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Canada

Travaux publics et
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Canada

Health Canada Laboratory

2301 Midland Avenue

PWGSC Engineering Asset Properties

PWGSC Project R.054345.001

121-25112-00



DESIGNATED SUBSTANCES AND HAZARDOUS MATERIALS SURVEY REPORT

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PWGSC Project R.054345.001
GENIVAR Project 121-25112-00

December 18, 2012

Ms. Maegan Harrison
Senior Environmental Specialist
Public Works & Government Services Canada
4900 Yonge Street, 11th Floor
Toronto, Ontario M2N 6A6

Re: Report for the Designated Substances and Hazardous Materials Survey (DSHMS) Health Canada Laboratory Rooms 115, 165 and 225 located at 2301 Midland Avenue in Toronto, ON.

Dear Ms. Harrison:

This report documents relevant background information, methodologies utilized, work undertaken and the findings of the Designated Substances and Hazardous Materials Survey (DSHMS) of the Health Canada Laboratory Rooms 115, 165 & 225 located at 2301 Midland Ave. in Toronto, ON, as conducted by GENIVAR on November 20th, 2012.

Please do not hesitate to contact the undersigned if you have any questions.

Yours truly,

GENIVAR Inc.



Hassan Ktaech, B.A. Hon.
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[Designated Substances and Hazardous Materials Survey Report for Health Canada Laboratory, Toronto, ON]

Executive Summary

GENIVAR Inc. (GENIVAR) was retained by Public Works and Government Services Canada (PWGSC) on behalf of Health Canada (HC) to conduct a Designated Substances and Hazardous Materials Survey (DSHMS) in support of planned upgrades in laboratory Rooms 115, 165 & 225 (“ the subject areas”) of the Health Canada Laboratory (“subject building”) located at 2301 Midland Avenue, in Toronto, Ontario.

The objectives of this survey were as follows;

- 1) To identify designated substances and/or hazardous materials that may be present in the subject areas;
- 2) To prepare a report documenting the identities, usages locations and quantities of any designated substances and hazardous materials identified within the subject areas and;
- 3) To provide PWGSC and HC with recommendations for the management of these materials in support of planned upgrades.

The primary findings of this survey are summarized below:

Designated Substance/ Hazardous Material	Survey Findings
Asbestos	The following asbestos-containing materials were identified within the subject areas: <ul style="list-style-type: none"> • <i>Drywall Joint Compound</i> • <i>Plaster</i> • <i>Transite Fumehood Panels (Presumed)</i> • <i>Transite Piping (Presumed)</i> • <i>Fire Doors (Presumed)</i>
Lead	The following lead-containing paints were identified within the subject areas: <ul style="list-style-type: none"> • <i>White Wall Paint</i> • <i>Blue Door Frame Paint</i> • <i>Yellow Door Frame Paint</i> • <i>Grey Floor Paint</i>
Silica	Building/construction materials known to contain silica such as glass, concrete, masonry, stone and mortar were observed within the subject areas.
Mercury	Mercury vapour is presumed to be present within fluorescent light tubes identified within the subject areas.

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1. Introduction

1.1 Site Description

GENIVAR Inc. (GENIVAR) was retained by Public Works and Government Services Canada (PWGSC) on behalf of Health Canada (HC) to conduct a Designated Substances and Hazardous Materials Survey (DSHMS) in support of planned upgrades in laboratory Rooms 115, 165 & 225 (“the subject areas”) of the Health Canada Laboratory (“subject building”) located at 2301 Midland Avenue, in Toronto, Ontario.

The subject building was reportedly constructed in the early 1970s (with annex/addition in 1989), is approximately 10,000 sq.m. in size and consists of three main floors, two annex floors and a basement level. The subject areas considered in this report are undergoing renovations which will include the complete demolition of all interior structures.

The DSHMS was authorized by PWGSC’s Environmental Services Project Manager on October 31st, 2012. The field survey was undertaken by Hassan Ktaech and Stephen Heikkila of GENIVAR on November 20th, 2012.

1.2 Survey Objectives

A DSHMS was conducted to identify the designated substances and hazardous materials, including (but not limited to) asbestos, lead, mercury and silica present in the subject areas. GENIVAR inspected the all the accessible areas and building spaces in the subject areas. Where necessary, representative samples of suspect asbestos-containing materials (ACMs) and lead containing paint were collected in accordance with applicable and current provincial regulations when deemed necessary.

This report has been prepared to document the identities, usages locations and quantities of designated substances and hazardous materials identified within the subject areas, and to provide PWGSC and HC with recommendations for the management of these materials in support of the planned upgrades.

1.3 Scope of Work

The areas and components inspected as part of this project were in accordance with those specified in the Statement of Work (PWGSC Project R.054345.001) for the project issued November 2012.

A thorough intrusive, but not destructive, survey was undertaken of the following:

- All accessible areas and building spaces within the specified areas
- Building construction materials within the specified areas;
- Components, fixtures, and fixed equipment/furniture within the specified areas;

The DSHMS consisted of the following tasks:

- A review of building plans and available environmental reports;
- A systematic (room-by-room) survey of the subject areas;
- Sampling of suspect materials (where necessary);
- Submission of samples to an accredited independent laboratory for analysis;
- Preparation of this report detailing observations from the site visit as well as recommendations regarding the recommended procedures for abatement of these materials.

1.4 Regulatory Context

Section 30 of the *Occupational Health and Safety Act* (the Act) stipulates that prior to the commencement of a project a list shall be prepared of all designated substances that are present at the project site (i.e. a designated substances survey). In accordance with the Act, the locations of designated substances must be identified in writing to all prospective constructors, contractors and sub-contractors who may work, disturb or come into contact with this type of material, at the same time as, or prior to, project tendering.

The term “designated substance” refers to the eleven chemical or physical agents specifically identified within the Act. Each of these substances is governed by its own respective regulation that defines the minimum health and safety requirements for assuring safe worker-substance interaction as well as the obligations of employers and workers in workplaces containing said substances. These regulations further stipulate the maximum concentrations of the respective substance to which a worker may be exposed, according to short-term exposure values and time-weighted average exposure values. Table 1 lists the eleven chemical/physical agents identified in the act as well as their respective regulations and corresponding amendments.

Table 1 Ontario Occupational Health & Safety Regulations for Designated Substances

Designated Substance	Applicable Regulation	Most Recent Amendment
Acrylonitrile	O. Reg. 490/09	O. Reg. 148/12
Arsenic	O. Reg. 490/09	O. Reg. 148/12
Asbestos	O. Reg. 490/09	O. Reg. 148/12
Asbestos (on Construction Projects and in Buildings and Repair Operations)	O. Reg. 278/05	O. Reg. 479/10
Benzene	O. Reg. 490/09	O. Reg. 148/12
Coke Oven Emissions	O. Reg. 490/09	O. Reg. 148/12
Ethylene Oxide	O. Reg. 490/09	O. Reg. 148/12
Isocyanates	O. Reg. 490/09	O. Reg. 148/12
Lead	O. Reg. 490/09	O. Reg. 148/12
Mercury	O. Reg. 490/09	O. Reg. 148/12
Silica	O. Reg. 490/09	O. Reg. 148/12
Vinyl Chloride	O. Reg. 490/09	O. Reg. 148/12

1.5 Additional Regulatory Requirements for Asbestos

Among the designated substances, asbestos is unique in that it is governed by two regulations under the Act - one for the general mining and processing operations of asbestos and one for asbestos on construction projects and in buildings and repair operations.

Ontario Regulation 278/05, made under the Act, entitled “Designated Substance – Asbestos on Construction Projects and in Buildings and Repair Operations” came into effect on November 1st, 2005,

with some sections contained therein becoming effective on November 1st, 2007. This regulation revoked and replaced the previous asbestos regulation, *O.Reg. 838/90*.

O.Reg. 278/05 introduces significant changes to how asbestos management is regulated in Ontario. Many of the regulatory changes adopted by *O. Reg. 278/05* were already in wide-use in industry as part of best management practices. Noteworthy regulatory changes include modifications to asbestos survey requirements, the management of asbestos on-site, abatement operations and procedures (i.e. Type 1, 2 and 3), the use of personal protective equipment (PPE) and air monitoring requirements.

1.6 Additional Regulatory Requirements for Lead

In April 2005, the federal *Surface Coating Materials Regulation (SOR/2005-109)* limited the allowable concentration of total lead present in a surface coating material (with some exceptions) to 600 mg/kg (600 ppm).

In December 2010, the Federal Government lowered the total lead limit in surface coating materials from 600 mg/kg to 90 mg/kg under subsections 4(1) and 5(1) and section 8 of the *Surface Coatings Materials Regulations (SOR/2005-109)*. The lowering of this limit aligns Canada with the United States in respect of total lead levels in surface coating materials and certain products with surface coating materials applied to them.

Therefore, using this revised threshold limit, those surface coating materials with lead concentrations that exceed 90 ppm (0.009% by weight) are considered to be lead-based.

1.7 Additional Regulatory Requirements for Waste Management

The disposal of designated substances is regulated under the Ontario *Environmental Protection Act* (the EPA), specifically *O. Reg. 347 – General – Waste Management* (most recently amended by *O. Reg. 395/07*). The regulation details the minimum requirements for the appropriate transport and disposal of wastes.

In addition to the EPA waste management requirements, the *Canada Wide Standards on Fluorescent Lamps Containing Mercury* requires that quantities of fluorescent light tubes destined for waste in excess of 25 tubes are to be considered hazardous waste and thus must be disposed of in a manner that is compliant with *O.Reg. 347*.

2. Methodology

2.1 General DSHMS Survey Methodology

GENIVAR's DSHMS sought to identify those substances defined as designated substances under the *Ontario Occupational Health and Safety Act* including: asbestos (friable and non-friable), lead, mercury, silica, benzene, acrylonitrile, arsenic, coke oven emissions, ethylene oxide, isocyanates, and vinyl chloride.

In addition to the Designated Substances, other Hazardous Materials were also included in the survey scope, however, it should be noted that Polychlorinated Biphenyls (PCB's) and Ozone Depleting Substances (ODS) were not included in the survey scope as the Health Canada confirmed that neither of these substances are present in the subject areas.

The surveyor performed a systematic survey of the building for the purposes of identifying observable designated substances and hazardous materials and documenting observations made about their locations, estimated quantities and respective conditions. These observations form the basis of management considerations and remedial actions provided in Section 4 of this report.

