

**DESIGNATED SUBSTANCE AND HAZARDOUS BUILDING MATERIAL SURVEY
CENTRAL HEATING AND COOLING PLANT (CHCP), BUILDING 3,
COMMUNICATIONS RESEARCH CENTRE CANADA (CRCC),
3701 CARLING AVENUE, OTTAWA, ON**



Submitted to:



**Public Services and
Procurement Canada**

**Public Services and Procurement Canada
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EXECUTIVE SUMMARY

Public Services and Procurement Canada (PSPC) retained BluMetric Environmental Inc. (BluMetric™) to conduct a Designated Substance and Hazardous Building Material Survey (DSHBMS) prior to the underground storage tank (UST) and above ground storage tank (AST) removal project at the Central Heating and Cooling Plant (CHCP), Building 3, located at the Communications Research Centre Canada (CRCC) at 3701 Carling Avenue in Ottawa, Ontario.

The site survey and sampling were performed by a BluMetric Occupational Hygiene and Environmental Technician on April 30, 2021 under the direction of the BluMetric Manager of Occupational Hygiene and Safety.

The purpose of the DSHBMS was to identify designated substances that may be impacted by the upcoming fuel storage tank system upgrade project. A visual assessment and semi-intrusive sampling was conducted for suspect asbestos and materials with lead content. A visual assessment was conducted to identify other designated substances such as acrylonitrile, arsenic, benzene, coke oven emissions, ethylene oxide, isocyanates, mercury, silica, vinyl chloride, and select hazardous materials such as halocarbons, polychlorinated biphenyls (PCBs) and mould.

The findings of the DSHBMS, based on the visual assessment and sampling, are summarized in Table I, below.

Table 1: Summary of Findings

Designated Substance	Summary of Findings
Asbestos	The following asbestos-containing materials were identified within the project areas. <ul style="list-style-type: none">• Grey paper layer under HVAC canvas• Vermicrete-like plaster and debris• Mortar/parging debris• Mechanical pipe elbow insulation
Lead	Low-level lead, lead-containing, or lead-based surface coatings were identified within the project areas.
Mercury	The following mercury-containing equipment were identified within the project area: <ul style="list-style-type: none">• Approximately 56 fluorescent light tubes• Thermostats (suspect)
Silica	The following silica-containing building materials were observed within the project area: <ul style="list-style-type: none">• Brick and mortar• Cinderblock and mortar• Plaster• Poured concrete



Designated Substance	Summary of Findings
Polychlorinated Biphenyls (PCBs)	The following suspect PCB-containing equipment were observed within the project area: <ul style="list-style-type: none">• Approximately 28 fluorescent light ballasts
Halocarbons	The following suspect halocarbon-containing equipment was observed within the project area but not anticipated to be disturbed: <ul style="list-style-type: none">• Fujitsu air conditioner – refrigerant 410A – 9oz
Mould	None observed
Benzene	The following equipment contain fuel (anticipated to contain benzene) within the project area: <ul style="list-style-type: none">• AST – 2,200L diesel fuel• UST – 2,500L fuel• Day tank• FOS, FOR and associated fuel piping
Other Designated Substances	None observed

The statements made within the executive summary are intended to be read in conjunction with the remainder of the report and are subject to the same limitations stated in Section 3.1.



TABLE OF CONTENTS

EXECUTIVE SUMMARY	i
1. INTRODUCTION	1
2. UNDERSTANDING OF WORK.....	1
3. OBJECTIVES AND SCOPE OF WORK.....	1
3.1 LIMITATIONS.....	2
4. PROJECT PREPARATION	3
4.1 DOCUMENT REVIEW	3
5. DESIGNATED SUBSTANCES AND HAZARDOUS BUILDING MATERIALS ASSESSMENT ...	3
5.1 ASBESTOS	3
5.1.1 Findings	3
5.1.2 Recommendations	5
5.2 LEAD.....	8
5.2.1 Findings	8
5.2.2 Recommendations	9
5.3 MERCURY	9
5.3.1 Findings	9
5.3.2 Recommendations	9
5.4 SILICA	9
5.4.1 Findings	9
5.4.2 Recommendations	10
5.5 POLYCHLORINATED BIPHENYLS (PCBs).....	10
5.5.1 Findings	10
5.5.2 Recommendations	10
5.6 HALOCARBONS.....	10
5.6.1 Findings	10
5.6.2 Recommendations	11
5.7 MOULD	11
5.7.1 Findings	11
5.7.2 Recommendations	11
5.8 BENZENE.....	11
5.8.1 Findings	11
5.8.2 Recommendations	11



5.9	OTHER DESIGNATED SUBSTANCES.....	12
5.9.1	Methodology.....	12
5.9.2	Findings	12
6.	CLOSURE.....	12

LIST OF TABLES

Table 1:	Summary of Findings	i
Table 2:	Summary of Asbestos-Containing Materials.....	4
Table 3:	Summary of Non-Asbestos-Containing Materials.....	5
Table 4:	Summary of Lead Analysis Results	8
Table 5:	Minimum of Asbestos Bulk Material Sample Requirements.....	Appendix A
Table 6:	TWA for Additional Designated Substances.....	Appendix A
Table 7:	200224-69 - CRCC Building 3 - Table 7 - Asbestos Results	Appendix B
Table 8:	200224-69 - CRCC Building 3 - Table 8 - Lead Results.....	Appendix B

LIST OF APPENDICES

Appendix A:	Regulations, Methods, and Resources
Appendix B:	Summary of Sample Locations and Analytical Results, and Photo Logs
Appendix C:	Laboratory Reports, Certificates of Analysis, and Chain of Custody Records
Appendix D:	Figures



1. INTRODUCTION

Public Services and Procurement Canada (PSPC) retained BluMetric Environmental Inc. (BluMetric™) to conduct a Designated Substance and Hazardous Building Material Survey (DSHBMS) prior to the underground storage tank (UST) and above ground storage tank (AST) removal project at the Central Heating and Cooling Plant (CHCP), Building 3, located at the Communications Research Centre Canada (CRCC) at 3701 Carling Avenue in Ottawa, Ontario.

The site survey and sampling were performed by a BluMetric Occupational Hygiene and Environmental Technician on April 30, 2021 under the direction of the BluMetric Manager of Occupational Hygiene and Safety.

2. UNDERSTANDING OF WORK

The purpose of the DSHBMS was to identify, quantify, and assess the condition of asbestos-containing materials, surface coatings and paints with lead content, and other designated substances prior to the commencement of the upcoming project.

The DSHBMS for the building was completed in compliance with the PSPC *Asbestos Management Standard* (dated June 2019), O. Reg. 278/05 (Designated Substance - Asbestos on Construction Projects and in Buildings and Repair Operations), and O. Reg. 490/09 (Designated Substances).

BluMetric coordinated on-site sampling with the PSPC Project Manager to assess and sample in select areas that are anticipated to be disturbed during the upcoming project. Walls, floors, ceilings, pipes, and mechanical equipment were assessed, if anticipated to be disturbed during the project.

The DSS was limited to the following areas:

- Building 3, 3701 Carling Avenue – Ground floor (Rooms 106, 107, 110, 112, exterior tanks and associated piping).

3. OBJECTIVES AND SCOPE OF WORK

The scope of work of this project included the following:



- A review of past reports and a gap analysis were performed to determine sampling requirements.
- A site visit was conducted to perform sampling for asbestos (in building materials), lead (in paint), and identify polychlorinated biphenyls (PCB's), halocarbons; and comment on the potential presence of the other nine designated substances or other potentially hazardous material.
 - Representative bulk samples for asbestos content analysis (minimum of three samples of each (homogeneous) type (estimated by visual appearance and texture) to meet Ontario Regulation 278/05 requirement) were collected.
 - Representative samples of paint were collected for lead-content analysis.
- Preparation of a report, including methodology, interpretation of sampling results, observations from site, observations from exploratory holes, photographs, quantities of ACM, lab report, floor plan (with sample locations and extent of confirmed asbestos-containing materials), recommendations (if required) and conclusions, based on the findings.
- National Master Specification (NMS)-format hazardous materials abatement specification for asbestos, based on the results of the DSHBMS. A NMS summary format specification was used for the remaining designated substances and/or hazardous materials.

3.1 LIMITATIONS

This report reflects the observations and site conditions of the accessible areas of the site at the time of the assessment. All efforts were made to thoroughly access and assess all areas; however, designated substances and hazardous building materials may remain within inaccessible areas of the buildings (behind physical barriers, within operating mechanical or electrified equipment).

Samples were collected from suspect asbestos-containing materials and suspect paints and surface coatings for lead content only. The results of the analytical results are representative of the sampled material, at the sample location, only. The assessment for all other designated substances and hazardous materials were based only on a visual assessment.

Full access to the project work areas was provided to BluMetric; however, the following areas were inaccessible during the site visit:

- Wall cavity between interior wall and exterior corrugated metal sheeting; and
- Any interior or underground components associated with the UST and AST.

Due to health and safety concerns, the fluorescent light fixtures could not be fully inspected by BluMetric staff, as they remained electrified at the time of the assessment.



4. PROJECT PREPARATION

4.1 DOCUMENT REVIEW

BluMetric was provided with and referenced the following documents/reports prior to the site visit in preparation of this report:

- 000745 - Shirley's Bay Fuel Storage Tank Removal
- Bldg 3 - Shirley's Bay Asbestos Survey - Final - May 28, 2018
- DSR Summary- Duct inspection project - Building 3

5. DESIGNATED SUBSTANCES AND HAZARDOUS BUILDING MATERIALS ASSESSMENT

5.1 ASBESTOS

5.1.1 Findings

Refer to **Appendix A** for information regarding the regulatory framework governing asbestos-containing materials in Canada (COHSR, Part X) and in Ontario (O. Reg. 278/05), and the *Asbestos Management Standard* (PSPC, June 2019).

Information, including room numbers, sample IDs, material types / descriptions, structural elements, friability, condition, accessibility, and asbestos type and concentration are provided in **Appendix B**. A photo log providing pictures of ACM is provided in **Appendix B**. The laboratory reports and chain of custody records are provided in **Appendix C**. Figures representing sample locations and extent of asbestos-containing materials are provided in **Appendix D**.

A summary of the asbestos-containing materials (ACM) is provided in **Table 2**, below.



Table 2: Summary of Asbestos-Containing Materials

Sample ID	Sample Location	Locations with Visibly Similar Material	Building System	Material Description	Type and Content	Friability
BluMetric Sampled Material						
112-O-Duct-01A-C	Main floor - Room 112	Possibly located in other rooms	Other (duct)	Grey paper layer under duct canvas	70% Chrysotile	Yes
110-W-PLA-01A-C	Main floor - Room 110	Ceiling	Wall	Vermicrete-like plaster	1% Chrysotile 1% Tremolite	Yes
Previously Identified						
PSPC sample ID - B3Shirley-AS-3A-C	PSPC, 2018	Above ceiling tiles of Rooms 106 & 107, may be present inside cinderblocks	Ceiling Space	Grey/white vermicrete debris	1% Tremolite	Yes
PSPC sample ID - B3Shirley-AS-4C	PSPC, 2018	Above ceiling tiles of Rooms 106 & 107, may be present inside cinderblocks	Ceiling Space	Dark Grey mortar/parging debris	1% Chrysotile	Yes
WSP Sample ID - 03- ELB-14A, B, C.	WSP, 2018	Rooms 109, 110, 112	Other	Mechanical pipe elbow insulation	65% Chrysotile	Yes

Other ACMs have been identified within the building; however, these materials were not identified within the proposed project areas and therefore, have not been listed. For more information regarding other ACMs, refer to historical reports.

