



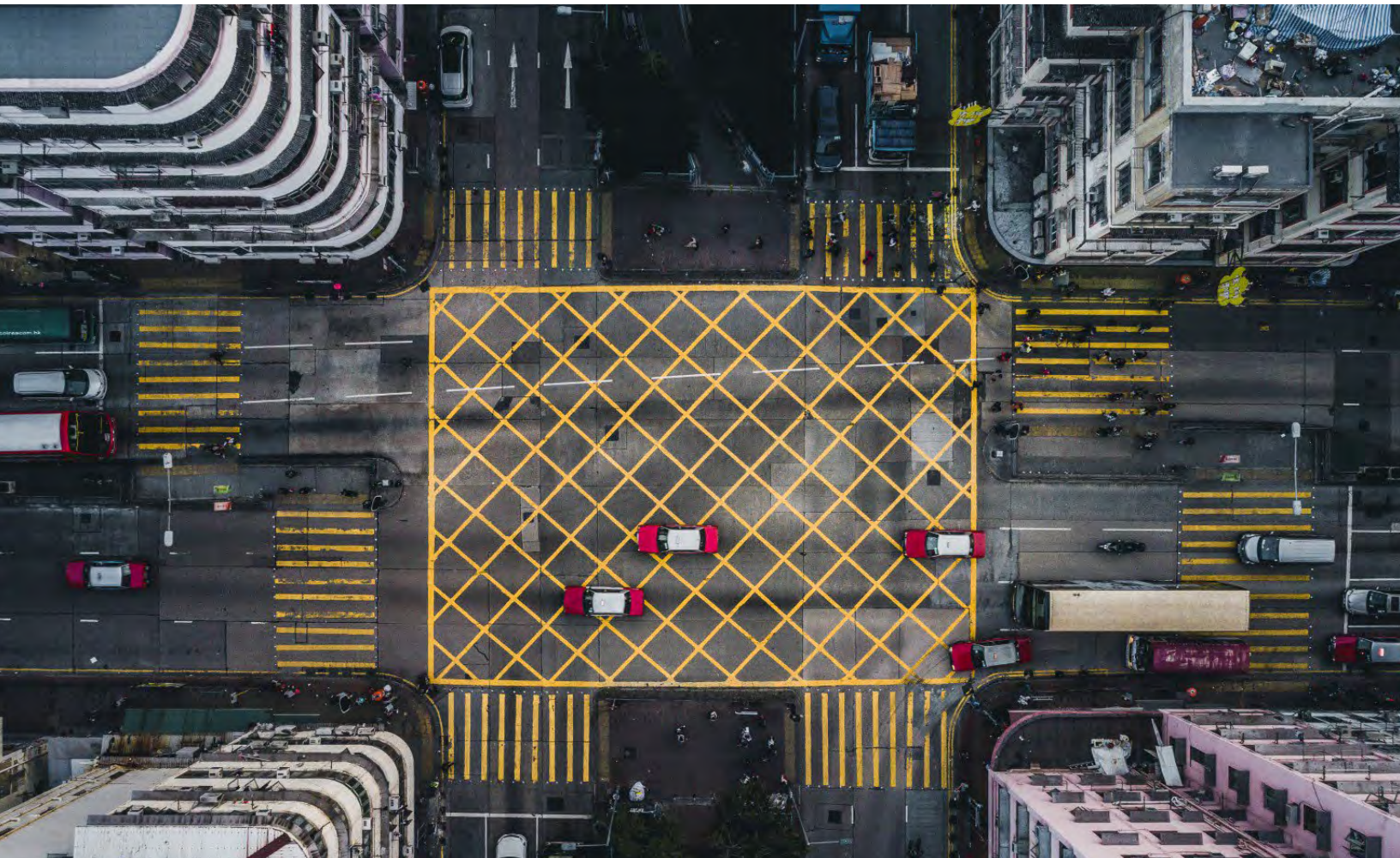
Designated Substances and Hazardous Materials Survey

Lakeridge Health, Bowmanville Hospital
(Project 185-LHBSR)
47 Liberty Street South, Bowmanville, Ontario

Infrastructure Ontario

22 November 2023

➔ **The Power of Commitment**



Executive Summary

GHD Limited (GHD) was retained by Infrastructure Ontario (IO) to complete a Designated Substances (DS) and Hazardous Materials (HM) Survey for a parcel of land that includes the buildings and properties located at 47 Liberty Street, 11 Lambert Street, and 18, 20, and 22 Prince Street, Bowmanville, Ontario (hereinafter collectively referred to as the "Property" or the "Site"). The Property is irregular in shape, and approximately 3.0 hectares (7.41 acres) in size.

The majority of the Site has been developed with a healthcare-related building since 1913, which consists of the Lakeridge Health (LH) Bowmanville Hospital, with outdoor surface parking, and a helipad to the east. The Bowmanville Memorial Hospital opened as a new facility in 1946, with an extension constructed in 1960. A new East Wing was later constructed and opened in 1990 and the Level 2 Critical Care Unit and Eye Care Centre opened in 2013. The LH hospital is currently comprised of a 2-storey to 4-storey building with North, South, and East Wings. The building occupies the western portion of the Bowmanville Hospital property, while the outdoor surface parking and helipad occupy the eastern portion.

A 2-storey office building called the Lambert House (potential former residence) is located near the center of the north Property limits. Constructed in 1926, the building operated as a residence. The building was substantially renovated in 1993.

Three detached residential dwellings are also located on the southeastern portion of the Site, with municipal addresses of 18, 20, and 22 Prince Street. The residential buildings on the southeastern portion of the Site are each single storey detached dwellings, with full basements.

The Site also includes two access roads which provide access to the Site, from Prince Street to the south and Queen Street to the north.

Building	Description	Approximate Footprint (square metres)
North Wing (47 Liberty Street)	Two above grade levels (ground and first) Built in 1950	Footprint: ~1,750 m ² Floorspace: 9,250 Work Area: 3,550
South Wing (47 Liberty Street)	Four levels above grade (ground, first, second, third) Below grade crawlspace Built in 1962	Footprint: ~1,280 m ² Floorspace: 26,450 Work Area: 4,525
East Wing (47 Liberty Street)	Four levels above grade (ground, first, second, third) Below grade basement Built in 1990	Footprint: ~1,375 m ² Floorspace: 4,443 Work Area: 750
Lambert House (11 Lambert Street)	Three levels above grade (first, second, attic) Below grade basement Built in 1926, significantly renovated 1993	Footprint: ~145 m ² Floorspace: ~5,000 Work Area: 3,623
Residence (18 Prince Street)	Unfinished attic, finished first floor Finished lookout basement Detached garage ~30 m ² Built prior to 1959	Footprint: 90 m ² Floorspace: ~180 m ² Work Area: 270 m ²

Building	Description	Approximate Footprint (square metres)
Residence (20 Prince Street)	Unfinished attic, finished first floor Finished lookout basement Detached garage ~30 m2 Built prior to 1959	Footprint: 90 m2 Floorspace: ~180 m2 Work Area: 270 m2
Residence (22 Prince Street)	Unfinished attic, finished first floor Finished lookout basement Built prior to 1959	Footprint: 90 m2 Floorspace: ~180 m2 Work Area: 270 m2

The DSHM Survey was requested to identify, primarily through a non-intrusive investigations, the locations of known, presumed or assumed DSHM within the Work Area and to close data gaps where information is lacking.

The objective of the DSHM Survey was to provide approximate order of magnitude quantities, and evaluate DS as defined and regulated by the Ontario Regulation (O. Reg.) 490/09 "Designated Substances", made under the Occupational Health Safety and Safety Act (OHSA) including: acrylonitrile, arsenic, asbestos, benzene, coke oven emissions, ethylene oxide, isocyanates, lead, mercury, silica, and vinyl chloride.

Other potentially hazardous substances that were also evaluated included polychlorinated biphenyls (PCBs), ozone depleting substances (ODS), man-made mineral fibres, and mould.

The following items were not inspected or sampled as part of the DSHM Assessment because they could not be safely accessed to inspect or sample:

- Components or wiring within live motors, lights or other electrical systems, equipment, wiring, and fixtures
- Fume hoods, fire doors, where the functional operation may be compromised by sampling
- Elevators, and confined spaces
- Active or internal components of boilers and HVAC systems
- Below grade utilities

The following conclusions/recommendations were developed based on the results of the DSHM Survey:

1. GENERAL

- a. Notification and/or a copy of the DSHM Survey Report should be made available to employees and contractors working in the areas with DSHM that may be disturbed. Maintenance staff and other employees that may potentially disturb or be exposed to DSHM should have awareness and other training on proper use and/or handling of these materials and protection measures.
- b. A DSHM or chemical sweep should be conducted prior to renovation or demolition activities to ensure removal and proper management of DSHM, including chemicals used and stored at the Site. All potential benzene containing products (petroleum based) and vinyl chloride containing products (solvents and cleaners) should be managed in accordance with OHSA/Workplace Hazardous Material Information System (WHMIS) regulations for Site workers. If the materials are removed from the Site as waste, the materials should be managed in accordance with O. Reg. 347 requirements.

2. ASBESTOS

- a. Asbestos was identified in building materials at the Site, as specified in Section 4.6 and Table 1b.
- b. All ACM must be managed in accordance with O. Reg. 278/05. Any abatement activities undertaken should be planned activities (either standalone abatement or as part of a future construction project) and abatement specifications should be prepared prior to tendering to identify each location where abatement is required as part of that project.

All abatement activities must follow the requirements in O. Reg. 278/05 for Type 1, Type 2 or Type 3 operations, depending on the material being abated and the proposed abatement methods, in addition to

CSA document CSA Z317.13 (Infection control during construction, renovation, and maintenance of health care facilities).

- c. The Asbestos Management Plan (AMP) at the hospital shall be maintained to manage ACM in place until it is all removed. The AMP shall be updated with a) the findings of this report, b) when ACM abatement is undertaken at the facility, c) when previously unidentified ACM is encountered during maintenance and construction operations, and d) when the corresponding regulations are changed. Until such time as construction projects are well-defined, an abatement plan should be prepared to manage ACM during the construction project.

3. LEAD

- a. All paints at the Site should be treated as containing lead. All of the painted surfaces were in good condition, with minor localized deterioration (chipped or flaking) in some areas (primarily exterior support areas) with the paint generally well adhered at the time of the inspection and is unlikely to be a significant hazard to Site occupants or users unless aggressively disturbed.
- b. All ceramic tile at the Site should be treated as containing lead. The material is in good condition at the time of the inspection, and is unlikely to be a significant hazard to Site occupants or users unless aggressively disturbed.
- c. Copper plumbing and cast-iron drain systems were observed throughout the Site. Solder connections on plumbing, and lead packing on cast iron connections may contain lead.
- d. The Guideline for Lead on Construction Projects (MOL, April 2011) and the Lead Guideline for Construction, Renovation, Maintenance or Repair (EACO, October 2014) should be used to develop and implement a Lead Control Plan, including procedures to protect workers during construction activities which may disturb lead containing materials.
- e. Emergency devices (smoke detectors/fire alarms and security alarm devices) and battery backups that do or may contain lead-acid batteries were identified throughout the Site. These batteries are not part of the building structure but may contain lead and should be assessed when removed from service and disposed of in accordance with O. Reg. 347 and O. Reg. 490/09. The Guideline for Lead on Construction Projects (MOL, April 2011) and the Lead Guideline for Construction, Renovation, Maintenance or Repair (EACO, October 2014) should be used to develop and implement a Lead Control Plan, including procedures to protect workers during construction activities which may disturb lead containing materials.

4. MERCURY

- a. There are approximately 1,300 fluorescent light tubes and more than 30 compact fluorescent light (CFL) bulbs, all containing mercury vapour, present throughout all building areas.
- b. Mercury may be present in thermostats, pressure gauges, and electrical switching.
- c. Prior to demolition activities, the mercury-containing products should be removed, handled and disposed at a permitted off-site treatment/disposal facilities in accordance with O. Reg. 490/09 Designated Substances. The waste would be classified as 146T hazardous waste on the facility Generator Registration Report under O. Reg. 347/90 – General Waste Management.

5. SILICA

- a. Silica is present throughout the building, including concrete, concrete block, glazing systems, ceiling tiles, ceramic tiles, fiberglass insulation, etc.).
- b. The Guideline for Silica on Construction Projects (MOL, April 2011) should be used to develop appropriate procedures to implement during demolition activities which disturb silica containing materials and may generate silica containing dust.

6. PCBs

- a. The majority of fluorescent light fixtures in the Work Areas have all been upgraded to T8 ballasts and do not contain PCBs.

- b. The majority of transformers were observed to be dry type transformer units which do not contain PCBs. A pad-mounted transformer unit was observed to the south of the Site. A pole-mounted transformer was observed adjacent to the north of the Site. An oil-filled transformer is located in the electrical room.
- c. LH are not aware of any transformers, capacitors or other electrical equipment with PCB-containing oil at the Site.

7. ODS

- a. Ozone depleting substances (ODS) are present throughout the Site in both portable units (AC units, refrigerators, freezers/ice machines, water coolers/fountains) and fixed units (water fountains, chillers, and HVAC units).
- b. Refrigerants should be managed in accordance with O. Reg. 463/10 Ozone Depleting Substances and Other Halocarbons requirements. Refrigerants should be removed from equipment by licensed technicians and disposed of in accordance with O. Reg. 347/90 General Waste Management requirements prior to demolition activities.

8. MMMF

- a. Based on the Site inspection, man-made mineral fibre materials are present throughout all buildings at the Site in fibreglass insulation in the building walls and ceilings, fibreglass mechanical pipe insulation and acoustical ceiling tiles.
- b. Measures should be taken to control man-made mineral fibre dust hazard when the potential for creating airborne man-made mineral fibre containing dust arises during demolition activities. The Guideline for Silica on Construction Projects (MOL, April 2011) should be used to develop appropriate procedures to implement during demolition activities that will disturb these materials to comply with OHSA.

Contents

1.	Introduction	1
1.1	Regulations and Guidance	2
1.2	Scope of Work	3
2.	Site Information	4
3.	Records Review	5
4.	Designated Substances and Hazardous Materials Survey	6
4.1	Overview	6
4.1.1	Acrylonitrile	6
4.1.2	Arsenic	6
4.1.3	Asbestos	6
4.1.4	Benzene	6
4.1.5	Coke Oven Emissions	7
4.1.6	Ethylene Oxide	7
4.1.7	Isocyanates	7
4.1.8	Lead	7
4.1.9	Mercury	7
4.1.10	Silica	8
4.1.11	Vinyl Chloride	8
4.2	PCBs	9
4.2.1	Fluorescent /HID Lamp Ballasts	9
4.2.2	Other Potential PCBs Sources	9
4.3	Potential ODS-Containing Equipment	10
4.4	Man-Made Mineral Fibres	10
4.5	Mould	10
4.6	Asbestos Survey	10
4.6.1	Safetech 2016 Reassessment Report – Findings	10
4.6.2	Safetech 2019 Lambert House Report - Findings	11
4.6.3	Safetech 2016 18 Prince Street Report - Findings	12
4.6.4	Safetech 2016 22 Prince Street Report - Findings	12
4.6.5	Asbestos Management Plan	12
4.6.6	GHD 2023 Asbestos Survey	12
4.6.7	Asbestos - Future Activities	15
4.7	Lead	15
4.7.1	2006 Pinchin Report - Findings	16
4.7.2	Safetech 2016 18 Prince Street Report – Findings	16
4.7.3	Safetech 2016 22 Prince Street Report - Findings	16
4.7.4	GHD 2023 Lead Survey	16
4.7.5	Lead - Future Activities	17
5.	Conclusions/Recommendations	17

Figure Index

Figure 1	Hospital Sample Location Plan
Figure 2	Sample Location Plan – Hospital Basement
Figure 3	Sample Location Plan – Hospital Ground Floor
Figure 4	Sample Location Plan – Hospital First Floor
Figure 5	Sample Location Plan – Hospital Second Floor
Figure 6	Sample Location Plan – Hospital Third Floor
Figure 7	Sample Location Plan – Lambert House Basement
Figure 8	Sample Location Plan – Lambert House Attic
Figure 9	Sample Location Plan – Lambert House First & Second Floor
Figure 10	Sample Location Plan – 18 Prince Street Residence
Figure 11	Sample Location Plan – 20 Prince Street Residence
Figure 12	Sample Location Plan – 22 Prince Street Residence

Table Index

Table 1a	Asbestos Sample Summary (All Sampled Material)
Table 1b	Asbestos Sample Summary (Confirmed ACM)
Table 2a	Lead Paint Chip Analysis Summary
Table 2b	Lead XRF Scan Summary

Appendices

Appendix A	Historical Reports
Appendix B	Analytical Laboratory Reports – Asbestos (GHD 2023)

1. Introduction

GHD Limited (GHD) was retained by Infrastructure Ontario (IO) to complete a Designated Substances (DS) and Hazardous Materials (HM) Survey of portions of the Lakeridge Health (LH) Bowmanville Hospital Property.

The LH Property (Site or Property) is located at 47 Liberty Street South in Bowmanville, Ontario. The Site can be subdivided into nine main areas;

- The Hospital North Wing (constructed in 1950)
- The Hospital South Wing (constructed in 1962)
- The Hospital East Wing (constructed in 1990)
- The Lambert House (constructed in 1926)
- The 18 Prince Street residence (constructed prior to 1959)
- The 20 Prince Street residence (constructed prior to 1959)
- The 22 Prince Street residence (constructed prior to 1959)
- The asphalt paved parking area and helicopter pad
- The grass / lawn covered landscaped areas

This DSHM Survey included an assessment of components of the LH property, referred to as the Work Area. The Work Area includes the three wings of the main hospital (North, South, and East), the Lambert House, the three residences at the southeast corner of the Site (18 Prince, 20 Prince, and 22 Prince), and the surrounding asphalt paved surfaces. The Work Area does not include the landscaped surfaces, nor does it include any underground services.

Building	Description	Approximate Footprint (square metres)
North Wing (47 Liberty Street)	Two above grade levels (ground and first) Built in 1950	Footprint: ~1,750 m2 Floorspace: 9,250 Work Area: 3,550
South Wing (47 Liberty Street)	Four levels above grade (ground, first, second, third) Below grade crawlspace Built in 1962	Footprint: ~1,280 m2 Floorspace: 26,450 Work Area: 4,525
East Wing (47 Liberty Street)	Four levels above grade (ground, first, second, third) Below grade basement Built in 1990	Footprint: ~ 1,375 m2 Floorspace: 4,443 Work Area: 750
Lambert House (11 Lambert Street)	Three levels above grade (first, second, attic) Below grade basement Built in 1926, significantly renovated 1993	Footprint: ~145 m2 Floorspace: ~5,000 Work Area: 3,623
Residence (18 Prince Street)	Unfinished attic, finished first floor Finished lookout basement Detached garage ~30 m2 Built prior to 1959	Footprint: 90 m2 Floorspace: ~180 m2 Work Area: 270 m2

Building	Description	Approximate Footprint (square metres)	
Residence (20 Prince Street)	Unfinished attic, finished first floor	Footprint:	90 m2
	Finished lookout basement	Floorspace:	~180 m2
	Detached garage ~30 m2		
	Built prior to 1959	Work Area:	270 m2
Residence (22 Prince Street)	Unfinished attic, finished first floor	Footprint:	90 m2
	Finished lookout basement	Floorspace:	~180 m2
	Built prior to 1959		
		Work Area:	270 m2

For the purposes of the DSHM Survey, the portions being assessed are referred to as the "Work Area", while the greater LH facility is the "Site or "Property". Figure 1 through Figure 12 shows the location of the five Work Areas on the Property.

The Site is developed with numerous buildings described below that contain the Work Area.

The DSHM Survey was requested to identify, primarily through a non-intrusive investigations, the locations of known, presumed or assumed DSHM and to close data gaps where information was lacking.

The objective of the DSHM Survey was to provide approximate order of magnitude quantities, and evaluate DS as defined and regulated by the Ontario Regulation (O. Reg.) 490/09 "Designated Substances", made under the Occupational Health Safety and Safety Act (OHSA) including: acrylonitrile, arsenic, asbestos, benzene, coke oven emissions, ethylene oxide, isocyanates, lead, mercury, silica, and vinyl chloride.

Other potentially hazardous substances that were also evaluated included polychlorinated biphenyls (PCBs), ozone depleting substances (ODS), man-made mineral fibres, and mould.

The following items were not inspected or sampled as part of the DSHM Assessment because they could not be safely accessed to inspect or sample:

- Components or wiring within live motors, lights or other electrical systems, equipment, wiring, and fixtures
- Fume hoods, fire doors, or the interior of equipment such as boilers or ductwork, where the functional operation may be compromised by sampling
- Elevators, and associated elevator shafts
- Confined spaces, or below grade utilities
- Occupied patient rooms

Similarly, the inspection was limited to the building components. The contents of the building were not included in the survey.

The DSHM Survey has been prepared for IO and LH, and may not be relied upon by others without the written consent of GHD. Any such unauthorized reliance on or use of this report will be at the third party's risk.

1.1 Regulations and Guidance

The DSHM Survey was conducted in accordance with or in consideration of the following regulations and guidance:

- Occupational Health and Safety Act (OHSA)
- O. Reg. 490/09 Designated Substances
- O. Reg. 278/05 Asbestos on Construction Projects and in Building and Repair Operations and the corresponding Guideline (Ontario Ministry of Labour [MOL], May 2011)
- Infection control during construction, renovation, and maintenance of health care facilities (Canadian Standards Association document CSA Z317.13)

- Lead Guideline for Construction, Renovation, Maintenance or Repair (Environmental Abatement Council of Ontario [EACO], October 2014)
- Guideline for Lead on Construction Projects (MOL, April 2011)
- Canadian Surface Coating Materials Regulations (SOR/2016-193)
- Canadian PCB Regulations (SOR/2008-273)
- O. Reg. 362 Waste Management – PCBs
- Guideline for Silica on Construction Projects (MOL, April 2011)
- Mercury-Containing Products Pollution Prevention Fact Sheet #21 (Ministry of the Environment [MOE], September 2001)
- O. Reg. 347/90 General Waste Management
- Mould guidelines for the Canadian construction industry (Canadian Construction Association [CCA], 2018)
- Mould Abatement Guidelines (Edition 3, EACO, 2015)
- Federal Halocarbon Regulations (FHR) (SOR/2003-289)
- Ozone Depleting Substances and Halocarbon Alternatives Regulations (SOR/2016-137)
- O. Reg. 463/10 ODS and Other Halocarbons
- Construction Safety Association of Ontario – Synthetic Vitreous Fibres, Guidelines for Construction (Construction Safety Association of Ontario, 2005)

1.2 Scope of Work

GHD completed an inspection of the building structures, materials, systems, and equipment in the Work Areas within the five buildings in August and October 2023 in order to accommodate LH needs and entry into occupied spaces, and to assist Phase 3 redevelopment plans of IO. Building materials observed in each area were evaluated, the condition and quantity of designated substances were recorded and samples were collected, as appropriate. IO and LH staff coordinated access to all areas of the Site for GHD. Within the Patient Care areas, the high utilization of available beds resulted in the site inspection being limited to a physical inspection of approximately 10% of rooms; inspections were limited to those unoccupied at the time of inspection, and each inspection was completed under infectious disease protocols. GHD completed the following tasks as part of the DSHM Survey activities:

- Review of the existing reports for the facility provided by the Client (as listed in section 3 – Records Review).
- Site inspection of the buildings and structures, including:
 - Asbestos Survey, including sampling and analysis of building materials.
 - Lead Survey, including sampling and analysis of paint.
 - Inspection and evaluation for the presence of the remaining nine designated substances: acrylonitrile, arsenic, benzene, coke oven emissions, ethylene oxides, isocyanates, mercury, silica, and vinyl chloride.
 - Inspection and evaluation for PCB-containing equipment (e.g., transformers, capacitors and fluorescent light ballasts) and potential mercury-containing equipment (e.g., manometers, thermostats, fluorescent light tubes). GHD did not collect samples for either of these materials and relied on visual inspection.
 - Inspection and evaluation for ODS-containing equipment – GHD requested lists of known ODS from IO and LH, but none was provided for review.
 - Inspection and assessment for man-made mineral fibres.
 - Inspection and evaluation for significant water intrusion/mould growth.
- Preparation of an inventory of designated substances and documentation of activities and evaluations in a report.

The observations during the Site inspection were documented in GHD standard DSHM Survey inspection formats. Representative photographs of the confirmed or assumed asbestos-containing materials (ACM) and the lead-containing paint are provided in Tables 1 and 2.

2. Site Information

Hospital – North Wing:

Reported as constructed in 1950. It consists of two above grade levels (Ground & First). Construction is poured concrete, clad in brick, with a flat built up roof (roof replaced in 2022). Floor finishes include terrazzo, vinyl floor tiles, vinyl sheet floor, and exposed concrete. Wall finishes include plaster and drywall. Ceiling finishes include plaster, drywall, lay-in ceiling tile, glue-in ceiling tiles.

Hospital – South Wing:

Reported as constructed in 1962. It consists of 4 above grade levels (Ground, First, Second, Third) plus an unfinished crawlspace (historic pipe insulation in the crawlspace replaced with fibreglass insulation and plastic covering). Construction is poured concrete, clad in brick, with a flat built up roof (roof replaced in 2022). Floor finishes include terrazzo, vinyl floor tiles, vinyl sheet floor, and exposed concrete. Wall finishes include plaster and drywall. Ceiling finishes include plaster, drywall, and lay-in ceiling tile.

Hospital – East Wing:

Reported as constructed in 1990. It consists of 4 above grade levels (Ground, First, Second, Third) plus a finished basement. Construction is poured concrete, clad in brick, with a flat built up roof (roof replaced in 2022). Floor finishes include terrazzo, vinyl floor tiles, vinyl sheet floor, and exposed concrete. Wall finishes include drywall. Ceiling finishes include drywall, and lay-in ceiling tile.

Lambert Building:

Reported as constructed in 1926, and significantly redeveloped in 1993. It consists of 3 above grade levels (First, Second, Attic) plus a partially finished basement. Construction is a concrete foundation and wood frame construction, clad in brick, with a peaked roof clad in asphalt shingle (roof replaced in 2022). Floor finishes include wood, vinyl floor tiles, vinyl sheet floor, and exposed concrete. Wall finishes include plaster and drywall. Ceiling finishes include plaster and drywall.

Residence – 18 Prince Street:

Built prior to 1959. The house consists of 2 levels (Basement, First floor) and an unfinished attic. Construction is a concrete foundation and wood frame construction, clad in brick, with a peaked roof clad in asphalt shingle (roof replaced in 2019). Floor finishes include wood, vinyl floor tiles, and vinyl sheet floor. Wall finishes include drywall. Ceiling finishes include drywall.

There is a detached garage west of the house. Construction is concrete pad, wood frame walls and roof, clad in Transite Shingle, with a peaked roof clad in asphalt shingle. The interior of the garage is unfinished.

Residence – 20 Prince Street:

Built prior to 1959. The house consists of 2 levels (Basement, First floor) and an unfinished attic. Construction is a concrete foundation and wood frame construction, clad in brick, with a peaked roof clad in asphalt shingle (roof replaced in 2018). Floor finishes include wood, vinyl floor tiles, and vinyl sheet floor. Wall finishes include drywall. Ceiling finishes include drywall.

There is a detached garage west of the house. Construction is concrete pad, wood frame walls and roof, clad in Transite Shingle, with a peaked roof clad in asphalt shingle. The interior of the garage is unfinished.

Residence – 22 Prince Street:

Built prior to 1959. The house consists of 2 levels (Basement, First floor) and an unfinished attic. Construction is a concrete foundation and wood frame construction, clad in brick, with a peaked roof clad in asphalt shingle (roof replaced approx. 2016-2018). Floor finishes include wood, vinyl floor tiles, and vinyl sheet floor. Wall finishes include drywall. Ceiling finishes include drywall. The roof extends to the west creating a carport.

3. Records Review

The following historical reports containing information about DSHM were provided to GHD by IO and/or LH for review and use, and are provided in Appendix A:

- "Reassessment of Asbestos-Containing Materials, Lakeridge Health Bowmanville 47 Liberty Street South Bowmanville Ontario, Report #168316" prepared by Safetech Environmental Ltd, dated 16 December 2016 (referred to as Safetech 2016 Reassessment report).
 - Addressed the hospital (North, South, and East Wings), the Lambert House, and the Blue Shed (which was removed from the Site between 2016 and 2023)
 - Identified Asbestos Containing Materials
- "Results of Bulk Sample Analysis for Determination of Asbestos Content, Lambert House, 11 Lambert Street Bowmanville, Ontario, Report #3190599" prepared by Safetech Environmental Ltd, dated 3 July 2019 (referred to as Safetech 2019 Lambert report).
 - Addressed the Lambert House
 - Identified Asbestos Containing Materials
- "DESIGNATED SUBSTANCES AND HAZARDOUS MATERIALS ASSESSMENT Renovation Project Residential Dwelling 18 Prince Street Bowmanville, Ontario, Report #193416" prepared by Safetech Environmental Ltd, dated 31 December 2016 (referred to as Safetech 2016 18 Prince report).
 - Addressed the 18 Prince Street Residence
 - Identified Designated Substances, UFFI, Mould, Pest, PCBs, and ODS
- "DESIGNATED SUBSTANCES AND HAZARDOUS MATERIALS ASSESSMENT Renovation Project Residential Dwelling 22 Prince Street Bowmanville, Ontario, Report #193416" prepared by Safetech Environmental Ltd, dated 31 December 2016 (referred to as Safetech 2016 22 Prince report).
 - Addressed the 22 Prince Street Residence
 - Identified Designated Substances, UFFI, Mould, Pest, PCBs, and ODS
- "Hazardous Building Materials Assessment Report, Lakeridge Health Bowmanville 47 Liberty Street South Bowmanville, Ontario Report #33603" prepared by Pinchin Environmental Ltd, dated 13 March 2006 (referred to as Pinchin 2006 report).
 - Addressed portions of South Wing and East Wing of hospital
 - Identified Designated Substances, and Mould

GHD confirmed that the materials identified as ACM in the above reports were generally present at the Site, or if absent, GHD assumed that the material had been removed.

Through intrusive assessment, GHD identified additional materials not in the above reports and additional quantities of some materials identified. The updated materials quantities are included in Section 4.6.6 of this report and the sections below.

No more recent reports with information regarding DSHM were provided to GHD for review. GHD understands that an asbestos management plan (AMP) exists for at least some of the buildings included in this Survey and requested a copy, but none was provided for review.

4. Designated Substances and Hazardous Materials Survey

GHD completed an inspection of the building structures, materials, systems, and equipment in the Work Areas within the five buildings intermittently in August and September 2023 in order to accommodate LH needs and entry into occupied spaces. Building materials observed in each area were evaluated, the condition and quantity of designated substances were recorded and samples were collected, as appropriate. IO and LH staff coordinated access to all areas of the Site for GHD. Within the Patient Care areas, the high utilization of available beds resulted in the site inspection being limited to a physical inspection of approximately 10% of rooms; inspections were limited to those unoccupied at the time of inspection, and inspection of Patient Care areas was completed under infectious disease protocols.

4.1 Overview

4.1.1 Acrylonitrile

Acrylonitrile is a colourless to pale-yellow liquid at room temperature, with an unpleasant odour. It is used in the manufacturing of synthetic fibres, rubber, coatings, and adhesives.

Based on the Site inspection, Site contact knowledge and historical use of the Site, no sources of acrylonitrile are present in the Work Areas.

4.1.2 Arsenic

Arsenic is a silver-grey, brittle, crystalline solid at room temperature. Arsenic compounds are used as wood preservatives, insecticides, herbicides, in metal alloys and are naturally present in certain minerals and soils.

Pressure treated wood products were not observed in the Work Areas. No fixed sources of arsenic associated with buildings were identified in the Work Areas.

4.1.3 Asbestos

Asbestos is a group of fibrous minerals that occur naturally in soil and rock. Asbestos fibres were formerly used (primarily for their insulating and fireproofing properties) in roofing shingles, ceiling tiles, floor tiles, asbestos cement products, gaskets, insulation, paper products, and other building insulating products.

O. Reg. 278/05 defines an asbestos-containing material (ACM) as any building material with greater than 0.5 percent asbestos by weight.

GHD collected and submitted for analysis samples of building materials suspected to contain asbestos, that were not identified in previous reports. The analytical laboratory reports are provided in Appendix B. GHD's Asbestos Survey is provided in Section 4.6.

4.1.4 Benzene

Benzene is a colourless liquid at room temperature, with a sweet odour. Benzene and benzene-containing compounds are components of crude oil and refined petroleum products such as gasoline and are present in coal, natural gas, and other materials. Benzene is a component of other chemicals that are used to make plastics, resins, nylon, synthetic rubber, lubricants, detergents, pharmaceuticals, and other materials.

At the time of the Site inspection no chemicals, fuels or liquids potentially containing benzene were observed in the areas inspected. There is the potential for release of benzene or benzene containing compounds if plastic and

petrochemical based products present in the building (e.g., electrical wiring, piping, etc.) were to degrade and/or combust during a fire or materials are degraded during any renovation or demolition activities.

Based on the Site inspection, Site contact knowledge and historical use of the Work Areas, no fixed sources of benzene are present in the Work Areas.

4.1.5 Coke Oven Emissions

Coke oven emissions are the airborne constituents of the by-product created by destructive distillation of coal and petroleum. Coke oven emissions are typically associated with the production of steel and coal processing/coke manufacture.

Based on the Site inspection, and review of the Inventory of Coal Gasification Plant Waste Sites in Ontario (Ontario Ministry of the Environment [MOE], April 1987), no sources of coke oven emissions were identified on the Property.

4.1.6 Ethylene Oxide

Ethylene oxide is a colourless gas at room temperature and a liquid at 12 degrees Celsius. It is used in the manufacturing of ethylene glycol, surfactants, fumigants, fungicides, and petroleum demulsifiers.

Based on the Site inspection, Site contact knowledge and historical use of the Work Areas, no sources of ethylene oxide are present in the Work Areas.

4.1.7 Isocyanates

Isocyanates are compounds that react with compounds containing alcohol (hydroxyl) groups to produce polyurethane polymers, which are components of polyurethane foams, thermoplastic elastomers, spandex fibres, and polyurethane paints. Isocyanates are raw materials used to manufacture polyurethane products, such as polyurethane foam, insulation materials, and surface coatings.

Based on the Site inspection, Site contact knowledge and historical use of the Work Areas, no significant sources of isocyanates are present in the Work Areas.

4.1.8 Lead

Lead is a naturally occurring bluish-grey metal that is solid at room temperature. Lead is used in the manufacture of batteries, solder, paint, and piping. Lead is known to be present in electrical and plumbing equipment (solder), electrical conduit, batteries, older paints, and older piping system materials.

Lead-based paint sampling was conducted as part of the previous DSHM Survey. GHD did not conduct paint sampling as part of the 2023 investigation.

GHD's Lead Survey is provided in Section 4.7.

4.1.9 Mercury

Mercury is a naturally occurring metal. At room temperature, it is a shiny, silver-coloured odourless liquid. When heated it becomes a colourless, odourless gas. Mercury is used in electrical switches, thermostats, thermometers, pressure gauges, dental fillings, certain batteries, certain lighting systems and some manufacturing processes.

The majority of the thermostats observed were either open coil or digital type, though some mercury-containing thermostats may remain. Mercury may also be present in electrical switches which were energized and were not inspected. Mercoid switches that contain mercury may be present in mechanical rooms and associated with HVAC units that were in operation at the time of inspection.

GHD observed approximately 1300 fluorescent light tubes (including exit signs) and approximately 30 compact fluorescent light (CFL) bulbs which containing mercury vapour throughout the inspected portion of the buildings and they are summarized as follows:

Hospital (North, South, East Wings combined)

- Approximately 1,120 fluorescent light tubes and 30 CFL bulbs, 87 exit signs, 16 emergency lights

Lambert Building

- Approximately 70 fluorescent light tubes, 6 exit signs

18 Prince Street

- No fluorescent light tubes observed

20 Prince Street

- Approximately 4 fluorescent light tubes

22 Prince Street

- Approximately 8 fluorescent light tubes

Based on the Site inspection and Site contact knowledge, no other mercury containing building equipment is present in the Work Areas. Some mobile medical equipment at the Site may contain mercury but was not included in the Survey as it is not part of the building structure and will likely be repurposed/moved and not remain at the time of construction/demolition.

4.1.10 Silica

Silica is a transparent to grey odourless powder or crystal at room temperature. It occurs widely in nature as sand, quartz, flint, and diatomite. Silica is used in the manufacture of glass, ceramics, abrasives, water treatment products, cosmetics, insecticides, paint, and foods. Silica is also used as a drying agent or preservative. Crystalline silica materials also are used in the production of concrete, cement, acoustic ceiling tiles, and ceramic tiles which are used for construction purposes.

Based on the Site inspection and building construction, crystalline silica is present throughout the buildings and exterior in the form of concrete (such as concrete walls, floors, sidewalks and curbs), asphalt (paved access roads and parking areas), brick, glazing, ceramic tile, speed tile, drywall and drywall joint compound, and man-made mineral fibers found throughout the facility.

There is the potential for silica dust to be generated by the grinding, cutting, or demolition of these building materials.

4.1.11 Vinyl Chloride

Vinyl chloride is a colourless, flammable gas at room temperature with a mild, sweet odour. Vinyl chloride is a degradation product of organic industrial/commercial solvents such as tetrachloroethylene (PCE) and trichloroethylene (TCE), which are used as degreasing and dry-cleaning agents. One use of vinyl chloride is in the manufacture of polyvinyl chloride (PVC), which is used in many plastic products including plastic pipe, electrical cable insulation, plumbing and conduit fixtures, clothing, upholstery, roofing, and flooring materials. Products potentially manufactured with vinyl chloride and present at the Site are not expected to contain residual vinyl chloride. There is the potential for release of vinyl chloride if building piping, wire and cable coatings and other building materials and equipment degrade or combust during a fire.

At the time of the Site inspection, solvents, cleaners, paints and other maintenance chemicals which may contain vinyl chloride were observed in the Work Areas. As these chemicals are currently in use for maintaining the facilities and

operations, potential vinyl chloride containing materials can be addressed through the completion of a chemical sweep immediately prior to demolition activities. A chemical sweep consists of conducting a pre-demolition inspection for the presence of containerized consumable chemicals throughout the buildings and consolidating all containerized chemicals into a secure area for off-site disposal/recycling.

Based on the Site inspection and the historical use of the Work Areas, there is no indication that vinyl chloride is present at the Site in reactive form.

4.2 PCBs

PCBs were historically used in transformers and capacitors due to their thermal stability and excellent dielectric properties. Prior to 1978, PCBs were also commonly found in hydraulic oil used in industrial equipment. While electrical and hydraulic equipment manufactured prior to 1978 remains in use today, most of that equipment was either manufactured to use non-PCB fluid or was retrofilled using non-PCB fluid. Equipment manufactured prior to 1978 has the potential to contain PCBs due to cross-contamination of dielectric fluid/hydraulic oil during manufacture and/or servicing. Where present in equipment manufactured prior to 1978, the PCB concentrations are generally low.

PCBs were also incorporated into cable wrap, concrete expansion joint compounds, and window caulking/glazing compound.

Canadian PCB Regulations (SOR/2008-273) define PCB-containing equipment as equipment that contains or is contaminated by a PCB liquid, mixture, or solid that contains at least 50 milligrams per kilogram (mg/kg) of PCBs per matrix material, and PCBs are also provincially regulated in accordance with O. Reg. 362/90 Waste Management – PCBs and O. Reg. 347/90 General Waste Management.

An assessment of potential PCB containing equipment/materials was conducted as part of the DSHM Survey. Potential PCB-containing equipment/materials identified in the Work Areas included lamp ballasts, elevators, electrical transformers and capacitors.

The majority of the indoor transformers were observed to be dry-type transformer units which do not contain PCBs. An oil-filled transformer is located in the electrical room. According to Site personnel, all oil-filled transformers at the Site have been tested and are known to not contain PCBs. GHD was not provided with testing results or analytical reports for the oil-filled transformers.

4.2.1 Fluorescent /HID Lamp Ballasts

Suspended fluorescent light fixtures provide lighting throughout the Work Areas. The majority of fluorescent light fixtures observed were T8 style, which have ballasts that do not contain PCBs. One 'non-T8' light ballast was inspected and observed to be labeled as 'non-PCB'. LH personnel confirmed that all older light fixtures have been replaced with the newer T8 fixtures and that they are not aware of any PCBs at the Site.

Light ballasts should be inspected when removed from service, and if not marked "No PCBs" or verified as not containing PCBs from manufacturer labels, should be managed and disposed as PCB containing. The fluorescent light fixtures throughout the building were generally observed to be in good condition.

4.2.2 Other Potential PCBs Sources

Several mechanically operated elevators, without hydraulic reservoirs, are located within the buildings, including in North Wing, South Wing, and East Wing. GHD relied on information provided by facility personnel. GHD did not inspect the elevator pits (generally inaccessible without an elevator contractor on-Site) to confirm the type of elevator.

Based on the Site inspection and Site contact knowledge, no PCB containing wastes are stored at the Site.

4.3 Potential ODS-Containing Equipment

Certain chemicals [such as chlorofluorocarbons (CFCs), hydrochlorofluorocarbons, and halons] are recognized as ODS because they break down in the stratosphere and release chlorine or bromine, which degrade the stratospheric ozone layer (i.e., greenhouse gases). The most common uses of ODS are as refrigerants in commercial, home, and vehicle air conditioners (AC) and refrigerators, rooftop heating, ventilation and air-conditioning (HVAC) units, foam blowing agents, solvents, aerosol spray propellants, fire extinguishing agents, and chemical reactants.

The Ozone-depleting Substances and Halocarbon Alternatives Regulations (SOR/2016-137) control the import, manufacture, use, sale, and export of bulk ODS. O. Reg. 463/10 ODS and Other Halocarbons consolidated previous multiple regulations regarding ODS use and management. The disposal of ODS waste is regulated by O. Reg. 347 General Waste Management.

Based on observations made by GHD during the Site inspection, fixed equipment containing chlorofluorocarbons (CFCs) in the Work Areas mainly utilize R134A. Many portable refrigeration and freezer units were also observed throughout the Work Areas, but are not catalogued as they are portable and not part of the building structure.

Refrigerants must be handled by qualified persons and recycled in accordance with O. Reg. 463/10.

4.4 Man-Made Mineral Fibres

Synthetic mineral fibres are fibrous inorganic substances made primarily from rock, clay, slag, or glass. These fibres are classified into three groups: fibreglass (glass wool and glass filament), mineral wool (rock wool and slag wool), and refractory ceramic fibres. Mineral fibres are used in insulation, lay-in ceiling tile, sprayed fireproofing, and sound control.

Based on the Site inspection, man-made mineral fibre materials are present throughout the Work Areas in fibreglass insulation in the building walls and ceilings, fibreglass mechanical pipe insulation, and acoustical ceiling tiles. These materials are generally in good condition and do not pose a hazard to occupants. Workers during construction would be protected from potential exposure by following similar protocols for protection against silica exposure.

4.5 Mould

During the Site assessment, GHD investigated areas accessible without demolition for any signs of significant water intrusion or suspect mould growth.

Within the main hospital building, small areas of limited water damage (e.g., in mechanical rooms, at entrances) were observed, but no significant water intrusion or suspect mould growth was observed at the Site.

A report detailing a mould assessment at 20 Prince Street in 2017 was provided. The recommended abatement was Type 1. It is not known if the abatement was completed, but no significant suspect mould growth was observed during GHD's inspection.

4.6 Asbestos Survey

4.6.1 Safetech 2016 Reassessment Report – Findings

The document "Reassessment of Asbestos-Containing Materials, Lakeridge Health Bowmanville 47 Liberty Street South Bowmanville Ontario, Report #168316" prepared by Safetech Environmental Ltd, dated 16 December 2016 (referred to as 2016 Safetech report) updated the asbestos component of the 2006 Pinchin report. Pertinent to this investigation, the Safetech 2016 Reassessment report identified the following Asbestos Containing Materials (ACM):

North Wing

- Aircell (friable, 15 ft, 25% Chrysotile) on ceiling in room NG16

- Parge cement on sweatwrap joints (friable, not counted) in north wing basement corridor
- Notes that pipes suspected to contain asbestos may be present in inaccessible areas with solid ceilings, pipe chases, columns, and vertical shafts
- Parge cement on Pipe Elbows (friable, 1 elbow, 50% Chrysotile) on ceiling in room NG16
- Plaster Finishes (2% Chrysotile) in BioWaste Fridge on North Ground Floor
- Brown Mastic supporting glue-on 1'x1' acoustic ceiling tiles (approx. 600ft², non-friable, 6% Chrysotile) in rooms NG02, NG03, NG28.
- 9"x9" Brown Vinyl Floor Tiles (approx. 30ft², non-friable, 3% Chrysotile) in Room NG02
- Black Tar Mastic under cork (possibly removed between 2014 and 2016, may remain in concealed areas)
- Assumes refractory bricks and gasketing/packing materials associated with the boiler, boiler cement/mortar joint compound, roofing felts, window caulking, fire door cores, caulking and mastics on mechanical equipment, elevator brakes, high voltage wire jacketing, bell and spigot joint material on large cast iron drain piping, hard textile breaker switch gear within electrical components to contain asbestos

South Wing

- Parge cement on sweatwrap joints (friable, not counted) throughout south wing
- Notes that pipes suspected to contain asbestos may be present in inaccessible areas with solid ceilings, pipe chases, columns, and vertical shafts
- Parge cement on Pipe Elbows and Pipe Fittings (friable, 35% chrysotile) assumed present in wall cavities and mechanical shafts
- Dark Grey Plaster between cork finishes and exterior brick (all, Chrysotile)
- Black Tar Mastic under cork (possibly removed between 2014 and 2016, but may remain in concealed areas) in emergency department
- Assumes roofing felts, window caulking, fire door cores, caulking and mastics on mechanical equipment, elevator brakes, high voltage wire jacketing, bell and spigot joint material on large cast iron drain piping, hard textile breaker switch gear within electrical components to contain asbestos

East Wing

- It was assumed no ACM was present, as the building was constructed in 1990

Blue Shed

- The Blue Shed building was not present in 2023, and so is not pertinent to this investigation.

Lambert House Residence Building

- Plaster Finishes (friable, poor condition in basement, Chrysotile) found throughout the building
- Assumes roofing felts, window caulking, fire door cores, hard textile breaker switch gear within electrical components to contain asbestos

4.6.2 Safetech 2019 Lambert House Report - Findings

The report "[Results of Bulk Sample Analysis for Determination of Asbestos Content, Lambert House, 11 Lambert Street Bowmanville, Ontario, Report #3190599](#)" prepared by Safetech Environmental Ltd, dated 3 July 2019 (referred to as 2019 Lambert report), identified the following Asbestos Containing Materials (ACM):

- Chrysotile Asbestos was detected at TRACE levels (<0.25%) in the base cement plaster finishes in walls and ceilings. As the asbestos concentration was below the Provincial definition of asbestos (0.5%), the material is not classified as ACM. *Note, common industry practice is to treat highly friable material as asbestos containing if asbestos is detected at any concentration.*

4.6.3 Safetech 2016 18 Prince Street Report - Findings

The report "DESIGNATED SUBSTANCES AND HAZARDOUS MATERIALS ASSESSMENT Renovation Project Residential Dwelling 18 Prince Street Bowmanville, Ontario, Report #193416" prepared by Safetech Environmental Ltd, dated 31 December 2016 (referred to as 2016 18 Prince Street report), identified the following Designated Substances (DS) as present:

- Asbestos | Transite Panels (non-friable, 10% Chrysotile, approx.. 800 ft2) on the garage exterior
- Lead | assumed present in solder, both on plumbing and electrical equipment
- Lead | assumed present in non-sampled paints
- Mercury | present in fluorescent light tubes
- Silica | present in concrete, concrete block, mortar, drywall, drywall joint compound

4.6.4 Safetech 2016 22 Prince Street Report - Findings

The report "DESIGNATED SUBSTANCES AND HAZARDOUS MATERIALS ASSESSMENT Renovation Project Residential Dwelling 22 Prince Street Bowmanville, Ontario, Report #193416" prepared by Safetech Environmental Ltd, dated 31 December 2016 (referred to as 2016 22 Prince Street report), identified the following Designated Substances (DS) as present:

- Asbestos | Transite Panels (non-friable, 10% Chrysotile, approx.. 800 ft2) on the garage exterior was identified in Table 2 of the report. *It is expected that this is a typo, as it was not included in the summary, and the building does not have a garage.*
- Lead | assumed present in solder, both on plumbing and electrical equipment
- Lead | assumed present in non-sampled paints
- Mercury | present in fluorescent light tubes
- Silica | present in concrete, concrete block, mortar, drywall, drywall joint compound

4.6.5 Asbestos Management Plan

GHD requested that IO and LH provide all known historic reports with information about DSHM. GHD is aware that an AMP has been prepared for some buildings at the Site but was not provided with a copy for review.

4.6.6 GHD 2023 Asbestos Survey

GHD conducted an Asbestos Survey which involved both reviewing the presence and condition of previously identified ACM, and collecting samples of friable (those that can be crumbled by hand pressure) and non-friable building materials suspected to contain asbestos that had not been previously sampled. Samples were collected in accordance with bulk asbestos sampling protocols and procedures provided in O. Reg. 278/05 Designated Substances in the Workplace: A Guide to the Asbestos Regulation for Construction Projects, Buildings and Repair Operations (MOL, May 2011), other guidance documents and experience.

GHD inspected and collected representative samples of suspect ACM in the non-patient care areas at the Site.

GHD conducted non-destructive visual assessments (no sampling) in select locations of patient care areas to confirm if previously identified ACM or suspect asbestos containing building materials are present in the patient care spaces. The visual inspection of the patient care areas was conducted within a portable enclosure unit under infection control protocols.

51 individual bulk samples of suspect ACM (that were not previously sampled) were collected throughout the Site. The materials sampled throughout the Site as part of the DSHM Survey included caulking, and window putty. Details for all of the suspect ACM encountered at the Site are provided in Table 1a.

Details and representative photographs of the confirmed or assumed ACM are provided in Tables 1a and Table 1b. Previously unsampled ACM was identified on the hospital exterior, and in the Prince Street residences. GHD sample locations are presented on Figures 1 through 12, and the analytical laboratory reports are provided in Appendix B.

The samples were submitted under Chain of Custody protocol to EMSL Canada, Inc. in Ottawa, Ontario for asbestos analysis. EMSL is an accredited and certified laboratory and has been performing asbestos analysis since 1981. Samples of friable materials were submitted for analysis by polarized light microscopy (PLM) using Method EPA/600/R 93/116 and a positive stop protocol (i.e., if one sub sample in a sample set is positive for asbestos at a concentration greater than 0.5%, other sub samples in that sample set are not analyzed and that material is considered ACM).

North Wing:

GHD visually confirmed the presence of the previously identified ACM (see section 4.6.1)

GHD collected bulk samples of previously untested building materials suspected to contain asbestos from the exterior of the North Wing of the hospital. GHD's 2023 sample locations are shown on Figure 1. Suspected ACM are documented in Table 1a, and confirmed ACM are documented in Table 1b.

The following previously unsampled materials were confirmed to contain greater than 0.5% asbestos:

- 2 | caulking, hard, grey (2% Chrysotile) found on the north wall, between the metal louvers and brick
- 3 | caulking, hard, brown (2% Chrysotile), found on north wall windows between the metal frame and brick
- 4 | caulking, hard black (3% Chrysotile) found on north wall windows between the metal frame and brick
- 6 | window putty, grey, hard (2% Chrysotile) found on windows on the northwest corner
- 7 | caulking, hard, white (2% Chrysotile) found in a single window in the northwest corner of the interior courtyard

The following building materials were not sampled, but are assumed to contain asbestos:

- Fire doors
- Elevator components (brakes)
- Fume hoods

All building materials visually similar to those identified as containing asbestos should be considered ACM and managed, handled, abated and disposed as ACM.

The remainder of submitted samples were non-detect for asbestos at a laboratory reporting limit of 0.1 percent by weight.

South Wing:

GHD visually confirmed the presence of the previously identified ACM (see section 4.6.1)

GHD collected bulk samples of previously untested building materials suspected to contain asbestos from the exterior of the South Wing of the hospital. GHD's 2023 sample locations are shown on Figure 1. Suspected ACM are documented in Table 1a, while the confirmed and assumed ACM are documented and are summarized in Table 1b.

The following previously unsampled materials were confirmed to contain greater than 0.5% asbestos:

- 10 | caulking, brown, hard (2% Chrysotile), found on all walls of the Wing between metal window frames and brick
- 11 | caulking, white, soft (1% Chrysotile), found on east wall between door frames and brick
- 12 | caulking, white, hard (2% Chrysotile), found on east and south walls between door / window frames and brick

The following building materials were not sampled, but are assumed to contain asbestos:

- Fire doors
- Elevator components (brakes)

- Fume hoods

All building materials visually similar to those identified as containing asbestos should be considered ACM and managed, handled, abated and disposed as ACM.

The remaining samples were non-detect for asbestos at a laboratory reporting limit of 0.1 percent by weight.

East Wing:

Due to the age of the building construction, ACM building materials were not anticipated, nor identified by GHD during the 2023 Site visits.

Lambert House:

GHD visually confirmed the presence of the previously identified ACM (see section 4.6.2).

GHD collected bulk samples of previously untested building materials suspected to contain asbestos from the exterior of the South Wing of the hospital. GHD's 2023 sample locations are shown on Figure 7. Suspected ACM are documented in Table 1a, while the confirmed and assumed ACM are documented and are summarized in Table 1b.

The following previously unsampled materials were confirmed to contain greater than 0.5% asbestos:

- L1 | caulking, brown, hard (2% Chrysotile), found on all walls of the Wing between metal window frames and brick

All building materials visually similar to those identified as containing asbestos should be considered ACM and managed, handled, abated and disposed as ACM.

Parking Area:

GHD collected bulk samples of asphalt for asbestos analysis. GHD's 2023 sample locations are shown on Figure 1. Sample information is summarized in Table 1a.

None of the asphalt samples contain greater than 0.1% asbestos.

18 Prince Street residence:

GHD visually confirmed the presence of the previously identified ACM (see Section 4.6.3).

GHD collected bulk samples of previously untested building materials suspected to contain asbestos from the exterior of the building and detached garage, and visually inspected the attic of the residence. GHD's 2023 sample locations are shown on Figure 10. Suspected ACM are documented in Table 1a, while the confirmed and assumed ACM are documented and are summarized in Table 1b.

The following previously unsampled materials were confirmed to contain greater than 0.5% asbestos:

- 18-1 | traces of black tar behind rigid white caulking (5% Chrysotile), found on all walls of the residence between door / window frames and brick

All building materials visually similar to those identified as containing asbestos should be considered ACM and managed, handled, abated and disposed as ACM.

The remaining samples were non-detected for asbestos at a laboratory reporting limit of 0.1 percent by weight.

20 Prince Street residence:

GHD collected bulk samples of previously untested building materials suspected to contain asbestos from the exterior of the building and detached garage, and visually inspected the attic of the residence. GHD's 2023 sample locations are shown on Figures 11. Suspected ACM are documented in Table 1a, while the confirmed and assumed ACM are documented and are summarized in Table 1b.

The transite panels on the exterior of the garage are known to contain asbestos and were not sampled.

The following materials were confirmed to contain greater than 0.5% asbestos:

- 20-2 | window putty (2% Chrysotile), found on the north window of the detached garage

All building materials visually similar to those identified as containing asbestos should be considered ACM and managed, handled, abated and disposed as ACM.

The remaining samples were non-detected for asbestos at a laboratory reporting limit of 0.1 percent by weight.

22 Prince Street residence:

GHD visually confirmed the presence of the previously identified ACM (see Section 4.6.4).

GHD collected bulk samples of previously untested building materials suspected to contain asbestos from the exterior of the building, and visually inspected the attic of the residence. GHD's 2023 sample locations are shown on Figure 12. Suspected ACM are documented in Table 1a, while the confirmed and assumed ACM are documented and are summarized in Table 1b.

None of the samples collected on the building exterior were confirmed to contain greater than 0.5% asbestos.

4.6.7 Asbestos - Future Activities

The AMP for the Site should be updated to include the new information provided in this report.

Any abatement activities undertaken should be planned activities (either standalone abatement or as part of a future construction project) and abatement specifications should be prepared prior to tendering to identify each location where abatement is required as part of that project. Abatement work should be conducted by trained personnel following appropriate health and safety practices, including proper personal hygiene, selection of personal protective equipment and respirator use. Any worker/supervisor who works in a Type 3 operation must have successfully completed an approved Ministry of Training, Colleges and Universities Asbestos Abatement Worker or Supervisor training program.

All abatement activities must follow the requirements in both O. Reg. 278/05 for Type 1, Type 2 or Type 3 operations, and CSA document CSA Z317.13 (Infection control during construction, renovation, and maintenance of health care facilities). Depending on the material being abated and the proposed abatement methods, this may include inspection and clearance air testing.

4.7 Lead

The Canadian Federal Government has been limiting the amount of lead in paint to 0.5 percent (5,000 parts per million [ppm]) since 1976. Paint used in buildings before 1960 probably contained elevated levels of lead. The Surface Coating Materials Regulations (SOR/2016-193 restricts the concentration of lead in new paint manufacture to 0.009 percent (90 ppm).

O. Reg. 490/09 regulates lead in the workplace as a designated substance. The MOL Occupational Exposure Level (OEL) for workers to inorganic lead is 0.05 milligrams per cubic metre (mg/m³) for an 8-hour time-weighted average exposure. If lead is present, either in paint or other materials, and there may be potential worker exposure at unacceptable levels, a Lead Control Program is required by the MOL to manage occupational exposures, including for renovation and demolition activities.

The Lead Guideline for Construction, Renovation, Maintenance or Repair (EACO, October 2014) and the Guideline for Lead on Construction Projects (MOL, April 2011) provide guidance on measures to be implemented to control potential lead hazards during maintenance, renovation, or demolition activities, which involve the disturbance of materials with elevated lead levels. The EACO lead guideline suggests that for paint with a low-level lead concentration (below 0.1 percent [1,000 ppm]), no special lead-specific precautions are required, provided there is no aggressive disturbance, such as sanding, grinding, or hot work. Lead-containing waste with certain leachable lead concentrations is also regulated in accordance with O. Reg. 347 – Waste Management General.

4.7.1 2006 Pinchin Report - Findings

The report "Hazardous Building Materials Assessment Report, Lakeridge Health Bowmanville 47 Liberty Street South Bowmanville, Ontario Report #33603" prepared by Pinchin Environmental Ltd, dated 13 March 2006 (referred to as Pinchin 2006 report), identified the following building materials that contained Lead:

- Painted surfaces | measured by XRF scan to contain 0.00-0.5 mg/cm² lead
- Ceramic tile | measured by XRF scan to contain 0.00 – 22.0 mg/cm² lead
- Lead sheet in Ground floor corridor | measured by XRF scan to contain 76 mg/cm² lead. Present in walls surrounding x-ray areas and dental offices
- Assumed present in solder (electrical and plumbing), electrical cable sheathing, batteries (including emergency lights)

4.7.2 Safetech 2016 18 Prince Street Report – Findings

The report "DESIGNATED SUBSTANCES AND HAZARDOUS MATERIALS ASSESSMENT Renovation Project Residential Dwelling 18 Prince Street Bowmanville, Ontario, Report #193416" prepared by Safetech Environmental Ltd, dated 31 December 2016 (referred to as 2016 18 Prince Street report), identified the following building materials that contained Lead:

- Lead | assumed present in solder, both on plumbing and electrical equipment
- Lead | assumed present in non-sampled paints

4.7.3 Safetech 2016 22 Prince Street Report - Findings

The report "DESIGNATED SUBSTANCES AND HAZARDOUS MATERIALS ASSESSMENT Renovation Project Residential Dwelling 22 Prince Street Bowmanville, Ontario, Report #193416" prepared by Safetech Environmental Ltd, dated 31 December 2016 (referred to as 2016 22 Prince Street report), identified the following building materials that contained Lead:

- Lead | assumed present in solder, both on plumbing and electrical equipment
- Lead | assumed present in non-sampled paints

4.7.4 GHD 2023 Lead Survey

Previous investigations at the Site identified lead in painted surfaces. Based on these results:

- all paint at the Site should be considered to contain lead. While the concentration varies, the majority of the paint in all of the buildings contains lead.

During the 2023 site walkthrough GHD observed that painted surfaces were generally very well adhered, with little peeling observed. Accordingly, paint sampling for lead was not conducted as part of the GHD 2023 DSHM Survey

The following building materials were observed during the GHD 2023 Site Visit. While not sampled, these items are assumed to contain lead:

- Batteries | in Exit Signs at hospital (>87), and Lambert Building (>6)
- Batteries | in emergency lights (>16) in hospital
- Solder | present in all buildings in copper plumbing connections and electrical systems
- Ceramic tile glaze | present in all buildings

4.7.5 Lead - Future Activities

Based on the sampling results, the paint at the Site contains lead. Lead is also present in batteries, and in solder (both electrical and plumbing).

All projects that include paint disturbance should be evaluated and managed consistent with the Guideline for Lead on Construction Projects (MOL, April 2011) and Lead Guideline for Construction, Renovation, Maintenance or Repair (EACO, October 2014) guideline. A Lead Control Plan should be prepared and followed during renovation or demolition activities when painted surfaces will be disturbed. For currently peeling paint that will be removed as maintenance activities, follow the procedures described in the two guidelines and collect samples of the collected paint debris for analysis by Toxic Characteristic Leaching Procedure (TCLP) to determine disposal requirements.

5. Conclusions/Recommendations

The following conclusions/recommendations were developed based on the results of the DSHM Survey:

1. General
 - a. Notification and/or a copy of the DSHM Survey Report should be made available to employees and contractors working in the areas with DSHM that may be disturbed. Maintenance staff and other employees that may potentially disturb or be exposed to DSHM should have awareness and other training on proper use and/or handling of these materials and protection measures.
 - b. A DSHM or chemical sweep should be conducted prior to renovation or demolition activities to ensure removal and proper management of DSHM, including chemicals used and stored at the Site. All potential benzene containing products (petroleum based) and vinyl chloride containing products (solvents and cleaners) should be managed in accordance with OSHA/Workplace Hazardous Material Information System (WHMIS) regulations for Site workers. If the materials are removed from the Site as waste, the materials should be managed in accordance with O. Reg. 347 requirements.
2. Asbestos
 - a. Asbestos was identified in building materials at the Site, as specified in Section 4.6 and Table 1b.
 - b. All ACM must be managed in accordance with O. Reg. 278/05. Any abatement activities undertaken should be planned activities (either standalone abatement or as part of a future construction project) and abatement specifications should be prepared prior to tendering to identify each location where abatement is required as part of that project.

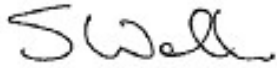
All abatement activities must follow the requirements in O. Reg. 278/05 for Type 1, Type 2 or Type 3 operations, depending on the material being abated and the proposed abatement methods, in addition to CSA document CSA Z317.13 (Infection control during construction, renovation, and maintenance of health care facilities).
 - c. The Asbestos Management Plan (AMP) at the hospital shall be maintained to manage ACM in place until it is all removed. The AMP shall be updated with a) the findings of this report, b) when ACM abatement is undertaken at the facility, c) when previously unidentified ACM is encountered during maintenance and construction operations, and d) when the corresponding regulations are changed. Until such time as construction projects are well-defined, an abatement plan should be prepared to manage ACM during the construction project.
3. Lead
 - a. All paints at the Site should be treated as containing lead. All of the painted surfaces were in good condition, with minor localized deterioration (chipped or flaking) in some areas (primarily exterior support areas) with the paint generally well adhered at the time of the inspection and is unlikely to be a significant hazard to Site occupants or users unless aggressively disturbed.

- b. All ceramic tile at the Site should be treated as containing lead. The material is in good condition at the time of the inspection, and is unlikely to be a significant hazard to Site occupants or users unless aggressively disturbed.
 - c. Copper plumbing and cast-iron drain systems were observed throughout the Site. Solder connections on plumbing, and lead packing on cast iron connections may contain lead.
 - d. The Guideline for Lead on Construction Projects (MOL, April 2011) and the Lead Guideline for Construction, Renovation, Maintenance or Repair (EACO, October 2014) should be used to develop and implement a Lead Control Plan, including procedures to protect workers during construction activities which may disturb lead containing materials.
 - e. Emergency devices (smoke detectors/fire alarms and security alarm devices) and battery backups that do or may contain lead-acid batteries were identified throughout the Site. These batteries are not part of the building structure but may contain lead and should be assessed when removed from service and disposed of in accordance with O. Reg. 347 and O. Reg. 490/09. The Guideline for Lead on Construction Projects (MOL, April 2011) and the Lead Guideline for Construction, Renovation, Maintenance or Repair (EACO, October 2014) should be used to develop and implement a Lead Control Plan, including procedures to protect workers during construction activities which may disturb lead containing materials.
4. Mercury
- a. There are approximately 1,300 fluorescent light tubes and more than 30 compact fluorescent light (CFL) bulbs, all containing mercury vapour, present throughout all building areas.
 - b. Mercury may be present in thermostats, pressure gauges, and electrical switching.
 - c. Prior to demolition activities, the mercury-containing products should be removed, handled and disposed at a permitted off-site treatment/disposal facilities in accordance with O. Reg. 490/09 Designated Substances. The waste would be classified as 146T hazardous waste on the facility Generator Registration Report under O. Reg. 347/90 – General Waste Management.
5. Silica
- a. Silica is present throughout the building, including concrete, concrete block, glazing systems, ceiling tiles, ceramic tiles, fiberglass insulation, etc.).
 - b. The Guideline for Silica on Construction Projects (MOL, April 2011) should be used to develop appropriate procedures to implement during demolition activities which disturb silica containing materials and may generate silica containing dust.
6. PCBs
- a. The majority of fluorescent light fixtures in the Work Areas have all been upgraded to T8 ballasts and do not contain PCBs.
 - b. The majority of transformers were observed to be dry type transformer units which do not contain PCBs. A pad-mounted transformer unit was observed to the south of the Site. A pole-mounted transformer was observed adjacent to the north of the Site. An oil-filled transformer is located in the electrical room.
 - c. LH are not aware of any transformers, capacitors or other electrical equipment with PCB-containing oil at the Site.
7. ODS
- a. Ozone depleting substances (ODS) are present throughout the Site in both portable units (AC units, refrigerators, freezers/ice machines, water coolers/fountains) and fixed units (water fountains, chillers, and HVAC units).
 - b. Refrigerants should be managed in accordance with O. Reg. 463/10 Ozone Depleting Substances and Other Halocarbons requirements. Refrigerants should be removed from equipment by licensed technicians and disposed of in accordance with O. Reg. 347/90 General Waste Management requirements prior to demolition activities.

8. MMMF

- a. Based on the Site inspection, man-made mineral fibre materials are present throughout all buildings at the Site in fibreglass insulation in the building walls and ceilings, fibreglass mechanical pipe insulation and acoustical ceiling tiles.
- b. Measures should be taken to control man-made mineral fibre dust hazard when the potential for creating airborne man-made mineral fibre containing dust arises during demolition activities. The Guideline for Silica on Construction Projects (MOL, April 2011) should be used to develop appropriate procedures to implement during demolition activities that will disturb these materials to comply with OHSA.

All of Which is Respectfully Submitted,
GHD

A handwritten signature in black ink that reads "Swall".

Scott Wallis, B.Sc.

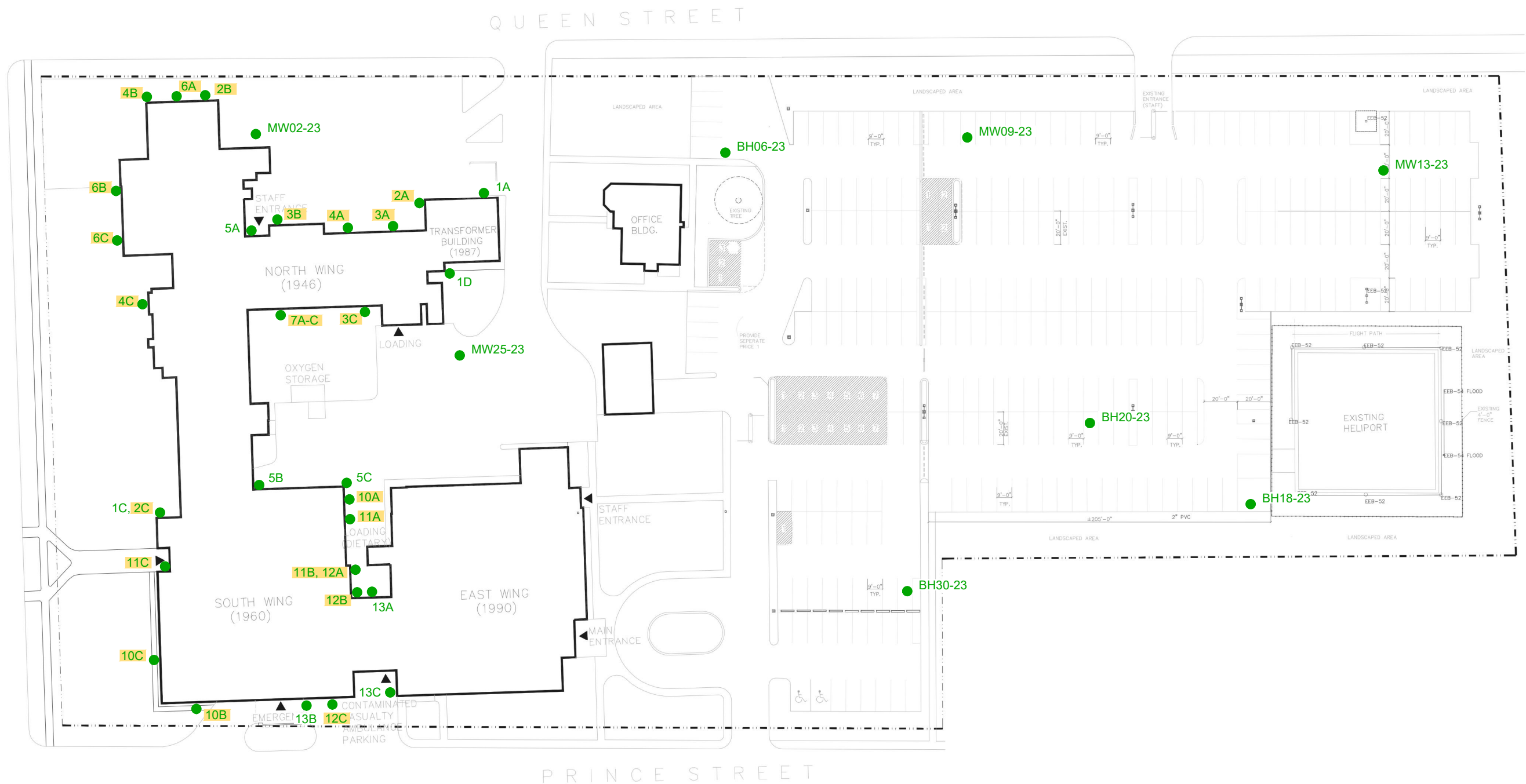
A handwritten signature in purple ink that reads "Craig A. M. Duffield".

Craig A. M. Duffield, B.A.Sc.

A handwritten signature in blue ink that reads "Aditya Khandekar".

Aditya Khandekar, P.Eng.

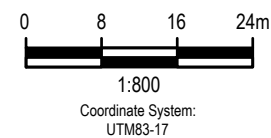
Figures



LEGEND

- SAMPLE LOCATION (GHD, 2023)
- SAMPLE CONTAINS ASBESTOS

NOTE: ALL SAMPLES ARE FROM EXTERIOR.

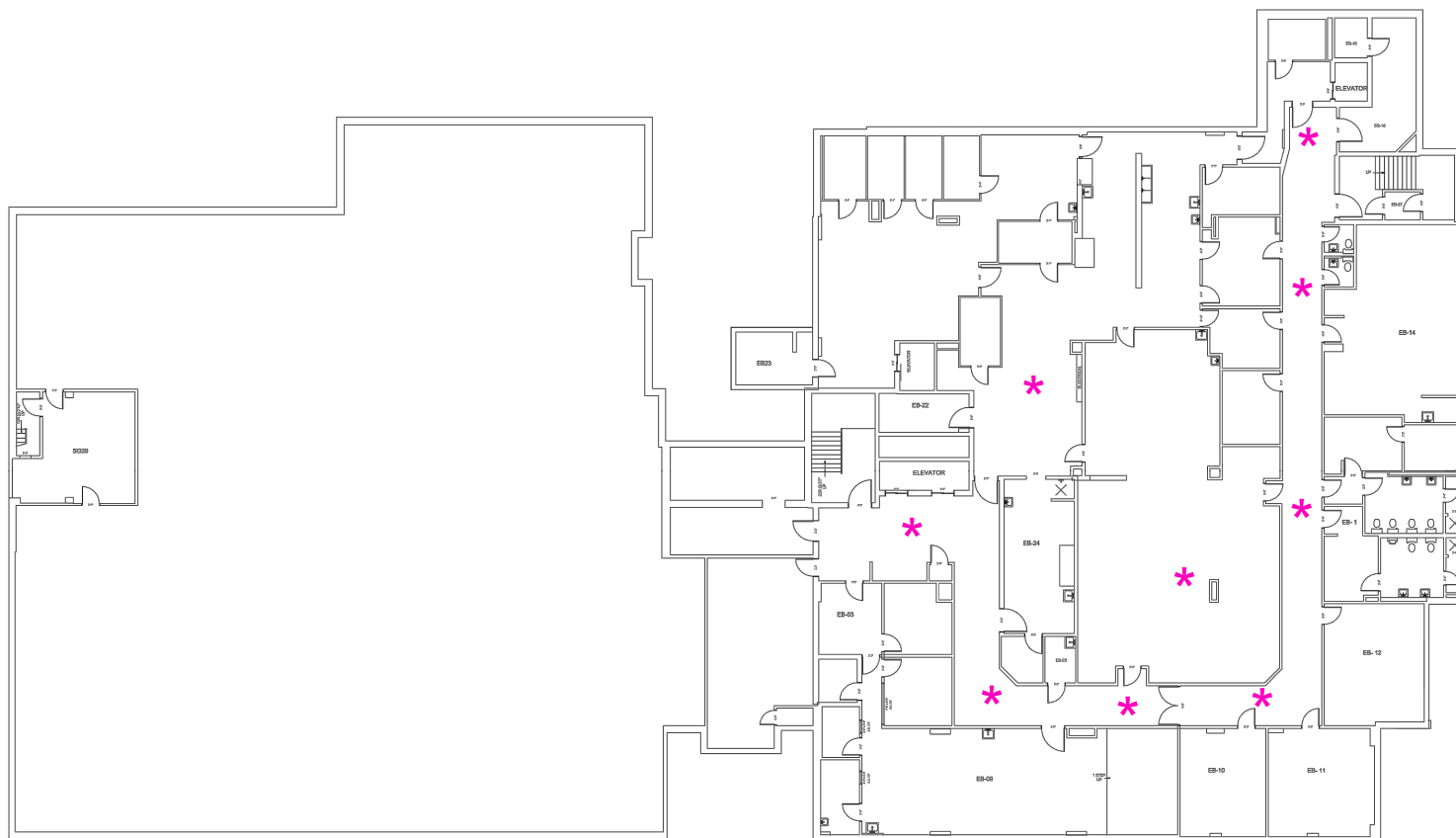


INFRASTRUCTURE ONTARIO
LAKE RIDGE HEALTH - BOWMANVILLE REDEVELOPMENT
 47 LIBERTY STREET SOUTH, BOWMANVILLE, ONTARIO
 DSHM SURVEY

HOSPITAL
SAMPLE LOCATION PLAN

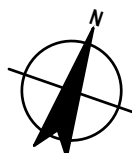
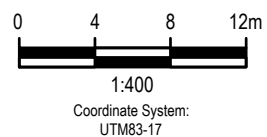
Project No. 12618254
 Date October 2023

FIGURE 1



LEGEND

INSPECTION AREA (NO ACM OBSERVED)

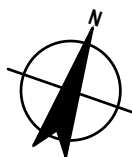
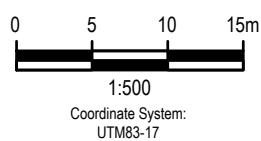
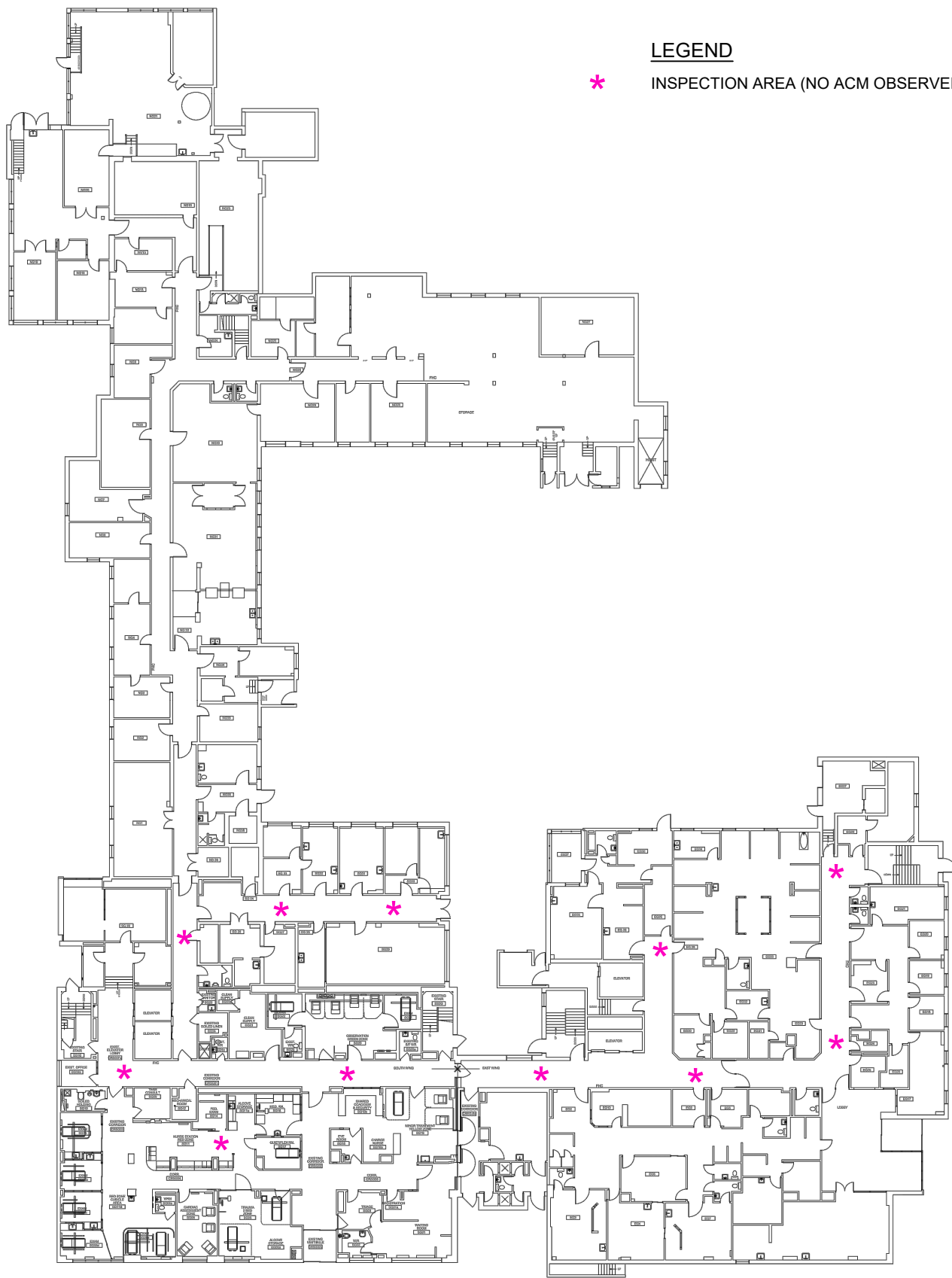


INFRASTRUCTURE ONTARIO
LAKERIDGE HEALTH - BOWMANVILLE REDEVELOPMENT
47 LIBERTY STREET SOUTH, BOWMANVILLE, ONTARIO
DSHM SURVEY

SAMPLE LOCATION PLAN - HOSPITAL BASEMENT

Project No. 12618254
Date October 2023

FIGURE 2

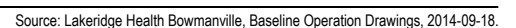


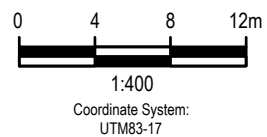
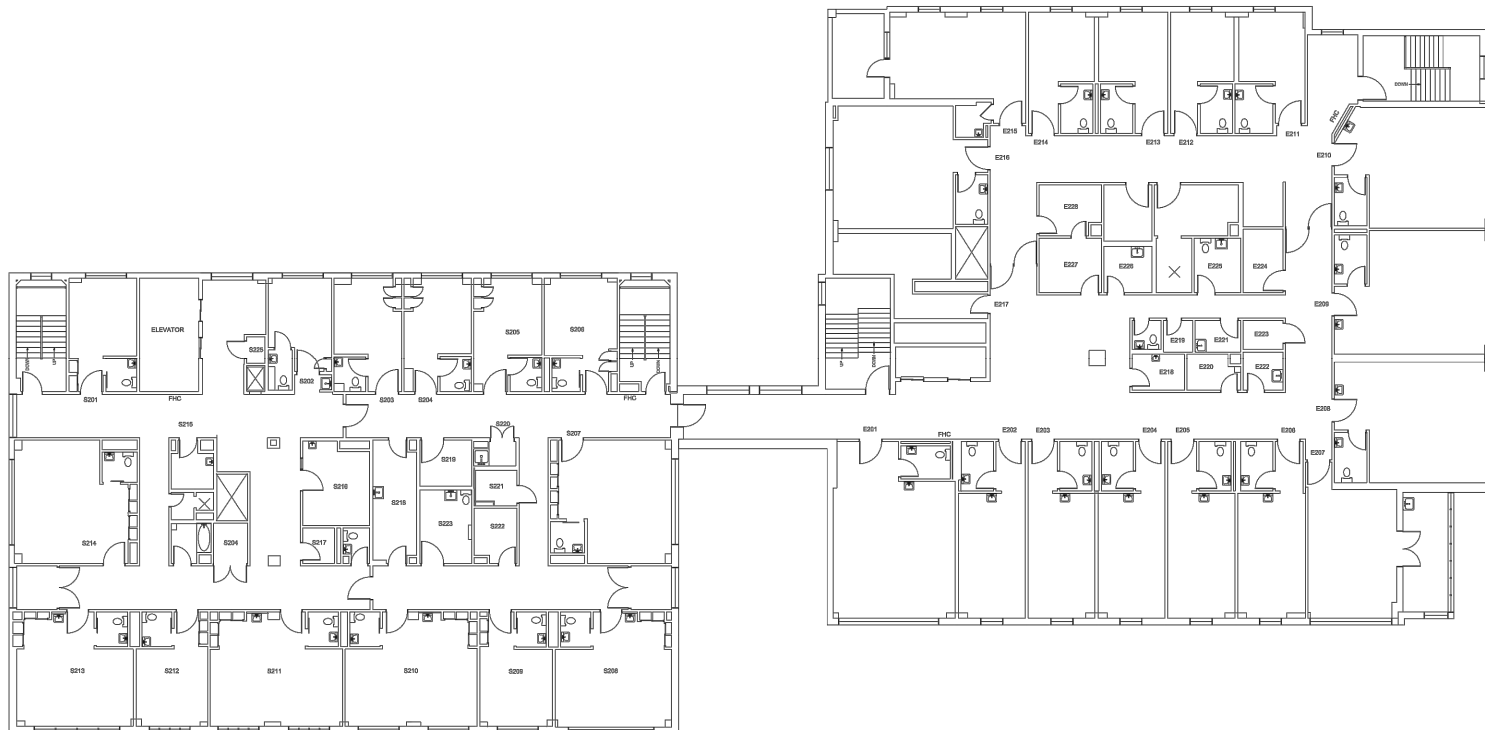
INFRASTRUCTURE ONTARIO
 LAKERIDGE HEALTH - BOWMANVILLE REDEVELOPMENT
 47 LIBERTY STREET SOUTH, BOWMANVILLE, ONTARIO
 DSHM SURVEY

**SAMPLE LOCATION PLAN -
 HOSPITAL GROUND FLOOR**

Project No. 12618254
 Date October 2023

FIGURE 3



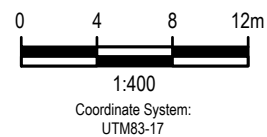
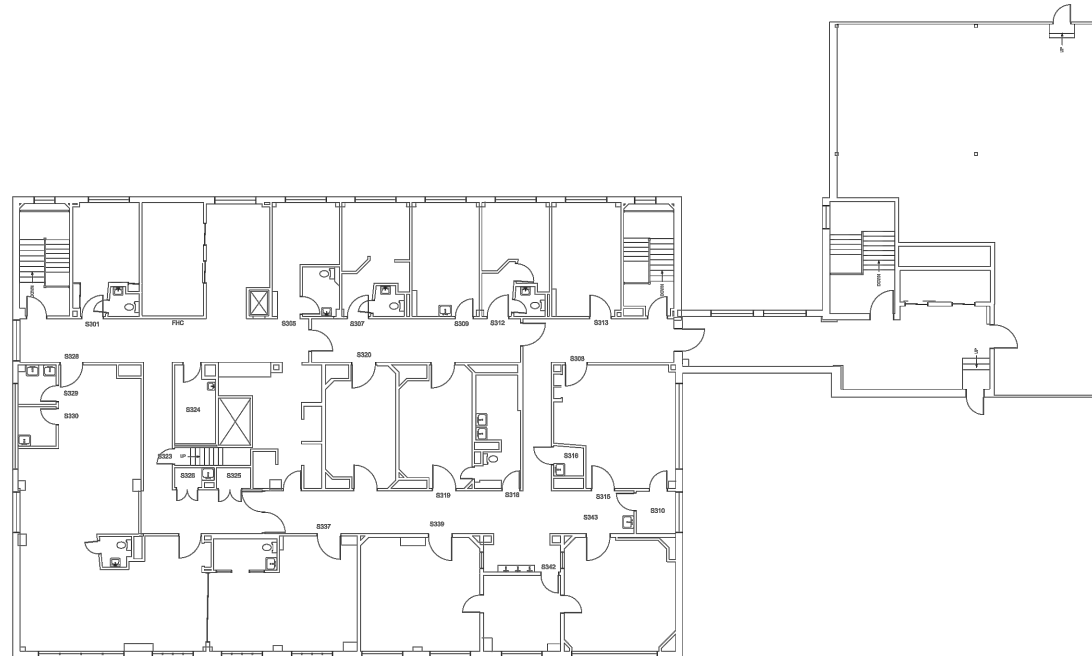


INFRASTRUCTURE ONTARIO
 LAKERIDGE HEALTH - BOWMANVILLE REDEVELOPMENT
 47 LIBERTY STREET SOUTH, BOWMANVILLE, ONTARIO
 DSHM SURVEY

**SAMPLE LOCATION PLAN -
 HOSPITAL SECOND FLOOR**

Project No. **12618254**
 Date **October 2023**

FIGURE 5

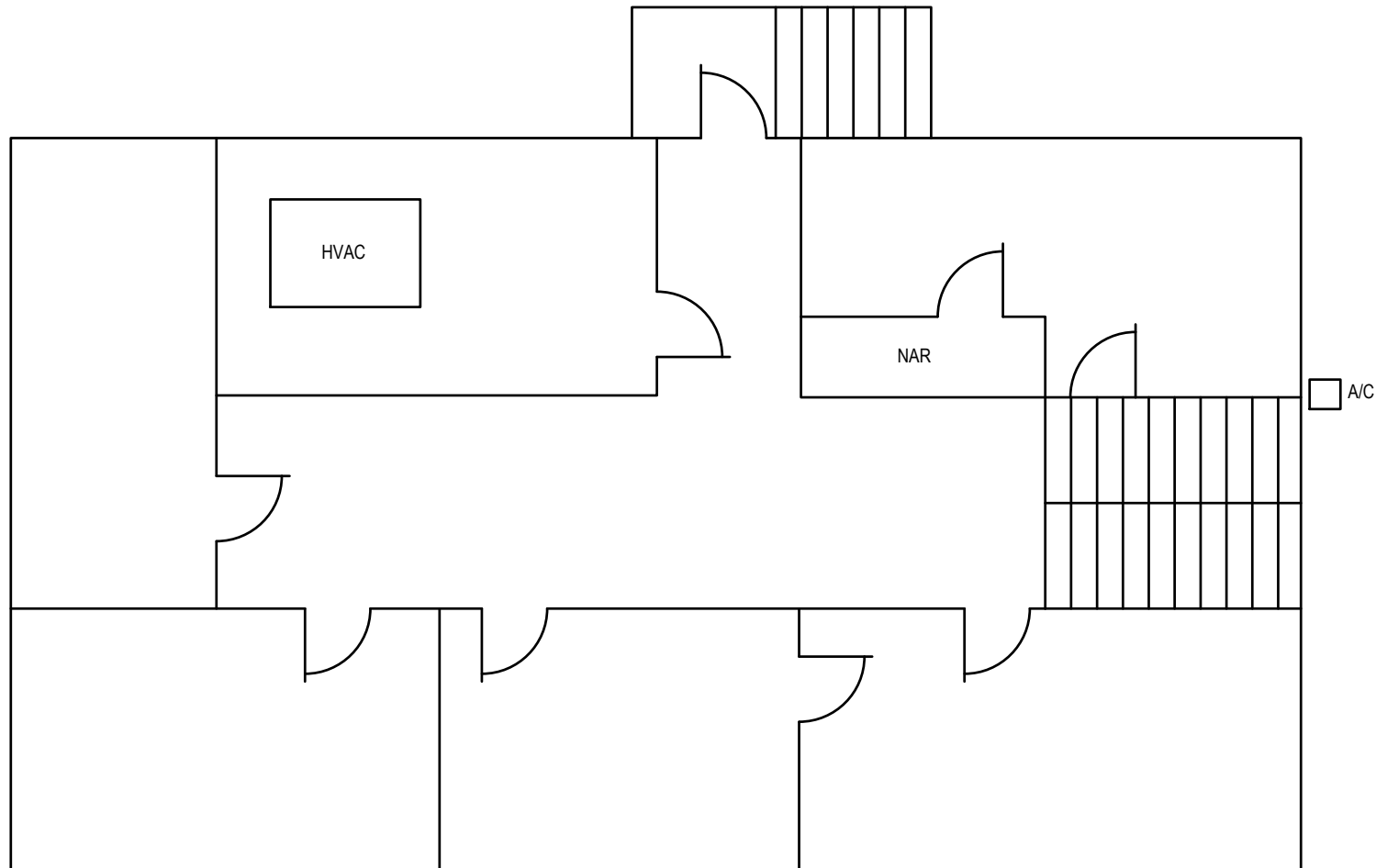


INFRASTRUCTURE ONTARIO
 LAKERIDGE HEALTH - BOWMANVILLE REDEVELOPMENT
 47 LIBERTY STREET SOUTH, BOWMANVILLE, ONTARIO
 DSHM SURVEY