Bulk samples were collected from suspect building materials (materials known as having the potential to be asbestos-containing) for analysis of their asbestos content. Paint chip samples were also collected from paint applications for analysis of their lead content. Survey procedures specific to asbestos-containing materials and lead are documented in Sections 2.2 and 2.3 of this report, respectively.

2.2 Asbestos Survey Methodology

The surveyor inspected the subject building for the presence of friable and non-friable asbestos-containing materials (ACM). Examples of ACM commonly found in buildings include:

- Sprayed insulation;
- Acoustic/texture plaster;
- Drywall joint compound
- Mechanical insulation;
- Asbestos cement;
- Piping;
- Acoustic ceiling tiles;
- Vinyl floor tiles and vinyl sheet flooring; and,
- Plaster.

The above materials were not necessarily observed during this survey.

Bulk samples were collected from suspect materials and analyzed to confirm the presence/absence of asbestos. The collection of bulk material samples was performed according to the procedures documented in the Ontario Ministry of Labour's (MOL) publication *Designated Substances in the Workplace: A Guide to the Asbestos Regulation for Construction Projects, Buildings and Repair Operations*.

O.Reg. 278/05 stipulates the minimum number of samples that must have asbestos concentrations less than 0.5% in order for an area of homogenous material to be not considered asbestos-containing. 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 O.Reg. 278/05 sampling requirements are summarized in greater detail in Table 2, below.

In addition, the minimum number of bulk samples collected followed PWGSC's *Departmental Policy 057 – Asbestos Management*.

Table 2 Minimum Number of Bulk Samples to be Collected Under O. Reg. 278/05 According to Material Area, Application and Friability

Type of Material	Size of Homogenous Material	Minimum Number of Bulk Samples
Surfacing material, including without limitation material that is applied to surfaces by spraying, by trowelling or otherwise, such as acoustical plaster on ceilings, fireproofing materials on structural members and plaster	Less than 90 m ²	3
	90m ² or more, but less than 450m ²	5
	450m ² or more	7
Thermal insulation, except as described below	Any size	3
Thermal insulation patch	Less than 2m or 0.5m ²	1

Table 2 Minimum Number of Bulk Samples to be Collected Under O. Reg. 278/05 According to Material Area, Application and Friability

Type of Material	Size of Homogenous Material	Minimum Number of Bulk Samples
Other material	Any size	3

Samples were collected from discrete locations with every attempt to minimize damage. All sample locations were left in a safe condition. The following procedures for collection of samples were followed:

- The surface of the material was wetted with amended water using a spray bottle. In situations where the material could not be wetted, a plastic bag or other containment device was placed around the sampling device.
- A sample was obtained by one of two methods;
 - 1) A sampling device was slowly pushed into the material with a twisting motion until the entire thickness was penetrated, followed by extraction of the sampling device, or;
 - 2) A knife was cleaned and then used to excise a piece of the material.
- Each sample was placed in a clear bag with a tight closure, labelled appropriately and placed in a second, similar bag.
- Debris was cleaned with wet paper towels and discarded into a plastic bag.
- Damage to the material sampled was repaired with duct tape and/or filler material as needed.

Bulk samples from suspect building/construction materials were collected and submitted to IATL Laboratories of Mount Laurel, New Jersey, for analysis using Polarized Light Microscopy (PLM) following the U.S. EPA/600/R-93/116 Method.

Vinyl floor tiles were analyzed using transmission electron microscopy (TEM) following the NIOSH 7402 method of analysis. IATL is certified under the National Voluntary Laboratory Accreditation Program (NVLAP) to perform asbestos analysis of bulk samples.

2.3 Lead Survey Methodology

Bulk paint samples (paint chip) from distinct colours observed within the facility were collected during the survey and submitted for analysis of lead content. Samples were collected with the aid of a thin-bladed knife, which was cleaned prior to each sampling event. The site surveyor selected sample locations where it appeared that the paint application was most representative of all areas on which it was applied. Each paint chip sample was placed in a clear bag with a tight closure, labelled appropriately and placed in a second, similar bag. The sample locations are identified on the Figures provided in **Appendix A** of this report. A chain of custody form was completed for all samples collected on-site and accompanied the samples during shipment to an independent laboratory for analysis.

To determine their lead content, samples were submitted to IATL Laboratories of Mount Laurel, New Jersey and analyzed using Atomic Absorption Spectroscopy (AAS).

A summary of the bulk paint samples collected, including a sample description, sampling location, type of analysis, and laboratory test results is provided in Table 6. Samples locations are identified on the Figures, provided in **Appendix A** of this report.

3. Observations and Results

The designated substances and hazardous materials identified by this survey are detailed below. Drawings/Figures of the surveyed areas including the locations of any identified asbestos-containing materials, designated substances and hazardous materials can be found in **Appendix A**. Laboratory Certificates of Analysis are provided in **Appendix B** of this report. Relevant site photographs taken during the survey are presented in **Appendix C** of this report. Supplemental Information which includes past environmental survey reports of the subject building, and manufacturer's data of suspect components/fixtures/equipment is included in **Appendix D**.

3.1 Asbestos

3.1.1 Drywall Joint Compound

Gypsum board with drywall joint compound finishing application was observed mainly on the walls of Rooms 115, 165 and 225 (a small section of drywall ceiling was also observed). Samples of drywall joint compound were collected by Advanced Environmental Corp. (AEC) in a past survey of the subject building, from various ceilings and walls within the subject building (Sample Set V05) and analyzed for asbestos content. The drywall joint compound sampled by AEC was identified to contain up to 1% *Chrysotile* asbestos. Based on AEC's report the drywall within the subject areas was confirmed to be asbestos-containing, thus not sampled during this survey. The drywall was observed to be in good condition.

3.1.2 Plaster

Interior plaster (thin white finish layer on grey base layer) was observed on section of ceiling near the centre of Room 225. Samples of plaster were collected by Advanced Environmental Corp. (AEC) in a past survey of the subject building, from various ceilings and walls within the subject building (Sample Set V05) and analyzed for asbestos content. The plaster sampled by AEC was identified to contain up to 3% *Chrysotile* asbestos. Based on AEC's report the plaster within Room 225 was confirmed to be asbestos-containing, thus not sampled during this survey. The plaster was observed to be in good condition.

3.1.3 Transite Fumehood Panels (*Presumed*)

Fifteen (15) fume hoods with interior liners suspected of being asbestos-containing cement (Transite) were observed in the laboratories. Historically, these types of panels are known to be asbestos-containing. A representative from the fume hood manufacturer (Kewaunee Scientific Corporation) was contacted, and it was confirmed by the manufacturer that asbestos-containing panels were used in the manufacture of these early Kewaunee fume hood models. See **Appendix D** – Supplemental Information for information gathered from the fumehood manufacturer.

3.1.4 Transite Cement Piping (*Presumed*)

Asbestos Cement (Transite) Pipes were observed in the ceiling space above numerous fume hoods in the subject areas and in the service core area connecting Rooms 115 and 165. This material was visually confirmed to be asbestos-containing. The Transite pipes were observed to be in good condition.

3.2 Lead Paint

Bulk paint samples (paint chips) were collected from each distinct colour of paint observed during the survey of the structure. A total of five (5) paint chip samples were collected from the paint applications observed in the subject areas. The paint chip samples were submitted to IATL Laboratories for analysis of lead content.

The lead concentrations of three (3) of the analyzed paints were found to exceed the threshold limit of 0.009% (lead by wt). Therefore, the blue door frame paint, yellow door frame paint, and grey floor paint applications are considered to be “lead-containing” under the federal *Hazardous Products Act (Surface Coating Materials Regulation)*. Additionally, white wall paint found throughout Room 225 was determined to be lead-containing by AEC during the past survey of the subject building. Lead-containing painted surfaces within the subject areas were observed to be in good condition, with minimal flaking, chipping or cracking.

It should be noted that lead concentrations are assumed to be consistent for each respective paint colour regardless of where they are observed throughout the subject areas (e.g. all white-coloured paint is assumed to have the same lead concentration wherever it is observed, regardless of the surface or underlying material it’s applied to within the areas surveyed).

3.3 Silica

Materials known to contain silica such as concrete and mortar were identified in the subject areas. These types of materials were prevalent throughout the building structure and require consideration in advance of their disturbance.

3.4 Mercury

Mercury vapour is assumed to be present within fluorescent light tubes observed within the subject areas.

3.5 Other Designated Substances and Hazardous Materials

The survey also included an identification of the following substances, none of which were observed to be present:

- Mould
- Acrylonitrile
- Arsenic
- Benzene
- Coke Oven Emissions
- Ethylene Oxides
- Isocyanates
- Vinyl Chloride Monomer
- Urea Formaldehyde Foam Insulation (UFFI)

It should be noted that although these substances were not physically observed within the framework of this assessment (a non-destructive investigation), substances such as mould and UFFI may exist concealed behind wallboards, ceilings and other inaccessible building spaces.

4. Conclusions and Recommendations

The following summarizes the DSHMS findings and related recommendations, with additional details presented in relevant report sections.

4.1 Asbestos-Containing Materials

The following table summarizes the asbestos-containing materials identified by the survey along with recommended remedial actions for each material.

