HALTON DISTRICT SCHOOL BOARD

PRE-RENOVATION DESIGNATED SUBSTANCES AND HAZARDOUS MATERIALS SURVEY

PAULINE JOHNSON PUBLIC SCHOOL

4350 LONGMOOR DRIVE, BURLINGTON, ONTARIO

July 12, 2021

30089648

Dwayne Kellyman, Dipl. Tech.

Technical Specialist

Jean Daigle

Senior Technical Specialist – Project Manager

PRE-RENOVATION DESIGNATED SUBSTANCES AND HAZARDOUS MATERIALS SURVEY

PAULINE JOHNSON PUBLIC SCHOOL
4350 Longmoor Drive, Burlington, Ontario

Prepared for:

Halton District School Board

J.W. Singleton Education Center

2050 Guelph Line

Burlington, ON L7P 5A8

Attention: Tom Hutcheson

Project Manager

Prepared by:

Arcadis Canada Inc.

121 Granton Drive, Suite 12

Richmond Hill, Ontario L4B 3N4

Tel 905 764 9380

Our Ref.:

30089648

Date:

July 12, 2021

CONTENTS

1 INTRODUCTION 1-1
1.1 Scope of Work 1-1
2 REGULATORY DISCUSSION AND METHODOLOGY 2-1
2.1 Asbestos 2-2
2.2 Lead 2-3
2.3 Mercury 2-3
2.4 Silica 2-4
2.5 Vinyl Chloride 2-4
2.6 Acrylonitrile 2-5
2.7 Other Designated Substances 2-5
2.8 Polychlorinated Biphenyls (PCBs) 2-5
2.9 Ozone-Depleting Substances (ODS) and Other Halocarbons 2-7
2.10 Mould 2-7
3 RESULTS AND DISCUSSION 3-1
3.1 Asbestos 3-1
3.2 Lead 3-8
3.3 Mercury 3-9
3.4 Silica 3-9
3.5 Vinyl Chloride 3-10
3.6 Acrylonitrile 3-10
3.7 Other Designated Substances 3-10
3.8 Polychlorinated Biphenyls (PCBs) 3-10
3.9 Ozone-Depleting Substances (ODS) and Other Halocarbons 3-10
3.10 Mould 3-10
4 USE AND LIMITATIONS OF THIS PRE-RENOVATION DESIGNATED SUBSTANCES AND HAZARDOUS MATERIALS SURVEY REPORT 4-1

TABLES

Table 3.1. Summary of Results of Analyses of Bulk Samples for Asbestos Content 3-1

Table 3.2. Summary of Results of Analyses of Bulk Samples for Lead Content 3-8

APPENDICES

A Floor Plans

B Laboratory Reports

C Summary of Asbestos, Lead and Silica Work Classifications

1 INTRODUCTION

Arcadis Canada Inc. (Arcadis) was retained by the Halton District School Board to conduct a pre-renovation designated substances and hazardous materials survey in designated study areas of Pauline Johnson Public School located at 4350 Longmoor Drive in Burlington, Ontario.

The information in this report is to be provided to all bidders on a project in accordance with the requirements of the *Occupational Health and Safety Act*.

The building is a single storey masonry structure originally constructed in 1967 with an addition to the west constructed in 1986.

It is our understanding that renovations are planned in designated areas of the building. The designated study areas were limited to areas affected by the proposed renovation project and are based on information provided by the HDSB. The survey included primarily inspecting materials in the designated study areas that are anticipated to be affected by the renovation project.

The designated study areas and eras of construction are shown on the floor plans provided in Appendix A.

The survey was undertaken to report on the presence or suspected presence of readily observable designated substances and hazardous materials.

1.1 Scope of Work

The scope of work for our investigation included:

- review of existing information;
- investigation of readily-accessible areas in the designated study areas for the presence of designated substances and hazardous materials used in building construction materials;
- obtaining representative bulk samples of materials suspected of containing asbestos and paint chip samples for lead analyses;
- laboratory analyses of bulk samples for asbestos content;
- laboratory analyses of paint chip samples for lead content; and
- preparation of a report outlining the findings of the investigation.