If new or suspect asbestos-containing materials are encountered or become accessible during the project, work in the immediate area should cease, and the material should be sampled and analyzed for asbestos content.



The following table summarizes building materials that were sampled (previously) and asbestos was not detected.

Table 3: Summary of Non-Asbestos-Containing Materials

Sample ID	Sample Location	Locations with Visibly Similar Material	Building System	Material Description
Previously Identified				
WSP Sample ID - 03-MTR-02A, B, C, D, E, F, G.	WSP, 2018	WSP, 2018 (Throughout (including 106, 107 & 109))	Wall	Mortar on brick and cement block
WSP Sample ID - 03-CLK-03A, B, C.	WSP, 2018	WSP, 2018 (Exterior)	Wall	Brown exterior caulking on metal sheeting
WSP Sample ID - 03-VFT-06A, B, C.	WSP, 2018	WSP, 2018 (Throughout (including 106, 107 & 109))	Floor	12" white vinyl floor tiles with blue-grey streaks (and associated mastic adhesive)
WSP Sample ID - 03-ACT-13A, B, C.	WSP, 2018	WSP, 2018 (Throughout (including 106, 107 & 109))	Ceiling	2'X4' ceiling tiles with large and small pinholes

The following materials were visually assessed as being non-asbestos-containing and were not sampled:

- Bare metal sheeting;
- Uninsulated metal pipes;
- PVC or plastic electrical wires;
- Galvanized metal conduits; and,
- Fibreglass and fiberglass paper.

5.1.2 Recommendations

The hazardous abatement procedures to be followed during the project are based on the scope of impacted area, type of building material, friability, type of work to be undertaken, equipment to be used, wet/dry work procedures, and fibre-release control measures (e.g., power tools equipped with HEPA filters). The classification of asbestos-related work is based on Section 6.2.1. of the Public Services and Procurement Canada Asbestos Management Standard which was developed to supplement the legislative requirements outlined in the Canada Occupational Health and Safety Regulations (COHSR) Part X – Hazardous Substances. Private-sector abatement contractors will also be required to follow the requirements as indicated in O.Reg. 278/05



(Designated Substance - Asbestos on Construction Projects and in Buildings and Repair Operations), and O. Reg. 490/09 (Designated Substances) under the Ontario Occupational Health and Safety Act, R.S.O. 1990, c. O.1.

Below describes precautions to be taken for Low risk, Moderate risk, and High risk operations.

Low risk work includes:

- non-destructive (i.e. without breaking, cutting, drilling, abrading) removal of non-friable asbestos-containing material;
- destructive work (i.e., breaking, cutting, drilling, abrading) on wetted non-friable asbestos-containing material with non-powered hand-held tools;
- removal of one square meter or less of drywall in which joint compounds contain asbestos-containing materials;
- removal or replacement of 7.5 square metres or less of non-friable asbestos-containing compressed-mineral-fibre-type ceiling tiles; and
- collecting samples of materials suspected of containing friable asbestos.

Moderate risk work includes:

- entry into ceiling spaces, crawlspaces, pipe tunnels, etc., where friable asbestos debris is or may be present;
- removal or replacement of greater than 7.5 square metres of non-friable asbestos-containing compressed-mineral-fibre-type ceiling tiles;
- removing more than 2 square meters of friable asbestos-containing suspended ceiling tiles that are removed without being broken, cut, drilled, abraded, ground, sanded, or vibrated;
- removal of more than one square metre of drywall where asbestos-containing joint compound materials has been used;
- destructive work (i.e., breaking, cutting, drilling, abrading) on non-wetted, non-friable asbestos-containing material with non-powered handheld tools;
- destructive work (i.e., breaking, cutting, drilling, abrading) on non-friable asbestos-containing material if the work is done by means of power tools that are attached to dust collecting devices equipped with a high efficiency particulate air (HEPA) filters;
- minor removal or disturbance of friable asbestos-containing material. Minor is defined as follows:
 - in Quebec: up to 0.03 m³ of debris
 - all others: up to 1 m² of surface area
- enclosing friable asbestos-containing material;
- applying tape or cover to asbestos-containing insulation;
- glove bag removal of asbestos-containing material from a pipe, duct or similar structure;
- removing filters in an air handling unit in a building that has sprayed-on asbestos-containing fireproofing; and



- work not otherwise classified as either low or high risk.

High risk work includes:

- major removal or disturbance of friable asbestos-containing material (greater than quantities defined under moderate work);
- destructive work (i.e., breaking, cutting, drilling, abrading) of non-friable asbestos-containing material using power tools not attached to dust-collecting devices equipped with HEPA filters;
- encapsulating friable asbestos-containing material by spray application of an encapsulant or sealant;
- cleaning or removal of ductwork and air handling equipment serving or passing through areas of buildings with sprayed, friable asbestos-containing material; and
- repair, alteration or demolition of a boiler, furnace, kiln, or similar equipment made of asbestos-containing refractory materials.

Based on the results of the assessment within the areas of the upcoming project work, we recommend the following:

- Minor removal or disturbance of friable asbestos-containing material. Minor is defined as up to 1 m² of surface area, using **Moderate Risk Work Procedures**:
 - Vermicrete and grey mortar debris above ceiling tiles;
 - Vermicrete;
 - Grey duct paper; and,
 - Grey pipe insulation, if required.
- Removal or disturbance of greater than 1 m² of surface area of the following friable asbestos-containing materials must be conducted in accordance with **High Risk Work Procedures**.
 - Vermicrete;
 - Grey duct paper; and,
 - Grey pipe insulation, if required.
- Destructive work (i.e., drilling) on non-wetted, non-friable asbestos-containing materials with non-powered hand held tools, or destructive work by means of power tools that are attached to dust collecting devices equipped with a high efficiency particulate air (HEPA) filters may be conducted as **Moderate Risk Work Procedures**. If the power tools are not equipped with HEPA filters, **High Risk Work Procedures** would apply.

If new or suspect asbestos-containing materials are encountered during the upcoming project, work in the immediate area should cease, and the material should be sampled and analyzed for asbestos content.



5.2 LEAD

5.2.1 Findings

Refer to **Appendix A** for information regarding the MOL's *Guideline: Lead on Construction Projects* dated (April 2011) and the EACO *Lead Guideline for Construction, Renovation, Maintenance or Repair* dated October 2014.

Information, including room numbers, sample IDs, material types / descriptions, structural elements, condition, and lead concentration are provided in **Appendix B**. A photo log providing pictures of all low lead, lead-containing, and lead-based paints is provided in **Appendix B**. The laboratory reports and chain of custody records are provided in **Appendix C**. Figures representing sample locations and extent of containing materials are provided in **Appendix D**.

Table 4: Summary of Lead Analysis Results

Sample ID	Sample Location	Locations with Visibly Similar Material	Building System	Material Description	Lead Content
Sampled Materials					
EXT-O-Pipe-P01	Main floor - Room 112	FOS and FOR pipes (exterior and room 112), day tank	Other	Grey	1,620
EXT-O-Beam-P02	Exterior	Three metal beams on concrete curb	Other	Yellow, black	<20
EXT-O-Vent-P03	Exterior	Normal vent metal pipe	Other	Brown, white	1,100
EXT-O-Tank-P04	Exterior	Metal AST to be removed	Other	Blue, blue, beige	646
110-W-PLA-P05	Main floor - Room 110	Room 110 plaster walls and ceiling, 112 walls (cinderblock, brick) and ceiling (corrugated metal)	Wall and ceiling	Beige	1,220
112-F-Conc-P06	Main floor - Room 112	Room 110 and 112 poured concrete floor	Floor	Grey	561
107-W-CB-P08	Main floor - Room 107	Cinderblock walls in rooms 106, 107 and 109	Walls	White, beige, green, brown	2,410

Notes:

- 1) **Grey and Bold** – Indicates “Lead Containing” (lead content between >1,000 – <5,000 µg/g) or “Lead Based” (lead content >5,000 µg/g)
- 2) Grey – Indicates “Low-level Lead” (lead content of >90 µg/g – ≤1,000 µg/g)
- 3) No Highlight - Indicates “no lead” (lead content ≤90 µg/g)



None of the paints were submitted for leachable lead analysis (TCLP), as requested by PSPC.

Lead may be present in other building materials including solder used on plumbing lines and fixtures, and in electrical equipment. These types of building materials were not tested as part of this assessment as the amounts of lead present would be minimal and are physically bound into the solder, thus do not pose a significant concern during the proposed work.

5.2.2 Recommendations

The Ontario Ministry of Labour (MOL) Lead on Construction Projects Guidelines and/or the EACO Lead Guideline for Construction, Renovation, Maintenance or Repair should be consulted for all work that may disturb low-level lead, lead-containing and lead-based paint or surface coatings. The stated guidelines include information on respiratory protection and work practices.

If newly identified paints or surface coatings are identified throughout the project, work should be halted, and the paint or surface coating should be sampled and submitted for lead-content analysis prior to work continuing.

5.3 MERCURY

5.3.1 Findings

The following mercury-containing equipment were identified within the project area.

- Approximately 56 fluorescent light tubes; and,
- Thermostats (suspect).

5.3.2 Recommendations

If previously unidentified or suspect mercury-containing materials and/or items are uncovered during the project, appropriate precautions outlined in **Appendix A** must be taken to avoid damaging the equipment or disturbing the mercury-containing materials.

5.4 SILICA

5.4.1 Findings

Silica is known to be present in cementitious building materials. At the time of the assessment, the following silica-containing building materials were observed within the project area:



- Brick and mortar;
- Cinderblock and mortar;
- Plaster; and
- Poured concrete.

5.4.2 Recommendations

Precautions should be taken to limit worker exposure to airborne silica particulate during the project in accordance with the *Silica on Construction Projects*, issued by the Ontario Ministry of Labour.

Additional information is provided in **Appendix A**.

5.5 POLYCHLORINATED BIPHENYLS (PCBs)

5.5.1 Findings

The following suspect PCB-containing equipment were observed within the project area:

- Approximately 28 fluorescent light ballasts.

5.5.2 Recommendations

If suspect PCB-containing equipment is discovered during the project, an environmental consultant should be consulted, and suspect PCB-containing equipment should be confirmed. PCB-containing equipment should be handled, stored, and disposed in accordance with the PCB Regulations SOR/2008-273 and R.R.O. 1990, Reg. 362.

5.6 HALOCARBONS

5.6.1 Findings

The following suspect halocarbon-containing equipment was observed within the project area but is not anticipated to be disturbed:

- Fujitsu air conditioner – refrigerant 410A – 9oz.



5.6.2 Recommendations

Should any equipment suspected of containing a refrigerant is uncovered and will be disturbed, during the project, a refrigeration technician should be consulted for recommendations on how to handle and dispose of the equipment. Equipment containing a refrigerant should be handled, stored, and disposed in accordance with the *Federal Halocarbon Regulation, SOR/2003-289*. The regulations stipulate specific federal requirements that must be met, including: installation, servicing, leak testing, charging, service logs, release reports, record keeping, etc.