Table 3 Summary of Asbestos-Containing Materials

Location	Material / Quantity	Assessment ¹	Action ²
Walls Throughout Rooms 115, 165, 225	Drywall Joint Compound on drywall Room 115 – 25 m ² Room 165 – 110 m ² Room 225 – 140 m ²	<ul style="list-style-type: none"> - Sample ID: N/A (Confirmed ACM in AEC Report, 2009) - Concentration: 1.0% Chrysotile - Material: Non-Friable - Accessibility: A (Areas of the building within reach, from floor level, of all building users. Activities of the building users may result in disturbance of ACM not normally within reach from floor level) - Condition: Good 	<p>Action 7 - Routine Surveillance</p> <p>During removal follow Type 2 procedures – if the material is not wetted and the work is done using non-powered hand tools or powered hand tools equipped with HEPA dust collection devices³</p>
Ceiling in Rooms 221 to 223	Plaster White layer on grey plaster Rooms 221 to 223 – 75 m ²	<ul style="list-style-type: none"> - Sample ID: N/A (Confirmed ACM in AEC Report, 2009) - Concentration: 3.0% Chrysotile - Material: Friable - Accessibility: C (Exposed) (Areas of the building above 8'0" where use of a ladder is required to reach the ACM. Only refers to ACM materials that are exposed to view, from the floor or ladder, without removing or opening other building components such as ceiling tiles, or service access doors or hatches. Does not include infrequently accessed service areas of the building) - Condition: Good 	<p>Action 7 - Routine Surveillance</p> <p>During removal follow Type 3 procedures</p>
Fume hoods in Rooms 115, 165 & 225	Grey Transite Cement Panels within lab fume hoods (Approximately 5 m ² per fume hood unit) Room 115 – 4 units Room 165 – 4 units Room 225 – 7 units	<ul style="list-style-type: none"> - Sample ID: N/A (Presumed ACM in AEC Report, 2009) Confirmed ACM by Kewaunee Scientific Corp., Appendix D - Concentration: N/A - Material: Non-Friable - Accessibility: A (Areas of the building within reach, from floor level, of all building users. Activities of the building users may result in disturbance of ACM not normally within reach from floor level) - Condition: Good 	<p>Action 7 - Routine Surveillance</p> <p>During removal follow Type 1 procedures – if the material is wetted and the work is done using non-powered hand tools³</p>

Location	Material / Quantity	Assessment ¹	Action ²
Above fume hoods (ceiling space) in Rooms 115 & 225	Grey Transite Cement Piping/Vents Room 115 – 10 m Room 165 – 15 m Room 225 – 25 m (Service Cores - 50m)	<ul style="list-style-type: none"> - Sample ID: N/A (<i>Confirmed ACM in AEC Report, 2009</i>) - Concentration: N/A - Material: Non-Friable - Accessibility: C (Concealed) <i>(Areas of the building which require the removal of a building component, including lay-in ceilings and access panels into solid ceiling systems. Includes rarely entered crawl spaces, attic spaces, etc. Observations are limited to the extent visible from the access points)</i> - Condition: Good 	<p>Action 7 - Routine Surveillance</p> <p>During removal follow Type 1 procedures – if the material is <i>wetted</i> and the work is done using <i>non-powered hand tools</i>³.</p>

1. Asbestos concentrations based on the following report: *Asbestos Product Survey, Government of Canada Building, Complex #5614739, 2301 Midland Avenue, Toronto, Ontario, Advanced Environmental Corporation, February 12, 2009.*
2. Action levels based on PWGSC DP 057 and are in compliance with Ontario and Federal regulations.
3. If the work is completed using conventional powered hand tools, work must follow **Type 3** procedures

4.1.1 Presumed Asbestos-Containing Materials

In cases where a suspect material was inaccessible or where access to the material required significant damage to building materials or components, so as to not cause unnecessary damage, the material was presumed to be asbestos-containing until sampling of the material is feasible. These materials should be treated as ACM, following the requirements of *O. Reg. 278/05*, unless proven otherwise. Table 4 summarizes the presumed asbestos-containing materials in the subject areas.

Table 4 Summary of Presumed Asbestos-Containing Materials

Location	Material / Quantity	Assessment	Action ¹
Fire Doors Rooms 115, 165, 225	Fire-rated doors 7 doors	<ul style="list-style-type: none"> - Sample ID: N/A (<i>Presumed ACM</i>) - Concentration: N/A - Material: Friable (applies to inner core material only) - Accessibility: D <i>(Areas of the building which are inaccessible or where demolition is required to access the ACM)</i> - Condition: Unknown 	<p>Action 7 - Routine Surveillance</p> <p>Prior to removal and disposal - Collect inner core samples following Type 2 procedures for determination of asbestos content.</p> <p style="text-align: center;">or</p> <p>For removal and disposal - Follow Type 1 procedures if the door is removed and disposed of in its entirety as ACM waste without disturbing inner core.</p>

1. Action levels based on PWGSC DP 057 and are in compliance with Ontario and Federal regulations.

4.1.2 Non Asbestos-Containing Materials

Table 5 summarizes the suspect materials from which bulk samples were collected, and subsequently identified as “non-asbestos” through laboratory analysis.

Table 5 Summary of Non Asbestos-Containing Materials

Material	Description	Sample ID ¹
Vinyl Floor Sheeting (VFS-1)	Cream w/ brown streaks Rooms 115, 165, 221 – 225	HC – 1A,B,C,D,E
Mastic (on VFS-1)	Tan floor tile mastic, blue layer	HC – 1A,B,D(2),E
Floor Tile Layer (VFT-1)	Green flooring beneath VSF-1 in Rooms 221 – 223	HC – 2A,B,C
Mastic (on VFT-1)	Yellow floor tile mastic	HC – 2A,B
Vinyl Floor Tile (VFT-2)	12"x12"; Yellow. 1 st Floor Washrooms and Phone Rooms	HC – 3A,B,C
Mastic (on VFT-2)	Tan floor tile mastic	HC – 3A,B,C

1. For sample ID and concentration levels refer to Laboratory Certificates of Analysis.

4.2 Lead

Lead concentrations within four different paint applications were found to exceed the threshold limit of 0.009% (lead by wt) and therefore, are considered to be “lead-containing” under the federal *Hazardous Products Act (Surface Coating Materials Regulation)*. Details can be found in Table 6, below.

Table 6 Summary of Lead-Containing Paints

Location	Material Description	Assessment ²	Action ¹
Room 225 Walls	White paint application (Approximately 325 m ²)	- Sample ID: V-L-06 (AEC Report, 2009) ² - Concentration: <0.0213 % - Condition: Good	Routine Surveillance During removal this material is to be removed following asbestos abatement procedures based on the underlying material (see DJC in Table 3)
Room 225 Door Frames	Blue paint application (Approximately 32.5 m ²)	- Sample ID: HC-L1 - Concentration: 0.26 % - Condition: Good	Routine Surveillance Follow Type 1 – if the coating is removed with a chemical gel or paste or Remove and dispose of entire door as lead-containing waste.
Room 165 Walls	Light Yellow paint application (Approximately 37 m ²)	- Sample ID: HC-L2 - Concentration: Presumed ³ - Condition: Good	Routine Surveillance During removal this material is to be removed following asbestos abatement procedures based on the underlying material (see DJC in Table 3)

Location	Material Description	Assessment ²	Action ¹
Room 165 Door Frames	Yellow paint application (Approximately 37 m ²)	- Sample ID: HC-L3 - Concentration: 0.95 % - Condition: Good	Routine Surveillance Follow Type 1 – if the coating is removed with a chemical gel or paste or Remove and dispose of entire door frames as lead-containing waste.
Service Cores Floors	Grey paint application (Approximately 37 m ²)	- Sample ID: HC-L5 - Concentration: 0.062 % - Condition: Good	Routine Surveillance It is not anticipated that this material will require removal.

1. Removal procedures based on the Ontario Ministry of Labor's "Guideline for Lead on Construction Projects" April 2011.
2. Lead concentrations based on the following report: *Designated Substances Survey, Government of Canada Building, Complex #5614739, 2301 Midland Avenue, Toronto, Ontario, Advanced Environmental Corporation, February 12, 2009.*
3. Laboratory analysis of this paint was reported as "VOID" due to insufficient quantity of material for analysis, therefore this paint is presumed to be lead-containing until proven otherwise.

Work that will disrupt and/or pulverize (including drilling, cutting, grinding or abrading) lead-containing materials must follow the recommendations provided in the *Ministry of Labour Guideline for Lead on Construction Projects*, dated September 2004. In addition, the aforementioned painted surfaces (containing lead) should be handled with appropriate health and safety precautions so as to comply with requirements of the Designated Substances regulation, O. Reg. 490/09, and disposal of these materials must also comply with the requirements of *O.Reg. 347 – General – Waste Management*.

Lead is also assumed to be present in the solder joints of copper piping observed in the ceiling space throughout the surveyed areas. It is unlikely that any special action will be required during piping removal/replacement work unless the cutting of the pipes at joints is required.

4.3 Other Designated Substances and Hazardous Materials

GENIVAR's survey included the remaining designated substances and hazardous materials as described in the survey methodology (Section 2.1). Table 7 summarizes any of these identified substances along with recommended remedial actions.

Table 7 Other Designated Substances and Hazardous Materials identified within the Site

Material	Description	Action
Silica	Building components containing silica such as concrete floor and cinderblock wall were observed throughout the surveyed areas.	Work that disturbs silica-containing materials should comply with the requirements of O. Reg. 490/09 <i>Silica</i> .
Mercury	Mercury is expected to be present within fluorescent light tubes identified within the subject areas (approximately 300 light tubes).	Mercury vapour within light fixtures poses no risk to workers or occupants provided the mercury containment remains intact and undisturbed. Removal and disposal of mercury-containing equipment is required prior to demolition activities that may disturb the equipment. The handling, transport, and disposal of mercury containing equipment must follow all applicable provincial and federal regulations and guidelines pertaining to Mercury.

Material	Description	Action
Mould	Mould was not observed in the area of work during the time of the survey.	No action required.
Acrylonitrile	Acrylonitrile was not observed in the area of work during the time of the survey.	No action required.
Arsenic	Arsenic was not observed in the area of work during the time of the survey.	No action required.
Benzene	Benzene was not observed in the area of work during the time of the survey.	No action required.
Coke Oven Emissions	Coke oven emissions were not observed in the area of work during the time of the survey.	No action required.
Ethylene Oxide	Ethylene oxide was not observed in the area of work during the time of the survey.	No action required.
Isocyanates	Isocyanates were not observed in the area of work during the time of the survey.	No action required.
Vinyl Chloride	Vinyl chloride was not observed in the area of work during the time of the survey.	No action required.