Mr. Dwayne Kellyman of Arcadis visited the site on June 17, 2021, to conduct the designated substances and hazardous materials survey at Pauline Johnson Public School.

2 REGULATORY DISCUSSION AND METHODOLOGY

Ontario Occupational Health and Safety Act (OHSA)

The Ontario *Occupational Health and Safety Act* (OHSA) sets out, in very general terms, the duties of employers and others to protect workers from health and safety hazards on the job. These duties include, but are not limited to:

- taking all reasonable precautions to protect the health and safety of workers [clause 25(2)(h)];
- ensuring that equipment, materials and protective equipment are maintained in good condition [clause 25(1)(b)];
- providing information, instruction and supervision to protect worker health and safety [clause 25(2)(a)]; and
- acquainting a worker or a person in authority over a worker with any hazard in the work and in the handling, storage, use, disposal and transport of any article, device, equipment or a biological, chemical or physical agent [clause 25(2)(d)].

In addition, Section 30 of the OHSA deals with the presence of designated substances on construction projects. Compliance with the OHSA and its regulations requires action to be taken where there is a designated substance hazard on a construction project.

Section 30 of the OHSA requires the owner of a project to determine if designated substances are present on a project and, if so, to inform all potential contractors as part of the bidding process. Contractors who receive this information are to pass it onto other contractors and subcontractors who are bidding for work on the project.

Regulation for Construction Projects, O.Reg. 213/91

The *Regulation for Construction Projects*, O.Reg. 213/91, applies to all construction projects. The following sections of the regulation would apply to situations where there is the potential for workers to be exposed to designated substances:

Section 14	(5)	A competent person shall perform tests and observations necessary for the detection of hazardous conditions on a project.
Section 21	(1)	A worker shall wear such protective clothing and use such personal protective equipment or devices as are necessary to protect the worker against the hazards to which the worker may be exposed.
	(2)	A worker's employer shall require the worker to comply with subsection (1).

(3) A worker required to wear personal protective clothing or use personal protective equipment or devices shall be adequately instructed and trained in the care and use of the clothing, equipment or device before wearing or using it.

Section 30 Workers who handle or use substances likely to endanger their health shall be provided with washing facilities with clean water, soap and individual towels.

Section 46 (1) A project shall be adequately ventilated by natural or mechanical means,

(a) if a worker may be injured by inhaling a noxious...dust or fume;

(2) If it is not practicable to provide natural or mechanical ventilation in the circumstances described in clause (1)(a), respiratory protective equipment suitable for the hazard shall be provided and be used by the workers.

Section 59 If the dissemination of dust is a hazard to a worker, the dust shall be adequately controlled or each worker who may be exposed to the hazard shall be provided with adequate personal protective equipment.

Regulation for Designated Substances (O.Reg. 490/09)

The *Designated Substance Regulation* (O.Reg. 490/09) specifies occupational exposure limits (OELs) for designated substances and requires an assessment and a control program to ensure compliance with these OELs.

Although, O.Reg. 490/09 and the OELs do not apply to an employer on a construction project, or to their workers at the project, employers still have a responsibility to protect the health of their workers and to comply with the OHSA and other applicable regulations. Section 25(2)(h) of the OHSA requires that employers take "every precaution reasonable in the circumstances for the protection of a worker".

Other regulatory requirements (and guidelines) which apply to control of exposure to designated substances and hazardous materials are referenced in the sections below.

2.1 Asbestos

Asbestos has been widely used in buildings, both in friable applications (materials which can be crumbled, pulverized or powdered by hand pressure, when dry) such as pipe and tank insulation, sprayed-on fireproofing and acoustic texture material and in non-friable manufactured products such as floor tile, gaskets, cement board and so on. The use of asbestos in friable applications was curtailed around the mid-1970s and, as such, most buildings constructed prior to about 1975 contain some form of friable construction material with an asbestos content. The use of asbestos in certain non-friable materials continued beyond the mid-1970s.