5.7 MOULD

5.7.1 Findings

At the time of the assessment, there was no visual evidence of mould growth.

5.7.2 Recommendations

If any suspect mould growth is uncovered during the project, remediation of the suspect mould should be completed by a competent person in accordance with the CCA's *Mould Guidelines for Canadian Construction Industry* (dated 2004) and/or EACO's *Mould Abatement Guidelines* (edition 3 dated 2015).

5.8 BENZENE

5.8.1 Findings

The following equipment contains fuel (anticipated to contain benzene) within the project area:

- AST – 2,200L diesel fuel;
- UST – 2,500L fuel;
- Day tank; and,
- FOS, FOR and associated fuel piping.

5.8.2 Recommendations

When benzene-containing materials are handled during the upcoming project, workers should wear proper respirator protection and materials should be disposed of at an approved waste facility.



5.9 OTHER DESIGNATED SUBSTANCES

5.9.1 Methodology

BluMetric conducted a visual assessment for the following designated substances:

- Arsenic;
- Acrylonitrile;
- Coke oven emissions;
- Ethylene oxide;
- Isocyanates; and
- Vinyl chloride.

5.9.2 Findings

At the time of the assessment, there was no visual evidence of the other designated substances or hazardous building materials.

If additional designated substances or hazardous building materials are identified throughout the project, an environmental consultant should be consulted for recommendations on how to appropriately handle the designated substance. These substances are governed by O. Reg. 490/09.

Reference **Appendix A** for more information regarding regulations concerning these designated substances.

6. CLOSURE

The conclusions presented in this report represent our professional opinion and are based upon the work described in this report and any limiting conditions in the terms of reference, scope of work, or conditions noted herein.

The findings presented in this report are based on conditions observed at the specified dates and locations, the analysis of samples for the specified parameters, and information obtained for this project. Unless otherwise stated, the findings cannot be extended to previous or future site conditions, locations that were not investigated directly, or types of analysis not performed.




BluMetric makes no warranty as to the accuracy or completeness of the information provided by others, or of conclusions and recommendations predicated on the accuracy of that information. Nothing in this report is intended to constitute or provide a legal opinion. BluMetric makes no representation as to compliance with occupational health and safety laws, rules, regulations, or policies established by regulatory agencies.

This report has been prepared for Public Services and Procurement Canada. Any use of a third party makes of this report, any reliance on the report, or decisions based upon the report, are the responsibility of those third parties unless authorization is received from BluMetric in writing.


BluMetric accepts no responsibility for any loss or damages suffered by any unauthorized third party as a result of decisions made or actions taken based on this report.

Respectfully submitted,
BluMetric Environmental Inc.

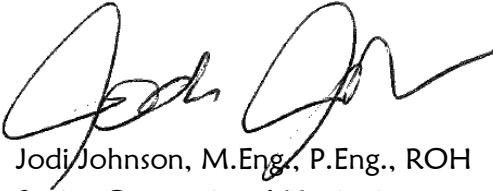


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APPENDIX A

Methodology, Regulations, and Resources



ASBESTOS

Regulations

Federal buildings must comply with Part II of the Canada Labour Code – Occupational Health and Safety, the Canada Occupational Health and Safety Regulations (COHSR) Part X – Hazardous Substances, and the Public Service and Procurement Canada (PSPC) *Asbestos Management Standard* (updated in June 2019). These regulations and standard detail asbestos-containing materials management, maintenance, repair, and abatement work processes.

The PSPC *Asbestos Management Standard* requires that all crown-owned and engineering assets must conduct an inspection to identify ACM, determine asbestos type and content, quantify of ACM, determine friability, assess the current condition, and the accessibility of the ACM. Based on the inspection, an asbestos inventory is developed as part of the Asbestos Management Plan and is maintained onsite in an accessible location for workers. Annual ACMs reassessments are required to update new inventory information as changes (renovations, retrofits, and upgrades) are made at specific locations, or as new ACM are identified. Outdated inventory records must be archived and retained as per section 6.2.11 of the PSPC Asbestos Management Standard.

In Ontario, asbestos containing materials (ACMs) are defined as any material identified to contain 0.5% or more asbestos (by dry weight volume) within one sample of a homogeneous material, as determined by the standard polarized light microscopy (PLM) method, as stipulated in Ontario Regulation 278/05 (O. Reg. 278/05), “*Designated Substance – Asbestos on Construction Projects and in Buildings and Repair Operations*”.

O. Reg. 278/05 requires that a management program designed to prevent worker exposure to airborne asbestos fibres be established in buildings where asbestos is known to be present. This program includes training of workers who may disturb asbestos and routine inspection and maintenance of the materials. The regulations states that “Ongoing asbestos management in buildings applies to the owner of a building that has been advised under Section 9 of the discovery of material that may be asbestos-containing material; and/or, an owner of a building knows or ought reasonably to know that asbestos-containing material has been used in a building for any purpose related to the building, including insulation, fireproofing and ceiling”.



Ontario Regulation 347, revised by Reg. 558 - made under the *Ontario Environmental Protection Act*, define specific requirements for the disposal of materials containing friable asbestos at landfills. O.Reg 347 states that asbestos waste must be transported in a properly labelled double-sealed container that is free of cuts, tears, or punctures, and be disposed of at a licensed waste station that has been appropriately notified of the shipment. Transportation of asbestos waste falls under the federal *Transportation of Dangerous Goods Act*. Asbestos waste must be transported in an appropriate vehicle with placards and transportation numbering and on arrival to the licensed landfill, should be immediately buried.

Methodology

BluMetric conducted a visual assessment in the project specific areas of the buildings to identify suspect asbestos-containing building materials (ACM). The condition, quantity, and accessibility of suspect ACM was noted.

BluMetric conducted intrusive sampling of suspect ACM by cutting and/or scraping using hand tools. Samples were placed into individual sample bags labeled with a unique sample number. The number of representative samples collected of each homogenous material is determined in accordance with O. Reg. 278/05 and are outlined in Table 5, below.

Table 5: Minimum of Asbestos Bulk Material Sample Requirements

Item	Type of Material	Size of Area of Homogeneous Material	Minimum Number of ACM Samples to be Collected
1.	Surfacing material, including without limitation material that is applied to surfaces by spraying, by troweling or otherwise, such as acoustical plaster on ceilings and fireproofing materials on structural members	Less than 90 square metres	3
		90 or more square metres, but less than 450 square metres	5
		450 or more square metres	7
2.	Thermal insulation, except as described in item 3	Any size	3
3.	Thermal insulation patch	Less than 2 linear metres or 0.5 square metres	1
4.	Other material	Any size	3

Samples of suspect ACMs were sent to NVLAP-accredited laboratory and analyzed by polarized light microscopy (PLM) using EPA Method 600/R-93/116/NYS-DOH 198.1. The laboratory staff was instructed to perform a “Positive Stop” analysis on materials, that is, if analysis indicates that if one sample in a homogenous material set is identified to be asbestos-containing, then, by default, all samples of the homogenized material are considered to be asbestos-containing and the remaining samples in the homogenous materials set are not analyzed.



LEAD

Regulations

Lead is a naturally occurring metal which can pose a health risk when inhaled, ingested, or absorbed. A common source of lead in commercial and residential buildings is paint. A health risk may occur as the paint surface deteriorates with aging or is damaged and disturbed to the point of creating dust and chips. Lead may also exist in solder used on plumbing lines and fixtures and in electrical equipment.

Paints are considered “no lead” if they are below laboratory detection limit or meet the Surface Coatings Material Regulation (lead content $\leq 90 \mu\text{g/g}$).

The *Surface Materials Regulations* (SOR/2005-109) under the federal *Hazardous Products Act* stipulates that total lead concentration of surfaces coatings cannot exceed $90 \mu\text{g/g}$ to be sold in Canada. This standard serves primarily to reduce potential exposure to lead by ingestion in residential settings where children may have access to lead contaminated surfaces or coated materials.

In the absence of a published criterion to determine whether an existing paint coating contains potentially hazardous levels of lead with respect to a potential exposure, it is reasonable to use the aforementioned legislation as a screening benchmark. Thus, paint samples with concentration of $\leq 90 \mu\text{g/g}$ are considered to be ‘no lead’.

The Environmental Abatement Council of Ontario (EACO) published document *Lead Guideline for Construction, Renovation, Maintenance or Repair* dated October 2014 is intended to be used when handling, applying, removing, or otherwise disturbing surface materials with lead content. This document is considered the industry standard best-practises for lead abatement and dust control measures. The *Lead Guideline for Construction, Renovation, Maintenance or Repair* dated

October 2014 stipulates that paints containing less than or equal to $1,000 \mu\text{g/g}$ lead are considered “low-level” lead paints, paints between $1,000 \mu\text{g/g}$ and $5,000 \mu\text{g/g}$ are considered to be “lead-containing”, and paints containing more than or equal to $5,000 \mu\text{g/g}$ are defined as “lead-based”.

For the purpose of this guideline, paints or surface coatings containing less than or equal to $1,000 \mu\text{g/g}$ of lead by weight are considered “low-level” lead paints. If these materials are disturbed in a non-aggressive manner, completed using regular dust control procedures and that



the Time-Weighted Average for Particles Not Otherwise Specified is not exceeded (R.R.O. 1990, Reg. 833 – Control of Exposure to Biological or Chemical Agents), worker protection from the inhalation of lead would not be required.

Where construction workers are exposed to airborne lead, measures and procedures to control their exposure must be implemented. The Ontario Ministry of Labour (MOL) Guideline (dated April 2011): Guideline: Lead on Construction Projects classifies all lead disturbances as Type 1, Type 2 or Type 3 operations, and can be thought of as being of low, medium, and high risk. Specific measures and procedures for working with lead are required depending on how the work is classified.

Disposal of construction waste containing lead must be done in accordance with O. Reg. 347 – General – Waste Management under the Ontario Environmental Protection Act. The classification of the waste as hazardous or non-hazardous is dependent upon the results of Toxicity Characteristic Leaching Procedure (TCLP) analysis. Any lead confirmed to be leachable in excess of 5.0 mg/L as per Schedule 4 – Leachate Quality Criteria should be disposed as hazardous waste.

Methodology

BluMetric conducted a visual assessment of the areas to identify suspect paints and surface coatings for lead content. Paint samples were selected to reflect all types of painted surfaces in the project specific areas of the buildings, while treating paints of similar colour as homogenous.

Suspect paints and surface coatings were collected by scraping or chipping the paint or surface coating using a chisel or utility knife, or by collecting existing flaking paint. Samples of suspect paints and surface coatings were placed into individual sample bags labeled with a unique sample number (starting at “P01” and proceeding in ascending numerical order). Sampling tools, utility knives and scrapers, were cleaned between samples to prevent cross contamination.

The samples collected were sent to the laboratory for lead content analysis in accordance with EPA Method 6020-ICP-MS.



MERCURY

Regulations

The Canada Consumer Product Safety Act – Surface Coating Materials Regulations SOR/2005-109 under the federal *Hazardous Products Act* stipulates that the concentration of total mercury present in a surface coating material (e.g., paints) must not be more than 10 µg/g if it is to be sold in Canada.

Mercury-containing materials must be either recycled or disposed as hazardous waste following the requirements of O. Reg. 347 – Waste Management under the *Ontario Environmental Protection Act*.