5. Closure

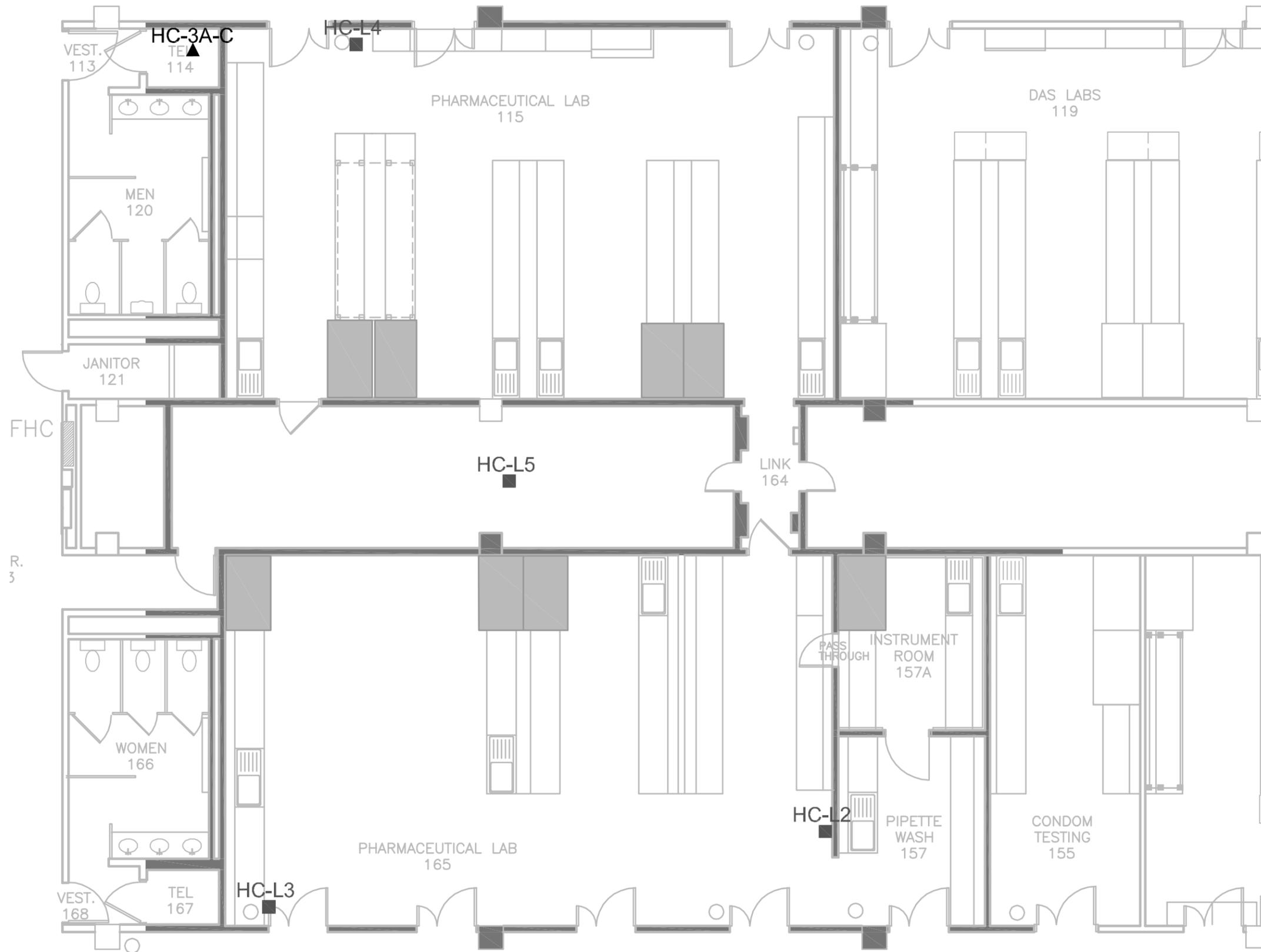
A Designated Substances and Hazardous Materials Survey (DSHMS) is intended to provide an owner or its authorized agent with a general summary of asbestos-containing materials (ACM) and other designated substances which includes their observed condition and their respective locations within a facility, as required under Ontario regulations.

GENIVAR Inc. warrants that the findings and conclusions contained herein have been prepared in accordance with generally accepted environmental survey methods. There is a possibility that materials may exist which could not be reasonably identified within the scope of the assessment or which were not apparent during the site visit. GENIVAR Inc. believes that the information collected during the survey is reliable. However, GENIVAR Inc. cannot warrant or guarantee that the information provided is absolutely complete or accurate beyond current environmental consulting standards. GENIVAR Inc. reserves the right to amend and/or supplement this report in the event that additional information or documentation becomes available.

Appendix A

Drawings





Legend

- ▲ ASBESTOS BULK SAMPLE LOCATION
- LEAD PAINT BULK SAMPLE LOCATION

NOTE: MATERIAL CONCENTRATION
 RED = ASBESTOS or LEAD CONTAINING
 BLACK = NONE DETECTED.



GENIVAR Project No: 121-25112-00
 PWGSC Project No.: R.054345.001
 Scale: Not To Scale
 Date: December 2012
 Drawn By: ET
 App'd By: HK

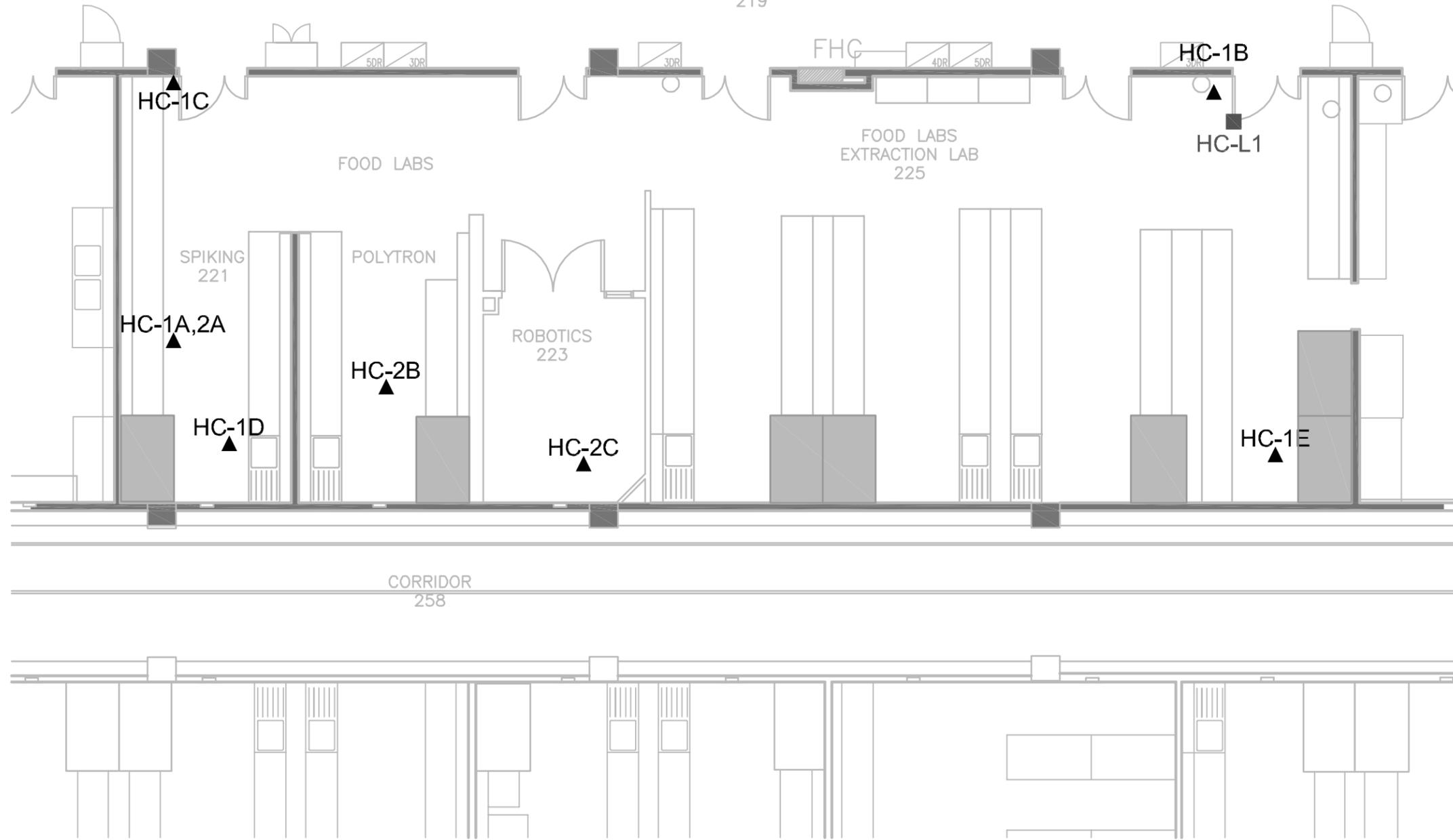
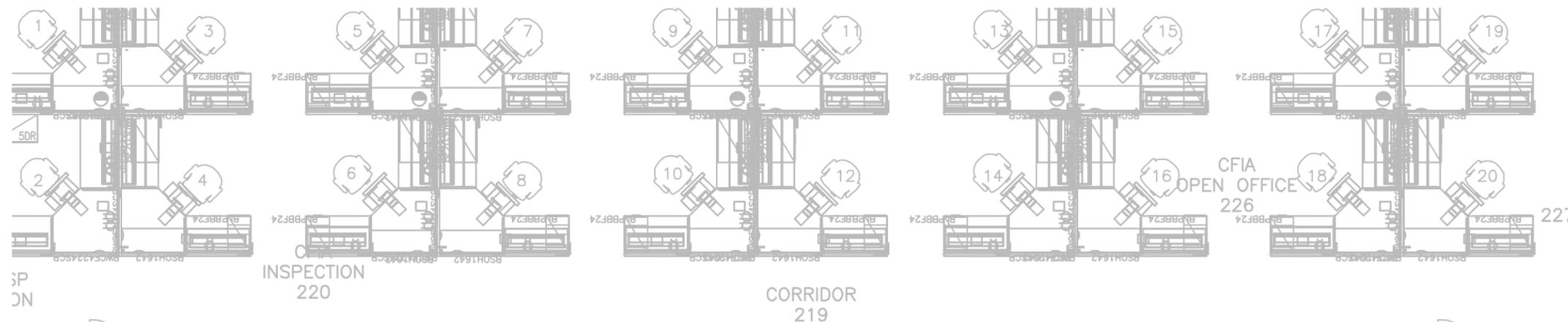
Client: **Public Works and Government Services Canada** / **Travaux publics et Services gouvernementaux Canada**

Site Address: **HEALTH CANADA LABORATORIES**
 2301 MIDLAND AVENUE,
 TORONTO, ON

LOCATIONS OF ASBESTOS AND LEAD BULK SAMPLES

FIRST FLOOR

Figure No: **1**



Legend

- ▲ ASBESTOS BULK SAMPLE LOCATION
- LEAD PAINT BULK SAMPLE LOCATION
- ② LOCATION NUMBER AND BOUNDARY

NOTE: MATERIAL CONCENTRATION
 RED = ASBESTOS or LEAD CONTAINING
 BLACK = NONE DETECTED.