Control of exposure to asbestos is governed in Ontario by Regulation 278/05 – *Designated Substance – Asbestos on Construction Projects and in Buildings and Repair Operations*. Disposal of asbestos waste

(friable and non-friable materials) is governed by Ontario Regulation 278/05 and by Ontario Regulation 347, *Waste Management – General*. O.Reg. 278/05 classifies asbestos work operations into three types (Type 1, 2 and 3), as shown in Table C-1 in Appendix C, and specifies procedures to be followed in conducting asbestos abatement work.

2.2 Lead

Lead is a heavy metal that can be found in construction materials such as paints, coatings, mortar, concrete, pipes, solder, packings, sheet metal, caulking, glazed ceramic products and cable splices. Lead has been used historically in exterior and interior paints.

The *Surface Coating Materials Regulations* (SOR/2016-193) made pursuant to the Canada Consumer Product Safety Act states that a surface coating material must not contain more than 90 mg/kg total lead. Health Canada defines a lead-containing surface coating as a paint or similar material that dries to a solid film that contains over 90 mg/kg dry weight of lead.

Information from the United States Occupational Health and Safety Administration (OSHA) suggests that the improper removal of lead paint containing 600 mg/kg lead results in airborne lead concentrations that exceed half of the permissible exposure limit. Lead concentrations as low as 90 mg/kg may present a risk to pregnant women and children[1].

The *National Plumbing Code* allowed lead as an acceptable material for pipes until 1975 and in solder until 1986.

The Ministry of Labour *Guideline, Lead on Construction Projects*, dated April 2011, provides guidance in the measures and procedures that should be followed when handling lead containing materials during construction projects. In the guideline, lead-containing construction operations are classified into three groups - Type 1 (low risk), Type 2 (medium risk) and Type 3 (high risk) based on presumed airborne concentrations of lead, as shown in Appendix C, Table C-2. Any operation that may expose a worker to lead that is not a Type 1, Type 2, or Type 3b operation, is classified as a Type 3a operation.

2.3 Mercury

Mercury has been used in electrical equipment such as alkaline batteries, fluorescent light bulbs (lamps), high intensity discharge (HID) lights (mercury vapour, high pressure sodium and metal halide), “silent switches” and in instruments such as thermometers, manometers and barometers, pressure gauges, float and level switches and flow meters. Mercury-containing lamps, the bulk of which are 1.22 m (four foot) fluorescent lamps contain between 7 and 40 mg of mercury each. Mercury compounds have also been

---

(1) *Lead-Containing Paints and Coatings: Preventing Exposure in the Construction Industry.* WorkSafe BC, 2011.

used historically as additives in latex paint to protect the paint from mildew and bacteria during production and storage.

The intentional addition of mercury to Canadian-produced consumer paints for interior use was prohibited in 1991. Mercury may have remained in paints after 1991, however, as a result of impurities in the paint ingredients or cross-contamination due to other manufacturing processes. The *Surface Coating Materials Regulations* made under the *Hazardous Products Act* set a maximum total mercury concentration of 10 mg/kg (0.001 percent) for surface coating materials (including paint). This criterion level applies to the sale and importation of new surface coating materials.

Mercury-containing thermostats and silent light switches are mercury tilt switches which are small tubes with electrical contacts at one end of the tube. A mercury tilt switch is usually present when no switch is visible. Mercury switches often have the word “TOP” stamped on the upper end of the switch, which is visible after removing the cover plate. If mercury switches are to be removed, the entire switch should be removed and placed into a suitable container for storage and disposal.

Waste light tubes generated during renovations or building demolition and waste mercury from equipment must either be recycled or disposed of in accordance with the requirements of Ont. Reg. 347 - *Waste Management, General*.

Waste mercury in amounts less than 5 kg (per month) are exempt from the generator registration requirements prescribed by O.Reg. 347 – *Waste Management – General*. Waste mercury from mercury switches or gauges should, however, be properly collected and shipped to a recycling facility or disposed of as a hazardous waste. Removal of mercury-containing equipment (e.g., switches, gauges, controls, etc.) should be carried out in a manner which prevents spillage and exposure to workers.

2.4 Silica

Silica exists in several forms of which crystalline silica is of most concern with respect to potential worker exposures. Quartz is the most abundant type of crystalline silica. Some commonly used construction materials containing silica include brick, refractory brick, concrete, concrete block, cement, mortar, rock and stone, sand, fill dirt, topsoil and asphalt containing rock or stone.