Methodology

A visual assessment for potential mercury-containing items (e.g., fluorescent light tubes, thermometers, and thermostat controls) was conducted in the project work areas.

SILICA

Regulations

Silica, as free crystalline quartz, is present in cementitious building materials. Silica, in an airborne dust form, may pose a health risk when inhaled over a prolonged duration. The time weighted average (TWA) exposure limit in Ontario for airborne crystalline silica is 0.05 mg/m³ (Cristobalite) and 0.10 mg/m³ (Quartz/Tripoli) as per O.Reg 833, and 0.025 mg/m³ (α-Quartz and Cristobalite) as per Part X of the COHSR which references ACGIH® Threshold Limit Values (TLVs®). Silica is also considered to be a designated substance and is regulated under O.Reg 490/09.

For silica containing materials, precautions should be taken during construction activities such as coring through concrete slabs and demolition of masonry or concrete units to ensure that workers' exposure levels to respirable airborne crystalline silica do not exceed permissible exposure limits. Work which could disturb silica containing materials should follow the recommendations provided in the document entitled *Guideline: Silica on Construction Projects* (dated April 2011) issued by the Ontario MOL and include respiratory protection.

Methodology

A visual inspection for silica-containing building materials in the buildings was conducted.



POLYCHLORINATED BIPHENYLS (PCBS)

Regulations

PCBs are not regulated under the Ontario Designated Substances Regulation (O. Reg. 490/09), however, are included in hazardous materials surveys because of their potentially hazardous nature and the specialized handling required during removal and disposal activities.

PCBs were used in various equipment until 1980 when O. Reg. 362 under the EPA prohibited the installment of electrical equipment containing PCBs after July 1980. Sections 16 and 17, End-of-Use Dates and Extension, in the PCB Regulations SOR/2008-273, imposes deadlines to eliminate all PCB containing equipment. There are different phase-out dates based on PCB concentrations and location/use of the PCB-containing equipment.

Methodology

BluMetric conducted a visual inspection for PCB containing equipment in the buildings. Equipment which possibly contain PCBs include the following:

- Transformers;
- Lamp ballasts;
- Hydraulic systems;
- Compressors;
- Switchgear; and
- Capacitors.

HALOCARBONS

Regulations

Halocarbons are chemical agents commonly added to refrigerants. Common sources of ODSs include air-conditioning units, refrigerators, freezers, and heat pumps. Refrigerants containing ODSs are regulated by O. Reg. 463/10, *Ozone Depleting Substances and Other Halocarbons*. O. Reg. 463/10 regulates the purchase, maintenance, and disposal of ODS containing equipment. *On federal land or in federal buildings, halocarbons are governed by the Federal Halocarbon Regulations, 2003 (SOR/2003-289) and Ozone-depleting Substances and Halocarbon Alternatives Regulations, (SOR 2016 -137).*



Many halocarbons, a group of ODSs, are being phased out or have already been banned for production or consumption. The following ozone-depleting substances are already banned: R10, R11, R12, R13, R13b1, R40, R111, R112, R113, R114, R115, R140, R211, R212, R213, R214, R215, R216, R217, R21, R22, R31, R121, R122, R123, R123b, R124, R124a, R131, R132, R133, R141, R141b, R142, R142b, R143a, R151, R221, R222, R223, R224, R225, R225ca, R225cb, R226, R231, R232, R233, R234, R235, R241, R242, R243, R244, R251, R252, R253, R261, R262, R271).

Methodology

BluMetric conducted a visual inspection for Halocarbon containing equipment in the buildings.

BENZENE

Regulations

Benzene may be present in any area where fuel, oil and waste oil are stored. It is possible that benzene was present in the paints, adhesives and roofing materials used during the original construction of many buildings. Over time, the benzene component typically volatilizes out of the paints, solvent and roofing bitumen and is released into the ambient air. Therefore, only trace levels of benzene are potentially present in these building materials. The Threshold Limit Value- time-weighted average (TLV-TWA), for benzene is 0.5 $\mu\text{g/g}$ for a worker as per COHSR, Part X and O. Reg. 490/09 and R. R. O. 1990, Reg 833. It is not expected that benzene emissions from existing building materials on site will exceed the allowable TLV-TWA. Equipment or products containing benzene should be disposed of appropriately.

Methodology

BluMetric conducted a visual inspection for Benzene containing equipment in the buildings. Potential sources of benzene include the following:

- Gasoline/Diesel fuel;
- Roofing materials;
- Paints; and
- Adhesives and caulking.



MOULD/FUNGAL SPORES

Guidelines

Fungal spores are ubiquitous in nature. For mould growth to occur, three conditions must be present: a medium to sustain growth, a temperature between 5°C to 40°C, and the presence of moisture. Indoors, the presence of moisture is the limiting factor.

Presently, there are no laws or regulations governing acceptable concentration of fungal spores in Canada due to the variation in individual susceptibility and limitations in sampling and analytical techniques. As such, it is the responsibility of the constructors, employers, and supervisors to ensure health and safety of workers, as per health and safety legislation.

Several guidelines and resources exist when conducting investigation and remediation of mould. The following documents outline procedures that should be followed during remediation procedures:

- *Environmental Abatement Council of Ontario's (EACO) Mould Abatement Guidelines*, 2015 – Edition 3;
- *Mould Guidelines for The Canadian Construction Industry*, Canadian Construction Association – 82, 2018;
- *Guidelines on Assessment and Remediation of Fungi in Indoor Environment*, New York City Department of Health and Mental Hygiene, November 2008;
- *Bioaerosols: Assessment and Control*, American Conference of Governmental Industrial Hygienists (ACGIH), 1999;
- *Fungal Contamination in Public Buildings: Health Effects and Investigation Methods*, Federal-Provincial Committee on Environmental and Occupational Health, 2004;
- *Field Guide for the Determination of Biological Contaminants in Environmental Samples*, American Industrial Hygiene Association (AIHA), 1996; and
- *Clean-Up Procedures for Mould in Houses*, Canada Mortgage and Housing Corporation (CMHC), 2004.

Methodology

BluMetric conducted a visual inspection for mould growth within the project work area.



Other Designated Substances

Acrylonitrile, arsenic, coke oven emissions, ethylene oxide, isocyanates, and vinyl chloride are other designated substances that, unless historical evidence or current activities suggest otherwise, are uncommon on site or unlikely to become airborne to an extent that would exceed the TWA. These substances are regulated by O. Reg. 490/09 and R. R. O. 1990, Reg. 833. Table 6, below, summarizes the TWA for each of these designated substances.

Table 6: TWA for Additional Designated Substances

Designated Substance	TWA
Acrylonitrile	2 ppm
Arsenic	10 µg/g
Coke Oven Emissions	150 µg/g
Ethylene Oxide	1 ppm
Isocyanates	5 ppb
Vinyl Chloride	1 ppm

Notes:

- 1) TWA – Time Weight Average over an 8-hour period
- 2) ppm – parts per million
- 3) µg/g – microgram per gram
- 4) ppb – parts per billion



APPENDIX B

Summary of Sample Locations and Analytical Results

Table 7: Asbestos-Content Analysis Results

Table 8: Lead-Content Analysis Results

Asbestos - Photo Log

Lead - Photo Log



Table 7: Asbestos-Content Analysis Results - CRCC Building 3, 3701 Carling Avenue, Ottawa, ON

Building	Sample ID	Sample Location	Locations with Visibly Similar Material	Building System	Material Description	Asbestos Content and Type	Condition	Accessibility	Quantity	Friability (Yes or No)	Photo Reference
CRCC Building 3	112-O-Duct-01A-C	Main floor - Room 112	Possibly located in other rooms	Other (duct)	Grey paper layer under duct canvas	70% Chrysotile	Good Poor	B	23m ² 2m ²	Yes	1
CRCC Building 3	110-W-PLA-01A-C	Main floor - Room 110	Ceiling	Wall	Vermicrete-like plaster	1% Chrysotile 1% Tremolite	Good Poor	B	135m ² 10m ²	Yes	2
CRCC Building 3	PSPC sample ID - B3Shirley-AS-3A-C	PSPC, 2018	Above ceiling tiles of Rooms 106 & 107, may be present inside cinderblocks	Ceiling Space	Grey/white vermicrete debris	1% Tremolite	Debris	C	Above ceiling tiles: Above one 2x4' CT and 3 m ² on wood structure under duct in room 106, approximately 30 m ² of small amounts of debris above ceiling tiles in Room 107	Yes	3-5
CRCC Building 3	PSPC sample ID - B3Shirley-AS-4C	PSPC, 2018	Above ceiling tiles of Rooms 106 & 107, may be present inside cinderblocks	Ceiling Space	Dark Grey mortar/parging debris	1% Chrysotile	Debris	C	Above one 2x4' CT and 3 m ² on wood structure under duct in room 106, approximately 30 m ² of small amounts of debris above ceiling tiles in Room 107	Yes	3-5
CRCC Building 3	WSP Sample ID - 03-ELB-14A, B, C.	WSP, 2018	Rooms 109, 110, 112	Other	Mechanical pipe elbow insulation	65% Chrysotile	Good Poor	C	Not anticipated to be disturbed: Room 110 (1 fitting poor) Room 109 (in ceiling space - 2 fittings poor)	Yes	8-9
CRCC Building 3	WSP Sample ID - 03-MRT-02A, B, C, D, E, F, G.	WSP, 2018	Rooms 106, 107 & 109 & throughout	Wall	Mortar on brick and cement block	None Detected	-	-	-	-	-
CRCC Building 3	WSP Sample ID - 03-CLK-03A, B, C.	WSP, 2018	Exterior	Wall	Brown exterior caulking on metal sheeting	None Detected	-	-	-	-	-
CRCC Building 3	WSP Sample ID - 03-VFT-06A, B, C.	WSP, 2018	Rooms 106, 107 & 109 & throughout	Floor	12" white vinyl floor tiles with blue-grey streaks (and associated mastic adhesive)	None Detected	-	-	-	-	-
CRCC Building 3	WSP Sample ID - 03-ACT-13A, B, C.	WSP, 2018	Rooms 106, 107 & 109 & throughout	Ceiling	2'X4' ceiling tiles with large and small pinholes	None Detected	-	-	-	-	-

1) Asbestos-containing material is defined by the Ontario Regulation respecting Designated Substance - Asbestos On Construction Projects and In Buildings and Repair Operations (O. Reg. 278/05) as "material that contains 0.5 per cent or more asbestos by dry weight".

2) None Detected - Asbestos not detected within the sampled material.

- Indicates sample collected previously by another consultant

Accessibility

Access (A)

Areas of the building within reach (from floor level) of all building users. Includes areas such as gymnasiums, workshops, and storage areas where activities of the building users (e.g. basketball on gym ceiling) may result in disturbance of asbestos-containing material not normally within reach from floor level.

Access (B)

Frequently entered maintenance areas within reach of maintenance staff, without the need for a ladder. Includes: frequently entered pipe chases, tunnels and service areas or areas within reach from a fixed ladder or catwalk, e.g. tops of equipment, mezzanines.

Access (C) Exposed

Areas of the building above 8'0" where use of a ladder is required to reach the asbestos-containing material. Only refers to asbestos-containing material 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.

Access (C) Concealed

Areas of the building which require the removal of a building component, including lay-in ceilings and access panels into solid ceiling systems such as a ventilation plenum. Includes rarely-entered crawl spaces, attic spaces, etc. Observations are limited to the extent visible from the access points.