**SAMPLE LOCATION PLAN -
 HOSPITAL THIRD FLOOR**

Project No. **12618254**
 Date **October 2023**

FIGURE 6

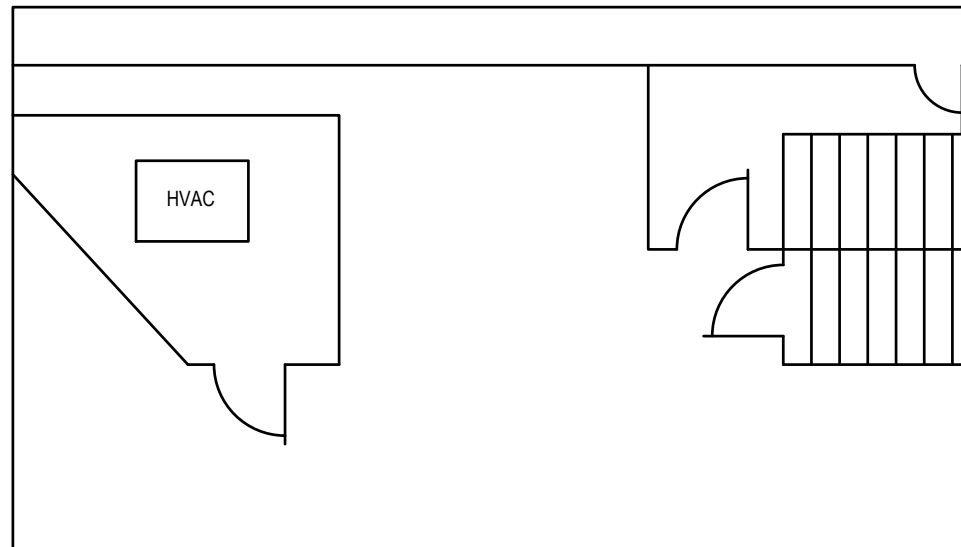


INFRASTRUCTURE ONTARIO
 LAKERIDGE HEALTH - BOWMANVILLE REDEVELOPMENT
 47 LIBERTY STREET SOUTH, BOWMANVILLE, ONTARIO
 DSHM SURVEY

SAMPLE LOCATION PLAN -
 LAMBERT HOUSE BASEMENT

Project No. 12618254
 Date October 2023

FIGURE 7



NOT TO SCALE

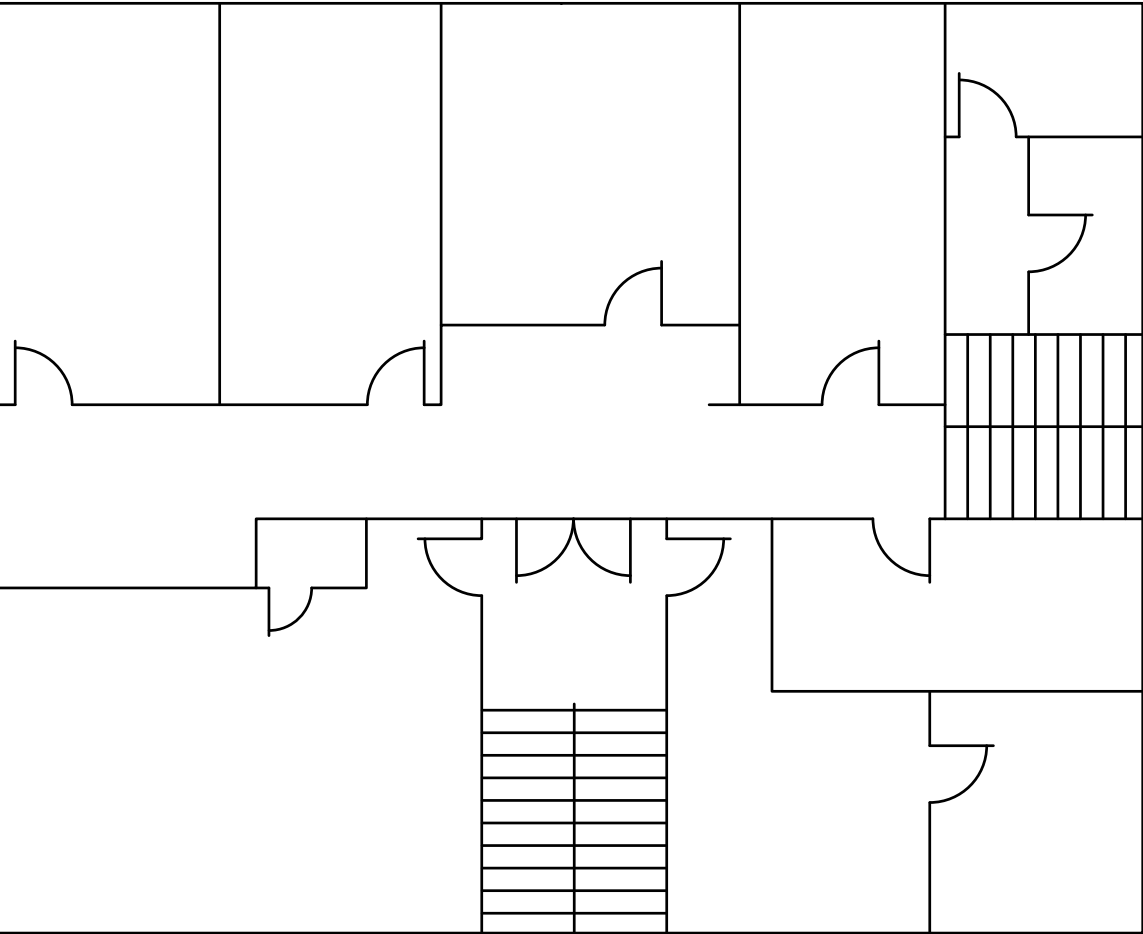


INFRASTRUCTURE ONTARIO
 LAKERIDGE HEALTH - BOWMANVILLE REDEVELOPMENT
 47 LIBERTY STREET SOUTH, BOWMANVILLE, ONTARIO
 DSHM SURVEY

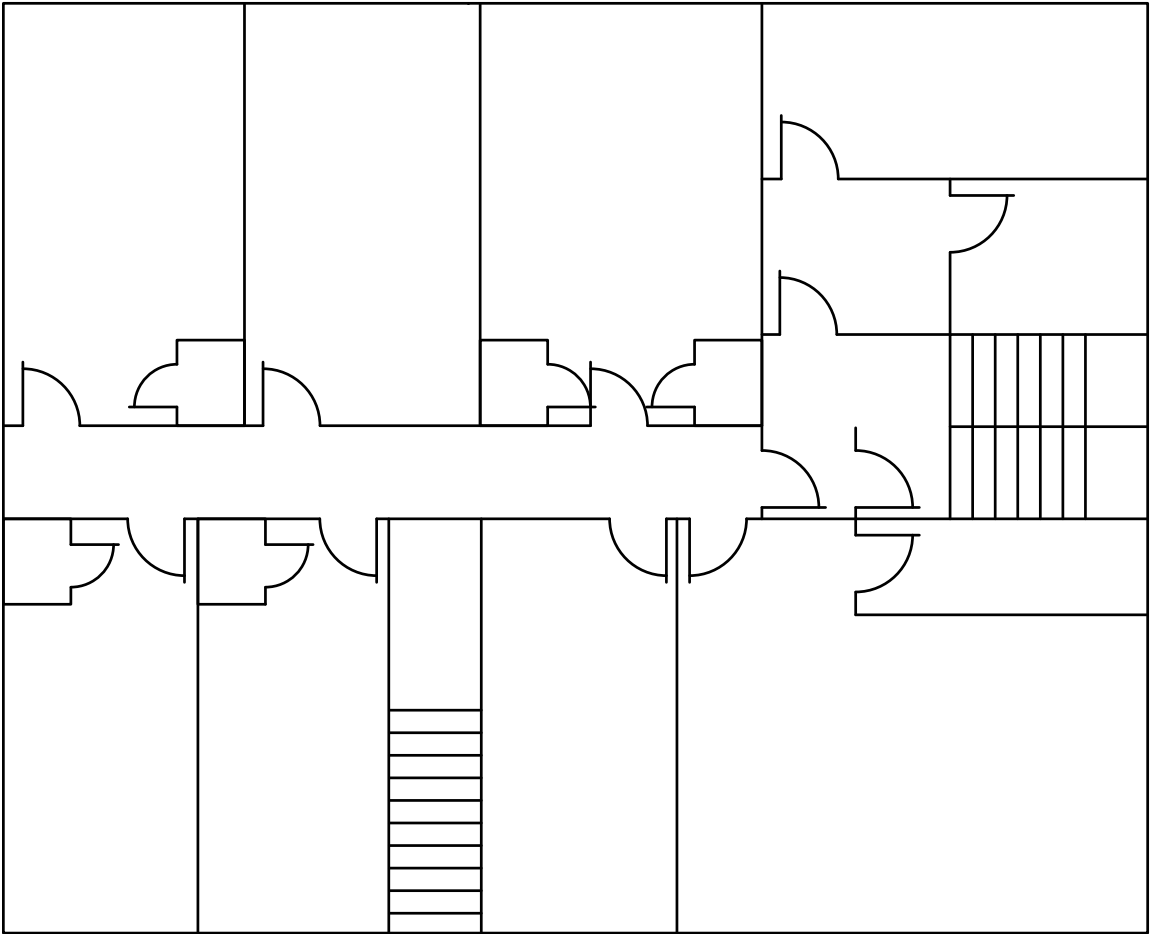
**SAMPLE LOCATION PLAN -
 LAMBERT HOUSE ATTIC**

Project No. **12618254**
 Date **October 2023**

FIGURE 8



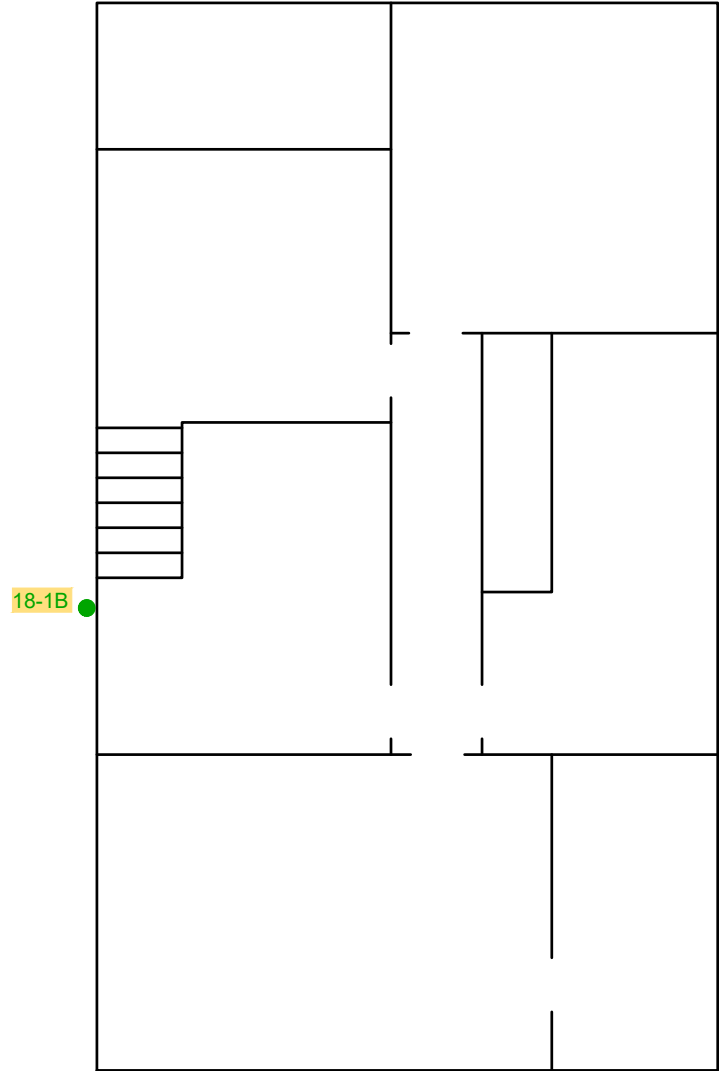
FIRST FLOOR



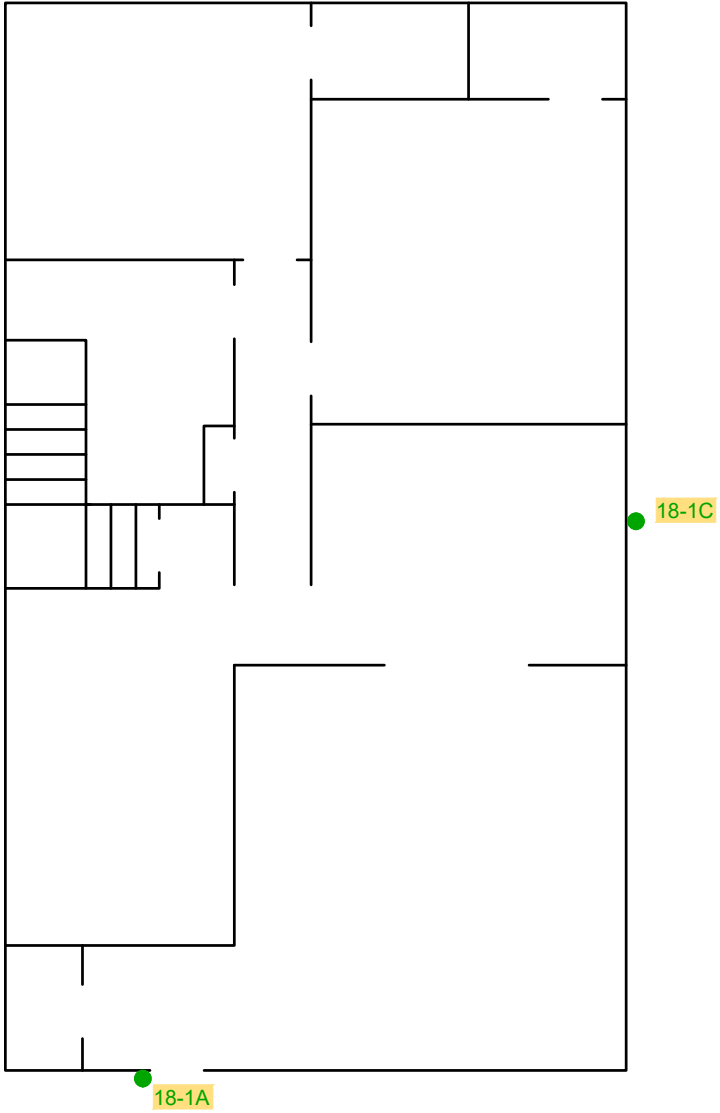
SECOND FLOOR

NOT TO SCALE

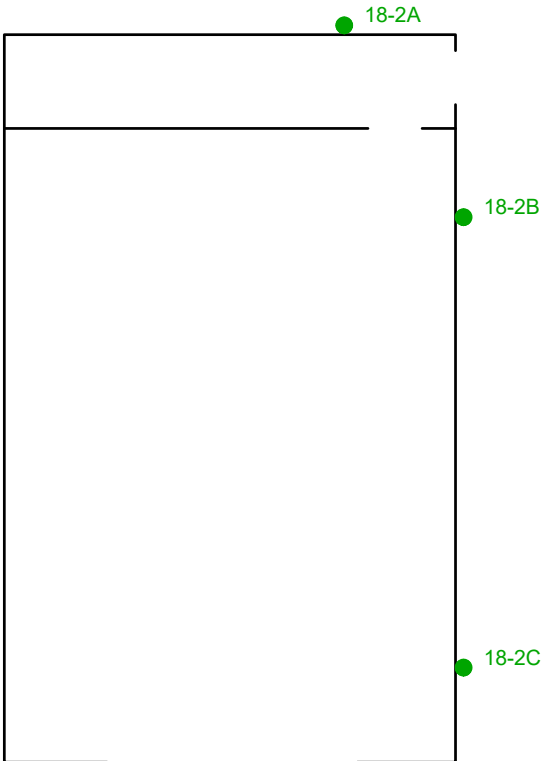




BASEMENT





FIRST FLOOR



GARAGE

NOT TO SCALE

LEGEND

-  SAMPLE LOCATION (GHD, 2023)
-  SAMPLE CONTAINS ASBESTOS

NOTE: ALL SAMPLES ARE FROM EXTERIOR.

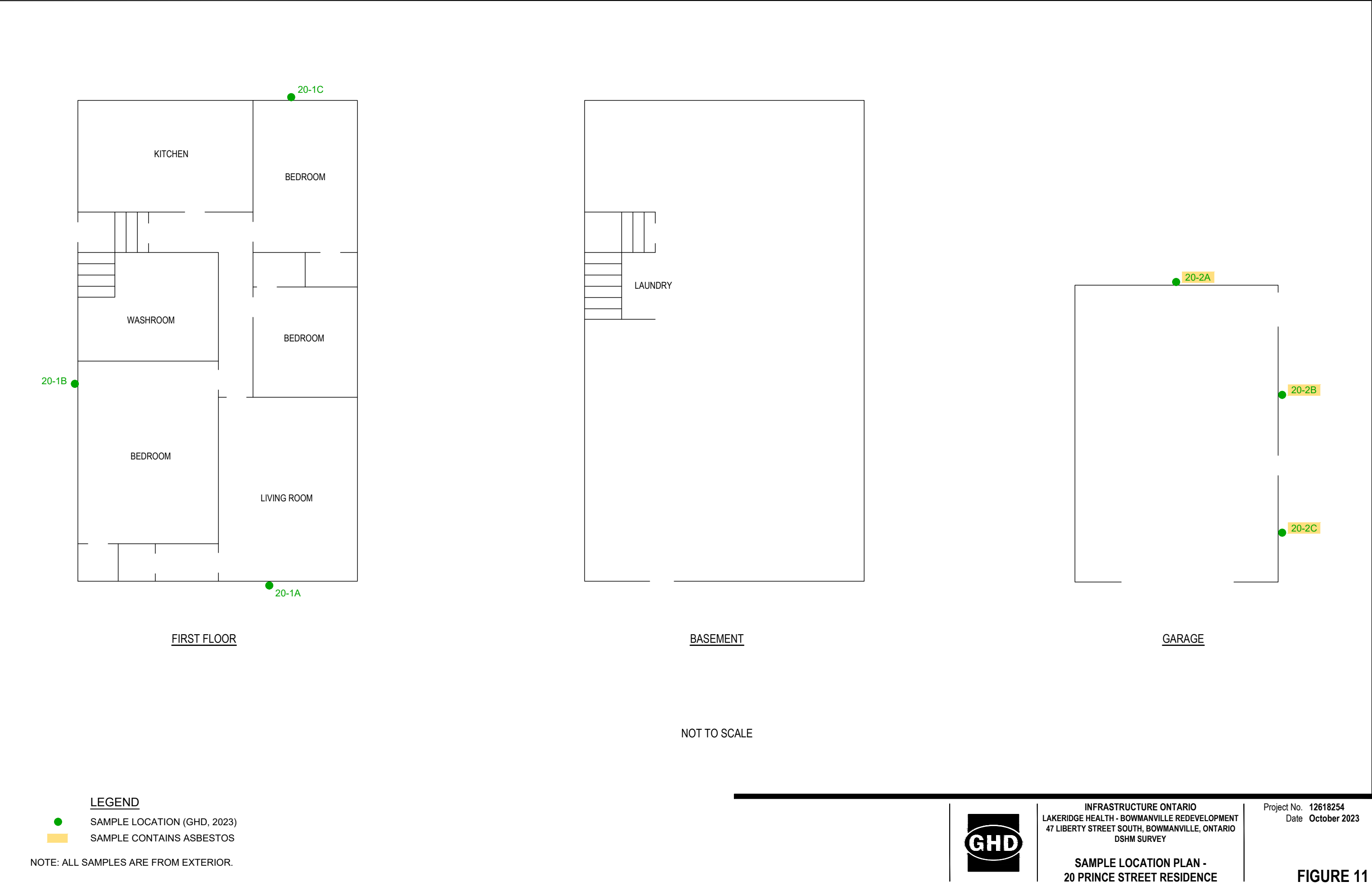


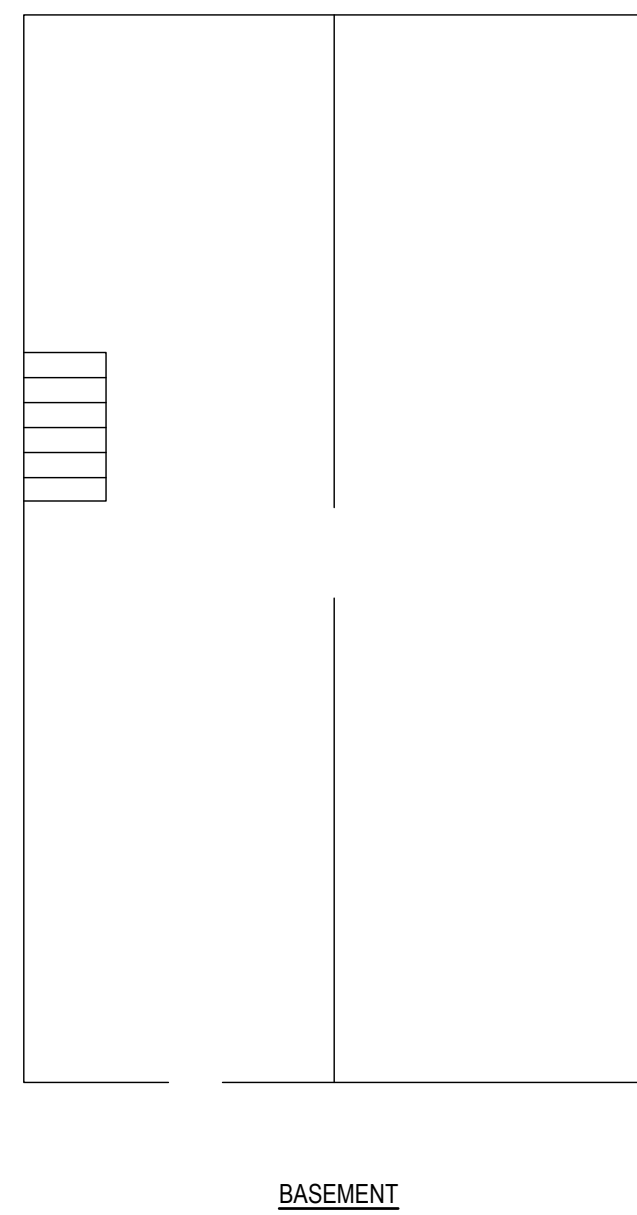
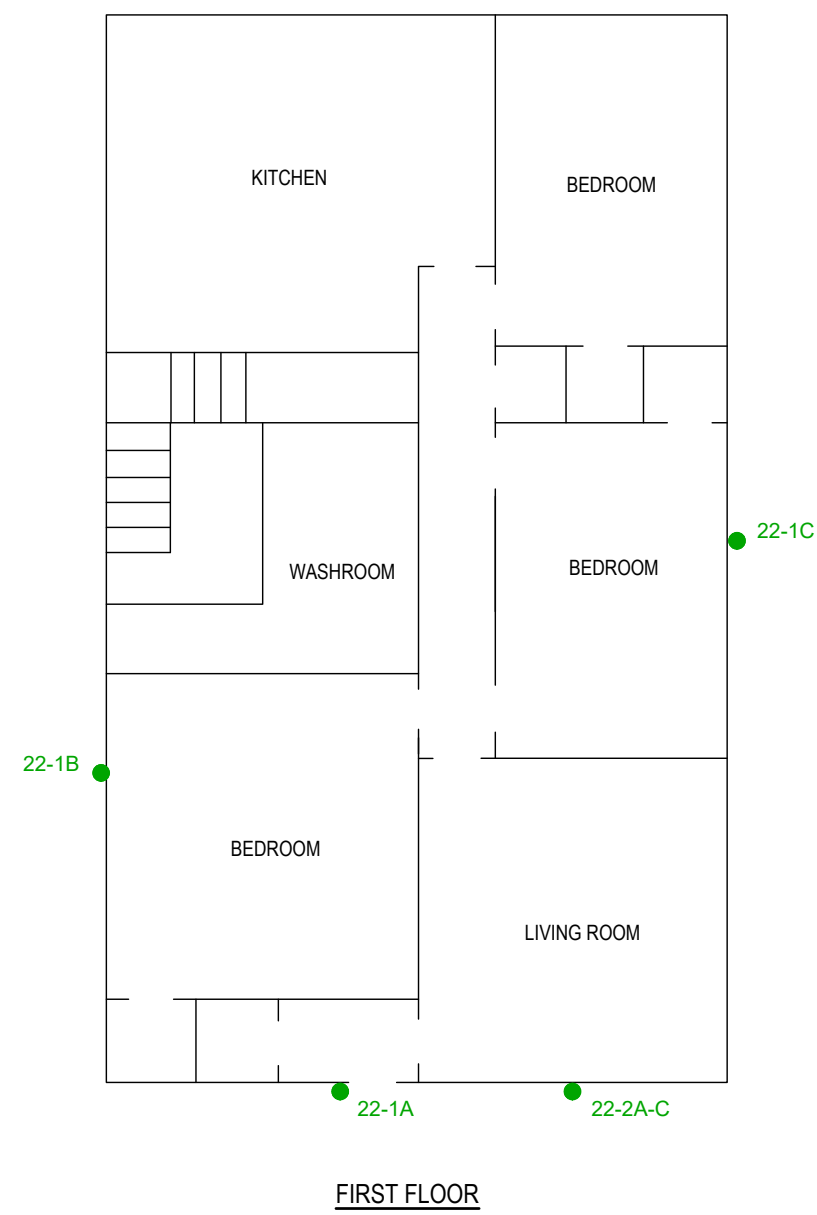
INFRASTRUCTURE ONTARIO
LAKERIDGE HEALTH - BOWMANVILLE REDEVELOPMENT
47 LIBERTY STREET SOUTH, BOWMANVILLE, ONTARIO
DSHM SURVEY

**SAMPLE LOCATION PLAN -
18 PRINCE STREET RESIDENCE**

Project No. 12618254
Date October 2023



FIGURE 10





NOT TO SCALE

LEGEND

-  SAMPLE LOCATION (GHD, 2023)
-  SAMPLE CONTAINS ASBESTOS

NOTE: ALL SAMPLES ARE FROM EXTERIOR.



INFRASTRUCTURE ONTARIO
LAKERIDGE HEALTH - BOWMANVILLE REDEVELOPMENT
47 LIBERTY STREET SOUTH, BOWMANVILLE, ONTARIO
DSHM SURVEY

SAMPLE LOCATION PLAN -
22 PRINCE STREET RESIDENCE

Project No. 12618254
Date October 2023

FIGURE 12

Tables

Table 1a

Asbestos Analytical Summary
Designated Substances and Hazardous Materials Survey
Lakeridge Health Bowmanville,
47 Liberty Street South, Bowmanville, Ontario

Sample Location	Surface	Material Type	Accessibility	Building Material	Estimated Quantity	Units	Damaged Material	Material Condition			Asbestos Content	Sample ID	Comments	Photographs
		S T M	H M L N			Each, m, sm, NQ	%	I D SD	NPD PD PSD	F NF	ND NS CH() A			
HOSPITAL - Pinchin Sampling Conducted in July 2007														
Ground Floor, North Wing, Room NG20- Environmental Services Workshop	Pipe			IN							ND(0.5%)	001 a-c	Sweatwrap on straight sections of unidentified pipe. Insulation is jacketed with canvas.	
Ground Floor, North Wing, Room NG20- Environmental Services Workshop	Pipe			PC				F			40% Chrysotile	002 a-c	Parging cement present on seams of non- asbestos sweatwrap on straight sections of unidentified pipe. Both sweatwrap and parging cement are covered with a canvas jacket and in good condition.	
Ground Floor, North Wing, Room NG29	Floor			VFT							ND(0.5%)	003 a-c	VFT-1 12"x12" vinyl floor tile, beige with white streaks	
Ground Floor, North Wing, Room NG-08	Wall			PL							ND(0.5%)	004 a	Plaster on wall	
Ground Floor, North Wing, Room NG-01	Wall			PL							ND(0.5%)	004 b	Plaster on wall	
Ground Floor, North Wing, Room NG-16 - Carpentry Shop	Wall			PL							ND(0.5%)	004 c	Plaster on wall	
Ground Floor, North Wing, Room NG-26 - Stores	Wall			PL							ND(0.5%)	004 d	Plaster on wall	
1st Floor, North Wing, Closet off of Stair ST-1	Wall			PL							ND(0.5%)	004 e	Plaster on wall	
1st Floor, North Wing, Room 108 - Penthouse Access Room	Wall			PL							ND(0.5%)	004 f	Plaster on wall	
1st Floor, North Wing, Room NG-123 - Corridor	Wall			PL							ND(0.5%)	004 g	Plaster on wall	
Ground Floor, North Wing, Room NG-02 - Bell Telecom Room	Ceiling			CT							ND(0.5%)	005 a-c	AT-1 acoustic ceiling tile, 1'x1', white, large and medium round holes	
Room SG34	Wall			PL							ND(0.5%)	006 a	Plaster on wall	
Room S110	Wall			PL							ND(0.5%)	006 b	Plaster on wall	
Room S111	Wall			PL							ND(0.5%)	006 c	Plaster on wall	
Room S129	Wall			PL							ND(0.5%)	006 d	Plaster on wall	
Room S225 - Telecom	Wall			PL							ND(0.5%)	006 e	Plaster on wall	
Room S208	Wall			PL							ND(0.5%)	006 f	Plaster on wall	
Room S325 - Clean Linen Closet	Wall			PL							ND(0.5%)	006 g	Plaster on wall	
Room SG38 - Library	Ceiling			CT							ND(0.5%)	007 a-c	AT-2 1'x1' glue-on acoustic ceiling tile, white, one direction large fissures	
Residence Building, Attic Level	Window			CA							ND(0.5%)	010 a-c	Window caulking, attic level	
Residence Building, Attic Level	Wall/Ceiling			PL						NF	PC 0.75 Chrysotile*	011 a, b	Plaster on wall, attic level	
Residence Building, Basement Level	Wall/Ceiling			PL						NF	PC 0.75 Chrysotile*	011 c-g	Plaster finish on wall/ceiling, basement level	

Table 1a

Asbestos Analytical Summary
Designated Substances and Hazardous Materials Survey
Lakeridge Health Bowmanville,
47 Liberty Street South, Bowmanville, Ontario



Sample Location	Surface	Material Type	Accessibility	Building Material	Estimated Quantity	Units	Damaged Material	Material Condition			Asbestos Content	Sample ID	Comments	Photographs
		S T M	H M L N			Each, m, sm, NQ	%	I D SD	NPD PD PSD	F NF	ND NS CH() A			
North Wing Throughout the 1967 Area of the Building	Floor			VT	84	sm				NF	A	Not sampled	9"x9" vinyl tiles were found in limited quantities throughout 1967 area of building. Regardless of colour or pattern, these tiles generally contain asbestos, and were not sampled.	
HOSPITAL - Pinchin Sampling Conducted in February 2008 (South Wing and East Wing)														
GF Corridor Outside Elevator	Ceiling			CT							ND(0.5%)	001 A	Homogeneous, beige, compressed, fibrous material. AT01 2x2 Fleck & Hole CT/Ceiling	
GF Corridor SG22	Ceiling			CT							ND(0.5%)	001 B	Homogeneous, beige, compressed, fibrous material. AT01 2x2 Fleck & Hole CT/Ceiling	See Photo for 001 A
1st Floor Outside S120	Ceiling			CT							ND(0.5%)	001 C	Homogeneous, beige, compressed, fibrous material. AT01 2x2 Fleck & Hole CT/Ceiling	See Photo for 001 A
GF Corridor SG22	Wall			PL							ND(0.5%)	002 A	2 Phases: a) Homogeneous, grey, hard, cementitious material. b) Homogeneous, white, hard, cementitious material.	

Table 1a

Asbestos Analytical Summary
Designated Substances and Hazardous Materials Survey
Lakeridge Health Bowmanville,
47 Liberty Street South, Bowmanville, Ontario


Sample Location	Surface	Material Type	Accessibility	Building Material	Estimated Quantity	Units	Damaged Material	Material Condition			Asbestos Content	Sample ID	Comments	Photographs
		S T M	H M L N			Each, m, sm, NQ	%	I D SD	NPD PD PSD	F NF	ND NS CH() A			
1st Floor Outside S120	Wall			PL							ND(0.5%)	002 B	Homogeneous, white, hard, cementitious material.	See Photo for 002 A
GF SG05	Wall			PL							ND(0.5%)	002 C	2 Phases: a) Homogeneous, grey, hard, cementitious material. b) Homogeneous, white, hard, cementitious material.	See Photo for 002 A
1st Floor Outside S126	Wall			PL							ND(0.5%)	002 D	Homogeneous, white, hard, cementitious material.	See Photo for 002 A
GF Mechanical Room	Wall			PL							ND(0.5%)	002 E	2 Phases: a) Homogeneous, grey, hard, cementitious material. b) Homogeneous, white, hard, cementitious material.	See Photo for 002 A
GF Outside SG05	Ceiling			CT							ND(0.5%)	003 A	Homogeneous, beige, compressed, fibrous material. AT02 2x4 Random Pinhole/Ceiling	
GF S006	Ceiling			PL							ND(0.5%)	003 B	Homogeneous, beige, compressed, fibrous material. AT02 2x4 Random Pinhole/Ceiling	See Photo for 003 A
1st Floor S124	Ceiling			PL							ND(0.5%)	003 C	Homogeneous, beige, compressed, fibrous material. AT02 2x4 Random Pinhole/Ceiling	See Photo for 003 A
GF SG06	Wall			DJC							ND(0.5%)	004 A	Homogeneous, off- white, soft, cementitious material. Drywall Joint Compound/Wall	
GF EG13	Wall			DJC							ND(0.5%)	004 B	Homogeneous, off- white, soft, cementitious material. Drywall Joint Compound/Wall	
Penthouse	Wall			DJC							ND(0.5%)	004 C	Homogeneous, off- white, soft, cementitious material. Drywall Joint Compound/Wall	

Table 1a

Asbestos Analytical Summary
Designated Substances and Hazardous Materials Survey
Lakeridge Health Bowmanville,
47 Liberty Street South, Bowmanville, Ontario

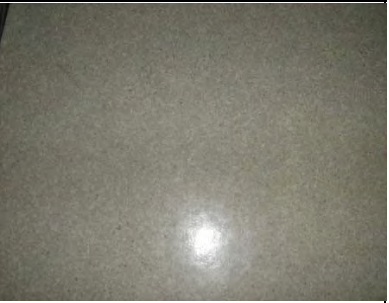
Sample Location	Surface	Material Type	Accessibility	Building Material	Estimated Quantity	Units	Damaged Material	Material Condition			Asbestos Content	Sample ID	Comments	Photographs
		S T M	H M L N			Each, m, sm, NQ	%	I D SD	NPD PD PSD	F NF	ND NS CH() A			
1st Floor S124	Floor			VSF							ND(0.5%)	005 A	Homogeneous, grey, consolidated, fibrous material on the back of vinyl sheet flooring.	
1st Floor S119	Floor			VSF							ND(0.5%)	005 B	Homogeneous, grey, consolidated, fibrous material on the back of vinyl sheet flooring.	See Photo for 005 A
GF SG05	Floor			VSF							ND(0.5%)	005 C	Homogeneous, grey, consolidated, fibrous material on the back of vinyl sheet flooring.	See Photo for 005 A
HOSPITAL - Safetech Sampling Conducted in January 2011														
	Wall			MA							ND(0.5%)	S-01 A-C	BLACK MASTIC ON CORK- EXTERIOR FACING WALLS	
	Wall			PL							ND(0.5%)	S-02 A-G	PLASTER WALL FINISH COAT- THROUGHOUT	
	Floor			SF							ND(0.5%)	S-03 A-C	TERRAZZO FLOORING	
	Floor			Cement Bind							ND(0.5%)	S-04 A-C	TERRACOTTA BRICK CEMENT BIND	
	Wall			Skim Coat							ND(0.5%)	S-05 A-E	CEMENTITIOUS SKIM COAT ON CONCRETE WALL	
ROOM S-125	Floor			VT							ND(0.5%)	S-06 A-C	GREY/TAN VINYL SHEET FLOORING- ROOM S-125	
ROOM S-110	Pipe			IN							35% Chrysotile	S-07 A-C	PIPE FITTING INSULATION- ROOM S-110	
ROOM S-110	Pipe			IN							ND(0.5%)	S-08 A-C	BROWN, TAN/BLACK CELLULOSE PIPE STRAIGHT INSULATION- ROOM S-110	
ROOM S-108 ABOVE BULKHEAD	Wall			DC							ND(0.5%)	S-09 A-C	DRYWALL JOINT COMPOUND- ROOM S-108 ABOVE BULKHEAD	
FISHER, CORRIDOR'	Ceiling			CT							ND(0.5%)	S-10 A-C	2X2 CEILING TILE, FISHER, CORRIDOR	
2nd Floor Corridor	Wall			CRT							ND(0.5%)	S-11 A-C	CERAMIC WALL TILE BACKING	
HOSPITAL - Safetech Sampling Conducted in May 2012														
	Floor			VT							ND(0.5%)	01 A-G	VINYL SHEET FLOORING	
	Wall			DC							ND(0.5%)	2 A-G	DRYWALL JOINT COMPOUND	

Table 1a

Asbestos Analytical Summary
Designated Substances and Hazardous Materials Survey
Lakeridge Health Bowmanville,
47 Liberty Street South, Bowmanville, Ontario

Sample Location	Surface	Material Type	Accessibility	Building Material	Estimated Quantity	Units	Damaged Material	Material Condition			Asbestos Content	Sample ID	Comments	Photographs
		S T M	H M L N			Each, m, sm, NQ	%	I D SD	NPD PD PSD	F NF	ND NS CH() A			
	Ceiling			CT							ND(0.5%)	3 A-C	TAN/WHITE 2X4 RANDOM PINHOLE CEILING TILE	
	Wall			PL							ND(0.5%)	4 A-G	PLASTER WALL	
	Wall			MA							4% Chrysotile	5 A-C	BLACK MASTIC ON CORK FINISH	
	HVAC			IN							ND(0.5%)	6 A-C	YELLOW HVAC INSULATION	
	Pipe			IN							ND(0.5%)	7 A-C	SILVER/YELLOW/BEIGE PIPE INSULATION	
	Pipe			IN							ND(0.5%)	8 A-C	PIPE FITTING INSULATION	
	Ceiling			CT							ND(0.5%)	9 A-C	2X4 TAN/WHITE MULTI-PINHOLE CEILING TILE	
HOSPITAL - Safetech Sampling Conducted in September 2012														
NG01	Tank			IN							ND(0.5%)	1 A-C	HOT WATER TANK INSULATION - NG01	
NG 16	Pipe			IN							50% Chrysotile	2 A-C	PIPE FITTING - NG 16	
NG 16	Aircell			CA							25% Chrysotile	3 A-C	AIRCELL PIPE INSULATION - NG 16	
SOUTH WING BASEMENT SHAFT	Pipe			IN							ND(0.5%)	4 A-C	PIPE INSULATION DEBRIS - SOUTH WING BASEMENT SHAFT	
BOILER ROOM B	Pipe			IN							ND(0.5%)	5 A-C	T-JOINT FITTING INSULATION - COLD WATER LINE BELOW/CONDENSATE TANK -	
CRAWL SPACE	Duct			Connector							ND(0.5%)	6 A-C	FLEX DUCT CONNECTOR - CRAWL SPACE	
S 221	Floor			Leveling Compound							ND(0.5%)	7 A-C	GREY FLOOR LEVELING COMPOUND - S 221	
NG 04	Ceiling			CT							ND(0.5%)	8 A, B	2 x 4 PINHOLE CEILING TILE - NG 04	
BASEMENT CORRIDOR/NORTH WING	Ceiling			CT							ND(0.5%)	8 C	2 x 4 PINHOLE CEILING TILE - NG 04	
NG 15	Ceiling			CT							ND(0.5%)	9 A-C	2 x 2 FISSURE CEILING TILE - NG 15	
NG 28	Ceiling			MA							6% Chrysotile	10 A-C	BROWN MASTIC FROM 1 x 1 CEILING TILES - NG 28	
NG 28	Ceiling			PL							ND(0.5%)	11 A, B	PLASTER CEILING - NG 28	
NG 01 EXTERIOR WALL	Wall			PL							ND(0.5%)	11 C	PLASTER WALL - NG 01 EXTERIOR WALL	

Table 1a

Asbestos Analytical Summary
Designated Substances and Hazardous Materials Survey
Lakeridge Health Bowmanville,
47 Liberty Street South, Bowmanville, Ontario

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		S T M	H M L N			Each, m, sm, NQ	%	I D SD	NPD PD PSD	F NF	ND NS CH() A			
NG 01	Ceiling			PL							ND(0.5%)	12 A, B	TEXTURED PLASTER CEILING - NG 01	
NG 39	Ceiling			PL							ND(0.5%)	12 C	TEXTURED PLASTER CEILING - NG 39	
HOSPITAL - Safetech Sampling Conducted in October 2012														
S205	Floor			VT							ND(0.5%)	1 A-C	BEIGE VINYL SHEET FLOOR- S205	
S205	Wall			DC							ND(0.5%)	2 A-C	DRYWALL JOINT COMPOUND- S205	
S206	Ceiling			CT							ND(0.5%)	3 A-C	2X4 PINHOLE CEILING TILE- S206	
S206	Cork Board			Tar							ND(0.5%)	4 A-C	CORK BOARD W/ BLACK TAR- S206	
S206	Wall			PL							ND(0.5%)	5 A-C	PLASTER WALL- S206	
HOSPITAL - Safetech Sampling Conducted in April 2013														
E2-220	Wall			DJC							ND(0.5%)	1 A-C	E2-220 DRYWALL JOINT COMPOUND	
E2-220	Floor			VSF							ND(0.5%)	2 A-C	E2-220 VINYL SHEET FLOORING	
HOSPITAL - Safetech Sampling Conducted in May 2013														
	Pipe			IN							ND(0.5%)	1 A-C	PIPE INSULATION (TAR)	
	Pipe			IN							<1% Chrysotile	2 A-C	PIPE INSULATIN (CELLULOSE)	
	Brick			MR							ND(0.5%)	3 A-C	MORTAR (BRICK AT PIPE PENTRATION)	
HOSPITAL - Safetech Sampling Conducted in July 2013														
				CA							ND(0.5%)	1 A-C	GREY CAULKING	
	Wall			PL							3% Chrysotile	2 A-C	GREY PLASTER	
				MR/PL							ND(0.5%)	2A TAR, 2B TAR, 3C TAR	TAR	
HOSPITAL - Safetech Sampling Conducted in September 2014														
LRH BOWMANVILLE	Pipe			MR							ND(0.5%)	1 A-C	LRH BOWMANVILLE BOILER MORTAR	

Table 1a

Asbestos Analytical Summary
Designated Substances and Hazardous Materials Survey
Lakeridge Health Bowmanville,
47 Liberty Street South, Bowmanville, Ontario

Sample Location	Surface	Material Type	Accessibility	Building Material	Estimated Quantity	Units	Damaged Material	Material Condition			Asbestos Content	Sample ID	Comments	Photographs
		S T M	H M L N			Each, m, sm, NQ	%	I D SD	NPD PD PSD	F NF	ND NS CH() A			
HOSPITAL - Safetech Sampling Conducted in January 2015														
EG 38	Wall			DJC							ND(0.5%)	1 A-C	DRYWALL JOINT COMPOUND- EG 38	
EG 39	Ceiling			CT							ND(0.5%)	2 A-C	2 X 4 SWIRL PINHOLE CEILING TILES- EG 39	
EG 36	Floor			VT							ND(0.5%)	3 A-C	BLUE VINYL SHEET FLOORING- EG 36	
HOSPITAL - Safetech Sampling Conducted in June 2015														
WEST END DOOR - EAST/WING	Door			IN							ND(0.5%)	1	INTERIOR DOOR INSULATION - WEST END DOOR - EAST/WING	
CENTRAL ACCESS/EMERGENCY ROOM	Door			IN							ND(0.5%)	2	INTERIOR DOOR INSULATION - CENTRAL ACCESS/EMERGENCY ROOM DOOR TO EAST WING	
HOSPITAL - Safetech Sampling Conducted in October 2015														
SOUTH ENTRANCE	Wall			DJC							ND(0.5%)	1 A-C	DRYWALL JOINT COMPOUND- SOUTH ENTRANCE	
SOUTH ENTRANCE	Floor			VSF							ND(0.5%)	2 A-C	BEIGE VINYL SHEET FLOOR- SOUTH ENTRANCE	
SOUTH ENTRANCE	Ceiling			CT							ND(0.5%)	3 A-C	2X4 PINHOLE CEILING TILE- SOUTH ENTRANCE	
SOUTH ENTRANCE	Brick			MR							ND(0.5%)	4 A-C	EXTERIOR BRICK MORTAR- SOUTH ENTRANCE	
HOSPITAL - Safetech Sampling Conducted in November 2015														
	Wall			PL							2% Chrysotile	B1 A-C	PLASTER WALL	
	Ceiling			Tar							2% Chrysotile	B2	TAR-LIKE CEILING	
HOSPITAL - Safetech Sampling Conducted in December 2015														
NG 36 WASHROOM	Ceiling			PL							ND(0.5%)	1 A-C	PLASTER CEILING- NG 36 WASHROOM	
HOSPITAL - Safetech Sampling Conducted in September 2016														
MEN'S WASHROOM/VINYL SHEETING	Floor			VSF							ND(0.1%)	1 A-C	NORTH WING (GROUND) - MEN'S WASHROOM/VINYL SHEETING	
NG02	Floor			VT							3% Chrysotile	2 A-C	NG02/VINYL FLOOR TILE (TAN)	
NG02	Floor			VT							ND(0.1%)	3 A-C	NG02/VINYL FLOOR TILE (GREY/WHITE)	
NG08	Floor			VT							ND(0.1%)	4 A-C	NG08/VINYL FLOOR TILE (BEIGE)	
NG28	Floor			VT							ND(0.1%)	5 A-C	NG28/VINYL FLOOR TILE (GREY)	
NG35	Floor			VT							ND(0.1%)	6 A-C	NG35/VINYL FLOOR TILE (BEIGE)	

Table 1a

Asbestos Analytical Summary
Designated Substances and Hazardous Materials Survey
Lakeridge Health Bowmanville,
47 Liberty Street South, Bowmanville, Ontario



Sample Location	Surface	Material Type	Accessibility	Building Material	Estimated Quantity	Units	Damaged Material	Material Condition			Asbestos Content	Sample ID	Comments	Photographs
		S T M	H M L N			Each, m, sm, NQ	%	I D SD	NPD PD PSD	F NF	ND NS CH() A			
FIRST FLOOR (NORTH)	Floor			VSF							ND(0.1%)	7 A-C	FIRST FLOOR (NORTH)/VINYL SHEETING (BEIGE)	
N103	Floor			VSF							ND(0.1%)	8 A-C	N103/VINYL SHEET FLOOR TILE(WHITE/BLUE)	
RESIDENCE BUILDING (2ND) WASHROOM	Floor			VSF							ND(0.1%)	10 A-C	RESIDENCE BUILDING (2ND) WASHROOM/VINYL SHEET	
HOSPITAL - Safetech Sampling Conducted in November 2016														
NORTH WING 1ST FLOOR	Floor			VSF							ND(0.1%)	7 A	NORTH WING 1ST FLOOR/BEIGE SMALL MARKS PATTERNED VINYL SHEET FLOOR	
EB LEVEL	Floor			VSF							ND(0.1%)	7 B	EB LEVEL/BEIGE SMALL MARKS PATTERNED VINYL SHEET FLOOR	
S129	Floor			VSF							ND(0.1%)	7 C	S129/BEIGE SMALL MARKS PATTERNED VINYL SHEET FLOOR	
NG WASHROOM ADJ. NG 30	Floor			VSF							ND(0.1%)	11 A-C	NG WASHROOM ADJ. NG 30/PLAIN BEIGE VINYL SHEET FLOORING	
HOSPITAL - Safetech Sampling Conducted in June 2019														
1ST FLOOR BOARD ROOM	Ceiling			DJC							ND(0.1%)	1 A-C	DRYWALL JOINT COMPOUND (CEILING FINISHES) - 1ST FLOOR BOARD ROOM	
HOSPITAL - Safetech Sampling Conducted in July 2019														
	Wall/Ceiling			PL							<0.25% Chrysotile	1 a-c	CEMENT PLASTER FINISH WALLS AND CEILING	
	Wall/Ceiling			Trowel							ND(0.1%)	2 a-c	TROWEL CEMENTITIOUS MATERIALWALLS AND CEILING	
HOSPITAL - GHD Sampling Conducted in September 2023														
Exterior North Wing	Wall/Ceiling	M	M	CA	40	m					ND(0.1%)	N1 A/C/D	Caulking - soft, grey north east corner, sealing metal door and window frames to brick	
Exterior North Wing	Wall/Ceiling	M	H	CA	20	m					2% Chrysotile	N2 A-C	Caulking - hard, grey north wall, sealing metal louvers to brick	

Table 1a

Asbestos Analytical Summary
Designated Substances and Hazardous Materials Survey
Lakeridge Health Bowmanville,
47 Liberty Street South, Bowmanville, Ontario

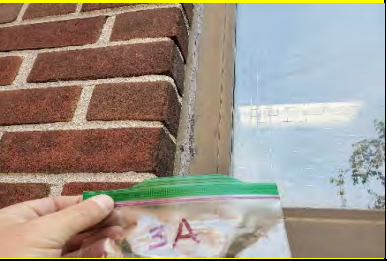

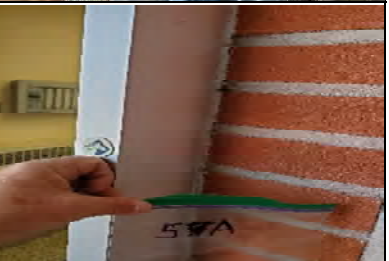



Sample Location	Surface	Material Type	Accessibility	Building Material	Estimated Quantity	Units	Damaged Material	Material Condition			Asbestos Content	Sample ID	Comments	Photographs
		S T M	H M L N			Each, m, sm, NQ	%	I D SD	NPD PD PSD	F NF	ND NS CH() A			
Exterior North Wing	Wall/Ceiling	M	M	CA	all						2% Chrysotile	N3 A-C	Caulking - hard, brown north wall, sealing metal window frame to brick	
Exterior North Wing	Wall/Ceiling	M	M	CA	all						3% Chrysotile	N4 A-C	Caulking - hard, black north wall, sealing metal window frame to brick	
Exterior North Wing	Wall/Ceiling	M	H	CA	20	m		I		NF	ND(0.1%)	N5 A-C	Caulking - soft, white north wing, sealing metal door frames to brick	
Exterior North Wing	Wall/Ceiling	M	H	WP	80	m	20%	D		NF	2% Chrysotile	N6 A-C	Window Putty northwest corner	
Exterior North Wing	Wall/Ceiling	M	H	CA	2	m		I		NF	2% Chrysotile	N7 A-C	Caulking - hard, white single window in courtyard / service entrance	
Exterior South Wing	Wall/Ceiling	M	H	CA	all			I		NF	2% Chrysotile	S10 A-C	Caulking - hard, brown sealing metal windows to brick	

Table 1a

Asbestos Analytical Summary
Designated Substances and Hazardous Materials Survey
Lakeridge Health Bowmanville,
47 Liberty Street South, Bowmanville, Ontario


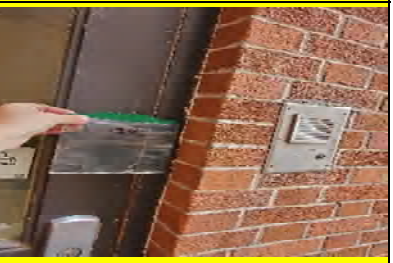

Sample Location	Surface	Material Type	Accessibility	Building Material	Estimated Quantity	Units	Damaged Material	Material Condition			Asbestos Content	Sample ID	Comments	Photographs
		S T M	H M L N			Each, m, sm, NQ	%	I D SD	NPD PD PSD	F NF	ND NS CH() A			
Exterior South Wing	Wall/Ceiling	M	H	CA	30	m		I		NF	1% Chrysotile	S11 A-C	Caulking - soft, white east (service) wall, sealing metal door frame to brick	
Exterior South Wing	Wall/Ceiling	M	H	CA	30	m		I		NF	2% Chrysotile	S12 A-C	Caulking - hard, white east (service) and south wall, sealing metal window and door frames to brick	
Exterior South Wing	Wall/Ceiling	M	H	CA	30	m		I		NF	ND(0.1%)	S13 A-C	Caulking - soft, brown east (service) and south wall, sealing metal window frames to brick	
Parking Lots	Asphalt	S	H	Asphalt		NQ	0	I	PD	NF	ND(0.1%)	MW-B-23	Parking lot asphalt	No Photograph
Parking Lots	Asphalt	S	H	Asphalt		NQ	0	I	PD	NF	ND(0.1%)	MW09-23	Parking lot asphalt	No Photograph
Parking Lots	Asphalt	S	H	Asphalt		NQ	0	I	PD	NF	ND(0.1%)	BH18-23T	Parking lot asphalt	No Photograph
Parking Lots	Asphalt	S	H	Asphalt		NQ	0	I	PD	NF	ND(0.1%)	BH18-23B	Parking lot asphalt	No Photograph
Parking Lots	Asphalt	S	H	Asphalt		NQ	0	I	PD	NF	ND(0.1%)	BH30-23	Parking lot asphalt	No Photograph
Parking Lots	Asphalt	S	H	Asphalt		NQ	0	I	PD	NF	ND(0.1%)	BH06-23	Parking lot asphalt	No Photograph
Parking Lots	Asphalt	S	H	Asphalt		NQ	0	I	PD	NF	ND(0.1%)	MW25-23	Parking lot asphalt	No Photograph
Parking Lots	Asphalt	S	H	Asphalt		NQ	0	I	PD	NF	ND(0.1%)	MW02-23	Parking lot asphalt	No Photograph
Parking Lots	Asphalt	S	H	Asphalt		NQ	0	I	PD	NF	ND(0.1%)	BH20-23	Parking lot asphalt	No Photograph
18 Prince Street Residence, Bowmanville - Safetech Sampling Conducted in December 2016														
Basement	Wall/Ceiling			DJC							ND(0.1%)	1 A-C	Drywall Joint Compound	
Garage Exterior	Wall			CA							ND(0.1%)	2 A-C	Exterior Caulking	

Table 1a

Asbestos Analytical Summary
Designated Substances and Hazardous Materials Survey
Lakeridge Health Bowmanville,
47 Liberty Street South, Bowmanville, Ontario







Sample Location	Surface	Material Type	Accessibility	Building Material	Estimated Quantity	Units	Damaged Material	Material Condition			Asbestos Content	Sample ID	Comments	Photographs
		S T M	H M L N			Each, m, sm, NQ	%	I D SD	NPD PD PSD	F NF	ND NS CH() A			
Garage Exterior	Siding			Transite Panels	800	sf					10% Chrysotile	3 A-C	Transite Panels	
Basement	Floor			VSF							ND(0.1%)	4 A-C	Vinyl Sheet Flooring (White with Green Diamonds)	
Basement Furnace Room	Wall			IN							ND(0.1%)	5 A-C	Black Paper within Wall cavity	
Garage Exterior (behind transite paneling)	Siding			IN							ND(0.1%)	6 A-C	Exterior Black Paper	
18 Prince Street Residence, Bowmanville - GHD Sampling Conducted in September 2023														
House Exterior Windows and Doors	Window and Door Frames	M	M	CA	40	m	0.1	I	NPD	NF	5% Chrysotile	18-1 A-C	Black Tar behind white, rigid caulking	
Garage Exterior	Window Frame	M	L	WP	6	m	30%	D	PD	NF	ND(0.1%)	18-2 A-C	Window Putty north garage window	
20 Prince Street Residence, Bowmanville - GHD Sampling Conducted in September 2023														
House Exterior Windows and Doors	Window and Door Frames	M	M	CA	40	m	10%	I	NPD	NF	ND(0.1%)	20-1 A-C	Caulking white, rigid	
Garage	Window Frame	M	L	WP	6	m	0.3	D	PD	NF	2% Chrysotile	20-2 A-C	Window Putty north garage window	

Table 1a

Asbestos Analytical Summary
Designated Substances and Hazardous Materials Survey
Lakeridge Health Bowmanville,
47 Liberty Street South, Bowmanville, Ontario

Sample Location	Surface	Material Type	Accessibility	Building Material	Estimated Quantity	Units	Damaged Material	Material Condition			Asbestos Content	Sample ID	Comments	Photographs
		S T M	H M L N			Each, m, sm, NQ	%	I D SD	NPD PD PSD	F NF	ND NS CH() A			
22 Prince Street Residence, Bowmanville - Safetech Sampling Conducted in December 2016														
Basement and 1st Floor	Wall/Ceiling			DJC							ND(0.1%)	1 A-C	Drywall Joint Compound	
Garage Exterior	Floor			VT							ND(0.1%)	2 A-C	Basement Vinyl Floor Tile (12x12 Beige)	
Garage Exterior	Floor			MA							ND(0.1%)	3 A-C	Basement Floor Mastic	
Exterior	Wall			CA							ND(0.1%)	4 A-C	Exterior Caulking (some confusing text in Safetech report??)	
22 Prince Street Residence, Bowmanville - GHD Sampling Conducted in September 2023														
House Exterior Windows and Doors	Window and Door Frames	M	M	CA	40	m	10%	I	NPD	NF	ND(0.1%)	22-1 A-C	Caulking white, rigid	
House Exterior Windows and Doors	Window and Door Frames	M	M	CA	40	m	10%	I	NPD	NF	ND(0.1%)	22-2 A-C	Caulking grey, flexible	

ACM Type:
S = Surfacing
T = Thermal
M = Miscellaneous

Accessibility:
H = High
M = Medium
L = Low
N = Not Accessible

Building Material:
VT = Vinyl Floor Tile
VSF =Vinyl Sheet Flooring
CT = Ceiling Tile
PL = Plaster
MR = Mortar
TR = Transite
MA = Mastic
IN = Insulation
CA = Caulking
DC= Drywall Compound
CRT = Ceramic Tile
PC=Parging Cement
WP=Window Putty

Material Condition:
I = Intact
D = Damaged
SD = Significantly Damage

NPD = No Potential for Damage
PD = Potential for Damage
PSD = Potential for Significant Damage

F = Friable
NF = Non-Friable

ACM:
A = Assumed
ND(0.5%) /ND(0.1%)= Not Detected at a detection limit of 0.5% / 0.1%
NS = Not Sampled
NQ = Not Quantified
CH() = Chrysotile (Percent by volume)
TR() = Tremolite (Percent by volume)
Bold =Asbestos Containing Material

Other:
GF=Ground Floor
Asbestos Containing Material
* **PC** indicates Stratified Point Count Method performed. Method not performed unless stated. Small asbestos fibres may be missed by PLM due to resolution limitation of the optical microscope. Therefore, negative PLM result cannot be guaranteed. Electron Microscopy can be used as a confirming technique. Regulatory limit is based upon the sample matrix.

Table 1b

Asbestos Analytical Summary
Designated Substances and Hazardous Materials Survey
Lakeridge Health Bowmanville,
47 Liberty Street South, Bowmanville, Ontario

Sample Location	Surface	Material Type	Accessibility	Building Material	Estimated Quantity	Units	Damaged Material	Material Condition			Asbestos Content	Sample ID	Comments	Photographs
		S T M	H M L N			Each, m, sm, NQ	%	I D SD	NPD PD PSD	F NF	ND NS CH() A			
HOSPITAL - Pinchin Sampling Conducted in July 2007														
Ground Floor, North Wing, Room NG20- Environmental Services Workshop	Pipe			PC				F			40% Chrysotile	002 a-c	Parging cement present on seams of non- asbestos sweatwrap on straight sections of unidentified pipe. Both sweatwrap and parging cement are covered with a canvas jacket and in good condition.	
Residence Building, Attic Level	Wall/Ceiling			PL				NF			PC 0.75 Chrysotile*	011 a, b	Plaster on wall, attic level	
Residence Building, Basement Level	Wall/Ceiling			PL				NF			PC 0.75 Chrysotile*	011 c-g	Plaster finish on wall/ceiling, basement level	
North Wing Throughout the 1967 Area of the Building	Floor			VT	84	sm		NF			A	Not sampled	9"x9" vinyl tiles were found in limited quantities throughout 1967 area of building. Regardless of colour or pattern, these tiles generally contain asbestos, and were not sampled.	
HOSPITAL - Safetech Sampling Conducted in January 2011														
ROOM S-110	Pipe			IN							35% Chrysotile	S-07 A-C	PIPE FITTING INSULATION- ROOM S-110	
HOSPITAL - Safetech Sampling Conducted in May 2012														
	Wall			MA							4% Chrysotile	5 A-C	BLACK MASTIC ON CORK FINISH	
HOSPITAL - Safetech Sampling Conducted in September 2012														
NG 16	Pipe			IN							50% Chrysotile	2 A-C	PIPE FITTING - NG 16	
NG 16	Aircell			CA							25% Chrysotile	3 A-C	AIRCELL PIPE INSULATION - NG 16	
NG 28	Ceiling			MA							6% Chrysotile	10 A-C	BROWN MASTIC FROM 1 x 1 CEILING TILES - NG 28	
HOSPITAL - Safetech Sampling Conducted in July 2013														
	Wall			PL							3% Chrysotile	2 A-C	GREY PLASTER	
HOSPITAL - Safetech Sampling Conducted in November 2015														
	Wall			PL							2% Chrysotile	B1 A-C	PLASTER WALL	
	Ceiling			Tar							2% Chrysotile	B2	TAR-LIKE CEILING	

Table 1b

Asbestos Analytical Summary
Designated Substances and Hazardous Materials Survey
Lakeridge Health Bowmanville,
47 Liberty Street South, Bowmanville, Ontario






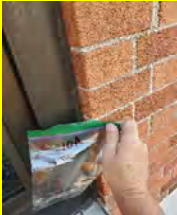





Sample Location	Surface	Material Type	Accessibility	Building Material	Estimated Quantity	Units	Damaged Material	Material Condition			Asbestos Content	Sample ID	Comments	Photographs
		S T M	H M L N			Each, m, sm, NQ	%	I D SD	NPD PD PSD	F NF	ND NS CH() A			
HOSPITAL - Safetech Sampling Conducted in September 2016														
NG02	Floor			VT							3% Chrysotile	2 A-C	NG02/VINYL FLOOR TILE (TAN)	
HOSPITAL - GHD Sampling Conducted in September 2023														
Exterior North Wing	Wall/Ceiling	M	H	CA	20	m					2% Chrysotile	N2 A-C	Caulking - hard, grey north wall, sealing metal louvers to brick	
Exterior North Wing	Wall/Ceiling	M	M	CA	all						2% Chrysotile	N3 A-C	Caulking - hard, brown north wall, sealing metal window frame to brick	
Exterior North Wing	Wall/Ceiling	M	M	CA	all						3% Chrysotile	N4 A-C	Caulking - hard, black north wall, sealing metal window frame to brick	
Exterior North Wing	Wall/Ceiling	M	H	WP	80	m	20%	D		NF	2% Chrysotile	N6 A-C	Window Putty northwest corner	
Exterior North Wing	Wall/Ceiling	M	H	CA	2	m		I		NF	2% Chrysotile	N7 A-C	Caulking - hard, white single window in courtyard / service entrance	
Exterior South Wing	Wall/Ceiling	M	H	CA	all			I		NF	2% Chrysotile	S10 A-C	Caulking - hard, brown sealing metal windows to brick	

Table 1b

Asbestos Analytical Summary
Designated Substances and Hazardous Materials Survey
Lakeridge Health Bowmanville,
47 Liberty Street South, Bowmanville, Ontario

Sample Location	Surface	Material Type	Accessibility	Building Material	Estimated Quantity	Units	Damaged Material	Material Condition			Asbestos Content	Sample ID	Comments	Photographs
		S T M	H M L N			Each, m, sm, NQ	%	I D SD	NPD PD PSD	F NF	ND NS CH() A			
Exterior South Wing	Wall/Ceiling	M	H	CA	30	m		I		NF	1% Chrysotile	S11 A-C	Caulking - soft, white east (service) wall, sealing metal door frame to brick	
Exterior South Wing	Wall/Ceiling	M	H	CA	30	m		I		NF	2% Chrysotile	S12 A-C	Caulking - hard, white east (service) and south wall, sealing metal window and door frames to brick	
18 Prince Street Residence, Bowmanville - Safetech Sampling Conducted in December 2016														
Garage Exterior	Siding			Transite Panels	800	sf					10% Chrysotile	3 A-C	Transite Panels	
18 Prince Street Residence, Bowmanville - GHD Sampling Conducted in September 2023														
House Exterior Windows and Doors	Window and Door Frames	M	M	CA	40	m	0.1	I	NPD	NF	5% Chrysotile	18-1 A-C	Black Tar behind white, rigid caulking	

Asbestos Analytical Summary
Designated Substances and Hazardous Materials Survey
Lakeridge Health Bowmanville,
47 Liberty Street South, Bowmanville, Ontario

Sample Location	Surface	Material Type	Accessibility	Building Material	Estimated Quantity	Units	Damaged Material	Material Condition			Asbestos Content	Sample ID	Comments	Photographs
		S T M	H M L N			Each, m, sm, NQ	%	I D SD	NPD PD PSD	F NF	ND NS CH() A			
20 Prince Street Residence, Bowmanville - GHD Sampling Conducted in September 2023														
Garage	Window Frame	M	L	WP	6	m	0.3	D	PD	NF	2% Chrysotile	20-2 A-C	Window Putty north garage window	

ACM Type:
S = Surfacing
T = Thermal
M = Miscellaneous

Accessibility:
H = High
M = Medium
L = Low
N = Not Accessible

Building Material:
VT = Vinyl Floor Tile
VSF =Vinyl Sheet Flooring
CT = Ceiling Tile
PL = Plaster
MR = Mortar
TR = Transite
MA = Mastic
IN = Insulation
CA = Caulking
DC= Drywall Compound
CRT = Ceramic Tile
PC=Parging Cement
WP=Window Putty

Material Condition:
I = Intact
D = Damaged
SD = Significantly Damage

NPD = No Potential for Damage
PD = Potential for Damage
PSD = Potential for Significant Damage

F = Friable
NF = Non-Friable

ACM:
A = Assumed
ND(0.5%) /ND(0.1%)= Not Detected at a detection limit of 0.5% / 0.1%
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CH() = Chrysotile (Percent by volume)
TR() = Tremolite (Percent by volume)
Bold =Asbestos Containing Material

Other:
GF=Ground Floor
Asbestos Containing Material
* PC indicates Stratified Point Count Method performed. Method not performed unless stated. Small asbestos fibres may be missed by PLM due to resolution limitation of the optical microscope. Therefore, negative PLM result cannot be guaranteed. Electron Microscopy can be used as a confirming technique. Regulatory limit is based upon the sample matrix.

Table 2a

Lead Analytical Summary
Designated Substances and Hazardous Materials Survey
Lakeridge Health Bowmanville,
47 Liberty Street South, Bowmanville, Ontario

Sample Identification	Location	Paint Colour	Surface	Accessibility ⁽¹⁾ H M L N	Lead Content ^{(2) (3)} % ppm		Comments	Sampling Location Photo
18 Prince Street Residence, Bowmanville - Safetech Sampling Conducted in December 2016								
L1	Room 2B	White/Grey	Block Wall	H	0.0090	90	White/gray paint in good condition on block wall	No Photo
L2	Basement	Green	Drywall	H	0.0090	90	Green paint on drywall in the basement in good condition	No Photo
22 Prince Street Residence, Bowmanville - Safetech Sampling Conducted in December 2016								
L1	Basement	White	Block Wall	H	<0.009	<90	White paint on concrete block wall in the basement	No Photo

Notes:

- (1) H = High, M = Medium, L = Low, N = Not Accessible
- (2) No Canadian or Ontario criteria for paint except for paint manufacture. The general standard of practice is to define paint as lead based paint when the lead content is 0.009 percent (90 ppm) or more by dry weight based on the 2010 Federal Hazardous Products regulation amendment. Ontario Ministry of Labour occupational exposure limit for lead is 0.05 mg lead/cubic metre of air and a Lead Control Plan is required to manage potential exposures during occupancy, maintenance, renovation and demolition activities until LBP is abated. Toxicity Characteristic Leachate Procedure waste characterization criteria for disposal is 5 milligrams per liter.
- (3) EACO suggests that LBP containing less than 1,000 ppm (0.1%) lead is considered a de minimis level of lead in paint or surface coatings, provided that aggressive disturbance or heating does not occur, and conventional worker protection measures should be provided (Environmental Abatement Contractors of Ontario Lead Guideline, October 2014).

Table 2b

Lead Sample Summary
Designated Substances and Hazardous Materials Survey
Lakeridge Health Bowmanville,
47 Liberty Street South, Bowmanville, Ontario

Sample Identification	Location	Paint Colour	Surface	Lead Content (mg/cm ²)		Comments	Sample Photo
Pinchin Niton X-ray Fluorescence Analyzer (XRF) Lead Test Results Conducted in February 2008 (South Wing and East Wing) ⁽¹⁾							
1	Ground Floor-Corridor	Grey	Sheeting	76		Grey lead sheeting	
2	Ground Floor-Corridor	Beige	Ceramic Tiles	22		Beige 4x4 ceramic tile	
3	Ground Floor-Corridor	Yellow	Ceramic Tiles	0.06		Yellow 5x5 ceramic tile	
4	Ground Floor-Corridor	White	Sink	-1.0		White sink	
5	Ground Floor-Corridor	Grey	Plaster Wall	0.02		Grey plaster	
6	Ground Floor-Corridor	Tope	Steel Door	0.01		Tope steel door	
7	Ground Floor-Corridor	Dark Tan	Ceramic Tiles	0.13		Dark tan 5x5 ceramic tile	
8	Ground Floor-Corridor	Tan	Plaster Wall	0.0		Tan plaster	
9	Ground Floor-Corridor	Dark Blue	Steel Door	0.03		Dark blue steel door	
10	Ground Floor-Corridor	Beige	Equipment	0.04		Beige fire equipment	
11	Ground Floor-Corridor	Purple	Window Frame	0.01		Purple window frame	
12	Ground Floor-Corridor	Dark Brown	Window Frame	-0.1		Dark brown window frame	
13	Ground Floor-Corridor	White	Radiator	-0.05		White radiator	
14	Ground Floor-Corridor	Grey	Steel Door	0.05		Grey elevator doors steel	
15	Ground Floor-Corridor	Pink	Plaster Wall	0.1		Pink plaster	
16	Ground Floor-Corridor	Blue	Steel Door	0.0		Blue steel door	
17	Ground Floor-Corridor	Pink	Plaster Wall	0.01		Pink plaster	
18	Ground Floor-Washroom	White	Ceramic Tiles	0.46		White 4x4 ceramic tile	
19	Ground Floor-Corridor	Grey	Plaster Wall	0.01		Grey plaster	
20	Ground Floor-Corridor	Beige	Plaster Wall	0.0		Beige plaster	
21	Ground Floor-Corridor	Tan	Floor	0.00		Tan terrazzo flooring	
22	Ground Floor-Corridor	Beige	Ceramic Tiles	17		Beige 4x4 ceramic tile	
23	Ground Floor-Corridor	Blue	Ceramic Tiles	0.9		Blue 4x4 ceramic tile	

Table 2b

Lead Sample Summary
Designated Substances and Hazardous Materials Survey
Lakeridge Health Bowmanville,
47 Liberty Street South, Bowmanville, Ontario

Sample Identification	Location	Paint Colour	Surface	Lead Content (mg/cm ²)	Comments	Sample Photo
Pinchin Niton X-ray Fluorescence Analyzer (XRF) Lead Test Results Conducted in February 2008 (South Wing and East Wing)⁽¹⁾						
24	Ground Floor-Corridor	Red	Ceramic Tiles	0.0		Red 6x6 ceramic tile
25	Ground Floor-Corridor	Beige	Plaster Wall	0.1		Beige plaster
26	Ground Floor-Corridor	White	Sink	0.0		White sink
27	Ground Floor-Corridor	Grey	Plaster Wall	0.0		Grey plaster
28	Ground Floor-Corridor	Pink	Drywall	0.0		Pink drywall
29	Ground Floor-Washroom	Grey	Ceramic Tiles	0.02		Grey 2x2 ceramic tile
30	Ground Floor-Washroom	White	Ceramic Tiles	0.5		White 4x4 ceramic tile
31	Ground Floor-Corridor	Yellow	Drywall	-0.1		Yellow drywall
32	Ground Floor-Corridor	Beige	Plaster Wall	0.0		Beige plaster
33	Ground Floor-Corridor	Beige	Ceramic Tiles	20		Beige 4x4 ceramic tile
34	Ground Floor-Washroom	Grey	Ceramic Tiles	0.01		Grey 2x2 ceramic tile
35	Ground Floor-Corridor	Grey	Plaster Wall	0.01		Grey plaster
36	Ground Floor-Corridor	White	Plaster Wall	0.13		White plaster
37	Penthouse-Mechanical	Red	Brick	0.0		Red 5x8 brick
38	Penthouse-Mechanical	Grey	Steel Door	0.04		Grey hand rail steel
39	Penthouse-Mechanical	Grey	Steel Door	0.1		Grey structural steel
40	Penthouse-Mechanical	White	Duct	0.5		White duct
41	Penthouse-Mechanical	Grey	Concrete Floor	0.1		Grey concrete floor
42	1st Floor Custodian Closet	Tan	Ceramic Tiles	1.8		Tan 5x8 ceramic tile
43	1st Floor Corridor	Red	Brick	0.1		Red 5x8 brick
44	1st Floor Corridor	Beige	Plaster Wall	0.04		Beige plaster
45	1st Floor Corridor	Light maroon	Steel Door	0.0		Light maroon steel door
46	1st Floor Corridor	Grey	Steel Door	0.0		Grey steel door

Table 2b

Lead Sample Summary
Designated Substances and Hazardous Materials Survey
Lakeridge Health Bowmanville,
47 Liberty Street South, Bowmanville, Ontario

Sample Identification	Location	Paint Colour	Surface	Lead Content (mg/cm ²)		Comments	Sample Photo
Pinchin Niton X-ray Fluorescence Analyzer (XRF) Lead Test Results Conducted in February 2008 (South Wing and East Wing) ⁽¹⁾							
47	1st Floor Corridor	Beige	Panel	0.02		Beige electrical panel	
48	1st Floor Corridor	Beige	Equipment	0.1		Beige fire equipment	
49	1st Floor Corridor	Yellow	Ceramic Tiles	0.02		Yellow 5x5 ceramic tile	
50	1st Floor Corridor	Off-white	Radiator	0.01		Off white radiator	
51	1st Floor Corridor	Brown	Ceramic Tiles	0.16		Brown 6x6 ceramic tile	
52	1st Floor Washroom	White	Ceramic Tiles	0.5		White 4x4 ceramic tile	
53	1st Floor Corridor	Beige	Brick	-0.3		Beige 5x8 brick	
54	1st Floor Corridor	Beige	Plaster Wall	-0.4		Beige plaster	
55	1st Floor Corridor	Off-white	Ceramic Tiles	0.6		Off white 4x4 ceramic tile	
56	1st Floor Corridor	White	Sink	0.0		White porcelain sink	
57	1st Floor Corridor	Beige	Plaster Wall	-0.5		Beige plaster	
58	1st Floor Washroom	Grey	Ceramic Tiles	0.04		Grey 2x2 ceramic tile	
59	1st Floor Corridor	Tan	Plaster Wall	0.02		Tan plaster	
60	1st Floor Corridor	Blue	Steel Door	0.02		Blue steel door	
61	1st Floor Corridor	Tan	Doors	0.05		Tan elevator doors	
62	Ground Floor-Exterior	Red	Brick	0.0		Red 5x8 brick	
63	Ground Floor-Mechanical Room	Red	Brick	-6.5		Red 3 ½ x 8 brick	

Notes:

(1)

Each distinctive paint finish present in more than very limited application was investigated for lead content. Separate measurements were made of architectural paints, structural steel primer, exterior paints, glazing on brick and ceramic tile, etc. Paint was tested with an X-ray Fluorescence Analyzer (XRF). The XRF analyzer was calibrated prior to, and after use, each shift. The presence of lead sheeting or other solid lead uses were noted where observed. Building materials suspected of containing lead were identified by appearance and age, and knowledge of historic applications. No sampling was performed

Appendices

Appendix A

Historical Reports

REASSESSMENT OF ASBESTOS – CONTAINING MATERIALS

**Lakeridge Health Bowmanville
47 Liberty Street South
Bowmanville, Ontario**

Prepared for:

**Mr. Don Baron
Manager, Engineering & Infrastructure**

**Lakeridge Health Bowmanville
47 Liberty Street South
Bowmanville, Ontario**

Performed by:

Safetech Environmental Limited



**Paul Valenti, B.ES., AMRT
Project Coordinator**



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Senior Project Manager**

SEL Project Number 168316

TABLE OF CONTENTS

1.0	BACKGROUND	2
2.0	HISTORY OF ASBESTOS.....	3
3.0	REGULATIONS FOR ASBESTOS IN BUILDING MATERIALS.....	3
4.0	METHODOLGY.....	5
5.0	ASSESSMENT OF ASBESTOS-CONTAINING MATERIALS.....	6
6.0	RESULTS.....	10
6.1	North Wing.....	10
6.2	South Wing	14
6.3	East Wing.....	17
6.4	Blue Shed.....	18
6.5	Residence Building	20
7.0	CONCLUSIONS & RECOMMENDATIONS	23

TABLES

Table I – Summary of Ontario Regulation 278/05 Bulk Sample Requirements

APPENDICES

Appendix I – Laboratory Certificates of Analysis/Historical SEL Samples
Appendix II - Project Drawings

December 14, 2016

Lakeridge Health Bowmanville
47 Liberty Street South
Bowmanville, Ontario

Attn: Mr. Don Baron
Manager, Engineering & Infrastructure

Re: Reassessment of Asbestos – Containing Materials
Lakeridge Health Bowmanville, 47 Liberty Street South, Bowmanville, ON

1.0 BACKGROUND

During September and October of 2016 Safetech Environmental Limited (SEL) performed a reassessment survey of all accessible areas of Lakeridge Health Bowmanville, 47 Liberty Street South, Bowmanville, Ontario to determine the type, location, presence and condition of asbestos-containing materials (ACM) within the facility that were previously identified during the original asbestos survey of the facility. Findings from the original asbestos survey were included within this reassessment report. Site drawings were provided and used as reference for locations of friable and non-friable asbestos - containing materials, room numbers and for areas within the hospital that require reassessment.

The objective of this study was to conduct a reassessment of previously identified asbestos, a designated substance as defined under the Ontario Occupational Health and Safety Act, RSO 1990 c. 0.1, and to determine if conditions have changed since the last assessment. The reassessment survey included a review of all accessible patient rooms, hallways, corridors, mechanical rooms, meeting rooms and other service areas for the presence and extent of ACM, evaluation of the type of ACM and degree of possible exposure, and assessing requirements for any further investigation or remedial action, if necessary. The reassessment survey addressed only accessible areas of the facility. No destructive testing was performed. Accessible patient care areas, hallways, mechanical rooms, office suites, lobbies, retail areas, stairwells, common areas, and corridors were inspected as indicated on drawings. Not all areas were inspected as they were occupied at the time of site inspection.

This report summarizes results of our on-site reassessment, laboratory analytical results and recommendations based on our findings.

2.0 HISTORY OF ASBESTOS

Asbestos-containing materials were used widely throughout Canada and other countries of the world during the 1900's. This naturally occurring mineral was used in building construction for its thermal properties, high tensile strength, low electrical conductivity and its ability to withstand chemical breakdown. This fibrous material when inhaled over a long period of time can lead to adverse health effects such as asbestosis, lung cancer and mesothelioma. Building materials with bound asbestos or asbestos that is in good condition pose little danger of releasing airborne fibres unless physically damaged (drilled, cut, sawn, ground or sanded).

An important factor when assessing the potential hazard associated with asbestos is its degree of friability. Ontario Regulation 278/05 – the Regulation respecting *Asbestos on Construction Projects and in Buildings and Repair Operations* as made under the Occupational Health & Safety Act defines friability as “material that when dry can be crumbled, pulverized or powdered by hand pressure and includes such material that is crumbled pulverized or powdered”.

Friable asbestos-containing materials have been banned from use in Ontario. The most common types of friable ACM include sprayed fireproofing and sprayed thermal insulation (ceased use circa 1973), sprayed acoustic texture coat finishes - stucco (ceased use circa 1982), and mechanical thermal system insulation (TSI) (ceased use circa 1981).

Non-friable ACM include vinyl floor tile - VAT (ceased use circa 1982), vinyl sheet flooring – VSF (ceased use circa 1982), floor adhesives (ceased use circa 1992), acoustic ceiling tile (ceased use circa 1982), plaster finishes (ceased use circa 1960's), drywall joint compound (ceased use circa 1980), roofing materials (ceased use circa 1991), and asbestos cement sheeting, piping, and gasketing material that may still be in use today.

This reassessment identified all friable and non-friable material noted in the building that were identified in the original asbestos survey.

3.0 REGULATIONS FOR ASBESTOS IN BUILDING MATERIALS

Management of asbestos-containing materials in buildings is regulated under Ontario Regulation 278/05, Regulation respecting Asbestos on Construction Projects and in Buildings and Repair Operations - made under the Occupational Health and Safety Act. Under this regulation an asbestos-containing material is defined as a material that contains 0.5 percent or more asbestos by dry weight. If materials are determined to be asbestos-containing this regulation requires that specific procedures are followed for ongoing management of these materials in buildings. This includes requirements such as – but not limited to – preparing and maintaining a record of the location and type (i.e. friable and non-friable) of asbestos-containing materials within the facility. This record is also required to be updated at least once in each 12 month period.

Specific procedures are also required to be followed during renovation or demolition projects that have the potential to disturb asbestos-containing materials. Specific procedures followed (i.e. Type 1, Type 2 or Type 3 operations) depends primarily on the type of asbestos present, the friability of the material, and quantity of material present.

For determining whether a material is considered asbestos-containing Ontario Regulation 278/05 outlines specific requirements for the collection of bulk samples of homogenous building materials. This includes the collection of a minimum number of samples for thermal system insulation, surfacing material and miscellaneous materials. In order for a building material to be deemed asbestos-containing only one of the samples analyzed within the sample set needs to contain 0.5% percent or more asbestos by dry weight. Therefore, if one sample in a sample set comes back positive the entire area of homogeneous material would then be deemed to be asbestos-containing. Table I outlines these bulk sample requirements.

TABLE I
Ontario Regulation 278/05 Bulk Sample Requirements

Item	Type of Material	Size of Area of Homogenous Material	Minimum Number of Bulk Material Samples to be Collected
1	Surfacing material including without limitation material that is applied to surfaces by spraying, trowelling or otherwise, such as acoustical plaster on ceilings and fireproofing materials on structural members	<90m ²	3
		>90m ² to <450m ²	5
		>450m ²	7
2	Thermal system insulation, except as described in item 3	Any Size	3
3	Thermal Insulation Patch	< 2 linear metres or 0.5m ²	1
4	Other Material	Any Size	3

Management of asbestos waste is governed by Ontario Regulation 347, General – Waste Management, made under the Environmental Protection Act. Section 17 of this regulation sets out requirements for proper handling, transportation and disposal of asbestos waste to prevent it from becoming airborne

4.0 METHODOLOGY

Bulk Sampling of Suspect Building Materials

Samples of suspect asbestos-containing materials were retrieved for analysis during the survey. Bulk samples were retrieved from homogeneous materials that were suspected to potentially contain asbestos. The appropriate numbers of bulk samples were taken for each set of suspect materials based on the minimum sample requirements outlined in O. Reg. 278/05 and summarized in Table I.

As specified in O. Reg. 278/05 the analysis procedure employed is US EPA Method 600/R-93/116 for the determination of asbestos in suspect materials. Identification is made using polarized light microscopy (PLM), with confirmation of presence and type of asbestos made by dispersion staining optical microscopy.

Building materials that were visually similar to materials previously tested were considered to have consistent content and were not re-sampled. Additional sampling was only conducted where the investigator believed a need existed.

Accessible Areas

Destructive testing including that of fire door cores and roofing felts was not performed during this investigation. Locations of identified ACM have been detailed in this report where access was readily available. Inaccessible areas such as above solid drywall/plaster ceilings, within walls, enclosed mechanical shafts, enclosed bulkheads and pipe chases were not investigated. However, details regarding the possible presence of ACM were provided on a case by case basis.

Boilers and Other Mechanical Equipment

Boilers, vessels, kilns, sterilizers, chillers, tanks and other mechanical systems were not disassembled or demolished to determine the presence of asbestos within refractory brick, gaskets and other internal liners. Boilers were often constructed with asbestos insulations between the refractory brick and outer steel layer. Any work that will involve the demolition or replacement of these systems should be further investigated using destructive testing techniques prior to the commencement of such projects.

Non-Friable Materials

Some non-friable materials were not bulk sampled for asbestos content. For example, Transite pipe cannot be tested without compromising the integrity of the active pipe. Conclusions and recommendations regarding the presence of asbestos within identified non-friable materials were based on the past experience of the investigator.

General Note Regarding Investigation

Please be advised that SEL has made every effort to investigate all areas within the building. However, in some cases, areas that are not identified on floor plans and/or architectural drawings may not have been included. SEL should be contacted if this is determined to ensure that the survey is complete. In addition, if renovations or demolition is contemplated, a thorough reassessment must be conducted with destructive testing to ensure all ACM's are identified. The reassessment should be performed prior to the commencement of construction activity.

Documents used as reference in this report include the following:

- *"Asbestos Building Materials Report, Lakeridge Health Corporation – Bowmanville, 47 Liberty Street South, Bowmanville, Ontario"* as prepared by Pinchin Environmental in November 2007.
- *"Hazardous Building Materials Assessment, Lakeridge Health Corporation – Bowmanville, 47 Liberty Street South, Bowmanville, Ontario"* as prepared by Pinchin Environmental in March 2008.
- *"Hazardous Building Materials Assessment, Hot Water Heating Upgrade Project, Lakeridge Health Corporation – Bowmanville, 47 Liberty Street South, Bowmanville, Ontario"* as prepared by SEL in September 2012.

5.0 ASSESSMENT OF ASBESTOS-CONTAINING MATERIALS

5.1 Accessibility Rating

Accessibility, Condition and Action (Priority) ratings for individual items, or defined areas were developed by SEL to determine remedial action plans specific to the facility's needs. The rating criteria for each of these items is further detailed below.

Accessibility has been assessed as: (A) Accessible to all non-maintenance occupants of the building; (B) Accessible to maintenance staff without a ladder; (C) Accessible to maintenance staff with a ladder and exposed to view without moving a building component; (D) Accessible to maintenance staff with a ladder and concealed from view due to a building component; (E) Not accessible without demolition or removal of fixed building components or building systems.

5.2 Condition Rating

I. Sprayed Applied Fireproofing, Insulation and Texture Finishes

To evaluate the condition of asbestos-containing surfacing materials such as fireproofing, non-mechanical thermal insulation, and texture finishes the following criteria was applied:

Good condition would indicate the following:

Surface of material shows no significant signs of damage, deterioration, or delamination. Up to 1 percent visible damage to surface is allowed. Evaluation of sprayed materials requires the surveyor to be familiar with the typical irregular surface texture as installed. GOOD condition includes unencapsulated or unpainted fireproofing or texture finishes, where no delamination or damage is observed, and encapsulated fireproofing or texture finishes where the encapsulation has been applied after the damage or fallout occurred.

Fair condition rating is not utilized in the evaluation of the fireproofing, non-mechanical insulation, or texture coat finishes. These materials are only classified as in Good or Poor condition.

Poor condition would indicate the following:

Sprayed materials show signs of damage, delamination, or deterioration. More than 1% damage to surface of ACM spray.

In observation areas where damage exists in isolated locations, both GOOD and POOR condition may be applicable.

II. Mechanical Insulation

The evaluation of the condition of mechanical insulation (on boilers, breeching, ductwork, piping, tanks, equipment, etc.) utilizes the following criteria:

Good condition would indicate the following:

Insulation is completely covered in jacketing and exhibits no evidence of damage or deterioration. No insulation is exposed. Includes conditions where jacketing has minor damage (i.e. scuffs or stains), but the jacketing is not penetrated.

Fair condition would indicate the following:

Minor penetrating damage to jacketed insulation (cuts, tears, nicks, deterioration or delamination) or undamaged insulation that had never been jacketed. Insulation is exposed but not showing surface disintegration. The extent of missing insulation ranges from minor to none. Damage can be repaired.

Poor condition would indicate the following:

Original insulation jacket is missing, damaged, deteriorated, or delaminated. Insulation is exposed and significant areas have been dislodged. Damage cannot be readily repaired.

III. Non-friable and Potential Friable Materials

The condition of non-friable or potentially friable ACM, such as plaster finishes, drywall compound, ceiling tiles, asbestos cement products, vinyl asbestos tile and asbestos paper backed vinyl sheet flooring, which have the potential to become friable when handled is evaluated as follows:

Good condition would indicate the following:

No significant damage. Material may be cracked or broken but is stable and not likely to become friable upon casual contact. If there is no friable DEBRIS present, the condition is rated as GOOD.

Fair condition rating is not utilized in the evaluation of the condition of non-friable and potentially friable materials. These materials are only classified as in Good or Poor condition.