The Ministry of Labour *Guideline, Silica on Construction Projects*, dated April 2011, provides guidance in controlling exposure to silica dust during construction activities. In the guideline, silica-containing construction operations are classified into three groups - Type 1 (low risk), Type 2 (medium risk) and Type 3 (high risk) based on presumed airborne concentrations of respirable crystalline silica in the form of cristobalite, tridymite, quartz and tripoli as shown in Appendix C, Table C-3.

2.5 Vinyl Chloride

Vinyl chloride vapours may be released from polyvinyl chloride (PVC) products in the event of heating or as a result of decomposition during fire. PVC is used in numerous materials that may be found in building

construction, including, for example, piping, conduits, siding, window and door frames, plastics, garden hoses, flooring and wire and cable protection.

2.6 Acrylonitrile

Acrylonitrile is used to produce nitrile-butadiene rubber, acrylonitrile-butadiene-styrene (ABS) polymers and styrene-acrylonitrile (SAN) polymers. Products made with ABS resins which may be found in buildings include telephones, bottles, packaging, refrigerator door liners, plastic pipe, building panels and shower stalls. Acrylonitrile can be released into the air by combustion of products containing ABS.

2.7 Other Designated Substances

Isocyanates are a class of chemicals used in the manufacture of certain types of plastics, foams, coatings and other products. Isocyanate-based building construction materials may include rigid foam products such as foam-core panels and spray-on insulation and paints, coatings, sealants and adhesives. Isocyanates may be inhaled if they are present in the air in the form of a vapour, a mist or a dust.

Benzene is a clear, highly flammable liquid used mainly in the manufacture of other chemicals. The commercial use of benzene as a solvent has practically been eliminated, however it continues to be used as a solvent and reactant in laboratories.

Arsenic is a heavy metal used historically in pesticides and herbicides. The primary use in building construction materials was its use in the wood preservative chromated copper arsenate (CCA). CCA was used to pressure treat lumber since the 1940's. Pressure-treated wood containing CCA is no longer being produced for use in most residential settings.

Ethylene oxide is a colourless gas at room temperature. it has been used primarily for the manufacture of other chemicals, as a fumigant and fungicide and for sterilization of hospital equipment.

Coke oven emissions are airborne contaminants emitted from coke ovens and are not a potential hazard associated with building construction materials.

2.8 Polychlorinated Biphenyls (PCBs)

The management of equipment classified as waste and containing Polychlorinated Biphenyls (PCBs) at concentrations of 50 parts per million (mg/kg) or greater is regulated by Ontario Regulation 362*, Waste Management – PCBs*. Under this regulation, PCB waste is defined as any waste material containing PCBs in concentrations of 50 mg/kg or greater. Any equipment containing PCBs at or greater than this level, such as transformers, switchgear, light ballasts and capacitors, which is removed from service due to age, failure or as a result of decommissioning, is considered to constitute a PCB waste. Although current federal legislation (effective 1 July 1980) has prohibited the manufacture and sale of new equipment containing PCBs since that time, continued operation of equipment supplied prior to this date and containing PCBs is still permitted. Handling, storage and disposition of such equipment is, however, tightly regulated and must

be managed in accordance with provincial and federal government requirements as soon as it is taken out of service or becomes unserviceable.

In most institutional, commercial facilities and in smaller industrial facilities, the primary source of equipment potentially containing PCBs is fluorescent and H.I.D. light ballasts. Small transformers may also be present. In larger industrial facilities, larger transformers and switch gear containing, or potentially containing, PCBs may also be present.

PCBs were also commonly added to industrial paints from the 1940s to the late 1970s. PCBs were added directly to the paint mixture to act as a fungicide, to increase durability and flexibility, to improve resistance to fires and to increase moisture resistance. The use of PCBs in new products was banned in Canada in the 1970s. PCB amended paints were used in speciality industrial/institutional applications prior to the 1970s including government buildings and equipment such as industrial plants, radar sites, ships as well as non-government rail cars, ships, grain bins, automobiles and appliances.