Access (D)

Areas of the building behind inaccessible solid ceiling systems, walls, or mechanical equipment, etc., where demolition of the ceiling, wall or equipment, etc., is required to reach the asbestos-containing material. Evaluation of condition and extent of asbestos-containing material is limited or impossible, depending on the assessor's ability to visually examine the materials in areas rated Access (D).

Table 8: Lead-Content Analysis Results - CRCC Building 3, 3701 Carling Avenue

Sample ID	Material Description	Sample Location	Other Locations with similar Surface Coating	Building System (F, W, C, CS, O)	Substrate Material	Condition (Good, Fair, Poor)	Quantity	Lead Content (ug/g)	Photo Reference
EXT-O-Pipe-P01	Grey	Room 112	Fuel oil return piping (connected to generator and AST) and day tank	Other	Fuel oil supply pipe (connected to generator and AST)	Good	2 pipes, 19 linear metres each (0.03m diameter) and day tank - 4 m ²	1620	1
EXT-O-Beam-P02	Yellow, black	Exterior	-	Other	Three metal beams on concrete curb	Fair	-	<20	-
EXT-O-Vent-P03	Brown, white	Exterior	Two normal vent metal pipes	Other	Normal vent metal pipe	Good-Fair	2 pipes, 9 linear metres total (0.06m diameter) - 1.08m ²	1 100	2
EXT-O-Tank-P04	Blue, blue, beige	Exterior	-	Other	Metal AST to be removed	Poor	13 m ²	646	3
110-W-PLA-P05	Beige	Room 110	Room 112 walls (cinderblock, brick) and ceiling (corrugated metal)	Walls / Ceiling	Vermicrete-like wall	Fair-Poor	145 m ² in room 110 441 m ² in room 112	1220	4
112-F-Conc-P06	Grey	Room 112	Room 110	Floor	Poured concrete floor	Fair-Poor	140 m ²	561	5
107-W-CB-P08	White, beige, green, brown	Room 107	Room 106, 109	Walls	Cinderblock walls	Good	290 m ²	2410	6
Surface Coating Materials Regulations (SOR/2016-193) – No lead paint								≤90 ug/g	
EACO 2014 Lead Guideline – Low-level Lead paint								>90 - ≤1,000 ug/g	
EACO 2014 Lead Guideline – Lead-containing paint								>1,000 - <5000 ug/g	
EACO 2014 Lead Guideline – Lead-based paint								≥5000 ug/g	

Grey Bold Indicates “Lead Containing” (lead content between >1,000 – <5,000 µg/g) or “Lead Based” (lead content ≥5, 000 µg/g)

Grey Highlight Indicates “Low-Lead Containing” (lead content of >90 µg/g – ≤1,000 µg/g)

No Highlight Indicates “no lead” (lead content ≤90 µg/g)



Photo 1 - 112-O-Duct-01A-C



Photo 2 - 110-W-PLA-01A-C

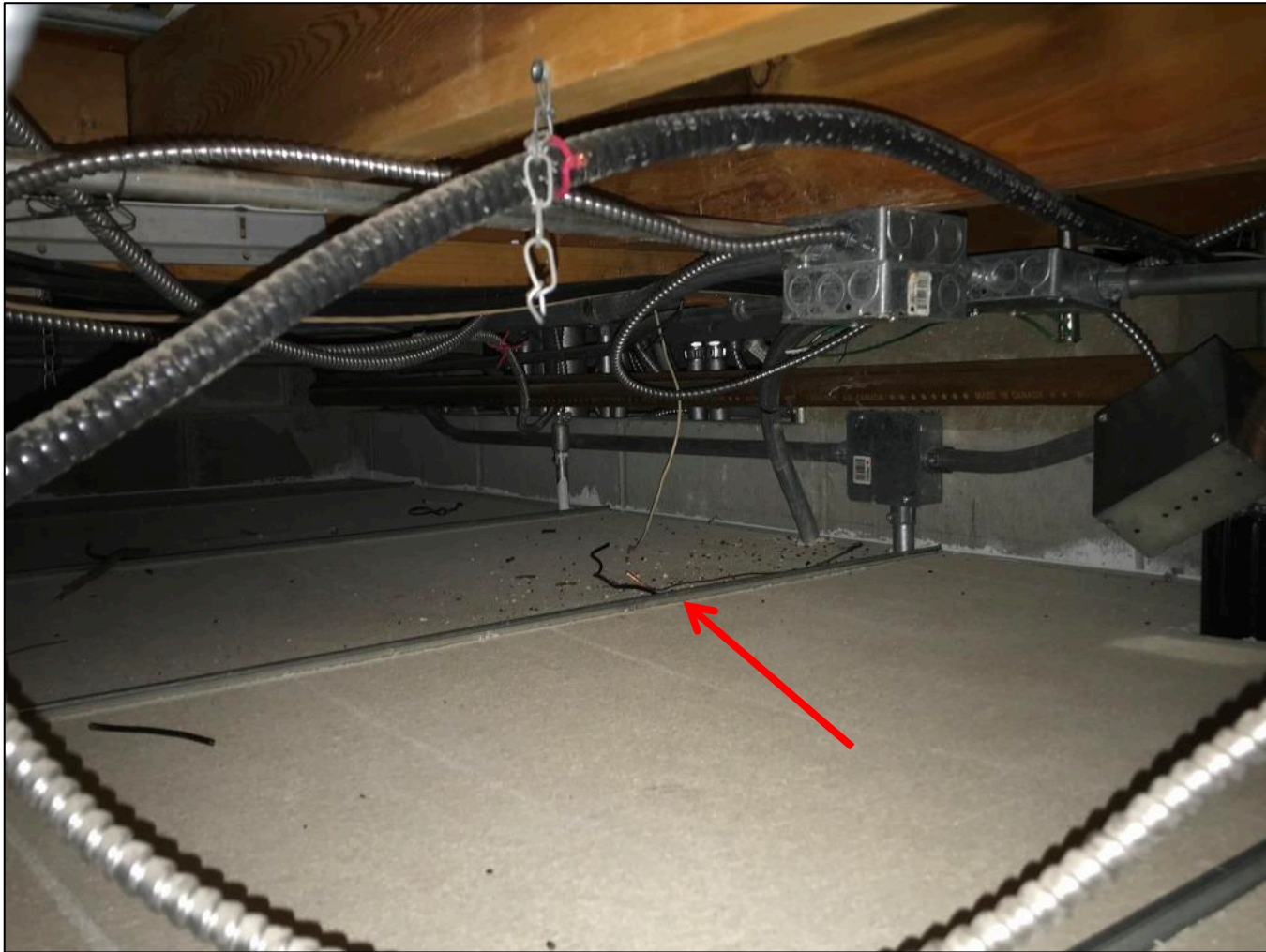


Photo 3 – Debris and rodent droppings above ceiling tiles in Room 106 (directly over where tiles are to be disturbed)

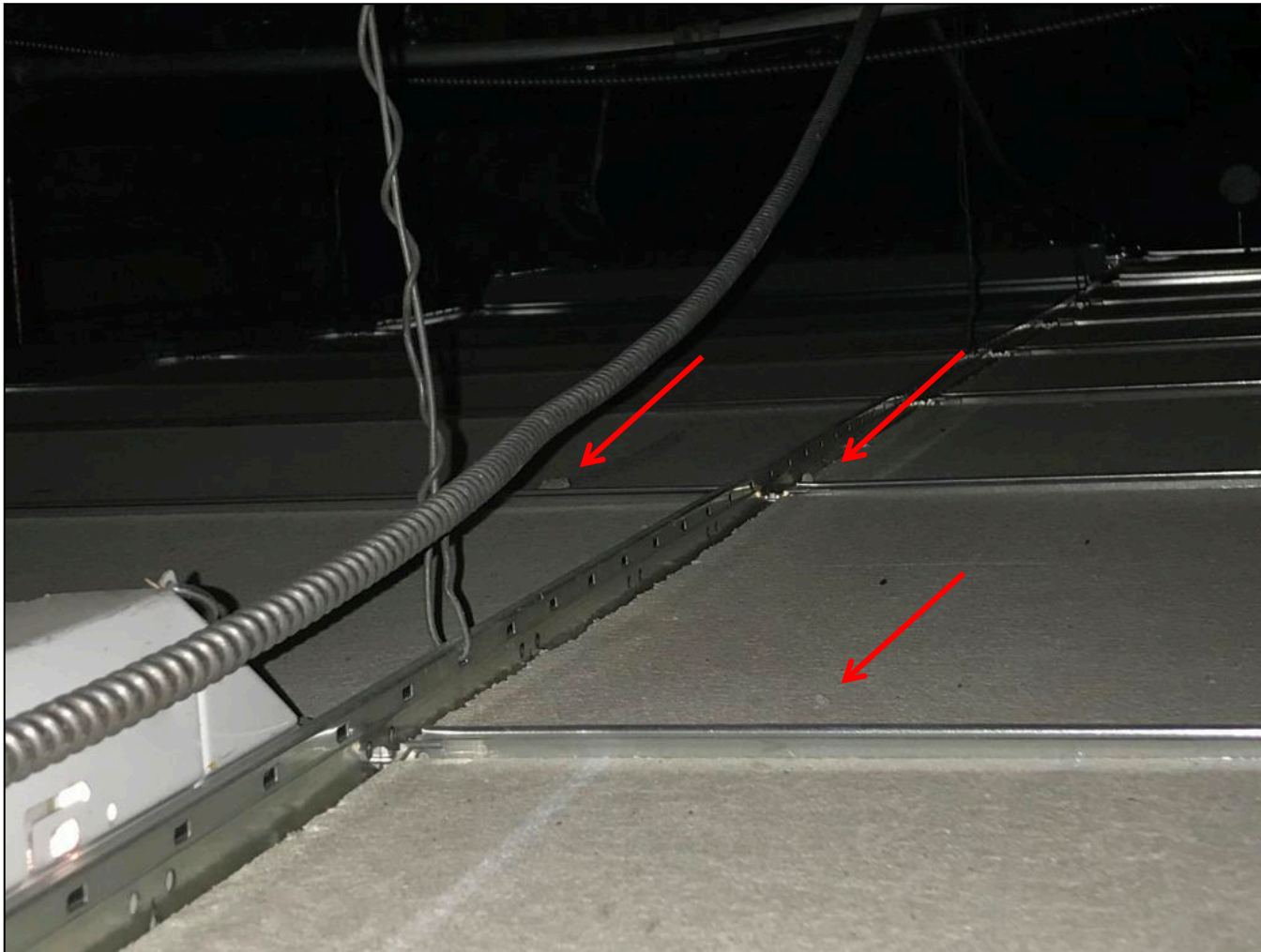


Photo 4 – View of small amounts of mortar and/or vermicrete debris above ceiling tiles (room 107)



Photo 5 – View of small amounts of mortar and/or vermicrete debris on wooden shelf, above ceiling tiles (room 106)