Poor condition would indicate the following:

Material is severely damaged. Loose DEBRIS is present or binder has disintegrated to the point where the material has become friable.

IV. Evaluation of Asbestos-Containing Debris

The presence of fallen debris must be noted separately from the presumed asbestos-containing source material. Debris is always considered to be in POOR condition.

Quantity

For each CONDITION, the approximate QUANTITY and the units of measure related to the QUANTITY (i.e.: linear feet (LF), square feet (SF) or each (EACH) as appropriate to the ITEM) has been recorded where applicable.

5.3 Action Rating

Recommended ACTION for compliance and for management of the ACM has been provided for each CONDITION and for each COMPONENT. Recommendations have been classified under the following 8 ACTIONS:

- Action 1: Action dealing with the immediate cleanup of fallen ACM likely to be disturbed.
- Action 2: Action dealing with the need to use Type 2 asbestos procedures to enter an area (other than a ceiling space).
- Action 3: Action dealing with performing asbestos removal for compliance with regulations.
- Action 4: Action dealing with Type 2 asbestos procedures for ceiling entry where friable ACM debris is present on the top side of a ceiling system.
- Action 5: Action dealing with the removal of asbestos that goes beyond compliance requirements but simplifies the asbestos management.
- Action 6: Action dealing with the repair of asbestos.
- Action 7: Action dealing with ACM surveillance requirements of the regulation.
- Action 8: Action for dealing with material that may contain asbestos but was not conclusively identified in the survey.

6.0 RESULTS

6.1 North Wing

The North Wing was constructed in 1950. It consists of two (2) above grade levels (Ground & First). The following provides a basic description of the building systems.

System	Description
Structure	Poured concrete
Exterior Cladding	Brick
HVAC	Gas fired boiler with forced air heating and hot water radiator system.
Roof	Flat built up
Flooring	Terrazzo, vinyl floor tiles, vinyl sheet flooring, concrete
Interior Walls	Plaster and drywall
Ceilings	Plaster, drywall, acoustic lay-in ceiling tiles, glued-on acoustic ceiling tiles

Summary of Assessment for Asbestos-Containing Materials North Wing—Lakeridge Health Bowmanville 47 Liberty Street South, Bowmanville, ON

Sprayed and Loose Fill Insulating Materials	Location/Description	Cond.	Est. Quantity	Friability
Sprayed Fireproofing	None identified in area(s) assessed.	N/A	N/A	N/A
Sprayed Insulation	None identified in area(s) assessed.	N/A	N/A	N/A
Loose Fill / Vermiculite Insulation	None identified in area(s) assessed. Interior portions of concrete block walls could not be assessed. However, it is not expected that these walls are insulated with loose fill or vermiculite insulation	N/A	N/A	N/A
Thermal System Insulation	Location/Description	Cond.	Est. Quantity	Friability

Mechanical Pipe Insulation – Straights	Linear mechanical pipe insulation (aircell) observed within Room NG 16 was previously sampled by SEL and found to contain 25% Chrysotile asbestos.	Good	~15 ft	Friable
	Sweat wrap linear pipe insulation observed within the North Wing Basement Corridor was previously sampled by SEL and Pinchin and found not to contain asbestos. However, as per a previous assessment by Pinchin Environmental in 2007, the sweat wrap pipe insulation was found to have asbestos containing parging cement at pipe insulation seams. Therefore, all sweat wrap pipe insulation is presumed to have asbestos containing parging cement at the seams.	Good	N/D	Friable
	Pipes insulated with friable asbestos insulations may also be present in inaccessible spaces such as above solid ceilings, in chases, in column enclosures and within shafts.	N/D	N/D	N/D
	Remaining mechanical pipes were observed to be insulated with fibreglass or not insulated.	N/A	N/A	N/A
Mechanical Pipe Insulation – Fittings (elbows, valves, tees, hangars, etc.)	Parging cement on mechanical pipe fittings observed within Room NG 16 was previously sampled by SEL and found to contain 50% Chrysotile asbestos.	Poor	~1 unit	Friable
HVAC Duct Insulation	HVAC ductwork was observed to be insulated with fibreglass or not insulated.	N/A	N/A	N/A
Breeching / Exhaust Insulation	Boiler breeching/exhaust was observed to be insulated with fibreglass or not insulated.	N/A	N/A	N/A
Tank Insulation	Hot water tank insulation within Room NG 01 was previously sampled by SEL and found not to contain asbestos.	N/A	N/A	N/A
Boiler Insulation	Boiler units were observed to be insulated with fibreglass or not insulated.	N/A	N/A	N/A
Other Mechanical Equipment Insulation	HVAC flex connections were previously sampled by SEL and found not to contain asbestos.	N/A	N/A	N/A
Architectural Finishes & Finishing Materials	Location/Description	Cond.	Est. Quantity	Friability
Sprayed Texture / Stucco Finishes	Textured plaster ceiling finishes observed within NG 01 and NG 39 were previously sampled by SEL and found not to contain asbestos.	N/A	N/A	N/A

Plaster Finishes	Various samples of plaster finishes have been collected by SEL and Pinchin and found not to contain asbestos, however a sample collected by SEL in 2015 from within the North Ground Floor Bio-Waste fridge was found to contain 2% Chrysotile asbestos. Therefore all plaster within the building should be presumed to contain asbestos, unless sampling proves otherwise.	N/A	N/A	N/A
Plaster Finishes	A dark grey plaster material, observed to be underlying cork insulation within the South wing was previously identified to contain Chrysotile asbestos. This material may be present beneath current plaster finishes and cork insulation within the North wing.	N/D	N/D	N/D
Drywall Joint Compound	Drywall with joint compound within the building was all reported to be installed during the 1990-1993 renovation, therefore is not suspected to contain asbestos. Historical samples collected have also been found not to contain asbestos.	N/A	N/A	N/A
Ceiling Tiles	Location/Description	Cond.	Est. Quantity	Friability
Lay-in Acoustic Ceiling Tiles	Various 2x4 and 2x2 lay-in ceiling tiles observed throughout the wing have been previously sampled by SEL and Pinchin and were found not to contain asbestos.	N/A	N/A	N/A
Glued-on Acoustic Ceiling Tiles	1x1 glued on ceiling tiles observed within NG02 were previously sampled and found not to contain asbestos, however the associated brown adhesive mastic was sampled by SEL and found to contain 6% Chrysotile asbestos. The mastic is present within Rooms NG02, NG03, and NG28.	Good	~600 ft ²	Non-Friable
Transite Ceiling Panels	None identified within the North Wing.	N/A	N/A	N/A
Flooring	Location/Description	Cond.	Est. Quantity	Friability
Vinyl Floor Tiles	9"x9" Tan vinyl floor tiles observed within the centre of NG02 beneath electrical equipment was sampled during this assessment and found to contain 3% Chrysotile asbestos.	Good	~30 ft ²	Non-Friable
Vinyl Sheet Flooring	Various patterns and styles of vinyl sheet flooring observed throughout the North Wing were sampled by SEL and found not to contain asbestos. Laboratory results initially indicated that a sample contained asbestos within the 1 st Floor, however it was determined that this was a laboratory error. Additional confirmatory samples were collected and found not to contain asbestos.	N/A	N/A	N/A
Asbestos Cement Products	Location/Description	Cond.	Est. Quantity	Friability
Piping	None identified in area(s) assessed.	N/A	N/A	N/A
Roofing, Siding, Wallboard	None identified in area(s) assessed.	N/A	N/A	N/A

Other Cement Products	None identified in area(s) assessed.	N/A	N/A	N/A
Misc. Materials	Location/Description	Cond.	Est. Quantity	Friability
Mastic	Black mastic/tar on cork material within select areas was sampled by SEL in 2014 and found to contain Chrysotile asbestos. The material was not observed during the current assessment however may be present within concealed locations.	N/D	N/D	Non-Friable
Other Materials	Other materials observed within the investigated area(s) that are suspected or previously confirmed to be asbestos-containing includes refractory bricks and gasketing/packing materials associated with the boiler, boiler cement/mortar joint compound, roofing felts, window caulking, fire door cores, caulking and mastics on mechanical equipment, elevator brakes, high voltage wire jacketing, bell and spigot joint material on large cast iron drain piping, hard textile breaker switch gear within electrical components. Bulk sampling was not conducted to verify asbestos content of these materials so as not compromise the integrity of the systems which they are a part of. However, based on the age of the materials they should be assumed to be asbestos-containing until proven otherwise.	N/D	N/D	N/D

Refer to Appendix II Project Drawings – North Wing for approximate locations of asbestos-containing materials on a floor by floor basis.

6.2 South Wing

South Wing was constructed in 1962. It consists of four (4) above grade levels (Ground, First, Second, & Third). The following provides a basic description of the building systems.

System	Description
Structure	Poured concrete
Exterior Cladding	Brick
HVAC	Gas fired boiler with forced air heating and hot water radiator system.
Roof	Flat built up
Flooring	Terrazzo, vinyl floor tiles, vinyl sheet flooring, concrete
Interior Walls	Plaster and drywall
Ceilings	Plaster, drywall, acoustic lay-in ceiling tile

Summary of Assessment for Asbestos-Containing Materials South Wing—Lakeridge Health Bowmanville 47 Liberty Street South, Bowmanville, ON

Sprayed and Loose Fill Insulating Materials	Location/Description	Cond.	Est. Quantity	Friability
Sprayed Fireproofing	None identified in area(s) assessed.	N/A	N/A	N/A
Sprayed Insulation	None identified in area(s) assessed.	N/A	N/A	N/A
Loose Fill / Vermiculite Insulation	None identified in area(s) assessed. Interior portions of concrete block walls could not be assessed. However, it is not expected that these walls are insulated with loose fill or vermiculite insulation	N/A	N/A	N/A
Thermal System Insulation	Location/Description	Cond.	Est. Quantity	Friability

Mechanical Pipe Insulation – Straights	Sweat wrap linear pipe insulation observed within the South Wing was previously sampled by SEL in 2011 and found not to contain asbestos. However, as per a previous assessment by Pinchin Environmental in 2007, the sweat wrap pipe insulation was found to have asbestos containing parging cement at pipe insulation seams. Therefore, all sweat wrap pipe insulation is presumed to have asbestos containing parging cement at the seams.	Good	N/D	Friable
	Pipes insulated with friable asbestos insulations may also be present in inaccessible spaces such as above solid ceilings, in chases, in column enclosures and within shafts.	N/D	N/D	N/D
	Remaining mechanical pipes were observed to be insulated with fibreglass or not insulated.	N/A	N/A	N/A
Mechanical Pipe Insulation – Fittings (elbows, valves, tees, hangars, etc.)	Parging cement on mechanical pipe fittings previously sampled by SEL and found to contain 35% Chrysotile asbestos. The material is suspected to be present within wall cavities and mechanical shafts.	N/D	N/D	Friable
HVAC Duct Insulation	HVAC ductwork was observed to be insulated with fibreglass or not insulated.	N/A	N/A	N/A
Breeching / Exhaust Insulation	None identified within the South Wing.	N/A	N/A	N/A
Tank Insulation	None identified within the South Wing.	N/A	N/A	N/A
Boiler Insulation	None identified within the South Wing.	N/A	N/A	N/A
Other Mechanical Equipment Insulation	HVAC flex connections were previously sampled within Room SG 39 by SEL and found not to contain asbestos.	N/A	N/A	N/A
Architectural Finishes & Finishing Materials	Location/Description	Cond.	Est. Quantity	Friability
Sprayed Texture / Stucco Finishes	None identified within the South Wing.	N/A	N/A	N/A
Plaster Finishes	Various samples of visible top layer plaster finishes have been collected by SEL and Pinchin and were all found not to contain asbestos.	N/A	N/A	N/A
	A dark grey plaster material, observed to be present between cork insulation and exterior brick within the South wing was previously identified to contain Chrysotile asbestos.	N/D	N/D	N/D
Drywall Joint Compound	Drywall with joint compound within the building was all reported to be installed during the 1990-1993 renovation, therefore is not suspected to contain asbestos. Historical samples collected have also been found not to contain asbestos.	N/A	N/A	N/A

Ceiling Tiles	Location/Description	Cond.	Est. Quantity	Friability
Lay-in Acoustic Ceiling Tiles	Various 2x4 and 2x2 lay-in ceiling tiles observed throughout the wing have been previously sampled by SEL and Pinchin and were found not to contain asbestos.	N/A	N/A	N/A
Glued-on Acoustic Ceiling Tiles	None identified within the South Wing.	N/A	N/A	N/A
Transite Ceiling Panels	None identified within the South Wing.	N/A	N/A	N/A
Flooring	Location/Description	Cond.	Est. Quantity	Friability
Vinyl Floor Tiles	Vinyl floor tiles observed within the south wing were observed to have been recently installed, therefore are not suspected to contain asbestos.	N/A	N/A	N/A
Vinyl Sheet Flooring	Various patterns and styles of vinyl sheet flooring observed throughout the South Wing were sampled by SEL and found not to contain asbestos.	N/A	N/A	N/A
Asbestos Cement Products	Location/Description	Cond.	Est. Quantity	Friability
Piping	None identified in area(s) assessed.	N/A	N/A	N/A
Roofing, Siding, Wallboard	None identified in area(s) assessed.	N/A	N/A	N/A
Other Cement Products	Floor leveling compound observed within S221 was previously sampled by SEL and found not to contain asbestos.	N/A	N/A	N/A
	Interior and exterior mortar has been previously sampled by SEL and found not to contain asbestos.	N/A	N/A	N/A
Misc. Materials	Location/Description	Cond.	Est. Quantity	Friability
Mastic	Black mastic/tar on cork material within the Emergency Department was sampled by SEL in 2012 and found to contain Chrysotile asbestos. The material was not observed during the current assessment however may be present within concealed locations.	N/D	N/D	Non-Friable
Other Materials	Other materials observed within the investigated area(s) that are suspected or previously confirmed to be asbestos-containing includes roofing felts, window caulking, fire door cores, caulking and mastics on mechanical equipment, elevator brakes, high voltage wire jacketing, bell and spigot joint material on large cast iron drain piping, hard textile breaker switch gear within electrical components. Bulk sampling was not conducted to verify asbestos content of these materials so as not compromise the integrity of the systems which they are a part of. However, based on the age of the materials they should be assumed to be asbestos-containing until proven otherwise.	N/D	N/D	N/D

Refer to Appendix II Project Drawings – South Wing for approximate locations of asbestos-containing materials on a floor by floor basis.

6.3 East Wing

The East Wing was reported to have been constructed in 1990. Based on the era of construction and historical records, the East Wing does not contain any asbestos-containing materials. Therefore, the East Wing was not assessed during the current reassessment. The following provides a basic description of the building systems.

System	Description
Structure	Poured concrete
Exterior Cladding	Brick
HVAC	Gas fired boiler with forced air heating and hot water radiator system.
Roof	Flat built up
Flooring	Terrazzo, vinyl floor tiles, vinyl sheet flooring, concrete
Interior Walls	Drywall
Ceilings	Drywall, acoustic lay-in ceiling tile

6.4 Blue Shed

The Blue Shed is located on the East Side of the main building. The building includes one (1) above grade level. The following provides a basic description of the building systems.

System	Description
Structure	Steel
Exterior Cladding	Steel
HVAC	Electric Heaters
Roof	Steel
Flooring	Concrete, vinyl sheet flooring
Interior Walls	Transite panels, wood panels
Ceilings	Transite ceiling tile, acoustic ceiling tile

Summary of Assessment for Asbestos-Containing Materials Blue Shed—Lakeridge Health Bowmanville 47 Liberty Street South, Bowmanville, ON

Sprayed and Loose Fill Insulating Materials	Location/Description	Cond.	Est. Quantity	Friability
Sprayed Fireproofing	None identified in area(s) assessed.	N/A	N/A	N/A
Sprayed Insulation	None identified in area(s) assessed.	N/A	N/A	N/A
Loose Fill / Vermiculite Insulation	None identified in area(s) assessed. Interior portions of concrete block walls could not be assessed. However, it is not expected that these walls are insulated with loose fill or vermiculite insulation	N/A	N/A	N/A
Thermal System Insulation	Location/Description	Cond.	Est. Quantity	Friability
Mechanical Pipe Insulation – Straights	Mechanical pipes were observed to be insulated with fibreglass or not insulated.	N/A	N/A	N/A
Mechanical Pipe Insulation – Fittings (elbows, valves, tees, hangars, etc.)	Mechanical pipe fittings were observed to be insulated with fibreglass or not insulated.	N/A	N/A	N/A
HVAC Duct Insulation	HVAC ductwork was observed to be insulated with fibreglass or not insulated.	N/A	N/A	N/A

Breeching / Exhaust Insulation	None identified within the Blue Shed.	N/A	N/A	N/A
Tank Insulation	None identified within the Blue Shed.	N/A	N/A	N/A
Boiler Insulation	None identified within the Blue Shed.	N/A	N/A	N/A
Other Mechanical Equipment Insulation	None identified within the Blue Shed.	N/A	N/A	N/A
Architectural Finishes & Finishing Materials	Location/Description	Cond.	Est. Quantity	Friability
Sprayed Texture / Stucco Finishes	None identified within the South Wing.	N/A	N/A	N/A
Plaster Finishes	None identified within the Blue Shed.	N/A	N/A	N/A
Drywall Joint Compound	None identified within the Blue Shed.	N/A	N/A	N/A
Ceiling Tiles	Location/Description	Cond.	Est. Quantity	Friability
Lay-in Acoustic Ceiling Tiles	<u>2x4 medium fissure and pinhole ceiling tiles</u> observed within the office and washroom area were previously sampled by Pinchin and found to contain Chrysotile asbestos.	Poor	~200 ft²	Non-Friable
Glued-on Acoustic Ceiling Tiles	None identified within the Blue Shed.	N/A	N/A	N/A
Transite Ceiling Panels	<u>Transite ceiling tiles</u> observed within the Blue Shed main storage area were previously sampled by Pinchin and found to contain Chrysotile asbestos.	Good-Poor	~800 ft²	Non-Friable
Flooring	Location/Description	Cond.	Est. Quantity	Friability
Vinyl Floor Tiles	None identified within the Blue Shed.	N/A	N/A	N/A
Vinyl Sheet Flooring	<u>Beige vinyl sheet flooring with paper backing</u> observed within the washrooms of the Blue Shed was sampled by SEL and found to contain Chrysotile asbestos.	Good	~75 ft²	Friable
Asbestos Cement Products	Location/Description	Cond.	Est. Quantity	Friability
Piping	None identified in area(s) assessed.	N/A	N/A	N/A
Roofing, Siding, Wallboard	<u>Transite wall board</u> was observed within the main storage area of the Blue Shed. The material is known to contain asbestos.	Good-Poor	~1200 ft²	Non-Friable
Other Cement Products	None identified within the Blue Shed.	N/A	N/A	N/A
Misc. Materials	Location/Description	Cond.	Est. Quantity	Friability

Mastic	None identified within the Blue Shed.	N/A	N/A	N/A
Other Materials	Other materials observed within the investigated area(s) that are suspected or previously confirmed to be asbestos-containing includes roofing felts, window caulking, fire door cores, hard textile breaker switch gear within electrical components. Bulk sampling was not conducted to verify asbestos content of these materials so as not compromise the integrity of the systems which they are a part of. However, based on the age of the materials they should be assumed to be asbestos-containing until proven otherwise.	N/D	N/D	N/D

Refer to Appendix II Project Drawings – Blue Shed for approximate locations of asbestos-containing materials on a floor by floor basis.

6.5 Residence Building

The Residence Building was constructed in 1926, and underwent a major renovation in 1993. The building consists of one (1) below grade level (Basement) and three (3) above grade levels (First, Second, & Attic). The following provides a basic description of the building systems.

System	Description
Structure	Concrete foundation and wood structure
Exterior Cladding	Brick
HVAC	Gas fired furnace with forced air heating
Roof	Tar shingle
Flooring	Wood, vinyl floor tiles, vinyl sheet flooring, concrete
Interior Walls	Plaster and drywall
Ceilings	Plaster, drywall

**Summary of Assessment for Asbestos-Containing Materials
Residence Building—Lakeridge Health Bowmanville
11 Lambert Street, Bowmanville, ON**

Sprayed and Loose Fill Insulating Materials	Location/Description	Cond.	Est. Quantity	Friability
Sprayed Fireproofing	None identified in area(s) assessed.	N/A	N/A	N/A
Sprayed Insulation	None identified in area(s) assessed.	N/A	N/A	N/A
Loose Fill / Vermiculite Insulation	None identified in area(s) assessed. Interior portions of concrete block walls could not be assessed. However, it is not expected that these walls are insulated with loose fill or vermiculite insulation	N/A	N/A	N/A
Thermal System Insulation	Location/Description	Cond.	Est. Quantity	Friability
Mechanical Pipe Insulation – Straights	Mechanical pipes were observed to be insulated with fibreglass or not insulated. Asbestos-containing mechanical insulation may be present within enclosed wall cavities.	N/A	N/A	N/A
Mechanical Pipe Insulation – Fittings (elbows, valves, tees, hangars, etc.)	Mechanical pipe fittings were observed to be insulated with fibreglass or not insulated. Asbestos-containing mechanical insulation may be present within enclosed wall cavities.	N/A	N/A	N/A
HVAC Duct Insulation	HVAC ductwork was observed to be insulated with fibreglass or not insulated.	N/A	N/A	N/A
Breeching / Exhaust Insulation	None identified within the Residence Building.	N/A	N/A	N/A
Tank Insulation	None identified within the Residence Building.	N/A	N/A	N/A
Boiler Insulation	None identified within the Residence Building.	N/A	N/A	N/A
Other Mechanical Equipment Insulation	None identified within the Residence Building.	N/A	N/A	N/A
Architectural Finishes & Finishing Materials	Location/Description	Cond.	Est. Quantity	Friability
Sprayed Texture / Stucco Finishes	None identified within the Residence Building.	N/A	N/A	N/A

Plaster Finishes	Plaster finishes observed throughout the Residence Building were previously sampled by Pinchin and found to contain Chrysotile asbestos. The material was observed to be in Poor condition within the Basement.	Good-Poor	N/D	Friable
Drywall Joint Compound	Drywall joint compound within the building was installed from 1993 onward, therefore the material is not suspected to contain asbestos.	N/A	N/A	N/A
Ceiling Tiles	Location/Description	Cond.	Est. Quantity	Friability
Lay-in Acoustic Ceiling Tiles	None identified within the Residence Building.	N/A	N/A	N/A
Glued-on Acoustic Ceiling Tiles	None identified within the Residence Building.	N/A	N/A	N/A
Transite Ceiling Panels	None identified within the Residence Building.	N/A	N/A	N/A
Flooring	Location/Description	Cond.	Est. Quantity	Friability
Vinyl Floor Tiles	Vinyl floor tiles present within the Residence Building have been newly installed, therefore they are not suspected to contain asbestos.	N/A	N/A	N/A
Vinyl Sheet Flooring	Vinyl sheet flooring observed within the building was sampled by SEL and found not to contain asbestos.	N/A	N/A	N/A
Asbestos Cement Products	Location/Description	Cond.	Est. Quantity	Friability
Piping	None identified within the Residence Building.	N/A	N/A	N/A
Roofing, Siding, Wallboard	None identified within the Residence Building.	N/A	N/A	N/A
Other Cement Products	None identified within the Residence Building.	N/A	N/A	N/A
Misc. Materials	Location/Description	Cond.	Est. Quantity	Friability
Caulking	Caulking was previously sampled by Pichin and found not to contain asbestos.	N/A	N/A	N/A
Other Materials	Other materials observed within the investigated area(s) that are suspected or previously confirmed to be asbestos-containing includes roofing felts, window caulking, fire door cores, hard textile breaker switch gear within electrical components. Bulk sampling was not conducted to verify asbestos content of these materials so as not compromise the integrity of the systems which they are a part of. However, based on the age of the materials they should be assumed to be asbestos-containing until proven otherwise.	N/D	N/D	N/D

7.0 CONCLUSIONS & RECOMMENDATIONS

Friable Asbestos – Containing Materials

Accessible “friable” asbestos-containing materials (ACM) are present throughout this facility in the form of mechanical pipe insulation, parging insulation on mechanical pipes, vinyl sheet flooring, and plaster finish. Please refer to the above noted wing by wing summary and the project drawings for approximate locations.

Friable ACM noted to be in POOR to FAIR condition should be repaired and/or removed in accordance with Ontario Regulation 278/05 - the Regulation respecting Asbestos on Construction Projects and in Buildings and Repair Operations, as made under the Occupational Health & Safety Act. Friable asbestos-containing mechanical insulation in GOOD condition, inaccessible material, or non-friable material, such as VAT and transite board, can remain in place until major system upgrading, renovations, or maintenance occurs which could result in the disturbance of such material. ACM in good condition can be maintained in its current condition until such time that this material will be disturbed (ie: renovations or maintenance work).

Asbestos-containing pipe and fitting insulation in good condition that is easily accessible may be removed following Type 2 Glove-bag removal procedures as outlined in Ontario Regulation 278/05 - the Regulation respecting Asbestos on Construction Projects and in Buildings and Repair Operations, as made under the Occupational Health & Safety Act. Pipe and fitting insulation in poor or fair condition may have to be removed following Type 3 asbestos abatement procedures as outlined in Ontario Regulation 278/05.

Current regulations require regular inspections, at least annually (recommended) and the record must be updated yearly of all areas identified as containing asbestos materials. Any damaged or exposed items noted should be repaired or removed under the Asbestos Management Plan’s Operations and Maintenance program.

Non-Friable Asbestos – containing Materials

Non-friable asbestos - containing vinyl floor tile, lay-in ceiling tile, and transite board are present within select areas of the facility. Please refer to the above noted wing by wing summary and the project drawings for approximate locations.

Non-friable ACM noted to be in POOR to FAIR condition should be repaired and/or removed in accordance with Ontario Regulation 278/05 - the Regulation respecting Asbestos on Construction Projects and in Buildings and Repair Operations, as made under the Occupational Health & Safety Act.

Asbestos removal work should be performed by a competent and qualified asbestos abatement contractor. It is recommended that all asbestos related work be subjected to inspection and air monitoring to ensure building occupants are safe from exposure.

Asbestos abatement work must be performed as outlined in Ontario Regulation 278/05. Asbestos-containing waste must be handled and disposed of according to Ontario Regulation 347, amended to O. Reg. 395/07 - General – Waste Management.

Regulation 278/05 requires regular inspections, at least annually, of all areas identified as having asbestos-containing materials. Any damaged or exposed items noted should be repaired or removed under the Operations and Maintenance program of the building's Asbestos Management Plan.

8.0 LIMITATIONS

The information and recommendations detailed in this report were carried out by trained professional and technical staff in accordance with generally accepted environmental and industrial hygiene work practices and procedures. Recommendations provided in this report have been generated in accordance with current regulations, accepted industry guidelines and practices. These regulations, guidelines and practices are considered acceptable as of the date of this report.

In preparation of this report, Safetech Environmental Limited (SEL) relied on information including testing services provided by independent laboratories. Except as expressly set out in this report, SEL has not made any independent verification of this information provided by independent entities. The collection of samples at the location noted was consistent with the scope of work agreed-upon with the person or entity to whom this report is addressed and the information obtained concerning prior site investigations. As conditions between samples may vary, the potential remains for the presence of unknown additional contaminants for which there were no known indicators. Conclusions are based on site conditions at the time of inspection and can only be extrapolated to an undefined limited area around inspected locations. The extent of the limited area depends on building construction and conditions. SEL cannot warrant against undiscovered environmental liabilities. If any information becomes available that differs from the findings in this report, we request that we be notified immediately to reassess the conclusions provided herein.

This report has been prepared for the sole use of the person or entity to who it is addressed. No other person or entity is entitled to use or rely upon this report without the express written consent of Safetech Environmental Limited and the person or entity to who it is addressed. Any use that a third party makes of this report, or any reliance based on conclusions and recommendations made, are the responsibility of such third parties. SEL accepts no responsibility for damages suffered by third parties as a result of actions based on this report.

APPENDIX I
Laboratory Certificates of Analysis/SEL Historical Samples

**EMSL Canada Inc.**

10 Falconer Drive, Unit #3 Mississauga, ON L5N 3L8

Phone: 289-997-4602

Fax: (289) 997-4607

Web: <http://www.emsl.com>Email: torontolab@emsl.com

Attn: Daniel Daloisio
 Safetech Environmental Limited
 3045 Southcreek Road
 Unit 14
 Mississauga, ON L4X 2X7
Fax: (905) 624-4306 **Phone:** (905) 624-2722
Proj: 101511

EMSL Order: 551100140
Customer ID: 55SELI62
Collected: 1/19/2011 3:44:00PM
Received: 1/19/2011

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Client Sample ID: S-01A **Lab Sample ID:** 551100140-0001
Sample Description: BLACK MASTIC ON CORK- EXTERIOR FACING WALLS'

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	1/19/2011	Black	0%	100%	None Detected	

Client Sample ID: S-01B **Lab Sample ID:** 551100140-0002
Sample Description: BLACK MASTIC ON CORK- EXTERIOR FACING WALLS'

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	1/19/2011	Black	0%	100%	None Detected	

Client Sample ID: S-01C **Lab Sample ID:** 551100140-0003
Sample Description: BLACK MASTIC ON CORK- EXTERIOR FACING WALLS'

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	1/19/2011	Black	0%	100%	None Detected	

Client Sample ID: S-02A **Lab Sample ID:** 551100140-0004
Sample Description: PLASTER WALL FINISH COAT- THROUGHOUT'

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	1/19/2011	Gray/White/Vari ous	0%	100%	None Detected	Both Layers Negative for Asbestos

Client Sample ID: S-02B **Lab Sample ID:** 551100140-0005
Sample Description: PLASTER WALL FINISH COAT- THROUGHOUT'

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	1/19/2011	White	0%	100%	None Detected	One Layer Present

Client Sample ID: S-02C **Lab Sample ID:** 551100140-0006
Sample Description: PLASTER WALL FINISH COAT- THROUGHOUT'

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	1/19/2011	White	0%	100%	None Detected	One Layer Present

Client Sample ID: S-02D **Lab Sample ID:** 551100140-0007
Sample Description: PLASTER WALL FINISH COAT- THROUGHOUT'

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	1/19/2011	White	0%	100%	None Detected	One Layer Present

Client Sample ID: S-02E **Lab Sample ID:** 551100140-0008
Sample Description: PLASTER WALL FINISH COAT- THROUGHOUT'

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	1/19/2011	White	0%	100%	None Detected	One Layer Present



EMSL Canada Inc.

10 Falconer Drive, Unit #3 Mississauga, ON L5N 3L8

Phone: 289-997-4602 Fax: (289) 997-4607 Web: <http://www.emsl.com> Email: torontolab@emsl.com

Attn: Daniel Dalosio
Safetech Environmental Limited
3045 Southcreek Road
Unit 14
Mississauga, ON L4X 2X7
Proj: 101511

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Client Sample ID: **S-02F** Lab Sample ID: 551100140-0009
Sample Description: PLASTER WALL FINISH COAT- THROUGHOUT'

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	1/19/2011	Gray/White/Vari ous	0%	100%	None Detected	Both Layers Negative for Asbestos

Client Sample ID: **S-02G** Lab Sample ID: 551100140-0010
Sample Description: PLASTER WALL FINISH COAT- THROUGHOUT'

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	1/19/2011	Gray/White/Vari ous	0%	100%	None Detected	Both Layers Negative for Asbestos

Client Sample ID: **S-03A** Lab Sample ID: 551100140-0011
Sample Description: TERRAZZO FLOORING'

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	1/19/2011	Tan/White/Vario us	0%	100%	None Detected	

Client Sample ID: **S-03B** Lab Sample ID: 551100140-0012
Sample Description: TERRAZZO FLOORING'

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	1/19/2011	Tan/White/Vario us	0%	100%	None Detected	

Client Sample ID: **S-03C** Lab Sample ID: 551100140-0013
Sample Description: TERRAZZO FLOORING'

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	1/19/2011	Tan/White	0%	100%	None Detected	

Client Sample ID: **S-04A** Lab Sample ID: 551100140-0014
Sample Description: TERRACOTTA BRICK CEMENT BIND'

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	1/19/2011	Gray/Various	0%	100%	None Detected	

Client Sample ID: **S-04B** Lab Sample ID: 551100140-0015
Sample Description: TERRACOTTA BRICK CEMENT BIND'

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	1/19/2011	Gray/Various	0%	100%	None Detected	

Client Sample ID: **S-04C** Lab Sample ID: 551100140-0016
Sample Description: TERRACOTTA BRICK CEMENT BIND'

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	1/19/2011	Gray/White	0%	100%	None Detected	

Client Sample ID: **S-05A** Lab Sample ID: 551100140-0017
Sample Description: CEMENTITIOUS SKIM COAT ON CONCRETE WALL'

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	1/19/2011	Gray/White	0%	100%	None Detected	

Client Sample ID: **S-05B** Lab Sample ID: 551100140-0018
Sample Description: CEMENTITIOUS SKIM COAT ON CONCRETE WALL'

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	1/19/2011	Gray/White	0%	100%	None Detected	



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Phone: 289-997-4602 Fax: (289) 997-4607 Web: <http://www.emsl.com> Email: torontolab@emsl.com

Attn: Daniel Daloisio
Safetech Environmental Limited
3045 Southcreek Road
Unit 14
Mississauga, ON L4X 2X7
Proj: 101511

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Client Sample ID: **S-05C** Lab Sample ID: 551100140-0019
Sample Description: CEMENTITIOUS SKIM COAT ON CONCRETE WALL'

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	1/19/2011	Gray/White	0%	100%	None Detected	

Client Sample ID: **S-05D** Lab Sample ID: 551100140-0020
Sample Description: CEMENTITIOUS SKIM COAT ON CONCRETE WALL'

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	1/19/2011	Gray/White	0%	100%	None Detected	

Client Sample ID: **S-05E** Lab Sample ID: 551100140-0021
Sample Description: CEMENTITIOUS SKIM COAT ON CONCRETE WALL'

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	1/19/2011	Gray/White	0%	100%	None Detected	

Client Sample ID: **S-06A** Lab Sample ID: 551100140-0022
Sample Description: VINYL SHEET FLOORING- ROOM S-125'

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	1/19/2011	Gray/Tan/Various	28%	72%	None Detected	

Client Sample ID: **S-06B** Lab Sample ID: 551100140-0023
Sample Description: VINYL SHEET FLOORING- ROOM S-125'

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	1/19/2011	Gray/Tan/Various	33%	67%	None Detected	

Client Sample ID: **S-06C** Lab Sample ID: 551100140-0024
Sample Description: VINYL SHEET FLOORING- ROOM S-125'

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	1/19/2011	Gray/Tan/Various	30%	70%	None Detected	

Client Sample ID: **S-07A** Lab Sample ID: 551100140-0025
Sample Description: PIPE FITTING INSULATION- ROOM S-110'

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	1/19/2011	Gray/White	0%	65%	35% Chrysotile	

Client Sample ID: **S-07B** Lab Sample ID: 551100140-0026
Sample Description: PIPE FITTING INSULATION- ROOM S-110'

TEST	Analyzed	Color	Non-Asbestos		Asbestos	Comment
	Date		Fibrous	Non-Fibrous		
PLM	1/19/2011		Stop Positive (Not Analyzed)			

Client Sample ID: **S-07C** Lab Sample ID: 551100140-0027
Sample Description: PIPE FITTING INSULATION- ROOM S-110'

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	1/19/2011		Stop Positive (Not Analyzed)			

Client Sample ID: **S-08A** Lab Sample ID: 551100140-0028
Sample Description: CELLULOSE PIEP STRAIGHT INSULATION- ROOM S-110'

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	1/19/2011	Brown/Tan/Black	65%	35%	None Detected	



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3045 Southcreek Road
Unit 14
Mississauga, ON L4X 2X7
Proj: 101511

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Client Sample ID: **S-08B** Lab Sample ID: 551100140-0029
Sample Description: CELLULOSE PIEP STRAIGHT INSULATION- ROOM S-110'

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	1/19/2011	Brown/Tan/Black	60%	40%	None Detected	

Client Sample ID: **S-08C** Lab Sample ID: 551100140-0030
Sample Description: CELLULOSE PIEP STRAIGHT INSULATION- ROOM S-110'

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	1/19/2011	Brown/Tan/Black	60%	40%	None Detected	

Client Sample ID: **S-09A** Lab Sample ID: 551100140-0031
Sample Description: DRYWALL JOINT COMPOUND- ROOM S-108 ABOVE BULKHEAD'

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	1/19/2011	White	0%	100%	None Detected	

Client Sample ID: **S-09B** Lab Sample ID: 551100140-0032
Sample Description: DRYWALL JOINT COMPOUND- ROOM S-108 ABOVE BULKHEAD'

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	1/19/2011	White	0%	100%	None Detected	

Client Sample ID: **S-09C** Lab Sample ID: 551100140-0033
Sample Description: DRYWALL JOINT COMPOUND- ROOM S-108 ABOVE BULKHEAD'

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	1/19/2011	White	0%	100%	None Detected	

Client Sample ID: **S-10A** Lab Sample ID: 551100140-0034
Sample Description: 2X2 CEILING TILE, FISHER, CORRIDOR'

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	1/19/2011	Gray/Tan/White	75%	25%	None Detected	

Client Sample ID: **S-10B** Lab Sample ID: 551100140-0035
Sample Description: 2X2 CEILING TILE, FISHER, CORRIDOR'

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	1/19/2011	Gray/Tan/White	70%	30%	None Detected	

Client Sample ID: **S-10C** Lab Sample ID: 551100140-0036
Sample Description: 2X2 CEILING TILE, FISHER, CORRIDOR'

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	1/19/2011	Gray/Tan/White	70%	30%	None Detected	

Client Sample ID: **S-11A** Lab Sample ID: 551100140-0037
Sample Description: CERAMIC WALL TILE BACKING'

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	1/19/2011	Gray/Various	0%	100%	None Detected	

Client Sample ID: **S-11B** Lab Sample ID: 551100140-0038
Sample Description: CERAMIC WALL TILE BACKING'

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	1/19/2011	Gray/Various	0%	100%	None Detected	



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Proj: 101511

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Client Sample ID: **S-11C**

Lab Sample ID: 551100140-0039

Sample Description: CERAMIC WALL TILE BACKING

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	1/19/2011	Gray/Various	0%	100%	None Detected	

Initial report from: 01/20/2011 11:38:40

Analyst(s)

Kevin Pang (37)

Kevin Pang
or other Approved Signatory

Any questions please contact Kevin Pang.

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Samples analyzed by EMSL Canada Inc. 10 Falconer Drive, Unit #3, Mississauga ON NVLAP Lab Code 200877-0



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EMSL Canada Order 551201774
Customer ID: 55SELI62
Customer PO: 121412
Project ID:

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Collected:
Received: 5/02/2012
Analyzed: 5/04/2012
Proj: LAKERIDGE BOWMANVILLE - EMERGENCY DEPT. RENOVATIONS

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Client Sample ID: 01A **Lab Sample ID:** 551201774-0001
Sample Description: VINYL SHEET FLOORING

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	5/04/2012	Gray/White	0%	100%	None Detected	

Client Sample ID: 01B **Lab Sample ID:** 551201774-0002
Sample Description: VINYL SHEET FLOORING

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	5/04/2012	Gray/White	0%	100%	None Detected	

Client Sample ID: 01C **Lab Sample ID:** 551201774-0003
Sample Description: VINYL SHEET FLOORING

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	5/04/2012	Gray/White	0%	100%	None Detected	

Client Sample ID: 01D **Lab Sample ID:** 551201774-0004
Sample Description: VINYL SHEET FLOORING

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	5/04/2012	Gray/White	0%	100%	None Detected	

Client Sample ID: 01E **Lab Sample ID:** 551201774-0005
Sample Description: VINYL SHEET FLOORING

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	5/04/2012	Gray/White	0%	100%	None Detected	

Client Sample ID: 01F **Lab Sample ID:** 551201774-0006
Sample Description: VINYL SHEET FLOORING

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	5/04/2012	Gray/Tan/Various	0%	100%	None Detected	

Client Sample ID: 01G **Lab Sample ID:** 551201774-0007
Sample Description: VINYL SHEET FLOORING

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	5/04/2012	Gray/Tan/Various	0%	100%	None Detected	



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EMSL Canada Order 551201774
Customer ID: 55SELI62
Customer PO: 121412
Project ID:

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Client Sample ID: 02A **Lab Sample ID:** 551201774-0008
Sample Description: DRYWALL JOINT COMPOUND

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	5/04/2012	White	0%	100%	None Detected	

Client Sample ID: 02B **Lab Sample ID:** 551201774-0009
Sample Description: DRYWALL JOINT COMPOUND

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	5/04/2012		0%	100%	None Detected	

Client Sample ID: 02C **Lab Sample ID:** 551201774-0010
Sample Description: DRYWALL JOINT COMPOUND

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	5/04/2012	White	0%	100%	None Detected	

Client Sample ID: 02D **Lab Sample ID:** 551201774-0011
Sample Description: DRYWALL JOINT COMPOUND

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	5/04/2012	White	0%	100%	None Detected	

Client Sample ID: 02E **Lab Sample ID:** 551201774-0012
Sample Description: DRYWALL JOINT COMPOUND

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	5/04/2012	White	0%	100%	None Detected	

Client Sample ID: 02F **Lab Sample ID:** 551201774-0013
Sample Description: DRYWALL JOINT COMPOUND

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	5/04/2012	White	0%	100%	None Detected	

Client Sample ID: 02G **Lab Sample ID:** 551201774-0014
Sample Description: DRYWALL JOINT COMPOUND

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	5/04/2012	White	0%	100%	None Detected	

Client Sample ID: 03A **Lab Sample ID:** 551201774-0015
Sample Description: 2X4 RANDOM PINHOLE CEILING TILE

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	5/04/2012	Tan/White	80%	20%	None Detected	



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EMSL Canada Order 551201774
Customer ID: 55SELI62
Customer PO: 121412
Project ID:

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Client Sample ID: 03B **Lab Sample ID:** 551201774-0016
Sample Description: 2X4 RANDOM PINHOLE CEILING TILE

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	5/04/2012	Tan/White	80%	20%	None Detected	

Client Sample ID: 03C **Lab Sample ID:** 551201774-0017
Sample Description: 2X4 RANDOM PINHOLE CEILING TILE

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	5/04/2012	Tan/White	80%	20%	None Detected	

Client Sample ID: 04A **Lab Sample ID:** 551201774-0018
Sample Description: PLASTER WALL

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	5/04/2012	Gray/White	0%	100%	None Detected	

Client Sample ID: 04B **Lab Sample ID:** 551201774-0019
Sample Description: PLASTER WALL

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	5/04/2012	Gray/White	0%	100%	None Detected	

Client Sample ID: 04C **Lab Sample ID:** 551201774-0020
Sample Description: PLASTER WALL

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	5/04/2012	Gray/White	0%	100%	None Detected	

Client Sample ID: 04D **Lab Sample ID:** 551201774-0021
Sample Description: PLASTER WALL

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	5/04/2012	Gray/White	0%	100%	None Detected	

Client Sample ID: 04E **Lab Sample ID:** 551201774-0022
Sample Description: PLASTER WALL

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	5/04/2012	Gray/White	0%	100%	None Detected	

Client Sample ID: 04F **Lab Sample ID:** 551201774-0023
Sample Description: PLASTER WALL

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	5/04/2012	Gray/White	0%	100%	None Detected	



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EMSL Canada Order 551201774
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Project ID:

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Client Sample ID: 04G **Lab Sample ID:** 551201774-0024
Sample Description: PLASTER WALL

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	5/04/2012	White	0%	100%	None Detected	

Client Sample ID: 05A **Lab Sample ID:** 551201774-0025
Sample Description: BLACK MASTIC ON CORK FINISH

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	5/04/2012	Black	0%	96%	4% Chrysotile	

Client Sample ID: 05B **Lab Sample ID:** 551201774-0026
Sample Description: BLACK MASTIC ON CORK FINISH

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	5/04/2012		Stop Positive (Not Analyzed)			

Client Sample ID: 05C **Lab Sample ID:** 551201774-0027
Sample Description: BLACK MASTIC ON CORK FINISH

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	5/04/2012		Stop Positive (Not Analyzed)			

Client Sample ID: 06A **Lab Sample ID:** 551201774-0028
Sample Description: HVAC INSULATION

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	5/04/2012	Yellow	99%	1%	None Detected	

Client Sample ID: 06B **Lab Sample ID:** 551201774-0029
Sample Description: HVAC INSULATION

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	5/04/2012	Yellow	99%	1%	None Detected	

Client Sample ID: 06C **Lab Sample ID:** 551201774-0030
Sample Description: HVAC INSULATION

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	5/04/2012	Yellow	99%	1%	None Detected	

Client Sample ID: 07A **Lab Sample ID:** 551201774-0031
Sample Description: PIPE INSULATION

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	5/04/2012	Silver/Yellow/Beige	70%	30%	None Detected	



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Customer ID: 55SELI62
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Project ID:

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Client Sample ID: 07B **Lab Sample ID:** 551201774-0032
Sample Description: PIPE INSULATION

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	5/04/2012	Silver/Yellow/Beige	70%	30%	None Detected	

Client Sample ID: 07C **Lab Sample ID:** 551201774-0033
Sample Description: PIPE INSULATION

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	5/04/2012	White/Silver/Yellow	60%	40%	None Detected	

Client Sample ID: 08A **Lab Sample ID:** 551201774-0034
Sample Description: PIPE FITTING INSULATION

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	5/04/2012	Silver/Yellow/Beige	50%	50%	None Detected	

Client Sample ID: 08B **Lab Sample ID:** 551201774-0035
Sample Description: PIPE FITTING INSULATION

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	5/04/2012	Yellow	99%	1%	None Detected	

Client Sample ID: 08C **Lab Sample ID:** 551201774-0036
Sample Description: PIPE FITTING INSULATION

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	5/04/2012	Yellow	99%	1%	None Detected	

Client Sample ID: 09A **Lab Sample ID:** 551201774-0037
Sample Description: 2X4 MULTI-PINHOLE CEILING TILE

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	5/04/2012	Tan/White	0%	100%	None Detected	

Client Sample ID: 09B **Lab Sample ID:** 551201774-0038
Sample Description: 2X4 MULTI-PINHOLE CEILING TILE

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	5/04/2012	Tan/White	80%	20%	None Detected	

Client Sample ID: 09C **Lab Sample ID:** 551201774-0039
Sample Description: 2X4 MULTI-PINHOLE CEILING TILE

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	5/04/2012	Tan/White	80%	20%	None Detected	



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EMSL Canada Order 551201774
Customer ID: 55SELI62
Customer PO: 121412
Project ID:

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Analyst(s)

Lisa Podzyhun	PLM	(10)
Matthew Davis	PLM	(27)

Kevin Pang
or other Approved Signatory

Any questions please contact Kevin Pang.

None Detected = <0.5%. EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. Samples received in good condition unless otherwise noted. This report must not be used to claim product endorsement by NVLAP of any agency of the U.S. Government.

Samples analyzed by EMSL Canada Inc. Mississauga, ON NVLAP Lab Code 200877-0

Initial report from: 05/04/2012 17:06:43



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EMSL Canada Order 551204201
Customer ID: 55SELI62
Customer PO: 150112
Project ID:

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Phone: (905) 624-2722
Fax: (905) 624-4306
Collected:
Received: 9/14/2012
Analyzed: 9/15/2012

Proj: 150112 BOWMANVILLE

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Client Sample ID: 1A **Lab Sample ID:** 551204201-0001
Sample Description: HOT WATER TANK INSULATION - NG01

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/15/2012	Gray	5%	95%	None Detected	

Client Sample ID: 1B **Lab Sample ID:** 551204201-0002
Sample Description: HOT WATER TANK INSULATION - NG01

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/15/2012	Gray	5%	95%	None Detected	

Client Sample ID: 1C **Lab Sample ID:** 551204201-0003
Sample Description: HOT WATER TANK INSULATION - NG01

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/15/2012	/hite/Various/Yello	60%	40%	None Detected	

Client Sample ID: 2A **Lab Sample ID:** 551204201-0004
Sample Description: PIPE FITTING - NG 16

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/15/2012	Gray	0%	50%	50% Chrysotile	

Client Sample ID: 3A **Lab Sample ID:** 551204201-0005
Sample Description: AIRCELL PIPE INSULATION - NG 16

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/15/2012	Gray	0%	75%	25% Chrysotile	

Client Sample ID: 4A **Lab Sample ID:** 551204201-0006
Sample Description: PIPE INSULATION DEBRIS - SOUTH WING BASEMENT SHAFT

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/15/2012	Brown	80%	20%	None Detected	

Client Sample ID: 4B **Lab Sample ID:** 551204201-0007
Sample Description: PIPE INSULATION - BASEMENT CORRIDOR NORTH WING

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/15/2012	rown/Various/Blac	65%	35%	None Detected	



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EMSL Canada Order 551204201
Customer ID: 55SELI62
Customer PO: 150112
Project ID:

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Client Sample ID: 4C		Lab Sample ID: 551204201-0008				
Sample Description: PIPE INSULATION - COLD WATER LINE CRAWL SPACE						
TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/15/2012	Brown/Tan/Various	75%	25%	None Detected	
Client Sample ID: 5A		Lab Sample ID: 551204201-0009				
Sample Description: T-JOINT FITTING INSULATION - COLD WATER LINE BELOW/CONDENSATE TANK - BOILER ROOM B						
TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/15/2012	Gray	15%	85%	None Detected	
Client Sample ID: 5B		Lab Sample ID: 551204201-0010				
Sample Description: T-JOINT FITTING INSULATION - COLD WATER LINE BELOW/CONDENSATE TANK - BOILER ROOM B						
TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/15/2012	Gray	15%	85%	None Detected	
Client Sample ID: 5C		Lab Sample ID: 551204201-0011				
Sample Description: T-JOINT FITTING INSULATION - COLD WATER LINE BELOW/CONDENSATE TANK - BOILER ROOM B						
TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/15/2012	Gray/Tan/Various	20%	80%	None Detected	
Client Sample ID: 6A		Lab Sample ID: 551204201-0012				
Sample Description: FLEX DUCT CONNECTOR - CRAWL SPACE						
TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/15/2012	Brown/Various	80%	20%	None Detected	
Client Sample ID: 6B		Lab Sample ID: 551204201-0013				
Sample Description: FLEX DUCT CONNECTOR - CRAWL SPACE						
TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/15/2012	Brown/Various	80%	20%	None Detected	
Client Sample ID: 6C		Lab Sample ID: 551204201-0014				
Sample Description: FLEX DUCT CONNECTOR - CRAWL SPACE						
TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/15/2012	Gray/White/Various	85%	15%	None Detected	
Client Sample ID: 7A		Lab Sample ID: 551204201-0015				
Sample Description: FLOOR LEVELING COMPOUND - S 221						
TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/15/2012	Gray	0%	100%	None Detected	



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EMSL Canada Order 551204201
Customer ID: 55SELI62
Customer PO: 150112
Project ID:

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Client Sample ID: 7B Lab Sample ID: 551204201-0016

Sample Description: FLOOR LEVELING COMPOUND - S 221

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/15/2012	Gray	0%	100%	None Detected	

Client Sample ID: 7C Lab Sample ID: 551204201-0017

Sample Description: FLOOR LEVELING COMPOUND - S 221

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/15/2012	Gray	0%	100%	None Detected	

Client Sample ID: 8A Lab Sample ID: 551204201-0018

Sample Description: 2 x 4 PINHOLE CEILING TILE - NG 04

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/15/2012	Gray/White	70%	30%	None Detected	

Client Sample ID: 8B Lab Sample ID: 551204201-0019

Sample Description: 2 x 4 PINHOLE CEILING TILE - NG 16

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/15/2012	Gray/White	70%	30%	None Detected	

Client Sample ID: 8C Lab Sample ID: 551204201-0020

Sample Description: 2 x 4 PINHOLE CEILING TILE - BASEMENT CORRIDOR/NORTH WING

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/15/2012	Gray/White/Various	80%	20%	None Detected	

Client Sample ID: 9A Lab Sample ID: 551204201-0021

Sample Description: 2 x 2 FISSURE CEILING TILE - NG 15

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/15/2012	Gray/White	80%	20%	None Detected	

Client Sample ID: 9B Lab Sample ID: 551204201-0022

Sample Description: 2 x 2 FISSURE CEILING TILE - NG 15

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/15/2012	Gray/White	80%	20%	None Detected	

Client Sample ID: 9C Lab Sample ID: 551204201-0023

Sample Description: 2 x 2 FISSURE CEILING TILE - NG 15

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/15/2012	Gray/White/Various	75%	25%	None Detected	



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Customer PO: 150112
Project ID:

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Client Sample ID:		10A		Lab Sample ID:			551204201-0024	
Sample Description:		BROWN MASTIC FROM 1 x 1 CEILING TILES - NG 28						
TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment		
			Fibrous	Non-Fibrous				
PLM	9/15/2012	Brown	0%	94%	6% Chrysotile			
Client Sample ID:		10B		Lab Sample ID:			551204201-0025	
Sample Description:		BROWN MASTIC FROM 1 x 1 CEILING TILES - NG 28						
TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment		
			Fibrous	Non-Fibrous				
PLM	9/15/2012			Stop Positive (Not Analyzed)				
Client Sample ID:		10C		Lab Sample ID:			551204201-0026	
Sample Description:		BROWN MASTIC FROM 1 x 1 CEILING TILES - NG 28						
TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment		
			Fibrous	Non-Fibrous				
PLM	9/15/2012			Stop Positive (Not Analyzed)				
Client Sample ID:		11A		Lab Sample ID:			551204201-0027	
Sample Description:		PLASTER CEILING - NG 28						
TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment		
			Fibrous	Non-Fibrous				
PLM	9/15/2012	Gray	0%	100%	None Detected			
Client Sample ID:		11B		Lab Sample ID:			551204201-0028	
Sample Description:		PLASTER CEILING - NG 34						
TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment		
			Fibrous	Non-Fibrous				
PLM	9/15/2012	Gray/White	0%	100%	None Detected			
Client Sample ID:		11C		Lab Sample ID:			551204201-0029	
Sample Description:		PLASTER WALL - NG 01 EXTERIOR WALL						
TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment		
			Fibrous	Non-Fibrous				
PLM	9/15/2012	Gray/White/Various	0%	100%	None Detected			
Client Sample ID:		12A		Lab Sample ID:			551204201-0030	
Sample Description:		TEXTURED PLASTER CEILING - NG 01						
TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment		
			Fibrous	Non-Fibrous				
PLM	9/15/2012	Gray	0%	100%	None Detected			
Client Sample ID:		12B		Lab Sample ID:			551204201-0031	
Sample Description:		TEXTURED PLASTER CEILING - NG 01						
TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment		
			Fibrous	Non-Fibrous				
PLM	9/15/2012	Gray/White	0%	100%	None Detected			



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Customer ID: 55SELI62
Customer PO: 150112
Project ID:

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Client Sample ID: 12C

Lab Sample ID: 551204201-0032

Sample Description: TEXTURED PLASTER CEILING - NG 39

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/15/2012	Gray/White/Various	0%	100%	None Detected	

Analyst(s)

Alice Feng	PLM	(21)
Kevin Pang	PLM	(9)

Kevin Pang
or other Approved Signatory

Any questions please contact Kevin Pang.

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Samples analyzed by EMSL Canada Inc. Mississauga, ON NVLAP Lab Code 200877-0

Initial report from: 09/15/2012 16:51:21



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EMSL Canada Order 551204693
Customer ID: 55SELI62
Customer PO:
Project ID:

Attn: Paul Valenti
Safetech Environmental
3045 Southcreek Road
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Mississauga, ON L4X 2X7

Phone: (905) 624-2722
Fax: (905) 624-4306
Collected:
Received: 10/12/2012
Analyzed: 10/15/2012

Proj: BOWMANVILLE PANTRY

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Client Sample ID: 1A **Lab Sample ID:** 551204693-0001

Sample Description: BEIGE VINYL SHEET FLOOR- S205

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/15/2012	Gray/Beige	25%	75%	None Detected	

Client Sample ID: 1B **Lab Sample ID:** 551204693-0002

Sample Description: BEIGE VINYL SHEET FLOOR- S205

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/15/2012	Gray/Beige	25%	75%	None Detected	

Client Sample ID: 1C **Lab Sample ID:** 551204693-0003

Sample Description: BEIGE VINYL SHEET FLOOR- S205

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/15/2012	Gray/Various	50%	50%	None Detected	

Client Sample ID: 2A **Lab Sample ID:** 551204693-0004

Sample Description: DRYWALL JOINT COMPOUND- S205

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/15/2012	White	0%	100%	None Detected	

Client Sample ID: 2B **Lab Sample ID:** 551204693-0005

Sample Description: DRYWALL JOINT COMPOUND- S205

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/15/2012	White	0%	100%	None Detected	

Client Sample ID: 2C **Lab Sample ID:** 551204693-0006

Sample Description: DRYWALL JOINT COMPOUND- S205

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/15/2012	White	0%	100%	None Detected	

Client Sample ID: 3A **Lab Sample ID:** 551204693-0007

Sample Description: 2X4 PINHOLE CEILING TILE- S206

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/15/2012	Tan/White	80%	20%	None Detected	



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EMSL Canada Order 551204693
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Customer PO:
Project ID:

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Client Sample ID: 3B **Lab Sample ID:** 551204693-0008
Sample Description: 2X4 PINHOLE CEILING TILE- S206

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/15/2012	Tan/White	80%	20%	None Detected	

Client Sample ID: 3C **Lab Sample ID:** 551204693-0009
Sample Description: 2X4 PINHOLE CEILING TILE- S205

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/15/2012	Gray	75%	25%	None Detected	

Client Sample ID: 4A **Lab Sample ID:** 551204693-0010
Sample Description: CORK BOARD W/ BLACK TAR- S206

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/15/2012	Brown/Black	0%	100%	None Detected	

Client Sample ID: 4B **Lab Sample ID:** 551204693-0011
Sample Description: CORK BOARD W/ BLACK TAR- S206

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/15/2012	Brown/Black	0%	100%	None Detected	

Client Sample ID: 4C **Lab Sample ID:** 551204693-0012
Sample Description: CORK BOARD W/ BLACK TAR- S206

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/15/2012	Brown/Black	0%	100%	None Detected	

Client Sample ID: 5A **Lab Sample ID:** 551204693-0013
Sample Description: PLASTER WALL- S206

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/15/2012	Gray/White	0%	100%	None Detected	

Client Sample ID: 5B **Lab Sample ID:** 551204693-0014
Sample Description: PLASTER WALL- S206

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/15/2012	Gray/White	0%	100%	None Detected	

Client Sample ID: 5C **Lab Sample ID:** 551204693-0015
Sample Description: PLASTER WALL- S206

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/15/2012	Gray/White/Various	0%	100%	None Detected	



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Customer ID: 55SELI62
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Project ID:

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Analyst(s)

Matthew Davis	PLM	(10)
Merriam Haffar	PLM	(5)

Kevin Pang
or other Approved Signatory

Any questions please contact Kevin Pang.

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Initial report from: 10/15/2012 13:45:24



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EMSL Canada Order 551302334
Customer ID: 55SELI62
Customer PO:
Project ID:

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Safetech Environmental
3045 Southcreek Road
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Mississauga, ON L4X 2X7

Phone: (905) 624-2722
Fax: (905) 624-4306
Collected:
Received: 4/17/2013
Analyzed: 4/17/2013

Proj: 124613- LAKERIDGE BOWMANVILLE E2 MED/DICT

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Client Sample ID: 1A **Lab Sample ID:** 551302334-0001
Sample Description: E2-220 DRYWALL JOINT COMPOUND

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	4/17/2013	White	0%	100%	None Detected	

Client Sample ID: 1B **Lab Sample ID:** 551302334-0002
Sample Description: E2-220 DRYWALL JOINT COMPOUND

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	4/17/2013	White	0%	100%	None Detected	

Client Sample ID: 1C **Lab Sample ID:** 551302334-0003
Sample Description: E2-218 DRYWALL JOINT COMPOUND

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	4/17/2013	White	0%	100%	None Detected	

Client Sample ID: 2A **Lab Sample ID:** 551302334-0004
Sample Description: E2-220 VINYL SHEET FLOORING

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	4/17/2013	Gray/Various	25%	75%	None Detected	

Client Sample ID: 2B **Lab Sample ID:** 551302334-0005
Sample Description: E2-218 VINYL SHEET FLOORING

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	4/17/2013	Gray/White	30%	70%	None Detected	

Client Sample ID: 2C **Lab Sample ID:** 551302334-0006
Sample Description: E2-218 VINYL SHEET FLOORING

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	4/17/2013	Gray	25%	75%	None Detected	



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EMSL Canada Order 551302334
Customer ID: 55SELI62
Customer PO:
Project ID:

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Analyst(s)

Jon Delos Santos	PLM	(2)
Merriam Haffar	PLM	(4)

Kevin Pang
or other Approved Signatory

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Initial report from: 04/17/2013 22:17:17



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EMSL Canada Order 551303376
Customer ID: 55SELI62
Customer PO: 138413
Project ID:

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Safetech Environmental
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Mississauga, ON L4X 2X7

Phone: (905) 624-2722
Fax: (905) 624-4306
Collected:
Received: 5/31/2013
Analyzed: 5/31/2013

Proj: LRH BOWMANVILLE, SG01 / 138413

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Client Sample ID: 1 A **Lab Sample ID:** 551303376-0001
Sample Description: PIPE INSULATION (TAR)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	5/31/2013	Black	80%	20%	None Detected	

Client Sample ID: 1 B **Lab Sample ID:** 551303376-0002
Sample Description: PIPE INSULATION (TAR)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	5/31/2013	Black	80%	20%	None Detected	

Client Sample ID: 1 C **Lab Sample ID:** 551303376-0003
Sample Description: PIPE INSULATION (TAR)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	5/31/2013	Black	65%	35%	None Detected	

Client Sample ID: 2 A **Lab Sample ID:** 551303376-0004
Sample Description: PIPE INSULATIN (CELLULOSE)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	5/31/2013	Tan	90%	10%	None Detected	

Client Sample ID: 2 B **Lab Sample ID:** 551303376-0005
Sample Description: PIPE INSULATIN (CELLULOSE)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	5/31/2013	Tan	90%	10%	<1% Chrysotile	

Client Sample ID: 2 C **Lab Sample ID:** 551303376-0006
Sample Description: PIPE INSULATIN (CELLULOSE)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	5/31/2013	Brown	95%	5%	None Detected	

Client Sample ID: 3 A **Lab Sample ID:** 551303376-0007
Sample Description: MORTAR (BRICK AT PIPE PENTRATION)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	5/31/2013	Gray	0%	100%	None Detected	



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Customer ID: 55SELI62
Customer PO: 138413
Project ID:

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Client Sample ID: 3 B

Lab Sample ID: 551303376-0008

Sample Description: MORTAR (BRICK AT PIPE PENTRATION)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	5/31/2013		0%	100%	None Detected	

Client Sample ID: 3 C

Lab Sample ID: 551303376-0009

Sample Description: MORTAR (BRICK AT PIPE PENTRATION)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	5/31/2013	Gray	0%	100%	None Detected	

Analyst(s)

Alice Feng	PLM	(3)
Jon Delos Santos	PLM	(6)

Kevin Pang
or other Approved Signatory

Any questions please contact Kevin Pang.

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Initial report from: 05/31/2013 21:47:39



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EMSL Canada Order 551304834
Customer ID: 55SELI62
Customer PO:
Project ID:

Attn: James Green
Safetech Environmental
3045 Southcreek Road
Unit 14
Mississauga, ON L4X 2X7
Proj: LHR BOWMANVILLE SE19

Phone: (905) 624-2722
Fax: (905) 624-4306
Collected:
Received: 7/24/2013
Analyzed: 7/24/2013

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Client Sample ID: 1A **Lab Sample ID:** 551304834-0001
Sample Description: CAULKING

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	7/24/2013	Gray	0%	100%	None Detected	

Client Sample ID: 1B **Lab Sample ID:** 551304834-0002
Sample Description: CAULKING

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	7/24/2013	Gray	0%	100%	None Detected	

Client Sample ID: 1C **Lab Sample ID:** 551304834-0003
Sample Description: CAULKING

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	7/24/2013	Gray	0%	100%	None Detected	

Client Sample ID: 2A **Lab Sample ID:** 551304834-0004
Sample Description: PLASTER

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	7/24/2013	Gray	0%	97%	3% Chrysotile	

Client Sample ID: 2A TAR **Lab Sample ID:** 551304834-0004A
Sample Description: TAR

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	7/24/2013	Brown	0%	100%	None Detected	

Client Sample ID: 2B **Lab Sample ID:** 551304834-0005
Sample Description: PLASTER

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	7/24/2013					Stop Positive (Not Analyzed)

Client Sample ID: 2B TAR **Lab Sample ID:** 551304834-0005A
Sample Description: TAR

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	7/24/2013	Brown	0%	100%	None Detected	



EMSL Canada Inc.

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EMSL Canada Order 551304834
Customer ID: 55SELI62
Customer PO:
Project ID:

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Client Sample ID: 2C

Lab Sample ID: 551304834-0006

Sample Description: PLASTER

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	7/24/2013					Stop Positive (Not Analyzed)

Client Sample ID: 2C TAR

Lab Sample ID: 551304834-0006A

Sample Description: TAR

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	7/24/2013	Black	0%	100%	None Detected	

Client Sample ID: 3A

Lab Sample ID: 551304834-0007

Sample Description: MORTAR/PLASTER

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	7/24/2013	Gray	0%	100%	None Detected	

Client Sample ID: 3B

Lab Sample ID: 551304834-0008

Sample Description: MORTAR/PLASTER

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	7/24/2013		0%	100%	None Detected	

Client Sample ID: 3C

Lab Sample ID: 551304834-0009

Sample Description: MORTAR/PLASTER

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	7/24/2013	Gray	0%	100%	None Detected	

Analyst(s)

Alice Feng PLM (3)
Arabee Sathiaselam PLM (7)

Kevin Pang
or other Approved Signatory

Any questions please contact Kevin Pang.

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Samples analyzed by EMSL Canada Inc. Mississauga, ON NVLAP Lab Code 200877-0

Initial report from: 07/24/2013 20:24:36



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EMSL Canada Order 551406869
Customer ID: 55SELI62
Customer PO: 172414
Project ID:

Attn: Stephen Choi
Safetech Environmental
3045 Southcreek Road
Unit 14
Mississauga, ON L4X 2X7

Phone: (905) 624-2722
Fax: (905) 624-4306
Collected:
Received: 9/19/2014
Analyzed: 9/23/2014

Proj: LRH BOWMANVILLE BOILER ROOM

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Client Sample ID: 1A

Lab Sample ID: 551406869-0001

Sample Description: LRH BOWMANVILLE BOILER MORTAR

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/23/2014	White/Various/Black	0%	100%	None Detected	

Client Sample ID: 1B

Lab Sample ID: 551406869-0002

Sample Description: LRH BOWMANVILLE BOILER MORTAR

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/23/2014	White/Various/Black	0%	100%	None Detected	

Client Sample ID: 1C

Lab Sample ID: 551406869-0003

Sample Description: LRH BOWMANVILLE BOILER MORTAR

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/23/2014	White/Various/Black	0%	100%	None Detected	

Analyst(s):

Arabee Sathiaselan PLM (1)
Nicole Yeo PLM (2)

Reviewed and approved by:

Kevin Pang
or Other Approved Signatory

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Samples analyzed by EMSL Canada Inc. Mississauga, ON NVLAP Lab Code 200877-0

(Initial report from: 09/23/2014 09:41:17)



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EMSL Canada Order 551500605
Customer ID: 55SELI62
Customer PO: LAKERIDGE
Project ID:

Attn: Paul Valenti
Safetech Environmental
3045 Southcreek Road
Unit 14
Mississauga, ON L4X 2X7
Proj: LAKERIDGE BOWMANVILLE

Phone: (905) 624-2722
Fax: (905) 624-4306
Collected:
Received: 1/20/2015
Analyzed: 1/23/2015

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Client Sample ID: 1A **Lab Sample ID:** 551500605-0001

Sample Description: DRYWALL JOINT COMPOUND- EG 38

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	1/21/2015	White	0%	100%	None Detected	

Client Sample ID: 1B **Lab Sample ID:** 551500605-0002

Sample Description: DRYWALL JOINT COMPOUND- EG 36

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	1/21/2015	White	0%	100%	None Detected	

Client Sample ID: 1C **Lab Sample ID:** 551500605-0003

Sample Description: DRYWALL JOINT COMPOUND- EG 39

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	1/23/2015	White	0%	100%	None Detected	

Client Sample ID: 2A **Lab Sample ID:** 551500605-0004

Sample Description: 2 X 4 SWIRL PINHOLE CEILING TILES- EG 39

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	1/21/2015	Tan	85%	15%	None Detected	

Client Sample ID: 2B **Lab Sample ID:** 551500605-0005

Sample Description: 2 X 4 SWIRL PINHOLE CEILING TILES- EG 39

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	1/21/2015	Tan	80%	20%	None Detected	

Client Sample ID: 2C **Lab Sample ID:** 551500605-0006

Sample Description: 2 X 4 SWIRL PINHOLE CEILING TILES- EG 36

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	1/23/2015	Gray/White	80%	20%	None Detected	

Client Sample ID: 3A **Lab Sample ID:** 551500605-0007

Sample Description: BLUE VINYL SHEET FLOORING- EG 36

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	1/21/2015	Blue	0%	100%	None Detected	



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EMSL Canada Order 551500605
Customer ID: 55SELI62
Customer PO: LAKERIDGE
Project ID:

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Client Sample ID: 3B

Lab Sample ID: 551500605-0008

Sample Description: BLUE VINYL SHEET FLOORING- EG 36

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	1/21/2015	Blue	0%	100%	None Detected	

Client Sample ID: 3C

Lab Sample ID: 551500605-0009

Sample Description: BLUE VINYL SHEET FLOORING- EG 36

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	1/23/2015	Gray	0%	100%	None Detected	

Analyst(s):

John Biesiadecki PLM (6)
Jon Delos Santos PLM (3)

Reviewed and approved by:

Matthew Davis
or Other Approved Signatory

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Samples analyzed by EMSL Canada Inc. Mississauga, ON NVLAP Lab Code 200877-0

Initial report from: 01/24/2015 10:15:16



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EMSL Canada Order 551505790
Customer ID: 55SELI62
Customer PO: 138915
Project ID:

Attn: Paul Valenti
Safetech Environmental
3045 Southcreek Road
Unit 14
Mississauga, ON L4X 2X7
Proj: 138915 LAKERIDGE BOWMANVILLE

Phone: (905) 624-2722
Fax: (905) 624-4306
Collected:
Received: 6/02/2015
Analyzed: 6/03/2015

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Client Sample ID: 1 **Lab Sample ID:** 551505790-0001

Sample Description: INTERIOR DOOR INSULATION - WEST END DOOR - EAST/WING

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	6/03/2015	White	15%	85%	None Detected	

Client Sample ID: 2 **Lab Sample ID:** 551505790-0002

Sample Description: INTERIOR DOOR INSULATION - CENTRAL ACCESS/EMERGENCY ROOM DOOR TO
EAST WING CORRIDOR

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	6/03/2015	White	30%	70%	None Detected	

Analyst(s):

Nicole Dimou PLM (2)

Reviewed and approved by:

Matthew Davis
or Other Approved Signatory

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Samples analyzed by EMSL Canada Inc. Mississauga, ON NVLAP Lab Code 200877-0

Initial report from: 06/04/2015 08:59:35



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EMSL Canada Order 551511422
Customer ID: 55SELI62
Customer PO:
Project ID:

Attn: Paul Valenti
Safetech Environmental
3045 Southcreek Road
Unit 14
Mississauga, ON L4X 2X7
Proj: LHB- SOUTH VESTIBULE

Phone: (905) 624-2722
Fax: (905) 624-4306
Collected:
Received: 10/30/2015
Analyzed: 11/03/2015

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Client Sample ID: 1A **Lab Sample ID:** 551511422-0001

Sample Description: DRYWALL JOINT COMPOUND- SOUTH ENTRANCE

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	11/03/2015	White	0%	100%	None Detected	

Client Sample ID: 1B **Lab Sample ID:** 551511422-0002

Sample Description: DRYWALL JOINT COMPOUND- SOUTH ENTRANCE

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	11/03/2015	White	0%	100%	None Detected	

Client Sample ID: 1C **Lab Sample ID:** 551511422-0003

Sample Description: DRYWALL JOINT COMPOUND- SOUTH ENTRANCE

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	11/03/2015	White	0%	100%	None Detected	

Client Sample ID: 2A **Lab Sample ID:** 551511422-0004

Sample Description: BEIGE VINYL SHEET FLOOR- SOUTH ENTRANCE

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	11/03/2015	Gray	15%	85%	None Detected	

Client Sample ID: 2B **Lab Sample ID:** 551511422-0005

Sample Description: BEIGE VINYL SHEET FLOOR- SOUTH ENTRANCE

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	11/03/2015	Gray	15%	85%	None Detected	

Client Sample ID: 2C **Lab Sample ID:** 551511422-0006

Sample Description: BEIGE VINYL SHEET FLOOR- SOUTH ENTRANCE

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	11/03/2015	Gray	15%	85%	None Detected	

Client Sample ID: 3A **Lab Sample ID:** 551511422-0007

Sample Description: 2X4 PINHOLE CEILING TILE- SOUTH ENTRANCE

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	11/03/2015	Gray	80%	20%	None Detected	



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EMSL Canada Order 551511422
Customer ID: 55SELI62
Customer PO:
Project ID:

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Client Sample ID: 3B **Lab Sample ID:** 551511422-0008
Sample Description: 2X4 PINHOLE CEILING TILE- SOUTH ENTRANCE

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	11/03/2015	Gray	80%	20%	None Detected	

Client Sample ID: 3C **Lab Sample ID:** 551511422-0009
Sample Description: 2X4 PINHOLE CEILING TILE- SOUTH ENTRANCE

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	11/03/2015	Gray	80%	20%	None Detected	

Client Sample ID: 4A **Lab Sample ID:** 551511422-0010
Sample Description: EXTERIOR BRICK MORTAR- SOUTH ENTRANCE

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	11/03/2015	Gray	0%	100%	None Detected	

Client Sample ID: 4B **Lab Sample ID:** 551511422-0011
Sample Description: EXTERIOR BRICK MORTAR- SOUTH ENTRANCE

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	11/03/2015	Gray	0%	100%	None Detected	

Client Sample ID: 4C **Lab Sample ID:** 551511422-0012
Sample Description: EXTERIOR BRICK MORTAR- SOUTH ENTRANCE

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	11/03/2015	Gray	0%	100%	None Detected	

Analyst(s):

Nicole Dimou PLM (4)
Romeo Samson PLM (8)

Reviewed and approved by:

Matthew Davis
or Other Approved Signatory

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(Initial report from: 11/03/2015 22:39:44)



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EMSL Canada Order 551511992
Customer ID: 55SELI62
Customer PO: P#178015
Project ID:

Attn: Natalie Markiewicz
Safetech Environmental
3045 Southcreek Road
Unit 14
Mississauga, ON L4X 2X7

Phone: (905) 624-2722
Fax: (905) 624-4306
Collected:
Received: 11/17/2015
Analyzed: 11/17/2015

Proj: P#178015 - BIO-WASTE FRIDGE, LAKERIDGE BOWMANVILLE

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Client Sample ID: B1A **Lab Sample ID:** 551511992-0001

Sample Description: PLASTER WALL

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	11/17/2015	Gray	0%	98%	2% Chrysotile	

Client Sample ID: B1B

Lab Sample ID: 551511992-0002

Sample Description: PLASTER WALL

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	11/17/2015					Stop Positive (Not Analyzed)

Client Sample ID: B1C

Lab Sample ID: 551511992-0003

Sample Description: PLASTER WALL

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	11/17/2015					Stop Positive (Not Analyzed)

Client Sample ID: B2

Lab Sample ID: 551511992-0004

Sample Description: TAR-LIKE CEILING

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	11/17/2015	Black	0%	98%	2% Chrysotile	

Analyst(s):

Romeo Samson PLM (2)

Reviewed and approved by:

Matthew Davis
or Other Approved Signatory

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Samples analyzed by EMSL Canada Inc. Mississauga, ON NVLAP Lab Code 200877-0

(Initial report from: 11/18/2015 08:42:19)



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EMSL Canada Order 551513225
Customer ID: 55SELI62
Customer PO:
Project ID:

Attn: Joshua Cinello
Safetech Environmental
3045 Southcreek Road
Unit 14
Mississauga, ON L4X 2X7

Phone: (905) 624-2722
Fax: (905) 624-4306
Collected:
Received: 12/17/2015
Analyzed: 12/17/2015

Proj: LAKERIDGE HEALTH BOWMANVILLE- 47 LIBERTY ST S

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Client Sample ID: 1A

Lab Sample ID: 551513225-0001

Sample Description: PLASTER CEILING- NG 36 WASHROOM

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/17/2015	Gray/White	0%	100%	None Detected	

Client Sample ID: 1B

Lab Sample ID: 551513225-0002

Sample Description: PLASTER WALL- NG 36 WASHROOM

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/17/2015	Gray/White	0%	100%	None Detected	

Client Sample ID: 1C

Lab Sample ID: 551513225-0003

Sample Description: PLASTER WALL- NG 36 WASHROOM

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/17/2015	Gray/White	0%	100%	None Detected	

Analyst(s):

Nicole Dimou PLM (1)
Romeo Samson PLM (2)

Reviewed and approved by:

Matthew Davis
or Other Approved Signatory

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Samples analyzed by EMSL Canada Inc. Mississauga, ON NVLAP Lab Code 200877-0

Initial report from: 12/18/2015 15:49:09



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EMSL Canada Order 551610095
Customer ID: 55SELI62
Customer PO: LAKERIDGE
Project ID:

Attn: Paul Valenti
Safetech Environmental
3045 Southcreek Road
Unit 14
Mississauga, ON L4X 2X7
Proj: LAKERIDGE HEALTH BOWMANVILLE

Phone: (905) 624-2722
Fax: (905) 624-4306
Collected:
Received: 9/19/2016
Analyzed: 9/23/2016

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Client Sample ID: 1A **Lab Sample ID:** 551610095-0001

Sample Description: NORTH WING (GROUND) - MEN'S WASHROOM/VINYL SHEETING

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/22/2016	Beige	0%	100%	None Detected	

Client Sample ID: 1B **Lab Sample ID:** 551610095-0002

Sample Description: NORTH WING (GROUND) - MEN'S WASHROOM/VINYL SHEETING

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/22/2016	Beige	0%	100%	None Detected	

Client Sample ID: 1C **Lab Sample ID:** 551610095-0003

Sample Description: NORTH WING (GROUND) - MEN'S WASHROOM/VINYL SHEETING

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/23/2016	Gray	0%	100%	None Detected	

Client Sample ID: 2A **Lab Sample ID:** 551610095-0004

Sample Description: NG02/VINYL FLOOR TILE (TAN)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/22/2016	Gray	0%	97%	3% Chrysotile	

Client Sample ID: 2B **Lab Sample ID:** 551610095-0005

Sample Description: NG02/VINYL FLOOR TILE (TAN)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/22/2016					Positive Stop (Not Analyzed)

Client Sample ID: 2C **Lab Sample ID:** 551610095-0006

Sample Description: NG02/VINYL FLOOR TILE (TAN)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/22/2016					Positive Stop (Not Analyzed)

Client Sample ID: 3A **Lab Sample ID:** 551610095-0007

Sample Description: NG02/VINYL FLOOR TILE (GREY/WHITE)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/22/2016	Gray	0%	100%	None Detected	



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EMSL Canada Order 551610095
Customer ID: 55SELI62
Customer PO: LAKERIDGE
Project ID:

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Client Sample ID: 3B **Lab Sample ID:** 551610095-0008
Sample Description: NG02/VINYL FLOOR TILE (GREY/WHITE)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/22/2016	Gray	0%	100%	None Detected	

Client Sample ID: 3C **Lab Sample ID:** 551610095-0009
Sample Description: NG02/VINYL FLOOR TILE (GREY/WHITE)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/23/2016	Gray	0%	100%	None Detected	

Client Sample ID: 4A **Lab Sample ID:** 551610095-0010
Sample Description: NG08/VINYL FLOOR TILE (BEIGE)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/22/2016	Beige	0%	100%	None Detected	

Client Sample ID: 4B **Lab Sample ID:** 551610095-0011
Sample Description: NG08/VINYL FLOOR TILE (BEIGE)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/22/2016	Beige	0%	100%	None Detected	

Client Sample ID: 4C **Lab Sample ID:** 551610095-0012
Sample Description: NG08/VINYL FLOOR TILE (BEIGE)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/23/2016	Beige	0%	100%	None Detected	

Client Sample ID: 5A **Lab Sample ID:** 551610095-0013
Sample Description: NG28/VINYL FLOOR TILE (GREY)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/22/2016	Gray	0%	100%	None Detected	

Client Sample ID: 5B **Lab Sample ID:** 551610095-0014
Sample Description: NG28/VINYL FLOOR TILE (GREY)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/22/2016	Gray	0%	100%	None Detected	

Client Sample ID: 5C **Lab Sample ID:** 551610095-0015
Sample Description: NG28/VINYL FLOOR TILE (GREY)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/23/2016	Gray	0%	100%	None Detected	



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EMSL Canada Order 551610095
Customer ID: 55SELI62
Customer PO: LAKERIDGE
Project ID:

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Client Sample ID: 6A **Lab Sample ID:** 551610095-0016
Sample Description: NG35/VINYL FLOOR TILE (BEIGE)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/22/2016	Pink	0%	100%	None Detected	

Client Sample ID: 6B **Lab Sample ID:** 551610095-0017
Sample Description: NG35/VINYL FLOOR TILE (BEIGE)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/22/2016	Pink	0%	100%	None Detected	

Client Sample ID: 6C **Lab Sample ID:** 551610095-0018
Sample Description: NG35/VINYL FLOOR TILE (BEIGE)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/23/2016	Gray	0%	100%	None Detected	

Client Sample ID: 7A **Lab Sample ID:** 551610095-0019
Sample Description: FIRST FLOOR (NORTH)/VINYL SHEETING (BEIGE)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/22/2016	Beige	15%	85%	None Detected	

Client Sample ID: 7B **Lab Sample ID:** 551610095-0020
Sample Description: FIRST FLOOR (NORTH)/VINYL SHEETING (BEIGE)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/22/2016	Beige	15%	85%	None Detected	

Client Sample ID: 7C **Lab Sample ID:** 551610095-0021
Sample Description: FIRST FLOOR (NORTH)/VINYL SHEETING (BEIGE)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/23/2016	Gray	0%	85%	15% Chrysotile	

Client Sample ID: 8A **Lab Sample ID:** 551610095-0022
Sample Description: N103/VINYL SHEET FLOOR TILE(WHITE/BLUE)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/22/2016	White/Black	0%	100%	None Detected	

Client Sample ID: 8B **Lab Sample ID:** 551610095-0023
Sample Description: N103/VINYL SHEET FLOOR TILE(WHITE/BLUE)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/22/2016	White/Black	0%	100%	None Detected	



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Customer ID: 55SELI62
Customer PO: LAKERIDGE
Project ID:

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Client Sample ID: 8C **Lab Sample ID:** 551610095-0024
Sample Description: N103/VINYL SHEET FLOOR TILE(WHITE/BLUE)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/23/2016	Gray/Blue	0%	100%	None Detected	

Client Sample ID: 9A **Lab Sample ID:** 551610095-0025
Sample Description: BLUE SHED WASHROOM/VINYL SHEET

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/22/2016	Beige	10%	75%	15% Chrysotile	

Client Sample ID: 9B **Lab Sample ID:** 551610095-0026
Sample Description: BLUE SHED WASHROOM/VINYL SHEET

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/22/2016				Positive Stop (Not Analyzed)	

Client Sample ID: 9C **Lab Sample ID:** 551610095-0027
Sample Description: BLUE SHED WASHROOM/VINYL SHEET

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/22/2016				Positive Stop (Not Analyzed)	

Client Sample ID: 10A **Lab Sample ID:** 551610095-0028
Sample Description: RESIDENCE BUILDING (2ND) WASHROOM/VINYL SHEET

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/22/2016	Gray	15%	85%	None Detected	

Client Sample ID: 10B **Lab Sample ID:** 551610095-0029
Sample Description: RESIDENCE BUILDING (2ND) WASHROOM/VINYL SHEET

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/22/2016	Gray	15%	85%	None Detected	

Client Sample ID: 10C **Lab Sample ID:** 551610095-0030
Sample Description: RESIDENCE BUILDING (2ND) WASHROOM/VINYL SHEET

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/23/2016	Gray	15%	85%	None Detected	



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EMSL Canada Order 551610095
Customer ID: 55SELI62
Customer PO: LAKERIDGE
Project ID:

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Analyst(s):

Natalie D'Amico PLM (18)
Shorthri Kalikutty PLM (8)

Reviewed and approved by:

Matthew Davis
or Other Approved Signatory

None Detected = <0.1%. EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. Samples received in good condition unless otherwise noted. This report must not be used to claim product endorsement by NVLAP of any agency of the U.S. Government.

Samples analyzed by EMSL Canada Inc. Mississauga, ON NVLAP Lab Code 200877-0

Initial report from: 09/23/2016 11:21:44



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EMSL Canada Order 551611801
Customer ID: 55SELI62
Customer PO: LAKERIDGE
Project ID:

Attn: Paul Valenti
Safetech Environmental
3045 Southcreek Road
Unit 14
Mississauga, ON L4X 2X7
Proj: LAKERIDGE BOWMANVILLE

Phone: (905) 624-2722
Fax: (905) 624-4306
Collected:
Received: 11/04/2016
Analyzed: 11/05/2016

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Client Sample ID: 7A **Lab Sample ID:** 551611801-0001

Sample Description: NORTH WING 1ST FLOOR/BEIGE SMALL MARKS PATTERNED VINYL SHEET FLOOR

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	11/05/2016	Beige	20%	80%	None Detected	

Client Sample ID: 7B **Lab Sample ID:** 551611801-0002

Sample Description: EB LEVEL/BEIGE SMALL MARKS PATTERNED VINYL SHEET FLOOR

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	11/05/2016	Beige	20%	80%	None Detected	

Client Sample ID: 7C **Lab Sample ID:** 551611801-0003

Sample Description: S129/BEIGE SMALL MARKS PATTERNED VINYL SHEET FLOOR

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	11/05/2016	Beige	20%	80%	None Detected	

Client Sample ID: 11A **Lab Sample ID:** 551611801-0004

Sample Description: NG WASHROOM ADJ. NG 30/PLAIN BEIGE VINYL SHEET FLOORING

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	11/05/2016	Beige	0%	100%	None Detected	

Client Sample ID: 11B **Lab Sample ID:** 551611801-0005

Sample Description: NG WASHROOM ADJ. NG 30/PLAIN BEIGE VINYL SHEET FLOORING

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	11/05/2016	Beige	0%	100%	None Detected	

Client Sample ID: 11C **Lab Sample ID:** 551611801-0006

Sample Description: NG WASHROOM ADJ. NG 30/PLAIN BEIGE VINYL SHEET FLOORING

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	11/05/2016	Beige	0%	100%	None Detected	



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Customer ID: 55SELI62
Customer PO: LAKERIDGE
Project ID:

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Analyst(s):

Shorthri Kalikutty PLM (6)

Reviewed and approved by:

Matthew Davis
or Other Approved Signatory

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Initial report from: 11/05/2016 15:26:53

APPENDIX II

Site Plans



Legend

Project:

Asbestos Survey

Location:

Lakeridge Health Bowmanville
47 Liberty Street South
Bowmanville, Ontario

Floor:

Site Plan

Description:

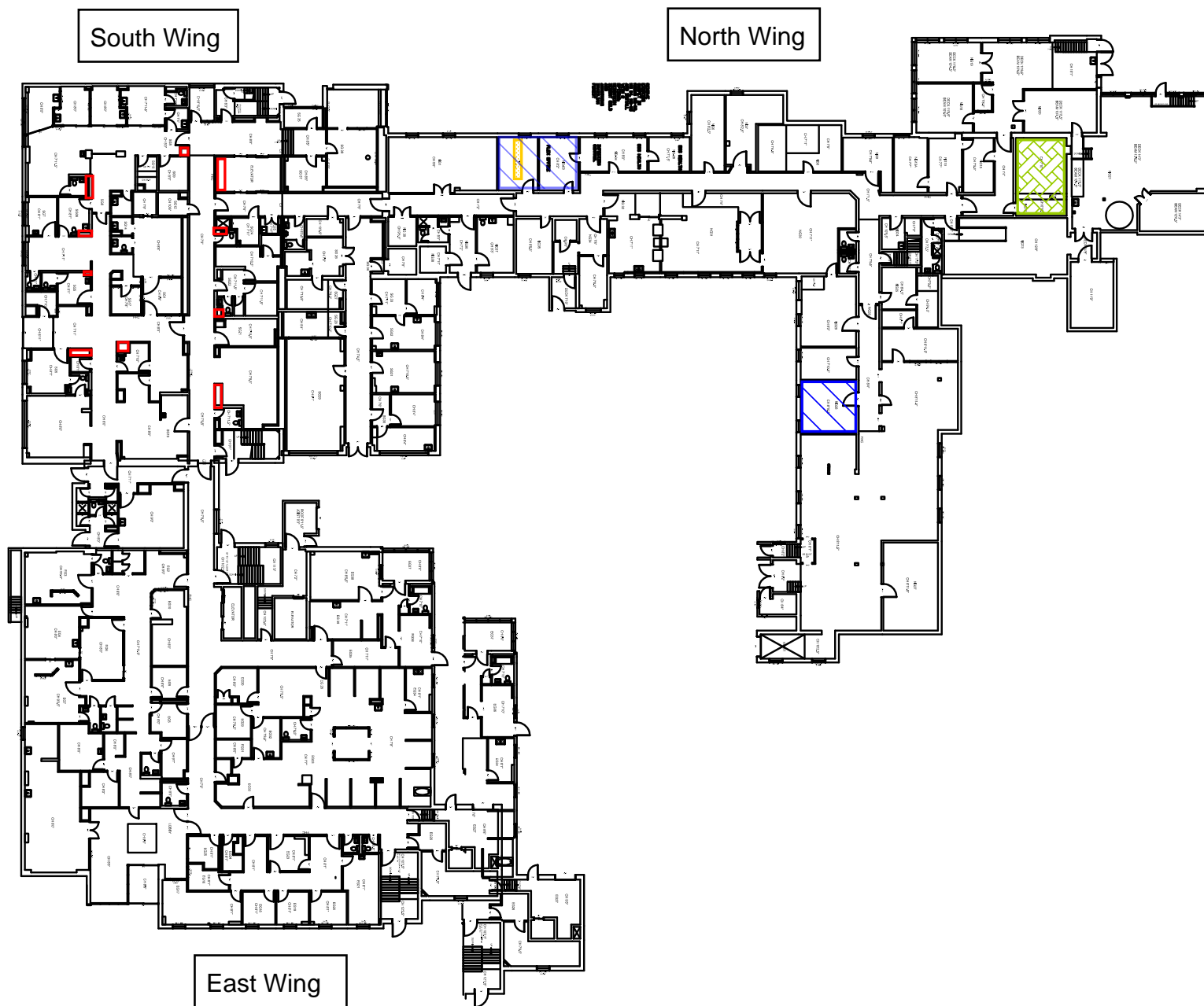
Location of Areas Assessed

Project No.: 168316





Date: December 31, 2016



3045 Southcreek Road, Unit 14
Mississauga, Ontario
L4X 2X7



Legend

-  ACM Pipe Fitting/Straight Insulation
-  Suspected ACM pipe insulation within cavities
-  ACM Mastic from 1x1 Ceiling Tiles
-  ACM Vinyl Floor Tiles

Notes:

1. Drawings not to be relied upon solely and to be used in conjunction with report.
2. ACM Parging suspected on sweatwrap piping throughout.
3. ACM plaster suspected throughout.