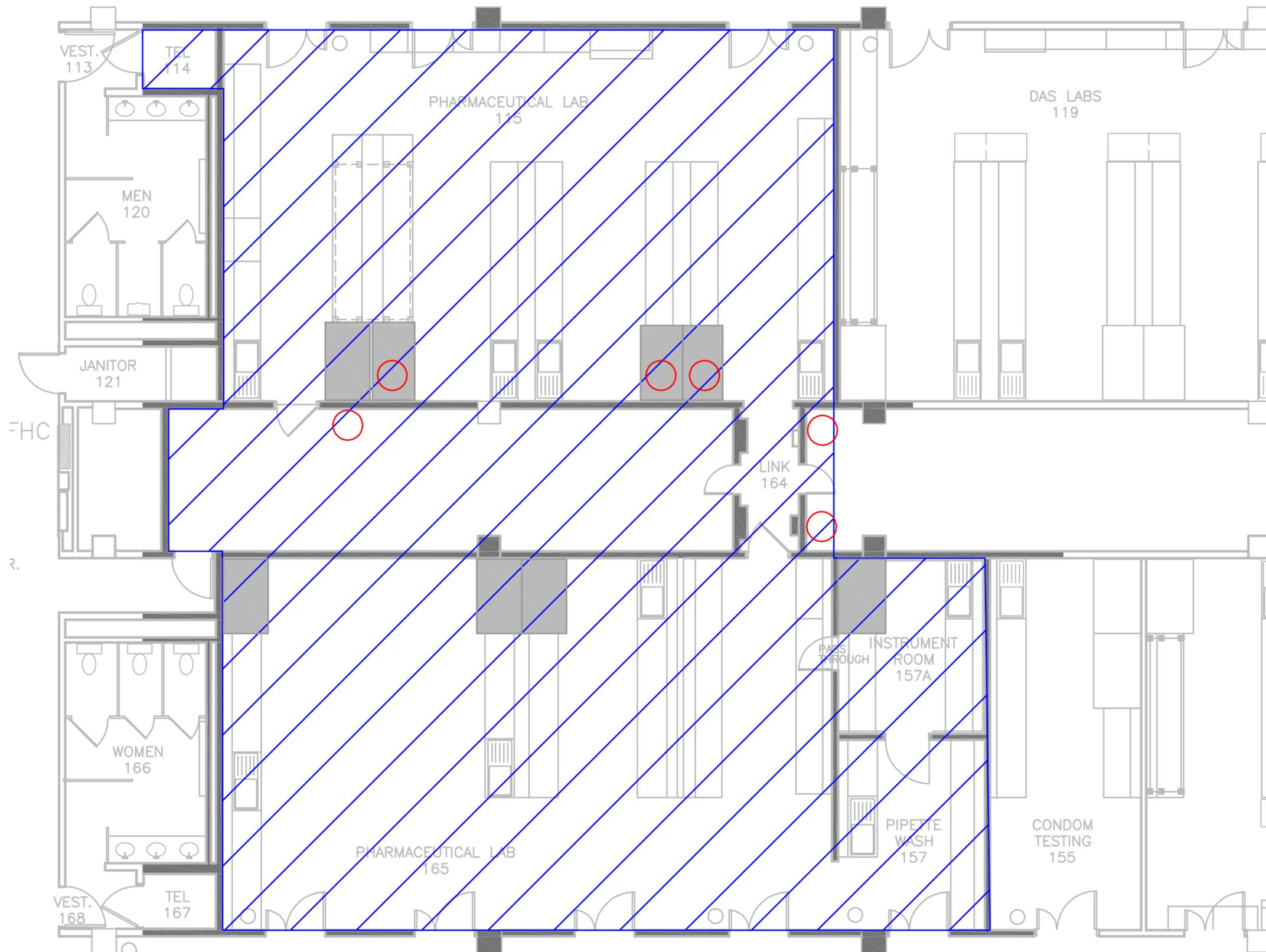
GENIVAR Project No: 121-25112-00
 PWGSC Project No.: R.054345.001
 Scale: Not To Scale
 Date: December 2012
 Drawn By: ET
 App'd By: HK

Client: **Public Works and Government Services Canada** / **Travaux publics et Services gouvernementaux Canada**

Site Address: **HEALTH CANADA LABORATORIES**
 2301 MIDLAND AVENUE,
 TORONTO, ON

LOCATIONS OF ASBESTOS AND LEAD BULK SAMPLES

SECOND FLOOR



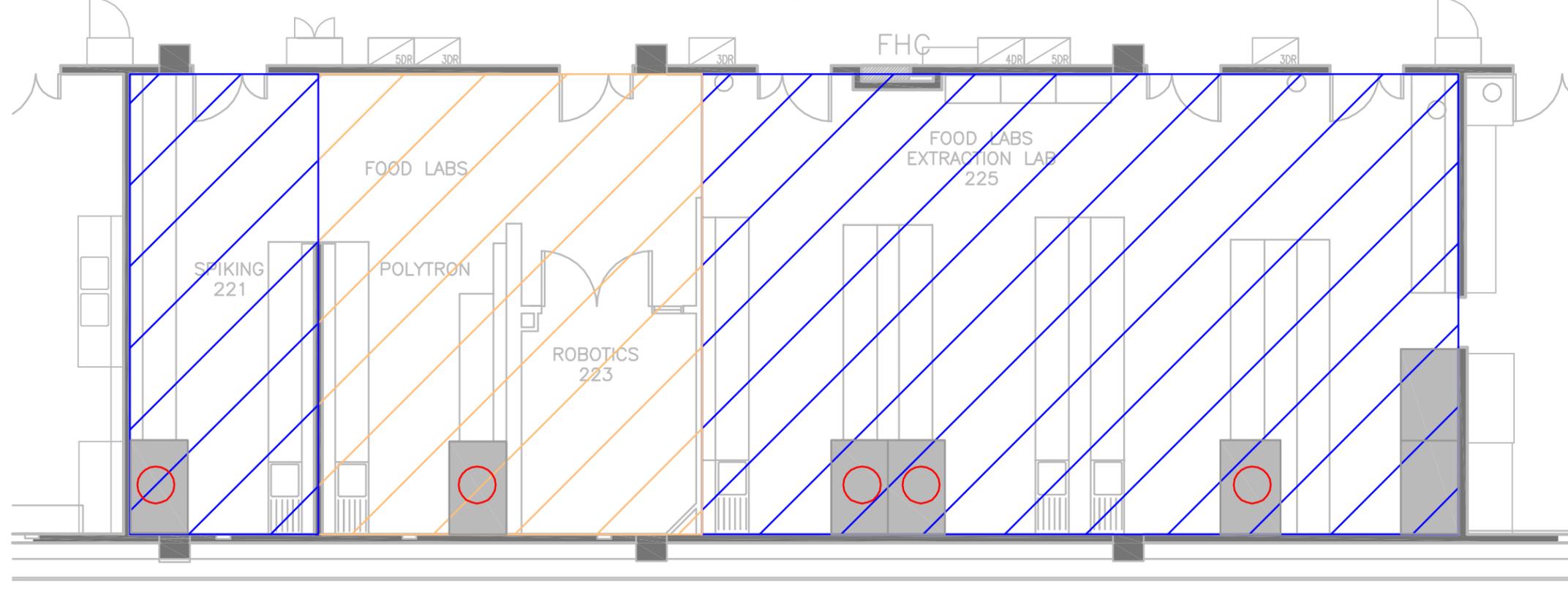
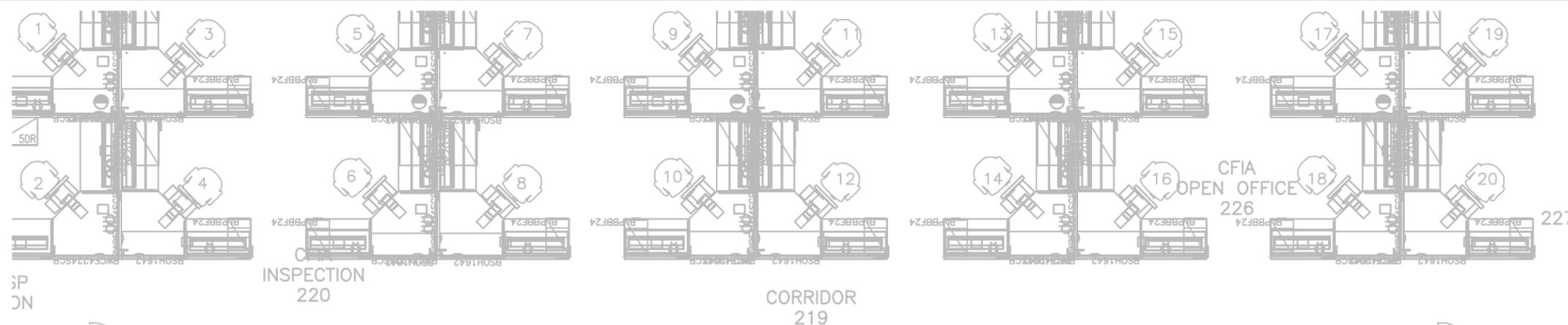
Legend	
	ASBESTOS-CONTAINING DRYWALL JOINT COMPOUND
	ASBESTOS-CONTAINING TRANSITE PANELS (FUME HOODS)
	TRANSITE PIPING (VERTICAL)

GENIVAR Project No: 121-25112-00
PWGSC Project No.: R.054345.001
Scale: Not To Scale
Date: December 2012
Drawn By: ET
App'd By: HK

Client:	Public Works and Government Services Canada Travaux publics et Services gouvernementaux Canada
Site Address:	HEALTH CANADA LABORATORIES 2301 MIDLAND AVENUE, TORONTO, ON

LOCATIONS OF ASBESTOS-CONTAINING MATERIALS

MAIN FLOOR



Legend	
	ASBESTOS-CONTAINING DRYWALL JOINT COMPOUND
	ASBESTOS-CONTAINING PLASTER APPLICATION
	ASBESTOS-CONTAINING TRANSITE PANELS (FUME HOODS)
	TRANSITE PIPING (VERTICAL)

GENIVAR Project No: 121-25112-00
PWGSC Project No.: R.054345.001
Scale: Not To Scale
Date: December 2012
Drawn By: ET
App'd By: HK