Removal of in-service equipment containing PCBs, such as fluorescent light ballasts, capacitors and transformers, is subject to the requirements of the federal *PCB Regulations* (discussed below).

The *PCB Regulations*, which came into force on 5 September 2008, were made under the *Canadian Environmental Protection Act*, 1999 (CEPA 1999) with the objective of addressing the risks posed by the use, storage and release to the environment of PCBs, and to accelerate their destruction. The *PCB Regulations* set different end-of-use deadlines for equipment containing PCBs at various concentration levels.

The Regulations Amending the PCB Regulations and Repealing the Federal Mobile PCB Treatment and Destruction Regulations were published on 23 April 2014, in the Canada Gazette, Part II, and came into force on 1 January 2015. The most notable part of the amendments is the addition of an end-of-use deadline date of 31 December 2025 for specific electrical equipment located at electrical generation, transmission and distribution facilities.

When the PCB materials are classified as waste, jurisdiction falls under the Ontario Ministry of the Environment and Climate Change (MOECC) and O.Reg. 362. All remedial and PCB management work must be carried out under the terms of a Director's Instruction issued by an MOECC District Office (for quantities of PCB fluid greater than 50 litres). The PCB waste stream, regardless of quantity, must be registered with the MOECC, in accordance with O.Reg. 347, *General - Waste Management*. O.Reg. 362 applies to any equipment containing greater than 1 kg of PCBs.

2.9 Ozone-Depleting Substances (ODS) and Other Halocarbons

Ontario Regulation 463/10 – *Ozone Depleting Substances and Other Halocarbons*, applies to the use, handling and disposal of Class 1 ozone-depleting substances, including various chlorofluorocarbons (CFCs), halons and other halocarbons, Class 2 ozone-depleting substances, including various hydrochlorofluorocarbons (HCFCs) and halocarbons, and other halocarbons, including fluorocarbons (FCs) and hydrofluorocarbons (CFCs). The most significant requirements for handling of ozone-depleting substances (ODS) and other Halocarbons, which include, for example, refrigerants used in refrigeration equipment and chillers, include the following:

- certification is required for all persons testing, repairing, filling or emptying equipment containing ODS and other halocarbons;
- the discharge of a Class 1 ODS or anything that contains a Class 1 ODS to the natural environment or within a building is prohibited;
- the making, use of, selling of or transferring of a Class 1 ODS is restricted to certain conditions;
- the discharge of a solvent or sterilant that contains a Class 2 ODS is prohibited;
- the making, use of, selling of or transferring of a solvent or sterilant that contains a Class 2 ODS is restricted to certain conditions;
- fire extinguishing equipment that contains a halon may be discharged to fight fires, except fires for firefighting training purposes;
- portable fire extinguishing equipment that contains a halon may be used or stored if the extinguisher was sold for use for the first time before 1 January 1996;
- records of the servicing and repair of equipment containing ODS and other halocarbons must be prepared and maintained by the owner of the equipment; and
- equipment no longer containing ODS and other halocarbons must be posted with a notice completed by a certified person.

Ontario Regulation 347, *General – Waste Management*, has also been amended to provide for more strict control of CFCs. The requirements under the amended regulation apply primarily to the keeping of records for the receipt or recycling of CFC waste.

2.10 Mould

Moulds are forms of fungi that are found everywhere both indoors and outdoors all year round. Outdoors, moulds live in the soil, on plants and on dead and decaying matter. More than 1000 different kinds of indoor

moulds have been found in buildings. Moulds spread and reproduce by making spores, which are all small and light-weight, able to travel through air, capable of resisting dry, adverse environmental conditions, and hence capable of surviving a long time. Moulds need moisture and nutrients to grow and their growth is stimulated by warm, damp and humid conditions.

Control of exposure to mould is required under Section 25(2)(h) of the Ontario *Occupational Health and Safety Act*, which states that employers shall take every precaution reasonable in the circumstances for the protection of workers. Recommended work practices are outlined in the following documents:

- *Mould Guidelines for the Canadian Construction Industry.* Standard Construction Document CCA 82 2004. Canadian Construction Association.
- *Mould Abatement Guidelines*. Environmental Abatement Council of Ontario. Edition 3. 2015.