Project:

Asbestos Survey

Location:

Lakeridge Health Bowmanville
47 Liberty Street South
Bowmanville, Ontario

Floor:

Ground Floor

Description:

Location of Areas Assessed

Project No.: 168316





Date: December 31, 2016



3045 Southcreek Road, Unit 14
Mississauga, Ontario
L4X 2X7



Legend

-  ACM Pipe Fitting/Straight Insulation
-  Suspected ACM pipe insulation within cavities
-  ACM Mastic from 1x1 Ceiling Tiles
-  ACM Vinyl Floor Tiles

Notes:

1. Drawings not to be relied upon solely and to be used in conjunction with report.
2. ACM Parging suspected on sweatwrap piping throughout.
3. ACM plaster suspected throughout.

Project:

Asbestos Survey

Location:

Lakeridge Health Bowmanville
47 Liberty Street South
Bowmanville, Ontario

Floor:

First Floor

Description:

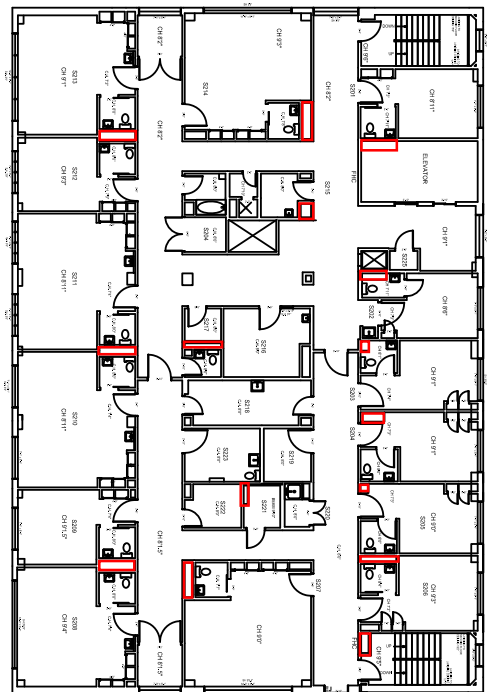
Location of Areas Assessed

Project No.: 168316

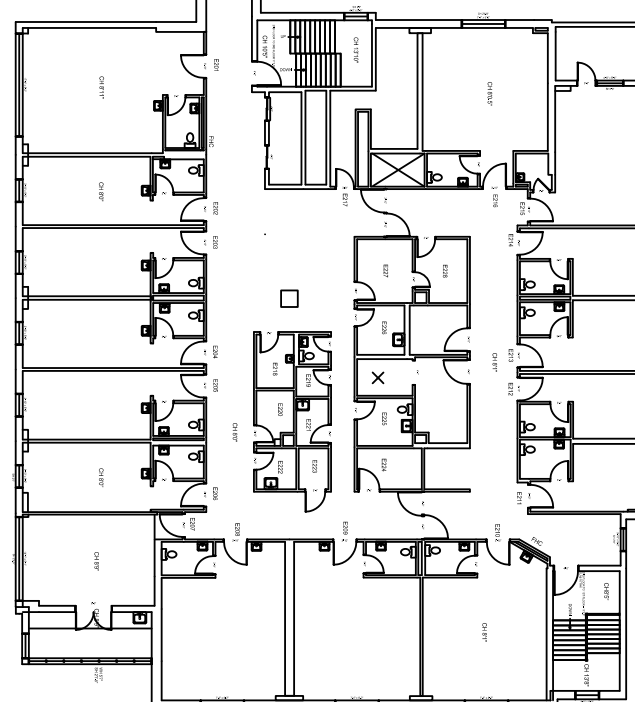
Date: December 31, 2016



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South Wing



East Wing

Legend

-  ACM Pipe Fitting/Straight Insulation
-  Suspected ACM pipe insulation within cavities
-  ACM Mastic from 1x1 Ceiling Tiles
-  ACM Vinyl Floor Tiles

Notes:
 1. Drawings not to be relied upon solely and to be used in conjunction with report.
 2. ACM Parging suspected on sweatwrap piping throughout.
 3. ACM plaster suspected throughout.

Project:
 Asbestos Survey

Location:
 Lakeridge Health Bowmanville
 47 Liberty Street South
 Bowmanville, Ontario

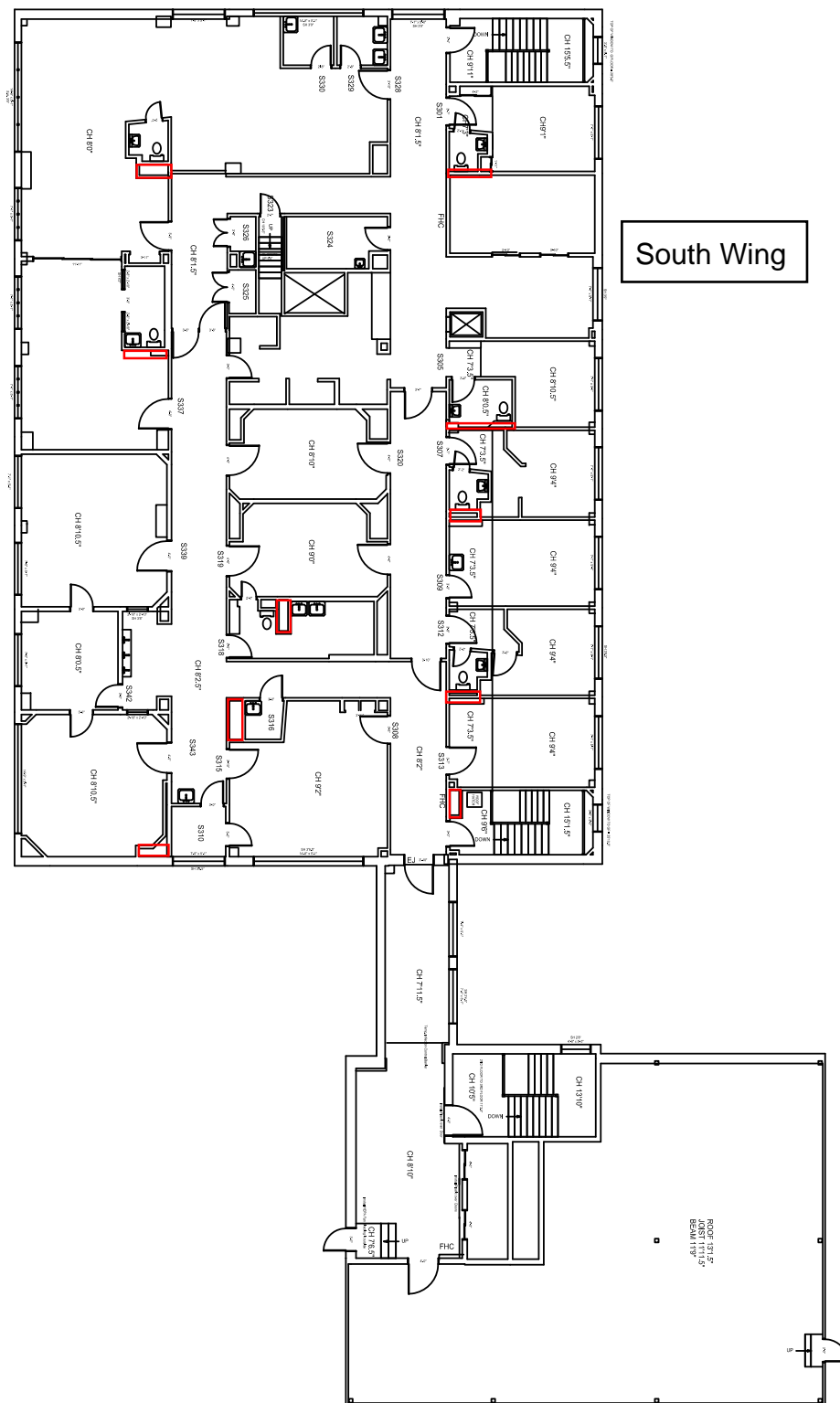
Floor:
 Second Floor

Description:
 Location of Areas Assessed

Project No.: 168316
Date: December 31, 2016







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 Mississauga, Ontario
 L4X 2X7



South Wing

East Wing

Legend

-  ACM Pipe Fitting/Straight Insulation
-  Suspected ACM pipe insulation within cavities
-  ACM Mastic from 1x1 Ceiling Tiles
-  ACM Vinyl Floor Tiles

Notes:

1. Drawings not to be relied upon solely and to be used in conjunction with report.
2. ACM Parging suspected on sweatwrap piping throughout.
3. ACM plaster suspected throughout.

Project:

Asbestos Survey

Location:

Lakeridge Health Bowmanville
47 Liberty Street South
Bowmanville, Ontario

Floor:

Third Floor

Description:

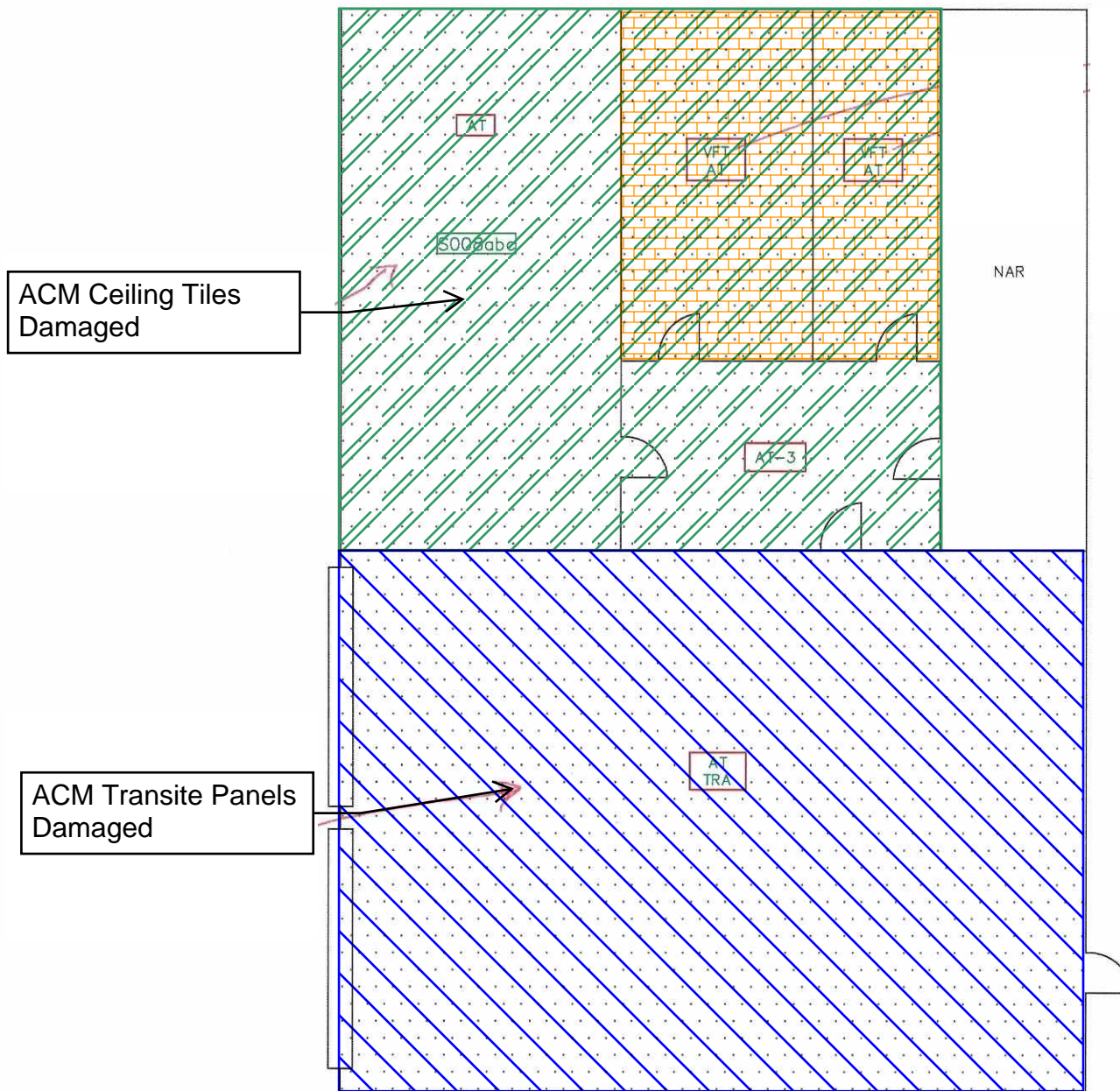
Location of Areas Assessed

Project No.: 168316

Date: December 31, 2016



3045 Southcreek Road, Unit 14
Mississauga, Ontario
L4X 2X7



Legend

-  ACM Vinyl Sheet Flooring
-  ACM Lay-in Ceiling Tiles
-  ACM Transite Ceiling Tiles & Wall Panels

Notes:

1. Drawings not to be relied upon solely and to be used in conjunction with report.

Project:

Asbestos Survey

Location:

Lakeridge Health Bowmanville
47 Liberty Street South
Bowmanville, Ontario

Floor:

Blue Shed

Description:

Location of Areas Assessed

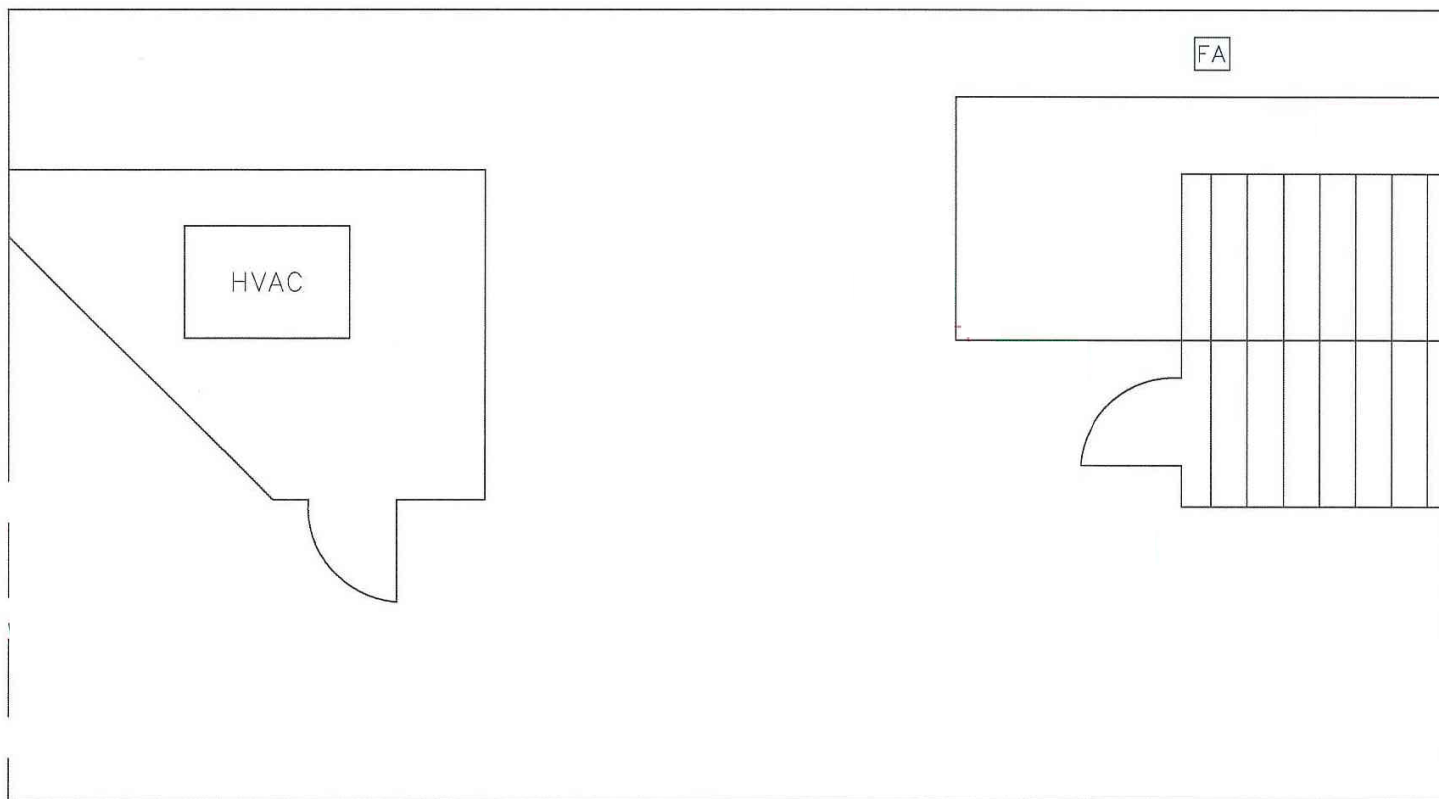
Project No.: 168316

Date: December 31, 2016



3045 Southcreek Road, Unit 14
Mississauga, Ontario
L4X 2X7

Residence



NOTE: PLASTER CONTAINS
ASBESTOS

Legend

Notes:

1. Drawings not to be relied upon solely and to be used in conjunction with report.
2. ACM plaster present throughout.
3. No Plans provided for first or second floor.

Project:

Asbestos Survey

Location:

Lakeridge Health Bowmanville
47 Liberty Street South
Bowmanville, Ontario

Floor:

Attic

Description:

Location of Areas Assessed

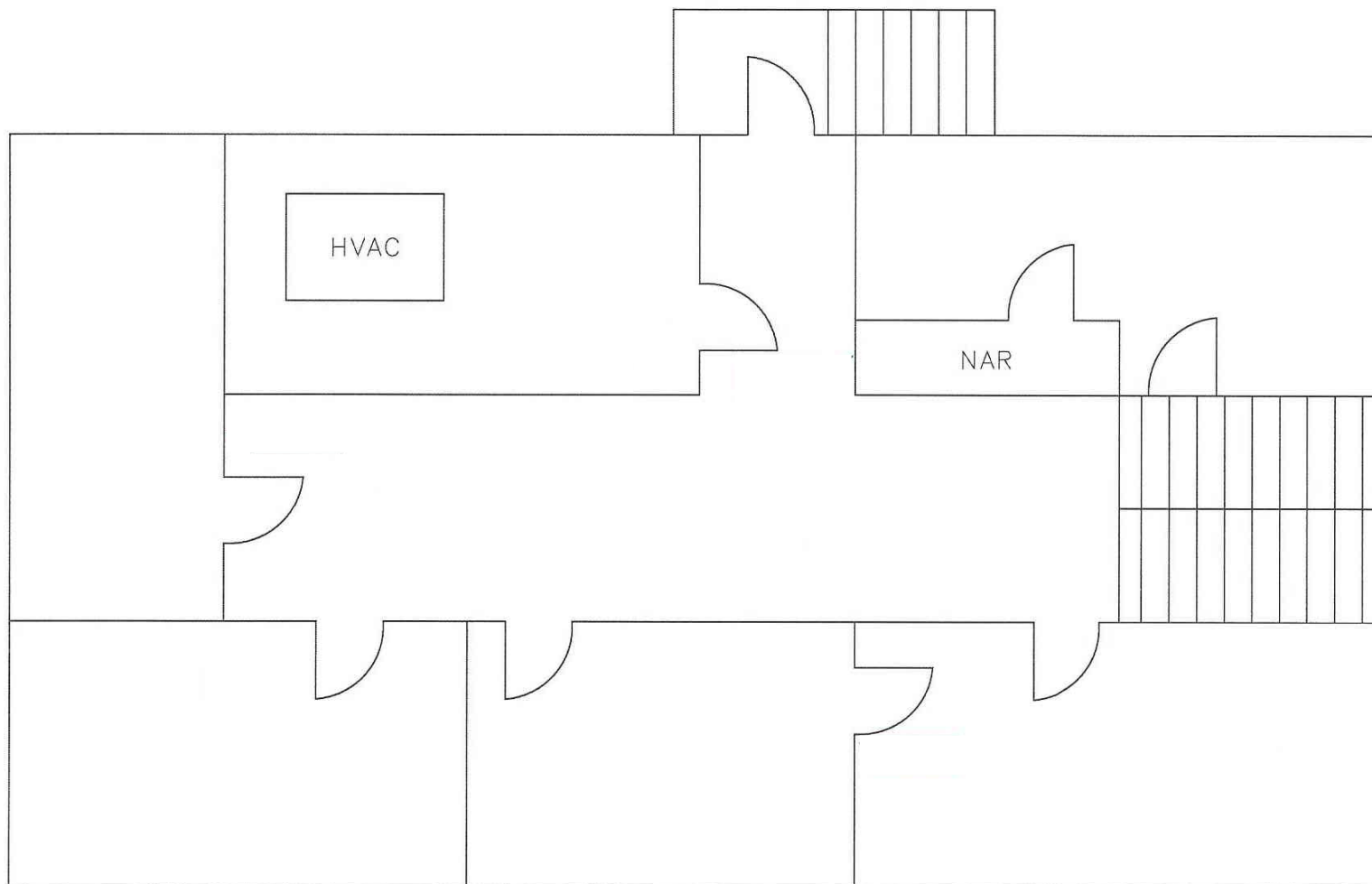
Project No.: 168316

Date: December 31, 2016



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Residence



NOTE: PLASTER CONTAINS
ASBESTOS

Legend

Notes:

1. Drawings not to be relied upon solely and to be used in conjunction with report.

2. ACM plaster present throughout.

Project:

Asbestos Survey

Location:

Lakeridge Health Bowmanville
47 Liberty Street South
Bowmanville, Ontario

Floor:

Basement

Description:

Location of Areas Assessed

Project No.: 168316

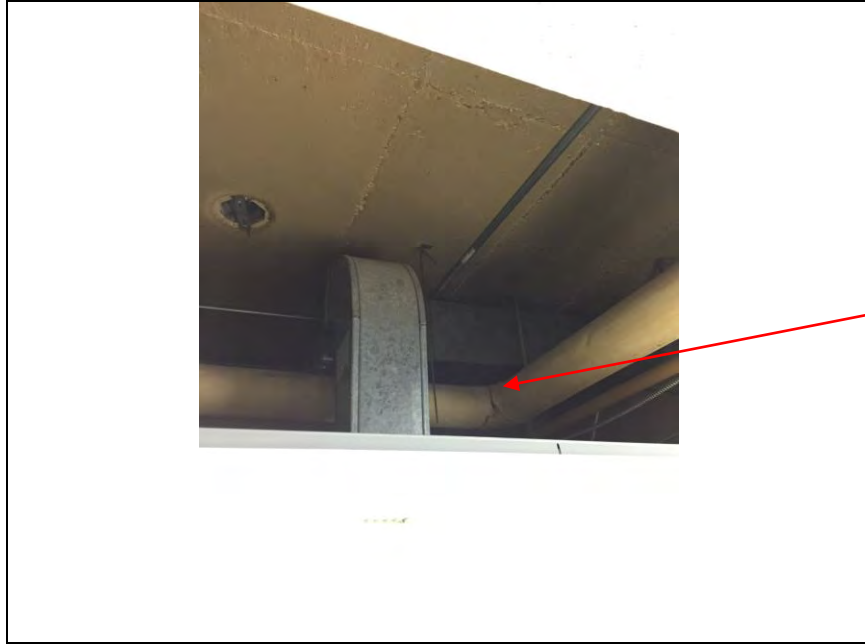
Date: December 31, 2016



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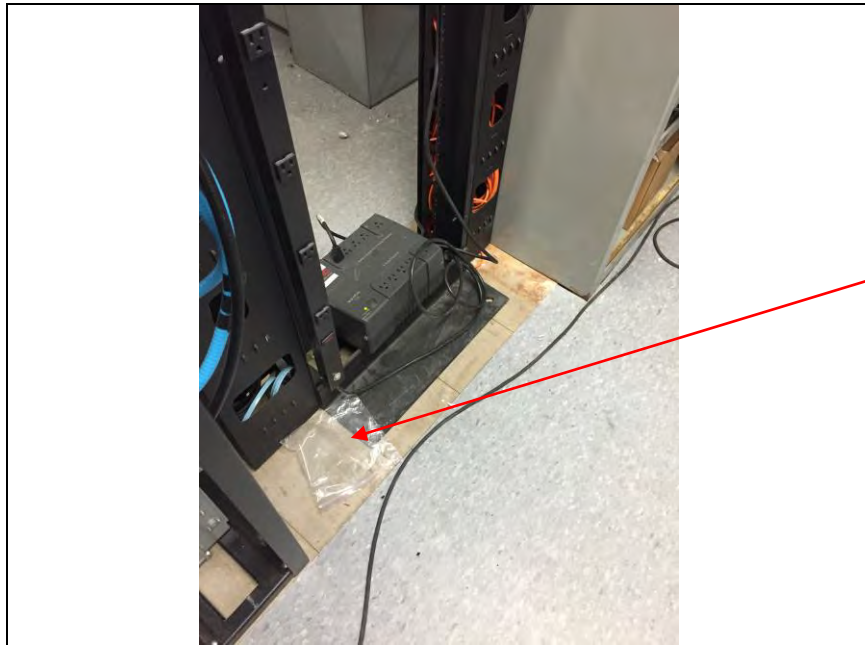
APPENDIX III

Photographs



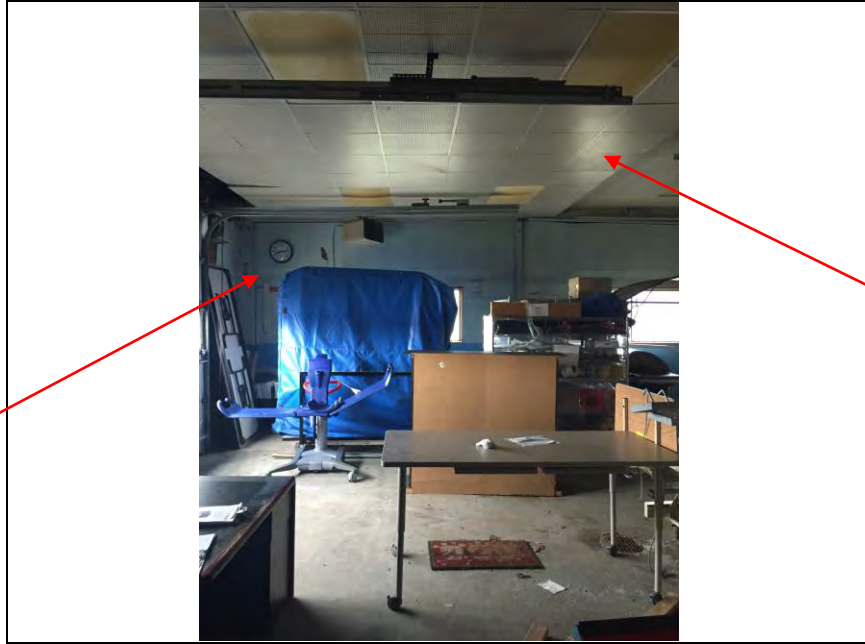
P1 –

View of asbestos-containing mechanical pipe and pipe fitting insulation within the space of room NG 16.



P2 –

View of asbestos-containing 9x9 vinyl floor tiles present within Room NG-02.



P3 –

View of asbestos-containing transite ceiling and wall panels within the Blue Shed.



P4 –

View of damaged asbestos-containing transite wall panels within the Blue Shed.



P5 –

View of asbestos-containing beige vinyl sheet flooring within the Washroom area of the Blue Shed.



P6 –

View of damaged and deteriorating plaster wall finish within the basement of the Residence Building.



P6 –

View of previously identified asbestos-containing plaster material observed between cork insulation and brick within the South wing.

Hazardous Building Materials Assessment Report

Lakeridge Health Bowmanville 47 Liberty Street South Bowmanville, Ontario



Prepared for:
Lakeridge Health Corporation
1 Hospital Court
Oshawa, Ontario
L1G 2B9

Attention: Tom Delaney

March 13, 2008

Pinchin File 44603

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Summary

Pinchin Environmental Ltd. (Pinchin) was retained by Tom Delaney of Lakeridge Health Corporation (LHC) to conduct a hazardous building materials assessment of the Lakeridge Health Bowmanville facility located at 47 Liberty Street South in Bowmanville, Ontario. This assessment has been performed prior to planned renovations. The assessed area included specified parts of the building (South Wing and East Wing) identified on the drawings found in Appendix V.

The assessment was performed by Thong Nguyen of Pinchin Environmental Ltd., on February 20, 2008. This report provides a detailed description of the Assessment Criteria (Section 2), Findings (Section 3), Recommendations (Section 4) and Limitations (Section 5). The full report must be referenced for the complete results of the assessment.

Summary of Findings:

Hazardous Materials were confirmed to be present as follows:

- Parging cement pipe insulation containing asbestos.
- Lead sheeting is present in wall cavities.
- Mercury vapour is present in all lamps
- Mercury is present as a liquid in thermostats located through out the assessed area
- Silica is present in concrete, mortar, brick, masonry, ceramics, granite, slate, stone, asphalt, etc.

Summary of Recommendations:

Ensure handling of Hazardous Building Materials conforms to current Occupational Health and Safety Regulatory requirements.

Dispose of waste containing hazardous materials as per the requirements of applicable waste handling regulations

Refer to recommendations section for procedures required when disturbing or removing hazardous building materials.

Table of Contents

1.0	INTRODUCTION AND SCOPE	1
1.1	Introduction	1
1.2	Facility Description	1
1.3	Scope of Assessment	2
2.0	ASSESSMENT CRITERIA.....	3
2.1	Methodology	3
2.2	Asbestos	3
2.3	Lead	6
2.4	Mercury	6
2.5	Silica.....	6
2.6	Other Designated Substances	6
2.7	Visible Mould.....	7
2.8	Analytical Methods	7
2.9	Photographs	8
2.10	Drawings	8
3.0	FINDINGS	8
3.1	Asbestos	8
3.2	Lead.....	10
3.3	Mercury	11
3.4	Silica.....	11
3.5	Mould	11
4.0	RECOMMENDATIONS	11
4.1	General	11
4.2	Asbestos	11
4.3	Lead.....	12
4.4	Mercury	12
4.5	Silica.....	12
5.0	LIMITATIONS.....	13
6.0	CLOSURE	14

Appendices

Appendix I	Friability and Regulations
Appendix II	Results of Bulk Sample Analysis for Asbestos
Appendix III	Niton XRF Lead Test Results
Appendix IV	Photographs
Appendix V	Drawings

1.0 INTRODUCTION AND SCOPE

1.1 Introduction

Pinchin Environmental Ltd. (Pinchin) was retained by Tom Delaney of Lakeridge Health Corporation (LHC) to conduct a hazardous building materials assessment of the Lakeridge Health Bowmanville facility located at 47 Liberty Street South in Bowmanville, Ontario. This assessment has been performed prior to planned renovations. The assessed area included specified parts of the building (South Wing and East Wing) identified on the drawings found in Appendix V.

This report of Designated Substances is made to fulfil the Owner's requirements under Section 30 of the Ontario Occupational Health and Safety Act, Revised Statutes of Ontario 1990, (as amended). Prior to tendering project work in the building, the building owner must provide this report to contractors tendering on the work. In turn, all contractors requesting tenders from subcontractors must furnish this report to subcontractors.

This assessment is intended for pre-construction or pre-demolition purposes only, and may not provide sufficient detail for long term management of asbestos-containing materials as required by Section 7(3) of O.Reg. 278/05.

1.2 Facility Description

The North Wing was constructed in 1950, followed by the South Wing in 1962, and the East Wing in 1990. A major renovation of the North and South Wings was undertaken at the time of construction of the East Wing. The following provides a basic description of the building systems.

System	Description
Structure	Placed concrete
Exterior Cladding	Brick
HVAC	Forced Air
Roof	Flat Built Up
Flooring	Terrazzo, Vinyl sheet flooring
Interior Walls	Plaster, Drywall

System	Description
Ceilings	Plaster, Drywall, Acoustic ceiling tiles

1.3 Scope of Assessment

The scope of the assessment was to establish the location, condition and type of hazardous building materials. The assessment included a search for hazardous materials incorporated in the structure and its finishes. For the purpose of the assessment and this document, Hazardous Materials are defined as those containing the following:

Designated Substances;

- Asbestos
- Lead
- Mercury
- Silica (free crystalline silica)

The investigation included an examination for the presence of:

- Visible Mould (Microbial Contamination)

The following designated substances are not typically found in buildings of this type, and were not included in the assessment. The Client did not report the presence of any of the following designated substances:

- Ethylene Oxide
- Vinyl Chloride (vinyl chloride monomer, not PVC)
- Benzene
- Arsenic
- Coke Oven Emissions
- Acrylonitrile
- Isocyanates

Not included was an assessment of owner or occupant articles within the building (i.e. stored items, furniture, etc.), sampling of materials that could result in damage to the building (specific exclusions are described below), or underground materials or equipment (vessels, drums, underground storage tanks, pipes, etc.).

2.0 ASSESSMENT CRITERIA

2.1 Methodology

The surveyor entered each room, corridor, service area, etc. where access was possible. The surveyor inspected for the presence of hazardous materials, and information was recorded where hazardous materials were present including approximate quantities, locations, and condition.

Concealed locations such as ceiling spaces above solid ceilings, shafts and pipe chases were accessed via existing access panels. No structural items, masonry walls or exterior building finishes were removed to determine the presence of concealed materials. Walls spaces and concealed chases (e.g. at washrooms) could not be demolished or accessed during this assessment.

2.2 Asbestos

The surveyor inspected for the presence of friable asbestos-containing materials (sprayed insulation, acoustic/texture plaster, mechanical insulation, etc.). The surveyor also inspected for the presence of non-friable asbestos-containing materials (ACM), and non-friable asbestos-containing materials which may become friable during construction (e.g. plaster). Typical examples of non-friable materials include asbestos cement sheets or pipes, acoustic ceiling tiles, vinyl floor tiles, vinyl sheet flooring, and asbestos textile products (curtains, vibration dampers), etc.

Representative samples of these friable materials were obtained to confirm visual identification. The number of samples collected complied with the sampling requirements of O.Reg. 278/05 (See Section 2.2.2 for details).

Plaster is considered a non-friable material while intact, but the dust and debris created during demolition is a friable material upon removal. Asbestos use in plaster is often inconsistent because installation practices greatly varied during on site mixing of plaster, and asbestos is occasionally present as a contaminant in materials used in plaster. Therefore extensive sampling of plaster surfaces is necessary to come to a reasonable conclusion regarding the presence and content of asbestos within plaster. Plaster is considered a surfacing material to determine the number of samples required.

Drywall joint compound is considered a non-friable material. It could possibly contain asbestos where installed prior to 1986. Most buildings undergo constant renovation, including the removal and replacement of drywall partitions. Therefore extensive sampling of drywall compound is often necessary to come to a reasonable conclusion. Furthermore, any attempt to distinguish and delineate all asbestos-containing drywall compound from new non-asbestos drywall

compound is often unachievable. Therefore, drywall joint compound was sampled at locations identified on drawings found in Appendix V, as scheduled for demolition.

2.2.1 Asbestos Assessment Exclusions

Sampling of a number of possible non-friable materials which may contain asbestos could *not* be included in our assessment. The presence of asbestos must be suspected and these materials are best sampled *immediately* prior to removal during renovation. These suspect non-friable materials are listed below, and could not be sampled as it causes significant damage to the material or building:

- elevator and lift brakes
- high voltage wiring
- exterior cladding, soffit and fascia boards on building
- fire-door cores
- window caulking
- demountable fire resistant metal clad walls
- mastics, adhesives and tar
- vermiculite above solid ceilings, inside masonry or other wall assemblies
- moulded plastic components (laboratory bench tops)
- paper products used under flooring or under metal or slate roofing
- concrete levelling compound (for floors)
- dust in ductwork

2.2.2 Asbestos Sampling Strategy and Frequency

Samples were collected at a rate that was in compliance with the requirements of O.Reg. 278/05, which states a minimum number of samples are to be collected and analyzed (1, 3, 5, or 7 depending on quantity, application and friability) from each area of homogeneous material for the material to be considered non-asbestos. This frequency is indicated in the table below. A homogeneous sampling area is defined by the USEPA as containing material that is uniform in texture and appearance, was installed at one time and is unlikely to consist of more than one type or formulation of material. The surveyor used information obtained on site by visual examination, available information on the phases of the construction and information on renovations obtained from the client to determine the extent of each homogeneous area and the number of samples required.

Type of Material	Size of Homogeneous Material	Minimum Number of Bulk Samples
Surfacing material, including without limitation material that is applied to surfaces by spraying, by troweling or otherwise, such as acoustical plaster on ceilings, fireproofing materials on structural members and plaster	Less than 90 square metres	3
	90 or more square metres, but less than 450 square metres	5
	450 or more square metres	7
Thermal insulation, except as described below	Any size	3
Thermal insulation patch	Less than 2 linear metres or 0.5 square metres	1
Other material	Any size	3

Asbestos cement products were visually identified as an asbestos-containing material where present.

2.2.3 Basis of Evaluation and Recommendation regarding ACM

The condition of any ACM found is evaluated as well as the potential for disturbance of the ACM. These evaluation criteria are based on the conclusions of published studies, particularly the “Royal Commission on Matters of Health and Safety Arising from the Use of Asbestos in Ontario”, existing Ontario regulation, and our experience involving buildings that contain friable ACM.

An asbestos-containing material was considered damaged if it is sprayed material that is delaminating, mechanical insulation with damaged/missing insulation or jacketing, non-friable materials that have been pulverized, exposed underpad on vinyl sheet flooring, etc., which causes it to become friable.

The priority for remedial action is based not only on the evaluation of condition but is also based on several other factors which include:

- Accessibility or potential for direct contact and disturbance which can cause release of asbestos to the air.
- Practicality of repair (for example will damage to the ACM continue even if it is repaired).
- Efficiency of the work (for example if damaged ACM is being removed in an area it may be most practical to remove all ACM in the area even if it is in good condition).

Recommendations also include those that are mandatory regulated requirements, such as some provincial requirements for institution of an asbestos management plan, training, record keeping etc.

2.3 Lead

Each distinctive paint finish present in more than very limited application was investigated for lead content. Separate measurements were made of architectural paints, structural steel primer, exterior paints, glazing on brick and ceramic tile, etc. Paint was tested with an X-ray Fluorescence Analyzer (XRF). The XRF analyzer was calibrated prior to, and after use, each shift. The presence of lead sheeting or other solid lead uses were noted where observed.

Building materials suspected of containing lead were identified by appearance and age, and knowledge of historic applications. No sampling was performed.

2.4 Mercury

Building materials suspected of containing mercury were identified by appearance and age, and knowledge of historic applications. No sampling was performed. No dismantling of equipment suspected of containing mercury was performed.

2.5 Silica

Building materials suspected of containing crystalline silica were identified by knowledge of historic applications. No sampling was performed.

2.6 Other Designated Substances

Designated substances other than those listed above, were not included in the assessment. Regulated quantities of these substances are not generally found in buildings unless used in manufacturing or processing applications. If any of these substances were used at the facility, we recorded information on their use that was supplied by the Owner. No sampling was performed.

2.7 Visible Mould

Visible mould growth was identified where present in a significant quantity on exposed building surfaces. Mould growth within wall cavities and other concealed locations was not addressed in this assessment.

2.8 Analytical Methods

2.8.1 Asbestos

Bulk samples collected for asbestos identification were analyzed at the Pinchin Laboratory. Preliminary identification of asbestos fibres is made using polarized light microscopy, with confirmation of the presence and type of asbestos made by dispersion staining optical microscopy. The analysis was performed in accordance with U.S. Environmental Protection Agency, Test Method EPA/600/R-93/116: Method for the Determination of Asbestos in Bulk Building Materials, June 1993. Pinchin Laboratories are certified under the National Voluntary Laboratory Accreditation Program (NVLAP) to perform asbestos analysis of bulk samples (Pinchin Laboratory Number 101270).

Analysis was completed using a stop positive approach. Only one result of greater than 0.5% asbestos content is required to determine that a material is asbestos-containing, but all samples must be analyzed to conclusively determine that a material is non-asbestos (O. Reg. 278/05). The laboratory stopped analyzing samples from a homogeneous material once greater than 0.5% asbestos was detected in any of the samples of that material. All were analyzed if no asbestos was detected.

Sample locations were recorded on the drawings in Appendix V. Analytical results are presented in Appendix II – Results of Bulk Sample Analysis for Asbestos.

2.8.2 Lead

Measurements for lead paint were made on-site with an X-ray fluorescence spectrum analyzer. The analyzer is a portable computerized instrument designed for on-site detection of lead in paint. The analyzer is recognized by the U.S. Housing and Urban Development department and the Environmental Protection Agency as equivalent or superior in accuracy, to the traditional paint scraping and laboratory analysis. The XRF analyzer allows many measurements to be made compared to sample collection and laboratory analysis, and is non-destructive. Paints, enamels and other liquid coating materials for use on the interior and exterior surfaces of buildings.

Test locations were recorded in Appendix III - Niton XRF Lead Test Results.

2.9 Photographs

Photographs are presented in Appendix IV. Locations where photographs were taken are recorded on the drawings in Appendix V.

2.10 Drawings

Included on the drawings in Appendix V, are locations that photographs were taken and samples collected.

3.0 FINDINGS

3.1 Asbestos

3.1.1 Sprayed Fireproofing and Thermal Insulation

Sprayed fireproofing or sprayed thermal insulation was not found.

3.1.2 Texture Finishes (Acoustic/Decorative)

Texture finishes were not found.

3.1.3 Pipe Insulation

Parging cement, containing chrysotile asbestos (visually confirmed), is present on pipe fittings (elbows, valves, tees, hangers etc.) on domestic water supply systems (Pinchin File 40492, Sample 002A). Parging cement is a friable insulation and jacketed with canvas and in good condition.

Sweatwrap insulation (brown layered paper), containing no asbestos, (Pinchin File 40492, Sample 001A-C) is present on straight sections of unidentified pipes, sanitary drains and rain water leaders. Sweatwrap is a friable insulation and jacketed with canvas.

Pipes insulated with friable asbestos insulations may also be present in inaccessible spaces such as above solid ceilings, in chases, in column enclosures and within shafts.

3.1.4 Duct Insulation

Ducts are either uninsulated or insulated with non-asbestos fibreglass jacketed with either canvas or foil.

3.1.5 Mechanical Equipment Insulation

No asbestos-containing insulations are present on mechanical equipment. All mechanical equipment is insulated with non-asbestos fibreglass or not insulated.

3.1.6 Acoustic Ceiling Tiles

Three (3) visually distinct types of acoustic ceiling tile are present in the assessed areas. The 2' x 4' lay-in acoustic ceiling tile, present throughout the assessed area, were sampled and found to contain no asbestos (Samples S003A-S003C). This type of ceiling tile has pattern of random pinholes. The 2' x 2' lay-in acoustic ceiling tile, present throughout the assessed area, were sampled and found to contain no asbestos (Samples S001A-S001C). This ceiling tile has a fleck and hole pattern. The 1' x1' glued on ceiling tile, present in Room SG38, was visually confirmed to contain no asbestos (Pinchin File 40492, Sample 005A-C). This ceiling tile has a fleck and hole pattern.

3.1.7 Vermiculite

Loose fill vermiculite was not found.

3.1.8 Plaster

Plaster was used on walls in the assessed area. Five (5) samples (Samples S002A-S002E) were analyzed and showed that no asbestos was present.

3.1.9 Drywall Compound

Drywall or gypsum board was used as a wall and ceiling finish in the assessed area.

A limited amount of sampling was performed (3 samples) from walls scheduled for demolition. All were shown to be non-asbestos (Samples S004A-S004C).

Drywall joint compound is a non-friable material. All drywall and drywall joint compound was in good condition.

3.1.10 Asbestos Cement Products

No asbestos cement products were found.

3.1.11 Vinyl Sheet Flooring

One pattern of vinyl sheet flooring is present in the assessed areas. Bulk sampling indicated no asbestos (samples S005A-S005C).

3.1.12 Vinyl Floor Tiles

Vinyl floor tiles were not found.

3.1.13 Firestopping

Firestopping was not found.

3.2 Lead

3.2.1 Lead-Based Paint, Coatings and Ceramic Tile Glazes

Paints and ceramic tile glazes were tested throughout the assessed area by XRF.

Complete test results are presented in Appendix III.

3.2.2 Other Lead Applications

Lead is present in wiring connectors, grounding conductors and solder throughout the building.

Lead may be present beneath jacketing as electrical or fibre optic cable sheathing.

Lead sheets are present as radiation shielding within walls around x-ray areas and dental offices. Refer to Appendix V drawings for locations of confirmed lead sheeting.

Back-up emergency lights, present throughout the building, are powered with lead-acid batteries.

Insignificant quantities of lead may be present in hot dipped galvanized steel materials.

3.3 Mercury

Mercury vapour is present in all fluorescent lamps.

Mercury vapour is present in all mercury vapour lamps, metal halide lamps, high pressure sodium lamps and neon lamps.

Mercury is present as a liquid in thermostats.

3.4 Silica

Free crystalline silica (common construction sand) will be present in concrete, mortar, brick, masonry, ceramics, granite, slate, stone, asphalt, etc., where present in the building.

3.5 Mould

Visible mould growth was not observed during the assessment.

4.0 RECOMMENDATIONS

4.1 General

Ensure handling of Hazardous Building Materials conforms to current Occupational Health and Safety Regulatory requirements.

Dispose of waste containing hazardous materials as per the requirements of applicable waste handling regulations¹.

4.2 Asbestos

Damaged asbestos-containing materials must be repaired or removed in order to comply with current Regulations.

All ACM must be removed prior to demolition. In addition, we recommend from practical experience, that all ACM be removed before possible disturbance

¹ Transportation and disposal of Designated Substances are under the jurisdiction of Federal, Provincial and local government agencies. Primarily, the Ministry of the Environment Regulation 347 as amended, dictates disposal requirements. However, regional dumpsites have the ability to impose more stringent requirements. Disposal of some Designated Substances may require testing prior to disposal so as to classify the waste.

brought about by maintenance, renovation or alteration activities. Disturbance of ACM must follow the appropriate asbestos precautions for the classification of work being performed. See the following for general procedures.

4.2.1 Pipe Insulation

If pipe insulation is to be removed, remove minor amounts (less than 1 square metre) of asbestos-containing pipe insulations using Type 2 procedures as outlined in Ontario Regulation 278/05. If larger amounts of pipe insulation (greater than 1 square metre) are to be removed, use Type 3 procedures as outlined in Ontario Regulation 278/05. Alternately use Glove Bag Procedures as outlined in Ontario Regulation 278/05.

If jacketing over asbestos insulation is to be repaired (e.g. canvas and lagging), use Type 2 procedures as outlined in Ontario Regulation 278/05.

4.3 Lead

Demolition of surfaces painted with lead-based paint, and of ceramic tiles, using sledge hammers etc. should be using Type 2A Lead procedures as outlined in the Ministry of Labour Guideline – Lead on Construction Projects, 2004.

Construction disturbance of lead-containing products may result in excessive exposure to lead. Cutting, grinding, drilling, removing stripping or demolition of materials containing or coated with lead should be completed only with proper respiratory protection and other worker safety precautions as outlined in the Ministry of Labour Guideline – Lead on Construction Projects, 2004.

4.4 Mercury

Avoid direct skin contact with mercury materials and avoid inhalation of mercury vapour. Avoid breaking lamps. If disposed of, waste lamps should be treated as likely hazardous waste, due to mercury content. Pinchin recommends treatment of fluorescent lamp waste to reclaim mercury. Recycle all mercury containing materials.

4.5 Silica

Construction disturbance of silica-containing products may result in excessive exposures to airborne silica, especially if performed indoors and dry. Cutting, grinding, drilling or demolition of materials containing silica should be completed only with proper respiratory protection and other worker safety precautions as outlined in the Ministry of Labour Guideline – Silica on Construction Projects, 2004.

5.0 LIMITATIONS

This report details the hazardous building materials found within or forming part of the building envelope. The assessment only included inspections of the structure and finishes, including mechanical equipment. The assessment did not include inspection of current or past owner or occupant articles within the building (i.e. process materials or equipment, portable equipment, curriculum items, etc.) and does not report on possible contaminants in the soil and groundwater of the site, underground storage tanks, buried piping, inside drums, vessels, production equipment, or in areas not accessed by the surveyor.

The work performed by Pinchin was conducted in accordance with generally accepted engineering or scientific practices current in this geographical area at the time the work was performed. The Client acknowledges that subsurface and concealed conditions may vary from those encountered or inspected. Pinchin can only comment on the environmental conditions observed on the date(s) the assessment is performed. The work is limited to those materials or areas of concern identified by the Client or outlined in our proposal. Other areas of concern may exist but were not investigated within the scope of this assignment.

Pinchin makes no other representations whatsoever, including those concerning the legal significance of its findings, or as to other legal matters touched on in this report, including, but not limited to, ownership of any property, or the application of any law to the facts set forth herein. With respect to regulatory compliance issue, regulatory statutes are subject to interpretation and these interpretations may change over time. Pinchin accepts no responsibility for consequential financial effects on transactions or property values, or requirements for follow-up actions and costs.

No warranty is either expressed or implied, or intended by this agreement or by furnishing oral or written reports or findings. The liability of Pinchin or its staff will be limited to the lesser of the fees paid or actual damages incurred by the Client. Pinchin will not be responsible for any consequential or indirect damages. Pinchin will only be liable for damages resulting from negligence of Pinchin. Pinchin will not be liable for any losses or damage if client has failed, within a period of (2) years following the date upon which the claim is discovered within the meaning of the Limitations Act, 2002 (Ontario), to commence legal proceedings against Consultant to recover such losses or damage.

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6.0 CLOSURE

Should there be any questions regarding the contents of this report, please contact the undersigned at 905-363-1424.

Pinchin Environmental Ltd.

Prepared by:

Reviewed by:

Original signed by...

Original signed by...

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APPENDIX I
FRIABILITY AND REGULATIONS

Friability

The term friable is applied to a material that can be readily reduced to dust or powder by hand or moderate pressure. ACM that are friable have a much greater potential than non-friable ACM to release airborne asbestos fibres when disturbed. The most common friable ACM used in the past are surfacing materials (usually sprayed fireproofing, texture, decorative or acoustic plaster) and thermal insulations on mechanical systems. Asbestos-containing manufactured materials include vinyl floor tiles, ceiling tiles, gasket materials, asbestos cement pipe or board, and asbestos textiles. Depending on the formulation these may be friable or non-friable. Note that though a product may be considered non-friable when new, if the product releases fine dust due to deterioration or during removal, the free dust is considered friable. For example, lay-in acoustic ceiling tiles or plaster may release significant dust at the time of removal.

Regulations - Ontario

Section 30 of the Occupational Health and Safety Act requires building owners or their agents (architects, general contractors, construction managers, etc.) to prepare or have prepared, a list of designated substances present in the area of construction or facility undergoing construction work. There are eleven designated substances subject to special regulation under the Occupational Health and Safety Act. Of these eleven, asbestos, lead, mercury, and silica are commonly found in buildings and can impact construction, demolition, and renovation projects. The owner should ensure that a prospective constructor has received a designated substance report before entering into a binding contract with the contractor. The owner or the owner's agent is liable to the contractor for damages and costs arising from unreported materials (of which the owner should reasonably have been aware), and could also be subject to orders and fines from the Ministry of Labour.

The disturbance of asbestos-containing materials (ACM) on construction projects is controlled by Ontario Ministry of Labour Regulation 278/05 made under the Occupational Health and Safety Act (Designated Substance - Asbestos on Construction Projects and in Buildings and Repair Operations). The Regulation classifies all disturbances as Type 1, Type 2, or Type 3, each of which has defined work practices. All ACM are subject to special handling and disposal, and must be removed before partial or full demolition. The Ministry of Labour must be notified prior to any project involving removal of more than a minor amount of friable ACM (Type 3 or Glove Bag abatement).

In addition to the requirements under the Occupational Health and Safety Act, Section 6 of the Ministry of Labour Regulations for Construction Projects (Ontario Regulation 213/91 as amended to O.Reg. 628/05) requires the contractor to report any Designated Substances likely to be used (asbestos is a Designated

Substance), handled or disturbed during the project. This information is required when submitting the Notice of Project form.

The Ministry of Labour released two documents in December 2004, Ministry of Labour Guideline - Lead on Construction Projects, and Ministry of Labour Guideline - Silica on Construction Projects. Although these documents were not released as Regulations, to quote the Ministry of Labour *“These guidelines will raise awareness of the potential hazards associated with Lead and Silica for common construction activities and tasks, and will provide assistance to employers, constructors and workers in how to take reasonable precautions to protect workers from exposure to Lead and Silica. These Guidelines include specific measures and procedures for typical construction activities and operations and can be used as best practices by the industry.”* These guidelines are expected to be widely enforced by the Ministry of Labour, via the general duty clause 25 (2) (h) of the Occupational Health and Safety Act, since there is no other construction regulation regarding lead and silica available for them to draw upon as a resource. The Ministry of Labour has also issued guidelines or proposed regulations for coal tar products and handling of mercury on construction sites.

The Ministry of Labour has not yet passed regulations or issued guidelines for control of other designated substances on construction projects. The Ministry of Labour has promulgated industrial regulations for all the designated substances, which give guidance on exposure monitoring, permissible exposure levels, medical monitoring, etc.

The Ontario Ministry of Labour published the hazard alert “Mould in Workplace Buildings”, in December 2000. To quote from the alert, “The sustained and/or extensive growth of any visible mould on the interior surfaces of a building is unacceptable. Mould growth on the interior surfaces of buildings is a risk factor for health problems.” The Ministry of Labour has enforced work stoppages as a result of indoor mould growth and has enforced removal using work practices similar to those required for asbestos abatement.

Waste disposal is controlled by Ministry of the Environment Regulation, R.R.O. 1990 Reg. 347 as amended by O.Reg. 461/05.

APPENDIX II
RESULTS OF BULK SAMPLE ANALYSIS FOR ASBESTOS



Pinchin Environmental Asbestos Laboratory Certificate of Analysis

Project Name:	Lakeridge Health 47 Liberty St. S	Date Received:	February 15, 2008
Project No.:	44603	Date Analyzed:	February 21, 2008
Lab Reference No.:	b50180	# Samples submitted:	17
Analyst(s):	L. DeCurtis	# Phases analyzed:	20

Bulk samples are checked visually and scanned under a stereomicroscope. Slides are prepared and observed under a Polarized Light Microscope (PLM) at magnifications of 40X, 100X or 400X as appropriate. Asbestos fibres are identified by a combination of morphology, colour, refractive index, extinction, sign of elongation, birefringence and dispersion staining colours. A visual estimate is made of the percentage of asbestos present by the prescribed method. A reported concentration of less than (<) the regulatory threshold indicates the presence of confirmed asbestos in trace quantities limited to only a few fibres or fibre bundles in an entire sample. Refer to the chart below for the provincial regulatory thresholds. Multiple phases within a sample are analyzed separately.

All bulk samples submitted to this laboratory for asbestos analysis are retained for a minimum of three months. Samples may be retrieved, upon request, for re-examination at any time during that period.

Pinchin Environmental Ltd. is accredited by the National Institute of Standards and Technology, National Voluntary Laboratory Accreditation Program (NVLAP Lab Code 101270-0 and 200795-0) for selected test methods for the identification of asbestos in bulk samples and meets all requirements of ISO/IEC 17025:1999 and relevant requirements of ISO 9002:1994.

Provincial Jurisdiction	Regulatory Threshold	Method(s) of Analysis	
Ontario	0.5%	EPA 600/R-93/116	
Quebec	0.1%	EPA 600/R-93/116	IRSST 244-2
Manitoba	0.1% friable 1% non-friable	EPA 600/R-93/116	NIOSH 9002
British Columbia	1.0%	EPA 600/R-93/116	
Alberta, Saskatchewan	Unstated, likely 1.0%	EPA 600/R-93/116	
Atlantic Provinces (NL, NS, PEI, NB)	1.0%	EPA 600/R-93/116	

Methods of Analysis:

EPA 600/R-93/116 - Method for the Determination of Asbestos in Bulk Building Materials dated July, 1993

IRSST 244-2 - Characterization of fibres in settled dust or in bulk materials. Institut de recherche en santé et en sécurité du travail du Québec, Issued 1999

NIOSH 9002 Method – Bulk Asbestos Method, Issue 2 dated the 15th, August 1994

NOTE: *This test report may not be reproduced, except in full, without the written approval of the laboratory. The client may not use this report to claim product endorsement by NVLAP or any agency of the U.S. Government. This report is valid only when signed in blue ink by the analyst and the laboratory manager.*

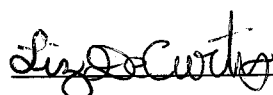
Pinchin Environmental Asbestos Laboratory Certificate of Analysis

Project Name: Lakeridge Health 47 Liberty St. S
Project No.: 44603
Prepared For: Thong Nguyen

Lab Reference No.: b50180
Date Analyzed: February 21, 2008

BULK SAMPLE ANALYSIS

SAMPLE IDENTIFICATION	SAMPLE DESCRIPTION	% COMPOSITION (VISUAL ESTIMATE)	
		ASBESTOS	OTHER
001A AT01 2x2 Fleck & Hole CT/Ceiling/GF Corridor Outside Elevator	Homogeneous, beige, compressed, fibrous material.	None Detected	Cellulose 50-75% Mineral Wool 10-25% Perlite 10-25% Other Non-Fibrous 0.5-5%
001B AT01 2x2 Fleck & Hole CT/Ceiling/GF Corridor SG22	Homogeneous, beige, compressed, fibrous material.	None Detected	Cellulose 50-75% Mineral Wool 10-25% Perlite 10-25% Other Non-Fibrous 0.5-5%
001C AT01 2x2 Fleck & Hole CT/Ceiling/1st Floor Outside S120	Homogeneous, beige, compressed, fibrous material.	None Detected	Cellulose 50-75% Mineral Wool 10-25% Perlite 10-25% Other Non-Fibrous 0.5-5%
002A Plaster Coat/Wall/GF Corridor SG22	2 Phases: a) Homogeneous, grey, hard, cementitious material.	None Detected	Non-Fibrous Material > 75%
	b) Homogeneous, white, hard, cementitious material.	None Detected	Non-Fibrous Material > 75%
002B Plaster Coat/Wall/1st Floor Outside S120	Homogeneous, white, hard, cementitious material.	None Detected	Non-Fibrous Material > 75%

ANALYST: 

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Prepared For: Thong Nguyen

Lab Reference No.: b50180
Date Analyzed: February 21, 2008

BULK SAMPLE ANALYSIS

SAMPLE IDENTIFICATION	SAMPLE DESCRIPTION	% COMPOSITION (VISUAL ESTIMATE)	
		ASBESTOS	OTHER
002C Plaster Coat/Wall/GF SG05	2 Phases: a) Homogeneous, grey, hard, cementitious material.	None Detected	Non-Fibrous Material > 75%
	b) Homogeneous, white, hard, cementitious material.	None Detected	Non-Fibrous Material > 75%
002D Plaster Coat/Wall/1st Floor Outside S126	Homogeneous, white, hard, cementitious material.	None Detected	Non-Fibrous Material > 75%
002E Plaster Coat/Wall/GF Mechanical Room	2 Phases: a) Homogeneous, grey, hard, cementitious material.	None Detected	Non-Fibrous Material > 75%
	b) Homogeneous, white, hard, cementitious material.	None Detected	Non-Fibrous Material > 75%
003A AT02 2x4 Random Pinhole/Ceiling/GF Outside SG05	Homogeneous, beige, compressed, fibrous material.	None Detected	Cellulose 50-75% Mineral Wool 10-25% Perlite 10-25% Other Non-Fibrous 0.5-5%
003B AT02 2x4 Random Pinhole/Ceiling/GF S006	Homogeneous, beige, compressed, fibrous material.	None Detected	Cellulose 50-75% Mineral Wool 10-25% Perlite 10-25% Other Non-Fibrous 0.5-5%

ANALYST: 

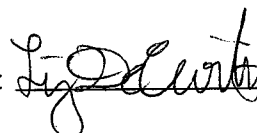
Pinchin Environmental Asbestos Laboratory Certificate of Analysis

Project Name: Lakeridge Health 47 Liberty St. S
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Lab Reference No.: b50180
Date Analyzed: February 21, 2008

BULK SAMPLE ANALYSIS

SAMPLE IDENTIFICATION	SAMPLE DESCRIPTION	% COMPOSITION (VISUAL ESTIMATE)	
		ASBESTOS	OTHER
003C AT02 2x4 Random Pinhole/Ceiling/1st Floor S124	Homogeneous, beige, compressed, fibrous material.	None Detected	Cellulose 50-75% Mineral Wool 10-25% Perlite 10-25% Other Non-Fibrous 0.5-5%
004A Drywall Joint Compound/Wall/GF SG06	Homogeneous, off-white, soft, cementitious material.	None Detected	Non-Fibrous Material > 75%
Comments:	Cellulose is present on the surface of this sample.		
004B Drywall Joint Compound/Wall/GF EG13	Homogeneous, white, soft, cementitious material.	None Detected	Non-Fibrous Material > 75%
Comments:	Cellulose is present on the surface of this sample.		
004C Drywall Joint Compound/ Wall/Penthouse	Homogeneous, white, soft, cementitious material.	None Detected	Non-Fibrous Material > 75%
Comments:	Drywall is present on the surface of this sample.		
005A Vinyl Sheet Flooring/Floor/1st Floor S124	Homogeneous, grey, consolidated, fibrous material on the back of vinyl sheet flooring.	None Detected	Cellulose 25-50% Synthetic Fibres 10-25% Glass Fibres 0.5-5% Wollastonite 0.5-5% Non-Fibrous Material 25-50%

ANALYST: 


Pinchin Environmental Asbestos Laboratory Certificate of Analysis

Project Name: Lakeridge Health 47 Liberty St. S
Project No.: 44603
Prepared For: Thong Nguyen

Lab Reference No.: b50180
Date Analyzed: February 21, 2008

BULK SAMPLE ANALYSIS

SAMPLE IDENTIFICATION	SAMPLE DESCRIPTION	% COMPOSITION (VISUAL ESTIMATE)	
		ASBESTOS	OTHER
005B Vinyl Sheet Flooring/Floor/1st Floor S119	Homogeneous, grey, consolidated, fibrous material on the back of vinyl sheet flooring.	None Detected	Cellulose 25-50% Synthetic Fibres 10-25% Glass Fibres 0.5-5% Wollastonite 0.5-5% Non-Fibrous Material 25-50%
005C Vinyl Sheet Flooring/Floor/GF SG05	Homogeneous, grey, consolidated, fibrous material on the back of vinyl sheet flooring.	None Detected	Cellulose 25-50% Synthetic Fibres 10-25% Glass Fibres 0.5-5% Wollastonite 0.5-5% Non-Fibrous Material 25-50%

ANALYST: 

APPENDIX III
NITON XRF LEAD TEST RESULTS

Test	Floor	Room Name or Number	Colour and Substrate	Lead Content (mg/cm ²)
1	GF	Corridor	Grey lead sheeting	76
2	GF	Corridor	Beige 4x4 ceramic tile	22
3	GF	Corridor	Yellow 5x5 ceramic tile	0.06
4	GF	Corridor	White sink	-1.0
5	GF	Corridor	Grey plaster	0.02
6	GF	Corridor	Tope steel door	0.01
7	GF	Corridor	Dark tan 5x5 ceramic tile	0.13
8	GF	Corridor	Tan plaster	0.0
9	GF	Corridor	Dark blue steel door	0.03
10	GF	Corridor	Beige fire equipment	0.04
11	GF	Corridor	Purple window frame	0.01
12	GF	Corridor	Dark brown window frame	-0.1
13	GF	Corridor	White radiator	-0.05
14	GF	Corridor	Grey elevator doors steel	0.05
15	GF	Corridor	Pink plaster	0.1
16	GF	Corridor	Blue steel door	0.0
17	GF	Corridor	Pink plaster	0.01

Test	Floor	Room Name or Number	Colour and Substrate	Lead Content (mg/cm ²)
18	GF	Washroom	White 4x4 ceramic tile	0.46
19	GF	Corridor	Grey plaster	0.01
20	GF	Corridor	Beige plaster	0.0
21	GF	Corridor	Tan terrazzo flooring	0.00
22	GF	Corridor	Beige 4x4 ceramic tile	17
23	GF	Corridor	Blue 4x4 ceramic tile	0.9
24	GF	Corridor	Red 6x6 ceramic tile	0.0
25	GF	Corridor	Beige plaster	0.1
26	GF	Corridor	White sink	0.0
27	GF	Corridor	Grey plaster	0.0
28	GF	Corridor	Pink drywall	0.0
29	GF	Washroom	Grey 2x2 ceramic tile	0.02
30	GF	Washroom	White 4x4 ceramic tile	0.5
31	GF	Corridor	Yellow drywall	-0.1
32	GF	Corridor	Beige plaster	0.0
33	GF	Corridor	Beige 4x4 ceramic tile	20
34	GF	Washroom	Grey 2x2 ceramic	0.01

Test	Floor	Room Name or Number	Colour and Substrate	Lead Content (mg/cm ²)
			tile	
35	GF	Corridor	Grey plaster	0.01
36	GF	Corridor	White plaster	0.13
37	PH	Mechanical	Red 5x8 brick	0.0
38	PH	Mechanical	Grey hand rail steel	0.04
39	PH	Mechanical	Grey structural steel	0.1
40	PH	Mechanical	White duct	0.5
41	PH	Mechanical	Grey concrete floor	0.1
42	1 st	Custodian closet	Tan 5x8 ceramic tile	1.8
43	1 st	Corridor	Red 5x8 brick	0.1
44	1 st	Corridor	Beige plaster	0.04
45	1 st	Corridor	Light maroon steel door	0.0
46	1 st	Corridor	Grey steel door	0.0
47	1 st	Corridor	Beige electrical panel	0.02
48	1 st	Corridor	Beige fire equipment	0.1
49	1 st	Corridor	Yellow 5x5 ceramic tile	0.02
50	1 st	Corridor	Off white radiator	0.01
51	1 st	Corridor	Brown 6x6 ceramic tile	0.16

Test	Floor	Room Name or Number	Colour and Substrate	Lead Content (mg/cm ²)
52	1 st	Washroom	White 4x4 ceramic tile	0.5
53	1 st	Corridor	Beige 5x8 brick	-0.3
54	1 st	Corridor	Beige plaster	-0.4
55	1 st	Corridor	Off white 4x4 ceramic tile	0.6
56	1 st	Corridor	White porcelain sink	0.0
57	1 st	Corridor	Beige plaster -0.5	-0.5
58	1 st	Washroom	Grey 2x2 ceramic tile	0.04
59	1 st	Corridor	Tan plaster	0.02
60	1 st	Corridor	Blue steel door	0.02
61	1 st	Corridor	Tan elevator doors	0.05
62	GF	Exterior	Red 5x8 brick	0.0
63	GF	Mechanical room	Red 3 ½ x 8 brick	-6.5

APPENDIX IV
PHOTOGRAPHS



Photo 1 – Plaster on brick – Sample S002



Photo 2 – 2' x 2' Acoustic ceiling tile –
Sample S001



Photo 3 – Lead sheeting



Photo 4 – 2' x 4' Acoustic ceiling tile
random pinhole – Sample S003



Photo 5 – Fibreglass insulated pipe with
paper covering and foil taped elbows

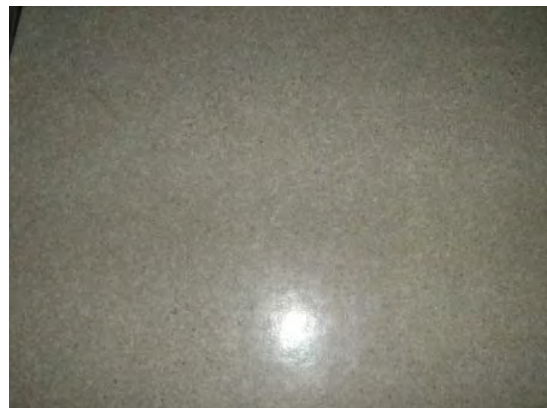


Photo 6 – Vinyl sheet flooring – Sample
S005



Photo 7 – Pipes insulated with fibreglass insulation



Photo 8 – Pipes insulated with fibreglass insulation



Photo 9 – Pipes inside pipe chase



Photo 10 – Debris inside pipe chase

APPENDIX V
DRAWINGS



LEGEND

SXXX SAMPLE LOCATIONS
PTCXX PHOTO LOCATIONS



2470 Milltower Court
Mississauga, Ontario
Phone: 1 888 767 3330

PROJECT NAME

LAKERIDGE HEALTH
47 LIBERTY ST. S
BOWMANVILLE, ONTARIO

DRAWING NAME

GROUND FLOOR

PROJECT NUMBER
44603

REVISION NUMBER
—

DRAWN BY
VG

CHECKED BY
—

SCALE
NTS

DRAWING NUMBER

1 of 9

DATE
2008/02/25





LEGEND

SXXX SAMPLE LOCATIONS
PTCXX PHOTO LOCATIONS



2470 Milltower Court
Mississauga, Ontario
Phone: 1 888 767 3330

PROJECT NAME

LAKERIDGE HEALTH
47 LIBERTY ST. S
BOWMANVILLE, ONTARIO

DRAWING NAME

FIRST FLOOR

PROJECT NUMBER
44603

REVISION NUMBER
—

DRAWN BY
VG

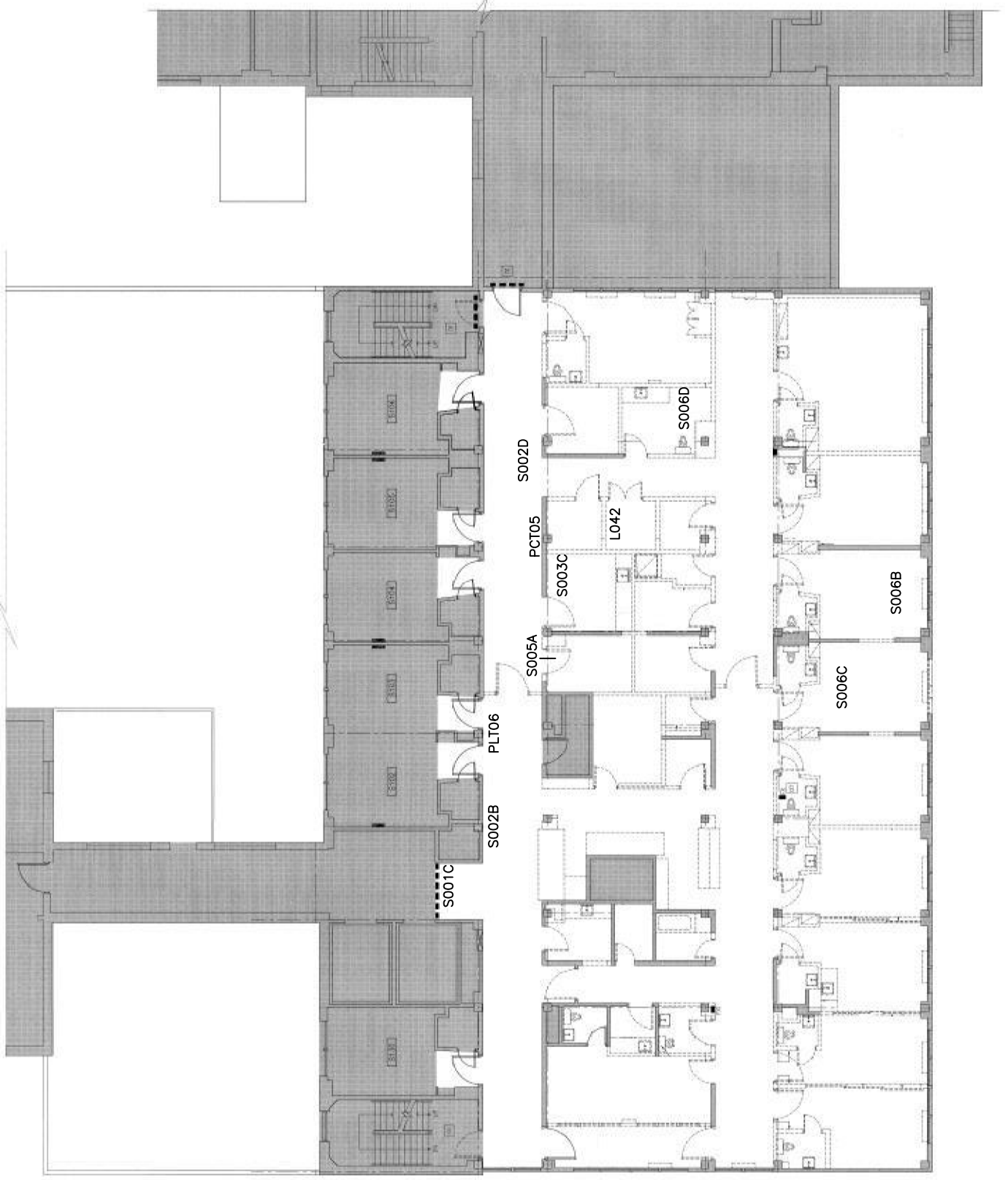
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SCALE
NTS

DRAWING NUMBER

DATE
2008/02/25

2 of 9





LEGEND

SXXX SAMPLE LOCATIONS
PTCXX PHOTO LOCATIONS



2470 Milltower Court
Mississauga, Ontario
Phone: 1 888 767 3330

PROJECT NAME

LAKERIDGE HEALTH
47 LIBERTY ST. S
BOWMANVILLE, ONTARIO

DRAWING NAME

PENTHOUSE

PROJECT NUMBER
44603

REVISION NUMBER
—

DRAWN BY
VG

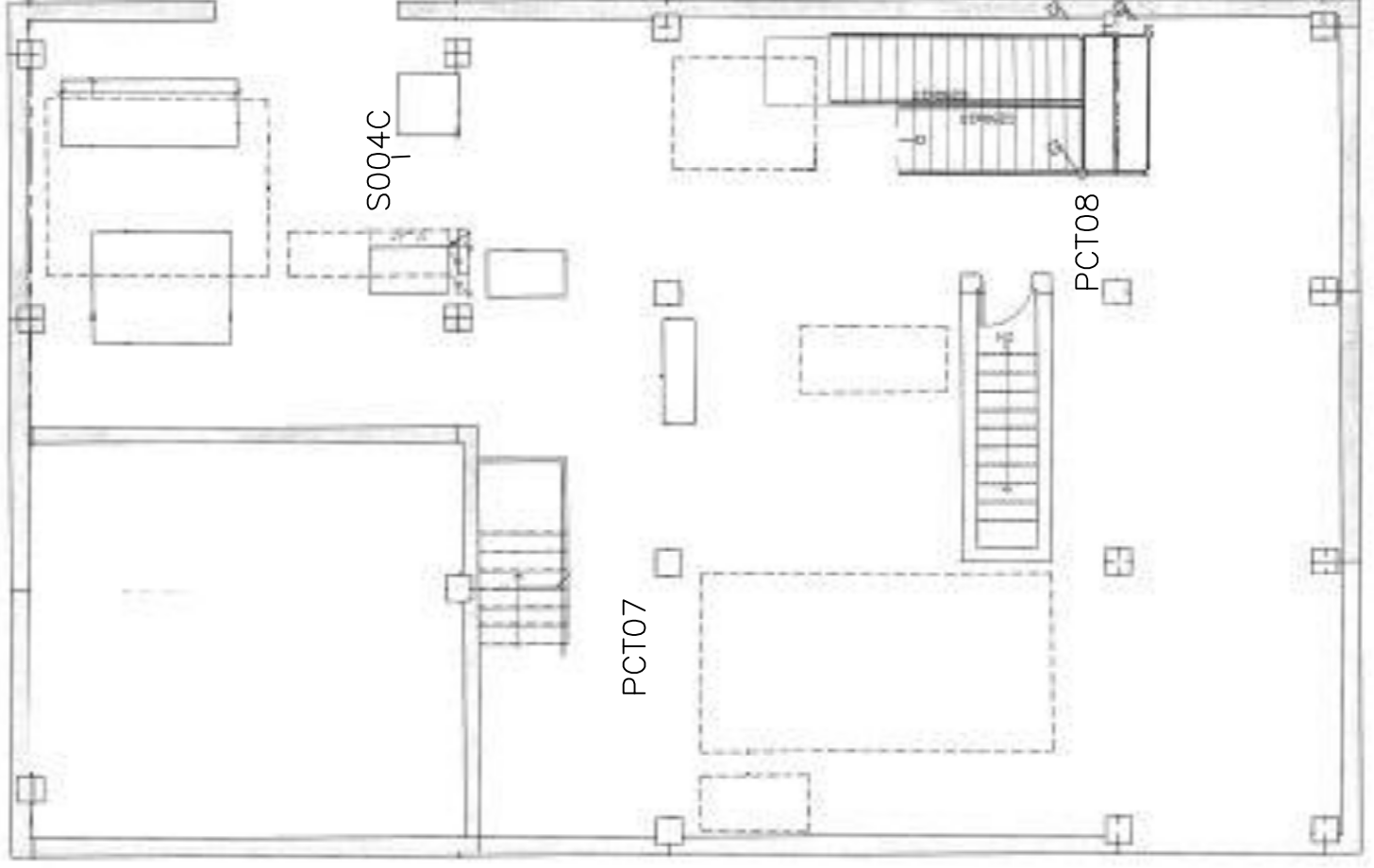
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DRAWING NUMBER

DATE
2008/02/25

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LEGEND

● CEILING ACCESS POINT



2470 Milltower Court
Mississauga, Ontario
Phone: 1 888 767 3330

PROJECT NAME

LAKERIDGE HEALTH
47 LIBERTY ST. S
BOWMANVILLE, ONTARIO

DRAWING NAME

GROUND FLOOR

PROJECT NUMBER
44603

REVISION NUMBER
—

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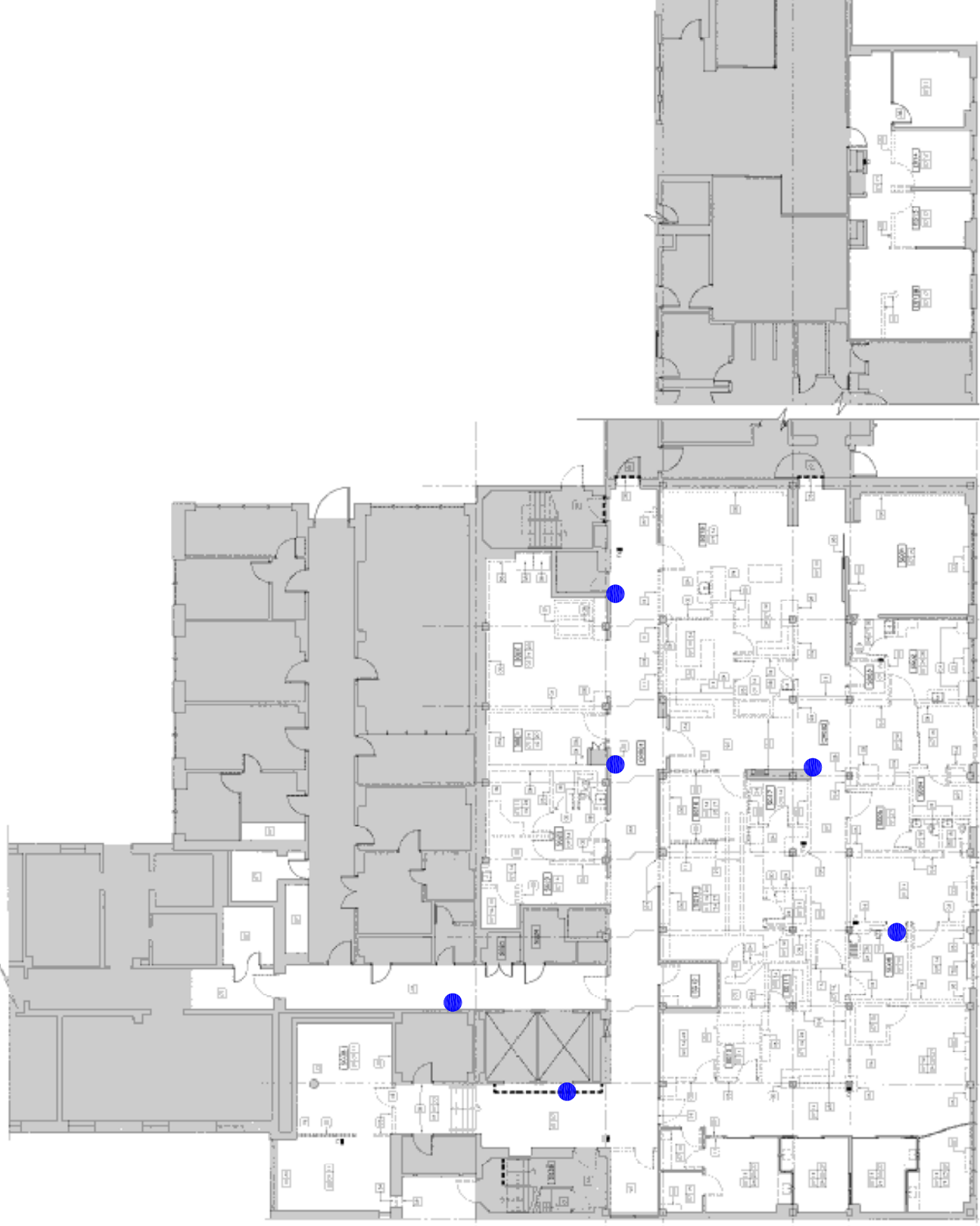
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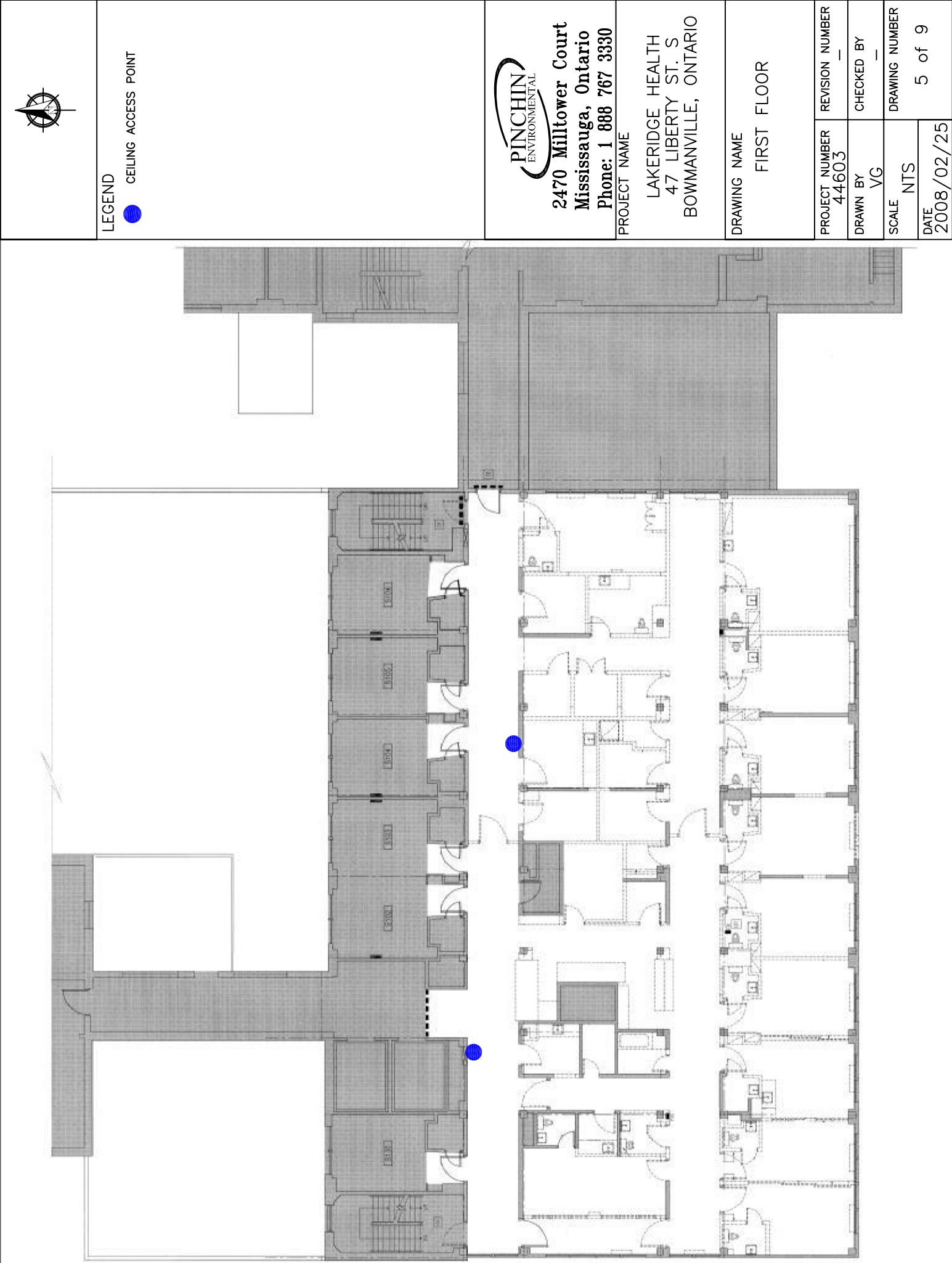
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DATE
2008/02/25





LEGEND

● CEILING ACCESS POINT



2470 Milltower Court
Mississauga, Ontario
Phone: 1 888 767 3330

PROJECT NAME

LAKERIDGE HEALTH
47 LIBERTY ST. S
BOWMANVILLE, ONTARIO

DRAWING NAME

FIRST FLOOR

PROJECT NUMBER
44603

REVISION NUMBER
—

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VG

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—

SCALE
NTS

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DATE
2008/02/25



LEGEND



CEILING ACCESS POINT



2470 Milltower Court
Mississauga, Ontario
Phone: 1 888 767 3330

PROJECT NAME

LAKERIDGE HEALTH
47 LIBERTY ST. S
BOWMANVILLE, ONTARIO

DRAWING NAME

PENTHOUSE

PROJECT NUMBER
44603

REVISION NUMBER
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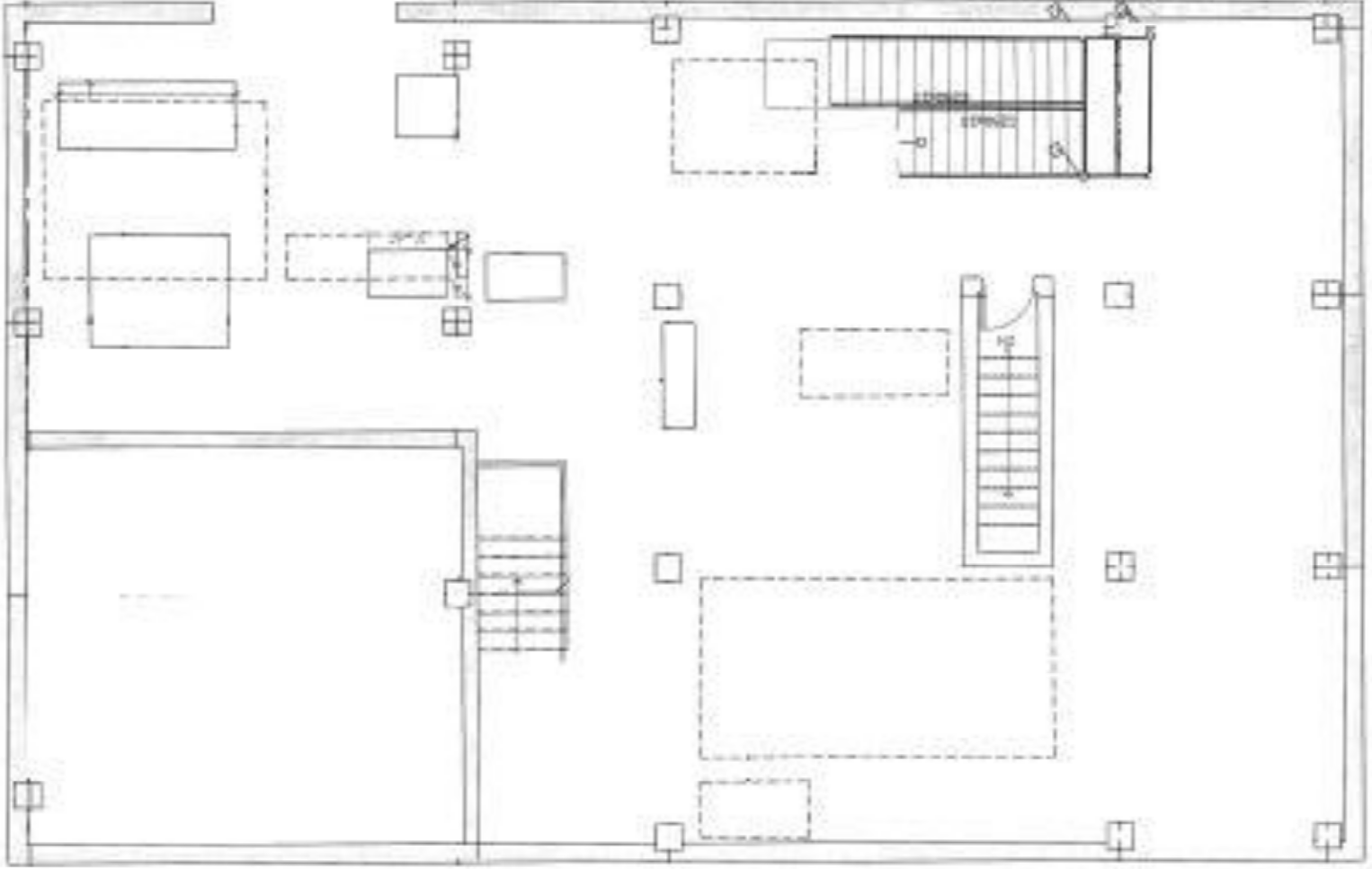
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DATE
2008/02/25

6 of 9





LEGEND

XX INACCESSIBLE PIPE CHASE



2470 Milltower Court
Mississauga, Ontario
Phone: 1 888 767 3330

PROJECT NAME

LAKERIDGE HEALTH
47 LIBERTY ST. S
BOWMANVILLE, ONTARIO

DRAWING NAME

GROUND FLOOR

PROJECT NUMBER
44603

REVISION NUMBER
—

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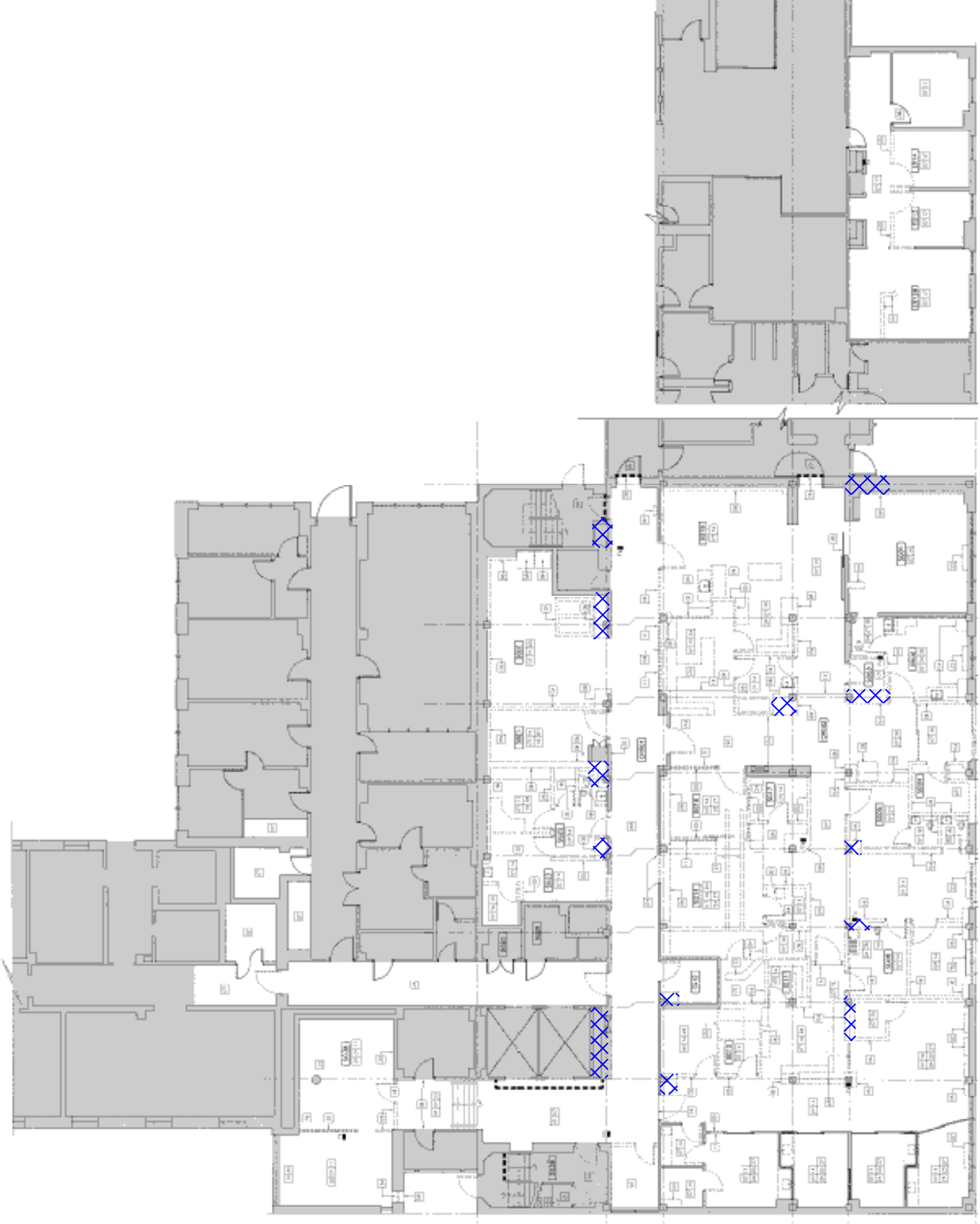
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DATE
2008/02/25





LEGEND

XX INACCESSIBLE PIPE CHASE



2470 Milltower Court
Mississauga, Ontario
Phone: 1 888 767 3330

PROJECT NAME

LAKERIDGE HEALTH
47 LIBERTY ST. S
BOWMANVILLE, ONTARIO

DRAWING NAME

FIRST FLOOR

PROJECT NUMBER
44603

REVISION NUMBER
—

DRAWN BY
VG

CHECKED BY
—

SCALE
NTS

DRAWING NUMBER

8 of 9

DATE
2008/02/25





LEGEND

- XX INACCESSIBLE PIPE CHASE
- ⊗ ASBESTOS PIPE INSULATION



2470 Milltower Court
Mississauga, Ontario
Phone: 1 888 767 3330

PROJECT NAME

LAKERIDGE HEALTH
47 LIBERTY ST. S
BOWMANVILLE, ONTARIO

DRAWING NAME

PENTHOUSE

PROJECT NUMBER
44603

REVISION NUMBER
—

DRAWN BY
VG

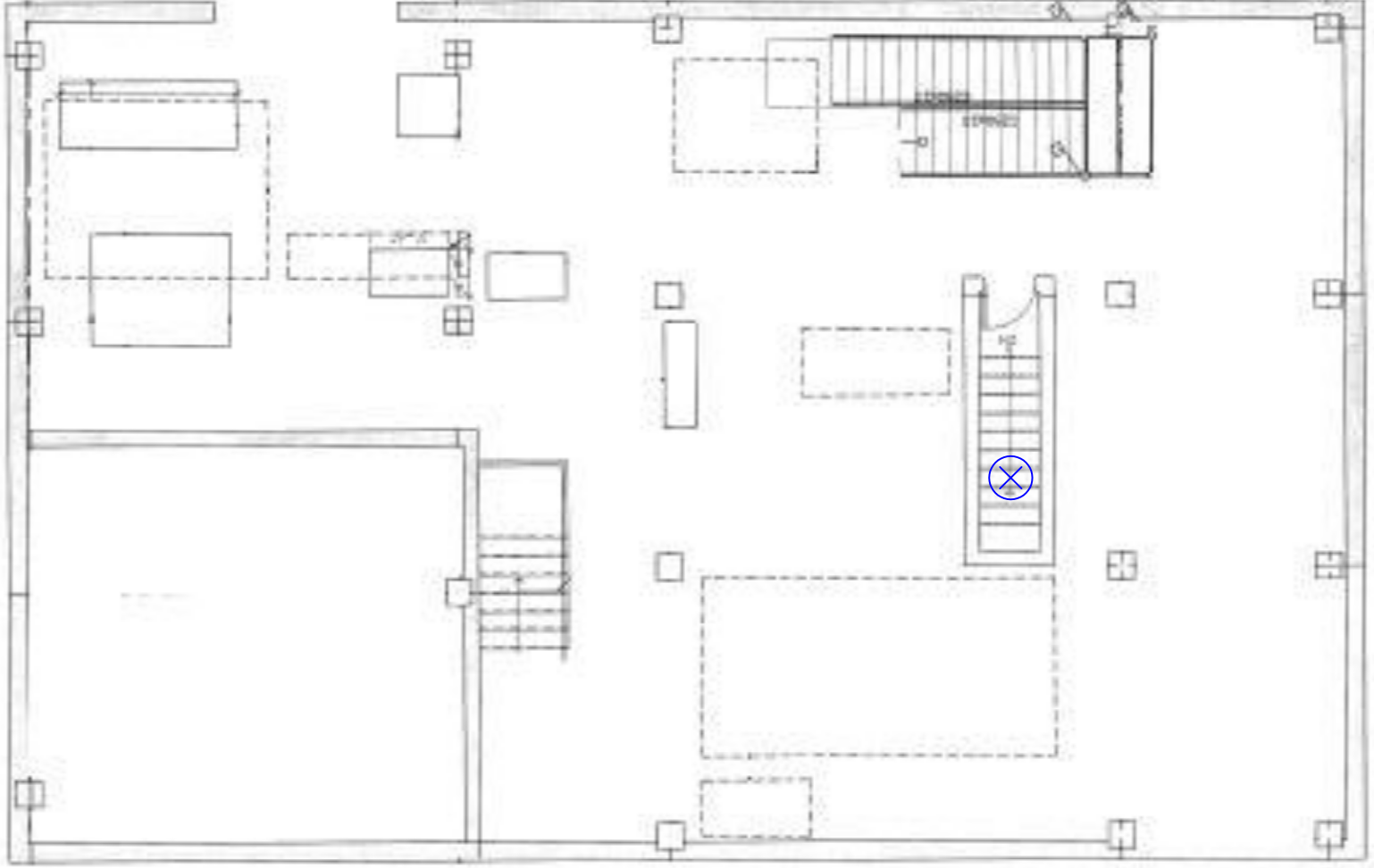
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SCALE
NTS

DRAWING NUMBER

DATE
2008/02/25

9 of 9





Asbestos Building Materials Report Lakeridge Health Corporation - Bowmanville 47 Liberty Street South Bowmanville, Ontario



Prepared for:
Lakeridge Health Corporation
1 Hospital Court
Oshawa, Ontario
L1G 2B9

Attention: John Meulenbroeks

November 27, 2007

Pinchin File 40492

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Summary

Pinchin Environmental Ltd. (Pinchin) was retained by Lakeridge Health Corporation (LHC) to conduct an asbestos-containing building materials assessment at the LHC facility located at 47 Liberty St. South in Bowmanville, Ontario. The objective of the assessment was to establish the location, condition and type of asbestos-containing building materials (ACM) that are present.