Client:	Public Works and Government Services Canada	Travaux publics et Services gouvernementaux Canada
Site Address:	HEALTH CANADA LABORATORIES 2301 MIDLAND AVENUE, TORONTO, ON	

LOCATIONS OF ASBESTOS-CONTAINING MATERIALS

SECOND FLOOR

Figure No: **4**

Appendix B

Laboratory Certificates of Analysis & Statement of Qualifications



CERTIFICATE OF ANALYSIS

Client: GENIVAR Inc.
600 Cochran Drive; Suite 500
Markham ON L3R 5K3

Report Date: 11/28/2012
Report No.: 291070
Project: PWGSC Health Canada Lab
Project No.: 121-25112-00

BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 4849991 **Description / Location:** Off-White Vinyl Sheet Flooring
Client No.: HC-1A Loc. 225

<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.: 4849991 **Description / Location:** Tan Mastic **Layer No.:** 2
Client No.: HC-1A Loc. 225

<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	1	Cellulose	99

Lab No.: 4849992 **Description / Location:** Off-White Vinyl Sheet Flooring
Client No.: HC-1B Loc. 225

<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.: 4849992 **Description / Location:** Tan Mastic **Layer No.:** 2
Client No.: HC-1B Loc. 225

<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

Accreditations: NIST-NVLAP No. 101165-0 NY-DOH No. 11021 AIHA-LAP, LLC 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.*

Analytical Method: EPA 600/R-93/116, by Polarized Light Microscopy

Comments: Quantification at <0.25% by volume is possible with this method. (PC) Indicates Stratified Point Count Method performed. (PC-Trace) means that asbestos was detected but is not quantifiable under the Point Counting regimen. 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 (ex. analyze until positive instructions). Small asbestos fibers may be missed by PLM due to resolution limitations of the optical microscope. Therefore, PLM is not consistently reliable in detecting asbestos in non-friable organically bound (NOB) materials. Quantitative transmission electron microscopy (TEM) is currently the only method that can pronounce materials as non-asbestos containing.

Analysis Performed By: T. Lowe

Approved By:

Date: 11/28/2012

Frank E. Ehrenfeld, III
Laboratory Director

CERTIFICATE OF ANALYSIS

Client: GENIVAR Inc.
600 Cochran Drive; Suite 500
Markham ON L3R 5K3

Report Date: 11/28/2012
Report No.: 291070
Project: PWGSC Health Canada Lab
Project No.: 121-25112-00

BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 4849993 **Description / Location:** Off-White Vinyl Sheet Flooring
Client No.: HC-1C Loc. 225

<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.: 4849994 **Description / Location:** Off-White Vinyl Sheet Flooring
Client No.: HC-1D Loc. 225

<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.: 4849994 **Description / Location:** Tan Mastic **Layer No.:** 2
Client No.: HC-1D Loc. 225

<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.: 4849994 **Description / Location:** Blue Floor Tile **Layer No.:** 3
Client No.: HC-1D Loc. 225

<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

Accreditations: NIST-NVLAP No. 101165-0 NY-DOH No. 11021 AIHA-LAP, LLC No. 100188
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Analytical Method: EPA 600/R-93/116, by Polarized Light Microscopy

Comments: Quantification at <0.25% by volume is possible with this method. (PC) Indicates Stratified Point Count Method performed. (PC-Trace) means that asbestos was detected but is not quantifiable under the Point Counting regime. 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 (ex. analyze until positive instructions). Small asbestos fibers may be missed by PLM due to resolution limitations of the optical microscope. Therefore, PLM is not consistently reliable in detecting asbestos in non-friable organically bound (NOB) materials. Quantitative transmission electron microscopy (TEM) is currently the only method that can pronounce materials as non-asbestos containing.

Analysis Performed By: T. Lowe

Date: 11/28/2012

CERTIFICATE OF ANALYSIS

Client: GENIVAR Inc.
600 Cochran Drive; Suite 500
Markham ON L3R 5K3

Report Date: 11/28/2012
Report No.: 291070
Project: PWGSC Health Canada Lab
Project No.: 121-25112-00

BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 4849995	Description / Location: Off-White Vinyl Sheet Flooring			
Client No.: HC-1E	Loc. 225			
<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.: 4849995	Description / Location: Tan Mastic			Layer No.: 2
Client No.: HC-1E	Loc. 225			
<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

Accreditations: NIST-NVLAP No. 101165-0 NY-DOH No. 11021 AIHA-LAP, LLC No. 100188

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Analytical Method: EPA 600/R-93/116, by Polarized Light Microscopy

Comments: Quantification of <0.25% by volume is possible with this method. (PC) Indicates Stratified Point Count Method performed. (PC-Trace) means that asbestos was detected but is not quantifiable under the Point Counting regimen. 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 (ex. analyze until positive instructions). Small asbestos fibers may be missed by PLM due to resolution limitations of the optical microscope. Therefore, PLM is not consistently reliable in detecting asbestos in non-friable organically bound (NOB) materials. Quantitative transmission electron microscopy (TEM) is currently the only method that can pronounce materials as non-asbestos containing.

Analysis Performed By: T. Lowe

Date: 11/28/2012

CERTIFICATE OF ANALYSIS

Client: GENIVAR Inc.
600 Cochran Drive; Suite 500
Markham ON L3R 5K3

Report Date: 11/26/2012
Report No.: 291027
Project: PWGSC Health Canada Lab
Project No.: 121-25112-00

BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 4848720 **Description / Location:** Blue Floor Tile
Client No.: HC-2A Loc.225

<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.: 4848720 **Description / Location:** Yellow Mastic **Layer No.:** 2
Client No.: HC-2A Loc.225

<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.: 4848721 **Description / Location:** Blue Floor Tile
Client No.: HC-2B Loc.225

<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.: 4848721 **Description / Location:** Yellow Mastic **Layer No.:** 2
Client No.: HC-2B Loc.225

<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

Accreditations: **NIST-NVLAP No. 101165-0** **NY-DOH No. 11021** **AIHA-LAP, LLC No. 100188**
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Analytical Method: EPA 600/R-93/116, by Polarized Light Microscopy

Comments: Quantification at <0.25% by volume is possible with this method. (PC) Indicates Stratified Point Count Method performed. (PC-Trace) means that asbestos was detected but is not quantifiable under the Point Counting regimen. 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 (ex. analyze until positive instructions). Small asbestos fibers may be missed by PLM due to resolution limitations of the optical microscope. Therefore, PLM is not consistently reliable in detecting asbestos in non-friable organically bound (NOB) materials. Quantitative transmission electron microscopy (TEM) is currently the only method that can pronounce materials as non-asbestos containing.

Analysis Performed By: T. Lowe

Approved By: _____

Date: 11/26/2012

Frank E. Ehrenfeld, III
Laboratory Director

CERTIFICATE OF ANALYSIS

Client:	GENIVAR Inc. 600 Cochran Drive; Suite 500 Markham ON L3R 5K3	Report Date:	11/26/2012
		Report No.:	291027
		Project:	PWGSC Health Canada Lab
		Project No.:	121-25112-00

BULK SAMPLE ANALYSIS SUMMARY

Lab No.:	4848722	Description / Location:	Blue Floor Tile Loc.225
Client No.:	HC-2C		
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
None Detected	None Detected	None Detected	None Detected
			100

Lab No.:	4848723	Description / Location:	Yellow Floor Tile; 12x12 Loc.114
Client No.:	HC-3A		
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
None Detected	None Detected	None Detected	None Detected
			100

Lab No.:	4848723	Description / Location:	Tan Mastic Loc.114	Layer No.:	2
Client No.:	HC-3A				
<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	

Accreditations: **NIST-NVLAP No. 101165-0** **NY-DOH No. 11021** **AIHA-LAP, LLC No. 100188**
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Analytical Method: EPA 600/R-93/116, by Polarized Light Microscopy

Comments: Quantification at <0.25% by volume is possible with this method. (PC) Indicates Stratified Point Count Method performed. (PC-Trace) means that asbestos was detected but is not quantifiable under the Point Counting regimen. 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 (ex. analyze until positive instructions). Small asbestos fibers may be missed by PLM due to resolution limitations of the optical microscope. Therefore, PLM is not consistently reliable in detecting asbestos in non-friable organically bound (NOB) materials. Quantitative transmission electron microscopy (TEM) is currently the only method that can pronounce materials as non-asbestos containing.

Analysis Performed By: T. Lowe

Date: 11/26/2012

CERTIFICATE OF ANALYSIS

Client:	GENIVAR Inc. 600 Cochran Drive; Suite 500 Markham ON L3R 5K3	Report Date:	11/26/2012
		Report No.:	291027
		Project:	PWGSC Health Canada Lab
		Project No.:	121-25112-00

BULK SAMPLE ANALYSIS SUMMARY

Lab No.:	4848724	Description / Location:	Yellow Floor Tile; 12x12 Loc.114	
Client No.:	HC-3B			
<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.:	4848724	Description / Location:	Tan Mastic Loc.114	Layer No.: 2
Client No.:	HC-3B			
<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.:	4848725	Description / Location:	Yellow Floor Tile; 12x12 Loc.114	
Client No.:	HC-3C			
<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.:	4848725	Description / Location:	Tan Mastic Loc.114	Layer No.: 2
Client No.:	HC-3C			
<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

Accreditations: **NIST-NVLAP No. 101165-0** **NY-DOH No. 11021** **AIHA-LAP, LLC 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.*

Analytical Method: EPA 600/R-93/116, by Polarized Light Microscopy

Comments: Quantification at <0.25% by volume is possible with this method. (PC) Indicates Stratified Point Count Method performed. (PC-Trace) means that asbestos was detected but is not quantifiable under the Point Counting regimen. 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 (ex. analyze until positive instructions). Small asbestos fibers may be missed by PLM due to resolution limitations of the optical microscope. Therefore, PLM is not consistently reliable in detecting asbestos in non-friable organically bound (NOB) materials. Quantitative transmission electron microscopy (TEM) is currently the only method that can pronounce materials as non-asbestos containing.