3 RESULTS AND DISCUSSION

3.1 Asbestos

Arcadis reviewed a report entitled *Survey of Asbestos-Containing Materials, Pauline Johnson Public School, 4350 Longmoor Drive, Burlington, Ontario* dated March 8, 2021. Information and/or bulk sample analysis results obtained from this report was utilized by Arcadis during the course of our investigation and in the preparation of this report.

During the course of our site investigation, representative bulk samples of material were collected by Arcadis staff. The samples were forwarded to EMSL Canada Inc. (EMSL) for asbestos analyses. Results of bulk sample analysis for asbestos content are provided in Table 3.1. Table 3.1 also include sample results that are outside of the designated study areas. This information is provided for references purposes only. Laboratory reports are provided in Appendix B. Locations of accessible asbestos-containing materials are outlined on the floor plan provided in Appendix A.

Table 3.1. Summary of Results of Analyses of Bulk Samples for Asbestos Content

Pauline Johnson Public School – June 17, 2021

Sample No.	Sample Location	Sample description	Asbestos Content
1A	Room 5	Interior concrete block mortar (era 1986)	< 0.25% chrysotile (1)
1B	Room 6	Interior concrete block mortar (era 1986)	< 0.25% chrysotile (1)
1C	Room 6	Interior concrete block mortar (era 1986)	< 0.25% chrysotile (1)
2A	Room 5	Concrete block-filler paint (era 1986)	None detected
2B	Room 6	Concrete block-filler paint (era 1986)	None detected
2C	Room 6	Concrete block-filler paint (era 1986)	None detected
3A	Room 4A	Black mastic under 9” vinyl floor tile	**5% chrysotile**
1A	9	Paint on block wall	None detected (2)
1B	3	Paint on block wall	None detected (2)
1C	27	Paint on block wall	None detected (2)
2A	27	Mortar on block wall	< 0.25% chrysotile (1,2)
2B	32	Mortar on block wall	< 0.25% chrysotile (1,2)
2C	28	Mortar on block wall	< 0.25% chrysotile (1,2)
3A	2	Vermiculite insulation in block wall	None detected (TEM) (2)
4A	2	Grout in ceramic tiles	None detected (2)
4B	2B	Grout in ceramic tiles	None detected (2)
4C	2B	Grout in ceramic tiles	None detected (2)
5A	2	Mortar in ceramic tiles	None detected (2)
5B	2B	Mortar in ceramic tiles	None detected (2)
5C	2B	Mortar in ceramic tiles	None detected (2)
6A	1	12”x12” vinyl floor tile, grey with black and white fleck	None detected (TEM) (2)

Sample No.	Sample Location	Sample description	Asbestos Content
6B	3	12”x12” vinyl floor tile, grey with black and white fleck	None detected (2)
6C	4	12”x12” vinyl floor tile, grey with black and white fleck	None detected (2)
7A	1	Mastic below 12”x12” vinyl floor tile, grey with black and white fleck	None detected (2)
7B	3	Mastic below 12”x12” vinyl floor tile, grey with black and white fleck	None detected (2)
7C	4	Mastic below 12”x12” vinyl floor tile, grey with black and white fleck	None detected (2)
8A	1	Grey interior window caulking between block wall and window frame	None detected (2)
8B	2	Grey interior window caulking between block wall and window frame	None detected (2)
8C	3	Grey interior window caulking between block wall and window frame	None detected (2)
9A	1	White interior window caulking	None detected (2)
9B	3	White interior window caulking	None detected (2)
9C	4	White interior window caulking	None detected (2)
1A	Ext. wall	Parging on concrete wall	None detected (2)
1B	Ext. wall	Parging on concrete wall	None detected (2)
1C	Ext. wall	Parging on concrete wall	None detected (2)
2A	Ext. wall	Control joint caulking	None detected (2)
2B	Ext. wall	Control joint caulking	None detected (2)
2C	Ext. wall	Control joint caulking	None detected (2)
3A	Corridor 11	Exterior door caulking - Brown	None detected (2)
3B	Corridor 11	Exterior door caulking - Brown	None detected (2)
3C	Corridor 12	Exterior door caulking - Brown	None detected (2)
4A	Ext. wall Room 17	Metal panel control joint caulking – Dark brown	None detected (2)
4B	Ext. wall Room 17	Metal panel control joint caulking – Dark brown	None detected (2)
4C	Ext. wall Room 3/4	Metal panel control joint caulking – Dark brown	None detected (2)
5A	Room 4	Exterior door caulking – Light grey/white	None detected (2)
5B	Room 27	Exterior door caulking – Light grey/white	None detected (2)
5C	Room 2	Exterior door caulking – Light grey/white	None detected (2)
6A	Room 17	Exterior door caulking – Hard grey/white	None detected (2)
6A	Room 23	Exterior door caulking – Hard grey/white	None detected (2)
6C	Room 1	Exterior door caulking – Hard grey/white	None detected (2)
1-A	Room: 1	Mastic – yellow in colour under carpet	None detected (PLM) (2) None detected (TEM) (2)