The assessment was performed by Niall Pinder of Pinchin Environmental Ltd., on July 3rd, 4th and 5th, 2007. The surveyor was accompanied by Don Jones of LHC during the assessment. This report provides a detailed description of the Assessment Criteria (Section 2), Findings (Section 3), Recommendations (Section 4) and Limitations (Section 5). The full report must be referenced for the complete results of the assessment.

Asbestos was confirmed to be present in the following building materials:

Pipe Insulation

Non-asbestos Sweatwrap pipe insulation with paring cement, containing chrysotile asbestos, at the seams (Sample 002A), is present on straight sections of unidentified pipe. The paring cement is friable. Both insulations are jacketed with canvas.

Acoustic Ceiling Tiles

The 2' x 4' lay-in acoustic ceiling tile present in the Blue Shed contains chrysotile asbestos (Sample 008A). This type of ceiling tile is white, with a pattern of medium size fissures and pinholes. Asbestos-containing acoustic tiles are non-friable and in good condition.

Plaster

Plaster containing chrysotile asbestos (Samples 010A) is present as a wall and ceiling finish in the Residence.

Asbestos Cement Products

Asbestos cement (also known as transite) tiles are present on the ceiling of the Blue Shed adjacent to the hospital. Transite is a non-friable material that was visually determined to contain asbestos. All transite sheets are in good condition. Assume these sheets contain asbestos of a type other than chrysotile.

Vinyl Floor Tiles

Several types of 9"x9" vinyl asbestos floor tiles were found in limited quantities throughout the original 1967 area of the building. Regardless of colour or pattern, these tiles generally contain asbestos, and were therefore not sampled during this assessment. A total of approximately 900 square feet of 9"x9" vinyl asbestos floor tile is present.

Tile Size	Colour	Original Sample Location or Area	Sample Number	Asbestos Content
9"x9"	All	Not sampled – See Appendix IV for specific locations	N/A	Assumed Yes
12"x12"	Gray with black flecks	Not sampled, W/C area in blue storage shed, less than 50 square feet of tile	N/A	Assumed Yes

The above table summarizes the sample results and visual appearance of the tile but does not include all locations of vinyl floor tile.

All vinyl floor tiles are non-friable materials and in good condition.

Recommendations

No remedial action is required to comply with O. Reg. 278/05. Ongoing assessment of the asbestos containing materials is required, which should be done using a building asbestos management plan.

Table of Contents

1.0	INTRODUCTION AND SCOPE	1
1.1	Facility Description	1
1.2	Scope of Work	3
2.0	ASSESSMENT CRITERIA.....	3
2.1	Methodology	3
2.2	Assessment Exclusions	4
2.3	Sampling Strategy and Frequency.....	5
2.4	Analytical Methods	6
2.5	Basis of Evaluation and Recommendation.....	7
2.6	Photographs	7
2.7	Drawings	7
3.0	FINDINGS	8
3.1	Sprayed Fireproofing and Thermal Insulation	8
3.2	Texture Finishes (Acoustic/Decorative).....	8
3.3	Pipe Insulation.....	8
3.4	Duct Insulation	9
3.5	Mechanical Equipment Insulation.....	9
3.6	Acoustic Ceiling Tiles	9
3.7	Vermiculite	10
3.8	Plaster	10
3.9	Drywall Compound	10
3.10	Asbestos Cement Products	10
3.11	Vinyl Sheet Flooring	11
3.12	Vinyl Floor Tiles	11
3.13	Other Asbestos-Containing Building Materials	12
4.0	RECOMMENDATIONS	12
4.1	Administrative Recommendations	12
4.2	Remedial Recommendations	13
4.3	Long Term Recommendations	13
5.0	LIMITATIONS OF ASSESSMENT	14
6.0	CLOSURE	16

Appendices

Appendix I	Friability and Regulations
Appendix II	Results of Bulk Sample Analysis for Asbestos
Appendix III	Drawings
Appendix IV	Photographs

1.0 INTRODUCTION AND SCOPE

Pinchin Environmental Ltd. (Pinchin) was retained by Lakeridge Health Corporation (LHC) to conduct an asbestos-containing building materials assessment of the LHC facility located at 47 Liberty St. South in Bowmanville, Ontario. The assessment included the North and South Wings, the adjacent former residence at 11 Lambert St. and a blue shed of approximately 1000 square feet located east of the hospital. The East Wing, constructed in 1990, was not included in the assessment at the request of LHC. Pinchin's assessment proposal of May 4, 2007 did not include the building at 11 Lambert Street or the blue shed. These two buildings were added at the request of Mr. M. Green once the survey was in progress. This assessment was performed for the purposes of long term management of the asbestos, and not for construction or renovation purposes. Additional intrusive testing will be required prior to using this information for construction or renovation.

1.1 Facility Description

The North Wing was constructed in 1950, followed by the South Wing in 1962, and the East Wing in 1990. A major renovation of the North and South Wings was undertaken at the time of construction of the East Wing. It was reported by Mr. M. Green of LHC that asbestos abatement was undertaken throughout the North and South Wings concurrent with the renovation, which included removal of lay-in ceiling tile systems and abatement of all accessible friable asbestos-containing materials (ACM) including that in mechanical rooms. Solid ceilings were not removed to abatement ACM above.

LHC maintains an extensive record of the abatement process which was reviewed by the surveyor.

The North Wing consists of two above grade levels (Ground and First). The South Wing consists of four above grade levels (Ground, First, Second and Third) and a small Penthouse Elevator Machine Room.

The former residence is a masonry and wood structure consisting of two floors as well as a full basement and attic. The residence was constructed in 1926, and underwent a major renovation in 1993, at which time many plaster walls and ceilings were removed and replaced with drywall and new HVAC systems installed.

The Blue Shed east of the hospital does not appear to have been renovated since constructed. LHC did not provide details regarding any asbestos abatement being performed in the shed.

The following provides a basic description of the building systems.

Hospital:

System	Description
Structure	Steel deck and poured concrete deck
Exterior Cladding	Masonry
HVAC	Gas fired boiler, with forced air heating and hot water radiator system
Roof	Membrane, tar, and gravel covering
Flooring	Terrazzo, vinyl floor tile, vinyl sheet flooring, metal, concrete
Interior Walls	Plaster, drywall, tile
Ceilings	Plaster, drywall, acoustic lay-in ceiling tile, solid plaster ceiling above acoustic lay-in ceiling tile system

Residence at 11 Lambert St.:

System	Description
Structure	Wood
Exterior Cladding	Masonry
HVAC	Gas fired furnace with forced air heating, recently replaced unit and ductwork
Roof	Tar shingle
Flooring	Wood, vinyl floor tile, vinyl sheet flooring
Interior Walls	Plaster, drywall
Ceilings	Plaster, drywall

Blue Storage Shed:

System	Description
Structure	Steel
Exterior Cladding	Steel
HVAC	None found.
Roof	Steel
Flooring	Vinyl floor tile, carpet, poured concrete
Interior Walls	Wood where present
Ceilings	Transite asbestos tile, acoustic lay-in ceiling tile

1.2 Scope of Work

The objective of the assessment was to establish the location, condition and type of all friable and a limited number of non-friable asbestos-containing building materials (ACM). The assessment included a search for ACM incorporated in the structure and its finishes. Not included was an assessment of owner or occupant articles within the building (i.e. stored items, furniture, etc.), sampling of materials that could result in damage to the building, or underground materials or equipment (vessels, drums, underground storage tanks, pipes, etc.). Specific exclusions are described below.

2.0 ASSESSMENT CRITERIA

2.1 Methodology

Based on LHC's belief that all friable ACM has been abated from the Bowmanville facility, the surveyor performed a visual below ceiling inspection of the North and South Wings. The East Wing, constructed in 1990, was not assessed.

Existing data provided by LHC was used to make generalizations about materials present above ceilings. Random locations on each floor were chosen for an above ceiling investigation to confirm if friable ACM has been abated in the area reviewed. Ceiling spaces where existing data was not available were examined

where access was possible. Above ceiling investigations were performed using the infection control cubicle where required.

The surveyor inspected for the presence of friable asbestos-containing materials (sprayed insulation, acoustic/texture plaster, mechanical insulation, etc.). Representative samples of these friable materials were obtained to confirm visual identification and when required to update existing bulk sampling to meet the current requirements of O.Reg. 278/05 (See Section 2.3 for details).

The surveyor also inspected for the presence of non-friable ACM, and non-friable materials which may become friable during construction (e.g. plaster). Typical examples of non-friable materials include asbestos cement ceiling tiles or piping, acoustic ceiling tiles, vinyl floor tiles, vinyl sheet flooring, and asbestos textiles (curtains, vibration dampers) etc. Asbestos cement materials were sampled or visually identified as an asbestos-containing material where present.

Plaster, while intact, is considered a non-friable material, however dust and debris created during demolition causes this to be considered a friable material during demolition. Asbestos use in plaster is often inconsistent because installation practices greatly varied during on site mixing of plaster, and it is occasionally present as a contaminant in vermiculite. Therefore extensive sampling of plaster surfaces is necessary to come to a reasonable conclusion regarding the presence and content of asbestos within plaster. Plaster is considered a surfacing material to determine the number of samples required.

Drywall joint compound is considered a non-friable material. It often contained asbestos when used prior to 1985. Most buildings undergo constant renovation, including the removal and replacement of drywall partitions. Therefore extensive sampling of drywall compound is often necessary to come to a reasonable conclusion. All accessible drywall was installed during the 1989/1990 renovation according to Don Jones of LHC, and the joint compound therefore is not suspected to contain asbestos as asbestos was not in used in joint compound at that time.

2.2 Assessment Exclusions

Sampling of a number of possible non-friable materials which may contain asbestos could *not* be included in our assessment. The presence of asbestos must be suspected and these materials are best sampled *immediately* prior to removal during renovation. These suspect non-friable materials are listed below, and could not be sampled as it causes significant damage to the material or building:

- elevator and lift brakes
- components or wiring within motors or lights

- high voltage wiring
- mechanical packing, ropes and gaskets
- exterior cladding, soffit and fascia boards on building
- fire-door cores
- window caulking
- demountable fire resistant metal clad walls
- roofing, roofing felt and building paper
- mastics, adhesives and tar
- vermiculite above solid ceilings, inside masonry or other wall assemblies
- moulded plastic components (laboratory bench tops)
- underground services or piping
- paper products used under flooring or under metal or slate roofing
- concrete levelling compound (for floors)
- refractory brick in boilers or incinerators
- dust in ductwork

Areas above solid or removable ceilings were accessed in a limited number of locations in order to gain information to make generalizations about the presence of concealed materials above ceilings. Our assessment did not include demolition of masonry, drywall, plaster etc. to view concealed conditions. The assessment did not include removal of finishes on floors, ceilings, walls or other demolition to check on concealed conditions.

2.3 Sampling Strategy and Frequency

Samples were collected at a rate that was in compliance with the requirements of O.Reg. 278/05, which states a minimum number of samples are to be collected and analyzed (1, 3, 5, or 7 depending on quantity, application and friability) from each area of homogeneous material for the material to be considered non-asbestos. This frequency is indicated in the table below. A homogeneous sampling area is defined by the USEPA as containing material that is uniform in texture and appearance, was installed at one time and is unlikely to consist of more than one type or formulation of material. The surveyor used information obtained on site by visual examination, available information on the phases of the construction and information on renovations obtained from the client to determine the extent of each homogeneous area and the number of samples required.

Type of Material	Size of Homogeneous Material	Minimum Number of Bulk Samples
Surfacing material, including without limitation material that is applied to surfaces by spraying, by towelling or otherwise, such as acoustical plaster on ceilings, fireproofing materials on structural members and plaster	Less than 90 square metres	3
	90 or more square metres, but less than 450 square metres	5
	450 or more square metres	7
Thermal insulation, except as described below	Any size	3
Thermal insulation patch	Less than 2 linear metres or 0.5 square metres	1
Other material	Any size	3

2.4 Analytical Methods

Bulk samples collected for asbestos identification were analyzed at IATL Laboratories in the USA. Preliminary identification of asbestos fibres is made using polarized light microscopy, with confirmation of the presence and type of asbestos made by dispersion staining optical microscopy. The analysis was performed in accordance with U.S. Environmental Protection Agency, Test Method EPA/600/R-93/116: Method for the Determination of Asbestos in Bulk Building Materials, June 1993. IATL Laboratories is certified under the National Voluntary Laboratory Accreditation Program (NVLAP) to perform asbestos analysis of bulk samples (IATL Laboratory NVLAP 101165).

Analysis was completed using a stop positive approach. Only one sample of a material is required to determine that a material is asbestos-containing, but all samples must be analyzed to conclusively determine that a material is non-asbestos (O. Reg. 278/05). The laboratory stopped analyzing samples from a homogeneous material once greater than 0.5% asbestos was detected in any of the samples of that material. All were analyzed if no asbestos was detected.

Sample locations were recorded on the drawings in Appendix III. Analytical results are presented in Appendix II – Results of Bulk Sample Analysis for Asbestos.

2.5 Basis of Evaluation and Recommendation

The condition of any ACM found is evaluated as well as the potential for disturbance of the ACM. These evaluation criteria are based on the conclusions of published studies, particularly the “Royal Commission on Matters of Health and Safety Arising from the Use of Asbestos in Ontario”, existing Ontario regulation, and our experience involving buildings that contain friable ACM.

An asbestos-containing material was considered damaged if it is sprayed material that is delaminating, mechanical insulation with damaged/missing insulation or jacketing, non-friable materials that have been pulverized, exposed underpad on vinyl sheet flooring, etc., which causes it to become friable.

The priority for remedial action is based not only on the evaluation of condition but is also based on several other factors which include:

- Accessibility or potential for direct contact and disturbance which can cause release of asbestos to the air.
- Practicality of repair (for example will damage to the ACM continue even if it is repaired).
- Efficiency of the work (for example if damaged ACM is being removed in an area it may be most practical to remove all ACM in the area even if it is in good condition).

Recommendations also include those that are mandatory regulated requirements, such as some provincial requirements for institution of an asbestos management plan, training, record keeping etc.

2.6 Photographs

Photographs are presented in Appendix IV.

2.7 Drawings

Included on the drawings in Appendix III are locations that samples were collected. Drawings are hatched to show the presence of asbestos-containing building materials.

3.0 FINDINGS

The assessment was performed by Niall Pinder of Pinchin on July 3rd, 4th, 5th, 2007.

The sample numbers (sample XXX) referenced below refer to the analytical reports in Appendix II.

The following rooms or areas of the building were not accessible to the surveyor and their contents could not be assessed, and are therefore not included in the report:

Location Number	Building	Floor	Number or Name of Inaccessible Room
Room NG21	North wing	Ground	Interior of old chimney stack
N/A	South wing	5 th	Elevator mechanical room, approximately 100 sq. ft.
N/A	Blue storage shed	Attic	Attic
N/A	Blue storage shed	Ground	East room
N/A	North Wing	1 st	Crawlspace above solid ceiling

3.1 Sprayed Fireproofing and Thermal Insulation

Sprayed fireproofing or sprayed thermal insulation was not found.

3.2 Texture Finishes (Acoustic/Decorative)

Texture finishes were not found.

3.3 Pipe Insulation

Non-asbestos brown, layered paper insulation, commonly referred to as Sweatwrap, is present on straight sections of unidentified pipe in the North Wing (Samples 001A-C). Sweatwrap was not observed in the South Wing.

Parging cement containing chrysotile asbestos (Sample 002A) is present on seams of non-asbestos Sweatwrap on unidentified pipes in Engineering / Environmental Services in the North Wing. No parging cement was observed elsewhere in the North Wing or South Wing. Both the parging cement and Sweatwrap are covered with a canvas jacket and in good condition.

Non-asbestos fibreglass insulation is present on fittings and straight sections of pipe throughout the building. Straight sections of fibreglass insulation are covered by canvas or paper. Fittings are fibreglass covered with paper or foil tape. There was no asbestos parging noted on the seams of the insulation at the locations inspected. Some sections of canvas covered fibreglass insulation appear to have been abated and reinsulated with fibreglass and paper or fibreglass and foil tape.

Pipes insulated with friable asbestos insulations may be present in inaccessible spaces such as above solid ceilings, in chases, in column enclosures and within shafts.

3.4 Duct Insulation

Ducts are either uninsulated or insulated with non-asbestos fibreglass jacketed with either canvas or foil.

3.5 Mechanical Equipment Insulation

No asbestos-containing insulations are present on mechanical equipment. All mechanical equipment is insulated with non-asbestos fibreglass or not insulated. , Main mechanical rooms for the North Wing (Rooms NG21, NG22, and NG23), were abated of all asbestos-containing insulations during the 1993 renovation (per Mr. Mel Green, LHC).

It was reported by Mr. Don Jones of LHC that several boilers in, the North Wing Boiler Room (Room NG21), were installed in 1978. These boilers must undergo intrusive testing prior to any future removal to determine the presence of asbestos.

3.6 Acoustic Ceiling Tiles

Three visually distinct types of acoustic ceiling tile, suspected to contain asbestos, are present in the building. Three samples of each were collected. Sample analysis determined one of the three styles contain chrysotile asbestos (Sample 008A). The asbestos-containing tiles are white, 2' by 4' lay-in tiles with a pattern of medium size fissures and pinholes. These tiles are located in the Blue Shed. Asbestos-containing acoustic tiles are non-friable and in good condition

The following ceiling tiles were sampled and found not to contain asbestos;

The white, 1'x1' glued-on tiles with a pattern of large fissures width way across the tile (Samples 007A-C)

The white, 1'x1' stapled-on tiles with a pattern of large and medium size round holes (Sample 005A-C).

All remaining types of acoustic ceiling tile are not suspected to contain asbestos as they were purchased/installed after 1986, per Don Jones of LHC.

3.7 Vermiculite

Loose fill vermiculite was not found.

3.8 Plaster

Plaster was used as an original wall and ceiling finish in the North Wing. Seven samples (Samples 004A-G) were analyzed and found not to contain asbestos. Based on O.Reg. 278/05 sampling requirements, all original plaster in the North Wing can be considered non-asbestos containing.

Plaster was used as an original wall and ceiling finish in the South Wing. Seven samples (Samples 006A-G) were analyzed and found not to contain asbestos. Based on O.Reg. 278/05 sampling requirements all original plaster in the South Wing can be considered non-asbestos containing.

Plaster containing chrysotile asbestos is present as a wall and ceiling finish in the residence at 11 Lambert St. (Sample 011A). Assume *all* plaster in the Residence contains chrysotile asbestos unless further sampling proves otherwise.

3.9 Drywall Compound

Drywall or gypsum board was used as a wall and ceiling finish in the North and South Wings and the Residence at 11 Lambert Street as a result of renovations. Until the early to mid-1980s, drywall joint compound contained chrysotile asbestos. It is the understanding of Pinchin that all drywall which was accessible during this assessment was installed during or after the 1989/90 renovation of the North and South Wings, or the 1993 renovation of the Residence (per Don Jones, LHC) and therefore not suspected to contain asbestos.

3.10 Asbestos Cement Products

Asbestos cement (also known as transite) tiles are present on the ceiling of the Blue Storage shed which is adjacent to the hospital. Transite is a non-friable material that was visually determined to contain asbestos. Approximately 600

square feet of tile are present. All transite sheets are in good condition. Assume these sheets contain asbestos of a type other than chrysotile.

3.11 Vinyl Sheet Flooring

The paper backing of the yellow, patterned vinyl sheet flooring found in the washroom area (approximately 50 square feet) of the Blue Storage shed is assumed to contain asbestos in the paper backing. Due to unhygienic conditions sampling was not performed.

Based on purchase and installation dates (post 1986) provided by Mr. Don Jones of LHC, remaining vinyl sheet flooring is not suspected to contain asbestos.

3.12 Vinyl Floor Tiles

Several types of 9"x9" vinyl floor tiles are present in limited quantities throughout the North Wing of the building. Floor tiles of this size and age generally contain asbestos. Therefore regardless of colour or pattern, 9" by 9" tiles are to be assumed to contain chrysotile asbestos. A total of approximately 900 square feet of 9"x9" vinyl asbestos floor tile is present.

Tile Size	Colour	Original Sample Location or Area	Sample Number	Asbestos Content
9"x9"	All	Not sampled – See Appendix III for specific locations	N/A	Assumed Yes
12"x12"	Gray with black flecks	Not sampled, W/C area in blue storage shed, less than 50 square feet of tile	N/A	Assumed Yes
12"x12"	Beige with white streaks	Room NG29	003A-C	No

The above table summarizes the sample results and visual appearance of the tile but does not include all locations of vinyl floor tile. Refer to drawings found in Appendix III for locations of asbestos-containing vinyl floor tiles.

All vinyl floor tiles are non-friable materials and in good condition.

Based on purchase/installation dates (post 1986) provided by Don Jones of LHC remaining vinyl floor tiles are not suspected to contain asbestos.

3.13 Other Asbestos-Containing Building Materials

Asbestos Cement

Transite (asbestos cement) ceiling tiles are present in the Blue Shed. Approximately 600 square feet of tiles are present. The tiles are 2'x2', with a pattern of evenly distributed rows of large round holes. Assume these sheets contain asbestos of a type other than chrysotile. Transite ceiling tiles are in good condition. See drawings in Appendix III for the location of transite ceiling tiles.

Caulking

A rough, gray caulking with a fine aggregate texture is present around windows in the attic level of the Residence building. The caulking was found to contain no asbestos (sample 010A-C).

4.0 RECOMMENDATIONS

4.1 Administrative Recommendations

As asbestos materials are present in the building, an Asbestos Management Program is required to comply with O.Reg. 278/05. The following are typical components of a comprehensive Asbestos Management Plan:

1. An Asbestos Building Materials Assessment. Report to be kept onsite and updated once every 12 month period or if the information changes.
2. Notification of workers, staff, and prospective contractor/constructor of locations and friability of asbestos-containing materials. An employer whose workers work in a building of which the employer is not the owner shall advise the owner if the workers discover material that may be asbestos-containing material in the building.
3. Notify any other person who is an occupier of the building in writing of any information regarding the presence of asbestos in the area occupied by the person.
4. Preparation of written asbestos work practices.
5. Repair or removal of all damaged ACM where it may be disturbed and become airborne (see Specific Recommendations).
6. Provide workers who may disturb friable ACM with training (on the hazards of asbestos, the use, care and disposal of protective equipment and clothing to be used and worn when doing the work, personal hygiene to be observed

when doing the work, the measures and procedures prescribed by Regulation 278/05.

7. Annual submission of Asbestos Work Reports to the Ministry of Labour for workers performing Type 2 or 3 work, and upon termination of the worker.
8. Upgrade the Asbestos Management Program by November 1, 2007 to include all non-friable materials and ceiling tiles.
9. In addition to the minimum regulatory requirements, an Asbestos Management Program should include other items to ensure good compliance (allocation of internal responsibilities, standard forms, provisions for inspection and air monitoring, etc.).
10. Sample all suspect materials and perform a pre-construction assessment with destructive testing prior to disturbance by renovation and demolition. Include in the assessment, destructive testing for friable and non-friable materials that are currently concealed by finishes, walls and ceiling systems (when these systems are affected by the work). All ACM must be removed prior to demolition

4.2 Remedial Recommendations

No remedial action is required to comply with O. Reg. 278/05. Ongoing surveillance is required to monitor the condition ACM.

4.3 Long Term Recommendations

4.3.1 Pipe Insulation

If pipe insulation is to be removed, remove minor amounts (less than 1 square metre) of asbestos-containing pipe insulations using Type 2 procedures as outlined in Ontario Regulation 278/05. If larger amounts of pipe insulation (greater than 1 square metre) are to be removed, use Type 3 procedures as outlined in Ontario Regulation 278/05. Alternately use Glove Bag Procedures as outlined in Ontario Regulation 278/05.

If jacketing over asbestos insulation is to be repaired (e.g. canvas and lagging), use Type 2 procedures as outlined in Ontario Regulation 278/05.

4.3.2 Plaster

In the absence of deterioration, or disturbance during renovations or demolition, asbestos-containing plaster can be managed as a non-friable material. Plaster is a non-friable material that becomes friable and generates significant dust, upon

removal. If plaster is to be abated/demolished in future during to renovation or demolition, remove minor amounts (less than 1 square metre) using Type 2 procedures as outlined in Ontario Regulation 278/05. If larger amounts of plaster (greater than 1 square metre) are to be removed, use Type 3 procedures as outlined in Ontario Regulation 278/05.

4.3.3 Asbestos-Cement Materials

If the material must be removed in the future due to demolition, renovation, etc. use Type 1 procedures as outlined by Ontario Regulation 278/05. Use only hand-held non-powered tools.

4.3.4 Vinyl Sheet Flooring

Prior to removal of vinyl sheet flooring in the Blue Storage Shed perform bulk sampling to determine if asbestos is present. Asbestos-containing vinyl sheet flooring is a non-friable material that can become friable, and can generate significant dust, upon removal. Therefore, if vinyl sheet flooring is to be abated in the future due to demolition, renovation, etc., use Type 2 abatement procedures as outlined in Ontario Regulation 278/05. Use only hand-held non-powered tools.

4.3.5 Vinyl Floor Tiles

Prior to removal of 9 by 9 inch vinyl floor tiles perform bulk sampling to determine if asbestos is present. If asbestos-containing vinyl floor tiles are to be removed in the future due to demolition, renovation, etc, use Type 1 procedures as outlined by Ontario Regulation 278/05. Use only hand-held non-powered tools.

5.0 LIMITATIONS OF ASSESSMENT

This report details the asbestos-containing building materials found within or forming part of the building envelope. The assessment only included inspections of the structure and finishes, including mechanical equipment. The assessment did not include inspection of current or past owner or occupant articles within the building (i.e. process materials or equipment, portable equipment, curriculum items, etc.) and does not report on possible contaminants in the soil and groundwater of the site, underground storage tanks, buried piping, inside drums, vessels, production equipment, or in areas not accessed by the surveyor.

The work performed by Pinchin was conducted in accordance with generally accepted engineering or scientific practices current in this geographical area at the time the work was performed. No warranty is either expressed or implied by furnishing written reports or findings. The Client acknowledges that subsurface and concealed conditions may vary from those encountered or inspected. Pinchin

can only comment on the environmental conditions observed on the date(s) the assessment is performed. The work is limited to those materials or areas of concern identified by the Client or outlined in our proposal. Other areas of concern may exist but were not investigated within the scope of this assignment.

Pinchin makes no other representations whatsoever, including those concerning the legal significance of its findings, or as to other legal matters touched on in this report, including, but not limited to, ownership of any property, or the application of any law to the facts set forth herein. With respect to regulatory compliance issue, regulatory statutes are subject to interpretation and these interpretations may change over time. Pinchin accepts no responsibility for consequential financial effects on transactions or property values, or requirements for follow-up actions and costs.

No warranty is either expressed or implied, or intended by this agreement or by furnishing oral or written reports or findings. The liability of Pinchin or its staff will be limited to the lesser of the fees paid or actual damages incurred by the Client. Pinchin will not be responsible for any consequential or indirect damages. Pinchin is only liable for damages resulting from negligence of Pinchin. All claims by the Client shall be deemed relinquished if not made within two years after last date of services provided.

Information provided by Pinchin is intended for Client use only. Pinchin will not provide results or information to any party unless disclosure by Pinchin is required by law. Any use by a third party of reports or documents authored by Pinchin or any reliance by a third party on or decisions made by a third party based on the findings described in said documents, is the sole responsibility of such third parties. Pinchin accepts no responsibility for damages suffered by any third party as a result of decisions made or actions conducted. No other warranties are implied or expressed.

6.0 CLOSURE

Should there be any questions regarding the contents of this report, please contact the undersigned at 905-363-1418.

Pinchin Environmental Ltd.

Prepared by:

Reviewed by:

Original signed by...

Original signed by...

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APPENDIX I
FRIABILITY AND REGULATIONS

Friability

The term friable is applied to a material that can be readily reduced to dust or powder by hand or moderate pressure. ACM that are friable have a much greater potential than non-friable ACM to release airborne asbestos fibres when disturbed. The most common friable ACM used in the past are surfacing materials (usually sprayed fireproofing, texture, decorative or acoustic plaster) and thermal insulations on mechanical systems. Asbestos-containing manufactured materials include vinyl floor tiles, ceiling tiles, gasket materials, asbestos cement pipe or board, and asbestos textiles. Depending on the formulation these may be friable or non-friable. Note that though a product may be considered non-friable when new, if the product releases fine dust due to deterioration or during removal, the free dust is considered friable. For example, lay-in acoustic ceiling tiles or plaster may release significant dust at the time of removal.

Regulations - Ontario

Each province has issued regulations or guidelines for control of work around asbestos in buildings and for the packaging and disposal of asbestos waste. The applicable regulations governing asbestos in *Ontario* are as follows:

The disturbance of asbestos-containing materials (ACM) on construction projects is controlled by Ontario Ministry of Labour Regulation 278/05 made under the Occupational Health and Safety Act (Designated Substance - Asbestos on Construction Projects and in Buildings and Repair Operations). The Regulation classifies all disturbances as Type 1, Type 2, or Type 3, each of which has defined work practices. All ACM are subject to special handling and disposal, and must be removed before partial or full demolition. The Ministry of Labour must be notified prior to any project involving removal of more than a minor amount of friable ACM (Type 3 or Glove Bag abatement).

In addition to the requirements under the Occupational Health and Safety Act, Section 6 of the Ministry of Labour Regulations for Construction Projects (Regulation 213/91 as amended to O.Reg. 631/94) requires the contractor to report any Designated Substances likely to be used (asbestos is a Designated Substance), handled or disturbed during the project. This information is required when submitting the Notice of Project form.

Waste disposal is controlled by Ministry of the Environment Regulation, R.R.O. 1990 Reg. 347 as amended by 461/05.

APPENDIX II

RESULTS OF BULK SAMPLE ANALYSIS FOR ASBESTOS

CERTIFICATE OF ANALYSIS

Client: Pinchin Environmental
2470 Milltower Court
Mississauga ON L5N 7W5

Report Date: 7/19/2007
Project: Bldg #LHC, Bowmanville
Project No.: 40492

BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 3012611	Description / Location: Tan Wrap; Pipe, Ground Floor			
Client No.: S001a	N.Wing,RmNG20,EnvironmentalSvcsWorkshop			
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	90	Cellulose	10

Lab No.: 3012612	Description / Location: Tan Wrap; Pipe, Ground Floor			
Client No.: S001b	N.Wing,RmNG20,EnvironmentalSvcsWorkshop			
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	90	Cellulose	10

Lab No.: 3012613	Description / Location: Tan Wrap; Pipe, Ground Floor			
Client No.: S001c	N.Wing,RmNG20,EnvironmentalSvcsWorkshop			
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	90	Cellulose	10

Lab No.: 3012614	Description / Location: Grey Parging Insulation; Pipe, Ground Floor			
Client No.: S002a	N.Wing,RmNG20,EnvironmentalSvcsWorkshop			
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
40	Chrysotile	None Detected	None Detected	60

NIST-NVLAP No. 101165-0**NY-DOH No. 11021****AIHA Lab No. 100188**

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This report shall not be reproduced except in full, without written approval of the laboratory.*

Analysis Method: EPA 600/R-93/116

Comments: (PC) Indicates Stratified Point Count Method performed. Method not performed unless stated. Small asbestos fibers may be missed by PLM due to resolution limitations of the optical microscope. Therefore, negative PLM results cannot be guaranteed. Electron Microscopy can be used as a confirming technique. Regulatory Limit is based upon the sample matrix. Quantification at <0.25% by volume is possible with this method. Analysis includes all distinct separable layers in accordance with EPA 600 Method. If not reported or otherwise noted, layer is either not present or the client has specifically requested that it not be analyzed.

Analysis Performed By: T. Fisher**Approved By:****Date:** 7/18/2007Frank E. Ehrenfeld, III
Laboratory Director

IATLInternational Asbestos
Testing Laboratories16000 Horizon Way Unit 100 Mt. Laurel, NJ 08054
Telephone: 856-231-9449 Fax: 856-231-9818**CERTIFICATE OF ANALYSIS****Client:** Pinchin Environmental

2470 Milltower Court

Mississauga ON L5N 7W5

Report Date: 7/19/2007**Project:** Bldg #LHC, Bowmanville**Project No.:** 40492**BULK SAMPLE ANALYSIS SUMMARY****Lab No.:** 3012615**Client No.:** S002b**Description / Location:** Sample Not Analyzed% AsbestosType% Non-Asbestos Fibrous MaterialType% Non-Fibrous Material

Sample Not Analyzed

Sample Not Analyzed

Lab No.: 3012616**Client No.:** S002c**Description / Location:** Sample Not Analyzed% AsbestosType% Non-Asbestos Fibrous MaterialType% Non-Fibrous Material

Sample Not Analyzed

Sample Not Analyzed

Lab No.: 3012617**Client No.:** S003a**Description / Location:** Tan Floor Tile, 12x12
Ground Floor, North Wing% AsbestosType% Non-Asbestos Fibrous MaterialType% Non-Fibrous Material

None Detected

None Detected

None Detected

None Detected

100

Lab No.: 3012617**Client No.:** S003a**Description / Location:** Tan Mastic
Ground Floor, North Wing**Layer No.:** 2% AsbestosType% Non-Asbestos Fibrous MaterialType% Non-Fibrous Material

None Detected

None Detected

None Detected

None Detected

100

NIST-NVLAP No. 101165-0**NY-DOH No. 11021****AIHA Lab No. 100188***This confidential report relates only to those item(s) tested and does not represent an endorsement by NIST-NVLAP, AIHA or any agency of the U.S. government**This report shall not be reproduced except in full, without written approval of the laboratory.*

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Analysis Performed By: T. Fisher**Date:** 7/18/2007



International Asbestos
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CERTIFICATE OF ANALYSIS

Client: Pinchin Environmental

2470 Milltower Court

Mississauga ON L5N 7W5

Report Date: 7/19/2007

Project: Bldg #LHC, Bowmanville

Project No.: 40492

BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 3012618	Description / Location: Tan Floor Tile; 12x12	
Client No.: S003b	Ground Floor, North Wing	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>
None Detected	None Detected	None Detected
		<u>% Non-Fibrous Material</u>
		100

Lab No.: 3012618	Description / Location: Tan Mastic	Layer No.: 2
Client No.: S003b	Ground Floor, North Wing	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>
None Detected	None Detected	None Detected
		<u>% Non-Fibrous Material</u>
		100

Lab No.: 3012619	Description / Location: Tan Floor Tile; 12x12	
Client No.: S003c	Ground Floor, North Wing	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>
None Detected	None Detected	None Detected
		<u>% Non-Fibrous Material</u>
		100

Lab No.: 3012619	Description / Location: Tan Mastic	Layer No.: 2
Client No.: S003c	Ground Floor, North Wing	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>
None Detected	None Detected	None Detected
		<u>% Non-Fibrous Material</u>
		100

NIST-NVLAP No. 101165-0

NY-DOH No. 11021

AIHA Lab No. 100188

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Analysis Performed By: T. Fisher

Date: 7/18/2007

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Testing Laboratories**16000 Horizon Way Unit 100 Mt. Laurel, NJ 08054
Telephone: 856-231-9449 Fax: 856-231-9818**CERTIFICATE OF ANALYSIS****Client:** Pinchin Environmental

2470 Milltower Court

Mississauga ON L5N 7W5

Report Date: 7/19/2007**Project:** Bldg #LHC, Bowmanville**Project No.:** 40492**BULK SAMPLE ANALYSIS SUMMARY****Lab No.:** 3012620**Client No.:** S004a**Description / Location:** White/Grey Wall Plaster
Ground Floor, North Wing, Room NG-08

<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

Lab No.: 3012621**Client No.:** S004b**Description / Location:** White/Grey Wall Plaster
Ground Floor, North Wing, Room NG-01

<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

Lab No.: 3012622**Client No.:** S004c**Description / Location:** White/Grey Wall Plaster; Ground Floor
North Wing, Room NG-06, Carpentry Shop

<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

Lab No.: 3012623**Client No.:** S004d**Description / Location:** White/Grey Wall Plaster
Ground Floor, North Wing, Room NG-26, Stores

<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

NIST-NVLAP No. 101165-0**NY-DOH No. 11021****AIHA Lab No. 100188**

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Analysis Performed By: T. Fisher**Date:** 7/18/2007



International Asbestos
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Telephone: 856-231-9449 Fax: 856-231-9818

CERTIFICATE OF ANALYSIS

Client: Pinchin Environmental
2470 Milltower Court
Mississauga ON L5N 7W5

Report Date: 7/19/2007
Project: Bldg #LHC, Bowmanville
Project No.: 40492

BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 3012624	Description / Location: Grey/White Wall Plaster
Client No.: S004e	1st Floor, North Wing, Closet Off Stair ST-1
<u>% Asbestos</u>	<u>Type</u>
None Detected	None Detected
<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
None Detected	None Detected
<u>% Non-Fibrous Material</u>	
	100

Lab No.: 3012625	Description / Location: Grey/White Wall Plaster; 1st Floor
Client No.: S004f	North Wing, Room 108, Penthouse Access Room
<u>% Asbestos</u>	<u>Type</u>
None Detected	None Detected
<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
None Detected	None Detected
<u>% Non-Fibrous Material</u>	
	100

Lab No.: 3012626	Description / Location: Grey/White Wall Plaster
Client No.: S004g	1st Floor, North Wing, Room N123, Corridor
<u>% Asbestos</u>	<u>Type</u>
None Detected	None Detected
<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
None Detected	None Detected
<u>% Non-Fibrous Material</u>	
	100

Lab No.: 3012627	Description / Location: Tan Ceiling Tile; 1x1; North Wing
Client No.: S005a	Ground Floor, Room NG-02, Bell Telecom Room
<u>% Asbestos</u>	<u>Type</u>
None Detected	None Detected
<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
30	Cellulose
70	Fibrous Glass
<u>% Non-Fibrous Material</u>	
	0

NIST-NVLAP No. 101165-0

NY-DOH No. 11021

AIHA Lab No. 100188

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Analysis Performed By: T. Fisher

Date: 7/18/2007

IATLInternational Asbestos
Testing Laboratories16000 Horizon Way Unit 100 Mt. Laurel, NJ 08054
Telephone: 856-231-9449 Fax: 856-231-9818**CERTIFICATE OF ANALYSIS****Client:** Pinchin Environmental

2470 Milltower Court

Mississauga ON L5N 7W5

Report Date: 7/19/2007**Project:** Bldg #LHC, Bowmanville**Project No.:** 40492**BULK SAMPLE ANALYSIS SUMMARY**

Lab No.: 3012628	Description / Location: Tan Ceiling Tile; 1x1; North Wing
Client No.: S005b	GroundFloor,RoomNG-02,BellTelecomRoom
<u>% Asbestos</u>	<u>Type</u>
None Detected	None Detected
	<u>% Non-Asbestos Fibrous Material</u>
	30
	70
	<u>Type</u>
	Cellulose
	Fibrous Glass
	<u>% Non-Fibrous Material</u>
	0

Lab No.: 3012629	Description / Location: Tan Ceiling Tile; 1x1; North Wing
Client No.: S005c	GroundFloor,RoomNG-02,BellTelecomRoom
<u>% Asbestos</u>	<u>Type</u>
None Detected	None Detected
	<u>% Non-Asbestos Fibrous Material</u>
	30
	70
	<u>Type</u>
	Cellulose
	Fibrous Glass
	<u>% Non-Fibrous Material</u>
	0

Lab No.: 3012630	Description / Location: Grey/White Wall Plaster
Client No.: S006a	Room SG34
<u>% Asbestos</u>	<u>Type</u>
None Detected	None Detected
	<u>% Non-Asbestos Fibrous Material</u>
	None Detected
	<u>Type</u>
	None Detected
	<u>% Non-Fibrous Material</u>
	100

Lab No.: 3012631	Description / Location: Grey/White Wall Plaster
Client No.: S006b	Room S110
<u>% Asbestos</u>	<u>Type</u>
None Detected	None Detected
	<u>% Non-Asbestos Fibrous Material</u>
	None Detected
	<u>Type</u>
	None Detected
	<u>% Non-Fibrous Material</u>
	100

NIST-NVLAP No. 101165-0**NY-DOH No. 11021****AIHA Lab No. 100188**

*This confidential report relates only to those item(s) tested and does not represent an endorsement by NIST-NVLAP, AIHA or any agency of the U.S. government.
This report shall not be reproduced except in full, without written approval of the laboratory.*

Analysis Method: EPA 600/R-93/116

Comments: (PC) Indicates Stratified Point Count Method performed. Method not performed unless stated. Small asbestos fibers may be missed by PLM due to resolution limitations of the optical microscope. Therefore, negative PLM results cannot be guaranteed. Electron Microscopy can be used as a confirming technique. Regulatory Limit is based upon the sample matrix. Quantification at <0.25% by volume is possible with this method. Analysis includes all distinct separable layers in accordance with EPA 600 Method. If not reported or otherwise noted, layer is either not present or the client has specifically requested that it not be analyzed.

Analysis Performed By: T. Fisher**Date:** 7/18/2007

IATLInternational Asbestos
Testing Laboratories16000 Horizon Way Unit 100 Mt. Laurel, NJ 08054
Telephone: 856-231-9449 Fax: 856-231-9818**CERTIFICATE OF ANALYSIS****Client:** Pinchin Environmental

2470 Milltower Court

Mississauga ON L5N 7W5

Report Date: 7/19/2007**Project:** Bldg #LHC, Bowmanville**Project No.:** 40492**BULK SAMPLE ANALYSIS SUMMARY****Lab No.:** 3012632**Client No.:** S006c**Description / Location:** Grey/White Wall Plaster

Room S111

% AsbestosType% Non-Asbestos Fibrous MaterialType% Non-Fibrous Material

None Detected

None Detected

None Detected

None Detected

100

Lab No.: 3012633**Client No.:** S006d**Description / Location:** Grey/White Wall Plaster

Room S129

% AsbestosType% Non-Asbestos Fibrous MaterialType% Non-Fibrous Material

None Detected

None Detected

None Detected

None Detected

100

Lab No.: 3012634**Client No.:** S006e**Description / Location:** Grey/White Wall Plaster

Room S225, Telecom Room

% AsbestosType% Non-Asbestos Fibrous MaterialType% Non-Fibrous Material

None Detected

None Detected

None Detected

None Detected

100

Lab No.: 3012635**Client No.:** S006f**Description / Location:** Grey/White Wall Plaster

Room S208

% AsbestosType% Non-Asbestos Fibrous MaterialType% Non-Fibrous Material

None Detected

None Detected

None Detected

None Detected

100

NIST-NVLAP No. 101165-0**NY-DOH No. 11021****AIHA Lab No. 100188***This confidential report relates only to those item(s) tested and does not represent an endorsement by NIST-NVLAP, AIHA or any agency of the U.S. government
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Analysis Method: EPA 600/R-93/116

Comments: (PC) Indicates Stratified Point Count Method performed. Method not performed unless stated. Small asbestos fibers may be missed by PLM due to resolution limitations of the optical microscope. Therefore, negative PLM results cannot be guaranteed. Electron Microscopy can be used as a confirming technique. Regulatory Limit is based upon the sample matrix. Quantification at <0.25% by volume is possible with this method. Analysis includes all distinct separable layers in accordance with EPA 600 Method. If not reported or otherwise noted, layer is either not present or the client has specifically requested that it not be analyzed.

Analysis Performed By: T. Fisher**Date:** 7/18/2007

IATLInternational Asbestos
Testing Laboratories16000 Horizon Way Unit 100 Mt. Laurel, NJ 08054
Telephone: 856-231-9449 Fax: 856-231-9818**CERTIFICATE OF ANALYSIS****Client:** Pinchin Environmental

2470 Milltower Court

Mississauga ON L5N 7W5

Report Date: 7/19/2007**Project:** Bldg #LHC, Bowmanville**Project No.:** 40492**BULK SAMPLE ANALYSIS SUMMARY****Lab No.:** 3012636**Client No.:** S006g**Description / Location:** Grey/White Wall Plaster
Room S325, Clean Linen Closet

<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

Lab No.: 3012637**Client No.:** S007a**Description / Location:** Off-White Ceiling Tile, 1x1
Room SG-38, Library

<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	90	Fibrous Glass	10

Lab No.: 3012638**Client No.:** S007b**Description / Location:** Off-White Ceiling Tile, 1x1
Room SG-38, Library

<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	90	Fibrous Glass	10

Lab No.: 3012639**Client No.:** S007c**Description / Location:** Off-White Ceiling Tile, 1x1
Room SG-38, Library

<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	90	Fibrous Glass	10

NIST-NVLAP No. 101165-0**NY-DOH No. 11021****AIHA Lab No. 100188***This confidential report relates only to those item(s) tested and does not represent an endorsement by NIST-NVLAP, AIHA or any agency of the U.S. government**This report shall not be reproduced except in full, without written approval of the laboratory.***Analysis Method:** EPA 600/R-93/116

Comments: (PC) Indicates Stratified Point Count Method performed. Method not performed unless stated. Small asbestos fibers may be missed by PLM due to resolution limitations of the optical microscope. Therefore, negative PLM results cannot be guaranteed. Electron Microscopy can be used as a confirming technique. Regulatory Limit is based upon the sample matrix. Quantification at <0.25% by volume is possible with this method. Analysis includes all distinct separable layers in accordance with EPA 600 Method. If not reported or otherwise noted, layer is either not present or the client has specifically requested that it not be analyzed.

Analysis Performed By: T. Fisher**Date:** 7/18/2007

IATLInternational Asbestos
Testing Laboratories16000 Horizon Way Unit 100 Mt. Laurel, NJ 08054
Telephone: 856-231-9449 Fax: 856-231-9818**CERTIFICATE OF ANALYSIS****Client:** Pinchin Environmental

2470 Milltower Court

Mississauga ON L5N 7W5

Report Date: 7/19/2007**Project:** Bldg #LHC, Bowmanville**Project No.:** 40492**BULK SAMPLE ANALYSIS SUMMARY****Lab No.:** 3012640**Client No.:** S008a**Description / Location:** Tan Ceiling Tile; 2x4

Blue Shed

% AsbestosType% Non-Asbestos Fibrous MaterialType% Non-Fibrous Material

PC 1.6

Chrysotile

60

Cellulose

0

PC 38.4

Fibrous Glass

Lab No.: 3012641**Client No.:** S008b**Description / Location:** Sample Not Analyzed% AsbestosType% Non-Asbestos Fibrous MaterialType% Non-Fibrous Material

Sample Not Analyzed

Sample Not Analyzed

Lab No.: 3012642**Client No.:** S008c**Description / Location:** Sample Not Analyzed% AsbestosType% Non-Asbestos Fibrous MaterialType% Non-Fibrous Material

Sample Not Analyzed

Sample Not Analyzed

Lab No.: 3012643**Client No.:** S010a**Description / Location:** Grey Non-Fibrous

Window, Attic Level, Residence Bldg

% AsbestosType% Non-Asbestos Fibrous MaterialType% Non-Fibrous Material

None Detected

None Detected

None Detected

None Detected

100

NIST-NVLAP No. 101165-0**NY-DOH No. 11021****AIHA Lab No. 100188***This confidential report relates only to those item(s) tested and does not represent an endorsement by NIST-NVLAP, AIHA or any agency of the U.S. government**This report shall not be reproduced except in full, without written approval of the laboratory.*

Analysis Method: EPA 600/R-93/116

Comments:

(PC) Indicates Stratified Point Count Method performed. Method not performed unless stated. Small asbestos fibers may be missed by PLM due to resolution limitations of the optical microscope. Therefore, negative PLM results cannot be guaranteed. Electron Microscopy can be used as a confirming technique. Regulatory Limit is based upon the sample matrix. Quantification at <0.25% by volume is possible with this method. Analysis includes all distinct separable layers in accordance with EPA 600 Method. If not reported or otherwise noted, layer is either not present or the client has specifically requested that it not be analyzed.

Analysis Performed By: T. Fisher**Date:** 7/18/2007

CERTIFICATE OF ANALYSIS

Client: Pinchin Environmental 2470 Milltower Court Mississauga ON L5N 7W5	Report Date: 7/19/2007 Project: Bldg #LHC, Bowmanville Project No.: 40492
--	--

BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 3012644	Description / Location: Grey Non-Fibrous			
Client No.: S010b	Window, Attic Level, Residence Bldg			
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

Lab No.: 3012645	Description / Location: Grey Non-Fibrous			
Client No.: S010c	Window, Attic Level, Residence Bldg			
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

Lab No.: 3012646	Description / Location: Grey/Tan Wall Plaster			
Client No.: S011a	Window, Attic Level, Residence Bldg			
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
PC 0.75	Chrysotile	None Detected	None Detected	PC 99.25

Lab No.: 3012647	Description / Location: Sample Not Analyzed			
Client No.: S011b				
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
Sample Not Analyzed		Sample Not Analyzed		

NIST-NVLAP No. 101165-0
NY-DOH No. 11021
AIHA Lab No. 100188

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Analysis Method: EPA 600/R-93/116

Comments: (PC) Indicates Stratified Point Count Method performed. Method not performed unless stated. Small asbestos fibers may be missed by PLM due to resolution limitations of the optical microscope. Therefore, negative PLM results cannot be guaranteed. Electron Microscopy can be used as a confirming technique. Regulatory Limit is based upon the sample matrix. Quantification at <0.25% by volume is possible with this method. Analysis includes all distinct separable layers in accordance with EPA 600 Method. If not reported or otherwise noted, layer is either not present or the client has specifically requested that it not be analyzed.

Analysis Performed By: T. Fisher

Date: 7/18/2007

CERTIFICATE OF ANALYSIS

Client: Pinchin Environmental

2470 Milltower Court

Mississauga ON L5N 7W5

Report Date: 7/19/2007**Project:** Bldg #LHC, Bowmanville**Project No.:** 40492

BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 3012648**Client No.:** S011c**Description / Location:** Sample Not Analyzed% AsbestosType% Non-Asbestos Fibrous MaterialType% Non-Fibrous Material

Sample Not Analyzed

Sample Not Analyzed

Lab No.: 3012649**Client No.:** S011d**Description / Location:** Sample Not Analyzed% AsbestosType% Non-Asbestos Fibrous MaterialType% Non-Fibrous Material

Sample Not Analyzed

Sample Not Analyzed

Lab No.: 3012650**Client No.:** S011e**Description / Location:** Sample Not Analyzed% AsbestosType% Non-Asbestos Fibrous MaterialType% Non-Fibrous Material

Sample Not Analyzed

Sample Not Analyzed

Lab No.: 3012651**Client No.:** S011f**Description / Location:** Sample Not Analyzed% AsbestosType% Non-Asbestos Fibrous MaterialType% Non-Fibrous Material

Sample Not Analyzed

Sample Not Analyzed

NIST-NVLAP No. 101165-0**NY-DOH No. 11021****AIHA Lab No. 100188**

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Analysis Method: EPA 600/R-93/116

Comments:

(PC) Indicates Stratified Point Count Method performed. Method not performed unless stated. Small asbestos fibers may be missed by FLM due to resolution limitations of the optical microscope. Therefore, negative FLM results cannot be guaranteed. Electron Microscopy can be used as a confirming technique. Regulatory Limit is based upon the sample matrix. Quantification at <0.25% by volume is possible with this method. Analysis includes all distinct separable layers in accordance with EPA 600 Method. If not reported or otherwise noted, layer is either not present or the client has specifically requested that it not be analyzed.

Analysis Performed By: T. Fisher**Date:** 7/18/2007

IATLInternational Asbestos
Testing Laboratories16000 Horizon Way Unit 100 Mt. Laurel, NJ 08054
Telephone: 856-231-9449 Fax: 856-231-9818

CERTIFICATE OF ANALYSIS

Client: Pinchin Environmental
2470 Milltower Court
Mississauga ON L5N 7W5**Report Date:** 7/19/2007
Project: Bldg #LHC, Bowmanville
Project No.: 40492

BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 3012652**Description / Location:** Sample Not Analyzed**Client No.:** S011g

<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
Sample Not Analyzed		Sample Not Analyzed		

NIST-NVLAP No. 101165-0**NY-DOH No. 11021****AIHA Lab No. 100188**

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Analysis Method: EPA 600/R-93/116

Comments: (PC) Indicates Stratified Point Count Method performed. Method not performed unless stated. Small asbestos fibers may be missed by PLM due to resolution limitations of the optical microscope. Therefore, negative PLM results cannot be guaranteed. Electron Microscopy can be used as a confirming technique. Regulatory Limit is based upon the sample matrix. Quantification at <0.25% by volume is possible with this method. Analysis includes all distinct separable layers in accordance with EPA 600 Method. If not reported or otherwise noted, layer is either not present or the client has specifically requested that it not be analyzed.

Analysis Performed By: T. Fisher**Date:** 7/18/2007



BULK SAMPLE TRANSMITTAL FORM

Pinchin Environmental Ltd.
2470 Milltower Court,
Mississauga, Ontario,
L5N 7W5
Tel: 905-363-0678
Fax: 905-363-0681

Project Name:		Results To:	
Asbestos Building Material Survey		Niall Pinder Email: npinder@pinchin.com	
Project #: 40492	Building #: LHC Bowmanville	Copy To: Email:	
Submitted By: N.Pinder		Special Instructions: Stop positive all but plaster Stop on Positive: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Analyze Mastic: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Date: July 6, 2007	P.O. #:	Invoice Required <input type="checkbox"/> Yes <input type="checkbox"/> No	
# of Samples: 42	Date Required:	Priority: <input type="checkbox"/> Reg <input type="checkbox"/> Rush	
SAMPLE NUMBER	SAMPLE DESCRIPTION	RESULT	
S001a 3012611	Sweatwrap on unidentified pipe, ground floor, north wing, room NG20 – Environmental Services workshop		
S001b 3012612	Sweatwrap on unidentified pipe, ground floor, north wing, room NG20 – Environmental Services workshop		
S001c 3012613	Sweatwrap on unidentified pipe, ground floor, north wing, room NG20 – Environmental Services workshop		
S002a 3012614	Parging cement on unidentified pipe, ground floor, north wing, room NG20 – Environmental Services workshop		
S002b 3012615	Parging cement on unidentified pipe, ground floor, north wing, room NG20 – Environmental Services workshop		
S002c 3012616	Parging cement on unidentified pipe, ground floor, north wing, room NG20 – Environmental Services workshop		
S003a 3012617	VFT-1 12"x12" vinyl floor tile, beige with white streaks, ground floor, north wing		
S003b 3012618	VFT-1 12"x12" vinyl floor tile, beige with white streaks, ground floor, north wing		
S003c 3012619	VFT-1 12"x12" vinyl floor tile, beige with white streaks, ground floor, north wing		
S004a 3012620	Plaster on wall, ground floor, north wing, room NG-08		

E.g. Vinyl floor tile, beige and white, Managers Office, 2nd Floor, Room 123, Location 22.

E.g. Parging cement insulation on pipe fitting, domestic hot water system, Basement, Boiler Room, Room B1, Location 1.

Hit tab in last box for more lines and a new page.

TO BE COMPLETED BY LAB PERSONNEL ONLY		LAB REF. #:
Analyzed By:	Date:	



BULK SAMPLE TRANSMITTAL FORM

Pinchin Environmental Ltd.
2470 Milltower Court,
Mississauga, Ontario,
L5N 7W5
Tel: 905-363-0678
Fax: 905-363-0681

Project Name:		Results To:	
Asbestos Building Material Survey		Niall Pinder Email: npinder@pinchin.com	
Project #: 40492	Building #: LHC Bowmanville	Copy To: Email:	
Submitted By: N.Pinder		Special Instructions: Stop positive all but plaster Stop on Positive: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Analyze Mastic: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Date: July 6, 2007	P.O. #:	Invoice Required <input type="checkbox"/> Yes <input type="checkbox"/> No	
# of Samples: 42	Date Required:	Priority: <input type="checkbox"/> Reg <input type="checkbox"/> Rush	
SAMPLE NUMBER	SAMPLE DESCRIPTION	RESULT	
S004b 3012621	Plaster on wall, ground floor, north wing, room NG-01		
S004c 3012622	Plaster on wall, ground floor, north wing, room NG-16 – carpentry shop		
S004d 3012623	Plaster on wall, ground floor, north wing, room NG-26 – stores		
S004e 3012624	Plaster on wall, 1 st floor, north wing, closet off of stair ST-1		
S004f 3012625	Plaster on wall, 1 st floor, north wing, room 108 – penthouse access room		
S004g 3012626	Plaster on wall, 1 st floor, north wing, room N123 – corridor		
S005a 3012627	AT-1 acoustic ceiling tile, 1'x1', white, large and medium round holes, north wing, ground floor, room NG-02 – Bell telecom room		
S005b 3012628	AT-1 acoustic ceiling tile, 1'x1', white, large and medium round holes, north wing, ground floor, room NG-02 – Bell telecom room		
S005c 3012629	AT-1 acoustic ceiling tile, 1'x1', white, large and medium round holes, north wing, ground floor, room NG-02 – Bell telecom room		
S006a 3012630	Plaster on wall, room SG34		

E.g. Vinyl floor tile, beige and white, Managers Office, 2nd Floor, Room 123, Location 22.
 E.g. Parging cement insulation on pipe fitting, domestic hot water system, Basement, Boiler Room, Room B1, Location 1.
 Hit tab in last box for more lines and a new page.

TO BE COMPLETED BY LAB PERSONNEL ONLY		LAB REF. #:
Analyzed By:	Date:	



BULK SAMPLE TRANSMITTAL FORM

Pinchin Environmental Ltd.
2470 Milltower Court,
Mississauga, Ontario,
L5N 7W5
Tel: 905-363-0678
Fax: 905-363-0681

Project Name: Asbestos Building Material Survey		Results To: Niall Pinder Email: npinder@pinchin.com	
Project #: 40492	Building #: LHC Bowmanville	Copy To: Email:	
Submitted By: N.Pinder		Special Instructions: Stop positive all but plaster Stop on Positive: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Analyze Mastic: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Date: July 6, 2007	P.O. #:	Invoice Required <input type="checkbox"/> Yes <input type="checkbox"/> No	
# of Samples: 42	Date Required:	Priority: <input type="checkbox"/> Reg <input type="checkbox"/> Rush	
SAMPLE NUMBER	SAMPLE DESCRIPTION	RESULT	
S006b 3012631	Plaster on wall, room S110		
S006c 3012632	Plaster on wall, room S111		
S006d 3012633	Plaster on wall, room S129		
S006e 3012634	Plaster on wall, room S225 – telecom room		
S006f 3012635	Plaster on wall, room S208		
S006g 3012636	Plaster on wall, room S325 – clean linen closet		
S007a 3012637	AT-2 1'x1' glue-on acoustic ceiling tile, white, one direction large fissures, room SG-38 – library		
S007b 3012638	AT-2 1'x1' glue-on acoustic ceiling tile, white, one direction large fissures, room SG-38 – library		
S007c 3012639	AT-2 1'x1' glue-on acoustic ceiling tile, white, one direction large fissures, room SG-38 – library		
S008a 3012640	AT-3 2'x4' acoustic ceiling tile, white, medium fissure and pinhole, location: Blue shed		

E.g. Vinyl floor tile, beige and white, Managers Office, 2nd Floor, Room 123, Location 22.

E.g. Parging cement insulation on pipe fitting, domestic hot water system, Basement, Boiler Room, Room B1, Location 1.

Hit tab in last box for more lines and a new page.

TO BE COMPLETED BY LAB PERSONNEL ONLY		LAB REF. #:
Analyzed By:	Date:	



BULK SAMPLE TRANSMITTAL FORM

Pinchin Environmental Ltd.
2470 Milltower Court,
Mississauga, Ontario,
L5N 7W5
Tel: 905-363-0678
Fax: 905-363-0681

Project Name:		Results To:	
Asbestos Building Material Survey		Niall Pinder Email: npinder@pinchin.com	
Project #: 40492	Building #: LHC Bowmanville	Copy To: Email:	
Submitted By: N.Pinder		Special Instructions: Stop positive all but plaster Stop on Positive: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Analyze Mastic: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Date: July 6, 2007	P.O. #:	Invoice Required <input type="checkbox"/> Yes <input type="checkbox"/> No	
# of Samples: 42	Date Required:	Priority: <input type="checkbox"/> Reg <input type="checkbox"/> Rush	
SAMPLE NUMBER	SAMPLE DESCRIPTION	RESULT	
S008b 3012641	AT-3 2'x4' acoustic ceiling tile, white, medium fissure and pinhole, location: Blue shed		
S008c 3012642	AT-3 2'x4' acoustic ceiling tile, white, medium fissure and pinhole, location: Blue shed		
S010a 3012643	Window caulking, attic level, Residence building		
S010b 3012644	Window caulking, attic level, Residence building		
S010c 3012645	Window caulking, attic level, Residence building		
S011a 3012646	Plaster on wall, attic level, Residence building		
S011b 3012647	Plaster on wall, attic level, Residence building		
S011c 3012648	Plaster on wall, basement level, Residence building		
S011d 3012649	Plaster on wall, basement level, Residence building		
S011e 3012650	Plaster on wall, basement level, Residence building		

E.g. Vinyl floor tile, beige and white, Managers Office, 2nd Floor, Room 123, Location 22.

E.g. Parging cement insulation on pipe fitting, domestic hot water system, Basement, Boiler Room, Room B1, Location 1.

Hit tab in last box for more lines and a new page.

TO BE COMPLETED BY LAB PERSONNEL ONLY		LAB REF. #:
Analyzed By:	Date:	



BULK SAMPLE TRANSMITTAL FORM

Pinchin Environmental Ltd.
2470 Milltower Court,
Mississauga, Ontario,
L5N 7W5
Tel: 905-363-0678
Fax: 905-363-0681

Project Name:		Results To:	
Asbestos Building Material Survey		Niall Pinder Email: npinder@pinchin.com	
Project #: 40492	Building #: LHC Bowmanville	Copy To: Email:	
Submitted By: N.Pinder		Special Instructions: Stop positive all but plaster Stop on Positive: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Analyze Mastic: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Date: July 6, 2007	P.O. #:	Invoice Required <input type="checkbox"/> Yes <input type="checkbox"/> No	
# of Samples: 42	Date Required:	Priority: <input type="checkbox"/> Reg <input type="checkbox"/> Rush	
SAMPLE NUMBER	SAMPLE DESCRIPTION	RESULT	
S011f 3012051	Plaster on wall, basement level, Residence building		
S001f Soil 3012052	Plaster on wall, basement level, Residence building		

E.g. Vinyl floor tile, beige and white, Managers Office, 2nd Floor, Room 123, Location 22.

E.g. Parging cement insulation on pipe fitting, domestic hot water system, Basement, Boiler Room, Room B1, Location 1.

Hit tab in last box for more lines and a new page.

TO BE COMPLETED BY LAB PERSONNEL ONLY		LAB REF. #:
Analyzed By:	Date:	

APPENDIX III

DRAWINGS



AREA NOT INCLUDED IN SURVEY



2470 Milltower Court
Mississauga, Ontario
Phone: 1 888 767 3330

PROJECT NAME

LAKERIDGE HEALTH
CORPORATION
BOWMANVILLE

47 LIBERTY ST. SOUTH
LIC 2N4

DRAWING NAME

GROUND FLOOR

PROJECT NUMBER
40492

REVISION NUMBER —

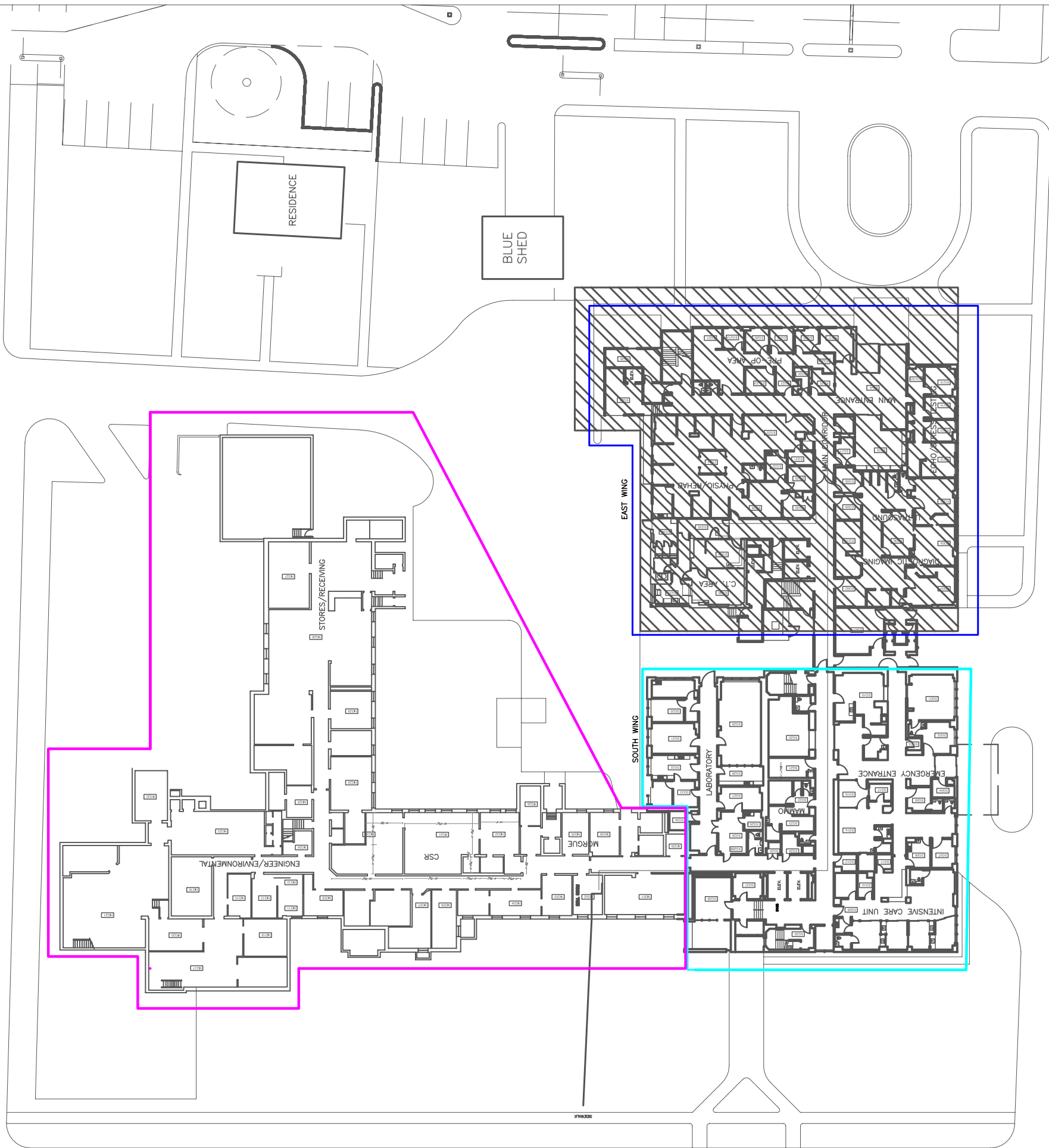
DRAWN BY
IMR

CHECKED BY _____

SCALE

DRAWING NUMBER
1 OF 11

DATE 07/24/2007





LEGEND

XXX

ASBESTOS BULK SAMPLE NUMBER AND LOCATION

X

PINCHIN LOCATION NUMBER

SC

SOLID CEILING

CA

CEILING ACCESSED

NAR

NO ACCESS ROOM

ASBESTOS CONTAINING MATERIAL:

P

PIPE INSULATION

VAT

VINYL ASBESTOS TILE

AT

ACOUSTIC TILES

TRA

TRANSITE

ASBESTOS-CONTAINING MATERIAL

ASBESTOS-CONTAINING PIPE INSULATION IN SHAFTS



2470 Milltower Court
Mississauga, Ontario
Phone: 1 888 767 3330

PROJECT NAME

LAKERIDGE HEALTH
CORPORATION
BOWMANVILLE
47 LIBERTY ST. SOUTH
LIC 2N4

DRAWING NAME

GROUND FLOOR
SOUTH WING

PROJECT NUMBER
40492

REVISION NUMBER
—

DRAWN BY
LMR

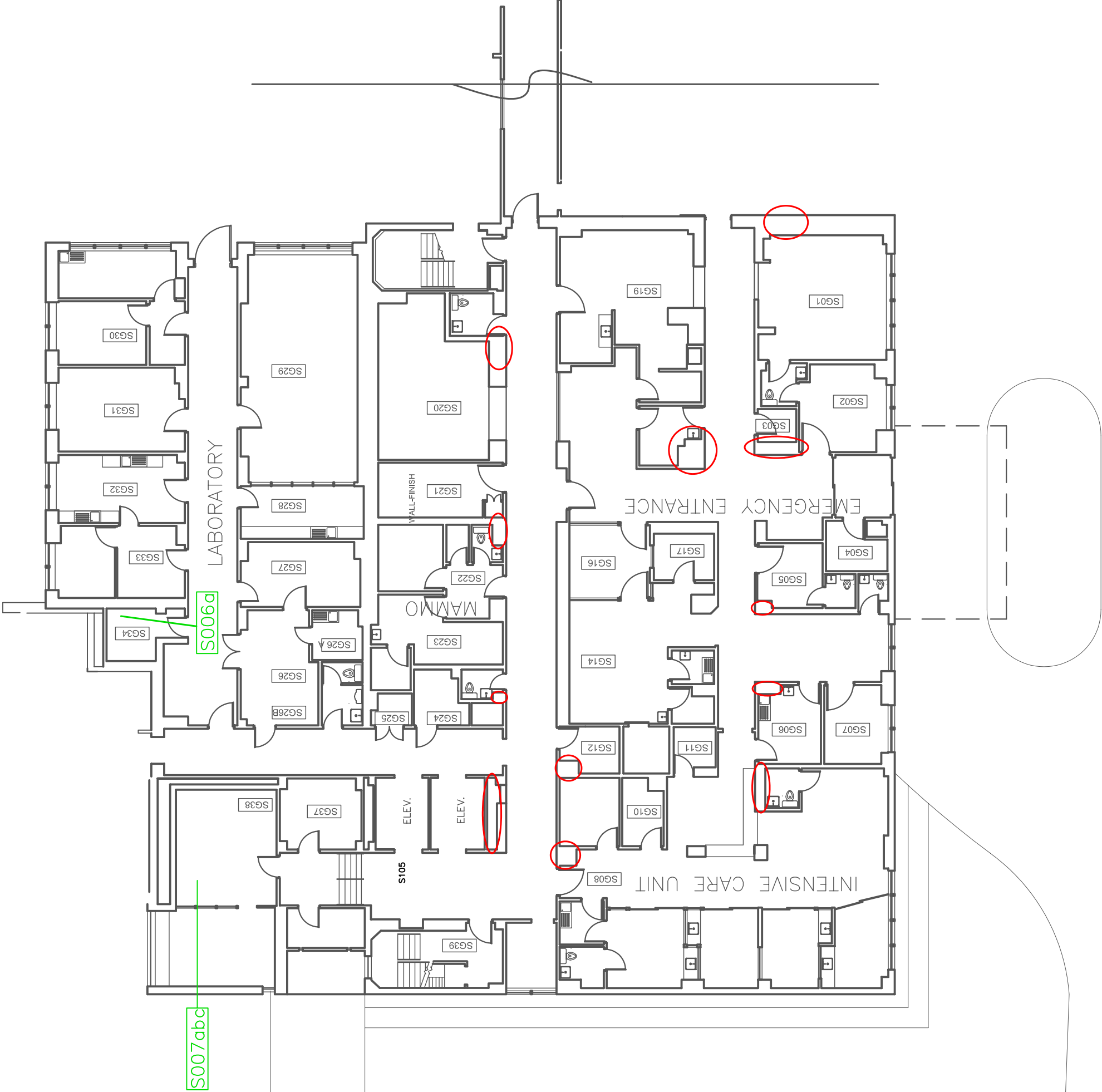
CHECKED BY
—

SCALE
NTS

DRAWING NUMBER

DATE
07/24/2007

2 OF 11





LEGEND

- ASBESTOS BULK SAMPLE NUMBER AND LOCATION
- PINCHIN LOCATION NUMBER
- SOLID CEILING
- CEILING ACCESSED
- NO ACCESS ROOM

ASBESTOS CONTAINING MATERIAL:

- P
- VAT
- AT
- TRA
-
- PIPE INSULATION
- VINYL ASBESTOS TILE
- ACOUSTIC TILES
- TRANSITE
- ASBESTOS-CONTAINING MATERIAL



2470 Milltower Court
Mississauga, Ontario
Phone: 1 888 767 3330

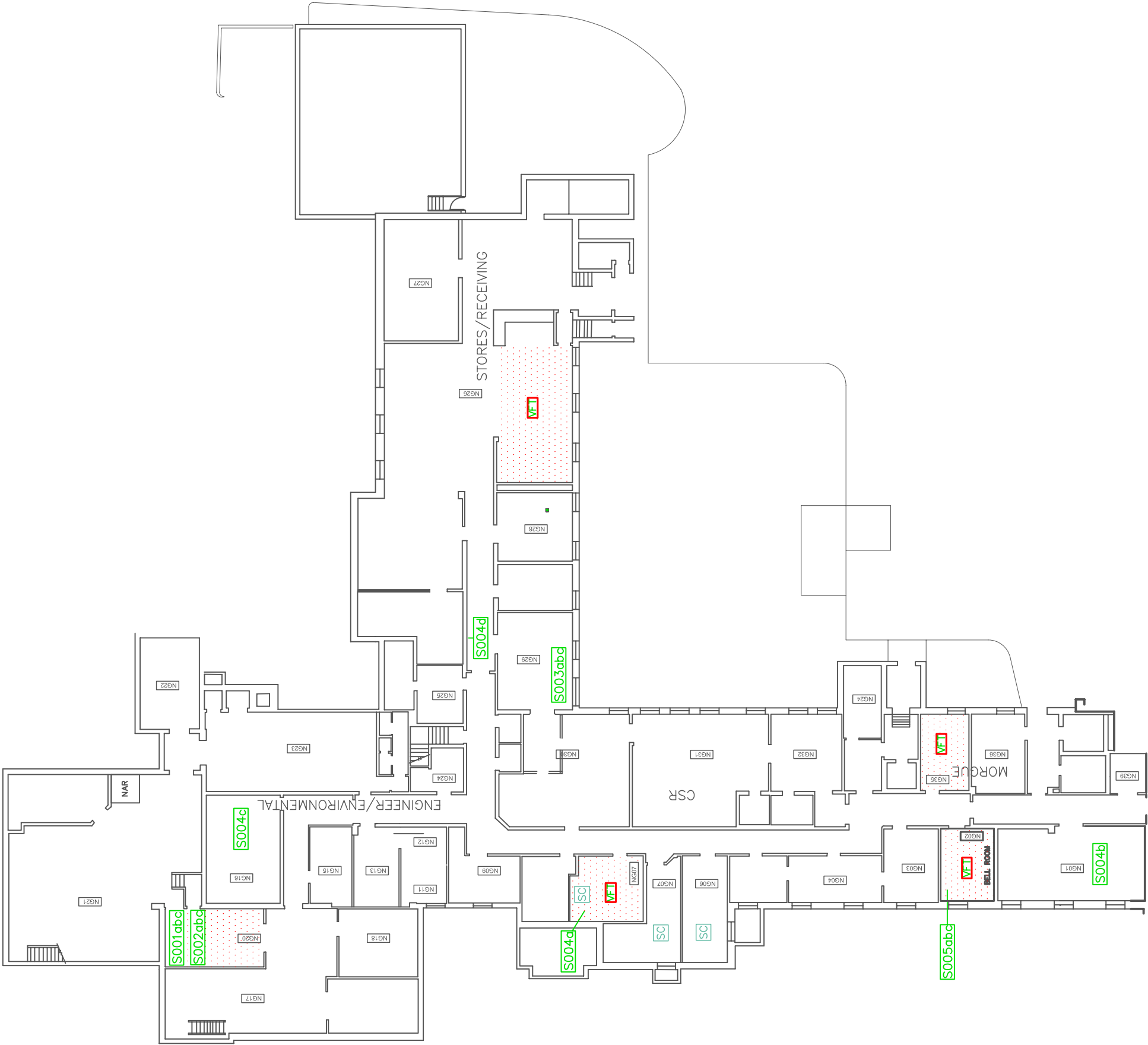
PROJECT NAME

LAKERIDGE HEALTH
CORPORATION
BOWMANVILLE
47 LIBERTY ST. SOUTH
LIC 2N4

DRAWING NAME

GROUND FLOOR
NORTH WING

PROJECT NUMBER 40492	REVISION NUMBER —
DRAWN BY LMR	CHECKED BY —
SCALE NTS	DRAWING NUMBER 3 OF 11
DATE 07/24/2007	





LEGEND

- CONSTRUCTED IN 1950
- CONSTRUCTED IN 1960
- CONSTRUCTED IN 1990 – NOT SURVEYED
- AREA NOT INCLUDED IN SURVEY



2470 Milltower Court
Mississauga, Ontario
Phone: 1 888 767 3330

PROJECT NAME

LAKERIDGE HEALTH
CORPORATION
BOWMANVILLE
47 LIBERTY ST. SOUTH
LIC 2N4

DRAWING NAME

FIRST FLOOR

PROJECT NUMBER

40492

REVISION NUMBER

—

DRAWN BY

LMR

CHECKED BY

—

SCALE

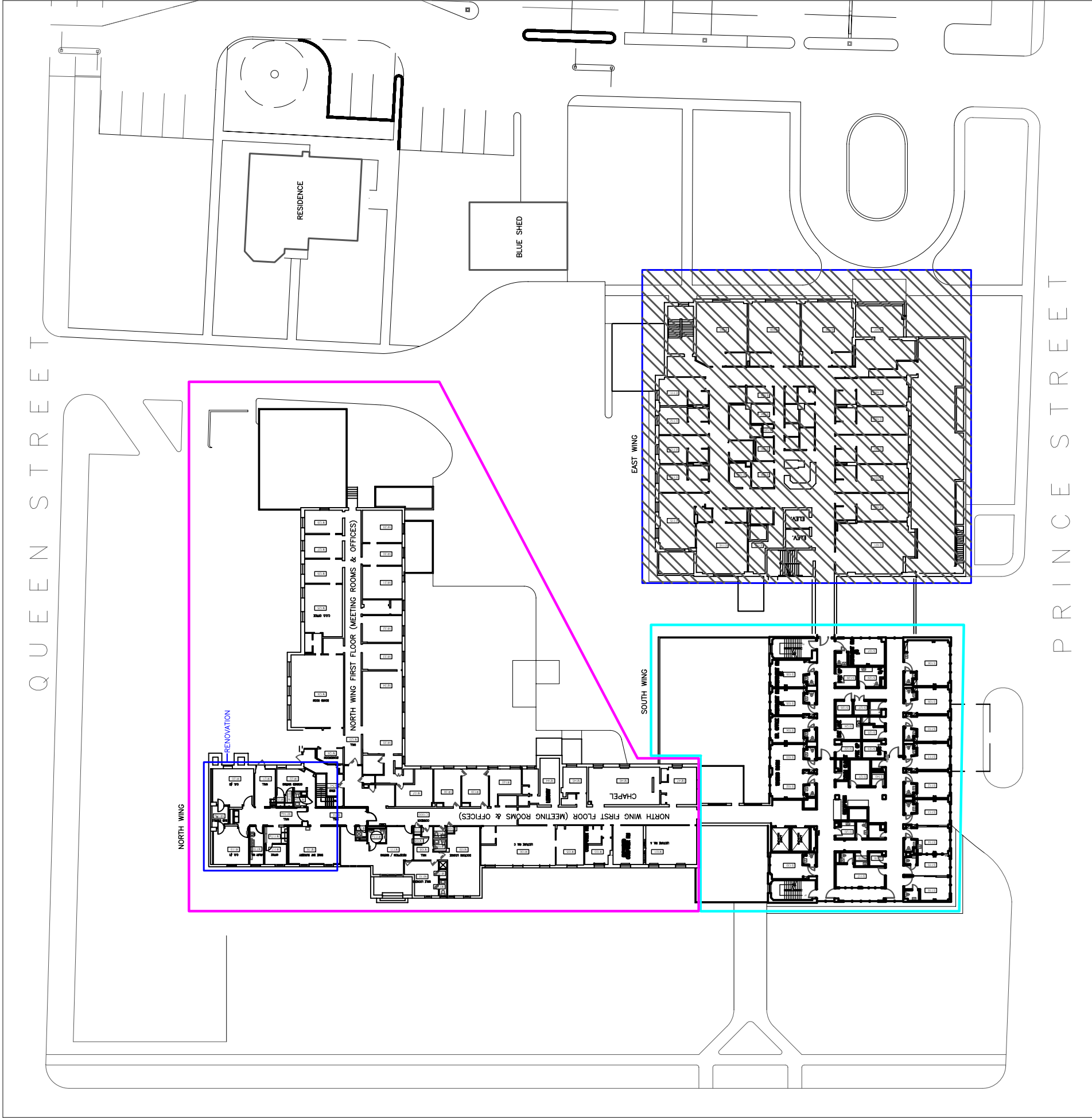
NTS

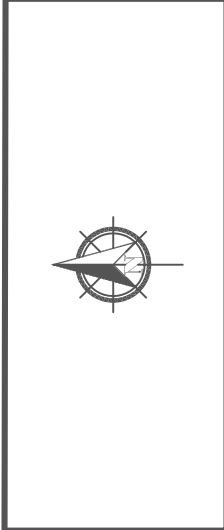
DRAWING NUMBER

4 OF 11

DATE

07/24/2007





LEGEND

ASBESTOS BULK SAMPLE NUMBER AND LOCATION

PINCHIN | LOCATION | NUMBER

SOLID CEILING

CEILING ACCESSED

NO ACCESS ROOM

ASBESTOS CONTAINING MATERIAL:

D PIPE INSULATION

VINYL ASBESTOS TILE

ACOUSTIC TILES

1155

THE UNIVERSITY OF CHICAGO

SHAFTS



2470 Milltower Court
Mississauga, Ontario
Phone: 1 888 767 3330

PROJECT NAME

LAKERIDGE HEALTH
CORPORATION
BOWMANVILLE
47 LIBERTY ST. SOUTH
LIC 2N4

DRAWING NAME

FIRST FLOOR
SOUTH WING

PROJECT NUMBER 40492	REVISION NUMBER —
DRAWN BY LMR	CHECKED BY —
SCALE NTS	DRAWING NUMBER 5 OF 11
DATE 07/24/2007	



LEGEND

- ASBESTOS BULK SAMPLE NUMBER AND LOCATION
- PINCHIN LOCATION NUMBER
- SOLID CEILING
- CEILING ACCESSED
- NO ACCESS ROOM
- NAR
- ASBESTOS CONTAINING MATERIAL:

- P PIPE INSULATION
- VAT VINYL ASBESTOS TILE
- AT ACOUSTIC TILES
- TRA TRANSITE
- ASBESTOS-CONTAINING MATERIAL



2470 Milltower Court
Mississauga, Ontario
Phone: 1 888 767 3330

PROJECT NAME

LAKERIDGE HEALTH
CORPORATION
BOWMANVILLE
47 LIBERTY ST. SOUTH
LIC 2N4

DRAWING NAME

FIRST FLOOR
NORTH WING

PROJECT NUMBER

40492

REVISION NUMBER

—

DRAWN BY

LMR

CHECKED BY

—

SCALE

NTS

DRAWING NUMBER

6 OF 11

DATE

07/24/2007





LEGEND

- ASBESTOS BULK SAMPLE NUMBER AND LOCATION
- XXX
- PINCHIN LOCATION NUMBER
- X
- SOLID CEILING
- SC
- CEILING ACCESSED
- CA
- NAR
- NO ACCESS ROOM

ASBESTOS CONTAINING MATERIAL:

- PIPE INSULATION
- P
- VINYL ASBESTOS TILE
- VAT
- ACOUSTIC TILES
- AT
- TRANSITE
- TRA
- ASBESTOS-CONTAINING MATERIAL
- [Pattern]
- ASBESTOS-CONTAINING PIPE INSULATION IN SHAFTS
- [Circle]



2470 Milltower Court
Mississauga, Ontario
Phone: 1 888 767 3330

PROJECT NAME

LAKERIDGE HEALTH
CORPORATION
BOWMANVILLE
47 LIBERTY ST. SOUTH
LIC 2N4

DRAWING NAME

SECOND FLOOR
SOUTH WING

PROJECT NUMBER 40492	REVISION NUMBER —
DRAWN BY LMR	CHECKED BY —
SCALE NTS	DRAWING NUMBER 7 OF 11
DATE 07/24/2007	





LEGEND

- ASBESTOS BULK SAMPLE NUMBER AND LOCATION
- XXX
- PINCHIN LOCATION NUMBER
- X
- SOLID CEILING
- SC
- CEILING ACCESSED
- CA
- NAR
- NO ACCESS ROOM

ASBESTOS CONTAINING MATERIAL:

- PIPE INSULATION
- P
- VINYL ASBESTOS TILE
- VAT
- ACOUSTIC TILES
- AT
- TRANSITE
- TRA
- ASBESTOS-CONTAINING MATERIAL
-
- ASBESTOS-CONTAINING PIPE INSULATION IN SHAFTS
-



2470 Milltower Court
Mississauga, Ontario
Phone: 1 888 767 3330

PROJECT NAME

LAKERIDGE HEALTH
CORPORATION
BOWMANVILLE
47 LIBERTY ST. SOUTH
LIC 2N4

DRAWING NAME

THIRD FLOOR
SOUTH WING

PROJECT NUMBER
40492

REVISION NUMBER
—

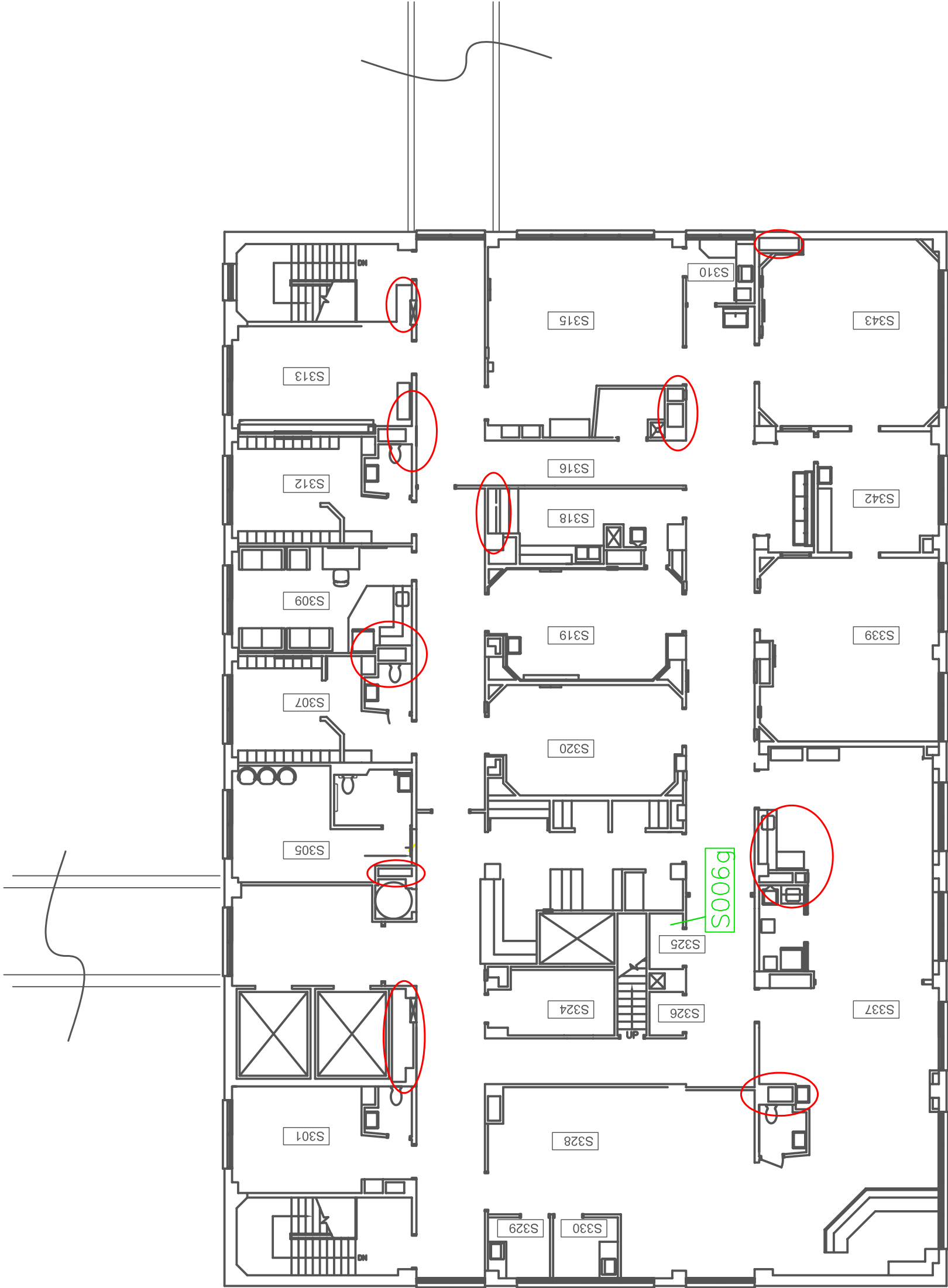
DRAWN BY
LMR

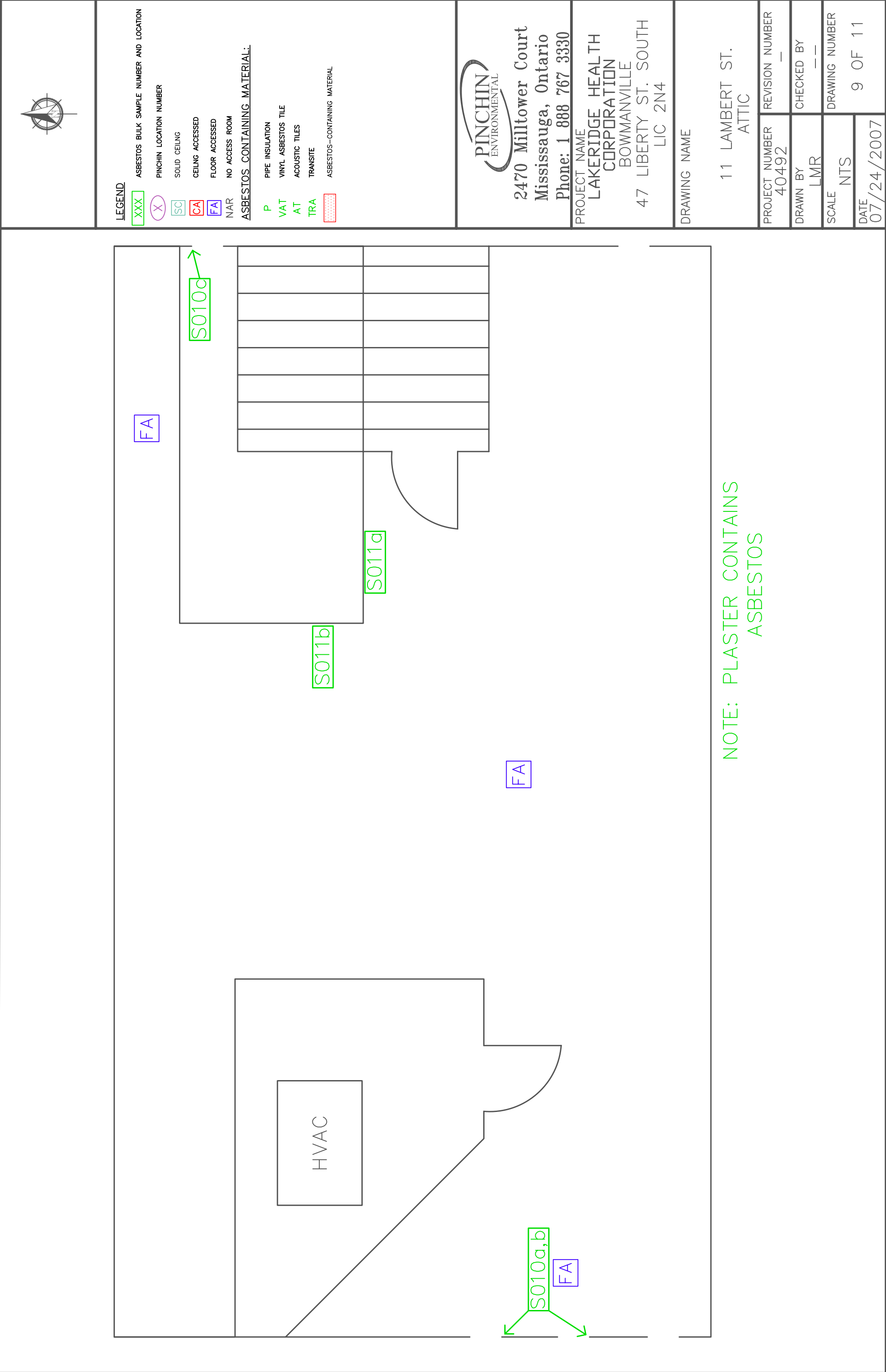
CHECKED BY
—

SCALE
NTS

DRAWING NUMBER
8 OF 11

DATE
07/24/2007







LEGEND

- XXX

ASBESTOS BULK SAMPLE NUMBER AND LOCATION
- X

PINCHIN LOCATION NUMBER
- SC

SOLID CEILING
- CA

CEILING ACCESSED
- NAR

NO ACCESS ROOM
- ASBESTOS CONTAINING MATERIAL:
- P

PIPE INSULATION
- VAT

VINYL ASBESTOS TILE
- AT

ACOUSTIC TILES
- TRA

TRANSITE
- ASBESTOS-CONTAINING MATERIAL



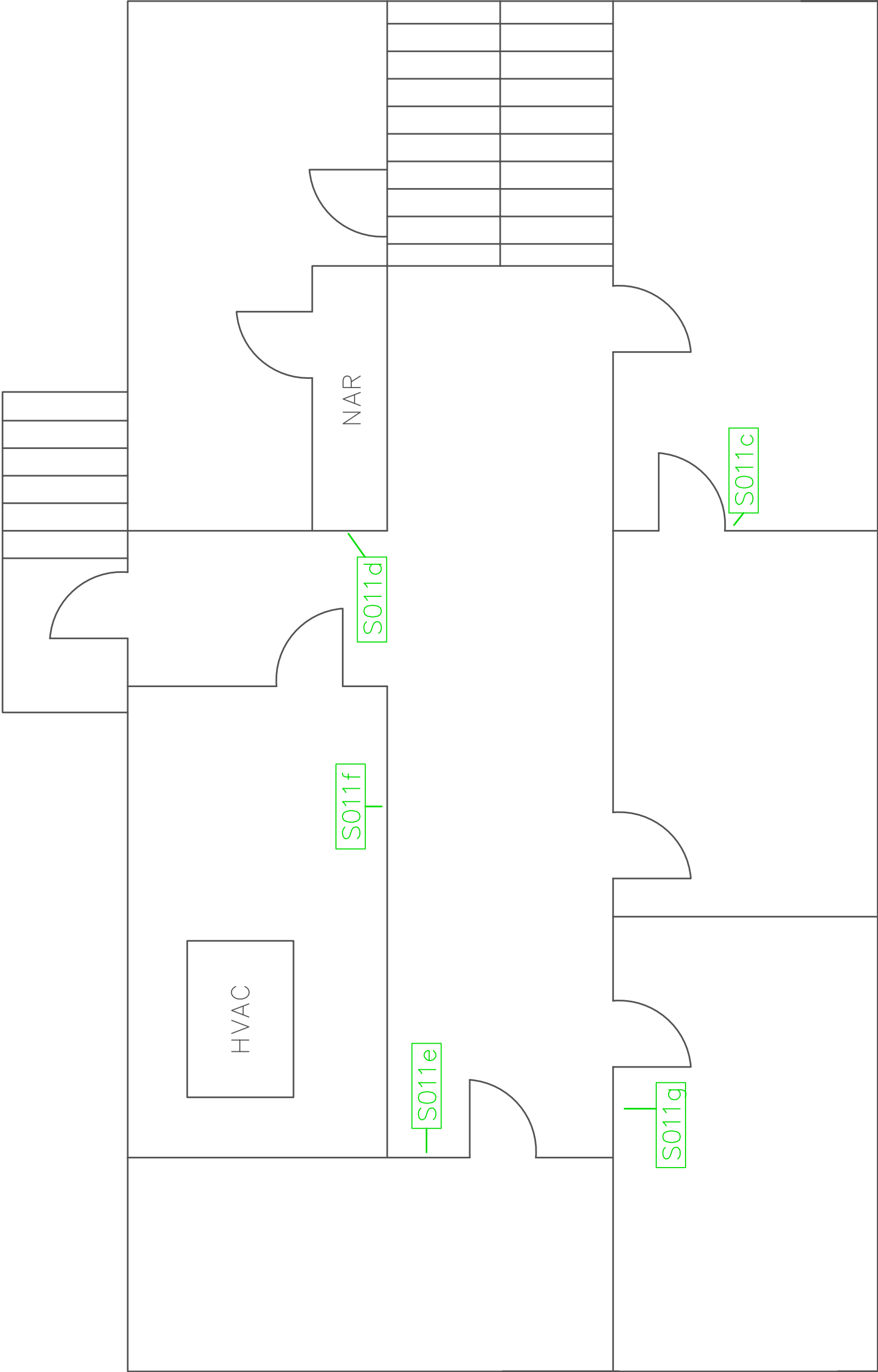
2470 Milltower Court
Mississauga, Ontario
Phone: 1 888 767 3330

PROJECT NAME
LAKERIDGE HEALTH
CORPORATION
BOWMANVILLE
47 LIBERTY ST. SOUTH
LIC 2N4

DRAWING NAME

11 LAMBERT ST
BASEMENT

PROJECT NUMBER 40492	REVISION NUMBER —
DRAWN BY LMR	CHECKED BY —
SCALE NTS	DRAWING NUMBER 10 OF 11
DATE 07/24/2007	



NOTE: PLASTER CONTAINS
ASBESTOS



LEGEND

XXX ASBESTOS BULK SAMPLE NUMBER AND LOCATION

X PINCHIN LOCATION NUMBER

SC SOLID CEILING

CA CEILING ACCESSED

NAR NO ACCESS ROOM

ASBESTOS CONTAINING MATERIAL:

P PIPE INSULATION

VAT VINYL ASBESTOS TILE

AT ACOUSTIC TILES

TRA TRANSITE

ASBESTOS-CONTAINING MATERIAL



2470 Milltower Court
Mississauga, Ontario
Phone: 1 888 767 3330

PROJECT NAME

LAKERIDGE HEALTH
CORPORATION
BOWMANVILLE

47 LIBERTY ST. SOUTH
LIC 2N4

DRAWING NAME

FIRST FLOOR
BLUE SHED

PROJECT NUMBER
40492

REVISION NUMBER

—

DRAWN BY
LMR

CHECKED BY

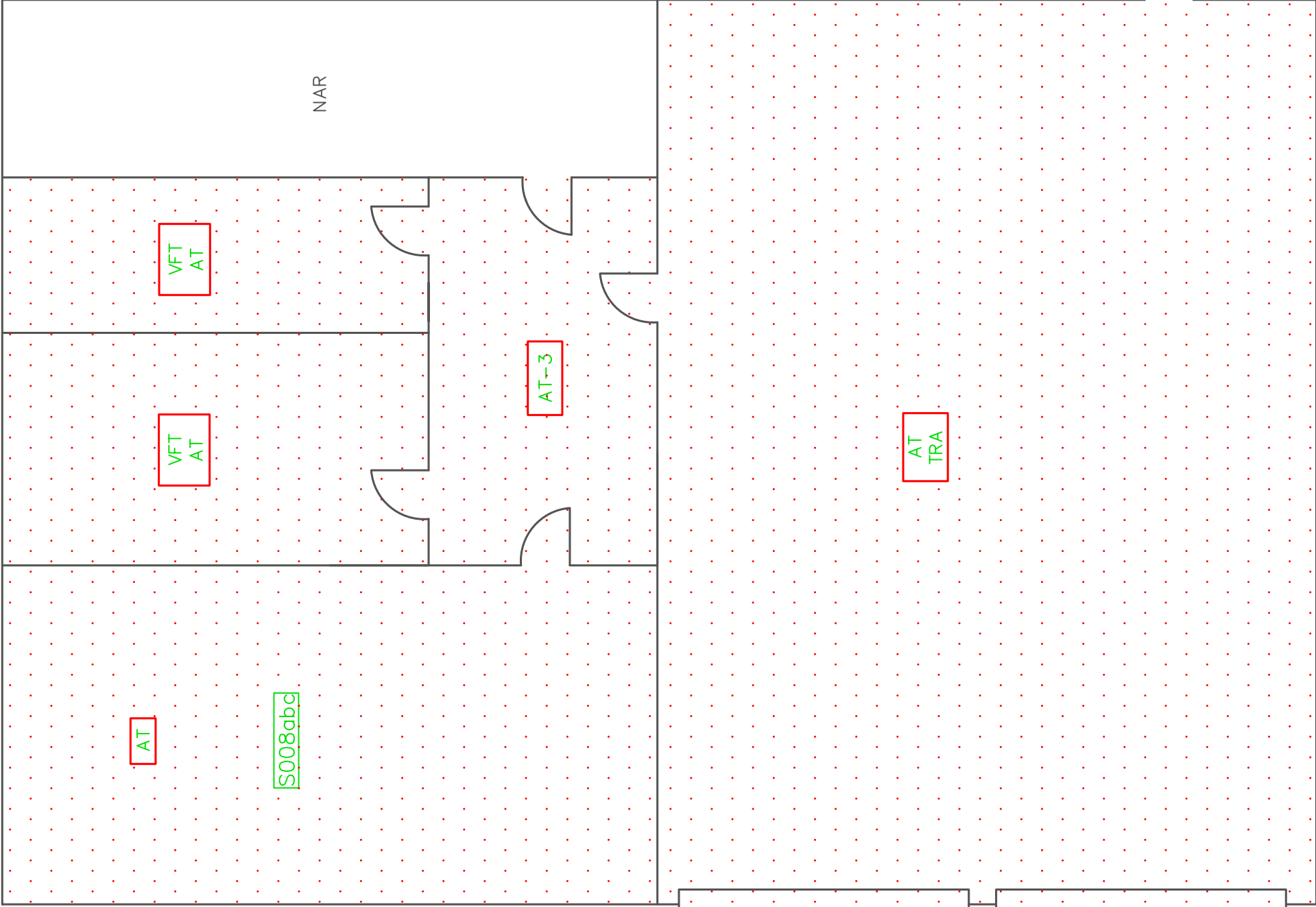
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SCALE
NTS

DRAWING NUMBER

DATE
07/24/2007

11 OF 11



APPENDIX IV
PHOTOGRAPHS



Residence at #11 Lambert St.



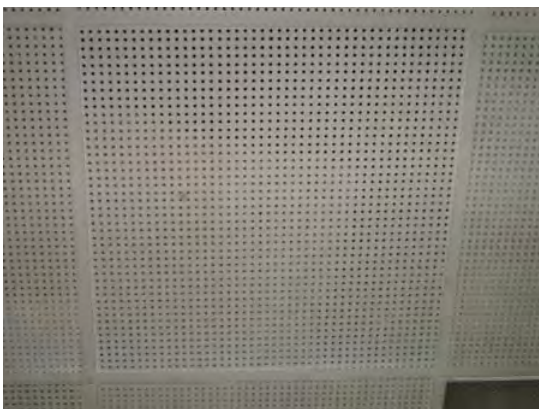
Blue storage shed adjacent to Hospital



Sweatwrap not containing asbestos (samples 001A-C), parging cement on seams containing asbestos (sample 002A), room NG20



Acoustic ceiling tile, 2'x4', white with pattern of medium fissures and pinholes, contains asbestos (sample 008A), location – blue storage shed



Transite ceiling tiles, 2'x2', visually confirmed to contain asbestos, location – blue storage shed



Plaster, containing asbestos, painted yellow, (sample 011A), attic level of Residence building



Vinyl floor tile, 12"x12", beige, pattern of white streaks, location NG29, Clean Linen, contains no asbestos (sample 003A-C)



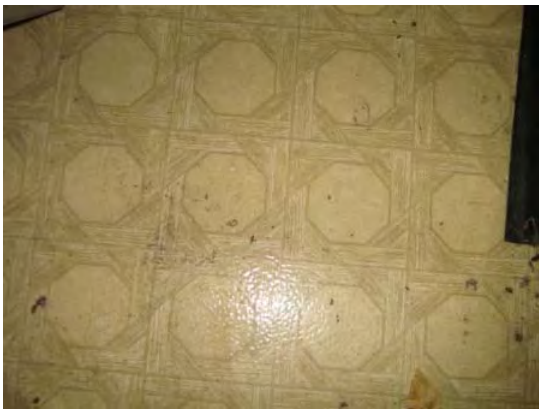
Screwed-on acoustic ceiling tile, 1'x1', white, pattern of large and medium round holes, location NG02, Bell Telecom room, contains no asbestos (sample 005A-C)



Glued-on acoustic ceiling tile, 1'x1', white, pattern of widthwise fissures, location SG38, Library, contains no asbestos (sample 007A-C)



Typical above-ceiling view in South Wing. Note fiberglass straight sections with canvas covering, fiberglass fittings with paper and foil tape coverings, location: corridor outside room S110



Vinyl sheet flooring, yellow with a beige pattern, present in old bathroom area in Blue Shed, assumed to contain asbestos in the paper backing layer



Vinyl floor tile, 12"x12", gray with black flecks, present in old bathroom area in Blue Shed, assumed to contain asbestos



Black caulking, around window, location: Attic level of Residence building, contains no asbestos (sample 010A-C)



Typical view of new drywall in Residence Attic level, drywall compound contains no asbestos due to date of installation

July 3, 2019

Lakeridge Health Bowmanville

47 Liberty Street South
Bowmanville, Ontario
L1C 2N4

Attention: Mr. Matthew Cannon
Manager, Engineering & Infrastructure

Re: Results of Bulk Sample Analysis for Determination of Asbestos Content
SAFETECH Project No.: 3190599
Lambert House, 11 Lambert Street, Bowmanville Ontario

1.0 BACKGROUND

On July 2, 2019, Safetech Environmental Limited (Safetech) collected bulk samples of various materials from Lambert House, 11 Lambert Street, Bowmanville Ontario. The bulk samples were then submitted to an independent laboratory for the determination of asbestos content.

2.0 REGULATIONS FOR ASBESTOS IN BUILDING MATERIALS

Management of asbestos-containing materials in buildings is regulated under Ontario Regulation 278/05, "Designated Substance - Asbestos on Construction Projects and in Buildings and Repair Operations", made under the Occupational Health and Safety Act (O.Reg. 278/05). Under this regulation, an asbestos-containing material (ACM) is defined as a material that contains 0.5 percent or more asbestos by dry weight.

If materials are determined to be asbestos-containing, O.Reg. 278/05 requires that specific procedures be followed for ongoing management of these materials in buildings. Specific measures and procedures are also required to be followed during renovation or demolition projects that have the potential to disturb ACM. The extent of measures and procedures necessary are defined in O.Reg. 278/05 as Type 1, Type 2 or Type 3 operations. The Type of operation required to be followed is dependent on several factors such as type of asbestos, friability of the material, quantity of material disturbed and type of work being conducted. In general, the Type of operation required increases as the risk of exposure increases.

Management of asbestos waste is governed by R.R.O. 1990, Regulation 347, "General – Waste Management", made under the Environmental Protection Act. Section 17 of this

regulation pertains to management of asbestos waste and sets out requirements for the safe handling, transportation and disposal of asbestos waste.

3.0 SAMPLING AND ANALYTICAL METHODOLOGY

Bulk samples of building materials suspected to contain asbestos were retrieved by Safetech in accordance with Section 3 and Table 1 of O.Reg. 278/05. The number of samples collected for each material was based on the type and quantity of the material present within the area(s) investigated. Each individual sample was placed in a labeled zip-lock bag for transportation to an independent laboratory.

Analysis for asbestos content was performed by the independent laboratory in accordance with the U.S. Environmental Protection Agency (EPA) Test Method EPA/600/R-93-116: Method for the Determination of Asbestos in Bulk Building Materials. June 1993. This method identifies the asbestos fibre content of building materials using polarized light microscopy (PLM) analytical techniques, with confirmation of presence and type of asbestos made by dispersion staining optical microscopy. This analytical method meets the requirements set forth in Section 3 of O.Reg. 278/05.

4.0 RESULTS

Results of analysis for the determination of asbestos content are summarized in Table I. Materials have been classified as “ACM”, “Non-ACM”, “Suspected ACM” or “Presumed Non-ACM” based on analytical results. Materials classified as Suspected ACM or Presumed Non-ACM may require further analysis (depending on site-specific conditions) to verify whether the material should be classified as ACM or Non-ACM. Please refer to the Limitations section of this report (Section 6.0) for additional details. The Laboratory Certificate of Analysis is attached.

TABLE I
Bulk Sample Analytical Results for Determination of Asbestos Content

Sample No.	Material Description	Sample Location	Asbestos Content	Material Classification
1A	Cement Plaster Finishes Walls & Ceilings*	Board Room LG-01	<0.25 Chrysotile	Non-ACM
1B				
1C				
2A	Trowel Cementitious Material Walls & Ceiling	Board Room LG-01	None-Detected	Non-ACM
2B				
2C				

*Trace means that asbestos was detected at a low concentration (i.e. <0.25%) that is not quantifiable.

5.0 CONCLUSIONS

As results summarized in Table I indicate, no asbestos was detected in any of the bulk samples of cement plaster finishes and trowel cementitious material retrieved for analysis. Therefore, the cement plaster finishes and trowel cementitious material is considered to be Non-ACM and there are no requirements for management, disturbance or removal of this material under O.Reg. 278/05.

6.0 LIMITATIONS

The investigation, assessments and recommendations detailed in this report were carried out in a manner consistent with the level of care and skill normally exercised by reasonable members of the environmental and industrial hygiene consulting profession currently practicing under similar conditions in the area. Furthermore, the investigation, assessments and recommendations in this report have been made based on conditions observed at the time of the assessment and are limited to the areas investigated. Unaccounted for conditions may be present in the areas assessed due to concealed conditions within wall/ceiling cavities, etc. or subsurface conditions that can vary from those encountered.

In preparing this report, Safetech Environmental Limited (Safetech) relied on information supplied by others, including independent laboratories and testing services. Conclusions made in this report are based on the laboratory analytical results for the bulk samples analyzed. Except as expressly set-out in this report, Safetech has not made any independent verification of such information.

The analytical method used meets the requirements of O.Reg. 278/05. However, small asbestos fibres may be missed by PLM due to resolution limitations of the optical microscope. Interfering binder/matrix and/or low asbestos content may also hinder positive identification by PLM. These conditions are common for vermiculite attic insulation (VAI) and non-friable organically bound (NOB) materials such as vinyl floor tiles, roofing materials, mastics and caulking and can lead to “false negative” results. If PLM analytical results for these types of materials indicate no asbestos detected they have been reported as “Presumed Non-ACM”. Due to limitations of the analytical method we cannot confirm that low quantities of asbestos are not present in these samples using solely PLM analysis. Additional analytical procedures should be considered for such materials to rule out false negative results.

Table 1 of Ontario Regulation 278/05 indicates the required minimum number of bulk material samples to be collected from a homogeneous material. Depending on the type of material and size of area, typically 3, 5 or 7 samples should be analyzed, and all deemed as negative (i.e. less than 0.5% asbestos) prior to confirming that the material sampled is non-asbestos. A single negative sample result is not considered to be sufficient evidence to confirm a material to be non-asbestos-containing.

This report has been prepared for the sole use of the person or entity to who it is addressed. No other person or entity is entitled to use or rely upon this report without the express written consent of Safetech Environmental Limited and the person or entity to who it is addressed. Any use that a third party makes of this report, or any reliance based on conclusions and recommendations made, are the responsibility of such third parties. Safetech accepts no responsibility for damages suffered by third parties as a result of actions based on this report.

Should you require any further information, please contact our office.

Sincerely,

SAFETECH ENVIRONMENTAL LIMITED



Stephen Choi B.A.Sc., C.EES, WRT
Project Coordinator

*Attachment(s): Laboratory Certificate of Analysis
 Site Photographs*



EMSL Canada Inc.

2756 Slough Street Mississauga, ON L4T 1G3
Phone/Fax: (289) 997-4602 / (289) 997-4607
<http://www.EMSL.com> / torontolab@emsl.com

EMSL Canada Order 551907950
Customer ID: 55SELI62
Customer PO: 3190599
Project ID:

Attn: Stephen Choi
Safetech Environmental
3045 Southcreek Road
Unit 14
Mississauga, ON L4X 2X7

Phone: (905) 624-2722
Fax: (905) 624-4306
Collected: 7/ 2/2019
Received: 7/02/2019
Analyzed: 7/03/2019

Proj: 3190599 - LRH Bowmanville, Lambert House Bulk Sampling

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Client Sample ID: 1a **Lab Sample ID:** 551907950-0001

Sample Description: Cement Plaster Finish Walls & Ceiling

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	7/03/2019	Gray/Tan/White	0.0%	100.0%	<1% Chrysotile	Layers combined prior to analysis at client request.
400 PLM Pt Ct	7/03/2019	Gray/Tan/White	0.0%	100.0%	<0.25% Chrysotile	

Client Sample ID: 1b

Lab Sample ID: 551907950-0002

Sample Description: Cement Plaster Finish Walls & Ceiling

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	7/03/2019	Gray/Tan	0.0%	100.0%	<1% Chrysotile	*
400 PLM Pt Ct	7/03/2019	Gray/Tan	0.0%	100.0%	<0.25% Chrysotile	

Client Sample ID: 1c

Lab Sample ID: 551907950-0003

Sample Description: Cement Plaster Finish Walls & Ceiling

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	7/03/2019	Gray/White	0.0%	100.0%	<1% Chrysotile	*
400 PLM Pt Ct	7/03/2019	Gray/White	0.0%	100.0%	<0.25% Chrysotile	

Client Sample ID: 2a

Lab Sample ID: 551907950-0004

Sample Description: Trowel Cementitious Material Walls & Ceiling

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	7/03/2019	Gray	0.0%	100.0%	None Detected	

Client Sample ID: 2b

Lab Sample ID: 551907950-0005

Sample Description: Trowel Cementitious Material Walls & Ceiling

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	7/03/2019	Gray	0.0%	100.0%	None Detected	

Client Sample ID: 2c

Lab Sample ID: 551907950-0006

Sample Description: Trowel Cementitious Material Walls & Ceiling

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	7/03/2019	Gray	0.0%	100.0%	None Detected	



EMSL Canada Inc.

2756 Slough Street Mississauga, ON L4T 1G3
Phone/Fax: (289) 997-4602 / (289) 997-4607
<http://www.EMSL.com> / torontolab@emsl.com

EMSL Canada Order 551907950
Customer ID: 55SELI62
Customer PO: 3190599
Project ID:

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

PLM: (*) Layers combined prior to analysis at client request.

Analyst(s):

Shorthri Kalikutty	PLM (2) 400 PLM Pt Ct (1)
Stephanie Achaiya	PLM (4) 400 PLM Pt Ct (2)

Reviewed and approved by:

Matthew Davis or other approved signatory
or Other Approved Signatory

None Detected = <0.1%. EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. Samples received in good condition unless otherwise noted. This report must not be used to claim product endorsement by NVLAP of any agency or the U.S. Government

Samples analyzed by EMSL Canada Inc. Mississauga, ON NVLAP Lab Code 200877-0

Initial report from: 07/03/2019 15:13:33



P1 – 1st Floor Board Room

View of the cement plaster finish confirmed to be Non-ACM.



P1 – 1st Floor Board Room

View of the trowel cementitious material confirmed to be Non-ACM.

June 13, 2019

Lakeridge Health Bowmanville

47 Liberty Street South
Bowmanville, Ontario
L1C 2N4

**Attention: Mr. Andreas Jacovou
Manager of Engineering**

**Re: Results of Bulk Sample Analysis for Determination of Asbestos Content
SAFETECH Project No.: 3190599
Lambert House, 11 Lambert Street, Bowmanville Ontario**

1.0 BACKGROUND

On June 11, 2019, Safetech Environmental Limited (Safetech) collected bulk samples of Drywall joint compound from ceiling finishes from Lambert House, 11 Lambert Street, Bowmanville Ontario. The bulk samples were then submitted to an independent laboratory for the determination of asbestos content.

2.0 REGULATIONS FOR ASBESTOS IN BUILDING MATERIALS

Management of asbestos-containing materials in buildings is regulated under Ontario Regulation 278/05, "Designated Substance - Asbestos on Construction Projects and in Buildings and Repair Operations", made under the Occupational Health and Safety Act (O.Reg. 278/05). Under this regulation, an asbestos-containing material (ACM) is defined as a material that contains 0.5 percent or more asbestos by dry weight.

If materials are determined to be asbestos-containing, O.Reg. 278/05 requires that specific procedures be followed for ongoing management of these materials in buildings. Specific measures and procedures are also required to be followed during renovation or demolition projects that have the potential to disturb ACM. The extent of measures and procedures necessary are defined in O.Reg. 278/05 as Type 1, Type 2 or Type 3 operations. The Type of operation required to be followed is dependent on several factors such as type of asbestos, friability of the material, quantity of material disturbed and type of work being conducted. In general, the Type of operation required increases as the risk of exposure increases.

Management of asbestos waste is governed by R.R.O. 1990, Regulation 347, "General – Waste Management", made under the Environmental Protection Act. Section 17 of this

regulation pertains to management of asbestos waste and sets out requirements for the safe handling, transportation and disposal of asbestos waste.

3.0 SAMPLING AND ANALYTICAL METHODOLOGY

Bulk samples of building materials suspected to contain asbestos were retrieved by Safetech in accordance with Section 3 and Table 1 of O.Reg. 278/05. The number of samples collected for each material was based on the type and quantity of the material present within the area(s) investigated. Each individual sample was placed in a labeled zip-lock bag for transportation to an independent laboratory.

Analysis for asbestos content was performed by the independent laboratory in accordance with the U.S. Environmental Protection Agency (EPA) Test Method EPA/600/R-93-116: Method for the Determination of Asbestos in Bulk Building Materials. June 1993. This method identifies the asbestos fibre content of building materials using polarized light microscopy (PLM) analytical techniques, with confirmation of presence and type of asbestos made by dispersion staining optical microscopy. This analytical method meets the requirements set forth in Section 3 of O.Reg. 278/05.

4.0 RESULTS

Results of analysis for the determination of asbestos content are summarized in Table I. Materials have been classified as “ACM”, “Non-ACM”, “Suspected ACM” or “Presumed Non-ACM” based on analytical results. Materials classified as Suspected ACM or Presumed Non-ACM may require further analysis (depending on site-specific conditions) to verify whether the material should be classified as ACM or Non-ACM. Please refer to the Limitations section of this report (Section 6.0) for additional details. The Laboratory Certificate of Analysis is attached.

TABLE I
Bulk Sample Analytical Results for Determination of Asbestos Content

Sample No.	Material Description	Sample Location	Asbestos Content	Material Classification
1A	Drywall Joint Compound – Ceiling Finishes	1 st Floor Board Room	None-detected	Non-ACM
1B				
1C				

*Trace means that asbestos was detected at a low concentration (i.e. <0.25%) that is not quantifiable.

5.0 CONCLUSIONS

As results summarized in Table I indicate, no asbestos was detected in any of the bulk samples of drywall joint compound retrieved for analysis. Therefore, the drywall joint compound is considered to be Non-ACM and there are no requirements for management, disturbance or removal of this material under O.Reg. 278/05.

6.0 LIMITATIONS

The investigation, assessments and recommendations detailed in this report were carried out in a manner consistent with the level of care and skill normally exercised by reasonable members of the environmental and industrial hygiene consulting profession currently practicing under similar conditions in the area. Furthermore, the investigation, assessments and recommendations in this report have been made based on conditions observed at the time of the assessment and are limited to the areas investigated. Unaccounted for conditions may be present in the areas assessed due to concealed conditions within wall/ceiling cavities, etc. or subsurface conditions that can vary from those encountered.

In preparing this report, Safetech Environmental Limited (Safetech) relied on information supplied by others, including independent laboratories and testing services. Conclusions made in this report are based on the laboratory analytical results for the bulk samples analyzed. Except as expressly set-out in this report, Safetech has not made any independent verification of such information.

The analytical method used meets the requirements of O.Reg. 278/05. However, small asbestos fibres may be missed by PLM due to resolution limitations of the optical microscope. Interfering binder/matrix and/or low asbestos content may also hinder positive identification by PLM. These conditions are common for vermiculite attic insulation (VAI) and non-friable organically bound (NOB) materials such as vinyl floor tiles, roofing materials, mastics and caulking and can lead to “false negative” results. If PLM analytical results for these types of materials indicate no asbestos detected they have been reported as “Presumed Non-ACM”. Due to limitations of the analytical method we cannot confirm that low quantities of asbestos are not present in these samples using solely PLM analysis. Additional analytical procedures should be considered for such materials to rule out false negative results.

Table 1 of Ontario Regulation 278/05 indicates the required minimum number of bulk material samples to be collected from a homogeneous material. Depending on the type of material and size of area, typically 3, 5 or 7 samples should be analyzed, and all deemed as negative (i.e. less than 0.5% asbestos) prior to confirming that the material sampled is non-asbestos. A single negative sample result is not considered to be sufficient evidence to confirm a material to be non-asbestos-containing.

This report has been prepared for the sole use of the person or entity to who it is addressed. No other person or entity is entitled to use or rely upon this report without the express written consent of Safetech Environmental Limited and the person or entity to who it is addressed. Any use that a third party makes of this report, or any reliance based on conclusions and recommendations made, are the responsibility of such third parties. Safetech accepts no responsibility for damages suffered by third parties as a result of actions based on this report.

Should you require any further information, please contact our office.

Sincerely,

SAFETECH ENVIRONMENTAL LIMITED



Yash Panchal, B. Eng

Occupational Health and Safety Technician



Stephen Choi B.A.Sc., C.EES, WRT

Project Coordinator

*Attachment(s): Laboratory Certificate of Analysis
 Site Photographs*



EMSL Canada Inc.

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Collected: 6/11/2019
Received: 6/11/2019
Analyzed: 6/12/2019

Proj: 3190599 - LAMBERT HOUSE - LR BOWMANVILLE

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Client Sample ID: 1A **Lab Sample ID:** 551907017-0001

Sample Description: DRYWALL JOINT COMPOUND (CEILING FINISHES) - 1ST FLOOR BOARD ROOM

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	6/12/2019	White	0.0%	100.0%	None Detected	

Client Sample ID: 1B **Lab Sample ID:** 551907017-0002

Sample Description: DRYWALL JOINT COMPOUND (CEILING FINISHES) - 1ST FLOOR BOARD ROOM

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	6/12/2019	White	0.0%	100.0%	None Detected	

Client Sample ID: 1C **Lab Sample ID:** 551907017-0003

Sample Description: DRYWALL JOINT COMPOUND (CEILING FINISHES) - 1ST FLOOR BOARD ROOM

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	6/12/2019	White	0.0%	100.0%	None Detected	

Analyst(s):

Natalie D'Amico PLM (1)
Stephanie Achaiya PLM (2)

Reviewed and approved by:

Matthew Davis or other approved signatory
or Other Approved Signatory

None Detected = <0.1%. EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. Samples received in good condition unless otherwise noted. This report must not be used to claim product endorsement by NVLAP of any agency of the U.S. Government.

Samples analyzed by EMSL Canada Inc. Mississauga, ON NVLAP Lab Code 200877-0

(Initial report from: 06/12/2019 11:40:33)



P1 – 1st Floor Board Room

View of the drywall joint compound – ceiling finishes confirmed to be Non-ACM.

DESIGNATED SUBSTANCES AND HAZARDOUS MATERIALS ASSESSMENT

**Renovation Project
Residential Dwelling**
18 Prince Street
Bowmanville, Ontario
L1C 1G5

Prepared for:

Mr. Don Baron
Manager, Engineering and Infrastructure

Lakeridge Health Corporation
47 Liberty Street South
Bowmanville, Ontario

Prepared by:

Safetech Environmental Limited

A handwritten signature in black ink, appearing to read 'J. Mazzulli'.

John Mazzulli, B.A.
Occupational Health and Safety Technician

Reviwed By:

A handwritten signature in black ink, appearing to read 'P. Valenti'.

Paul Valenti, B.ES. AMRT
Project Manager

SEL Project Number 193416

Date of Site Work: December 8, 2016
Date of Issue: December 31, 2016

TABLE OF CONTENTS

EXECUTIVE SUMMARY	i
1.0 INTRODUCTION	1
1.1 Background and Objectives	1
1.2 Scope of Work	2
1.3 Description of Area(s) Assessed	2
2.0 METHODOLOGY	2
2.1 Designated Substances	3
2.1.1 Asbestos	3
2.1.2 Lead	4
2.1.3 Mercury	5
2.1.4 Silica	5
2.1.5 Other Designated Substances	6
2.2 Other Hazardous Materials	6
2.2.1 Chemical Hazards	6
2.2.2 Biological Hazards	6
2.2.3 Environmental Hazards	7
3.0 RESULTS	8
3.1 Designated Substances	8
3.1.1 Asbestos	8
3.1.2 Lead	11
3.1.3 Mercury	12
3.1.4 Silica	12
3.1.5 Other Designated Substances	12
3.2 Other Hazardous Materials	13
3.2.1 Chemical Hazards	13
3.2.2 Biological Hazards	13
3.2.3 Environmental Hazards	13
4.0 CONCLUSIONS AND RECOMMENDATIONS	14
4.1 Designated Substances	14
4.1.1 Asbestos	14

4.1.2	Lead	15
4.1.3	Mercury	16
4.1.4	Silica	16
4.1.5	Other Designated Substances.....	16
4.2	Other Hazardous Materials	17
4.2.1	Chemical Hazards	17
4.2.2	Biological Hazards.....	17
4.2.3	Environmental Hazards	17
5.0	LIMITATIONS.....	18

LIST OF TABLES

Table 1 – Bulk Sample Analytical Results for Determination of Asbestos Content
Table 2 – Results of Assessment for Asbestos-Containing Materials
Table 3 – Results of Paint Condition and Lead Content Assessment

LIST OF APPENDICES

Appendix A – Condition Assessment Criteria for Asbestos-Containing Materials
Appendix B – Laboratory Certificate of Analysis - Asbestos
Appendix C – Laboratory Certificate of Analysis - Lead
Appendix D – Site Photographs
Appendix E – Background Information on Designated Substances and Other Hazardous Materials

EXECUTIVE SUMMARY

Safetech Environmental Limited (SEL) was commissioned by Lakeridge Health Corporation to conduct a designated substances and hazardous materials assessment within the Residential Dwelling located at 18 Prince Street, Bowmanville, Ontario.

The objective of our assessment was to determine the presence, location, condition and quantities of designated substances and other hazardous materials within that have the potential to be disturbed as part of planned renovation activities (i.e. Renovation Project) so that appropriate control measures can be implemented to protect workers during the work.

A summary of our assessment results and general recommendations based on our findings are provided in the following Table. This Table should be considered a summary only. Please refer to the Results (Section 3) and Conclusions and Recommendations (Section 4) of our report for additional details.

Designated Substance	Findings	Recommendations
Asbestos	Transite panels covering the exterior garage area were found to be asbestos-containing.	Remove following Type 1 operations following the requirements of O.Reg. 278/05.
Lead	Lead concentration below 0.009% by weight was identified in paint tested. Paints not sampled are presumed to contain varying concentrations of lead.	Work involving the disturbance of a lead-containing paint should follow the procedures outlined in the Ministry of Labour " <i>Lead on Construction Projects</i> " guideline. Lead-containing wastes should be recycled if practicable or handled and disposed of according to O.Reg. 347.
Mercury	Mercury vapour is expected to be present within fluorescent light tubes/bulbs.	Handle lamps with care and keep intact. All waste lamps are recommended to be sent to a lamp recycling facility.

Silica	Building materials identified that are suspected to contain crystalline silica include drywall walls/drywall joint compound and concrete floor.	Any work involving the disturbance of silica-containing materials should follow the procedures outlined in the Ministry of Labour “ <i>Silica on Construction Projects</i> ” guideline.
Other Designated Substances	No other designated substances are expected to be present in any significant quantities or in a form that would represent an exposure concern.	No protective measures or procedures specific to acrylonitrile, arsenic, benzene, coke oven emissions, ethylene oxide, isocyanates, and vinyl chloride are considered necessary.
Other Hazardous Materials	Findings	Recommendations
Urea Formaldehyde Foam Insulation	No UFFI was identified or is suspected within the areas assessed.	No action required.
Mould Contamination	No mould growth was detected in any areas.	No action required.
Pest Infestation	No pest infestation was detected in any areas.	No action required.
Polychlorinated Biphenyls	No equipment suspected of containing PCBs was observed within the areas assessed.	No action required.
Ozone Depleting and Global Warming Substances	No equipment suspected of ozone depleting and/or global warming substances was observed within the areas assessed.	No action required.

This assessment satisfies the Owner’s requirements under Section 30 of the Ontario Occupational Health and Safety Act (OHSA), Revised Statutes of Ontario 1990, as amended.

Should you have any questions regarding the information contained in the report, please contact our office.

Safetech Environmental Limited



John Mazzulli, B.A.
Occupational Health and Safety Technician

December 31, 2016

Lakeridge Health Corporation
47 Liberty Street South
Bowmanville, Ontario

Attention: Mr. Don Baron
Manager, Engineering and Infrastructure

RE: Designated Substances and Hazardous Materials Assessment
Renovation Project – Residential Dwelling
18 Prince Street, Bowmanville, Ontario

1.0 INTRODUCTION

1.1 Background and Objectives

Safetech Environmental Limited (SEL) was commissioned by Lakeridge Health Corporation to conduct a designated substances and hazardous materials assessment within 18 Prince Street, Bowmanville, Ontario. The objective of our assessment was to determine the presence, location, condition and quantities of designated substances and other hazardous materials within the Residential Dwelling that have the potential to be disturbed as part of planned renovation activities (i.e. Renovation Project) so that appropriate control measures can be implemented to protect workers during the work.

This assessment satisfies the Owner's requirements under Section 30 of the Ontario Occupational Health and Safety Act (OHSA), Revised Statutes of Ontario 1990, as amended. Section 30(1) requires a building owner to determine if there are any designated substances present at a project site prior to construction or demolition activity. Sections 30(2), (3) and (4) require the Owner and constructors for a project to provide the findings in this report as part of the tendering information for any tendered project or to prospective contractors (and subcontractors) of a project before entering into a binding contract.

This report documents findings of our on-site inspection that was conducted on December 8, 2016 and provides conclusions and recommendations based on our findings and knowledge of the planned renovation project.

1.2 Scope of Work

In accordance with our fee proposal document, our scope of work included the following activities:

- A visual assessment of the accessible area(s) specific to the Renovation Project to identify the presence, location, condition and quantities of designated substances and other hazardous materials.
- Collection, analysis and interpretation of representative bulk samples of suspect asbestos-containing building materials for the determination of asbestos content and material classification.
- Collection, analysis and interpretation of representative paint chip samples for the determination of lead content.
- Preparation of a report to document findings and provide recommendations regarding control measures and/or special handling procedures for designated substances or specific hazardous materials that may be disturbed as part of planned renovation activities.

This assessment only identified designated substances and hazardous materials that were deemed to be part of the building or somehow otherwise incorporated into the building structure and its finishes. Assessing occupant items such as stored products, furnishings, items and materials used or produced as part of a manufacturing process, etc. were beyond the scope of this assessment. In addition, our assessment did not include an investigation for underground materials or equipment (vessels, drums, underground storage tanks, pipes, cables, etc.). Furthermore, this assessment was limited to the areas investigated, and more specifically, to those materials that may be disturbed as part of the planned renovation work, as described in Section 1.3.

1.3 Description of Area(s) Assessed

The areas investigated included all accessible locations; exterior of the building, garage, all rooms associated with the main floor, all rooms associated with the basement, and the attic space.

2.0 METHODOLOGY

The presence of hazardous materials was assessed by visual inspection. For the purpose of this assessment and this document, hazardous materials include designated substances as well as other chemical, biological and environmental hazards as defined below:

- **Designated Substances (as prescribed by Ontario Regulation 490/09):**
 - Acrylonitrile, Arsenic, Asbestos, Benzene, Coke Oven Emissions, Ethylene Oxide, Isocyanates, Lead, Mercury, Silica and Vinyl Chloride.
- **Other Hazardous Materials:**
 - **Chemical Hazards** – Urea Formaldehyde Foam Insulation (UFFI)
 - **Biological Hazards** – Mould Contamination and Pest Infestation
 - **Environmental Hazards** – Polychlorinated Biphenyls (PCBs) and Ozone Depleting & Global Warming Substances

For background information regarding the above hazardous materials, please refer to Appendix E.

Destructive testing was not conducted as part of this assessment. Concealed locations such as above solid plaster or drywall ceilings, within plaster or drywall wall cavities, enclosed mechanical/pipe shafts and bulkheads, etc. were not investigated. Similarly, motors, blowers, electrical panels, etc., were not de-energized or disassembled to examine concealed conditions. Building materials that are not detailed within this assessment due to inaccessibility at the time of our site visit and/or uncovered during renovation/demolition activities should be assessed by a qualified person prior to their disturbance.

Bulk sampling followed by laboratory analysis was also conducted to confirm the presence/absence of selected hazardous materials. Bulk sampling was limited to asbestos in building materials and lead in paint on building finishes. All other hazardous materials were identified by visual inspection only. Where possible, observations regarding the location, quantity and condition of the hazardous materials identified were made in order to determine the potential for exposure and provide appropriate recommendations for remedial action, if necessary. Specific methodology for each individual hazardous material assessed is further detailed below.

2.1 Designated Substances

2.1.1 Asbestos

A visual inspection for the presence of both friable and non-friable asbestos-containing material (ACM) was performed within the assessment area(s). The condition of ACM was rated as Good, Fair or Poor based on our assessment criteria provided in Appendix A.

Although destructive testing was not conducted, details regarding the possible presence of ACM in enclosed locations were provided on a case-by-case basis where our visual inspection indicated this possibility. If an existing asbestos survey was available for review, SEL relied on the information present. Building materials that were visually similar to materials previously tested and that were confirmed to be either ACM or non-

ACM were considered to have consistent content and were not re-sampled. Additional sampling was only conducted where the investigator believed a need existed.

Bulk samples of building materials suspected to contain asbestos were retrieved by SEL only for materials that were deemed to have a potential to be disturbed. Bulk samples were retrieved in accordance with Section 3 and Table 1 of Ontario Regulation 278/05, *“Designated Substance – Asbestos on Construction Projects and in Buildings and Repair Operations”*. The number of samples collected for each material was based on the type and quantity of the material present within the area(s) investigated. Each individual sample was placed in a labeled zip-lock bag for transportation to an independent laboratory (EMSL). EMSL is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP) for bulk asbestos fiber analysis.

Analysis for asbestos content was performed by the independent laboratory in accordance with the U.S. Environmental Protection Agency (EPA) Test Method EPA/600/R-93-116: Method for the Determination of Asbestos in Bulk Building Materials. June 1993. This method identifies the asbestos fibre content of building materials using polarized light microscopy (PLM) analytical techniques, with confirmation of presence and type of asbestos made by dispersion staining optical microscopy. This analytical method meets the requirements set forth in Section 3 of O.Reg. 278/05.

In accordance with O. Reg. 278/05, an asbestos-containing material is defined as material that contains 0.5 per cent or more asbestos by dry weight. The laboratory was instructed to conduct “stop-positive” analysis for all materials. If a sample was found to be asbestos-containing no further analysis was conducted for samples taken from the same homogeneous material. The Laboratory Certificate of Analysis is included in Appendix B.

Locations where ACM have been identified are detailed in this report. Recommendations pertaining to ACM were made based on the friability, accessibility and condition of the material in conjunction with the potential for the planned renovation work to disturb the ACM.

2.1.2 Lead

An assessment for lead in paint was conducted by retrieving paint chip samples from representative surfaces within the area(s) assessed that were deemed to have a potential to be disturbed as part of the planned renovation activities. The condition of painted surfaces from which samples were taken were also visually assessed for signs of deterioration such as cracking, chipping, flaking, bubbling and deterioration due to friction. The condition of these surfaces was assessed as good, fair or poor based on the degree and extent of deterioration.

The number of paint chip samples retrieved for analysis was based on the number of surface colours observed and the approximate surface area of the paint. Samples were

not retrieved from paint finishes with limited application while additional samples were retrieved for paints covering greater surface areas to better account for possible variances in lead concentration due to underlying paints (if present). All paint chip samples were retrieved by scraping the paint down to the base material substrate to ensure collection of all layers of paint. Care was taken to avoid collection of the underlying substrate to reduce analytical substrate matrix interference.

Upon completion of our assessment, paint chip samples were submitted to an independent laboratory (EMSL) for the determination of lead content. This laboratory participates in and is accredited by the EPA (U.S. Environmental Protection Agency) for analysis of lead in paint chips through the American Industrial Hygiene Association (AIHA) Environmental Lead Laboratory Accreditation Program (ELLAP). Analysis was conducted by the laboratory following the EPA “Test Methods for Evaluating Solid Waste, Physical/Chemical Methods” (SW-846), Method 7000B “Flame Atomic Absorption Spectrophotometry”. Results of analysis were reported by the laboratory as the percentage of lead by weight of the total sample (% by wt.). The Laboratory Certificate of Analysis is included in Appendix C.

The presence of lead in other materials, such as lead sheeting, pigmented mortar, lead piping, lead solder, etc. were noted where observed but were not sampled to verify lead content. Lead can be present in these materials to varying degrees, depending on their age of application (refer to Appendix E for additional details) and should be considered lead-containing until proven otherwise.

2.1.3 Mercury

The type, quantity and location of mercury-containing equipment and devices within the area(s) assessed were determined by visual inspection based on appearance, age and knowledge of historical uses. Sampling for mercury-containing building materials and dismantling of suspect mercury-containing equipment was not performed. Where possible, attempts were made to verify the presence/absence of mercury by gathering additional information such as equipment model number, serial number, etc.

2.1.4 Silica

The presence of crystalline silica in building materials was determined through visual inspection of building materials only, based on knowledge of the historic use of silica-containing materials in certain building materials. Sampling to verify the presence/absence of silica in building materials was not performed.

2.1.5 Other Designated Substances

Other designated substances (i.e. acrylonitrile, arsenic, benzene, coke oven emissions, ethylene oxide, isocyanates, and vinyl chloride) are typically not expected to be encountered in building materials as significant constituents or in a form that would represent an exposure concern. These substances were not included in our assessment unless specific information regarding their use (e.g. in a manufacturing process) was provided to us. Please refer to Appendix E for information regarding where these designated substances are typically found or used. No sampling for these designated substances was performed.

2.2 Other Hazardous Materials

2.2.1 Chemical Hazards

Urea Formaldehyde Foam Insulation (UFFI)

A visual inspection to evaluate the possible presence of Urea Formaldehyde Foam Insulation (UFFI) was conducted within the area(s) assessed. Our visual inspection was limited to looking for evidence of possible UFFI installation (i.e. repaired nozzle holes in walls) and overspray at wall/ceiling joints, etc. No destructive testing or material sampling was conducted as part of our assessment.

2.2.2 Biological Hazards

Mould Contamination

A visual inspection to determine the possibility of mould growth was conducted within the area(s) assessed. Our assessment was limited to looking for evidence of mould growth and water damage (staining, material deterioration, efflorescence, etc.) on the surface of building materials, which may be an indicator of hidden mould growth. No moisture content readings of building materials were taken to determine their current condition. Additionally, destructive testing to confirm the presence/absence of hidden mould growth and material sampling to verify the presence/absence of mould on suspect surfaces was beyond the scope of this assessment.

Pest Infestation

The presence and extent of pest infestation within the area(s) assessed was based on visually inspecting for evidence of significant pest activity, including signs of nesting, droppings/fecal accumulation, dead insects/carcass accumulation, etc. Evidence of minor pest presence was not considered to be indicative of pest infestation.

2.2.3 Environmental Hazards

Polychlorinated Biphenyls (PCBs)

The presence of PCB-containing electrical equipment within the area(s) assessed was identified through visual inspection and knowledge of the timeline of historical use.

For stand-alone transformers and capacitors, information from the manufacturer nameplate (such as the date of manufacture, dielectric fluid trade name or “Type Number”, etc.) was gathered, where possible, to further evaluate if the equipment may contain PCBs. This information was then compared to the information provided in the Environment Canada document entitled “*Handbook on PCB’s in Electrical Equipment*” (Third Edition, April 1988) to aid in identification. Transformers and capacitors confirmed to be manufactured after 1979 were assumed to not contain PCBs. If appropriate information could not be obtained it was assumed that the transformer or capacitor contained PCBs.

For fluorescent light ballasts, a representative number of fixtures were inspected, if possible, for assessment areas that were constructed prior to 1980 and where there was no history or evidence of a complete lighting retrofit. The light fixtures were examined by removing any lenses and ballast covers to expose the ballast and identify information such as ballast make, model number, serial number, and date code. This information was then compared to the information provided in the Environment Canada document entitled “*Identification of Lamp Ballasts Containing PCBs*” (Report EPS 2/CC/2 (revised) August 1991) to aid in identification. Ballasts that could not be confirmed Non-PCB-containing were assumed to contain PCBs. The light fixtures were not de-energized and ballasts were not removed to obtain manufacturer information that may be on the back of the ballast. If visual confirmation of ballast type could not be made it was assumed that light fixtures in areas constructed prior to 1980 that have not undergone a complete lighting retrofit have PCB-containing ballasts until proven otherwise.

No sampling of materials or fluids within equipment was conducted to verify the presence/absence of PCBs. Inspection and testing of other materials for PCB content, including (but not limited to) caulking, asphalt, oil-based paint, plastics, switches, electric cables and hydraulic fluids was beyond the scope of our assessment.

Ozone Depleting and Global Warming Substances

The presence of fixed equipment likely to contain ozone-depleting substances (ODS) and/or global-warming substances (GWS) was identified through visual inspection and knowledge of the timeline of historical use. This included equipment such as chillers, air-conditioners, walk-in refrigeration and freezer units and fixed dry-chemical fire extinguishers, where chemicals such as hydrochlorofluorocarbons (HCFCs), hydrofluorocarbons (HFCs) or halons may be present. Where possible, information

regarding the type and quantity of refrigerant present was obtained from the manufacturer nameplate. Our visual assessment was limited to fixed equipment within the area(s) assessed and did not include portable equipment such as stand-alone refrigerators, freezers, water coolers, air-conditioners and fire extinguishers, etc.

3.0 RESULTS

Results of our visual assessment and bulk sample analytical findings are summarized in the sections below. Photographs of conditions observed are referenced in the appropriate section where applicable (as **P#**) and are included in Appendix D.

3.1 Designated Substances

3.1.1 Asbestos

Results of bulk sample analysis for the determination of asbestos content are summarized in Table 1. Materials have been classified as “ACM”, “Non-ACM”, “Suspected ACM” or “Presumed Non-ACM” based on analytical results. Materials classified as Suspected ACM or Presumed Non-ACM may require further analysis (depending on site-specific conditions) to verify whether the material should be classified as ACM or Non-ACM. Please refer to the Limitations section of this report (Section 5.0) for additional details. The Laboratory Certificate of Analysis is included in Appendix B.

Table 1
Bulk Sample Analytical Results for Determination of Asbestos Content
Renovation Project – Residential Dwelling
18 Prince Street, Bowmanville, Ontario
Sample Collection Date: December 8, 2016

Sample No.	Material Description	Sample Location	Asbestos Content	Material Classification
1A	Drywall Joint Compound	Basement Locations (Walls and Ceiling)	Non-Detected	Non –ACM
1B				
1C				
2A	Exterior Caulking	Garage Exterior	Non-Detected	Non-ACM
2B				
2C				
3A	Transite Panels	Garage Exterior	10% Chrysotile	ACM
3B			Positive Stop (Not Analyzed)	
3C			Positive Stop (Not Analyzed)	

Sample No.	Material Description	Sample Location	Asbestos Content	Material Classification
4A	Vinyl Sheet Flooring (White with Green Diamonds)	Basement	Non-Detected	Non-ACM
4B				
4C				
5A	Black Paper within Wall	Basement Furnace Room	Non-Detected	Non-ACM
5B				
5C				
6A	Exterior Black Paper	Garage Exterior (behind transite paneling)	Non-Detected	Non-ACM
6B				
6C				

As per O.Reg. 278/05, ACM contains $\geq 0.5\%$ asbestos by dry weight.

Materials assessed for asbestos content are summarized in Table 2 based on the type/use of the material. The condition and friability of materials confirmed or suspected to be asbestos-containing (based on our visual assessment and results of bulk sample analysis) is provided. Condition (Cond.) ratings are provided as Good (G), Fair (F) or Poor (P) based on our Assessment Criteria provided in Appendix A. Estimates of quantity have only been provided for confirmed or suspected asbestos-containing materials that were deemed to have a potential to be disturbed as part of the Renovation Project. Any quantities provided should be considered rough estimates only and should not be relied upon for bidding purposes. It is the responsibility of the selected Contractor to obtain actual quantities.

Table 2
Results of Assessment for Asbestos-Containing Materials
Renovation Project – Residential Dwelling
18 Prince Street, Bowmanville, Ontario

Sprayed and Loose Fill Insulating Materials	Location/Description	Cond.	Est. Quantity	Friability
Sprayed Fireproofing	None identified in area(s) assessed.	N/A	N/A	N/A
Sprayed Insulation	None identified in area(s) assessed.	N/A	N/A	N/A
Loose Fill / Vermiculite Insulation	None identified in area(s) assessed. Interior portions of concrete block walls could not be assessed. However, it is not expected that these walls are insulated with loose fill or vermiculite insulation	N/A	N/A	N/A
Thermal System Insulation	Location/Description	Cond.	Est. Quantity	Friability
Mechanical Pipe Insulation – Straights	Mechanical pipes were observed to be insulated with fibreglass or not insulated.	N/A	N/A	N/A

Mechanical Pipe Insulation – Fittings (elbows, valves, tees, hangars, etc.)	Mechanical pipe fittings were observed to be insulated with fibreglass or not insulated.	N/A	N/A	N/A
HVAC Duct Insulation	None identified in area(s) assessed.	N/A	N/A	N/A
Breeching / Exhaust Insulation	None identified in area(s) assessed.	N/A	N/A	N/A
Tank Insulation	None identified in area(s) assessed.	N/A	N/A	N/A
Boiler Insulation	None identified in area(s) assessed.	N/A	N/A	N/A
Other Mechanical Equipment Insulation	None identified in area(s) assessed.	N/A	N/A	N/A
Architectural Finishes & Finishing Materials	Location/Description	Cond.	Est. Quantity	Friability
Sprayed Texture / Stucco Finishes	None identified in area(s) assessed.	N/A	N/A	N/A
Plaster Finishes	None identified in area(s) assessed.	N/A	N/A	N/A
Drywall Joint Compound	Drywall joint compound observed on drywall finishes within the house were sampled (Sample Set 1) and analyzed for asbestos content using the PLM method of detection. The samples were found not to contain asbestos.	N/A	N/A	N/A
Ceiling Tiles	Location/Description	Cond.	Est. Quantity	Friability
Lay-in Acoustic Ceiling Tiles	None identified in area(s) assessed.	N/A	N/A	N/A
Glued-on Acoustic Ceiling Tiles	None identified in area(s) assessed.	N/A	N/A	N/A
Transite Ceiling Panels	None identified in area(s) assessed.	N/A	N/A	N/A
Flooring	Location/Description	Cond.	Est. Quantity	Friability
Vinyl Floor Tiles	None identified in area(s) assessed.	N/A	N/A	N/A
Vinyl Sheet Flooring	White with green diamond pattern vinyl sheet flooring observed within the basement was sampled (Sample Set 4) and analyzed for asbestos content using the PLM method of detection. The samples were found not to contain asbestos.	N/A	N/A	N/A

Asbestos Cement Products	Location/Description	Cond.	Est. Quantity	Friability
Piping	None identified in area(s) assessed.	N/A	N/A	N/A
Roofing, Siding, Wallboard	Transite wall panels observed on the exterior of the garage were sampled (Sample Set 3) and analyzed for asbestos content using the PLM method of detection. The samples were found to contain 10% Chrysotile asbestos.	Good	~800 ft ²	Non-Friable
Other Cement Products	None identified in area(s) assessed.	N/A	N/A	N/A
Misc. Materials	Location/Description	Cond.	Est. Quantity	Friability
Caulking	Exterior caulking was sampled (Sample Set 2) and analyzed for asbestos content using the PLM method of detection. The samples were found not to contain asbestos.	N/A	N/A	N/A
Construction Paper	Black paper observed within the basement wall cavity was sampled (Sample Set 5) analyzed for asbestos content using the PLM method of detection. The samples were found not to contain asbestos.	N/A	N/A	N/A
	Black paper observed behind transite panels on the garage was sampled (Sample Set 6) analyzed for asbestos content using the PLM method of detection. The samples were found not to contain asbestos.	N/A	N/A	N/A
Other Materials	Roofing materials were not sampled so as not to compromise the integrity of the roofing system. Therefore roofing materials should be presumed to contain asbestos until sampling proves otherwise or date of installation is confirmed.	N/D	N/D	N/D

Notes: N/A=Not Applicable; N/D=Not Determined

3.1.2 Lead

Laboratory analytical results for paints tested to determine lead content are summarized below in Table 3. Locations where bulk samples were retrieved for analysis are indicated in Floor Plans included in Appendix B. The Laboratory Certificate of Analysis is included in Appendix C. Refer to Section 4.1.2 of this report for recommended lead abatement procedures (if any) that correspond to the type of proposed construction, renovation, or demolition work.

Table 3
Results of Paint Condition and Lead Content Assessment
Renovation Project – Residential Dwelling
18 Prince Street, Bowmanville, Ontario
Sample Collection Date: December 8, 2016

Sample No.	Location	Surface	Paint Colour	Condition	Lead Conc. (% by wt.)	Material Classification
L1	Room 2B	Block Wall	White/ Gray	Good	0.0090	LLLP
L2	Basement	Drywall	Green	Good	0.0090	LLLP

LCM: Lead-Containing Material ($\geq 0.1\%$ Lead Content); LLLP: Low Level Lead Paint ($< 0.1\%$ Lead Content)

*Substrate matrix interference. Actual lead concentration may be higher as a result.

Varying concentrations of lead may be present within paints not sampled. Lead may also be present as a component of solder used in pipe fittings and electrical equipment.

3.1.3 Mercury

Mercury is present within the area(s) assessed in the form of vapour within fluorescent light tubes/bulbs.

3.1.4 Silica

A number of building materials were identified within the surveyed area(s) that are suspected to contain crystalline silica. This includes the following materials:

- Concrete;
- Concrete block and associated mortar;
- Drywall and associated drywall joint compound;

3.1.5 Other Designated Substances

Acrylonitrile, arsenic, benzene, coke oven emissions, ethylene oxide, isocyanates, and vinyl chloride were not included in our assessment as these substances are not expected to be a significant component of building materials or present in a form that would represent an exposure concern. Additionally, no specific information regarding their use was provided to us.

3.2 Other Hazardous Materials

3.2.1 Chemical Hazards

No visible evidence of UFFI installation (i.e. injection openings) or overspray of foam insulation at wall/ceiling joints was identified. In addition, due to the age of construction and use of the building the presence of UFFI insulation within wall cavities is not suspected.

3.2.2 Biological Hazards

Mould Contamination

There was no visible evidence of obvious mould growth on building finishes within the surveyed area(s) at the time of our assessment. In addition, there was no visible evidence of any significant water staining or discolouration to building finishes within the surveyed area(s) that would suggest the potential for hidden mould growth behind these finishes.

Pest Infestation

There was no visible evidence of any significant pest infestation within the surveyed area(s).

3.2.3 Environmental Hazards

Polychlorinated Biphenyls (PCBs)

No light fixtures or other electrical equipment (such as transformers or capacitors) suspected of containing PCBs were observed in areas assessed.

Ozone Depleting and Global Warming Substances

No fixed equipment suspected to contain ODS/GWS were observed in the area(s) assessed.

4.0 CONCLUSIONS AND RECOMMENDATIONS

4.1 Designated Substances

4.1.1 Asbestos

Results of our assessment indicated that the following asbestos-containing materials are present within the Residential Dwelling that are likely to be disturbed as part of the Renovation Project:

- Exterior transite panels – Garage

As per O.Reg. 278/05, removal of non-friable ACM can be conducted following Type 1 operations; as long as the material can be removed without being broken, cut, drilled or otherwise similarly disturbed. If the material cannot be removed without it breaking or being similarly disturbed then the work should be conducted using non-powered hand tools and the material should be wetted to control the spread of dust. If the material cannot be wetted or if power tools attached to dust-collecting devices equipped with HEPA (high efficiency particulate aerosol) filters are used during removal or disturbance, then work should be performed following Type 2 operations. If non-friable materials are removed or disturbed using power tools that are not attached to dust-collecting devices that are equipped with HEPA filters then work should be conducted following Type 3 operations.

Other materials observed within the investigated area(s) that are suspected or previously confirmed to be asbestos-containing but are not likely to be disturbed as part of the project includes roofing felts. Since the above materials are not likely to be disturbed as part of the project bulk sampling was not conducted to verify asbestos content. However, based on the age of the materials they should be assumed to be asbestos-containing until proven otherwise.

The removal or disturbance of ACM must follow the measures and procedures indicated in O.Reg. 278/05. This work should be conducted by workers who have received proper training by a “competent person” in the hazards of asbestos exposure, personal hygiene and work practices, and the use and care of respirators and protective clothing. Any worker/supervisor who works in a Type 3 operation must successfully complete the Asbestos Abatement Worker or Supervisor Training Program approved by the Ministry of Training, Colleges and Universities.

It is recommended that all work involving the removal or disturbance of ACM be subject to inspection and testing to document conformance with O.Reg. 278/05 requirements. The degree of inspection and testing is dependent on site-specific conditions such as the type, duration, size and location of the work. In most circumstances Type 3 operations require a visual inspection and clearance air testing to be conducted by a competent worker on completion of the work. The inspection should be conducted to

ensure that the enclosure and the work area inside the enclosure are free from visible dust, debris or residue that may contain asbestos. Clearance air testing for Type 3 operations requires a minimum number of air samples to be taken (depending on the size of the work area) following specific sampling and analytical procedures and all samples taken must meet the clearance criteria set out in O.Reg. 278/05.

4.1.2 Lead

Paints and surface coatings not sampled are assumed to be lead-containing (>0.1% lead content). Any disturbance of the lead-containing paints or surface coatings should be conducted in accordance the procedures outlined in the Environmental Abatement Council of Ontario (EACO) “Lead Guideline” (October 2014) and/or the Ministry of Labour (MOL) “Lead on Construction Projects” guideline (April 2011). The extent of procedures (or Type of operation) necessary depends on the type of work to be conducted.

Results of paint chip analysis for the determination of lead content indicated that paint sampled is considered a „low-level lead paint” (<0.1% based on requirements of the Environmental Abatement Council of Ontario (EACO) Lead Guideline (2014)). If the „low-level lead paints” are disturbed in a non-aggressive manner (no use of power tools/abrasive blasting, grinding, welding, heating, etc.), then respirators are not considered necessary. However, Type 1 measures and procedures should still be implemented during the non-aggressive disturbance of „low-level lead paints”, including, but not limited to, no smoking, eating, drinking and chewing gum in the work area, dust suppression methods must be implemented, and facilities must be made available to that workers can wash their hands and face.

At this time the method of disturbance, if any, of lead-containing paints is unknown. It is recommended that any contractor whose work requires lead-containing paints to be disturbed consult the EACO or MOL guidelines prior to the start of work to determine the Class/Type of operation(s) and the corresponding control measures (engineering controls, work/hygiene practices, protective clothing and equipment and worker training) necessary to conduct the work in a manner that will prevent worker overexposure to lead.

If practicable, all bulk lead waste materials should be separated from other wastes and sent to a recycling facility. If not practicable, lead-containing waste should be handled and disposed of according to Ontario Regulation 347 (O.Reg. 347), “*General – Waste Management*”, made under the Environmental Protection Act. Under this regulation (and depending on the quantity of waste generated) the waste may be subject to analysis following the Toxicity Characteristic Leaching Procedure (TCLP) to determine if it is a “leachate toxic waste” based on the leachate quality criteria provided in Schedule 4 of the regulation. Such wastes must meet specific treatment requirements (Schedule 5) or undergo alternative treatment for hazardous debris (Schedule 8) prior to land disposal.

4.1.3 Mercury

Although no mercury was visibly identified in other equipment, dismantling of equipment was not conducted to verify the presence/absence of mercury. It is cautioned that thermometers, barometers and other measuring devices (pressure gauges/sensors, vacuum gauges, manometers, etc.), thermostats and a variety of other electrical switches (temperature sensitive, tilt switches, float switches, etc.) may contain mercury that may not be visible without dismantling the equipment. Such devices should be assumed to contain mercury until proven otherwise and similar precautions to those outlined above should be taken if any of these items are to be disturbed or taken out of service in the future.

4.1.4 Silica

Suspect silica-containing materials were identified to be present within the project-specific work area. In their current state, building materials containing silica do not represent a risk to building occupants or construction workers. Risks associated with exposure to silica arise during demolition activities that cause silica dust to be created (particularly grinding, drilling or cutting operations and during major demolition), resulting in a crystalline silica inhalation hazard.

If any materials suspected to contain silica are to be removed or otherwise disturbed as a result of renovation/demolition activities it is recommended that procedures be put in place to control the generation of dust (such as routine water misting) and thus reduce the potential for worker exposure. Workers that have the potential to be exposed to airborne silica should also wear appropriate protective clothing and respiratory protection.

Any work involving the disturbance of silica-containing materials should follow the procedures outlined in the MOL *"Silica on Construction Projects"* guideline (April 2011). The appropriate engineering controls, work practices, hygiene practices, personal protective measures and training necessary to conduct the work in a safe manner are provided in this guideline. The general measures and procedures (or Type of operation) necessary depends on the type of work to be conducted.

4.1.5 Other Designated Substances

No other designated substances are expected to be a component of building materials within the surveyed area(s) in a form that would represent an exposure concern. Therefore, no protective measures or procedures specific to acrylonitrile, arsenic, benzene, coke oven emissions, ethylene oxide, isocyanates, and vinyl chloride are considered necessary.

4.2 Other Hazardous Materials

4.2.1 Chemical Hazards

As no UFFI was identified or is suspected to be present within the surveyed area(s) no further action is required. However, given that no destructive testing was conducted, there is a remote possibility that UFFI could be hidden within locations such as exterior wall cavities. If suspect foam insulation is identified during renovation/demolition activities work should be stopped and the area should be re-assessed to evaluate conditions and determine appropriate control measures and worker protection, if necessary.

4.2.2 Biological Hazards

Mould Contamination

No mould contamination was identified in the surveyed area(s) and therefore no further action is required at this time. Although no obvious mould contamination or evidence to suggest possible hidden mould contamination was visibly identified within the surveyed area(s) there is still a potential for hidden mould growth to exist behind or underneath building finishes. Should suspect mould growth be discovered during the course of renovation or demolition work it is recommended that all work stop so that the area can be assessed to evaluate proper control measures and remediation protocols in order to avoid worker exposure to mould and possible contamination of adjacent areas.

Pest Infestation

No visual evidence of any significant pest infestation was observed within the area(s) assessed. Therefore, no additional precautionary measures are deemed necessary for protection against biological contaminants potentially associated with pest infestation.

4.2.3 Environmental Hazards

Polychlorinated Biphenyls (PCBs)

No equipment was identified within the surveyed area(s) that is expected to be PCB-containing.

Ozone Depleting and Global Warming Substances

No fixed equipment suspected to contain OD/GWS were identified.

Any refrigerant that is removed from an air-conditioning unit, heat pump, refrigeration or freezer unit (that is not mobile) is defined as a Stationary Refrigerant Waste under Ontario Regulation 347 and must be collected, handled, transported and recycled or

disposed of in accordance with the requirements set forth in Sections 30 to 35 of this regulation.

5.0 LIMITATIONS

The information and recommendations detailed in this report were carried out by trained professional and technical staff in accordance with generally accepted environmental and industrial hygiene work practices and procedures. Recommendations provided in this report have been generated in accordance with accepted industry guidelines and practices. These guidelines and practices are considered acceptable as of the date of this report.

In preparation of this report, Safetech Environmental Limited (SEL) relied on information supplied by others, including without limitation, information pertaining to the history and operation of the site, test results and reports of other consultants and testing services provided by independent laboratories. Except as expressly set out in this report, SEL has not made any independent verification of information provided by independent entities.

The collection of samples at the location noted was consistent with the scope of work agreed-upon with the person or entity to whom this report is addressed and the information obtained concerning prior site investigations. As conditions between samples may vary, the potential remains for the presence of unknown additional contaminants for which there were no known indicators.

The analytical method used for determination of asbestos content meets the requirements of O.Reg. 278/05. However, small asbestos fibres may be missed by PLM due to resolution limitations of the optical microscope. Interfering binder/matrix and/or low asbestos content may also hinder positive identification by PLM. These conditions are common for vermiculite attic insulation (VAI) and non-friable organically bound (NOB) materials such as vinyl floor tiles, roofing materials, mastics and caulking and can lead to "false negative" results. If PLM analytical results for these types of materials indicate no asbestos detected they have been reported as "Presumed Non-ACM". Due to limitations of the analytical method we cannot confirm that low quantities of asbestos are not present in these samples using solely PLM analysis. Additional analytical procedures should be considered for such materials to rule out false negative results.

Conclusions are based on site conditions at the time of inspection and can only be extrapolated to an undefined limited area around inspected locations. The extent of the limited area depends on building construction and conditions. Building materials that are not detailed within this survey due to inaccessibility during the time of survey and/or are uncovered during renovation/demolition activities should be properly assessed by a qualified person prior to their disturbance. SEL cannot warrant against undiscovered

environmental liabilities. If any information becomes available that differs from the findings in this report, we request that we be notified immediately to reassess the conclusions provided herein.

No other person or entity is entitled to use or rely upon this report without the express written consent of Safetech Environmental Limited and the person or entity to who it is addressed. Any use that a third party makes of this report, or any reliance based on conclusions and recommendations made, are the responsibility of such third parties. SEL accepts no responsibility for damages suffered by third parties as a result of actions based on this report.

Appendix A

Condition Assessment Criteria for Asbestos-Containing Materials

The condition of asbestos-containing materials identified within the surveyed area(s) was assessed as Good (G), Fair (F) or Poor (P). The assessment criteria used to determine condition is dependent on material characteristics, such as friability. The following Table summarizes the criteria used by SEL to evaluate the condition of ACM.

Condition Assessment Criteria for Asbestos-Containing Materials

Sprayed Fireproofing, Sprayed Insulation and Sprayed Texture Finishes	
Good	<ul style="list-style-type: none"> • Surface shows no significant signs of damage, deterioration, or delamination (i.e. <1%). • Unencapsulated or unpainted fireproofing or texture finishes, where no delamination or damage is observed. • Encapsulated fireproofing or texture finishes where encapsulation applied after damage or fallout.
Fair	• Not utilized as part of condition assessment for these materials.
Poor	• Greater than 1% damage, delamination, or deterioration to surface.
In areas where damage exists in isolated locations, both Good and Poor may be applicable.	
Mechanical Insulation (boilers, breeching, ductwork, piping, tanks, equipment, etc.)	
Good	<ul style="list-style-type: none"> • Insulation completely covered in jacketing and exhibits no evidence of damage or deterioration. • Jacketing may have minor damage (i.e. scuffs or stains), but is not penetrated.
Fair	<ul style="list-style-type: none"> • Minor penetrating damage to jacketed insulation (cuts, tears, nicks, deterioration or delamination). • Undamaged insulation that had never been jacketed. • Insulation is exposed but not showing surface disintegration. • Extent of missing insulation ranges from minor to none. • Damage that can be repaired.
Poor	<ul style="list-style-type: none"> • Original insulation jacket is missing, damaged, deteriorated, or delaminated. • Insulation is exposed and significant areas have been dislodged. • Damage that cannot be easily repaired.
Non-Friable and Potentially Friable Materials (includes materials such as plaster finishes, drywall compound, ceiling tiles, asbestos cement products, vinyl asbestos tile and asbestos paper backed vinyl sheet flooring, etc., which have the potential to become friable when handled)	
Good	<ul style="list-style-type: none"> • No significant damage. • Material may be cracked or broken but is stable and not likely to become friable upon casual contact. • No friable debris present
Fair	• Not utilized as part of condition assessment for these materials.
Poor	<ul style="list-style-type: none"> • Material is severely damaged. • Debris is present or binder has disintegrated to the point where the material has become friable.
Asbestos-Containing Debris (noted separately from the presumed source material)	
Poor	• Debris is always considered to be in Poor condition.

Appendix B

Laboratory Certificate of Analysis - Asbestos

Appendix C

Laboratory Certificate of Analysis - Lead

Appendix D

Site Photographs



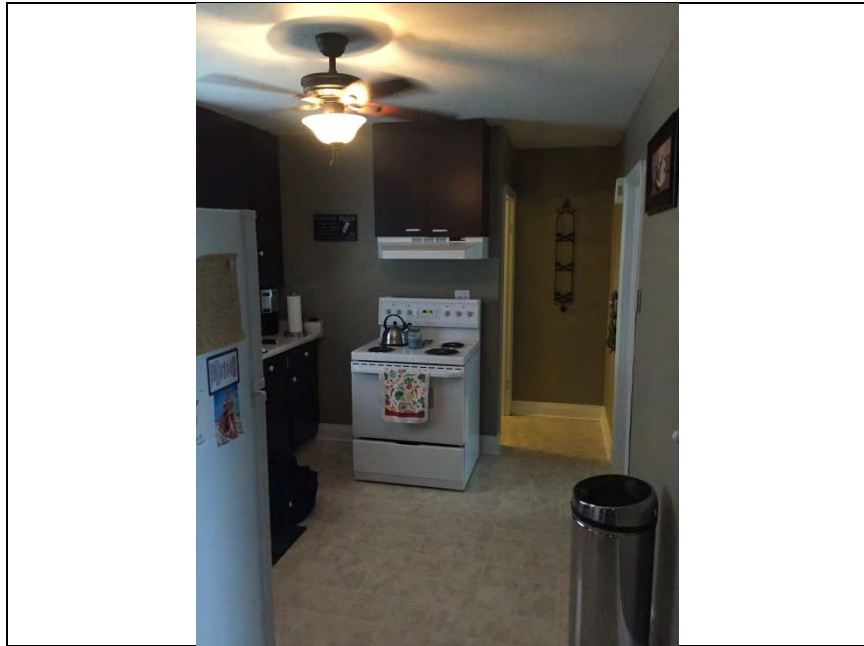
P1 –18 Prince Street, Bowmanville, Ontario

View of the front exterior of 18 Prince Street, Bowmanville, Ontario on December 8th, 2016.



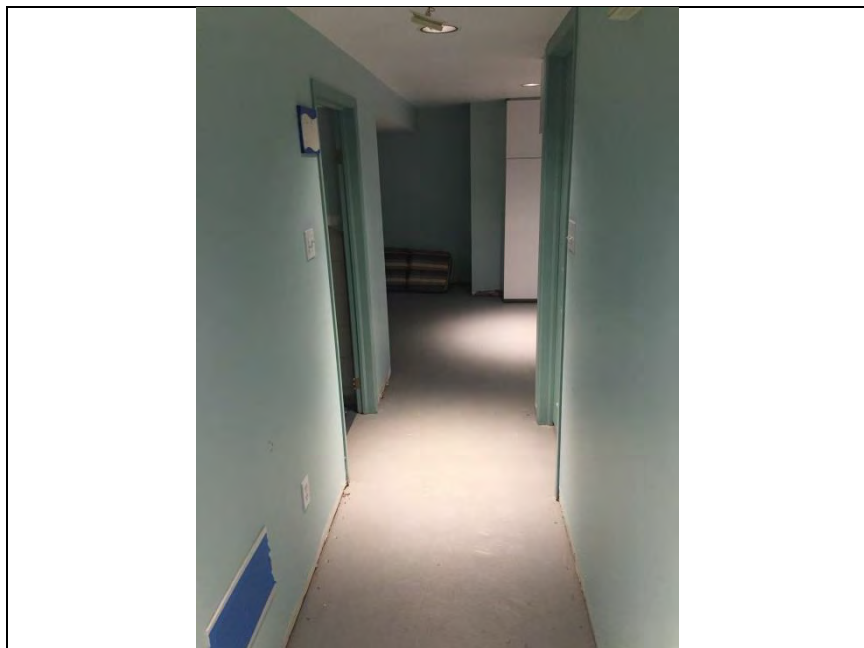
P2 – 18 Prince Street, Bowmanville, Ontario

View of the garage where exterior white transite paneling was found to be asbestos-containing.



P3 – 18 Prince Street, Bowmanville, Ontario

Typical view within the main floor whereby no asbestos-containing materials were identified.



P4 – 18 Prince Street, Bowmanville, Ontario

Typical view within the basement whereby no asbestos-containing materials were observed.

Appendix E

Background Information on Designated Substances and Other Hazardous Materials

DESIGNATED SUBSTANCES

The Occupational Health and Safety Act of Ontario (OHSA) allows for certain toxic substances to be especially designated. The OHSA defines a designated substance as “a biological, chemical or physical agent or combination thereof prescribed as a designated substance to which the exposure of a worker is prohibited, regulated, restricted, limited or controlled.” Ontario Regulation 490/09 - Designated Substances (O.Reg. 490/09), made under the Occupational Health and Safety Act outlines required steps to control exposure of workers to designated substances. Under O.Reg. 490/09 there are eleven (11) designated substances; acrylonitrile, arsenic, asbestos, benzene, coke oven emissions, ethylene oxide, isocyanates, lead, mercury, silica and vinyl chloride. This regulation applies to every employer and worker at a workplace where the designated substances are present, produced, processed, used, handled or stored and at which a worker is likely to be exposed to the designated substance.