Analysis Performed By: T. Lowe

Date: 11/26/2012

CERTIFICATE OF ANALYSIS

Client: GENIVAR Inc. 600 Cochran Drive; Suite 500 Markham ON L3R 5K3	Report Date: 11/27/2012 Report No.: 291162 Project: PWGSC Health Canada Lab Project No.: 121-25112-00
---	--

TEM BULK SAMPLE ANALYSIS SUMMARY

IATL No.: 124848720A	Description / Location: Blue Floor Tile	Loc.225
Client No.: HC-2A		

Organic Fraction:	20.7 %	
Gravimetrically Reduced Subsample:	79.3 %	
Percent Asbestos Detected:	ND	None Detected
Percent Non-Asbestos Fibrous Material:	ND	None Detected
Percent Non-Fibrous Material:	79.3 %	Other

Comments:

NIST-NVLAP No. 101165-0

AIHA-LAP, LLC No. 100188

NYS-DOH No. 11021

Methodology: Transmission Electron Microscopy (TEM) In Accordance With :
ELAP 198.4 "Method For Identifying And Quantitating Asbestos In Non-Friable Organically Bound Bulk Samples", Revised 1/11/2005.
EPA-600/R-93/116 Section 2.5 "Asbestos In Bulk Building Materials By TEM Gravimetry."

IATL assumes that all sampling methods and data upon which these results are based have been accurately supplied by the client.

The "Gravimetrically Reduced Subsample" is the portion of the submitted sample remaining following the ashing and acid treatment processes. TEM analysis occurs on this portion of the sample. Final results are calculated to represent the sample as submitted.

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. Results are verifiable for only those operations and analyses performed in the laboratory.

Analysis Performed By: C. Liska

Approved By:

Date: 11/27/2012

Frank E. Ehrenfeld, III
Laboratory Director

CERTIFICATE OF ANALYSIS

Client: GENIVAR Inc. 600 Cochran Drive; Suite 500 Markham ON L3R 5K3	Report Date: 11/27/2012 Report No.: 291162 Project: PWGSC Health Canada Lab Project No.: 121-25112-00
---	--

TEM BULK SAMPLE ANALYSIS SUMMARY

IATL No.: 124848720B	Description / Location: Yellow Mastic	Loc.225
Client No.: HC-2A		

Organic Fraction:

Gravimetrically Reduced Subsample:

Percent Asbestos Detected:

Percent Non-Asbestos Fibrous Material:

Insufficient Material For Analysis

Percent Non-Fibrous Material:

Comments: Note: Insufficient material provided for analysis.

NIST-NVLAP No. 101165-0

AIHA-LAP, LLC No. 100188

NYS-DOH No. 11021

Methodology: Transmission Electron Microscopy (TEM) In Accordance With :
ELAP 198.4 "Method For Identifying And Quantitating Asbestos In Non-Friable Organically Bound Bulk Samples", Revised 1/11/2005.
EPA-600/R-93/116 Section 2.5 "Asbestos In Bulk Building Materials By TEM Gravimetry."

IATL assumes that all sampling methods and data upon which these results are based have been accurately supplied by the client.

The "Gravimetrically Reduced Subsample" is the portion of the submitted sample remaining following the ashing and acid treatment processes. TEM analysis occurs on this portion of the sample. Final results are calculated to represent the sample as submitted.

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. Results are verifiable for only those operations and analyses performed in the laboratory.

Analysis Performed By: C. Liska

Date: 11/27/2012

CERTIFICATE OF ANALYSIS

Client: GENIVAR Inc. 600 Cochran Drive; Suite 500 Markham ON L3R 5K3	Report Date: 11/27/2012 Report No.: 291162 Project: PWGSC Health Canada Lab Project No.: 121-25112-00
---	--

TEM BULK SAMPLE ANALYSIS SUMMARY

IATL No.: 124848721A	Description / Location: Blue Floor Tile	Loc.225
Client No.: HC-2B		

Organic Fraction:	31.3 %	
Gravimetrically Reduced Subsample:	68.7 %	
Percent Asbestos Detected:	ND	None Detected
Percent Non-Asbestos Fibrous Material:	ND	None Detected
Percent Non-Fibrous Material:	68.7 %	Other

Comments:

NIST-NVLAP No. 101165-0

AIHA-LAP, LLC No. 100188

NYS-DOH No. 11021

Methodology: Transmission Electron Microscopy (TEM) In Accordance With :
ELAP 198.4 "Method For Identifying And Quantitating Asbestos In Non-Friable Organically Bound Bulk Samples", Revised 1/11/2005.
EPA-600/R-93/116 Section 2.5 "Asbestos In Bulk Building Materials By TEM Gravimetry."

IATL assumes that all sampling methods and data upon which these results are based have been accurately supplied by the client.

The "Gravimetrically Reduced Subsample" is the portion of the submitted sample remaining following the ashing and acid treatment processes. TEM analysis occurs on this portion of the sample. Final results are calculated to represent the sample as submitted.

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Analysis Performed By: C. Liska

Date: 11/27/2012

CERTIFICATE OF ANALYSIS

Client: GENIVAR Inc. 600 Cochran Drive; Suite 500 Markham ON L3R 5K3	Report Date: 11/27/2012 Report No.: 291162 Project: PWGSC Health Canada Lab Project No.: 121-25112-00
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TEM BULK SAMPLE ANALYSIS SUMMARY

IATL No.: 124848721B	Description / Location: Yellow Mastic	Loc.225
Client No.: HC-2B		

Organic Fraction:

Gravimetrically Reduced Subsample:

Percent Asbestos Detected:

Percent Non-Asbestos Fibrous Material: Insufficient Material For Analysis

Percent Non-Fibrous Material:

Comments: Note: Insufficient material provided for analysis.

NIST-NVLAP No. 101165-0

AIHA-LAP, LLC No. 100188

NYS-DOH No. 11021

Methodology: Transmission Electron Microscopy (TEM) In Accordance With :
ELAP 198.4 "Method For Identifying And Quantitating Asbestos In Non-Friable Organically Bound Bulk Samples", Revised 1/11/2005.
EPA-600/R-93/116 Section 2.5 "Asbestos In Bulk Building Materials By TEM Gravimetry."

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Analysis Performed By: C. Liska

Date: 11/27/2012

CERTIFICATE OF ANALYSIS

Client: GENIVAR Inc. 600 Cochran Drive; Suite 500 Markham ON L3R 5K3	Report Date: 11/27/2012 Report No.: 291162 Project: PWGSC Health Canada Lab Project No.: 121-25112-00
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TEM BULK SAMPLE ANALYSIS SUMMARY

IATL No.: 124848722A	Description / Location: Blue Floor Tile	Loc.225
Client No.: HC-2C		

Organic Fraction:	16.8 %	
Gravimetrically Reduced Subsample:	83.2 %	
Percent Asbestos Detected:	ND	None Detected
Percent Non-Asbestos Fibrous Material:	ND	None Detected
Percent Non-Fibrous Material:	83.2 %	Other

Comments:

NIST-NVLAP No. 101165-0

AIHA-LAP, LLC No. 100188

NYS-DOH No. 11021

Methodology: Transmission Electron Microscopy (TEM) In Accordance With :
ELAP 198.4 "Method For Identifying And Quantitating Asbestos In Non-Friable Organically Bound Bulk Samples", Revised 1/11/2005.
EPA-600/R-93/116 Section 2.5 "Asbestos In Bulk Building Materials By TEM Gravimetry."

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The "Gravimetrically Reduced Subsample" is the portion of the submitted sample remaining following the ashing and acid treatment processes. TEM analysis occurs on this portion of the sample. Final results are calculated to represent the sample as submitted.

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Results are verifiable for only those operations and analyses performed in the laboratory.

Analysis Performed By: C. Liska

Date: 11/27/2012

CERTIFICATE OF ANALYSIS

Client: GENIVAR Inc. 600 Cochran Drive; Suite 500 Markham ON L3R 5K3	Report Date: 11/27/2012 Report No.: 291162 Project: PWGSC Health Canada Lab Project No.: 121-25112-00
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TEM BULK SAMPLE ANALYSIS SUMMARY

IATL No.: 124848723A	Description / Location: Yellow Floor Tile	Loc.114
Client No.: HC-3A		

Organic Fraction:	50.4 %	
Gravimetrically Reduced Subsample:	49.6 %	
Percent Asbestos Detected:	ND	None Detected
Percent Non-Asbestos Fibrous Material:	ND	None Detected
Percent Non-Fibrous Material:	49.6 %	Other

Comments:

NIST-NVLAP No. 101165-0

AIHA-LAP, LLC No. 100188

NYS-DOH No. 11021

Methodology: Transmission Electron Microscopy (TEM) In Accordance With :
ELAP 198.4 "Method For Identifying And Quantitating Asbestos In Non-Friable Organically Bound Bulk Samples", Revised 1/11/2005.
EPA-600/R-93/116 Section 2.5 "Asbestos In Bulk Building Materials By TEM Gravimetry."

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Analysis Performed By: C. Liska

Date: 11/27/2012

CERTIFICATE OF ANALYSIS

Client: GENIVAR Inc. 600 Cochran Drive; Suite 500 Markham ON L3R 5K3	Report Date: 11/27/2012 Report No.: 291162 Project: PWGSC Health Canada Lab Project No.: 121-25112-00
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TEM BULK SAMPLE ANALYSIS SUMMARY

IATL No.: 124848723B	Description / Location: Tan Mastic	Loc.114
Client No.: HC-3A		

Organic Fraction:	61.4 %	
Gravimetrically Reduced Subsample:	38.6 %	
Percent Asbestos Detected:	ND	None Detected
Percent Non-Asbestos Fibrous Material:	Trace	SiAl, Other Fiber
Percent Non-Fibrous Material:	38.6 %	Ti, Titanium Oxide Other

Comments: Note: Insufficient material (<100mg) to verify results.

NIST-NVLAP No. 101165-0**AIHA-LAP, LLC No. 100188****NYS-DOH No. 11021**

Methodology: Transmission Electron Microscopy (TEM) In Accordance With :
ELAP 198.4 "Method For Identifying And Quantitating Asbestos In Non-Friable Organically Bound Bulk Samples", Revised 1/11/2005.
EPA-600/R-93/116 Section 2.5 "Asbestos In Bulk Building Materials By TEM Gravimetry."

IATL assumes that all sampling methods and data upon which these results are based have been accurately supplied by the client.

The "Gravimetrically Reduced Subsample" is the portion of the submitted sample remaining following the ashing and acid treatment processes. TEM analysis occurs on this portion of the sample. Final results are calculated to represent the sample as submitted.