Sample No.	Sample Location	Sample description	Asbestos Content
1-B	Room: 2	Mastic – yellow in colour under carpet	None detected (2)
1-C	Room: 19	Mastic – yellow in colour under carpet	None detected (2)
2-A	Room: 1	Mastic – black in colour under 12” x 12” vinyl floor tile	None detected (PLM) (2) None detected (TEM) (2)
2-B	Room: 2	Mastic – black in colour under 12” x 12” vinyl floor tile	None detected (2)
2-C	Room: 2	Mastic – black in colour under 12” x 12” vinyl floor tile	None detected (2)
3-A	Room: 1	12” x 12” vinyl floor tile – white in colour with black streaks	**1.1% chrysotile (2,3)**
4-A	Room: 1	Mastic – light beige in colour from baseboard	None detected (PLM) (2) None detected (TEM) (2)
4-B	Room: 2	Mastic – light beige in colour from baseboard	None detected (2)
4-C	Room: 19	Mastic – light beige in colour from baseboard	None detected (2)
5-A	Room: 1	Vinyl baseboard – black in colour	None detected (PLM) (2) None detected (TEM) (2)
5-B	Room: 2	Vinyl baseboard – black in colour	None detected (2)
5-C	Room: 19	Vinyl baseboard – black in colour	None detected (2)
6-A	Room: 29	Mastic – black in colour under 12” x 12” vinyl floor tile	None detected (PLM) (2) None detected (TEM) (2)
6-B	Room: 29	Mastic – black in colour under 12” x 12” vinyl floor tile	None detected (2)
6-C	Room: 29	Mastic – black in colour under 12” x 12” vinyl floor tile	None detected (2)
7-A	Room: 29	12” x 12” vinyl floor tile – brown in colour with white streak	None detected (PLM) (2) None detected (TEM) (2)
7-B	Room: 29	12” x 12” vinyl floor tile – brown in colour with white streak	None detected (2)
7-C	Room: 29	12” x 12” vinyl floor tile – brown in colour with white streak	None detected (2)
8-A	Room: 19	Mastic – black in colour under 12” x 12” vinyl floor tile	**1.9% chrysotile (2)**
9-A	Room: 19	12” x 12” vinyl floor tile – light green with light and dark fleck	None detected (PLM) (2) None detected (TEM) (2)
9-B	Room: 19A	12” x 12” vinyl floor tile – light green with light and dark fleck	None detected (2)
9-C	Room: 19B	12” x 12” vinyl floor tile – light green with light and dark fleck	None detected (2)
10-A	Room: 16	12” x 12” vinyl floor tile – beige in colour with light and dark fleck	None detected (PLM) (2) None detected (TEM) (2)
10-B	Room: 16A	12” x 12” vinyl floor tile – beige in colour with light and dark fleck	None detected (2)
10-C	Room: 16C	12” x 12” vinyl floor tile – beige in colour with light and dark fleck	None detected (2)