Photo 6 – View of possible vermicrete-like material inside of cinderblocks

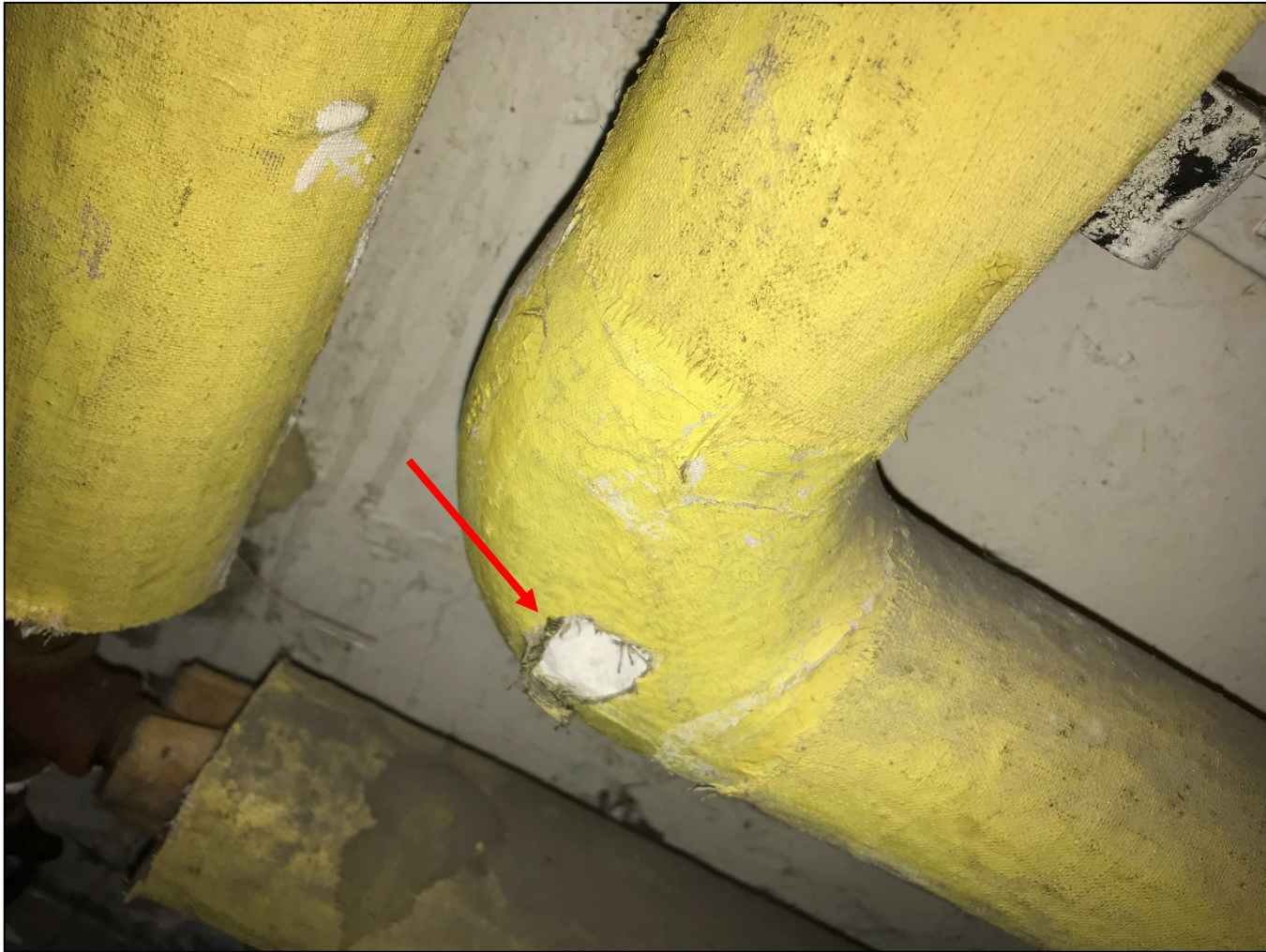


Photo 7 – View of exposed white pipe insulation in Room 110.

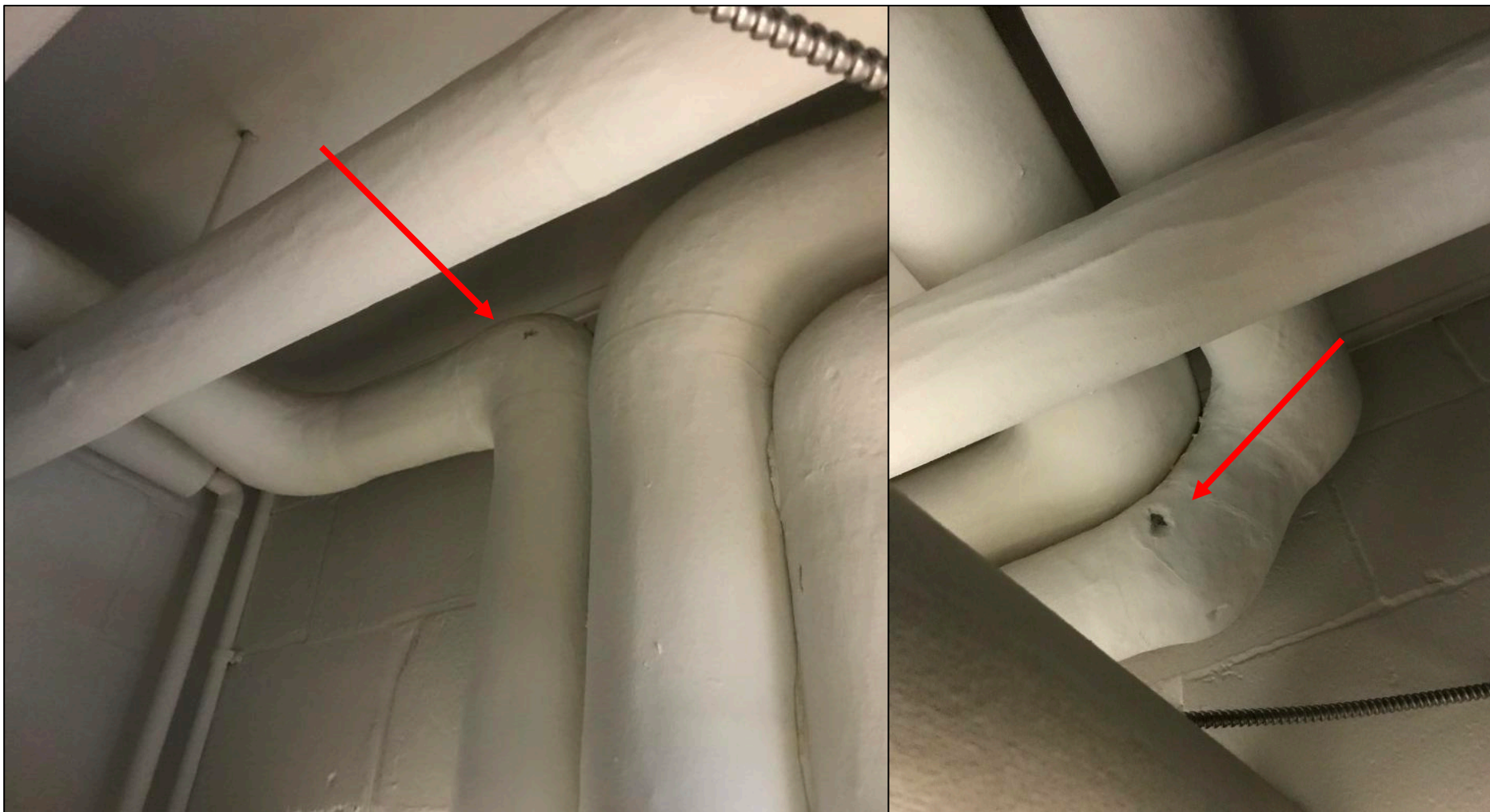


Photo 8 – View of fittings in poor condition above ceiling tiles in Room 109.



Photo 1: Main Floor, Room 112 – Grey Paint (Lead Containing)



Photo 2: Exterior Piping – Brown. White Paint (Lead Containing)



Photo 3: Exterior – Blue Paint (Low Lead Containing)

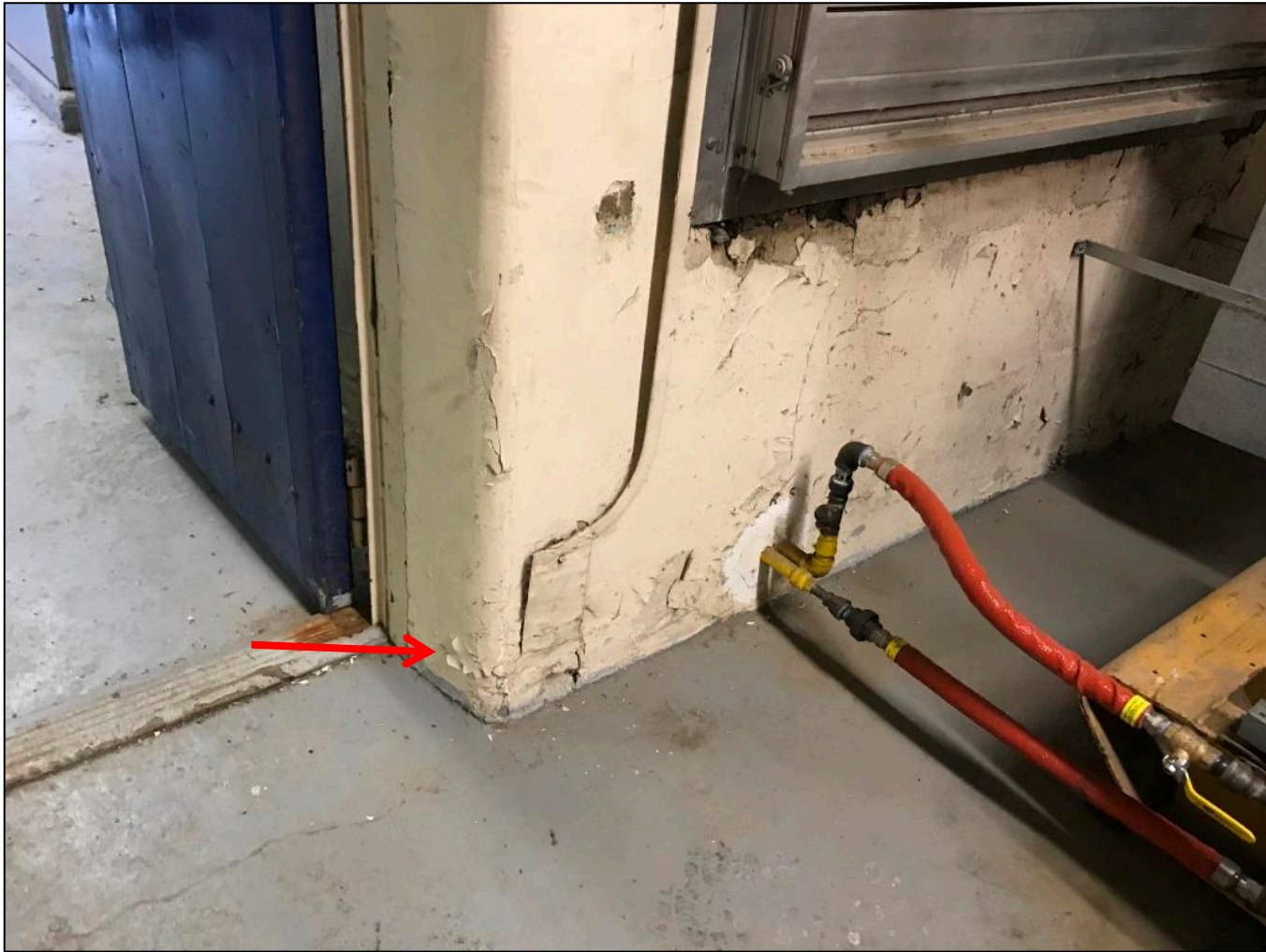


Photo 4: Main Floor, Room 110 – Beige Paint (Lead Containing)