Section 14 of O.Reg. 490/09 exempts an employer and the workers of an employer who engage in construction from the requirements of the regulation. However, designated substances are still required to be identified prior to the beginning of a demolition or renovation project to ensure that construction workers (and potentially building occupants) are adequately protected from the hazards posed by the presence of these materials if the planned work may cause them to be disturbed. Accordingly, under Section 30 of the OHSA building owners are required to perform an assessment to determine whether any designated substances are present at the project site before the beginning of the project. The owner is also required to prepare a list of designated substances that are present at the site and provide this list to prospective constructors before entering into a binding contract with the constructor. This way, contractors and construction workers are made aware of designated substances present within the work area so that appropriate measures can be taken during the work to limit exposure to these substances.

Designated Substances and Hazardous Materials Assessments are conducted to conform to the requirements of Section 30 of the OHSA. The assessments are performed to identify designated substances (and other hazardous materials) within the work area that may present a hazard to workers if disturbed. These substances are commonly a component of building materials or equipment found in buildings. Additional information regarding the eleven designated substances including their properties, uses and health effects are provided below.

Acrylonitrile

Acrylonitrile (ACN) is a clear, colourless or pale yellow liquid with a pungent onion- or garlic-like, irritating odour. It is highly flammable and as such is a severe fire and explosion hazard.

Acrylonitrile is used mainly as a monomer or comonomer in the production of acrylic fibres, plastics, resins and nitrile rubbers. Historically, a mixture of acrylonitrile and carbon tetrachloride was used as a pesticide; however, all pesticide uses have stopped. Based on its use as a chemical intermediate, exposure to acrylonitrile is primarily occupational, via inhalation during its manufacture and use. Therefore, this designated substance is not expected to be encountered in buildings where it is not either produced or used in a manufacturing process.

Acute (short-term) exposure of workers to acrylonitrile has been observed to cause mucous membrane irritation, headaches, dizziness, and nausea. More significant exposures may lead to symptoms such as limb weakness, labored and irregular breathing, impaired judgment, cyanosis, collapse, and convulsions. Exposure of the skin to high concentrations of acrylonitrile in the air may irritate the skin and cause it to turn red while direct skin contact with acrylonitrile may cause the skin to blister and peel. The International Agency for Research on Cancer (IARC) concluded that there is inadequate evidence in humans for the carcinogenicity of acrylonitrile, but has classified it as possibly carcinogenic to humans (Group 2B).

Arsenic

Arsenic is a naturally occurring mineral, widely distributed in the earth's crust. Elemental arsenic (sometimes referred to as metallic arsenic) is a silver-gray or white brittle metal. However, arsenic is usually found in the environment combined with other elements such as oxygen, chlorine, and sulfur to form inorganic arsenic compounds. Arsenic has no odor and is almost tasteless.

Arsenic and its compounds have a variety of commercial uses. Inorganic arsenic compounds are mainly used as a wood preservative. Copper chromated arsenic (CCA) is used to make "pressure-treated" lumber. CCA-treated wood is no longer used for residential applications but may still be used in industrial applications. Arsenic is also used in metallurgy for hardening copper, lead and certain metal alloys, in pigment production, in the manufacture of certain types of glass, and in semiconductors and light-emitting diodes. Inorganic arsenic compounds are no longer used as pesticides in agriculture; however, organic arsenic compounds, namely cacodylic acid, disodium methylarsenate (DSMA), and monosodium methylarsenate (MSMA), are used, as yet, as pesticides – principally on cotton.

Today, workplace exposure to arsenic may still occur in some occupations that use arsenic, such as copper or lead smelting, wood treating, or pesticide application. Exposure to arsenic within buildings other than where it is used as part of the

manufacturing process is unlikely and therefore arsenic is not expected to be encountered as part of a routine hazardous building materials assessment.

Human exposure to arsenic can cause both short and long term health effects. Short-term or acute effects can occur within hours or days of exposure. If you breathe high levels of inorganic arsenic, then you are likely to experience a sore throat and irritated lungs. Longer exposure at lower concentrations can lead to skin effects (such as darkened patches of skin and areas of thickened skin), and also to circulatory and peripheral nervous disorders. An important concern is the ability of inhaled inorganic arsenic to increase the risk of cancer. Long term exposure to arsenic has been linked to cancer of the bladder, lungs, skin, kidneys, nasal passages, liver and prostate. The IARC classifies arsenic and arsenic compounds as "carcinogenic to humans" (Group 1).

Asbestos

Asbestos is the name given to a number of naturally occurring fibrous minerals found in the environment. Ontario Regulation 490/09 (Designated Substances) defines asbestos as any one of the following fibrous silicates: actionlite; amosite; anthophyllite; chrysotile; crocidolite; and tremolite. Asbestos fibres have several desirable characteristics such as high textile strength, the ability to be spun and woven, and resistance to heat and most chemicals. These characteristics have resulted in the historical use of asbestos in a wide variety of building materials and other manufactured goods. Examples of products where asbestos has been used include roofing shingles, ceiling and floor tiles, insulation, sprayed fireproofing, gaskets, and friction products such as automotive brakes and clutches.

The peak years for asbestos use were in the 1960s and early 1970s. Therefore, asbestos is commonly found in building materials of this era. The use of asbestos in building materials and other products has decreased significantly since this time. Friable asbestos-containing materials (material that when dry can be crumbled, pulverized or powdered by hand pressure), such as sprayed fireproofing and sprayed insulation, ceased use circa 1973. Mechanical thermal system insulation ceased use circa 1981 while sprayed acoustic texture coat finishes ceased use circa 1982. Non-friable asbestos-containing materials were generally manufactured for a longer period of time (with the exception of plaster finishes which ceased use circa 1960"s). Asbestos-containing drywall joint compound ceased use circa 1980. Vinyl floor tiles, vinyl sheet flooring and acoustic ceiling tile ceased use 1982. Other non-friable materials continued to be produced into the 1990"s, including roofing materials (ceased use circa 1991) and floor adhesives (ceased use circa 1992). Today, asbestos is a controlled substance, and is banned for use in most products sold in Canada under the Hazardous Products Act (with the exception of certain roof shingles, clutch facings and brake linings).

Potentially harmful exposure to asbestos occurs through inhalation of air containing asbestos fibres. The greatest risk for workplace exposure to airborne asbestos is in occupations that produce and use asbestos, such as in mining and milling operations or

in the manufacture of products containing asbestos. Exposure to airborne asbestos fibres may also occur to construction workers, trades people, maintenance workers and other building occupants in buildings constructed with asbestos-containing materials; especially during building renovations or repairs or if the materials are in poor condition or are otherwise disturbed.

Health risks associated with asbestos exposure are dependent on several factors such as the type and airborne concentration of asbestos, and period of exposure. In general, the greater the exposure to asbestos, the greater the chance of developing harmful health effects. Typically, chronic, daily exposure to elevated airborne concentrations of asbestos over a period of years is required for health effects to eventually manifest themselves. Health effects associated with exposure to asbestos can result in asbestosis (a scarring of the lungs which makes breathing difficult), mesothelioma (a rare cancer of the lining of the chest or abdominal cavity) and lung cancer. The link between exposure to asbestos and other types of cancers and health effects is less clear.

Benzene

Benzene is a clear, colourless liquid with a characteristic, sweet or aromatic hydrocarbon odour. It is a liquid at room temperature but evaporates into the air very quickly, making it a highly flammable vapour as well as an extremely flammable liquid.

Benzene is formed from both natural processes and human activities. Natural sources of benzene include volcanoes and forest fires. Benzene is also a natural part of crude oil, gasoline, and cigarette smoke. It is produced from petroleum and coal sources and is used mainly in the manufacture of other chemicals which are used to make plastics, resins, and nylon and synthetic fibers. Benzene is also used to make some types of rubbers, lubricants, dyes, detergents, drugs, and pesticides.

Exposure to pure benzene within buildings other than where it is produced or used as part of a manufacturing process is unlikely. Therefore benzene is not expected to be encountered as part of a routine hazardous building materials assessment.

Exposure to benzene primarily occurs through inhalation of airborne vapours. Short-term (acute) health effects associated with overexposure to benzene vapours can result in symptoms such as headache, nausea, dizziness, drowsiness and confusion, with unconsciousness or even death at very high levels. Long-term (chronic) exposure to Benzene may cause blood and bone marrow effects which can lead to anemia and leukemia (cancer of the blood-forming organs) as well as cause damage to the immune system, increasing the chance for infection. The IARC classifies benzene as "carcinogenic to humans" (Group 1).

Coke Oven Emissions

Coke Oven Emissions refers to the benzene soluble fraction of total particulate matter emitted during the destructive distillation or carbonization of coal for the production of coke (pure carbon). These emissions are a mixture of coal tar, coal tar pitch, volatiles (including benzene, toluene and xylene), creosote, polycyclic aromatic hydrocarbons (PAHs – including benzo(a)pyrene, benzanthracene, chrysene and phenanthrene), and metals (including cadmium, arsenic, beryllium and chromium). Condensed coke oven emissions are a brownish, thick liquid or semisolid with a naphthalene-like odor, while uncondensed coke oven emissions are vapors that escape when the ovens are changed and emptied and are a component of fugitive emissions.

The coke produced is used as a component in the manufacturing of iron and steel. Coke is also used to synthesize calcium carbide and to manufacture graphite and electrodes. Additional chemicals recovered from the coke oven emissions (such as benzene, toluene, naphthalene, sulfur, and ammonium sulfate) are used as raw materials for plastics, solvents, dyes, drugs, waterproofing, paints, pipecoating, roads, roofing, insulation, and as pesticides and sealants.

Coke oven emissions would only be present within facilities producing or using coke as part of the manufacturing process and thus occupational exposure is limited to those workers in the aluminum, steel, graphite, electrical, and construction industries. Therefore, coke oven emissions are not a contaminant of concern during a routine hazardous building materials assessment.

Chronic (long-term) exposure to coke oven emissions can result in chronic bronchitis (particularly those who smoke) and additional health effects such as conjunctivitis, severe dermatitis, and lesions of the respiratory system and digestive system. However, the greatest concern regarding chronic exposure to coke oven emissions is the increased risk of cancer. The IARC classifies coke production as "carcinogenic to humans" (Group 1). The site at which excess cancer rates have been identified most commonly among workers in coke production is the lung. Excess risk for kidney cancer has also been associated with work in coke plants. Additional studies have also reported excess risks for other types of cancers such as cancer of the large intestine and pancreas.

Ethylene Oxide

Ethylene oxide is colourless gas with a somewhat sweet odour. It is extremely flammable and also dangerously reactive. Ethylene oxide exists as a compressed gas that has been produced since the early 1900s. It is used primarily as a chemical intermediate in the production of ethylene glycol, glycol ethers, nonionic surfactants and other industrial chemicals. Much smaller amounts are used as a non-explosive mixture with nitrogen or carbon dioxide for sterilizing medical instruments and supplies in hospitals and industrially for the fumigation of spices.

Most people are not likely to be exposed to ethylene oxide because it is not commonly found in the environment. Exposure to ethylene oxide is generally limited to those facilities where it is made or used. Therefore, ethylene oxide is not a contaminant of concern during a routine hazardous building materials assessment, although the presence of it should be determined in buildings such as hospitals if construction activities are to occur in or adjacent to areas where it is used or stored.

Exposure to ethylene oxide can result in irritation to the skin or eyes; however, the greatest risk for health effects is through inhalation. This can result in irritation to the nose, throat and respiratory tract, with damage to the central nervous system at higher concentrations. Exposure to high concentrations may cause headache, nausea, dizziness, drowsiness, and incoordination. Exposure to ethylene oxide is also a cancer hazard and possible reproductive hazard. In epidemiological studies of exposure to ethylene oxide, the most frequently reported association has been with lymphatic and haematopoietic cancer. The IARC has concluded that there is limited evidence for the carcinogenicity of ethylene oxide in humans and sufficient evidence for carcinogenicity in experimental animals, classifying ethylene oxide as “carcinogenic to humans” (Group 1).

Isocyanates

Isocyanates are a family of highly reactive, low molecular weight, manufactured chemicals containing one or more isocyanate groups (-NCO). An isocyanate that has two isocyanate groups is known as a diisocyanate, which are the most common type of isocyanates used for manufacturing other products. The most commonly used diisocyanates include methylene diphenyl diisocyanate (MDI), toluene diisocyanate (TDI), and hexamethylene diisocyanate (HDI).

When isocyanates are combined with other compounds that contain free hydroxyl functional groups (i.e. -OH) they react and begin to form polyurethane polymers. These polyurethanes find significant application in the manufacture of rigid and flexible foams. Flexible foam is primarily used for cushioning, while rigid foam is used mainly for insulation. Polyurethanes are also used in the production of adhesives, elastomers, and coatings and are increasingly used in the automobile industry, autobody repair, and building insulation materials.

This diversity of applications means that exposures to isocyanates can occur in a broad range of production facilities from small workshops to automated production lines. Jobs that may involve exposure to isocyanates include painting, foam-blowing, and the manufacture of many polyurethane products. Exposure to isocyanates within buildings where it is not produced or used as part of manufacturing is unlikely, as products such as rigid foam insulation that may be used in buildings has already undergone the curing process. Completely cured products are fully reacted and therefore are considered to be inert and non-toxic. However, some products such as spray foams, coatings, sealants and adhesives may be sold and used in an uncured form. An example would be an adhesive, which is sold to be initially applied in an uncured form and as it cures (hardens), bonds two pieces of wood together. Such products can provide potential exposure to building occupants and construction workers during the application and use of these products. However, for the purposes of a routine hazardous building materials assessment, products that may have contained isocyanate as part of the manufacturing process (e.g. rigid foam) or during the application/installation process (e.g. spray foam, adhesives and sealants) are assumed to be fully cured and would no longer contain free isocyanate.

Direct skin contact with isocyanates can cause marked skin irritation, resulting in reddening, swelling and blistering. However the greatest route of exposure to isocyanates is through inhalation of fine vapours or droplets. Airborne exposure to isocyanates can result in irritation to the mucous membranes of the eyes and respiratory tracts. This results in symptoms such as excessive tear secretion, dry throat, dry cough, chest pains and difficulty in breathing. Isocyanates are also a major cause of work-related asthma worldwide. Increased exposure to isocyanates can lead to sensitization. Once sensitized, individuals are subject to severe asthma attacks (which in some cases has been reported to result in death) if they are re-exposed.

Lead

Lead is a naturally occurring metal found in small amounts in the earth's crust. It is usually found in ore with zinc, silver and (most abundantly) copper, and is extracted together with these metals. Metallic lead is bluish-white in colour but soon tarnishes to a dull grey when exposed to air. When melted into liquid form it has a shiny chrome-silver appearance.

Lead is soft, dense, highly malleable and resistant to corrosion, with poor electrical conductivity as compared to most other metals. Such properties have resulted in lead being used in many applications, including products and materials commonly found in buildings. It is present as a component of lead-acid batteries, ammunition, PVC plastics, and older brass and chrome-plated brass faucets. As a building component, lead has been used in water distribution piping, as an alloy in solder, in electrical conduits, roofs and roofing details, and as an additive to paints, ceramic glazes and mortars as pigments or for anti-corrosion properties. Lead has also used as sheeting inside buildings for shielding X-rays and for sound attenuation.

Exposure to lead can occur for workers in workplaces that produce the above materials but also to construction workers, building maintenance personnel and the general population due to the widespread historical use of lead in building materials and consumer products. Most exposure to lead occurs through ingestion or inhalation, with the health effects being the same. Overexposure to lead can result in damage to nervous connections and can cause blood and brain disorders, severe damage to the kidneys and ultimately death. Infants and young children are especially vulnerable to the health effects of lead, as overexposure has been proven to result in the permanent reduction in cognitive capacity. In pregnant women, high levels of exposure to lead may cause miscarriage. The IARC has concluded that lead and inorganic lead compounds are “possibly carcinogenic to humans” (Group 2B).

The known serious health effects associated with lead exposure has brought about widespread reduction in its use. The use of lead in building materials and consumer products has decreased substantially since the 1970s to where lead is no longer being used in building materials and consumer products or is present at significantly lower concentrations. For example, unleaded gasoline was introduced in Canada in 1975, after which leaded gasoline was phased out and banned in 1990. Lead-based solder has been banned since the 1980s and most solder used today is either lead-free or has very low lead concentrations. Up until the 1960s, lead was added to paints in significant quantities. Since that time, the concentration of lead in paint has decreased. The federal government began reducing the amount of lead allowed in interior paint in 1976 (to 0.5% by weight). By 1991, paint manufacturers in Canada and the U.S. voluntarily stopped adding lead to paint, reducing lead concentrations to background levels. In 2005 the *Surface Coating Materials Regulations* came into effect to limit the concentration of lead in paint (to 0.06% by weight) for both interior and exterior paints sold to consumers. This was since amended in 2011 to further reduce the allowable lead limit (to 0.009% by weight) and extended to include all consumer paints and coatings.

Mercury

Mercury is a naturally occurring element found in the earth's crust, with natural deposits generally found as a vermilion red ore called cinnabar. Mercury can exist as metallic mercury, organic mercury or inorganic mercury. Metallic or elemental mercury has unique properties as compared to other metals. It is the only pure metal that is a liquid at room temperature, having a silvery-white, shiny appearance. Mercury is the densest liquid known, which produces a colourless, odourless vapour at room temperature.

The unique properties of mercury have resulted in it being used in a wide variety of applications. Properties such as its coefficient of expansion and ability to conduct electricity has resulted in mercury being used in thermometers, barometers and other measuring devices (blood pressure gauges, vacuum gauges, manometers, etc.), thermostats and a variety of other electrical switches (temperature sensitive, tilt switches, float switches, etc.). Mercury is also used in antifouling paints, dry cell or button batteries and numerous lighting products, including fluorescent lamps and a

variety of High Intensity Discharge (HID) lamps such as mercury vapor, metal halide and high pressure sodium lamps. HID lamps are used for street lights, floodlights and industrial lighting applications. Because of the wide variety of uses mercury can be found as a component of machinery, equipment and lighting within buildings; although many of its uses have been phased out over the years.

The health effects of mercury exposure depend on its chemical form (elemental, inorganic or organic), the route of exposure (inhalation, ingestion or skin contact), and the level of exposure. Vapours from liquid elemental mercury and methyl mercury are more easily absorbed than inorganic mercury salts and can, therefore, cause more harm. Exposure to mercury occurs mainly from breathing contaminated air or ingesting contaminated water and food. Mercury is a neurotoxin, which means it can adversely affect the central nervous system. Upon exposure, mercury tends to accumulate quickly in the brain where it tightly binds with the tissue and is released at a very slow rate. The nervous system effects of mercury toxicity are sometimes referred to as "Mad Hatter's Disease" since mercurous nitrate was used in making felt hats. High levels of exposure to mercury can also lead to harmful effects on the digestive and respiratory systems, and the kidneys. Many mercury compounds may also be teratogenic or capable of causing birth defects.

Mercury compounds can also be toxic at low levels in the environment. The characteristics of mercury that make it an environmental problem are its toxicity and persistence in the environment, and its ability to accumulate and bioconcentrate as methyl mercury in fish and fish-eating predators such as large fish or loons. Therefore, proper disposal of mercury-containing materials is essential. The improper disposal of mercury-containing products such as fluorescent light bulb tubes, high intensity discharge lamps, mercury vapour lamps, mercury thermometers and thermostats can lead to the release of mercury from municipal landfills. Used fluorescent and HID lamps may be classified as hazardous waste due to their mercury content and should be recycled if possible rather than being disposed of in landfill.

Silica

Silica (silicon dioxide) is the name of a group of minerals that contain silicon and oxygen in a chemical combination and have the general formula SiO_2 . It is one of the most common minerals in the earth's crust. Silica can be present as crystalline silica (free silica) or amorphous silica (combined silica), and exists in many forms. The three most common crystalline forms of silica encountered in the workplace environment are quartz, tridymite, and cristobalite. Quartz is by far the most common crystalline silica found in nature, being abundant in most rock types, notably granites, sandstones, quartzites and in sands and soils. Cristobalite and tridymite are found in volcanic rocks. Amorphous silica is found in nature as biogenic silica and as silica glass of volcanic origin. One form of biogenic silica, diatomaceous earth, originates from the skeletons of diatoms deposited on sea floors. From a health perspective it is the crystalline silica forms that raise the biggest concerns.

Silica is present in numerous building materials and products, including concrete, brick, stone, terrazzo, refractory brick, etc. Low concentrations of silica are also possible in plaster, drywall, acoustical ceiling tiles, drywall joint compound, mortars and adhesives. Because of the wide usage of quartz-containing materials, workers may be exposed to crystalline silica in a large variety of industries and occupations. Occupational exposure to silica dust occurs in cement and brick manufacturing, asphalt pavement manufacturing, china and ceramic manufacturing and the tool and die, steel and foundry industries. Exposure to silica also occurs during many different construction and maintenance activities. The most severe exposures to crystalline silica result from abrasive blasting activities using silica sand. Other activities that may produce crystalline silica dust include jack hammering, rock/well drilling, concrete mixing, concrete drilling, tuck pointing, and brick and concrete block cutting and sawing. Additionally, crystalline silica exposures occur in the maintenance, repair and replacement of refractory brick furnace linings.

Adverse health effects associated with silica exposure result from inhalation of the respirable fraction of crystalline silica, which can arise from many of the activities outlined above. The main health effects associated with silica exposure are lung cancer and silicosis. The IARC has concluded that crystalline silica inhaled in the form of quartz or cristobalite from occupational sources is “carcinogenic to Humans” (Group 1). Silicosis is caused by scarring of the lung tissue from breathing in silica dust. This scarring is permanent and causes a reduction in the lungs’ ability to take in oxygen, making it difficult to breathe and in severe cases can be disabling, or even fatal. Since silicosis affects lung function, it also makes one more susceptible to lung infections like tuberculosis.

Vinyl Chloride

Vinyl chloride is a manufactured substance that does not occur naturally. It is used as a chemical intermediate and not an end product. Vinyl chloride exists in liquid form if kept under high pressure or at low temperatures. At room temperature, it is a colourless gas. It burns easily and is not stable at high temperatures.

Most of the vinyl chloride produced is used to make a polymer called polyvinyl chloride (PVC). PVC is used to make a variety of plastic products including pipes, wire and cable coatings, vinyl flooring, vinyl wallpaper and window frames. It is also used to make furniture, upholstery and packaging materials. One of the concerns regarding PVC is that upon burning it will emit toxic fumes. Contaminants emitted when PVC is burned include hydrochloric acid, carbon monoxide and carbon dioxide, along with lesser amounts of dioxin and furan.

Vinyl chloride is reported to be slightly irritating to the eyes and respiratory tract in humans. Central nervous system effects (including dizziness, drowsiness, fatigue, headache, visual and/or hearing disturbances, memory loss, and sleep disturbances) as well as peripheral nervous system symptoms (peripheral neuropathy, tingling,

numbness, weakness, and pain in fingers) have been reported in workers exposed to vinyl chloride. Short-term (acute) exposure to extremely high levels of vinyl chloride has also reportedly caused loss of consciousness, lung and kidney irritation, and inhibition of blood clotting in humans. The most significant health effect associated with exposure to vinyl chloride is that it is a known human carcinogen that causes a rare cancer of the liver. It has been classified by the IARC as "carcinogenic to humans" (Group 1). Brain cancer, lung cancer, and some cancers of the blood also may be connected with breathing vinyl chloride over long periods.

OTHER HAZARDOUS MATERIALS

CHEMICAL HAZARDS

Urea Formaldehyde Foam Insulation

Urea-formaldehyde foam insulation (UFFI) was developed in as an improved means of insulating difficult-to-reach cavities. It was typically made at the construction site from a mixture of urea-formaldehyde resin, a foaming agent and compressed air. When the mixture is injected into the wall, urea and formaldehyde unite and "cure" into an insulating foam plastic. Its appearance is like ordinary shaving cream. Dry, it can be a white or tan colour, and fluffy like styrofoam. Over time UFFI shrinks significantly and may begin to degrade due to its crumbly texture.

UFFI was installed primarily in wall cavities during the 1970's as an energy conservation measure. The insulation was used most extensively from 1975 to 1978, during the period of the Canadian Home Insulation Program (CHIP), when financial incentives were offered by the government to upgrade home insulation levels. In addition to detached homes it can be found in common areas and walls of semi-detached homes, apartment buildings and condominiums. UFFI was also used to a lesser degree in some commercial and industrial buildings.

UFFI installation has been banned in Canada under the Hazardous Products Act (HPA) since December, 1980 due to concerns regarding the health effects of exposure to formaldehyde. Formaldehyde is a colourless, pungent-smelling gas. Health effects include eye, nose, and throat irritation; wheezing and coughing; fatigue; skin rash; nausea; headache; dizziness; and severe allergic reactions.

Sometimes, a slight excess of formaldehyde was often added to ensure complete "curing" with the urea to produce the urea-formaldehyde foam. The excess formaldehyde was given off after installation during the initial curing process, which typically took a few days to a week to complete. UFFI was sometimes improperly installed or used in locations where it should not have been, resulting in continued off-gassing of formaldehyde past the initial curing stage. Since UFFI was last installed in 1980, it should have little effect on indoor formaldehyde levels today. However, if UFFI comes in contact with water or moisture, it could begin to break down. Due to the age

of the insulation UFFI may also begin to degrade and crumble into a fine powder. Under these conditions UFFI may release more formaldehyde and consideration should be given to removing the material using properly trained remediation personnel.

BIOLOGICAL HAZARDS

Mould

Mould is part of the fungi kingdom, which also includes mushrooms and yeasts. They are a naturally occurring and essential part of our environment since they break down dead organic material in the outdoor environment (such as leaves, wood and other plant debris), which they use as a food source.

Mould reproduces by means of tiny spores that are so small they can't be seen by the naked eye. Because of their small size mould spores easily become airborne and can travel long distances, entering indoor environments through ventilation systems, open windows or doors, or tracked in on footwear. Therefore, mould spores are a commonly detected in indoor air and as a component of settled dust.

Under normal conditions, the presence of indoor mould is not an issue. However, if conditions exist that allow it to grow and multiply indoors it can become a potential hazard. Several factors will affect what moulds will grow within a building and how fast they will grow. This includes parameters such as temperature, airflow, and the pH (i.e. acidity/alkalinity) of the food substrate. However, the most important parameter affecting mould growth is water availability, as all moulds need some amount of moisture for them to be able to grow. Buildings that have had a history of water damage are at greater risk of indoor mould growth.

Indoor mould growth may present a risk to the building structure itself through decomposition of building materials. Health risks to building occupants may also occur as a result of indoor mould growth. Construction or renovation work which disturbs mould-contaminated materials increases this risk of exposure to building occupants and the construction workers themselves. Health effects associated with exposure to mould most commonly results in allergic type reactions such as runny nose, cough, congestion, eye irritation and aggravation of asthma, headache and fatigue. Exposure to very high concentrations of airborne mould spores (such as those that may be observed during disturbance of mould-contaminated building materials) can result in more serious health effects such as Organic Dust Toxic Syndrome (ODTS) or Hypersensitivity Pneumonitis (HP), where flu-like symptoms (fever, chills, cough, fatigue, shortness of breath, body aches, etc.) are exhibited. The chronic form of HP may occur from long-term exposure to lower levels of mould and results in a continued worsening in shortness of breath or cough. A variety of species of mould have also been documented to cause serious invasive infections, which are generally limited to individuals whose immune systems are already somehow compromised.

Pest Infestation

Areas currently or previously infested by pests (including birds, bats, rodents, raccoons, cockroaches, etc.) can result in potential exposure to numerous biological hazards that can be viral, bacterial, fungal or parasitic in nature. This can occur through exposure to their droppings, urine or saliva.

Bird and bat droppings should be presumed to be contaminated with the fungi *Histoplasma capsulatum* and/or *Cryptococcus neoformans*. These fungi grow well in the high nutrient content of accumulated bird and bat excrement and can cause respiratory infections in workers exposed during construction or maintenance activities that cause the droppings to be disturbed and the fungi to become airborne.

Histoplasmosis is an infectious disease caused by inhaling the spores of *Histoplasma capsulatum*. After an exposure, how ill a person becomes varies greatly and most likely depends on the number of spores inhaled and a person's age and susceptibility to the disease. The mildest form of histoplasmosis produces no signs or symptoms, but severe infections can cause serious problems throughout your body as well as in your lungs. Otherwise healthy people who've had intense exposure to *H. capsulatum* may experience a form of the disease known as acute symptomatic pulmonary histoplasmosis. Typical symptoms include fever, muscle aches, headache, dry cough, chest pain, sweating and loss of appetite.

Cryptococcosis is an infectious disease caused by inhaling the spores of *Cryptococcus neoformans*. Once inhaled, infection with cryptococcosis may go away on its own, remain in the lungs only, or spread throughout the body. Most cases occur to people with a weakened immune system, such as those with HIV infection, taking high doses of corticosteroid medications, cancer chemotherapy, or who have Hodgkin's disease. In people with a normal immune system, the lung (pulmonary) form of the infection may have no symptoms. In people with weakened immune systems, the *cryptococcus* organism may spread to the brain. Most people with this infection have meningoencephalitis (swelling and irritation of the brain and spinal cord) when they are diagnosed.

Rodents such as deer mice may be infected with Hantavirus, which can be shed in their urine, saliva and droppings. Exposure to Hantavirus can result in a serious respiratory illness called hantavirus pulmonary syndrome (HPS). Initially, infected individuals exhibit flu-like symptoms, including fever and body aches which progresses to shortness of breath and coughing which rapidly becomes more severe. Exposure to Hantavirus in Canada is rare and Health Canada has only found the virus in a very small percentage of deer mice tested in Northern Ontario.

A raccoon latrine (i.e. an area where they repeatedly deposit fresh feces on top of old feces) may contain microscopic roundworm (*Baylisascaris procyonis*) eggs that can potentially be hazardous to human health. Once deposited in the environment, the eggs develop into an infectious form; and if inadvertently ingested by humans, the larvae

hatch out of the eggs and may penetrate the body's organs. Larvae travel through the body and may cause serious eye disease, spinal cord or brain damage or death. Raccoon roundworm disease is not contracted by inhalation nor has any case of inhalation of roundworm eggs been documented.

Exposure to animal dander, scales, fur, urine, feces and saliva can also result in exposure to certain proteins that can act as allergens and can also cause asthmatic reactions. Some common sources of pest-related allergens include cockroaches, dust mites and rodents. The protein in urine from rats and mice is a potent allergen. Cockroach allergens are also potent and are derived from several sources, such as saliva, fecal material, secretions, cast skins, debris, and dead bodies. Allergic reactions occur when sensitized persons inhale, swallow or touch traces of the allergen, resulting in an exaggerated reaction of the body's immune system to the foreign protein. Typical allergic reactions result in nasal, eye, and throat irritation as well as possible skin hives. These proteins may also trigger asthma attacks when sensitive individuals inhale the proteins, resulting in symptoms such as coughing, wheezing, chest tightness, and breathing difficulties.

ENVIRONMENTAL HAZARDS

Polychlorinated Biphenyls

Polychlorinated biphenyls (PCBs) are a class of man-made organic chemicals known as chlorinated hydrocarbons. They vary in consistency from thin, light-coloured liquids to yellow or black waxy solids. They were manufactured in the United States from 1929 until their manufacture was banned in 1979. Although PCBs were not manufactured in Canada, they were imported from the U.S. over the years. Canada banned the import, manufacture and sale of PCBs in 1977.

PCBs are non-flammable, chemically stable over a wide range of temperature and physical conditions, not soluble in water, unaffected by acids, base or corrosive chemicals, and have a high dielectric or electrical insulating capacity. Due to these unique properties PCBs were used in hundreds of industrial and commercial applications, most commonly in electrical transformers and capacitors, including those capacitors found in light ballasts. They were also used as coolants, fire retardants and as insulation and in a number of other commercial applications including carbonless copy paper, dust suppressors for roads, hydraulic fluids, caulking compounds, plasticizers and lubricating oils and heat-transfer applications.

Although PCBs were found to be extremely useful in many industrial and commercial applications some of their chemical properties also made them an environmental and health hazard. PCBs are nearly indestructible and therefore persist if released into the natural environment. Their high fat and low water solubility result in a build-up (bioaccumulation) of PCBs in the fatty tissue of animals and humans if ingested/inhaled. Because PCBs persist in the fatty tissue of animals their concentration will tend to increase the higher up the food chain.

Most of what is known about the human health effects of PCBs is based on exposures due to accidental releases or job-related activities. These exposures are much higher than the levels normally found in the environment. The adverse health effects include a severe form of acne (chloracne), swelling of the upper eyelids, discolouring of the nails and skin, numbness in the arms and/or legs, weakness, muscle spasms, chronic bronchitis, and problems related to the nervous system. The International Agency for Research on Cancer (IARC) classifies PCBs as “probably carcinogenic to humans” (Group 2A) based on limited evidence that long-term, high-level occupational exposure can lead to increased incidence of liver and kidney cancers. The long-term impact of low-level exposures to PCBs that is common in the general population is unclear. The current state of knowledge suggests that low-level exposures to PCBs are unlikely to cause adverse health effects. However, people eating large amounts of certain sports fish, wild game and marine mammals are at increased risk for higher exposures and possible adverse health effects.

Ozone Depleting and Global Warming Substances

There are several different types of chemicals that are being or have been used as refrigerants in commercial, home and vehicle air conditioners and refrigerators or as fire extinguishing agents in portable and fixed fire extinguishing equipment. This includes groups of chemical compounds known as chlorofluorocarbons (CFCs), hydrochlorofluorocarbons (HCFCs) and halons. Some of these chemicals have also been used as foam blowing agents, as cleaning solvents for electrical components, as aerosol spray propellants, and in hospital sterilization procedures. Fixed halon fire extinguishing systems have historically been used in areas such as data centers, IT rooms, museums, libraries, surgical suites, and other locations where use of water-based suppressants could irreparably damage electronics or vital archival collections. There is a large number of halon fire extinguishing systems still in service in Canada. The concern regarding past and present use of many of the chemicals used as refrigerants or fire extinguishing agents is that they are ozone-depleting substances (ODS). When released into the environment these chemicals break down in the stratosphere and release chlorine or bromine, which destroy the stratospheric ozone layer. The ozone layer screens the earth from some of the sun's harmful ultraviolet rays (UVB). As the ozone layer is depleted, higher UVB levels reach the earth, resulting in increased exposure to UVB. Increased exposure to UVB can cause skin cancer and plays a major role in malignant melanoma development. It can also increase the likelihood of cataracts and may also suppress proper functioning of the body's immune system and the skin's natural defences.

CFCs, HCFCs and halons are also known to be greenhouse gases and contribute to global warming due to the build-up of these heat-trapping gases in the atmosphere. Hydrofluorocarbons (HFCs) are a common replacement chemical for CFC and HCFC refrigerants; and although they do not have any ozone depleting potential they are a potent greenhouse gas.

Due to the ozone-depleting potential and/or global warming potential of CFCs, HCFCs, HFCs and halons it is important to control their use and emission into the environment.

The manufacture and use of CFCs has stopped while transitional refrigerants (HCFCs) are scheduled to be phased out of production. No phase-out dates are currently planned for any HFCs. In Ontario, Regulation 463/10, "Ozone Depleting Substances and Other Halocarbons" (made under the Environmental Protection Act) enhances the control and management of substances that deplete the ozone layer and contribute to global warming. This regulation has requirements to prevent or minimize ozone-depleting substances and other halocarbons emissions, which serves a dual environmental benefit of lowering emissions that destroy the ozone layer and contribute to climate change.

DESIGNATED SUBSTANCES AND HAZARDOUS MATERIALS ASSESSMENT

**Renovation Project
Residential Dwelling**
22 Prince Street
Bowmanville, Ontario
L1C 1G5

Prepared for:

Mr. Don Baron
Manager, Engineering and Infrastructure

Lakeridge Health Corporation
47 Liberty Street South
Bowmanville, Ontario

Prepared by:

Safetech Environmental Limited

A handwritten signature in black ink, appearing to read "J. Mazzulli".

John Mazzulli, B.A.
Occupational Health and Safety Technician

Reviwed By:

A handwritten signature in black ink, appearing to read "P. Valenti".

Paul Valenti, B.ES. AMRT
Project Manager

SEL Project Number 193416

Date of Site Work: December 8, 2016
Date of Issue: December 31, 2016

TABLE OF CONTENTS

EXECUTIVE SUMMARY	i
1.0 INTRODUCTION	1
1.1 Background and Objectives	1
1.2 Scope of Work	2
1.3 Description of Area(s) Assessed	2
2.0 METHODOLOGY	2
2.1 Designated Substances	3
2.1.1 Asbestos	3
2.1.2 Lead	4
2.1.3 Mercury	5
2.1.4 Silica	5
2.1.5 Other Designated Substances	6
2.2 Other Hazardous Materials	6
2.2.1 Chemical Hazards	6
2.2.2 Biological Hazards	6
2.2.3 Environmental Hazards	7
3.0 RESULTS	8
3.1 Designated Substances	8
3.1.1 Asbestos	8
3.1.2 Lead	11
3.1.3 Mercury	11
3.1.4 Silica	12
3.1.5 Other Designated Substances	12
3.2 Other Hazardous Materials	12
3.2.1 Chemical Hazards	12
3.2.2 Biological Hazards	12
3.2.3 Environmental Hazards	13
4.0 CONCLUSIONS AND RECOMMENDATIONS	13
4.1 Designated Substances	13
4.1.1 Asbestos	13

4.1.2	Lead	14
4.1.3	Mercury	15
4.1.4	Silica	15
4.1.5	Other Designated Substances.....	15
4.2	Other Hazardous Materials	16
4.2.1	Chemical Hazards	16
4.2.2	Biological Hazards.....	16
4.2.3	Environmental Hazards	16
5.0	LIMITATIONS.....	17

LIST OF TABLES

Table 1 – Bulk Sample Analytical Results for Determination of Asbestos Content
Table 2 – Results of Assessment for Asbestos-Containing Materials
Table 3 – Results of Paint Condition and Lead Content Assessment

LIST OF APPENDICES

Appendix A – Condition Assessment Criteria for Asbestos-Containing Materials
Appendix B – Laboratory Certificate of Analysis - Asbestos
Appendix C – Laboratory Certificate of Analysis - Lead
Appendix D – Site Photographs
Appendix E – Background Information on Designated Substances and Other Hazardous Materials

EXECUTIVE SUMMARY

Safetech Environmental Limited (SEL) was commissioned by Lakeridge Health Corporation to conduct a designated substances and hazardous materials assessment within the Residential Dwelling located at 22 Prince Street, Bowmanville, Ontario.

The objective of our assessment was to determine the presence, location, condition and quantities of designated substances and other hazardous materials within that have the potential to be disturbed as part of planned renovation activities (i.e. Renovation Project) so that appropriate control measures can be implemented to protect workers during the work.

A summary of our assessment results and general recommendations based on our findings are provided in the following Table. This Table should be considered a summary only. Please refer to the Results (Section 3) and Conclusions and Recommendations (Section 4) of our report for additional details.

Designated Substance	Findings	Recommendations
Asbestos	No asbestos-containing materials were identified within the areas assessed.	No action required.
Lead	Lead concentration below 0.009% by weight was identified in paint tested. Paints not sampled are presumed to contain varying concentrations of lead.	Work involving the disturbance of a lead-containing paint should follow the procedures outlined in the Ministry of Labour “ <i>Lead on Construction Projects</i> ” guideline. Lead-containing wastes should be recycled if practicable or handled and disposed of according to O.Reg. 347.
Mercury	Mercury vapour is expected to be present within fluorescent light tubes/bulbs.	Handle lamps with care and keep intact. All waste lamps are recommended to be sent to a lamp recycling facility.

Silica	Building materials identified that are suspected to contain crystalline silica include drywall walls/drywall joint compound and concrete floor.	Any work involving the disturbance of silica-containing materials should follow the procedures outlined in the Ministry of Labour "Silica on Construction Projects" guideline.
Other Designated Substances	No other designated substances are expected to be present in any significant quantities or in a form that would represent an exposure concern.	No protective measures or procedures specific to acrylonitrile, arsenic, benzene, coke oven emissions, ethylene oxide, isocyanates, and vinyl chloride are considered necessary.
Other Hazardous Materials	Findings	Recommendations
Urea Formaldehyde Foam Insulation	No UFFI was identified or is suspected within the areas assessed.	No action required.
Mould Contamination	No mould growth was detected in any areas.	No action required.
Pest Infestation	No pest infestation was detected in any areas.	No action required.
Polychlorinated Biphenyls	No equipment suspected of containing PCBs was observed within the areas assessed.	No action required.
Ozone Depleting and Global Warming Substances	No equipment suspected of ozone depleting and/or global warming substances was observed within the areas assessed.	No action required.

This assessment satisfies the Owner's requirements under Section 30 of the Ontario Occupational Health and Safety Act (OHSA), Revised Statutes of Ontario 1990, as amended.

Should you have any questions regarding the information contained in the report, please contact our office.

Safetech Environmental Limited



John Mazzulli, B.A.
Occupational Health and Safety Technician

December 31, 2016

Lakeridge Health Corporation
47 Liberty Street South
Bowmanville, Ontario

Attention: Mr. Don Baron
Manager, Engineering and Infrastructure

RE: Designated Substances and Hazardous Materials Assessment
Renovation Project – Residential Dwelling
22 Prince Street, Bowmanville, Ontario

1.0 INTRODUCTION

1.1 Background and Objectives

Safetech Environmental Limited (SEL) was commissioned by Lakeridge Health Corporation to conduct a designated substances and hazardous materials assessment within 22 Prince Street, Bowmanville, Ontario. The objective of our assessment was to determine the presence, location, condition and quantities of designated substances and other hazardous materials within the Residential Dwelling that have the potential to be disturbed as part of planned renovation activities (i.e. Renovation Project) so that appropriate control measures can be implemented to protect workers during the work.

This assessment satisfies the Owner's requirements under Section 30 of the Ontario Occupational Health and Safety Act (OHSA), Revised Statutes of Ontario 1990, as amended. Section 30(1) requires a building owner to determine if there are any designated substances present at a project site prior to construction or demolition activity. Sections 30(2), (3) and (4) require the Owner and constructors for a project to provide the findings in this report as part of the tendering information for any tendered project or to prospective contractors (and subcontractors) of a project before entering into a binding contract.

This report documents findings of our on-site inspection that was conducted on December 8, 2016 and provides conclusions and recommendations based on our findings and knowledge of the planned renovation project.

1.2 Scope of Work

In accordance with our fee proposal document, our scope of work included the following activities:

- A visual assessment of the accessible area(s) specific to the Renovation Project to identify the presence, location, condition and quantities of designated substances and other hazardous materials.
- Collection, analysis and interpretation of representative bulk samples of suspect asbestos-containing building materials for the determination of asbestos content and material classification.
- Collection, analysis and interpretation of representative paint chip samples for the determination of lead content.
- Preparation of a report to document findings and provide recommendations regarding control measures and/or special handling procedures for designated substances or specific hazardous materials that may be disturbed as part of planned renovation activities.

This assessment only identified designated substances and hazardous materials that were deemed to be part of the building or somehow otherwise incorporated into the building structure and its finishes. Assessing occupant items such as stored products, furnishings, items and materials used or produced as part of a manufacturing process, etc. were beyond the scope of this assessment. In addition, our assessment did not include an investigation for underground materials or equipment (vessels, drums, underground storage tanks, pipes, cables, etc.). Furthermore, this assessment was limited to the areas investigated, and more specifically, to those materials that may be disturbed as part of the planned renovation work, as described in Section 1.3.

1.3 Description of Area(s) Assessed

The areas investigated included all accessible locations; exterior of the building, garage, all rooms associated with the main floor, all rooms associated with the basement, and the attic space.

2.0 METHODOLOGY

The presence of hazardous materials was assessed by visual inspection. For the purpose of this assessment and this document, hazardous materials include designated substances as well as other chemical, biological and environmental hazards as defined below:

- **Designated Substances (as prescribed by Ontario Regulation 490/09):**
 - Acrylonitrile, Arsenic, Asbestos, Benzene, Coke Oven Emissions, Ethylene Oxide, Isocyanates, Lead, Mercury, Silica and Vinyl Chloride.
- **Other Hazardous Materials:**
 - **Chemical Hazards** – Urea Formaldehyde Foam Insulation (UFFI)
 - **Biological Hazards** – Mould Contamination and Pest Infestation
 - **Environmental Hazards** – Polychlorinated Biphenyls (PCBs) and Ozone Depleting & Global Warming Substances

For background information regarding the above hazardous materials, please refer to Appendix E.

Destructive testing was not conducted as part of this assessment. Concealed locations such as above solid plaster or drywall ceilings, within plaster or drywall wall cavities, enclosed mechanical/pipe shafts and bulkheads, etc. were not investigated. Similarly, motors, blowers, electrical panels, etc., were not de-energized or disassembled to examine concealed conditions. Building materials that are not detailed within this assessment due to inaccessibility at the time of our site visit and/or uncovered during renovation/demolition activities should be assessed by a qualified person prior to their disturbance.

Bulk sampling followed by laboratory analysis was also conducted to confirm the presence/absence of selected hazardous materials. Bulk sampling was limited to asbestos in building materials and lead in paint on building finishes. All other hazardous materials were identified by visual inspection only. Where possible, observations regarding the location, quantity and condition of the hazardous materials identified were made in order to determine the potential for exposure and provide appropriate recommendations for remedial action, if necessary. Specific methodology for each individual hazardous material assessed is further detailed below.

2.1 Designated Substances

2.1.1 Asbestos

A visual inspection for the presence of both friable and non-friable asbestos-containing material (ACM) was performed within the assessment area(s). The condition of ACM was rated as Good, Fair or Poor based on our assessment criteria provided in Appendix A.

Although destructive testing was not conducted, details regarding the possible presence of ACM in enclosed locations were provided on a case-by-case basis where our visual inspection indicated this possibility. If an existing asbestos survey was available for review, SEL relied on the information present. Building materials that were visually similar to materials previously tested and that were confirmed to be either ACM or non-

ACM were considered to have consistent content and were not re-sampled. Additional sampling was only conducted where the investigator believed a need existed.

Bulk samples of building materials suspected to contain asbestos were retrieved by SEL only for materials that were deemed to have a potential to be disturbed. Bulk samples were retrieved in accordance with Section 3 and Table 1 of Ontario Regulation 278/05, *“Designated Substance – Asbestos on Construction Projects and in Buildings and Repair Operations”*. The number of samples collected for each material was based on the type and quantity of the material present within the area(s) investigated. Each individual sample was placed in a labeled zip-lock bag for transportation to an independent laboratory (EMSL). EMSL is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP) for bulk asbestos fiber analysis.

Analysis for asbestos content was performed by the independent laboratory in accordance with the U.S. Environmental Protection Agency (EPA) Test Method EPA/600/R-93-116: Method for the Determination of Asbestos in Bulk Building Materials. June 1993. This method identifies the asbestos fibre content of building materials using polarized light microscopy (PLM) analytical techniques, with confirmation of presence and type of asbestos made by dispersion staining optical microscopy. This analytical method meets the requirements set forth in Section 3 of O.Reg. 278/05.

In accordance with O. Reg. 278/05, an asbestos-containing material is defined as material that contains 0.5 per cent or more asbestos by dry weight. The laboratory was instructed to conduct “stop-positive” analysis for all materials. If a sample was found to be asbestos-containing no further analysis was conducted for samples taken from the same homogeneous material. The Laboratory Certificate of Analysis is included in Appendix B.

Locations where ACM have been identified are detailed in this report. Recommendations pertaining to ACM were made based on the friability, accessibility and condition of the material in conjunction with the potential for the planned renovation work to disturb the ACM.

2.1.2 Lead

An assessment for lead in paint was conducted by retrieving paint chip samples from representative surfaces within the area(s) assessed that were deemed to have a potential to be disturbed as part of the planned renovation activities. The condition of painted surfaces from which samples were taken were also visually assessed for signs of deterioration such as cracking, chipping, flaking, bubbling and deterioration due to friction. The condition of these surfaces was assessed as good, fair or poor based on the degree and extent of deterioration.

The number of paint chip samples retrieved for analysis was based on the number of surface colours observed and the approximate surface area of the paint. Samples were not retrieved from paint finishes with limited application while additional samples were retrieved for paints covering greater surface areas to better account for possible variances in lead concentration due to underlying paints (if present). All paint chip samples were retrieved by scraping the paint down to the base material substrate to ensure collection of all layers of paint. Care was taken to avoid collection of the underlying substrate to reduce analytical substrate matrix interference.

Upon completion of our assessment, paint chip samples were submitted to an independent laboratory (EMSL) for the determination of lead content. This laboratory participates in and is accredited by the EPA (U.S. Environmental Protection Agency) for analysis of lead in paint chips through the American Industrial Hygiene Association (AIHA) Environmental Lead Laboratory Accreditation Program (ELLAP). Analysis was conducted by the laboratory following the EPA "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (SW-846), Method 7000B "Flame Atomic Absorption Spectrophotometry". Results of analysis were reported by the laboratory as the percentage of lead by weight of the total sample (% by wt.). The Laboratory Certificate of Analysis is included in Appendix C.

The presence of lead in other materials, such as lead sheeting, pigmented mortar, lead piping, lead solder, etc. were noted where observed but were not sampled to verify lead content. Lead can be present in these materials to varying degrees, depending on their age of application (refer to Appendix E for additional details) and should be considered lead-containing until proven otherwise.

2.1.3 Mercury

The type, quantity and location of mercury-containing equipment and devices within the area(s) assessed were determined by visual inspection based on appearance, age and knowledge of historical uses. Sampling for mercury-containing building materials and dismantling of suspect mercury-containing equipment was not performed. Where possible, attempts were made to verify the presence/absence of mercury by gathering additional information such as equipment model number, serial number, etc.

2.1.4 Silica

The presence of crystalline silica in building materials was determined through visual inspection of building materials only, based on knowledge of the historic use of silica-containing materials in certain building materials. Sampling to verify the presence/absence of silica in building materials was not performed.

2.1.5 Other Designated Substances

Other designated substances (i.e. acrylonitrile, arsenic, benzene, coke oven emissions, ethylene oxide, isocyanates, and vinyl chloride) are typically not expected to be encountered in building materials as significant constituents or in a form that would represent an exposure concern. These substances were not included in our assessment unless specific information regarding their use (e.g. in a manufacturing process) was provided to us. Please refer to Appendix E for information regarding where these designated substances are typically found or used. No sampling for these designated substances was performed.

2.2 Other Hazardous Materials

2.2.1 Chemical Hazards

Urea Formaldehyde Foam Insulation (UFFI)

A visual inspection to evaluate the possible presence of Urea Formaldehyde Foam Insulation (UFFI) was conducted within the area(s) assessed. Our visual inspection was limited to looking for evidence of possible UFFI installation (i.e. repaired nozzle holes in walls) and overspray at wall/ceiling joints, etc. No destructive testing or material sampling was conducted as part of our assessment.

2.2.2 Biological Hazards

Mould Contamination

A visual inspection to determine the possibility of mould growth was conducted within the area(s) assessed. Our assessment was limited to looking for evidence of mould growth and water damage (staining, material deterioration, efflorescence, etc.) on the surface of building materials, which may be an indicator of hidden mould growth. No moisture content readings of building materials were taken to determine their current condition. Additionally, destructive testing to confirm the presence/absence of hidden mould growth and material sampling to verify the presence/absence of mould on suspect surfaces was beyond the scope of this assessment.

Pest Infestation

The presence and extent of pest infestation within the area(s) assessed was based on visually inspecting for evidence of significant pest activity, including signs of nesting, droppings/fecal accumulation, dead insects/carcass accumulation, etc. Evidence of minor pest presence was not considered to be indicative of pest infestation.

2.2.3 Environmental Hazards

Polychlorinated Biphenyls (PCBs)

The presence of PCB-containing electrical equipment within the area(s) assessed was identified through visual inspection and knowledge of the timeline of historical use.

For stand-alone transformers and capacitors, information from the manufacturer nameplate (such as the date of manufacture, dielectric fluid trade name or “Type Number”, etc.) was gathered, where possible, to further evaluate if the equipment may contain PCBs. This information was then compared to the information provided in the Environment Canada document entitled “*Handbook on PCB’s in Electrical Equipment*” (Third Edition, April 1988) to aid in identification. Transformers and capacitors confirmed to be manufactured after 1979 were assumed to not contain PCBs. If appropriate information could not be obtained it was assumed that the transformer or capacitor contained PCBs.

For fluorescent light ballasts, a representative number of fixtures were inspected, if possible, for assessment areas that were constructed prior to 1980 and where there was no history or evidence of a complete lighting retrofit. The light fixtures were examined by removing any lenses and ballast covers to expose the ballast and identify information such as ballast make, model number, serial number, and date code. This information was then compared to the information provided in the Environment Canada document entitled “*Identification of Lamp Ballasts Containing PCBs*” (Report EPS 2/CC/2 (revised) August 1991) to aid in identification. Ballasts that could not be confirmed Non-PCB-containing were assumed to contain PCBs. The light fixtures were not de-energized and ballasts were not removed to obtain manufacturer information that may be on the back of the ballast. If visual confirmation of ballast type could not be made it was assumed that light fixtures in areas constructed prior to 1980 that have not undergone a complete lighting retrofit have PCB-containing ballasts until proven otherwise.

No sampling of materials or fluids within equipment was conducted to verify the presence/absence of PCBs. Inspection and testing of other materials for PCB content, including (but not limited to) caulking, asphalt, oil-based paint, plastics, switches, electric cables and hydraulic fluids was beyond the scope of our assessment.

Ozone Depleting and Global Warming Substances

The presence of fixed equipment likely to contain ozone-depleting substances (ODS) and/or global-warming substances (GWS) was identified through visual inspection and knowledge of the timeline of historical use. This included equipment such as chillers, air-conditioners, walk-in refrigeration and freezer units and fixed dry-chemical fire extinguishers, where chemicals such as hydrochlorofluorocarbons (HCFCs), hydrofluorocarbons (HFCs) or halons may be present. Where possible, information

regarding the type and quantity of refrigerant present was obtained from the manufacturer nameplate. Our visual assessment was limited to fixed equipment within the area(s) assessed and did not include portable equipment such as stand-alone refrigerators, freezers, water coolers, air-conditioners and fire extinguishers, etc.

3.0 RESULTS

Results of our visual assessment and bulk sample analytical findings are summarized in the sections below. Photographs of conditions observed are referenced in the appropriate section where applicable (as **P#**) and are included in Appendix D.

3.1 Designated Substances

3.1.1 Asbestos

Results of bulk sample analysis for the determination of asbestos content are summarized in Table 1. Materials have been classified as “ACM”, “Non-ACM”, “Suspected ACM” or “Presumed Non-ACM” based on analytical results. Materials classified as Suspected ACM or Presumed Non-ACM may require further analysis (depending on site-specific conditions) to verify whether the material should be classified as ACM or Non-ACM. Please refer to the Limitations section of this report (Section 5.0) for additional details. The Laboratory Certificate of Analysis is included in Appendix B.

Table 1
Bulk Sample Analytical Results for Determination of Asbestos Content
Renovation Project – Residential Dwelling
22 Prince Street, Bowmanville, Ontario
Sample Collection Date: December 8, 2016

Sample No.	Material Description	Sample Location	Asbestos Content	Material Classification
1A	Drywall Joint Compound	Basement	None Detected	Non –ACM
1B		Basement		
1C		1 st Floor		
2A	Basement Vinyl Floor Tile (12x12 Beige)	Garage Exterior	None Detected	Non-ACM
2B				
2C				
3A	Basement Floor Mastic	Garage Exterior	None Detected	Non-ACM
3B				
3C				
4A	Exterior Caulking	Basement Flooring	None Detected	Non-ACM
4B				
4C				

As per O.Reg. 278/05, ACM contains $\geq 0.5\%$ asbestos by dry weight.

Materials assessed for asbestos content are summarized in Table 2 based on the type/use of the material. The condition and friability of materials confirmed or suspected to be asbestos-containing (based on our visual assessment and results of bulk sample analysis) is provided. Condition (Cond.) ratings are provided as Good (G), Fair (F) or Poor (P) based on our Assessment Criteria provided in Appendix A. Estimates of quantity have only been provided for confirmed or suspected asbestos-containing materials that were deemed to have a potential to be disturbed as part of the Renovation Project. Any quantities provided should be considered rough estimates only and should not be relied upon for bidding purposes. It is the responsibility of the selected Contractor to obtain actual quantities.

Table 2
Results of Assessment for Asbestos-Containing Materials
Renovation Project – Residential Dwelling
22 Prince Street, Bowmanville, Ontario

Sprayed and Loose Fill Insulating Materials	Location/Description	Cond.	Est. Quantity	Friability
Sprayed Fireproofing	None identified in area(s) assessed.	N/A	N/A	N/A
Sprayed Insulation	None identified in area(s) assessed.	N/A	N/A	N/A
Loose Fill / Vermiculite Insulation	None identified in area(s) assessed. Interior portions of concrete block walls could not be assessed. However, it is not expected that these walls are insulated with loose fill or vermiculite insulation	N/A	N/A	N/A
Thermal System Insulation	Location/Description	Cond.	Est. Quantity	Friability
Mechanical Pipe Insulation – Straights	Mechanical pipes were observed to be insulated with fibreglass or not insulated.	N/A	N/A	N/A
Mechanical Pipe Insulation – Fittings (elbows, valves, tees, hangars, etc.)	Mechanical pipe fittings were observed to be insulated with fibreglass or not insulated.	N/A	N/A	N/A
HVAC Duct Insulation	None identified in area(s) assessed.	N/A	N/A	N/A
Breeching / Exhaust Insulation	None identified in area(s) assessed.	N/A	N/A	N/A
Tank Insulation	None identified in area(s) assessed.	N/A	N/A	N/A
Boiler Insulation	None identified in area(s) assessed.	N/A	N/A	N/A

Other Mechanical Equipment Insulation	None identified in area(s) assessed.	N/A	N/A	N/A
Architectural Finishes & Finishing Materials	Location/Description	Cond.	Est. Quantity	Friability
Sprayed Texture / Stucco Finishes	None identified in area(s) assessed.	N/A	N/A	N/A
Plaster Finishes	None identified in area(s) assessed.	N/A	N/A	N/A
Drywall Joint Compound	Drywall joint compound observed on drywall finishes within the house were sampled (Sample Set 1) and analyzed for asbestos content using the PLM method of detection. The samples were found not to contain asbestos.	N/A	N/A	N/A
Ceiling Tiles	Location/Description	Cond.	Est. Quantity	Friability
Lay-in Acoustic Ceiling Tiles	None identified in area(s) assessed.	N/A	N/A	N/A
Glued-on Acoustic Ceiling Tiles	None identified in area(s) assessed.	N/A	N/A	N/A
Transite Ceiling Panels	None identified in area(s) assessed.	N/A	N/A	N/A
Flooring	Location/Description	Cond.	Est. Quantity	Friability
Vinyl Floor Tiles	12"x12" beige vinyl floor tiles observed within the basement were sampled (Sample Set 2) and analyzed for asbestos content using the PLM method of detection. The samples were found not to contain asbestos.	N/A	N/A	N/A
Vinyl Sheet Flooring	White with green diamond pattern vinyl sheet flooring observed within the basement was sampled (Sample Set 4) and analyzed for asbestos content using the PLM method of detection. The samples were found not to contain asbestos.	N/A	N/A	N/A
Asbestos Cement Products	Location/Description	Cond.	Est. Quantity	Friability
Piping	None identified in area(s) assessed.	N/A	N/A	N/A
Roofing, Siding, Wallboard	<u>Transite wall panels</u> observed on the exterior of the garage were sampled (Sample Set 3) and analyzed for asbestos content using the PLM method of detection. The samples were found to contain 10% Chrysotile asbestos.	Good	~800 ft ²	Non-Friable
Other Cement Products	None identified in area(s) assessed.	N/A	N/A	N/A

Misc. Materials	Location/Description	Cond.	Est. Quantity	Friability
Caulking	Exterior caulking was sampled (Sample Set 4) and analyzed for asbestos content using the PLM method of detection. The samples were found not to contain asbestos.	N/A	N/A	N/A
Mastic	Flooring mastic observed within the basement was sampled (Sample Set 3) analyzed for asbestos content using the PLM method of detection. The samples were found not to contain asbestos.	N/A	N/A	N/A
Other Materials	Roofing materials were not sampled so as not to compromise the integrity of the roofing system. Therefore roofing materials should be presumed to contain asbestos until sampling proves otherwise or date of installation is confirmed.	N/D	N/D	N/D

Notes: N/A=Not Applicable; N/D=Not Determined

3.1.2 Lead

Laboratory analytical results for paints tested to determine lead content are summarized below in Table 3. Locations where bulk samples were retrieved for analysis are indicated in Floor Plans included in Appendix B. The Laboratory Certificate of Analysis is included in Appendix C. Refer to Section 4.1.2 of this report for recommended lead abatement procedures (if any) that correspond to the type of proposed construction, renovation, or demolition work.

Table 3
Results of Paint Condition and Lead Content Assessment
Renovation Project – Residential Dwelling
22 Prince Street, Bowmanville, Ontario
Sample Collection Date: December 8, 2016

Sample No.	Location	Surface	Paint Colour	Condition	Lead Conc. (% by wt.)	Material Classification
L1	Basement	Block Wall	White	Good	<0.0090	Non-LCM

LCM: Lead-Containing Material ($\geq 0.1\%$ Lead Content); LLLP: Low Level Lead Paint ($< 0.1\%$ Lead Content)

*Substrate matrix interference. Actual lead concentration may be higher as a result.

Varying concentrations of lead may be present within paints not sampled. Lead may also be present as a component of solder used in pipe fittings and electrical equipment.

3.1.3 Mercury

Mercury is present within the area(s) assessed in the form of vapour within fluorescent light tubes/bulbs.

3.1.4 Silica

A number of building materials were identified within the surveyed area(s) that are suspected to contain crystalline silica. This includes the following materials:

- Concrete;
- Concrete block and associated mortar;
- Drywall and associated drywall joint compound;

3.1.5 Other Designated Substances

Acrylonitrile, arsenic, benzene, coke oven emissions, ethylene oxide, isocyanates, and vinyl chloride were not included in our assessment as these substances are not expected to be a significant component of building materials or present in a form that would represent an exposure concern. Additionally, no specific information regarding their use was provided to us.

3.2 Other Hazardous Materials

3.2.1 Chemical Hazards

No visible evidence of UFFI installation (i.e. injection openings) or overspray of foam insulation at wall/ceiling joints was identified. In addition, due to the age of construction and use of the building the presence of UFFI insulation within wall cavities is not suspected.

3.2.2 Biological Hazards

Mould Contamination

There was no visible evidence of obvious mould growth on building finishes within the surveyed area(s) at the time of our assessment. In addition, there was no visible evidence of any significant water staining or discolouration to building finishes within the surveyed area(s) that would suggest the potential for hidden mould growth behind these finishes.

Pest Infestation

There was no visible evidence of any significant pest infestation within the surveyed area(s).

3.2.3 Environmental Hazards

Polychlorinated Biphenyls (PCBs)

No light fixtures or other electrical equipment (such as transformers or capacitors) suspected of containing PCBs were observed in areas assessed.

Ozone Depleting and Global Warming Substances

No fixed equipment suspected to contain ODS/GWS were observed in the area(s) assessed.

4.0 CONCLUSIONS AND RECOMMENDATIONS

4.1 Designated Substances

4.1.1 Asbestos

Results of our assessment indicated that no asbestos-containing materials are present within the Residential Dwelling that are likely to be disturbed as part of the Renovation Project.

Other materials observed within the investigated area(s) that are suspected or previously confirmed to be asbestos-containing but are not likely to be disturbed as part of the project includes roofing felts. Since the above materials are not likely to be disturbed as part of the project bulk sampling was not conducted to verify asbestos content. However, based on the age of the materials they should be assumed to be asbestos-containing until proven otherwise.

The removal or disturbance of ACM must follow the measures and procedures indicated in O.Reg. 278/05. This work should be conducted by workers who have received proper training by a “competent person” in the hazards of asbestos exposure, personal hygiene and work practices, and the use and care of respirators and protective clothing. Any worker/supervisor who works in a Type 3 operation must successfully complete the Asbestos Abatement Worker or Supervisor Training Program approved by the Ministry of Training, Colleges and Universities.

It is recommended that all work involving the removal or disturbance of ACM be subject to inspection and testing to document conformance with O.Reg. 278/05 requirements. The degree of inspection and testing is dependent on site-specific conditions such as the type, duration, size and location of the work. In most circumstances Type 3 operations require a visual inspection and clearance air testing to be conducted by a competent worker on completion of the work. The inspection should be conducted to

ensure that the enclosure and the work area inside the enclosure are free from visible dust, debris or residue that may contain asbestos. Clearance air testing for Type 3 operations requires a minimum number of air samples to be taken (depending on the size of the work area) following specific sampling and analytical procedures and all samples taken must meet the clearance criteria set out in O.Reg. 278/05.

4.1.2 Lead

Paints and surface coatings not sampled are assumed to be lead-containing (>0.1% lead content). Any disturbance of the lead-containing paints or surface coatings should be conducted in accordance the procedures outlined in the Environmental Abatement Council of Ontario (EACO) "Lead Guideline" (October 2014) and/or the Ministry of Labour (MOL) "Lead on Construction Projects" guideline (April 2011). The extent of procedures (or Type of operation) necessary depends on the type of work to be conducted.

Results of paint chip analysis for the determination of lead content indicated that paint sampled is considered a „low-level lead paint“ (<0.1% based on requirements of the Environmental Abatement Council of Ontario (EACO) Lead Guideline (2014)). If the „low-level lead paints“ are disturbed in a non-aggressive manner (no use of power tools/abrasive blasting, grinding, welding, heating, etc.), then respirators are not considered necessary. However, Type 1 measures and procedures should still be implemented during the non-aggressive disturbance of „low-level lead paints“, including, but not limited to, no smoking, eating, drinking and chewing gum in the work area, dust suppression methods must be implemented, and facilities must be made available to that workers can wash their hands and face.

At this time the method of disturbance, if any, of lead-containing paints is unknown. It is recommended that any contractor whose work requires lead-containing paints to be disturbed consult the EACO or MOL guidelines prior to the start of work to determine the Class/Type of operation(s) and the corresponding control measures (engineering controls, work/hygiene practices, protective clothing and equipment and worker training) necessary to conduct the work in a manner that will prevent worker overexposure to lead.

If practicable, all bulk lead waste materials should be separated from other wastes and sent to a recycling facility. If not practicable, lead-containing waste should be handled and disposed of according to Ontario Regulation 347 (O.Reg. 347), "*General – Waste Management*", made under the Environmental Protection Act. Under this regulation (and depending on the quantity of waste generated) the waste may be subject to analysis following the Toxicity Characteristic Leaching Procedure (TCLP) to determine if it is a "leachate toxic waste" based on the leachate quality criteria provided in Schedule 4 of the regulation. Such wastes must meet specific treatment requirements (Schedule 5) or undergo alternative treatment for hazardous debris (Schedule 8) prior to land disposal.

4.1.3 Mercury

Although no mercury was visibly identified in other equipment, dismantling of equipment was not conducted to verify the presence/absence of mercury. It is cautioned that thermometers, barometers and other measuring devices (pressure gauges/sensors, vacuum gauges, manometers, etc.), thermostats and a variety of other electrical switches (temperature sensitive, tilt switches, float switches, etc.) may contain mercury that may not be visible without dismantling the equipment. Such devices should be assumed to contain mercury until proven otherwise and similar precautions to those outlined above should be taken if any of these items are to be disturbed or taken out of service in the future.

4.1.4 Silica

Suspect silica-containing materials were identified to be present within the project-specific work area. In their current state, building materials containing silica do not represent a risk to building occupants or construction workers. Risks associated with exposure to silica arise during demolition activities that cause silica dust to be created (particularly grinding, drilling or cutting operations and during major demolition), resulting in a crystalline silica inhalation hazard.

If any materials suspected to contain silica are to be removed or otherwise disturbed as a result of renovation/demolition activities it is recommended that procedures be put in place to control the generation of dust (such as routine water misting) and thus reduce the potential for worker exposure. Workers that have the potential to be exposed to airborne silica should also wear appropriate protective clothing and respiratory protection.

Any work involving the disturbance of silica-containing materials should follow the procedures outlined in the MOL *"Silica on Construction Projects"* guideline (April 2011). The appropriate engineering controls, work practices, hygiene practices, personal protective measures and training necessary to conduct the work in a safe manner are provided in this guideline. The general measures and procedures (or Type of operation) necessary depends on the type of work to be conducted.

4.1.5 Other Designated Substances

No other designated substances are expected to be a component of building materials within the surveyed area(s) in a form that would represent an exposure concern. Therefore, no protective measures or procedures specific to acrylonitrile, arsenic, benzene, coke oven emissions, ethylene oxide, isocyanates, and vinyl chloride are considered necessary.

4.2 Other Hazardous Materials

4.2.1 Chemical Hazards

As no UFFI was identified or is suspected to be present within the surveyed area(s) no further action is required. However, given that no destructive testing was conducted, there is a remote possibility that UFFI could be hidden within locations such as exterior wall cavities. If suspect foam insulation is identified during renovation/demolition activities work should be stopped and the area should be re-assessed to evaluate conditions and determine appropriate control measures and worker protection, if necessary.

4.2.2 Biological Hazards

Mould Contamination

No mould contamination was identified in the surveyed area(s) and therefore no further action is required at this time. Although no obvious mould contamination or evidence to suggest possible hidden mould contamination was visibly identified within the surveyed area(s) there is still a potential for hidden mould growth to exist behind or underneath building finishes. Should suspect mould growth be discovered during the course of renovation or demolition work it is recommended that all work stop so that the area can be assessed to evaluate proper control measures and remediation protocols in order to avoid worker exposure to mould and possible contamination of adjacent areas.

Pest Infestation

No visual evidence of any significant pest infestation was observed within the area(s) assessed. Therefore, no additional precautionary measures are deemed necessary for protection against biological contaminants potentially associated with pest infestation.

4.2.3 Environmental Hazards

Polychlorinated Biphenyls (PCBs)

No equipment was identified within the surveyed area(s) that is expected to be PCB-containing.

Ozone Depleting and Global Warming Substances

No fixed equipment suspected to contain OD/GWS were identified.

Any refrigerant that is removed from an air-conditioning unit, heat pump, refrigeration or freezer unit (that is not mobile) is defined as a Stationary Refrigerant Waste under Ontario Regulation 347 and must be collected, handled, transported and recycled or

disposed of in accordance with the requirements set forth in Sections 30 to 35 of this regulation.

5.0 LIMITATIONS

The information and recommendations detailed in this report were carried out by trained professional and technical staff in accordance with generally accepted environmental and industrial hygiene work practices and procedures. Recommendations provided in this report have been generated in accordance with accepted industry guidelines and practices. These guidelines and practices are considered acceptable as of the date of this report.

In preparation of this report, Safetech Environmental Limited (SEL) relied on information supplied by others, including without limitation, information pertaining to the history and operation of the site, test results and reports of other consultants and testing services provided by independent laboratories. Except as expressly set out in this report, SEL has not made any independent verification of information provided by independent entities.

The collection of samples at the location noted was consistent with the scope of work agreed-upon with the person or entity to whom this report is addressed and the information obtained concerning prior site investigations. As conditions between samples may vary, the potential remains for the presence of unknown additional contaminants for which there were no known indicators.

The analytical method used for determination of asbestos content meets the requirements of O.Reg. 278/05. However, small asbestos fibres may be missed by PLM due to resolution limitations of the optical microscope. Interfering binder/matrix and/or low asbestos content may also hinder positive identification by PLM. These conditions are common for vermiculite attic insulation (VAI) and non-friable organically bound (NOB) materials such as vinyl floor tiles, roofing materials, mastics and caulking and can lead to "false negative" results. If PLM analytical results for these types of materials indicate no asbestos detected they have been reported as "Presumed Non-ACM". Due to limitations of the analytical method we cannot confirm that low quantities of asbestos are not present in these samples using solely PLM analysis. Additional analytical procedures should be considered for such materials to rule out false negative results.

Conclusions are based on site conditions at the time of inspection and can only be extrapolated to an undefined limited area around inspected locations. The extent of the limited area depends on building construction and conditions. Building materials that are not detailed within this survey due to inaccessibility during the time of survey and/or are uncovered during renovation/demolition activities should be properly assessed by a qualified person prior to their disturbance. SEL cannot warrant against undiscovered

environmental liabilities. If any information becomes available that differs from the findings in this report, we request that we be notified immediately to reassess the conclusions provided herein.

No other person or entity is entitled to use or rely upon this report without the express written consent of Safetech Environmental Limited and the person or entity to who it is addressed. Any use that a third party makes of this report, or any reliance based on conclusions and recommendations made, are the responsibility of such third parties. SEL accepts no responsibility for damages suffered by third parties as a result of actions based on this report.

Appendix A

Condition Assessment Criteria for Asbestos-Containing Materials

The condition of asbestos-containing materials identified within the surveyed area(s) was assessed as Good (G), Fair (F) or Poor (P). The assessment criteria used to determine condition is dependent on material characteristics, such as friability. The following Table summarizes the criteria used by SEL to evaluate the condition of ACM.

Condition Assessment Criteria for Asbestos-Containing Materials

Sprayed Fireproofing, Sprayed Insulation and Sprayed Texture Finishes	
Good	<ul style="list-style-type: none"> • Surface shows no significant signs of damage, deterioration, or delamination (i.e. <1%). • Unencapsulated or unpainted fireproofing or texture finishes, where no delamination or damage is observed. • Encapsulated fireproofing or texture finishes where encapsulation applied after damage or fallout.
Fair	<ul style="list-style-type: none"> • Not utilized as part of condition assessment for these materials.
Poor	<ul style="list-style-type: none"> • Greater than 1% damage, delamination, or deterioration to surface.
In areas where damage exists in isolated locations, both Good and Poor may be applicable.	
Mechanical Insulation (boilers, breeching, ductwork, piping, tanks, equipment, etc.)	
Good	<ul style="list-style-type: none"> • Insulation completely covered in jacketing and exhibits no evidence of damage or deterioration. • Jacketing may have minor damage (i.e. scuffs or stains), but is not penetrated.
Fair	<ul style="list-style-type: none"> • Minor penetrating damage to jacketed insulation (cuts, tears, nicks, deterioration or delamination). • Undamaged insulation that had never been jacketed. • Insulation is exposed but not showing surface disintegration. • Extent of missing insulation ranges from minor to none. • Damage that can be repaired.
Poor	<ul style="list-style-type: none"> • Original insulation jacket is missing, damaged, deteriorated, or delaminated. • Insulation is exposed and significant areas have been dislodged. • Damage that cannot be easily repaired.
Non-Friable and Potentially Friable Materials (includes materials such as plaster finishes, drywall compound, ceiling tiles, asbestos cement products, vinyl asbestos tile and asbestos paper backed vinyl sheet flooring, etc., which have the potential to become friable when handled)	
Good	<ul style="list-style-type: none"> • No significant damage. • Material may be cracked or broken but is stable and not likely to become friable upon casual contact. • No friable debris present
Fair	<ul style="list-style-type: none"> • Not utilized as part of condition assessment for these materials.
Poor	<ul style="list-style-type: none"> • Material is severely damaged. • Debris is present or binder has disintegrated to the point where the material has become friable.
Asbestos-Containing Debris (noted separately from the presumed source material)	
Poor	<ul style="list-style-type: none"> • Debris is always considered to be in Poor condition.

Appendix B

Laboratory Certificate of Analysis - Asbestos



EMSL Canada Inc.

2756 Slough Street Mississauga, ON L9T 5N4
Phone/Fax: 289-997-4602 / (289) 997-4607
<http://www.EMSL.com> / torontolab@emsl.com

EMSL Canada Order 551613262
Customer ID: 55SELI62
Customer PO: P. 193416
Project ID:

Attn: Paul Valenti
Safetech Environmental
3045 Southcreek Road
Unit 14
Mississauga, ON L4X 2X7

Phone: (905) 624-2722
Fax: (905) 624-4306
Collected:
Received: 12/12/2016
Analyzed: 12/15/2016

Proj: P. 193416 22 PRINCE STREET, BOWMANVILLE, ON

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Client Sample ID: 1A **Lab Sample ID:** 551613262-0001

Sample Description: DRYWALL JOINT COMPOUND

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/15/2016	White	0%	100%	None Detected	

Client Sample ID: 1B **Lab Sample ID:** 551613262-0002

Sample Description: DRYWALL JOINT COMPOUND

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/15/2016	White	0%	100%	None Detected	

Client Sample ID: 1C **Lab Sample ID:** 551613262-0003

Sample Description: DRYWALL JOINT COMPOUND

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/15/2016	White	0%	100%	None Detected	

Client Sample ID: 2A **Lab Sample ID:** 551613262-0004

Sample Description: BASEMENT VINYL FLOOR TILE (12 X 12 BEIGE)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/15/2016	Tan	0%	100%	None Detected	

Client Sample ID: 2B **Lab Sample ID:** 551613262-0005

Sample Description: BASEMENT VINYL FLOOR TILE (12 X 12 BEIGE)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/15/2016	Tan	0%	100%	None Detected	

Client Sample ID: 2C **Lab Sample ID:** 551613262-0006

Sample Description: BASEMENT VINYL FLOOR TILE (12 X 12 BEIGE)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/15/2016	Tan	0%	100%	None Detected	

Client Sample ID: 3A **Lab Sample ID:** 551613262-0007

Sample Description: BASEMENT FLOOR MASTIC

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/15/2016	Black	0%	100%	None Detected	



EMSL Canada Inc.

2756 Slough Street Mississauga, ON L9T 5N4
Phone/Fax: 289-997-4602 / (289) 997-4607
<http://www.EMSL.com> / torontolab@emsl.com

EMSL Canada Order 551613262
Customer ID: 55SELI62
Customer PO: P. 193416
Project ID:

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Client Sample ID: 3B **Lab Sample ID:** 551613262-0008
Sample Description: BASEMENT FLOOR MASTIC

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/15/2016	Black	0%	100%	None Detected	

Client Sample ID: 3C **Lab Sample ID:** 551613262-0009
Sample Description: BASEMENT FLOOR MASTIC

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/15/2016	Black	0%	100%	None Detected	

Client Sample ID: 4A **Lab Sample ID:** 551613262-0010
Sample Description: EXTERIOR CAULKING

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/15/2016	White	0%	100%	None Detected	

Client Sample ID: 4B **Lab Sample ID:** 551613262-0011
Sample Description: EXTERIOR CAULKING

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/15/2016	White	0%	100%	None Detected	

Client Sample ID: 4C **Lab Sample ID:** 551613262-0012
Sample Description: EXTERIOR CAULKING

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/15/2016	White	0%	100%	None Detected	

Analyst(s):

Romeo Samson PLM (8)
Shorthri Kalikutty PLM (4)

Reviewed and approved by:

Matthew Davis
or Other Approved Signatory

None Detected = <0.1%. EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. Samples received in good condition unless otherwise noted. This report must not be used to claim product endorsement by NVLAP of any agency of the U.S. Government.

Samples analyzed by EMSL Canada Inc. Mississauga, ON NVLAP Lab Code 200877-0

Initial report from: 12/15/2016 14:15:11

Appendix C

Laboratory Certificate of Analysis - Lead

**EMSL Canada Inc.**

2756 Slough Street, Mississauga, ON L9T 5N4

Phone/Fax: 289-997-4602 / (289) 997-4607

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

EMSL Canada Or 551613263
CustomerID: 55SELI62
CustomerPO: 22 PRINCE
ProjectID:

Attn: **Paul Valenti**
Safetech Environmental
3045 Southcreek Road
Unit 14
Mississauga, ON L4X 2X7

Phone: (905) 624-2722
Fax: (905) 624-4306
Received: 12/12/16 4:20 PM
Collected:

Project: 22 PRINCE STREET, BOWMANVILLE, ON

Test Report: Lead in Paint Chips by Flame AAS (SW 846 3050B/7000B)*

<i>Client Sample Description</i>	<i>Lab ID</i>	<i>Collected</i>	<i>Analyzed</i>	<i>Lead Concentration</i>
L1	551613263-0001	12/13/2016		<0.0090 % wt
Site: BASEMENT WHITE PAINT				

Rowena Fanto, Lead Supervisor
or other approved signatory

*Analysis following Lead in Paint by EMSL SOP/Determination of Environmental Lead by FLAA. Reporting limit is 0.010 % wt based on the minimum sample weight per our SOP. Unless noted, results in this report are not blank corrected. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities. Samples received in good condition unless otherwise noted. "<" (less than) result signifies that the analyte was not detected at or above the reporting limit. Measurement of uncertainty is available upon request. The QC data associated with the sample results included in this report meet the recovery and precision requirements unless specifically indicated otherwise. Definitions of modifications are available upon request.

Samples analyzed by EMSL Canada Inc. Mississauga, ON A2LA Accredited Environmental Testing Cert #2845.08

Initial report from 12/15/2016 09:06:22

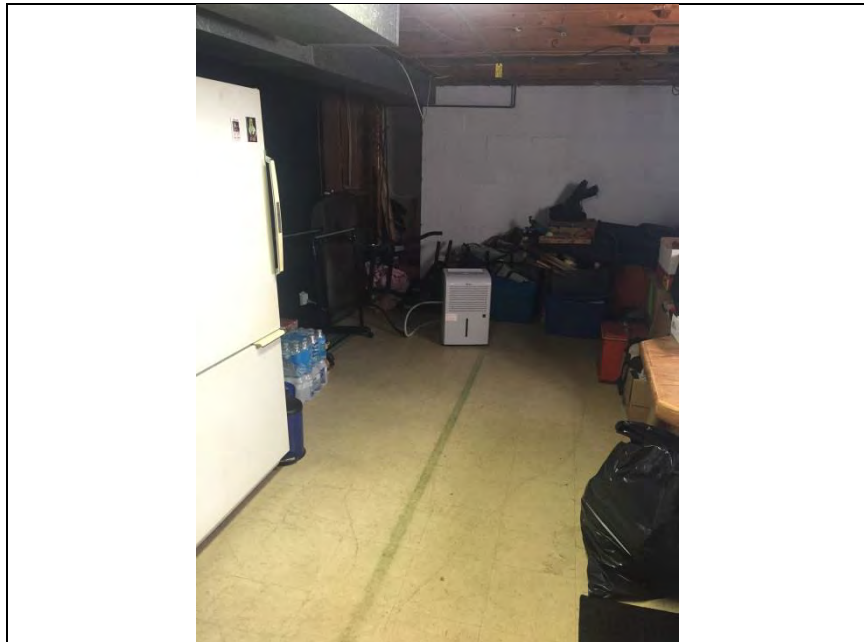
Appendix D

Site Photographs



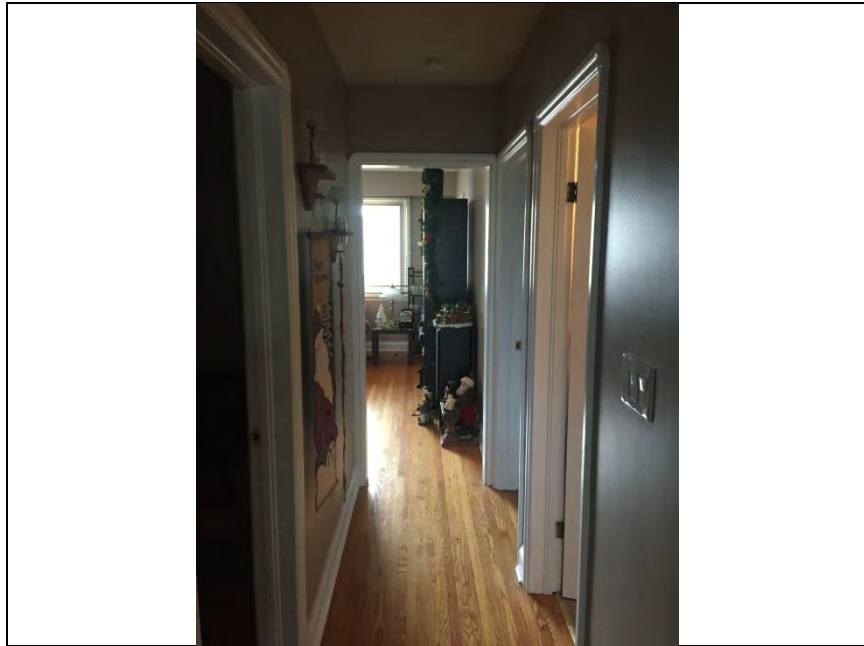
P1 – 22 Prince Street, Bowmanville, Ontario

View of the front exterior of 22 Prince Street, Bowmanville, Ontario on December 8th, 2016.



P2 – 22 Prince Street, Bowmanville, Ontario

View within the basement during our assessment on December 8th, 2016.



P3 – 22 Prince Street, Bowmanville, Ontario

View of the main level hallway during our assessment on December 8th, 2016.



P4 – 22 Prince Street, Bowmanville, Ontario

View from the backyard during our assessment on December 8th, 2016.

Appendix E

Background Information on Designated Substances and Other Hazardous Materials

DESIGNATED SUBSTANCES

The Occupational Health and Safety Act of Ontario (OHSA) allows for certain toxic substances to be especially designated. The OHSA defines a designated substance as “a biological, chemical or physical agent or combination thereof prescribed as a designated substance to which the exposure of a worker is prohibited, regulated, restricted, limited or controlled.” Ontario Regulation 490/09 - Designated Substances (O.Reg. 490/09), made under the Occupational Health and Safety Act outlines required steps to control exposure of workers to designated substances. Under O.Reg. 490/09 there are eleven (11) designated substances; acrylonitrile, arsenic, asbestos, benzene, coke oven emissions, ethylene oxide, isocyanates, lead, mercury, silica and vinyl chloride. This regulation applies to every employer and worker at a workplace where the designated substances are present, produced, processed, used, handled or stored and at which a worker is likely to be exposed to the designated substance.

Section 14 of O.Reg. 490/09 exempts an employer and the workers of an employer who engage in construction from the requirements of the regulation. However, designated substances are still required to be identified prior to the beginning of a demolition or renovation project to ensure that construction workers (and potentially building occupants) are adequately protected from the hazards posed by the presence of these materials if the planned work may cause them to be disturbed. Accordingly, under Section 30 of the OHSA building owners are required to perform an assessment to determine whether any designated substances are present at the project site before the beginning of the project. The owner is also required to prepare a list of designated substances that are present at the site and provide this list to prospective constructors before entering into a binding contract with the constructor. This way, contractors and construction workers are made aware of designated substances present within the work area so that appropriate measures can be taken during the work to limit exposure to these substances.

Designated Substances and Hazardous Materials Assessments are conducted to conform to the requirements of Section 30 of the OHSA. The assessments are performed to identify designated substances (and other hazardous materials) within the work area that may present a hazard to workers if disturbed. These substances are commonly a component of building materials or equipment found in buildings. Additional information regarding the eleven designated substances including their properties, uses and health effects are provided below.

Acrylonitrile

Acrylonitrile (ACN) is a clear, colourless or pale yellow liquid with a pungent onion- or garlic-like, irritating odour. It is highly flammable and as such is a severe fire and explosion hazard.

Acrylonitrile is used mainly as a monomer or comonomer in the production of acrylic fibres, plastics, resins and nitrile rubbers. Historically, a mixture of acrylonitrile and carbon tetrachloride was used as a pesticide; however, all pesticide uses have stopped. Based on its use as a chemical intermediate, exposure to acrylonitrile is primarily occupational, via inhalation during its manufacture and use. Therefore, this designated substance is not expected to be encountered in buildings where it is not either produced or used in a manufacturing process.

Acute (short-term) exposure of workers to acrylonitrile has been observed to cause mucous membrane irritation, headaches, dizziness, and nausea. More significant exposures may lead to symptoms such as limb weakness, labored and irregular breathing, impaired judgment, cyanosis, collapse, and convulsions. Exposure of the skin to high concentrations of acrylonitrile in the air may irritate the skin and cause it to turn red while direct skin contact with acrylonitrile may cause the skin to blister and peel. The International Agency for Research on Cancer (IARC) concluded that there is inadequate evidence in humans for the carcinogenicity of acrylonitrile, but has classified it as possibly carcinogenic to humans (Group 2B).

Arsenic

Arsenic is a naturally occurring mineral, widely distributed in the earth's crust. Elemental arsenic (sometimes referred to as metallic arsenic) is a silver-gray or white brittle metal. However, arsenic is usually found in the environment combined with other elements such as oxygen, chlorine, and sulfur to form inorganic arsenic compounds. Arsenic has no odor and is almost tasteless.

Arsenic and its compounds have a variety of commercial uses. Inorganic arsenic compounds are mainly used as a wood preservative. Copper chromated arsenic (CCA) is used to make "pressure-treated" lumber. CCA-treated wood is no longer used for residential applications but may still be used in industrial applications. Arsenic is also used in metallurgy for hardening copper, lead and certain metal alloys, in pigment production, in the manufacture of certain types of glass, and in semiconductors and light-emitting diodes. Inorganic arsenic compounds are no longer used as pesticides in agriculture; however, organic arsenic compounds, namely cacodylic acid, disodium methylarsenate (DSMA), and monosodium methylarsenate (MSMA), are used, as yet, as pesticides – principally on cotton.

Today, workplace exposure to arsenic may still occur in some occupations that use arsenic, such as copper or lead smelting, wood treating, or pesticide application. Exposure to arsenic within buildings other than where it is used as part of the

manufacturing process is unlikely and therefore arsenic is not expected to be encountered as part of a routine hazardous building materials assessment.

Human exposure to arsenic can cause both short and long term health effects. Short-term or acute effects can occur within hours or days of exposure. If you breathe high levels of inorganic arsenic, then you are likely to experience a sore throat and irritated lungs. Longer exposure at lower concentrations can lead to skin effects (such as darkened patches of skin and areas of thickened skin), and also to circulatory and peripheral nervous disorders. An important concern is the ability of inhaled inorganic arsenic to increase the risk of cancer. Long term exposure to arsenic has been linked to cancer of the bladder, lungs, skin, kidneys, nasal passages, liver and prostate. The IARC classifies arsenic and arsenic compounds as "carcinogenic to humans" (Group 1).

Asbestos

Asbestos is the name given to a number of naturally occurring fibrous minerals found in the environment. Ontario Regulation 490/09 (Designated Substances) defines asbestos as any one of the following fibrous silicates: actionlite; amosite; anthophyllite; chrysotile; crocidolite; and tremolite. Asbestos fibres have several desirable characteristics such as high textile strength, the ability to be spun and woven, and resistance to heat and most chemicals. These characteristics have resulted in the historical use of asbestos in a wide variety of building materials and other manufactured goods. Examples of products where asbestos has been used include roofing shingles, ceiling and floor tiles, insulation, sprayed fireproofing, gaskets, and friction products such as automotive brakes and clutches.