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Analysis Performed By: C. Liska**Date:** 11/27/2012

CERTIFICATE OF ANALYSIS

Client: GENIVAR Inc.
600 Cochran Drive; Suite 500
Markham ON L3R 5K3

Report Date: 11/27/2012
Report No.: 291162
Project: PWGSC Health Canada Lab
Project No.: 121-25112-00

TEM BULK SAMPLE ANALYSIS SUMMARY

IATL No.: 124848724A **Description / Location:** Yellow Floor Tile **Loc.114**
Client No.: HC-3B

Organic Fraction: 51.4 %
Gravimetrically Reduced Subsample: 48.6 %
Percent Asbestos Detected: ND None Detected
Percent Non-Asbestos Fibrous Material: 0.500 % SiAl, Other Fiber
Percent Non-Fibrous Material: 48.1 % Other

Comments:

NIST-NVLAP No. 101165-0

AIHA-LAP, LLC No. 100188

NYS-DOH No. 11021

Methodology: Transmission Electron Microscopy (TEM) In Accordance With :
ELAP 198.4 "Method For Identifying And Quantitating Asbestos In Non-Friable Organically Bound Bulk Samples", Revised 1/11/2005.
EPA-600/R-93/116 Section 2.5 "Asbestos In Bulk Building Materials By TEM Gravimetry."

IATL assumes that all sampling methods and data upon which these results are based have been accurately supplied by the client.

The "Gravimetrically Reduced Subsample" is the portion of the submitted sample remaining following the ashing and acid treatment processes. TEM analysis occurs on this portion of the sample. Final results are calculated to represent the sample as submitted.

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Analysis Performed By: C. Liska

Date: 11/27/2012

CERTIFICATE OF ANALYSIS

Client: GENIVAR Inc. 600 Cochran Drive; Suite 500 Markham ON L3R 5K3	Report Date: 11/27/2012 Report No.: 291162 Project: PWGSC Health Canada Lab Project No.: 121-25112-00
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TEM BULK SAMPLE ANALYSIS SUMMARY

IATL No.: 124848724B	Description / Location: Tan Mastic	Loc.: 114
Client No.: HC-3B		

Organic Fraction:	65.1 %	
Gravimetrically Reduced Subsample:	34.9 %	
Percent Asbestos Detected:	ND	None Detected
Percent Non-Asbestos Fibrous Material:	Trace	SiAl, Other Fiber
Percent Non-Fibrous Material:	34.9 %	Other

Comments: Note: Insufficient material (<100mg) to verify results.

NIST-NVLAP No. 101165-0

AIHA-LAP, LLC No. 100188

NYS-DOH No. 11021

Methodology: Transmission Electron Microscopy (TEM) In Accordance With :
ELAP 198.4 "Method For Identifying And Quantitating Asbestos In Non-Friable Organically Bound Bulk Samples", Revised 1/11/2005.
EPA-600/R-93/116 Section 2.5 "Asbestos In Bulk Building Materials By TEM Gravimetry."

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The "Gravimetrically Reduced Subsample" is the portion of the submitted sample remaining following the ashing and acid treatment processes. TEM analysis occurs on this portion of the sample. Final results are calculated to represent the sample as submitted.

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Analysis Performed By: C. Liska

Date: 11/27/2012

CERTIFICATE OF ANALYSIS

Client: GENIVAR Inc.
600 Cochran Drive; Suite 500
Markham ON L3R 5K3

Report Date: 11/27/2012
Report No.: 291162
Project: PWGSC Health Canada Lab
Project No.: 121-25112-00

TEM BULK SAMPLE ANALYSIS SUMMARY

IATL No.: 124848725A **Description / Location:** Yellow Floor Tile **Loc.114**
Client No.: HC-3C

Organic Fraction: 50.4 %
Gravimetrically Reduced Subsample: 49.6 %
Percent Asbestos Detected: ND None Detected
Percent Non-Asbestos Fibrous Material: ND None Detected
Percent Non-Fibrous Material: 49.6 % SiMg M+, Silicate
Other

Comments:

NIST-NVLAP No. 101165-0

AIHA-LAP, LLC No. 100188

NYS-DOH No. 11021

Methodology: Transmission Electron Microscopy (TEM) In Accordance With :
ELAP 198.4 "Method For Identifying And Quantitating Asbestos In Non-Friable Organically Bound Bulk Samples". Revised 1/11/2005.
EPA-600/R-93/116 Section 2.5 "Asbestos In Bulk Building Materials By TEM Gravimetry."

IATL assumes that all sampling methods and data upon which these results are based have been accurately supplied by the client.

The "Gravimetrically Reduced Subsample" is the portion of the submitted sample remaining following the ashing and acid treatment processes. TEM analysis occurs on this portion of the sample. Final results are calculated to represent the sample as submitted.

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Analysis Performed By: C. Liska

Date: 11/27/2012

CERTIFICATE OF ANALYSIS

Client: GENIVAR Inc.
600 Cochran Drive; Suite 500
Markham ON L3R 5K3

Report Date: 11/27/2012
Report No.: 291162
Project: PWGSC Health Canada Lab
Project No.: 121-25112-00

TEM BULK SAMPLE ANALYSIS SUMMARY

IATL No.: 124848725B **Description / Location:** Tan Mastic **Loc.:** 114
Client No.: HC-3C

Organic Fraction: 63.3 %

Gravimetrically Reduced Subsample: 36.7 %

Percent Asbestos Detected: Trace Chrysotile, Detected at < 0.25%
Tremolite, Detected at < 0.25%

Percent Non-Asbestos Fibrous Material: ND None Detected

Percent Non-Fibrous Material: 36.7 % Other

Comments: Note: Insufficient material (<100mg) to verify results.

NIST-NVLAP No. 101165-0

AIHA-LAP, LLC No. 100188

NYS-DOH No. 11021

Methodology: Transmission Electron Microscopy (TEM) in Accordance With :
ELAP 198.4 "Method For Identifying And Quantitating Asbestos In Non-Friable Organically Bound Bulk Samples", Revised 1/11/2005.
EPA-600/R-93/116 Section 2.5 "Asbestos In Bulk Building Materials By TEM Gravimetry."

IATL assumes that all sampling methods and data upon which these results are based have been accurately supplied by the client.

The "Gravimetrically Reduced Subsample" is the portion of the submitted sample remaining following the ashing and acid treatment processes. TEM analysis occurs on this portion of the sample. Final results are calculated to represent the sample as submitted.

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Analysis Performed By: C. Liska

Date: 11/27/2012

CERTIFICATE OF ANALYSIS

Client: GENIVAR Inc. 600 Cochran Drive; Suite 500 Markham ON L3R 5K3	Report Date: 11/26/2012 Report Number: 291015 Project: PWGSC Health Canada Lab Project No.: 121-25112-00
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LEAD PAINT SAMPLE ANALYSIS SUMMARY

<u>Lab No.</u>	<u>Client No.</u>	<u>Location / Description</u>	<u>Concentration Lead By Weight (%)</u>
4848613	HC-L1	Blue Paint/Door Frames Location: 225	0.26
4848614	HC-L2	Lt. Yellow Paint/Door Frames Location: 165	Void**
4848615	HC-L3	Yellow Paint/Door Frames Location: 165	0.95
4848616	HC-L4	Cream Paint/Walls Location: 115	0.0064***
4848617	HC-L5	Grey Paint/Floor Location: Service Core	0.062

Accreditations: **NATIONAL LEAD LABORATORY ACCREDITATION PROGRAM (NLLAP)**
AIHA-LAP, LLC No. 100188 NYSDOH-ELAP No. 11021

Analytical Methods: ASTM D3335-85A "Standard Method To Test For Low Concentrations Of Lead In Paint By Atomic Absorption Spectrophotometry"
 EPA SW846-(3050B:7000B) "Standard Method To Test For Low Concentrations Of Lead In Soils, Sludges and Sediments By AAS"

Comments: Regulatory limit is 0.5% lead by weight (EPA/HUD guidelines). Recommend multiple sampling for all samples less than regulatory limit for confirmation. All results are based on the samples as received at the lab. IATL assumes that appropriate sampling methods have been used and the data upon which these results are based have been accurately supplied by the client. Method Detection Limit (MDL) per EPA Method 40CFR Part 136 Appendix B. Reporting Limit (RL) based upon Lowest Standard Determined (LSD) in accordance with AIHA-ELLAP policies. LSD=0.2 ppm MDL=0.0044% by weight. RL= 0.010% by weight (based upon 100 mg sampled). * Insufficient sample provided to perform QC reanalysis (<200 mg) ** Not enough sample provided to analyze (<50 mg) *** Matrix / substrate interference possible. Sample results are not corrected for contamination by field or analytical blanks. This confidential report relates only to those item(s) tested and does not represent an endorsement by NIST-NVLAP, AIHA or any government agency. This report shall not be reproduced except in full, without written approval of the laboratory.

Date Received: 11/23/2012
Date Analyzed: 11/26/2012
Analyst: C. Shaffer

Approved By: _____
 Frank E. Ehrenfeld, III
 Laboratory Director

Appendix C

Project Photographs



Health Canada Laboratories, Health Canada
2301 Midland Avenue, Toronto, ON



Photograph 1: [Room 115] Asbestos-containing Transite cement pipe vents above fume hoods observed to be in good condition.



Photograph 2: [Service Cores] Asbestos-containing Transite cement piping observed to be in good condition.



Photograph 3: [Room 225] Asbestos-containing Transite cement panels within fume hoods observed to be in good condition.



Photograph 4: [Room 165] Asbestos-containing drywall joint compound observed to be in good condition.

Health Canada Laboratories, Health Canada
2301 Midland Avenue, Toronto, ON



Photograph 5: [Room 225] Lead-containing white wall paint application (V-L-06) and blue door frame paint (HC-L1), both observed to be in good condition.



Photograph 6: [Room 165] Lead-containing yellow paint application (HC-L3) observed to be in good condition.

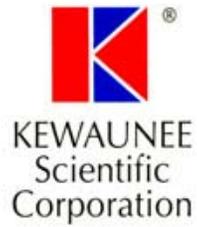


Photograph 7: [Service Cores] Lead-containing grey floor paint application observed to be in good condition.

Appendix D

Supplemental Information





November 21, 2012

Jessica MacKinnon
GENIVAR

The pictures you sent Kewaunee are of hoods that are at least 35 years old. The interior panels of these hoods are asbestos-containing cement board.

Sincerely,

A handwritten signature in black ink, appearing to read "Ranjit Gurjar". The signature is stylized and cursive.

Ranjit Gurjar
Director of Engineering
Kewaunee Scientific Corporation