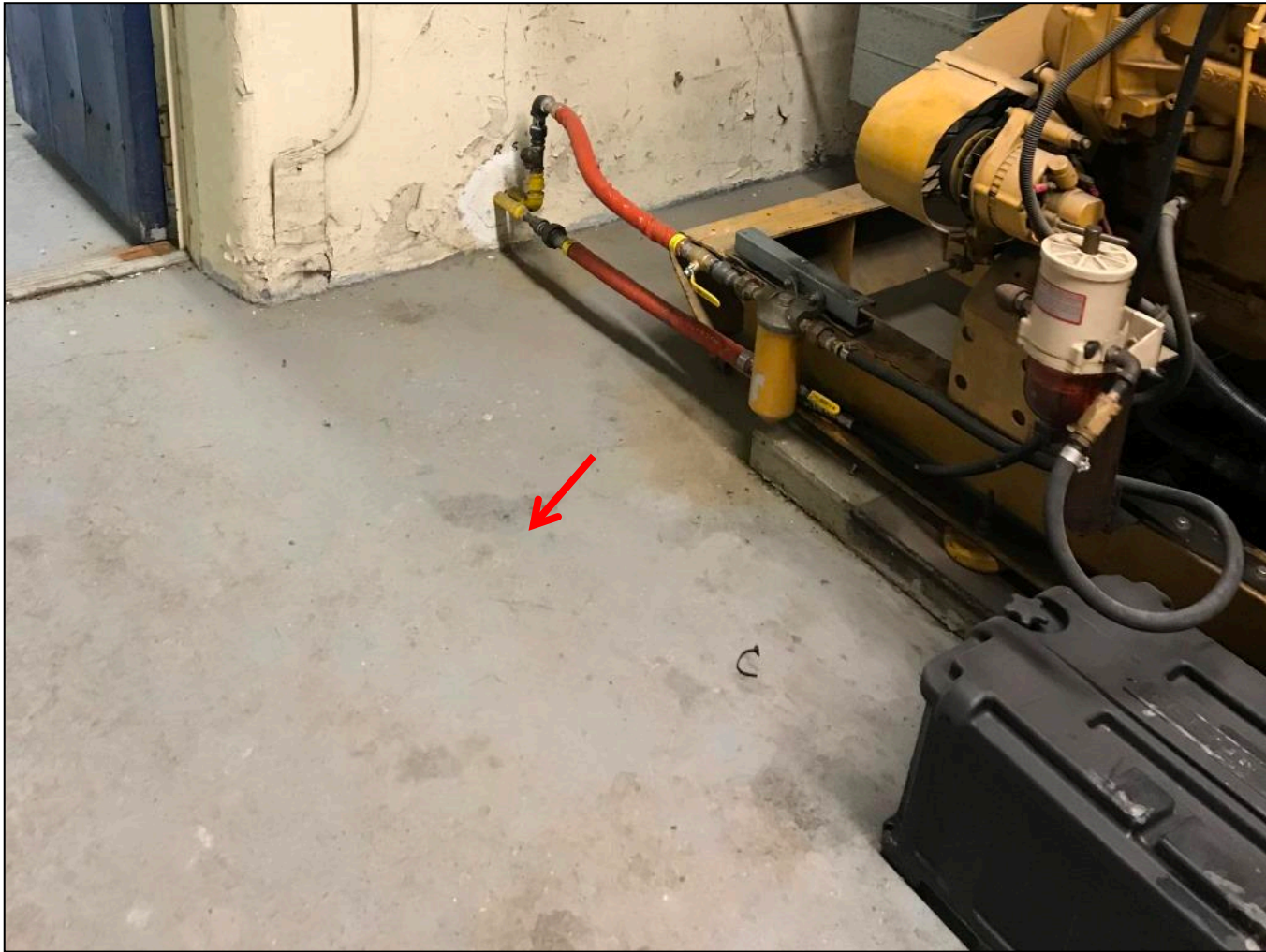


Photo 5: Main Floor, Room 112 – Grey Paint (Low Lead Containing)

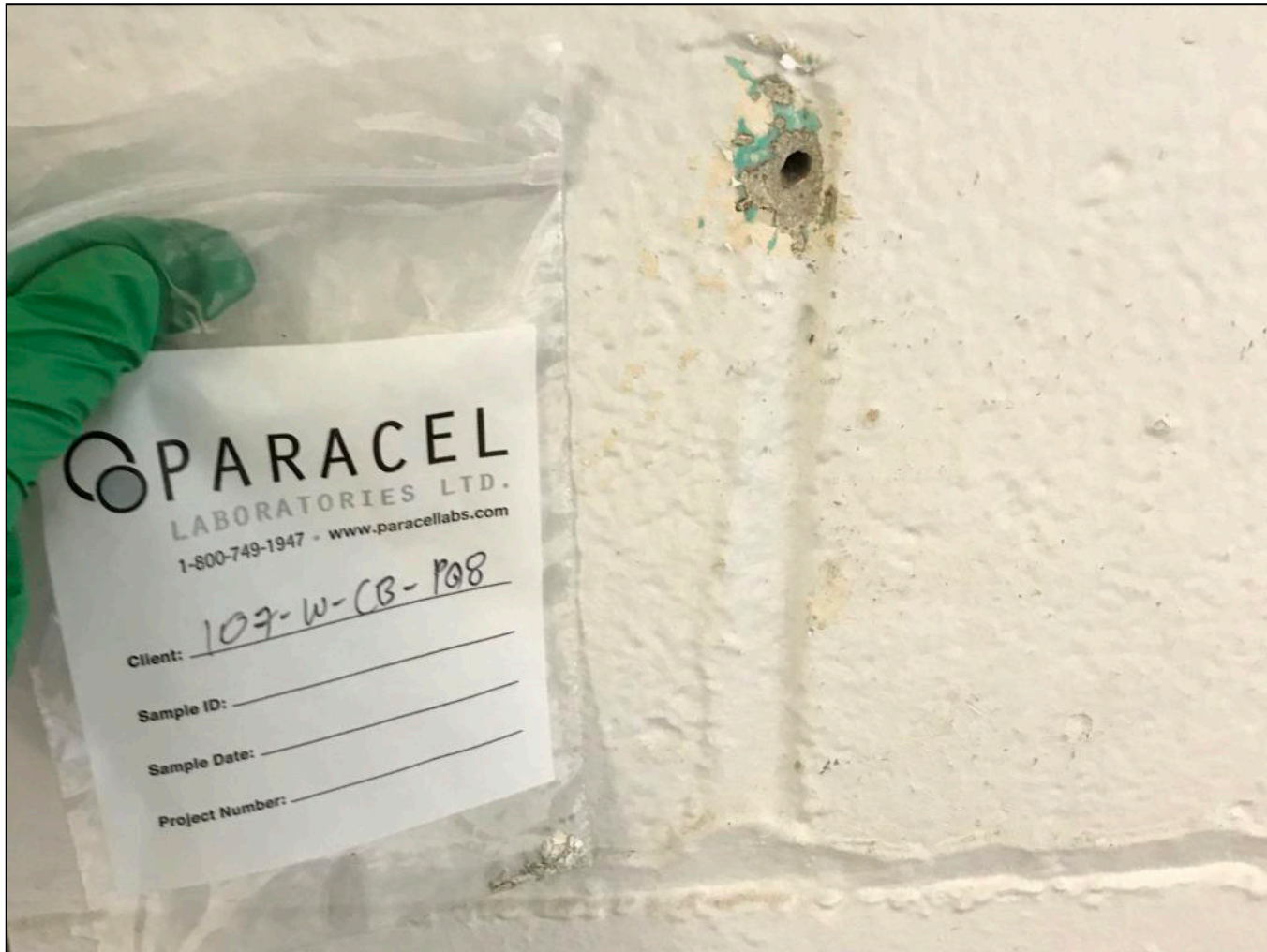


Photo 6: Main Floor, Room 107 – White, Beige, Green, Brown
Paint (Lead Containing)

APPENDIX C

Laboratory Reports, Certificates of Analysis, and Chain of Custody Records



Certificate of Analysis

BluMetric Environmental Inc. (Carp)

1682 Woodward Drive
Ottawa, ON K2C 3R8
Attn: Veronique Maynard

Client PO:

Project: 200224-69

Custody: 54586

Report Date: 5-May-2021


Order Date: 30-Apr-2021

Order #: 2118565

This Certificate of Analysis contains analytical data applicable to the following samples as submitted :

Paracel ID	Client ID
2118565-01	112-0-Duct-01a
2118565-02	112-0-Duct-01b
2118565-03	112-0-Duct-01c
2118565-04	110-W-PLA-01a
2118565-05	110-W-PLA-01b
2118565-06	110-W-PLA-01c

Approved By:



Emma Diaz

Senior Analyst

Certificate of Analysis

 Client: **BluMetric Environmental Inc. (Carp)**

Client PO:

Report Date: 05-May-2021

Order Date: 30-Apr-2021

Project Description: 200224-69

Asbestos, PLM Visual Estimation **MDL - 0.5%**

Parcel ID	Sample Date	Colour	Description	Asbestos Detected	Material Identification	% Content
2118565-01	30-Apr-21	Grey	Paper Layer	Yes	Client ID: 112-0-Duct-01a	
					Chrysotile	70
					Non-Fibers	30
2118565-02	30-Apr-21	Grey	Paper Layer		Client ID: 112-0-Duct-01b	
					not analyzed, positive stop	
2118565-03	30-Apr-21	Grey	Paper Layer		Client ID: 112-0-Duct-01c	
					not analyzed, positive stop	
2118565-04	30-Apr-21	Grey	Vermiculite Like Plaster	Yes	Client ID: 110-W-PLA-01a	
					Chrysotile	1
					Tremolite	1
2118565-05	30-Apr-21	Grey	Vermiculite Like Plaster			Non-Fibers
						98
					Client ID: 110-W-PLA-01b	
2118565-06	30-Apr-21	Grey	Vermiculite Like Plaster			not analyzed, positive stop
					Client ID: 110-W-PLA-01c	
						not analyzed, positive stop

** Analytes in bold indicate asbestos mineral content.

Analysis Summary Table

Analysis	Method Reference/Description	Lab Location	Lab Accreditation	*	Analysis Date
Asbestos, PLM Visual Estimation	AppE to SubE of 40CFR Part753 and EPA/600/R-93/116	2 - Ottawa West	CALA 1262		4-May-21

* Reference to the NVLAP term does not permit the user of this report to claim product certification , approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