The peak years for asbestos use were in the 1960s and early 1970s. Therefore, asbestos is commonly found in building materials of this era. The use of asbestos in building materials and other products has decreased significantly since this time. Friable asbestos-containing materials (material that when dry can be crumbled, pulverized or powdered by hand pressure), such as sprayed fireproofing and sprayed insulation, ceased use circa 1973. Mechanical thermal system insulation ceased use circa 1981 while sprayed acoustic texture coat finishes ceased use circa 1982. Non-friable asbestos-containing materials were generally manufactured for a longer period of time (with the exception of plaster finishes which ceased use circa 1960"s). Asbestos-containing drywall joint compound ceased use circa 1980. Vinyl floor tiles, vinyl sheet flooring and acoustic ceiling tile ceased use 1982. Other non-friable materials continued to be produced into the 1990"s, including roofing materials (ceased use circa 1991) and floor adhesives (ceased use circa 1992). Today, asbestos is a controlled substance, and is banned for use in most products sold in Canada under the Hazardous Products Act (with the exception of certain roof shingles, clutch facings and brake linings).

Potentially harmful exposure to asbestos occurs through inhalation of air containing asbestos fibres. The greatest risk for workplace exposure to airborne asbestos is in occupations that produce and use asbestos, such as in mining and milling operations or

in the manufacture of products containing asbestos. Exposure to airborne asbestos fibres may also occur to construction workers, trades people, maintenance workers and other building occupants in buildings constructed with asbestos-containing materials; especially during building renovations or repairs or if the materials are in poor condition or are otherwise disturbed.

Health risks associated with asbestos exposure are dependent on several factors such as the type and airborne concentration of asbestos, and period of exposure. In general, the greater the exposure to asbestos, the greater the chance of developing harmful health effects. Typically, chronic, daily exposure to elevated airborne concentrations of asbestos over a period of years is required for health effects to eventually manifest themselves. Health effects associated with exposure to asbestos can result in asbestosis (a scarring of the lungs which makes breathing difficult), mesothelioma (a rare cancer of the lining of the chest or abdominal cavity) and lung cancer. The link between exposure to asbestos and other types of cancers and health effects is less clear.

Benzene

Benzene is a clear, colourless liquid with a characteristic, sweet or aromatic hydrocarbon odour. It is a liquid at room temperature but evaporates into the air very quickly, making it a highly flammable vapour as well as an extremely flammable liquid.

Benzene is formed from both natural processes and human activities. Natural sources of benzene include volcanoes and forest fires. Benzene is also a natural part of crude oil, gasoline, and cigarette smoke. It is produced from petroleum and coal sources and is used mainly in the manufacture of other chemicals which are used to make plastics, resins, and nylon and synthetic fibers. Benzene is also used to make some types of rubbers, lubricants, dyes, detergents, drugs, and pesticides.

Exposure to pure benzene within buildings other than where it is produced or used as part of a manufacturing process is unlikely. Therefore benzene is not expected to be encountered as part of a routine hazardous building materials assessment.

Exposure to benzene primarily occurs through inhalation of airborne vapours. Short-term (acute) health effects associated with overexposure to benzene vapours can result in symptoms such as headache, nausea, dizziness, drowsiness and confusion, with unconsciousness or even death at very high levels. Long-term (chronic) exposure to Benzene may cause blood and bone marrow effects which can lead to anemia and leukemia (cancer of the blood-forming organs) as well as cause damage to the immune system, increasing the chance for infection. The IARC classifies benzene as "carcinogenic to humans" (Group 1).

Coke Oven Emissions

Coke Oven Emissions refers to the benzene soluble fraction of total particulate matter emitted during the destructive distillation or carbonization of coal for the production of coke (pure carbon). These emissions are a mixture of coal tar, coal tar pitch, volatiles (including benzene, toluene and xylene), creosote, polycyclic aromatic hydrocarbons (PAHs – including benzo(a)pyrene, benzanthracene, chrysene and phenanthrene), and metals (including cadmium, arsenic, beryllium and chromium). Condensed coke oven emissions are a brownish, thick liquid or semisolid with a naphthalene-like odor, while uncondensed coke oven emissions are vapors that escape when the ovens are changed and emptied and are a component of fugitive emissions.

The coke produced is used as a component in the manufacturing of iron and steel. Coke is also used to synthesize calcium carbide and to manufacture graphite and electrodes. Additional chemicals recovered from the coke oven emissions (such as benzene, toluene, naphthalene, sulfur, and ammonium sulfate) are used as raw materials for plastics, solvents, dyes, drugs, waterproofing, paints, pipecoating, roads, roofing, insulation, and as pesticides and sealants.

Coke oven emissions would only be present within facilities producing or using coke as part of the manufacturing process and thus occupational exposure is limited to those workers in the aluminum, steel, graphite, electrical, and construction industries. Therefore, coke oven emissions are not a contaminant of concern during a routine hazardous building materials assessment.

Chronic (long-term) exposure to coke oven emissions can result in chronic bronchitis (particularly those who smoke) and additional health effects such as conjunctivitis, severe dermatitis, and lesions of the respiratory system and digestive system. However, the greatest concern regarding chronic exposure to coke oven emissions is the increased risk of cancer. The IARC classifies coke production as "carcinogenic to humans" (Group 1). The site at which excess cancer rates have been identified most commonly among workers in coke production is the lung. Excess risk for kidney cancer has also been associated with work in coke plants. Additional studies have also reported excess risks for other types of cancers such as cancer of the large intestine and pancreas.

Ethylene Oxide

Ethylene oxide is colourless gas with a somewhat sweet odour. It is extremely flammable and also dangerously reactive. Ethylene oxide exists as a compressed gas that has been produced since the early 1900s. It is used primarily as a chemical intermediate in the production of ethylene glycol, glycol ethers, nonionic surfactants and other industrial chemicals. Much smaller amounts are used as a non-explosive mixture with nitrogen or carbon dioxide for sterilizing medical instruments and supplies in hospitals and industrially for the fumigation of spices.

Most people are not likely to be exposed to ethylene oxide because it is not commonly found in the environment. Exposure to ethylene oxide is generally limited to those facilities where it is made or used. Therefore, ethylene oxide is not a contaminant of concern during a routine hazardous building materials assessment, although the presence of it should be determined in buildings such as hospitals if construction activities are to occur in or adjacent to areas where it is used or stored.

Exposure to ethylene oxide can result in irritation to the skin or eyes; however, the greatest risk for health effects is through inhalation. This can result in irritation to the nose, throat and respiratory tract, with damage to the central nervous system at higher concentrations. Exposure to high concentrations may cause headache, nausea, dizziness, drowsiness, and incoordination. Exposure to ethylene oxide is also a cancer hazard and possible reproductive hazard. In epidemiological studies of exposure to ethylene oxide, the most frequently reported association has been with lymphatic and haematopoietic cancer. The IARC has concluded that there is limited evidence for the carcinogenicity of ethylene oxide in humans and sufficient evidence for carcinogenicity in experimental animals, classifying ethylene oxide as “carcinogenic to humans” (Group 1).

Isocyanates

Isocyanates are a family of highly reactive, low molecular weight, manufactured chemicals containing one or more isocyanate groups (-NCO). An isocyanate that has two isocyanate groups is known as a diisocyanate, which are the most common type of isocyanates used for manufacturing other products. The most commonly used diisocyanates include methylene diphenyl diisocyanate (MDI), toluene diisocyanate (TDI), and hexamethylene diisocyanate (HDI).

When isocyanates are combined with other compounds that contain free hydroxyl functional groups (i.e. -OH) they react and begin to form polyurethane polymers. These polyurethanes find significant application in the manufacture of rigid and flexible foams. Flexible foam is primarily used for cushioning, while rigid foam is used mainly for insulation. Polyurethanes are also used in the production of adhesives, elastomers, and coatings and are increasingly used in the automobile industry, autobody repair, and building insulation materials.

This diversity of applications means that exposures to isocyanates can occur in a broad range of production facilities from small workshops to automated production lines. Jobs that may involve exposure to isocyanates include painting, foam-blowing, and the manufacture of many polyurethane products. Exposure to isocyanates within buildings where it is not produced or used as part of manufacturing is unlikely, as products such as rigid foam insulation that may be used in buildings has already undergone the curing process. Completely cured products are fully reacted and therefore are considered to be inert and non-toxic. However, some products such as spray foams, coatings, sealants and adhesives may be sold and used in an uncured form. An example would be an adhesive, which is sold to be initially applied in an uncured form and as it cures (hardens), bonds two pieces of wood together. Such products can provide potential exposure to building occupants and construction workers during the application and use of these products. However, for the purposes of a routine hazardous building materials assessment, products that may have contained isocyanate as part of the manufacturing process (e.g. rigid foam) or during the application/installation process (e.g. spray foam, adhesives and sealants) are assumed to be fully cured and would no longer contain free isocyanate.

Direct skin contact with isocyanates can cause marked skin irritation, resulting in reddening, swelling and blistering. However the greatest route of exposure to isocyanates is through inhalation of fine vapours or droplets. Airborne exposure to isocyanates can result in irritation to the mucous membranes of the eyes and respiratory tracts. This results in symptoms such as excessive tear secretion, dry throat, dry cough, chest pains and difficulty in breathing. Isocyanates are also a major cause of work-related asthma worldwide. Increased exposure to isocyanates can lead to sensitization. Once sensitized, individuals are subject to severe asthma attacks (which in some cases has been reported to result in death) if they are re-exposed.

Lead

Lead is a naturally occurring metal found in small amounts in the earth's crust. It is usually found in ore with zinc, silver and (most abundantly) copper, and is extracted together with these metals. Metallic lead is bluish-white in colour but soon tarnishes to a dull grey when exposed to air. When melted into liquid form it has a shiny chrome-silver appearance.

Lead is soft, dense, highly malleable and resistant to corrosion, with poor electrical conductivity as compared to most other metals. Such properties have resulted in lead being used in many applications, including products and materials commonly found in buildings. It is present as a component of lead-acid batteries, ammunition, PVC plastics, and older brass and chrome-plated brass faucets. As a building component, lead has been used in water distribution piping, as an alloy in solder, in electrical conduits, roofs and roofing details, and as an additive to paints, ceramic glazes and mortars as pigments or for anti-corrosion properties. Lead has also used as sheeting inside buildings for shielding X-rays and for sound attenuation.

Exposure to lead can occur for workers in workplaces that produce the above materials but also to construction workers, building maintenance personnel and the general population due to the widespread historical use of lead in building materials and consumer products. Most exposure to lead occurs through ingestion or inhalation, with the health effects being the same. Overexposure to lead can result in damage to nervous connections and can cause blood and brain disorders, severe damage to the kidneys and ultimately death. Infants and young children are especially vulnerable to the health effects of lead, as overexposure has been proven to result in the permanent reduction in cognitive capacity. In pregnant women, high levels of exposure to lead may cause miscarriage. The IARC has concluded that lead and inorganic lead compounds are “possibly carcinogenic to humans” (Group 2B).

The known serious health effects associated with lead exposure has brought about widespread reduction in its use. The use of lead in building materials and consumer products has decreased substantially since the 1970s to where lead is no longer being used in building materials and consumer products or is present at significantly lower concentrations. For example, unleaded gasoline was introduced in Canada in 1975, after which leaded gasoline was phased out and banned in 1990. Lead-based solder has been banned since the 1980s and most solder used today is either lead-free or has very low lead concentrations. Up until the 1960s, lead was added to paints in significant quantities. Since that time, the concentration of lead in paint has decreased. The federal government began reducing the amount of lead allowed in interior paint in 1976 (to 0.5% by weight). By 1991, paint manufacturers in Canada and the U.S. voluntarily stopped adding lead to paint, reducing lead concentrations to background levels. In 2005 the *Surface Coating Materials Regulations* came into effect to limit the concentration of lead in paint (to 0.06% by weight) for both interior and exterior paints sold to consumers. This was since amended in 2011 to further reduce the allowable lead limit (to 0.009% by weight) and extended to include all consumer paints and coatings.

Mercury

Mercury is a naturally occurring element found in the earth's crust, with natural deposits generally found as a vermilion red ore called cinnabar. Mercury can exist as metallic mercury, organic mercury or inorganic mercury. Metallic or elemental mercury has unique properties as compared to other metals. It is the only pure metal that is a liquid at room temperature, having a silvery-white, shiny appearance. Mercury is the densest liquid known, which produces a colourless, odourless vapour at room temperature.

The unique properties of mercury have resulted in it being used in a wide variety of applications. Properties such as its coefficient of expansion and ability to conduct electricity has resulted in mercury being used in thermometers, barometers and other measuring devices (blood pressure gauges, vacuum gauges, manometers, etc.), thermostats and a variety of other electrical switches (temperature sensitive, tilt switches, float switches, etc.). Mercury is also used in antifouling paints, dry cell or button batteries and numerous lighting products, including fluorescent lamps and a

variety of High Intensity Discharge (HID) lamps such as mercury vapor, metal halide and high pressure sodium lamps. HID lamps are used for street lights, floodlights and industrial lighting applications. Because of the wide variety of uses mercury can be found as a component of machinery, equipment and lighting within buildings; although many of its uses have been phased out over the years.

The health effects of mercury exposure depend on its chemical form (elemental, inorganic or organic), the route of exposure (inhalation, ingestion or skin contact), and the level of exposure. Vapours from liquid elemental mercury and methyl mercury are more easily absorbed than inorganic mercury salts and can, therefore, cause more harm. Exposure to mercury occurs mainly from breathing contaminated air or ingesting contaminated water and food. Mercury is a neurotoxin, which means it can adversely affect the central nervous system. Upon exposure, mercury tends to accumulate quickly in the brain where it tightly binds with the tissue and is released at a very slow rate. The nervous system effects of mercury toxicity are sometimes referred to as "Mad Hatter's Disease" since mercurous nitrate was used in making felt hats. High levels of exposure to mercury can also lead to harmful effects on the digestive and respiratory systems, and the kidneys. Many mercury compounds may also be teratogenic or capable of causing birth defects.

Mercury compounds can also be toxic at low levels in the environment. The characteristics of mercury that make it an environmental problem are its toxicity and persistence in the environment, and its ability to accumulate and bioconcentrate as methyl mercury in fish and fish-eating predators such as large fish or loons. Therefore, proper disposal of mercury-containing materials is essential. The improper disposal of mercury-containing products such as fluorescent light bulb tubes, high intensity discharge lamps, mercury vapour lamps, mercury thermometers and thermostats can lead to the release of mercury from municipal landfills. Used fluorescent and HID lamps may be classified as hazardous waste due to their mercury content and should be recycled if possible rather than being disposed of in landfill.

Silica

Silica (silicon dioxide) is the name of a group of minerals that contain silicon and oxygen in a chemical combination and have the general formula SiO_2 . It is one of the most common minerals in the earth's crust. Silica can be present as crystalline silica (free silica) or amorphous silica (combined silica), and exists in many forms. The three most common crystalline forms of silica encountered in the workplace environment are quartz, tridymite, and cristobalite. Quartz is by far the most common crystalline silica found in nature, being abundant in most rock types, notably granites, sandstones, quartzites and in sands and soils. Cristobalite and tridymite are found in volcanic rocks. Amorphous silica is found in nature as biogenic silica and as silica glass of volcanic origin. One form of biogenic silica, diatomaceous earth, originates from the skeletons of diatoms deposited on sea floors. From a health perspective it is the crystalline silica forms that raise the biggest concerns.

Silica is present in numerous building materials and products, including concrete, brick, stone, terrazzo, refractory brick, etc. Low concentrations of silica are also possible in plaster, drywall, acoustical ceiling tiles, drywall joint compound, mortars and adhesives. Because of the wide usage of quartz-containing materials, workers may be exposed to crystalline silica in a large variety of industries and occupations. Occupational exposure to silica dust occurs in cement and brick manufacturing, asphalt pavement manufacturing, china and ceramic manufacturing and the tool and die, steel and foundry industries. Exposure to silica also occurs during many different construction and maintenance activities. The most severe exposures to crystalline silica result from abrasive blasting activities using silica sand. Other activities that may produce crystalline silica dust include jack hammering, rock/well drilling, concrete mixing, concrete drilling, tuck pointing, and brick and concrete block cutting and sawing. Additionally, crystalline silica exposures occur in the maintenance, repair and replacement of refractory brick furnace linings.

Adverse health effects associated with silica exposure result from inhalation of the respirable fraction of crystalline silica, which can arise from many of the activities outlined above. The main health effects associated with silica exposure are lung cancer and silicosis. The IARC has concluded that crystalline silica inhaled in the form of quartz or cristobalite from occupational sources is “carcinogenic to Humans” (Group 1). Silicosis is caused by scarring of the lung tissue from breathing in silica dust. This scarring is permanent and causes a reduction in the lungs’ ability to take in oxygen, making it difficult to breathe and in severe cases can be disabling, or even fatal. Since silicosis affects lung function, it also makes one more susceptible to lung infections like tuberculosis.

Vinyl Chloride

Vinyl chloride is a manufactured substance that does not occur naturally. It is used as a chemical intermediate and not an end product. Vinyl chloride exists in liquid form if kept under high pressure or at low temperatures. At room temperature, it is a colourless gas. It burns easily and is not stable at high temperatures.

Most of the vinyl chloride produced is used to make a polymer called polyvinyl chloride (PVC). PVC is used to make a variety of plastic products including pipes, wire and cable coatings, vinyl flooring, vinyl wallpaper and window frames. It is also used to make furniture, upholstery and packaging materials. One of the concerns regarding PVC is that upon burning it will emit toxic fumes. Contaminants emitted when PVC is burned include hydrochloric acid, carbon monoxide and carbon dioxide, along with lesser amounts of dioxin and furan.

Vinyl chloride is reported to be slightly irritating to the eyes and respiratory tract in humans. Central nervous system effects (including dizziness, drowsiness, fatigue, headache, visual and/or hearing disturbances, memory loss, and sleep disturbances) as well as peripheral nervous system symptoms (peripheral neuropathy, tingling,

numbness, weakness, and pain in fingers) have been reported in workers exposed to vinyl chloride. Short-term (acute) exposure to extremely high levels of vinyl chloride has also reportedly caused loss of consciousness, lung and kidney irritation, and inhibition of blood clotting in humans. The most significant health effect associated with exposure to vinyl chloride is that it is a known human carcinogen that causes a rare cancer of the liver. It has been classified by the IARC as "carcinogenic to humans" (Group 1). Brain cancer, lung cancer, and some cancers of the blood also may be connected with breathing vinyl chloride over long periods.

OTHER HAZARDOUS MATERIALS

CHEMICAL HAZARDS

Urea Formaldehyde Foam Insulation

Urea-formaldehyde foam insulation (UFFI) was developed in as an improved means of insulating difficult-to-reach cavities. It was typically made at the construction site from a mixture of urea-formaldehyde resin, a foaming agent and compressed air. When the mixture is injected into the wall, urea and formaldehyde unite and "cure" into an insulating foam plastic. Its appearance is like ordinary shaving cream. Dry, it can be a white or tan colour, and fluffy like styrofoam. Over time UFFI shrinks significantly and may begin to degrade due to its crumbly texture.

UFFI was installed primarily in wall cavities during the 1970's as an energy conservation measure. The insulation was used most extensively from 1975 to 1978, during the period of the Canadian Home Insulation Program (CHIP), when financial incentives were offered by the government to upgrade home insulation levels. In addition to detached homes it can be found in common areas and walls of semi-detached homes, apartment buildings and condominiums. UFFI was also used to a lesser degree in some commercial and industrial buildings.

UFFI installation has been banned in Canada under the Hazardous Products Act (HPA) since December, 1980 due to concerns regarding the health effects of exposure to formaldehyde. Formaldehyde is a colourless, pungent-smelling gas. Health effects include eye, nose, and throat irritation; wheezing and coughing; fatigue; skin rash; nausea; headache; dizziness; and severe allergic reactions.

Sometimes, a slight excess of formaldehyde was often added to ensure complete "curing" with the urea to produce the urea-formaldehyde foam. The excess formaldehyde was given off after installation during the initial curing process, which typically took a few days to a week to complete. UFFI was sometimes improperly installed or used in locations where it should not have been, resulting in continued off-gassing of formaldehyde past the initial curing stage. Since UFFI was last installed in 1980, it should have little effect on indoor formaldehyde levels today. However, if UFFI comes in contact with water or moisture, it could begin to break down. Due to the age

of the insulation UFFI may also begin to degrade and crumble into a fine powder. Under these conditions UFFI may release more formaldehyde and consideration should be given to removing the material using properly trained remediation personnel.

BIOLOGICAL HAZARDS

Mould

Mould is part of the fungi kingdom, which also includes mushrooms and yeasts. They are a naturally occurring and essential part of our environment since they break down dead organic material in the outdoor environment (such as leaves, wood and other plant debris), which they use as a food source.

Mould reproduces by means of tiny spores that are so small they can't be seen by the naked eye. Because of their small size mould spores easily become airborne and can travel long distances, entering indoor environments through ventilation systems, open windows or doors, or tracked in on footwear. Therefore, mould spores are a commonly detected in indoor air and as a component of settled dust.

Under normal conditions, the presence of indoor mould is not an issue. However, if conditions exist that allow it to grow and multiply indoors it can become a potential hazard. Several factors will affect what moulds will grow within a building and how fast they will grow. This includes parameters such as temperature, airflow, and the pH (i.e. acidity/alkalinity) of the food substrate. However, the most important parameter affecting mould growth is water availability, as all moulds need some amount of moisture for them to be able to grow. Buildings that have had a history of water damage are at greater risk of indoor mould growth.

Indoor mould growth may present a risk to the building structure itself through decomposition of building materials. Health risks to building occupants may also occur as a result of indoor mould growth. Construction or renovation work which disturbs mould-contaminated materials increases this risk of exposure to building occupants and the construction workers themselves. Health effects associated with exposure to mould most commonly results in allergic type reactions such as runny nose, cough, congestion, eye irritation and aggravation of asthma, headache and fatigue. Exposure to very high concentrations of airborne mould spores (such as those that may be observed during disturbance of mould-contaminated building materials) can result in more serious health effects such as Organic Dust Toxic Syndrome (ODTS) or Hypersensitivity Pneumonitis (HP), where flu-like symptoms (fever, chills, cough, fatigue, shortness of breath, body aches, etc.) are exhibited. The chronic form of HP may occur from long-term exposure to lower levels of mould and results in a continued worsening in shortness of breath or cough. A variety of species of mould have also been documented to cause serious invasive infections, which are generally limited to individuals whose immune systems are already somehow compromised.

Pest Infestation

Areas currently or previously infested by pests (including birds, bats, rodents, raccoons, cockroaches, etc.) can result in potential exposure to numerous biological hazards that can be viral, bacterial, fungal or parasitic in nature. This can occur through exposure to their droppings, urine or saliva.

Bird and bat droppings should be presumed to be contaminated with the fungi *Histoplasma capsulatum* and/or *Cryptococcus neoformans*. These fungi grow well in the high nutrient content of accumulated bird and bat excrement and can cause respiratory infections in workers exposed during construction or maintenance activities that cause the droppings to be disturbed and the fungi to become airborne.

Histoplasmosis is an infectious disease caused by inhaling the spores of *Histoplasma capsulatum*. After an exposure, how ill a person becomes varies greatly and most likely depends on the number of spores inhaled and a person's age and susceptibility to the disease. The mildest form of histoplasmosis produces no signs or symptoms, but severe infections can cause serious problems throughout your body as well as in your lungs. Otherwise healthy people who've had intense exposure to *H. capsulatum* may experience a form of the disease known as acute symptomatic pulmonary histoplasmosis. Typical symptoms include fever, muscle aches, headache, dry cough, chest pain, sweating and loss of appetite.

Cryptococcosis is an infectious disease caused by inhaling the spores of *Cryptococcus neoformans*. Once inhaled, infection with cryptococcosis may go away on its own, remain in the lungs only, or spread throughout the body. Most cases occur to people with a weakened immune system, such as those with HIV infection, taking high doses of corticosteroid medications, cancer chemotherapy, or who have Hodgkin's disease. In people with a normal immune system, the lung (pulmonary) form of the infection may have no symptoms. In people with weakened immune systems, the *cryptococcus* organism may spread to the brain. Most people with this infection have meningoencephalitis (swelling and irritation of the brain and spinal cord) when they are diagnosed.

Rodents such as deer mice may be infected with Hantavirus, which can be shed in their urine, saliva and droppings. Exposure to Hantavirus can result in a serious respiratory illness called hantavirus pulmonary syndrome (HPS). Initially, infected individuals exhibit flu-like symptoms, including fever and body aches which progresses to shortness of breath and coughing which rapidly becomes more severe. Exposure to Hantavirus in Canada is rare and Health Canada has only found the virus in a very small percentage of deer mice tested in Northern Ontario.

A raccoon latrine (i.e. an area where they repeatedly deposit fresh feces on top of old feces) may contain microscopic roundworm (*Baylisascaris procyonis*) eggs that can potentially be hazardous to human health. Once deposited in the environment, the eggs develop into an infectious form; and if inadvertently ingested by humans, the larvae

hatch out of the eggs and may penetrate the body's organs. Larvae travel through the body and may cause serious eye disease, spinal cord or brain damage or death. Raccoon roundworm disease is not contracted by inhalation nor has any case of inhalation of roundworm eggs been documented.

Exposure to animal dander, scales, fur, urine, feces and saliva can also result in exposure to certain proteins that can act as allergens and can also cause asthmatic reactions. Some common sources of pest-related allergens include cockroaches, dust mites and rodents. The protein in urine from rats and mice is a potent allergen. Cockroach allergens are also potent and are derived from several sources, such as saliva, fecal material, secretions, cast skins, debris, and dead bodies. Allergic reactions occur when sensitized persons inhale, swallow or touch traces of the allergen, resulting in an exaggerated reaction of the body's immune system to the foreign protein. Typical allergic reactions result in nasal, eye, and throat irritation as well as possible skin hives. These proteins may also trigger asthma attacks when sensitive individuals inhale the proteins, resulting in symptoms such as coughing, wheezing, chest tightness, and breathing difficulties.

ENVIRONMENTAL HAZARDS

Polychlorinated Biphenyls

Polychlorinated biphenyls (PCBs) are a class of man-made organic chemicals known as chlorinated hydrocarbons. They vary in consistency from thin, light-coloured liquids to yellow or black waxy solids. They were manufactured in the United States from 1929 until their manufacture was banned in 1979. Although PCBs were not manufactured in Canada, they were imported from the U.S. over the years. Canada banned the import, manufacture and sale of PCBs in 1977.

PCBs are non-flammable, chemically stable over a wide range of temperature and physical conditions, not soluble in water, unaffected by acids, base or corrosive chemicals, and have a high dielectric or electrical insulating capacity. Due to these unique properties PCBs were used in hundreds of industrial and commercial applications, most commonly in electrical transformers and capacitors, including those capacitors found in light ballasts. They were also used as coolants, fire retardants and as insulation and in a number of other commercial applications including carbonless copy paper, dust suppressors for roads, hydraulic fluids, caulking compounds, plasticizers and lubricating oils and heat-transfer applications.

Although PCBs were found to be extremely useful in many industrial and commercial applications some of their chemical properties also made them an environmental and health hazard. PCBs are nearly indestructible and therefore persist if released into the natural environment. Their high fat and low water solubility result in a build-up (bioaccumulation) of PCBs in the fatty tissue of animals and humans if ingested/inhaled. Because PCBs persist in the fatty tissue of animals their concentration will tend to increase the higher up the food chain.

Most of what is known about the human health effects of PCBs is based on exposures due to accidental releases or job-related activities. These exposures are much higher than the levels normally found in the environment. The adverse health effects include a severe form of acne (chloracne), swelling of the upper eyelids, discolouring of the nails and skin, numbness in the arms and/or legs, weakness, muscle spasms, chronic bronchitis, and problems related to the nervous system. The International Agency for Research on Cancer (IARC) classifies PCBs as “probably carcinogenic to humans” (Group 2A) based on limited evidence that long-term, high-level occupational exposure can lead to increased incidence of liver and kidney cancers. The long-term impact of low-level exposures to PCBs that is common in the general population is unclear. The current state of knowledge suggests that low-level exposures to PCBs are unlikely to cause adverse health effects. However, people eating large amounts of certain sports fish, wild game and marine mammals are at increased risk for higher exposures and possible adverse health effects.

Ozone Depleting and Global Warming Substances

There are several different types of chemicals that are being or have been used as refrigerants in commercial, home and vehicle air conditioners and refrigerators or as fire extinguishing agents in portable and fixed fire extinguishing equipment. This includes groups of chemical compounds known as chlorofluorocarbons (CFCs), hydrochlorofluorocarbons (HCFCs) and halons. Some of these chemicals have also been used as foam blowing agents, as cleaning solvents for electrical components, as aerosol spray propellants, and in hospital sterilization procedures. Fixed halon fire extinguishing systems have historically been used in areas such as data centers, IT rooms, museums, libraries, surgical suites, and other locations where use of water-based suppressants could irreparably damage electronics or vital archival collections. There is a large number of halon fire extinguishing systems still in service in Canada. The concern regarding past and present use of many of the chemicals used as refrigerants or fire extinguishing agents is that they are ozone-depleting substances (ODS). When released into the environment these chemicals break down in the stratosphere and release chlorine or bromine, which destroy the stratospheric ozone layer. The ozone layer screens the earth from some of the sun's harmful ultraviolet rays (UVB). As the ozone layer is depleted, higher UVB levels reach the earth, resulting in increased exposure to UVB. Increased exposure to UVB can cause skin cancer and plays a major role in malignant melanoma development. It can also increase the likelihood of cataracts and may also suppress proper functioning of the body's immune system and the skin's natural defences.

CFCs, HCFCs and halons are also known to be greenhouse gases and contribute to global warming due to the build-up of these heat-trapping gases in the atmosphere. Hydrofluorocarbons (HFCs) are a common replacement chemical for CFC and HCFC refrigerants; and although they do not have any ozone depleting potential they are a potent greenhouse gas.

Due to the ozone-depleting potential and/or global warming potential of CFCs, HCFCs, HFCs and halons it is important to control their use and emission into the environment.

The manufacture and use of CFCs has stopped while transitional refrigerants (HCFCs) are scheduled to be phased out of production. No phase-out dates are currently planned for any HFCs. In Ontario, Regulation 463/10, "Ozone Depleting Substances and Other Halocarbons" (made under the Environmental Protection Act) enhances the control and management of substances that deplete the ozone layer and contribute to global warming. This regulation has requirements to prevent or minimize ozone-depleting substances and other halocarbons emissions, which serves a dual environmental benefit of lowering emissions that destroy the ozone layer and contribute to climate change.



**MOULD ASSESSMENT REPORT
20 Prince Street
Bowmanville, Ontario**

Prepared for:

**Mr. Don Baron
Manager, Engineering and Infrastructure**

**Lakeridge Health Corporation
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SEL Project Number 207617



March 17th, 2017

Lakeridge Health Corporation
850 Champlain Drive
Oshawa, Ontario

Attention: Mr. Don Baron
Manager, Engineering and Infrastructure

Re: Results of Mould Assessment
20 Prince Street, Bowmanville, Ontario

1.0 BACKGROUND

On March 8th, 2017 personnel from Safetech Environmental Limited (SEL) performed a visual assessment for water damage and mould growth within accessible areas of the residence located at the aforementioned address. Moisture content readings of building materials, air sampling for total airborne mould spores and surface sampling for the determination of mould growth were also taken to supplement our visual assessment.

This assessment was performed at the request of Mr. Don Baron, Manager, Engineering and Infrastructure for Lakeridge Health Corporation following occupant concerns about possible mould within the residence.

Assessing potential health risks to potential building occupants associated with the presence of indoor mould growth was beyond the scope of our investigation. Any decisions regarding health risks posed by indoor mould growth and decisions to remove or return occupants to affected areas should be based on a medical assessment made by a practitioner who is trained in occupational/environmental medicine or a related specialty and is knowledgeable about these types of exposures.

This report summarizes results of our visual assessment, moisture measurements and laboratory results.

2.0 INTRODUCTION

Fungi can be found almost everywhere in indoor and outdoor environments. They are a naturally occurring and essential part of our environment and include a wide variety of organisms such as moulds, yeasts and mushrooms. Fungi act as decomposers in the outdoor environment, breaking down dead organic material (such as leaves, wood and other plant debris) which they use as a food source.

Mould spores are brought into indoor environments through ventilation systems, open windows or doors, or tracked in on footwear. If conditions exist that allow fungi to grow indoors, concentrations will increase to levels that are typically not found in buildings. Indoor mould growth occurs primarily as a result of water damage to cellulose-containing building materials and/or furnishings (such as wood, drywall, wallpaper, ceiling tiles, etc.) during catastrophic or chronic events such as leaks, floods, condensation (associated with high humidity or cold spots), improper design or operation of humidification systems, and building envelope failures. Under these conditions, fungal growth may present a risk to the building structure itself (through decomposition of building materials) as well as to occupants in the building (through potentially adverse health effects).

2.1 Health Effects Associated with Exposure to Mould

Health effects caused by inhalation of fungal spores (and other fungal fragments) most commonly results in allergic type reactions such as runny nose, cough, congestion, eye irritation and aggravation of asthma, headache and fatigue⁸. Exposure to very high concentrations of fungi (such as those that may be observed during remediation of contaminated building materials) can result in more serious health effects such as Organic Dust Toxic Syndrome (ODTS) or Hypersensitivity Pneumonitis (HP), where flu-like symptoms are exhibited. A variety of species of mould have also been documented to cause serious infections. However, serious invasive infections are generally limited to individuals whose immune systems are already somehow compromised.

Health effects posed by exposure to toxigenic moulds are not well understood. Controversy in the medical community currently surrounds the possibility that airborne fungal exposure can result in more serious health effects due to the ability of some species (such as *Aspergillus flavus*, *Aspergillus fumigatus* and *Stachybotrys chartarum*) to produce mycotoxins under favourable growth conditions. These so-called “toxic moulds” have been implicated in causing serious health effects such as bleeding lungs in infants, liver damage, central nervous system damage, and cancer. However, any causal association for such health effects remains weak and unproven from inhalation exposure at levels that one would expect to find in mould-contaminated buildings.

2.2 Mould Assessment & Remediation Guidelines

Regardless of the type or severity of health effects that may be caused by exposure to mould, mould growth inside a building should be considered unacceptable from a building operations and maintenance standpoint as well as from a health risk standpoint. In Ontario, the Ministry of Labour (MOL) recognized this and in September of 2000 issued an alert regarding mould titled “Mould in Workplace Buildings”. This alert outlined potential health effects caused by mould exposure, causes of mould growth in buildings, and the need to properly remediate mould-contaminated building materials. The requirement for employers to provide a safe and healthy workplace for all employees was indicated by the MOL within this alert by citing section 25(2)(h) of the Occupational Health and Safety Act, which states that employers are required to take every precaution reasonable in the circumstances for the protection of workers. This includes protecting workers from mould in workplace buildings.

Further to the MOL alert, several government agencies and special interest groups have developed guidelines for the proper assessment and remediation of mould-contaminated buildings. In Canada, recent guidelines have been published by the Canadian Construction Association (CCA) entitled “Mould Guidelines for the Canadian Construction Industry” (March 2004) while in Ontario the Environmental Abatement Council of Ontario (EACO) has published “EACO Mould Abatement Guidelines” (April 2010). Currently, this guideline is being considered by the MOL for adoption as a recognized code of practice.

The above guidelines are similar in nature and incorporate elements common to several other guidelines issued by groups such as Health Canada⁴, the Manitoba Department of Labour⁷, the New York City Department of Health⁸, the Institute of Inspection, Cleaning and Restoration Certification (IICRC)⁶, and the U.S. Environmental Protection Agency (EPA)¹⁰. Common to all is the need to remediate contaminated building materials under controlled conditions, with the extent of safety measures employed based partially on the extent of contamination. In general, more stringent remediation methods, engineering controls and worker protection are required the more extensive the mould contamination. These requirements have generally been distinguished in the guidelines by employing different Levels of Remediation (e.g., Level 1, 2 or 3).

SEL recognizes and follows the practices and procedures outlined in the most current mould remediation guidelines available. General recommendations for remediation procedures, engineering controls and work practices that are common to several of the above-mentioned guidelines and used by SEL are summarized below in Table I.

TABLE I
Summary of Mould Remediation Requirements by Level of Remediation

Level of Remediation	Level 1	Level 2	Level 3
Estimated Area of Mould Growth	<10 ft ² (<1 m ²)	10-100 ft ² (1-10 m ²)	>100 ft ² (>10 m ²)
Level of Containment	Polyethylene drop sheet	Polyethylene enclosure	Polyethylene enclosure and two-chambered worker/waste decontamination facilities
Engineering Controls	Turn off HVAC system and seal over openings, use dust suppression methods	Isolate/seal the HVAC system, use dust suppression methods, maintain negative pressure through use of HEPA vacuum or HEPA-filtered negative air unit	Isolate/seal the HVAC system, use dust suppression methods, maintain negative pressure (that is to be continually measured and recorded) through use of HEPA-filtered negative air unit
Worker Protection	Dust impermeable gloves, half-face air purifying respirator (N95 minimum), full body dust-impervious coveralls	Dust impermeable gloves, half-face air purifying respirator (100 Series), full body dust-impervious coveralls and boot covers or separate work boots	Dust impermeable gloves, full-face PAPRs or full face non-powered air purifying respirator (100 Series), full body dust-impervious coveralls and boot covers or separate work boots
Clean Up Procedures	Double-bag waste in 6-mil polyethylene bags, HEPA-vacuum and/or wet wipe exposed surfaces with a detergent solution	Double-bag waste in 6-mil polyethylene bags, HEPA-vacuum and wet wipe exposed surfaces with a detergent solution	Bag waste in 6-mil polyethylene bag within work area and then within double bagging room of waste decontamination facility, HEPA-vacuum and wet wipe exposed surfaces with a detergent solution
Project Quality Assurance	Project authority should consider whether removal of occupants adjacent to the work area is necessary.	Project authority should consider whether removal of occupants adjacent to the work area is necessary. Consult with qualified Health & Safety professional prior to remediation work and for monitoring of compliance with guidelines. A competent supervisor to be present during all contaminated work and a competent person should inspect the work area for enclosure defects on a regular basis.	Project should be conducted following a site-specific work plan or specification. Project authority should consider whether removal of occupants adjacent to the work area is necessary. Consult with qualified Health & Safety professional prior to remediation work and for monitoring of compliance with guidelines. A competent supervisor to be present during all contaminated work and a competent person should inspect the work area for enclosure defects on a regular basis. Project authority or representative should periodically inspect work activities and inspect the work area for acceptable completion via visual inspection and possibly clearance testing (air and/or surface sampling).

It should be noted that the remediation procedures summarized in Table I are not meant to be comprehensive. The summary is general in nature only, as specific recommended requirements vary slightly from guideline to guideline. Each applicable guideline should be consulted for a full description of their recommended remedial procedures. In addition, the procedures outlined above may not necessarily reflect procedures to be employed on every project, as specific procedures to be followed should be determined on a project by project basis, based on professional judgment. The general procedures outlined above also do not account for specific conditions that may be encountered, such as remediation in locations where immuno-compromised or other susceptible occupants may be present (e.g., hospitals or other health care facilities) or remediation of biohazards other than mould that may be present due to sewer backups, environmental floods, or bird and bat droppings. Under these conditions, additional precautions may apply.

3.0 MOULD ASSESSMENT METHODOLOGY

Our assessment for the determination of the presence of mould growth included all readily accessible areas of the residence. In order to assess the potential for and extent of mould growth (if any), our assessment consisted of a visual inspection of accessible areas and moisture content readings of building materials. Both of these activities are further described below.

3.1 Visual Assessment

The focus of our visual assessment was to identify and quantify locations within the areas assessed that may be affected by water damage and/or mould growth. Evidence of water damage may include water staining and/or discolouration to building material surfaces and deterioration to building surface components (such as cracking or peeling paint or plaster, delamination of wallpaper, efflorescence on plaster and concrete surfaces, etc.). Degraded building materials (such as soft or crumbling drywall and plaster) also provide an indication of potential chronic water infiltration. The source of water damage was identified, where possible, in areas where water damage was evident.

Mould growth is visually identified as spotty discolouration on surfaces or as a mass of fuzzy discolouration, depending on the extent of growth. The colour of mould growth will vary depending on the mould species present and the material on which it is growing. Mould commonly appears to be black, grayish, white, brown or green in colour. Differentiation between mould growth and other staining or discolouration was made based on past experience and/or by confirmation of mould growth on similar surfaces through surface sampling. Visible identification of mould growth should be viewed as 'preliminary' or 'suspect' until positively identified through laboratory analysis.

Special attention was paid to building materials and furnishings that are typically conducive to mould growth due to their cellulose content. This included materials such as drywall, cardboard, lay-in ceiling tiles, carpeting, wallpaper, wood framing, plywood, particleboard, oriented strand board (OSB), etc., if present.

Our visual assessment was primarily non-destructive in nature. Locations where there was visual evidence of water damage and/or elevated moisture content readings indicated the potential for “hidden” mould growth, which could exist between building elements, underneath the surface of the affected material or within wall/ceiling cavities, etc.

3.2 Moisture Content Readings of Building Materials

In order to determine the moisture content of building materials present within the areas assessed, moisture content (MC) readings were taken using a Protimeter Moisture Meter System (MMS). This unit is able to detect moisture content in building materials using two modes of moisture measurement. For the detection of moisture beneath surfaces or from hard surfaces such as concrete, ceramics, masonry and plaster, the instrument is operated in Search Mode. This mode uses radio frequency technology to give instant relative measurements of moisture on a relative scale reading from 0 to 1,000. When the MMS is operated in Measure Mode, pin-type conductivity electrodes are used to give precise wood moisture equivalent (WME) measurements from non-conductive materials such as wood, drywall and insulating materials. WME measurements are reported in the range of 7.8 to 99.9% in increments of 0.1%. Values obtained above typical wood fibre saturation (30%) are relative readings.

For wood products such as framing, plywood and oriented strand board, typical MC readings obtained from these “dry” materials (stabilized with normal indoor environments) are 8-14%, 15% and 8-11% respectively. Generally, wood materials are considered dry enough when readings are within 4% of the dry standard, and moisture content below 20% inhibits the growth of destructive fungi⁵.

To determine if building materials other than wood products have elevated moisture levels, MC readings obtained with the MMS are compared against MC values of similar products that are known to be dry. For example, typical “dry” drywall has a WME of approximately 10%. Thus, values obtained above 10% indicate elevated MC. In general, for cellulose-based products, WME values below 10% should be considered low or “normal”, values between 10 and 15% represent “borderline” conditions where there may be elevated moisture conditions, values between 16 and 20% represent “suspect” conditions where fungal growth may start to occur, while values above 20% represent “fungal growth” conditions.

Results of MC readings were used in conjunction with our visual assessment results to further define the extent of water damage. Elevated readings would indicate recent or

chronic water damage. In addition, elevated MC readings indicate the potential for hidden mould growth on the unexposed side of the material being measured. It should be noted that even if normal MC readings are obtained, areas that have been subjected to water damage in the past and have since dried out may have hidden mould growth. Under these conditions, further assessment activities (such as intrusive investigation) would have to be performed to rule out the presence of mould growth.

3.2 Air Sampling for Total Mould Spores

Air sampling for total mould spores was performed using spore trap sampling techniques. Allergenco D cassettes were attached to a Zefon Bio-Pump Plus portable air sampling pump designed specifically to provide constant airflow for the short sampling times required for mould screening. The Zefon Bio-Pump Plus was calibrated to a flow rate of 15 litres per minute (lpm) using a primary standard calibrator with an Allergenco D cassette in line. The Allergenco D cassette contains a special glass slide within the cassette housing that has a sticky sampling substrate which traps particles impacting on the slide surface.

Air sampling for total mould spores was on March 8th, 2017. This included two air samples on the main floor (Living Room and Room #1), one air sample within the basement and an exterior control sample. Sampling was performed within the chosen locations for a period of five (5) minutes for a total sample volume of 75 litres (L) per sample.

At the completion of air sampling the Allergenco D cassettes were submitted to an independent laboratory for the determination of total spore concentrations using Direct Microscopic Exam (DME) techniques. Each sample was viewed at 400X magnification and individual spores were counted and grouped to the genus level where possible, based on spore morphology (i.e., size, shape, colour, etc.). This analytical method provides a *Total* spore count as all spores identified are counted, whether viable or non-viable. Airborne spore concentrations for each mould type identified and a total airborne spore concentration is then determined by the analytical laboratory, with results reported as spores per cubic metre of air (spores/m³).

3.2.1 Interpretation of Air Sampling Results

Air sampling for mould spores can be useful in determining whether there are hidden mould amplification sites within a building. Air sampling can also assist in evaluating the degree to which the presence of hidden or known mould amplification sites are impacting on the quality of air within the locations sampled. However, air sampling for total mould spores should not be used as the only means to assess the presence or absence of mould amplification sites. The visible presence of mould on interior surfaces requires remedial action regardless of airborne spore loads.

Due to the lack of a clear dose-response relationship for airborne spore exposure and given such a wide range of susceptibility for exposed persons, no airborne spore concentrations have been established that would indicate a health risk to building occupants. As such, there are currently no regulated exposure limits for airborne spore exposure.

Given the lack of adequate scientific data to establish airborne spore exposure limits, currently recommended practice for proper interpretation of air sampling results is to perform comparison analysis. If air sampling is performed due to concern regarding potential exposure in a particular room or area of a building, samples should generally be taken in a minimum of three locations. This would include the area of concern, an area of no concern (i.e., a non-complaint or non-affected area) and outside the building. Given the limitations associated with a relatively short sampling time, the greater number of areas sampled and/or the greater number of repeat sampling performed (i.e. multiple samples taken in the same area), the greater the level of certainty with respect to airborne spore exposure.

Following the above sampling strategy, analytical results are then compared to one another with respect to indoor and outdoor biodiversity. Generally, in an area not affected by mould contamination, one would expect to see the same type of mould spores present inside at a similar rank order but lower concentration (especially for mechanically ventilated buildings) as detected in outdoor air. Mould types that are dominating indoor samples but are not dominant or not detected in outdoor samples provides indication that an interior mould amplification site likely exists and that air quality is degraded.

3.3 Surface Sampling of Building Materials for the Determination of Mould Growth

Surface sampling activities were performed to verify the presence (or absence) of mould growth on building surfaces. A tape lift sample was collected by physically applying a piece of tape to the surface, removing with steady force and placing it inside of a zip-lock plastic freezer bag for transportation to an independent analytical laboratory.

Analysis of the surface sample was performed using Direct Microscopic Exam (DME) techniques. The samples are examined under 400x magnification in order to identify fungal structures present on the sample. Moulds present are identified by the laboratory to the genus or species level where possible and are listed in rank order. The presence of mould growth on the sample is determined microscopically by viewing fungal spores with associated growth structures, such as hyphae and conidia. The presence of mould growth is subjectively graded by the analyst in terms of sparse, moderate or abundant. The presence of spores alone (lacking the presence of fungal growth structures) is assessed by the analytical laboratory as a few (<10 spores/microscopic field), some (10-100 spores/microscopic field), or many (>100 spores/microscopic field).

3.3.1 Interpretation of Surface Sampling Results

Distinguishing the difference between actual mould growth, spore deposition due to inadequate cleaning and the presence of normal background spore deposition is important in determining if building surfaces remaining within remediated areas have been adequately cleaned. In order to determine an appropriate level of cleanliness, SEL has developed in-house guidelines based on past experience. These are summarized below:

1. The detection of mould spores alone from a surface sample, especially those indicative of normal conditions (i.e. a mix of spore types that are usually seen outdoors and typically seen on surfaces everywhere) does not constitute a mould growth site or indicate areas of remaining mould contamination. Low concentrations of mould spores (i.e. a “few” to “some”) may be considered acceptable if it is determined that these spores likely arise from areas outside of the area of remediation as a result of infiltration of air from adjacent or outdoor locations.
2. The detection of spores from certain marker genera (i.e. those spore types that are normally present in small numbers but often multiply indoors under favourable conditions, such as *Stachybotrys* or *Chaetomium* spores) or the detection of spore types that have been determined to be growing in the remediation area from previous surface sampling may indicate that cleaning of surfaces following remediation is inadequate. The presence of these spore types should not be detected at concentrations greater than a “few”. In some cases (depending on spore type and interior conditions where elevated moisture readings to building surfaces are still present) the detection of any of the above spore types from tape lift samples should be considered unacceptable.
3. Spores seen with underlying mycelia and/or sporulating structures indicates that mould growth likely still remains on the surface tested. SEL considers the verification of mould growth graded by the laboratory as “moderate” to “abundant” (regardless of the type of mould growth) to be unacceptable from a remediation performance perspective. The detection of mould growth reported as “sparse” may be acceptable under certain conditions, depending on the type of mould detected, the material on which it was detected and the moisture content reading obtained from this material.

3.4 Area Classification and Estimation of Level of Remediation

Each of the individual areas assessed was assigned a classification number (i.e., 0, 0+, 1, 1+, 2, 2+, 3 or 3+) by SEL based on the extent of visible mould growth and water damage determined to be present. This classification system has been developed based on a number of current mould remediation guidelines but also accounts for possible undiscovered or hidden mould growth (if applicable). A Level of Remediation was then estimated based on a combination of all information obtained from our assessment. SEL's classification system is summarized below in Table II.

TABLE II
Summary of Area Classification and Level of Remediation

Area Classification	Estimated Extent of Visible Mould Growth*	Potential for Additional Hidden Mould Growth**	Level of Remediation***
0	None Detected	Not likely	0
0+	None Detected	Possible	0-3
1	<10 ft ² (1 m ²)	Not likely	1
1+	<10 ft ² (1 m ²)	Possible	1-3
2	10-100 ft ² (1-10 m ²)	Not likely	2
2+	10-100 ft ² (1-10 m ²)	Possible	2-3
3	>100 ft ² (10 m ²)	Not likely	3
3+	>100 ft ² (10 m ²)	Possible	3

* Estimate accounts for mould growth in "hidden" locations if assessment techniques (e.g., borescope or intrusive investigation) allow for inspection and identification of mould growth. **Elevated moisture content readings and/or visible water damage to surfaces that are typically conducive to mould growth indicate the potential for hidden mould growth additional to that identified. ***Actual level of remediation is dependent on the extent of visible and anticipated hidden mould growth.

4.0 MOULD ASSESSMENT RESULTS

Results of our mould assessment are summarized below in Table III. Each area assessed has been classified according to our assessment criteria outlined in Table II. In addition, an estimated Level of Remediation has been provided based on our results. Locations where photographs (P#) were taken that support our observations are also indicated in Table III and are included in Appendix I. For the purposes of this report the front of the house is considered to be facing south.

TABLE III
Summary of Mould Assessment Results
20 Prince Street, Bowmanville, Ontario
March 8th, 2017

1. Attic	Area Classification: 0	Level of Remediation: 0
<p>Observations: Building finishes consisted of wooden plank roof sheathing, wood framing and blown-in fiberglass insulation. No obvious visible mould growth or significant water damage was identified to these building finishes (P1). Normal moisture content readings (8-12%MC) were taken from representative plywood and wood framing finishes.</p>		
<p>Recommendations: No mould remediation activities are considered to be necessary.</p>		
2. Living Room and Foyer	Area Classification: 0	Level of Remediation: 0
<p>Observations: Building finishes consisted of plaster walls and ceiling and hardwood flooring. Signs of water damage (flaking paint) were observed to the plaster ceiling (P2) between the lighting fixture and the south window; however, no obvious visible mould growth was identified. Moisture readings obtained from the plaster ceiling at this location exhibited dry moisture conditions (<200REL, P3). A surface sample (T1) obtained from this section of the plaster ceiling did not identify any mould growth. No other signs of water damage or mould growth was identified to the remaining building finishes and moisture readings obtained indicated dry moisture conditions (<200REL).</p>		
<p>Recommendations: No mould remediation activities are considered to be necessary. However, further investigation is recommended to be performed within the attic at this location to determine if a possible roof leak is present.</p>		
3. Room #3	Area Classification: 1	Level of Remediation: 1
<p>Observations: Building finishes consisted of plaster walls and ceiling and hardwood flooring. No obvious signs of water damage were observed to building finishes and moisture readings obtained from the plaster ceiling and walls and hardwood floor exhibited dry moisture conditions (<15%MC, <200REL, P4). Superficial mould growth (P5) was observed to the framing of the south window (within the closet) which is likely attributed to a buildup of condensation.</p>		
<p>Recommendations: The south window framing is recommended to be surface cleaned. Level 1 mould remediation protocols are recommended to be followed.</p>		
4. Room #2	Area Classification: 0	Level of Remediation: 0
<p>Observations: Building finishes consisted of plaster walls and ceiling and hardwood flooring. No obvious signs of water damage or mould growth were observed to building finishes and moisture readings obtained from the plaster ceiling/walls and hardwood floor exhibited dry moisture conditions (<15%MC, <200REL).</p>		

Recommendations: No mould remediation activities are considered to be necessary.

5. Room #1

Area Classification: 1

Level of Remediation: 1

Observations: Building finishes consisted of plaster walls and ceiling and hardwood flooring. No obvious signs of water damage were observed to building finishes and moisture readings obtained from the plaster ceiling/walls and hardwood flooring exhibited dry moisture conditions (<15%MC, <200REL). Superficial mould growth was observed to the framing of the north and east windows (**P6, P7**) which is likely attributed to a buildup of condensation.

Recommendations: The north and east window framing are recommended to be surface cleaned. Level 1 mould remediation protocols are recommended to be followed.

6. Bathroom

Area Classification: 1

Level of Remediation: 1

Observations: Building finishes consisted of plaster walls and ceiling and vinyl floor tiles. Minor signs of water damage (i.e. paint bubbling and cracking) were observed to the plaster ceiling (**P8**) adjacent to the bathroom window, likely attributed to the buildup of condensation within the bathroom and the lack of use of the exhaust fan. No obvious visible mould growth was observed to this section of plaster ceiling exhibiting water damage and moisture readings obtained from this section of the ceiling exhibited dry moisture conditions (<200REL). Minor visible mould growth was observed to caulking (**P9**) present around the sink vanity (likely attributed to splash back). Moisture readings obtained from the plaster wall at this section exhibited dry moisture conditions (<200REL). Further investigation within the sink vanity cabinetry revealed minor visible mould growth (**P10**) to the piece of wood supporting the sink (likely attributed to sink leaks); however, moisture readings obtained from the piece of wood exhibited dry moisture conditions (<15%MC). The remainder of building finishes were observed to be in good condition, free from obvious visible mould growth and water damage and moisture readings obtained exhibited dry moisture conditions (<200REL).

Recommendations: The caulking around the sink vanity is recommended to be removed and re-caulked to ensure a proper seal. The piece of wood supporting the sink is recommended to be surface cleaned. Level 1 mould remediation protocols are recommended to be followed.

7. Kitchen

Area Classification: 1

Level of Remediation: 1

Observations: Building finishes consisted of plaster walls and ceiling and vinyl floor tiles. Minor water damage (i.e. paint bubbling/flaking) was observed around the kitchen sink area (**P11**) as no backsplash is present; however, moisture readings obtained indicated dry moisture conditions (<200REL). Minor superficial mould growth was observed to the framing of the west window (**P12**) likely attributed to the buildup of condensation. The remainder of building finishes were observed to be in good condition, free from obvious visible mould growth and water damage and moisture readings obtained exhibited dry moisture conditions (<200REL).

Recommendations: The west window framing is recommended to be surface cleaned. Level 1 mould remediation protocols are recommended to be followed

8. Corridor and Staircase	Area Classification: 0	Level of Remediation: 0
Observations: Building finishes consisted of plaster walls and ceilings, vinyl floor tiles, hardwood flooring, vinyl floor tiles, wood paneling and wooden staircase. Building finishes were observed to be in good condition, free from obvious visible mould growth and water damage and moisture readings obtained indicated dry moisture conditions (<200REL).		
Recommendations: No mould remediation activities are considered to be necessary.		
9. Basement	Area Classification: 0	Level of Remediation: 0
Observations: Building finishes consisted of a painted concrete floor, drywall walls and an open wooden ceiling deck. Building finishes appeared to be in good condition, free from obvious visible mould growth and water damage (P13). Moisture readings obtained from representative building finishes exhibited dry moisture conditions (<200REL, P14) with exception to the concrete flooring which exhibited elevated moisture conditions (600REL).		
Recommendations: No mould remediation activities are considered to be necessary.		

4.2 Air Sampling for Total Mould Spores

Results of air sampling for total mould spores are summarized below in Table IV as total fungal concentrations and as a percentage of the outdoor air concentration for the interior sample location. Comparisons of each interior location to the exterior control sample are summarized in Table I. The Laboratory Certificate of Analysis is included in Appendix II.

TABLE IV
Results of Air Sampling for Total Mould Spores
20 Prince Street, Bowmanville, Ontario
March 8th, 2017

Sample No.: Location	Total Spore Conc. (spores/m ³)	Percent of Outdoor Air Conc.	Comments
A1: Living Room	120	5%	Lower concentration of total airborne mould spores in comparison to the exterior control samples. All spore types identified were also present in the exterior control sample at higher concentrations. No significant indication of mould amplification site.
A2: Bedroom #1	213	9%	Lower concentration of total airborne mould spores in comparison to the exterior control samples. All spore types identified were also present in the exterior control sample at similar or higher concentrations. No significant indication of mould amplification site.
A3: Basement	53	2%	Lower concentration of total airborne mould spores in comparison to the exterior control samples. All spore types identified were also present in the exterior control sample at higher concentrations. No significant indication of mould amplification site.
A4: Exterior Control	2,413	-	Higher concentration of total airborne mould spores in comparison to interior air samples. Spore types identified included Colourless spore types that could not be further identified (39% of total), <i>Cladosporium</i> spores (28%) and Basidiospores (20%). A lower concentration of three other spore types was detected.

4.3 Surface Sampling of Building Materials for the Determination of Mould Growth

Surface sampling results are summarized below in Table V. Please refer to Appendix II for the Laboratory Certificate of Analysis

TABLE V
Summary of Surface Sampling Results
20 Prince Street, Bowmanville, Ontario
March 8th, 2017

Sample No.: Location	Surface	Mould Spores Detected (Concentration)		Indication of Mould Growth
		Spores Alone	Growth Structures	
T1: Living Room	Plaster Ceiling	<i>Cladosporium</i> (a few spores)	None	No

5.0 CONCLUSIONS & RECOMMENDATIONS

5.1 Visual Assessment

Results of our visual assessment indicated no significant water damage or mould growth with exception to minor water damage to the plaster ceiling within the living room and bathroom which are likely attributed to either a roof leak or a buildup of condensation within the bathroom. Furthermore, minor superficial mould growth was observed to window framing within Rooms #1 and #3 and the kitchen also likely attributed to a buildup of condensation. Minor visible mould growth was observed to the bathroom sink vanity caulking and a sink supporting piece of wood present within the cabinetry. Overall, moisture readings obtained all building materials indicated dry moisture conditions.

Based on the extent of mould growth identified within Rooms #1 and #3, kitchen and the Bathroom, remediation is recommended to be performed following Level 1 mould remediation procedure. Level 1 mould remediation procedures do not require isolation of the area for removal and/or cleaning. However, it is recommended that a polyethylene drop sheet be placed below the area of work to contain dust and debris. Individuals performing the clean-up should consider the use of minimal personal protection such as dust impermeable gloves, a half-face air purifying respirator (N95 minimum) and full body dust-impervious coveralls, as recommended in current mould remediation guidelines.

Individuals who perform mould remediation should be fit to work with potential mould exposure and should be properly trained in the hazards of mould remediation and the proper remediation procedures to be followed. Workers should be familiar with the health hazards posed by mould exposure, personal protection equipment (including proper respirator use and fitting), and remediation, clean up and waste handling and disposal practices.

Remediation within Rooms #1 and #3, kitchen and bathroom is recommended to consist of surface cleaning the window framing and sink vanity caulking and sink framing as indicated in Table III.

Following the completion of bulk removal all remaining surfaces within the remediation areas should be cleaned of visible debris accumulation using HEPA-vacuuuming and damp-wiping techniques. We recommend that a three-stage decontamination process be performed as a minimum, consisting of an initial HEPA-vacuuuming, followed by damp wiping with clean cloths and a mild detergent solution, followed by a second HEPA-vacuuuming.

5.2 Air Sampling for Total Mould Spores

Results of air sampling for total mould spores indicated that the concentration of airborne mould spores detected within main floor and basement were significantly lower as compared to the exterior control sample. In addition, all spore types were detected with a similar rank order indicating a similar biodiversity. Therefore, results of air sampling conducted on March 8th, 2017 do not indicate degraded air quality with respect to airborne mould spores within the main floor and basement of the residence.

5.3 Surface Sampling of Building Materials for the Determination of Mould Growth

A surface sample retrieved from the plaster ceiling exhibiting water damage within the Living Room did not detect the presence of mould growth. Therefore, our recommendation of further investigating the attic space for possible roof leaks is reiterated.

6.0 LIMITATIONS

The investigations, assessments and recommendations detailed in this report were carried out in a manner consistent with the level of care and skill normally exercised by reasonable members of the environmental and industrial hygiene consulting profession currently practicing under similar conditions in the area. There are no other warranties, expressed or implied, that apply to the professional services provided under the terms of our assignment and included in this report.

In preparing this report, Safetech Environmental Limited relied on information supplied by others, including independent testing laboratories. Except as expressly set out in this report, we have not made any independent verification of such information.

The investigation, assessments and recommendations in this report have been made based on conditions observed at the time of the assessment and are limited to the areas investigated. Areas of mould growth may exist in areas not assessed by Safetech Environmental Limited. Mould growth conditions can change with time and



mould growth additional to that noted in this report may occur if water infiltration/humidity conditions persist or reoccur. Unaccounted mould growth may also be present in the areas assessed due to concealed or subsurface conditions that can vary from those encountered (if accessed).

The investigation, assessments and recommendations in this report have been made in the context of existing industry accepted guidelines which were in place at the date of this report. The investigation did not take account of any government regulations not in effect or not generally promulgated at the date of this report.

This report is for the sole use of the person or entity to whom it is addressed. No other person or entity is entitled to use or rely upon this report.

References:

1. American Industrial Hygiene Association: *Report of Microbial Growth Task Force*, ISBN 1-931504-26-1. May 2001.
2. Canadian Construction Association: *Mould Guidelines for the Canadian Construction Industry*, Standard Construction Document CCA 82. March 2004.
3. Environmental Abatement Council of Ontario: *EACO Mould Abatement Guidelines*. April 2010.
4. Health Canada: *Fungal Contamination in Public Buildings: Health Effects and Investigation Methods*, 2004.
5. Institute of Inspection, Cleaning and Restoration Certification: *S500-06, Standard and Reference Guide for Professional Water Damage Restoration*, 3rd Edition.
6. Institute of Inspection, Cleaning and Restoration Certification: *S520, Standard and Reference Guide for Professional Mold Remediation*. August 2008.
7. Manitoba Department of Labour, Workplace Safety and Health Division: *Guidelines for the Investigation, Assessment, & Remediation of Mould in Workplaces*. March 2001.
8. New York City Department of Health & Mental Hygiene, Bureau of Environmental & Occupational Disease Epidemiology: *Guidelines on Assessment and Remediation of Fungi in Indoor Environments*. November, 2008.
9. Ontario Ministry of Labour: *Alert - Mould in Workplace Buildings*, Alert 20/12/00, ISSN 1195-5228. December 2000.
10. United States Environmental Protection Agency: *Mould Remediation in Schools and Commercial Buildings*, EPA 402-K-01-001. March 2001.



APPENDIX I

Site Photographs



P1

Attic: No obvious visible mould growth or water damage was observed to the wooden plank sheathing.



P2

Living Room: Paint cracking observed to the plaster ceiling.



P3

Living Room: Moisture readings obtained from the plaster ceiling indicated dry moisture conditions (<200REL).



P4

Room #3: Moisture readings obtained from building finishes indicated dry moisture conditions (<200REL).



P5

Room #3: Superficial mould growth was identified to the window framing of the south window.



P6

Room #1: Superficial mould growth identified to the window framing.



P7

Room #1: Superficial mould growth identified to the window framing.



P8

Bathroom: Paint delamination was observed to the plaster ceiling.



P9

Bathroom: Minor superficial mould growth was observed to the sink vanity caulking.



P10

Bathroom: Minor visible mould growth was observed to the wood supporting the sink.



P11

Kitchen: Minor water damage was observed to the plaster wall adjacent to the sink.



P12

Kitchen: Superficial mould growth was observed to the window framing.



P13

Basement: No obvious visible mould growth or water damage was observed.



P14

Basement: Moisture readings obtained from the wooden ceiling deck exhibited dry moisture conditions (<15%MC).



APPENDIX II
Laboratory Certificates of Analysis

To:

Natalie Markiewicz
Safetech Environmental Ltd.
3045 Southcreek Road, #14
Mississauga, Ontario
L4X 2X7

EMC LAB REPORT NUMBER: 61399
Job/Project Name: 20 Prince Street, Bowmanville, ON
Job/Project No: **No. of Samples:** 4
Sample Type: Allergenco-D **Date Received:** Mar 8/17
Analysis Method(s): Fungal Spore Counting
Date Analyzed: Mar 13/17 **Date Reported:** Mar 13/17
Analyst: Lalita Sarlashkar, Ph.D., *Microbiologist*
Approved By: Fajun Chen, Ph.D., *Principal Mycologist*

Client's Sample ID	A1			A2			A3			A4					
EMC Lab Sample No.	270872			270873			270874			270875					
Sampling Date	Mar 8/17			Mar 8/17			Mar 8/17			Mar 8/17					
Description/Location	Living room			Room #1			Basement			Exterior control					
Air Volume (m ³)	0.075			0.075			0.075			0.075					
Fungal Spores	raw ct.	%	spores/m ³	raw ct.	%	spores/m ³	raw ct.	%	spores/m ³	raw ct.	%	spores/m ³	raw ct.	%	spores/m ³
<i>Alternaria</i>															
<i>Arthrinium</i>															
Ascospores										18	10	240			
<i>Aspergillus/Penicillium</i> type	4	44	53	12	75	160	2	50	27	5	3	67			
Basidiospores	2	22	27							36	20	480			
<i>Cercospora</i>															
<i>Chaetomium</i>															
<i>Cladosporium</i>	1	11	13	1	6	13	1	25	13	50	28	667			
Colorless	2	22	27	3	19	40	1	25	13	70	39	933			
<i>Drechslera/Bipolaris</i> group															
<i>Epicoccum</i>															
<i>Fusarium</i>															
<i>Oidium</i>															
<i>Pithomyces</i>															
<i>Polythrincium</i>															
Rusts															
Smuts, <i>Periconia</i> , <i>Myxomycetes</i>										2	1	27			
<i>Stachybotrys</i>															
<i>Torula</i>															
<i>Ulocladium</i>															
Unidentified spores															
Number of spores/sample	9			16			4			181					
Fungal fragments (0-3 +)	0+			0+			0+			0+					
Non-fungal material (0-3 +)	2+			2+			1+			2+					
TOTAL SPORES/M³	120			213			53			2,413					

Note:

1. *Aspergillus/Penicillium* type spores may include those of *Acremonium*, *Paecilomyces*, *Trichoderma* and others.
2. A scale of 0 + to 3 + (indicating increasing amount) is used to rate abundance of fungal fragments and non-fungal material, with 3+ indicating the most abundance.
3. The presence of a large amount of dust debris may obscure some spores to be counted. Spore counts from samples with 3 + non-fungal material and/or 3 + fungal material may be treated as under-counts.
4. Unidentified spores are those lacking distinguishable characteristics for correct identification. Colorless are colorless spores lacking distinguishable characteristics.
5. These results are only related to the sample(s) analyzed.

Laboratory Analysis Report

To:

Natalie Markiewicz
 Safetech Environmental Ltd.
 3045 Southcreek Road, #14
 Mississauga, Ontario
 L4X 2X7

EMC LAB REPORT NUMBER: 61400

Job/Project Name: 20 Prince Street, Bowmanville, ON

Job/Project No: **No. of Samples:** 1

Sample Type: Tape Lift **Date Received:** Mar 8/17

Analysis Method(s): Direct Microscopic Examination

Date Analyzed: Mar 13/17 **Date Reported:** Mar 13/17

Analyst: Weizhong Liu, Ph.D., *Mycologist*

Approved By: Fajun Chen, Ph.D., *Principal Mycologist*



Client's Sample ID	Lab Sample No.	Date Sampled	Description/Location	Mould Identified, in Rank Order	Mould Growth
T1	270876	Mar 8/17	Living room, plaster ceiling	<i>Cladosporium</i> (a few spores)	None

Note:

1. Mould growth is subjectively assessed with description terms sparse, moderate and abundant.
2. The presence of spores (lacking other fungal structures associated) is assessed as following: a few spores (< 10 spores average per microscopic field at 400X), some spores (10 - 100 spores average per microscopic field at 400X), many spores (> 100 spores average per microscopic field at 400X).
3. The presence of a few spores generally represents settled spores on the surface of the sample rather than indicating mould growth.
4. The results are only related to the samples analyzed.

Appendix B

**Analytical Laboratory Reports – Asbestos
(GHD 2023)**



EMSL Canada Inc.

22 Antares Drive Suite 102 Ottawa, ON K2E 7Z6
Phone/Fax: (343) 882-6076 / (343) 882-6077
<http://www.EMSL.com> / ottawalab@EMSL.com

EMSL Canada Order 672303045
Customer ID: 55CONE58
Customer PO: 735-005434
Project ID:

Attn: Scott Wallis
GHD Limited
179 Colonnade Road
Suite 400
Nepean, Ontario, ON K2E7J4
Proj: 12618254-50

Phone: (613) 727-0510
Fax: (519) 725-1394
Collected:
Received: 10/04/2023
Analyzed: 10/12/2023

Summary Test Report for Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05

Client Sample ID: 1-A **Lab Sample ID:** 672303045-0001
Sample Description: N-caulking-soft, grey

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/11/2023	Gray	0.0%	100.0%	None Detected	

Client Sample ID: 1-C **Lab Sample ID:** 672303045-0002
Sample Description: N-caulking-soft, grey

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/11/2023	Gray	0.0%	100.0%	None Detected	

Client Sample ID: 1-D **Lab Sample ID:** 672303045-0003
Sample Description: N-caulking-soft, grey

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/12/2023	Gray	0.0%	100.0%	None Detected	

Client Sample ID: 2-A **Lab Sample ID:** 672303045-0004
Sample Description: N-caulking-hard, grey

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/11/2023	Gray	0.0%	98.0%	2% Chrysotile	

Client Sample ID: 2-B **Lab Sample ID:** 672303045-0005
Sample Description: N-caulking-hard, grey

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/11/2023					Positive Stop (Not Analyzed)

Client Sample ID: 2-C **Lab Sample ID:** 672303045-0006
Sample Description: N-caulking-hard, grey

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/11/2023					Positive Stop (Not Analyzed)

Client Sample ID: 3-A **Lab Sample ID:** 672303045-0007
Sample Description: N-caulking-hard, brown

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/11/2023	Brown	0.0%	98.0%	2% Chrysotile	



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<http://www.EMSL.com> / ottawalab@EMSL.com

EMSL Canada Order 672303045
Customer ID: 55CONE58
Customer PO: 735-005434
Project ID:

Summary Test Report for Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05

Client Sample ID: 3-B

Lab Sample ID: 672303045-0008

Sample Description: N-caulking-hard, brown

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/11/2023					Positive Stop (Not Analyzed)

Client Sample ID: 3-C

Lab Sample ID: 672303045-0009

Sample Description: N-caulking-hard, brown

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/11/2023					Positive Stop (Not Analyzed)

Client Sample ID: 4-A

Lab Sample ID: 672303045-0010

Sample Description: N-caulking-hard, black

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/11/2023	Black	0.0%	97.0%	3% Chrysotile	

Client Sample ID: 4-B

Lab Sample ID: 672303045-0011

Sample Description: N-caulking-hard, black

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/11/2023					Positive Stop (Not Analyzed)

Client Sample ID: 4-C

Lab Sample ID: 672303045-0012

Sample Description: N-caulking-hard, black

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/11/2023					Positive Stop (Not Analyzed)

Client Sample ID: 5-A

Lab Sample ID: 672303045-0013

Sample Description: N-caulking-soft, white

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/11/2023	White	0.0%	100.0%	None Detected	

Client Sample ID: 5-B

Lab Sample ID: 672303045-0014

Sample Description: N-caulking-soft, white

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/11/2023	White	0.0%	100.0%	None Detected	

Client Sample ID: 5-C

Lab Sample ID: 672303045-0015

Sample Description: N-caulking-soft, white

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/12/2023	White	0.0%	100.0%	None Detected	



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EMSL Canada Order 672303045
Customer ID: 55CONE58
Customer PO: 735-005434
Project ID:

Summary Test Report for Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05

Client Sample ID: 6-A

Lab Sample ID: 672303045-0016

Sample Description: N-window putty

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/11/2023	Gray	0.0%	98.0%	2% Chrysotile	

Client Sample ID: 6-B

Lab Sample ID: 672303045-0017

Sample Description: N-window putty

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/11/2023					Positive Stop (Not Analyzed)

Client Sample ID: 6-C

Lab Sample ID: 672303045-0018

Sample Description: N-window putty

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/11/2023					Positive Stop (Not Analyzed)

Client Sample ID: 7-A

Lab Sample ID: 672303045-0019

Sample Description: N-caulking-hard, white

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/11/2023	White	0.0%	98.0%	2% Chrysotile	

Client Sample ID: 7-B

Lab Sample ID: 672303045-0020

Sample Description: N-caulking-hard, white

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/11/2023					Positive Stop (Not Analyzed)

Client Sample ID: 7-C

Lab Sample ID: 672303045-0021

Sample Description: N-caulking-hard, white

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/11/2023					Positive Stop (Not Analyzed)

Client Sample ID: 10-A

Lab Sample ID: 672303045-0022

Sample Description: S-caulking-brown, hard

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/11/2023	Brown	0.0%	98.0%	2% Chrysotile	

Client Sample ID: 10-B

Lab Sample ID: 672303045-0023

Sample Description: S-caulking-brown, hard

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/11/2023					Positive Stop (Not Analyzed)



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EMSL Canada Order 672303045
 Customer ID: 55CONE58
 Customer PO: 735-005434
 Project ID:

Summary Test Report for Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05

Client Sample ID: 10-C

Lab Sample ID: 672303045-0024

Sample Description: S-caulking-brown, hard

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/11/2023					Positive Stop (Not Analyzed)

Client Sample ID: 11-A

Lab Sample ID: 672303045-0025

Sample Description: S-caulking-white, soft

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/11/2023	White	0.0%	100.0%	None Detected	

Client Sample ID: 11-B

Lab Sample ID: 672303045-0026

Sample Description: S-caulking-white, soft

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/11/2023	White	0.0%	100.0%	None Detected	

Client Sample ID: 11-C-Caulking 1

Lab Sample ID: 672303045-0027

Sample Description: S-caulking-white, soft

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/12/2023	White	0.0%	100.0%	None Detected	

Client Sample ID: 11-C-Caulking 2

Lab Sample ID: 672303045-0027A

Sample Description: S-caulking-white, soft

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/12/2023	Gray	5.0%	94.0%	1% Chrysotile	

Client Sample ID: 12-A

Lab Sample ID: 672303045-0028

Sample Description: S-caulking-white, hard

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/11/2023	White	5.0%	93.0%	2% Chrysotile	

Client Sample ID: 12-B

Lab Sample ID: 672303045-0029

Sample Description: S-caulking-white, hard

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/11/2023					Positive Stop (Not Analyzed)

Client Sample ID: 12-C

Lab Sample ID: 672303045-0030

Sample Description: S-caulking-white, hard

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/11/2023					Positive Stop (Not Analyzed)



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EMSL Canada Order 672303045
 Customer ID: 55CONE58
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 Project ID:

Summary Test Report for Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05

Client Sample ID: 13-A

Lab Sample ID: 672303045-0031

Sample Description: S-caulking-brown, soft

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/11/2023	Brown	0.0%	100.0%	None Detected	

Client Sample ID: 13-B

Lab Sample ID: 672303045-0032

Sample Description: S-caulking-brown, soft

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/11/2023	Brown	5.0%	95.0%	None Detected	

Client Sample ID: 13-C

Lab Sample ID: 672303045-0033

Sample Description: S-caulking-brown, soft

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/12/2023	Brown	0.0%	100.0%	None Detected	

Client Sample ID: 18-1-A

Lab Sample ID: 672303045-0034

Sample Description: 18-caulking, rigid, white

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/11/2023	White	0.0%	100.0%	None Detected	

Client Sample ID: 18-1-B-Caulking

Lab Sample ID: 672303045-0035

Sample Description: 18-caulking, rigid, white

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/11/2023	White	0.0%	100.0%	None Detected	

Client Sample ID: 18-1-B-Tar

Lab Sample ID: 672303045-0035A

Sample Description: 18-caulking, rigid, white

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/11/2023	Black	0.0%	95.0%	5% Chrysotile	

Client Sample ID: 18-1-C

Lab Sample ID: 672303045-0036

Sample Description: 18-caulking, rigid, white

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/11/2023				Positive Stop (Not Analyzed)	

Client Sample ID: 18-2-A

Lab Sample ID: 672303045-0037

Sample Description: 18-window putty

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/11/2023	Tan	0.0%	100.0%	None Detected	



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Summary Test Report for Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05

Client Sample ID: 18-2-B

Lab Sample ID: 672303045-0038

Sample Description: 18-window putty

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/11/2023	Tan	0.0%	100.0%	None Detected	

Client Sample ID: 18-2-C

Lab Sample ID: 672303045-0039

Sample Description: 18-window putty

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/12/2023	Tan	0.0%	100.0%	None Detected	

Client Sample ID: 20-1-A

Lab Sample ID: 672303045-0040

Sample Description: 20-caulking-rigid, white

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/11/2023	White	2.0%	98.0%	None Detected	

Client Sample ID: 20-1-B

Lab Sample ID: 672303045-0041

Sample Description: 20-caulking-rigid, white

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/11/2023	White	2.0%	98.0%	None Detected	

Client Sample ID: 20-1-C

Lab Sample ID: 672303045-0042

Sample Description: 20-caulking-rigid, white

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/12/2023	White	2.0%	98.0%	None Detected	

Client Sample ID: 20-2-A

Lab Sample ID: 672303045-0043

Sample Description: 20-window putty

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/11/2023	Gray	0.0%	98.0%	2% Chrysotile	

Client Sample ID: 20-2-B

Lab Sample ID: 672303045-0044

Sample Description: 20-window putty

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/11/2023				Positive Stop (Not Analyzed)	

Client Sample ID: 20-2-C

Lab Sample ID: 672303045-0045

Sample Description: 20-window putty

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/11/2023				Positive Stop (Not Analyzed)	



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EMSL Canada Order 672303045
Customer ID: 55CONE58
Customer PO: 735-005434
Project ID:

Summary Test Report for Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05

Client Sample ID: 22-1-A

Lab Sample ID: 672303045-0046

Sample Description: 22-caulking-rigid, white

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/11/2023	White	2.0%	98.0%	None Detected	

Client Sample ID: 22-1-B

Lab Sample ID: 672303045-0047

Sample Description: 22-caulking-rigid, white

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/11/2023	White	2.0%	98.0%	None Detected	

Client Sample ID: 22-1-C

Lab Sample ID: 672303045-0048

Sample Description: 22-caulking-rigid, white

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/12/2023	White	3.0%	97.0%	None Detected	

Client Sample ID: 22-2-A

Lab Sample ID: 672303045-0049

Sample Description: 22-window putty

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/11/2023	Black	2.0%	98.0%	None Detected	

Client Sample ID: 22-2-B

Lab Sample ID: 672303045-0050

Sample Description: 22-window putty

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/11/2023	Black	2.0%	98.0%	None Detected	

Client Sample ID: 22-2-C

Lab Sample ID: 672303045-0051

Sample Description: 22-window putty

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/12/2023	Black	2.0%	98.0%	None Detected	



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EMSL Canada Order 672303045
Customer ID: 55CONE58
Customer PO: 735-005434
Project ID:

Summary Test Report for Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05

Analyst(s):

Shawn Ryan PLM (27)
Simon Parent PLM (9)

Reviewed and approved by:

Ewa Krupinska, Laboratory Manager
or Other Approved Signatory

None Detected = <0.1%. EMSL maintains liability limited to cost of analysis. Interpretation and use of test results are the responsibility of the client. This is a summary report; official reports are available on LabConnect or upon request and relates only to the samples reported above, and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. The report reflects the samples as received. Results are generated from the field sampling data (sampling volumes and areas, locations, etc.) provided by the client on the Chain of Custody. Samples are within quality control criteria and met method specifications unless otherwise noted. The above analyses were performed in general compliance with Appendix E to Subpart E of 40 CFR (previously EPA 600/M4-82-020 "Interim Method") but augmented with procedures outlined in the 1993 ("final") version of the method. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the federal government. Non-friable organically bound materials present a problem matrix and therefore EMSL recommends gravimetric reduction prior to analysis. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample. Estimation of uncertainty is available on request.

Samples analyzed by EMSL Canada Inc. Ottawa, ON NVLAP Lab Code 201040-0

Initial report from: 10/12/2023 10:33:18

**EMSL Canada Inc.**

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EMSL Canada Or 552315820
CustomerID: 55GEOL85
CustomerPO: 735-008344
ProjectID:

Attn: **Craig Duffield**
GHD Limited
347 Pido Road
Unit 29
Peterborough, ON K9J 6X7

Phone: (705) 749-3317
Fax: (705) 749-9248
Received: 10/13/2023 03:04 PM
Analysis Date: 10/23/2023
Collected: 10/6/2023

Project: **12618254-50**

Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763
Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light
Microscopy with Milling and Gravimetric Reduction. Quantitation with 400 Point Count
Procedure.

SAMPLE ID	DESCRIPTION	APPEARANCE	Matrix		NON- ASBESTOS % Fibrous	NON- ASBESTOS % NON-FIBROUS	ASBESTOS % TYPES
			(%) Organic	(%) Acid			
MW-B-23 552315820-0001	6" Asphalt Core	Black Non-Fibrous Homogeneous	4.2	0.0		95.8 Non-fibrous (other)	None Detected
MW09-23 552315820-0002	6" Asphalt Core	Black Non-Fibrous Homogeneous	5.8	0.0		94.2 Non-fibrous (other)	None Detected
BH18-23T 552315820-0003	6" Asphalt Core (Top layer)	Black Non-Fibrous Homogeneous	5.9	0.0		94.1 Non-fibrous (other)	None Detected
BH18-23B 552315820-0004	6" Asphalt Core (Bottom layer)	Black Non-Fibrous Homogeneous	5.4	0.0		94.6 Non-fibrous (other)	None Detected
BH30-23 552315820-0005	6" Asphalt Core	Black Non-Fibrous Homogeneous	5.1	0.0		94.9 Non-fibrous (other)	None Detected
BH06-23 552315820-0006	6" Asphalt Core	Black Non-Fibrous Homogeneous	5.1	0.0		94.9 Non-fibrous (other)	None Detected
MW25-23 552315820-0007	6" Asphalt Core	Black Non-Fibrous Homogeneous	5.0	0.0		95.0 Non-fibrous (other)	None Detected

Analyst(s)

Diana Costantino (3)

Kira Ramphal (6)

Matthew Davis or other approved signatory
or other approved signatory

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Samples analyzed by EMSL Canada Inc. Mississauga, ON NVLAP Lab Code 200877-0

Initial report from 10/23/2023 16:00:17

**EMSL Canada Inc.**

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CustomerID: 55GEOL85
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ProjectID:

Attn: **Craig Duffield**
GHD Limited
347 Pido Road
Unit 29
Peterborough, ON K9J 6X7

Phone: (705) 749-3317
Fax: (705) 749-9248
Received: 10/13/2023 03:04 PM
Analysis Date: 10/23/2023
Collected: 10/6/2023

Project: 12618254-50

Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763
Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light
Microscopy with Milling and Gravimetric Reduction. Quantitation with 400 Point Count
Procedure.

SAMPLE ID	DESCRIPTION	APPEARANCE	(% Matrix Organic Acid)		NON- ASBESTOS % Fibrous	NON- ASBESTOS % NON-FIBROUS	ASBESTOS % TYPES
MW02-23 552315820-0008	6" Asphalt Core	Black Non-Fibrous Homogeneous	6.8	0.0		93.2 Non-fibrous (other)	None Detected
BH20-23 552315820-0009	6" Asphalt Core	Black Non-Fibrous Homogeneous	5.1	0.0		94.9 Non-fibrous (other)	None Detected

Analyst(s)

Diana Costantino (3)

Kira Ramphal (6)

Matthew Davis or other approved signatory
or other approved signatory

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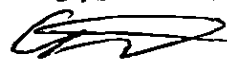
Initial report from 10/23/2023 16:00:17

Asbestos Bulk Building Material Chain of Custody

EMSL Order Number (lab use only).

EMSL ANALYTICAL INC.
LABORATORY PRODUCTS TRAINING

552315820

Company Name: GHD Ltd 735		EMSL Customer ID:	
Street: 347 Pido Rd		City: Peterborough	State or Province: ON
Zip/Postal Code: K9T 6X7	Country: Canada	Telephone #: 613-328-9733	Fax #:
Report To (Name): Craig Duffield @ GHD.com		Please Provide Results via: <input type="checkbox"/> Fax <input checked="" type="checkbox"/> Email	
email Address:		Purchase Order Number: 735-00543	
Client Project ID: 12618254-50		EMSL Project ID (internal use only):	
State or Province Collected: Ontario		CT only <input type="checkbox"/> Commercial/Taxable <input type="checkbox"/> Residential/Tax Exempt	
EMSL-Bill to: <input type="checkbox"/> Same <input type="checkbox"/> Different - If different note instructions in comment: Third party billing requires written authorization from third party			
Turnaround Time (TAT) Options Please Check			
<input type="checkbox"/> 3 Hour	<input type="checkbox"/> 6 Hour	<input type="checkbox"/> 24 Hour	<input type="checkbox"/> 32 Hour* <input type="checkbox"/> 48 Hour <input type="checkbox"/> 72 Hour <input type="checkbox"/> 96 Hour <input checked="" type="checkbox"/> 1 Week <input type="checkbox"/> 2 Week
32 Hour TAT available for select tests only. Samples must be submitted by 11:30am. Please call ahead for large projects and/or turnaround times 6 hours or less.			
PLM - Bulk (reporting limit)		TEM - Bulk	
<input checked="" type="checkbox"/> PLM EPA 600/R-93/115 (<1%)		<input type="checkbox"/> TEM EPA NOB - EPA 600/R-93/116 Section 2.5.5.1	
<input type="checkbox"/> PLM EPA NOB (<1%)		<input type="checkbox"/> NY ELAP Method 198.4 non-friable - NY	
Point Count <input checked="" type="checkbox"/> 400 (<0.25%) <input type="checkbox"/> 1000 (<0.1%)		<input type="checkbox"/> Chatfield Protocol (semi-quantitative)	
Point Count w/Gravimetric <input type="checkbox"/> 400 (<0.25%) <input type="checkbox"/> 1000 (<0.1%)		<input type="checkbox"/> TEM % by Mass - EPA 600/R-93/116 Section 2.5.5.2	
<input type="checkbox"/> NIOSH 9002 (<1%)		<input type="checkbox"/> TEM Qualitative via Filtration Prep Technique	
<input type="checkbox"/> NY ELAP Method 198.1- friable - NY		<input type="checkbox"/> TEM Qualitative via Drop Mount Prep Technique	
<input type="checkbox"/> NY ELAP Method 198.6 NOB- non-friable - NY		Other tests (please specify)	
<input type="checkbox"/> NY ELAP Method 198.8- Vermiculite Surfacing Material			
<input type="checkbox"/> OSHA ID-191 Modified			
<input type="checkbox"/> EMSL Standard Addition Method			
<input type="checkbox"/> Positive Stop - Clearly Identify Homogenous Areas (HA)		Date Sampled: Oct 6, 2023	
Sampler's Name: Craig Aytheart		Sampler's Signature: 	
Sample #	HA #	Sample Location	Material Description
BH MW-13-23	<input checked="" type="checkbox"/>	10/06/23 0900	6" Asphalt Core
MV 09-23	<input checked="" type="checkbox"/>	10/06/23 0930	6" Asphalt Core
BH 18-23T	<input checked="" type="checkbox"/>	10/06/23 1015	6" Asphalt Core (Top Layer)
BH 18-23B	<input checked="" type="checkbox"/>	10/06/23 1015	6" Asphalt Core (Bottom Layer)
BH 30-23	<input checked="" type="checkbox"/>	10/06/23 1045	6" Asphalt Core
BH 06-23	<input checked="" type="checkbox"/>	10/06/23 1130	6" Asphalt Core
Client Sample # (s):		Total # of Samples: 89	
Relinquished by (Client):		Date: 10/13/22	Time: 11:23 AM WTI
Received by (Lab): Lab 59/601		Date: 10/13/23	Time: 3:04 PM WTI
Comments/Special Instructions:			


Page 1 of _____

Controlled Document - 550-01 Asbestos Bulk - R4 - 09/10/2019

EMSL Analytical Inc.'s (DBA: LA Testing) Laboratory Terms and Conditions are incorporated into this chain of custody by reference in their entirety. Submission of samples to EMSL Analytical Inc. constitutes acceptance and acknowledgment of all terms and conditions.

EMSL ANALYTICAL, INC.
LABORATORY PRODUCTS TRAINING**Chain of Custody**
EMSL Order Number (Lab Use Only):EMSL ANALYTICAL, INC.
200 ROUTE 130 NORTH
CINNAMINSON, NJ 08077
PHONE: (800) 220-3675
FAX: (856) 786-5974

Analysis Completed In Accordance with EMSL's Terms and Conditions located in the Analytical Price Guide

Sample #	Sample Description	Volume/Area (Air) HA # (Bulk)	Date/Time Sampled
MW25-23	6" Asphalt Core	✓	10/06/23 1150
MW02-23	6" Asphalt Core	✓	10/06/23 1320
BH20-23	6" Asphalt Core	✓	10/06/23 1350
*Comments/Special Instructions:			
			

Analysis Completed In Accordance with EMSL's Terms and Conditions located in the Analytical Price Guide



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