Ottawa West Lab: 25 Northside Rd, Unit C Nepean, Ontario K2H 8S1

Work Order Revisions | Comments

None



Client Name: <u>Blumetric</u>	Project Reference: <u>200284-69</u>	Turnaround Time: <input type="checkbox"/> Immediate <input type="checkbox"/> 1 Day <input type="checkbox"/> 4 Hour <input type="checkbox"/> 2 Day <input type="checkbox"/> 8 Hour <input checked="" type="checkbox"/> 3 Day <input checked="" type="checkbox"/> Regular Date Required: _____
Contact Name: <u>V. Maynard</u>	Quote #:	
Address: <u>1682 Woodhurst Drive</u>	PO #:	
Telephone: <u>613-875-9537</u>	Email Address: <u>vmaynard@blumetric.ca</u> <u>hfrisk@blumetric.ca</u> <u>johnsun@blumetric.ca</u>	

ASBESTOS & MOLD ANALYSIS

Matrix: ☐ Air ☒ Bulk ☐ Tape Lift ☐ Swab ☐ Other Regulatory Guideline: ☒ QN ☐ QC ☐ AB ☐ SK ☐ Other:
 Analyses: ☐ Microscopic Mold ☐ Culturable Mold ☐ Bacteria GRAM ☐ PCM Asbestos ☒ PLM Asbestos ☐ Chatfield Asbestos ☐ TEM Asbestos

Paracel Order Number:		Sampling Date	Air Volume (L)	Analysis Required	Asbestos - Bulk	
Sample ID					Identify Distinct Building Materials to Be Analyzed (if not specified, all materials identified will be analyzed) *	Positive Stop?
1	112-0-Duct-01a,b,c	30 Apr 2021	—	PLM	Gray paper layer	<input checked="" type="checkbox"/>
2	110-W-PLA-01a,b,c	"	—	"	Vermiculite-like plaster	<input checked="" type="checkbox"/>
3						<input type="checkbox"/>
4						<input type="checkbox"/>
5						<input type="checkbox"/>
6						<input type="checkbox"/>
7						<input type="checkbox"/>
8						<input type="checkbox"/>
9						<input type="checkbox"/>
10						<input type="checkbox"/>
11						<input type="checkbox"/>
12						<input type="checkbox"/>

* If left blank, all distinct materials identified in the samples will be analyzed and reported separately as per EPA 600/R-93/116. Additional charges will apply.

Comments:		Method of Delivery: <u>Drop Box</u>	
Relinquished By (Sign): <u>[Signature]</u>	Received at Depot:	Received at Lab: <u>[Signature]</u>	Verified By: <u>[Signature]</u>
Relinquished By (Print): <u>V. Maynard</u>		Date/Time: <u>Apr 30/21 13:50</u>	Date/Time: <u>Apr 30/21 14:25</u>
Date/Time: <u>30 April 2021 13:00</u>	Date/Time:		

Certificate of Analysis

BluMetric Environmental Inc. (Carp)

1682 Woodward Drive
Ottawa, ON K2C 3R8
Attn: Veronique Maynard

Client PO:
Project: 200224-69
Custody: 132085

Report Date: 6-May-2021
Order Date: 30-Apr-2021

Order #: 2118594

This Certificate of Analysis contains analytical data applicable to the following samples as submitted:

Parcel ID	Client ID
2118594-01	Ext-O-Pipe-P01 Grey
2118594-02	Ext-O-Beam-P02 Yellow, Black
2118594-03	Ext-O-Vent-P03 Brown
2118594-04	Ext-O-Tank-P04 Blue, Blue, Beige
2118594-05	110-W-PLA-P05- Beige
2118594-06	112-F-Conc-P06- Grey
2118594-08	107-W-CB-P08- White, Beige, Green, Brown

Approved By:



Mark Foto, M.Sc.
Lab Supervisor

Any use of these results implies your agreement that our total liability in connection with this work, however arising shall be limited to the amount paid by you for this work, and that our employees or agents shall not under circumstances be liable to you in connection with this work

Certificate of Analysis

Report Date: 06-May-2021

Client: BluMetric Environmental Inc. (Carp)

Order Date: 30-Apr-2021

Client PO:

Project Description: 200224-69

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Metals, ICP-OES	based on MOE E3470, ICP-OES	6-May-21	6-May-21

Sample and QC Qualifiers Notes

1- QM-07 : The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on other acceptable QC.

Sample Data Revisions

None

Work Order Revisions/Comments:

None

Other Report Notes:

n/a: not applicable

ND: Not Detected

MDL: Method Detection Limit

Source Result: Data used as source for matrix and duplicate samples

%REC: Percent recovery.

RPD: Relative percent difference.

Certificate of Analysis

Report Date: 06-May-2021

Client: BluMetric Environmental Inc. (Carp)

Order Date: 30-Apr-2021

Client PO:

Project Description: 200224-69

Sample Results

Lead				Matrix: Paint
				Sample Date: 30-Apr-21
Paracel ID	Client ID	Units	MDL	Result
2118594-01	Ext-O-Pipe-P01 Grey	ug/g	20	1620
2118594-02	Ext-O-Beam-P02 Yellow, Black	ug/g	20	<20
2118594-03	Ext-O-Vent-P03 Brown	ug/g	20	1100
2118594-04	Ext-O-Tank-P04 Blue, Blue, Beige	ug/g	20	646
2118594-05	110-W-PLA-P05- Beige	ug/g	20	1220
2118594-06	112-F-Conc-P06- Grey	ug/g	20	561
2118594-08	107-W-CB-P08- White, Beige, Green, Brown	ug/g	20	2410

Laboratory Internal QA/QC

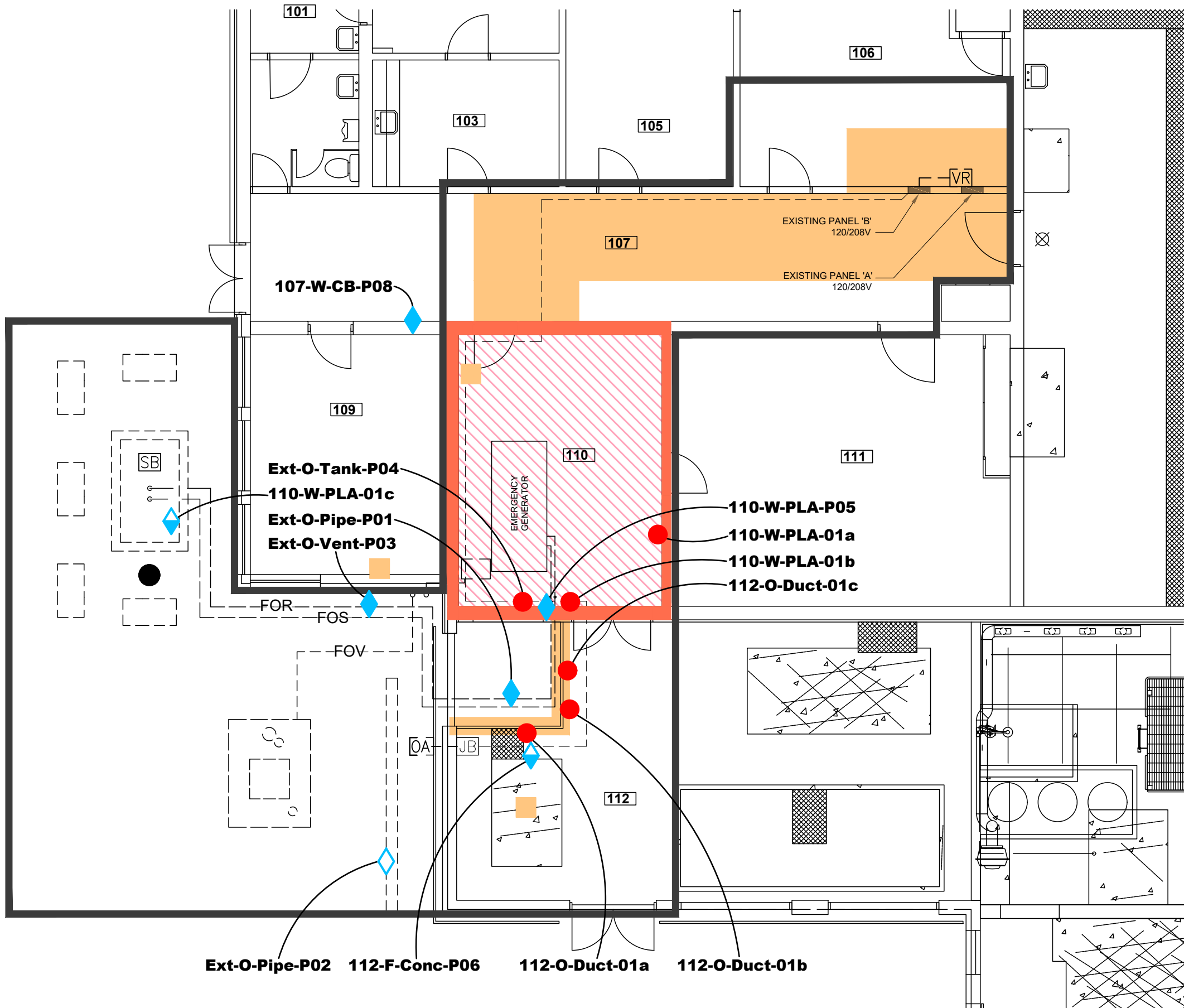
Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Matrix Blank									
Lead	ND	20	ug/g						
Matrix Duplicate									
Lead	1520	20	ug/g	1760			14.6	30	
Matrix Spike									
Lead	979	20	ug/g	878	40.7	70-130			QM-07



APPENDIX D

Figures





- LEGEND
- SCOPE OF WORK AREA
 - NON-ASBESTOS CONTAINING SAMPLE LOCATION
 - ASBESTOS-CONTAINING SAMPLE LOCATION
 - PAINT SAMPLE, NO LEAD (≤ 90 ug/g)
 - PAINT SAMPLE, LOW-LEVEL LEAD (> 90 ug/g - $\leq 1,000$ ug/g)
 - PAINT SAMPLE, LEAD-CONTAINING ($> 1,000$ ug/g - $< 5,000$ ug/g)
 - PAINT SAMPLE, LEAD-BASED ($\geq 5,000$ ug/g)

- ASBESTOS CONTAINING MATERIAL
- ASBESTOS-CONTAINING WALL
 - ASBESTOS-CONTAINING FLOOR
 - ASBESTOS-CONTAINING CEILING
 - ASBESTOS-CONTAINING OTHER

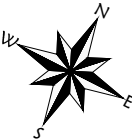
NOTE:
BLUE AST TO BE REMOVED AND GREY CONCRETE FLOORS OF ROOMS 110 AND 112 HAVE LOW LEVEL LEAD PAINT

REV.	DESCRIPTION	DATE	BY	CHK
------	-------------	------	----	-----

REFERENCE :
BASE BUILDING PLAN-FIRST FLOOR PLAN-DOVER-BROUSE-SLATER, DRAWING # A-2 OF 5, BRANCH PLANNING AND MANAGEMENT SERVICES - GEOMATICS DIVISION, PUBLICS WORKS AND GOVERNMENT SERVICES CANADAMAY 1997.

NOTE :
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NOT TO SCALE



CLIENT
Public Services and Procurement Canada

PROJECT
Designated Substance and Hazardous Building Materials Survey
CRCC Building 3
3701 Carling Avenue, Ottawa, ON

TITLE
Bulk Sample Locations
Building 3 - Ground Floor



PROJECT # 200224-69	DATE 2021-05-20	REV. -	FIG. 1
DRAWN K.T.	DESIGNED V.M.	CHECKED M.F.	CAD DRAWING 200224-69-FIG1.DWG

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