Sample No.	Sample Location	Sample description	Asbestos Content
11-A	Room: 13	9” x 9” vinyl floor tile – brown/white/grey in colour with streaks	None detected (PLM) (2) **0.97% chrysotile (TEM) (2)**
12-A	Room: 8	12” x 12” vinyl floor tile – cream in colour with light and dark fleck	None detected (PLM) (2) None detected (TEM) (2)
12-B	Room: 8	12” x 12” vinyl floor tile – cream in colour with light and dark fleck	None detected (2)
12-C	Room: 8	12” x 12” vinyl floor tile – cream in colour with light and dark fleck	None detected (2)
13-A	Room: 18	12” x 12” vinyl floor tile – beige in colour with brown streaks	None detected (PLM) (2) None detected (TEM) (2)
13-B	Room: 18	12” x 12” vinyl floor tile – beige in colour with brown streaks	None detected (2)
13-C	Room: 18	12” x 12” vinyl floor tile – beige in colour with brown streaks	None detected (2)
14-A	Room: 18A	12” x 12” vinyl floor tile – grey in colour with light and dark fleck	None detected (PLM) (2) None detected (TEM) (2)
14-B	Room: 18A	12” x 12” vinyl floor tile – grey in colour with light and dark fleck	None detected (2)
14-C	Room: 18A	12” x 12” vinyl floor tile – grey inj colour with light and dark fleck	None detected (2)
15-A	Room: 17	12” x 12” vinyl floor tile – light beige in colour with spaced tan fleck	None detected (PLM) (2) None detected (TEM) (2)
15-B	Room: 17	12” x 12” vinyl floor tile – light beige in colour with spaced tan fleck	None detected (2)
15-C	Room: 17	12” x 12” vinyl floor tile – light beige in colour with spaced tan fleck	None detected (2)
16-A	Room: 25	12” x 12” vinyl floor tile – white in colour with spaced black fleck	None detected (PLM) (2) None detected (TEM) (2)
16-B	Room: 25	12” x 12” vinyl floor tile – white in colour with spaced black fleck	None detected (2)
16-C	Room: 26	12” x 12” vinyl floor tile – white in colour with spaced black fleck	None detected (2)
17-A	Room: 1	Caulking – grey in colour from interior window frame and wall	None detected (PLM) (2) None detected (TEM) (2)
17-B	Room: 2	Caulking – grey in colour from interior window frame and wall	None detected (2)
17-C	Exterior: 1	Caulking – grey in colour from exterior window frame and wall	None detected (2)
18-A	Room: 1	Caulking – white in colour from wall and wood bulkhead joint	None detected (PLM) (2) None detected (TEM) (2)
18-B	Room: 1	Caulking – white in colour from wall and wood bulkhead joint	None detected (2)
18-C	Room: 2	Caulking – white in colour from wall and wood bulkhead joint	None detected (2)
19-A	Room: 2	Caulking – brown in colour from interior door frame	**1.5% chrysotile (2)**

Sample No.	Sample Location	Sample description	Asbestos Content
20-A	Room: 14	Caulking – grey in colour new look from interior window frame	None detected (PLM) (2) None detected (TEM) (2)
20-B	Room: 14	Caulking – grey in colour new look from interior window frame	None detected (2)
20-C	Room: 14	Caulking – grey in colour new look from exterior window frame	None detected (2)
21-A	Room: 15	Caulking – white in colour from interior door frame	< 0.25% chrysotile (PLM) (1,2) **1.3% chrysotile (TEM) (2)**
22-A	Room: 19	Caulking – yellow in colour from wall and wood bulkhead joint	**2.2% chrysotile (2)**
23-A	Exterior: 19	Caulking – grey in colour brittle from exterior door frame	**1.3% chrysotile (2)**
24-A	Room: 29	Caulking- white in colour from interior door frame	None detected (PLM) (2) None detected (TEM) (2)
24-B	Room: 29	Caulking- white in colour from interior door frame	None detected (2)
24-C	Room: 29	Caulking- white in colour from interior door frame	None detected (2)
25-A	Room: 1	Fire proofing – white in colour from gypsum board above ceiling tiles	None detected (2)
25-B	Room: 2	Fire proofing – white in colour from gypsum board above ceiling tiles	None detected (2)
25-C	Room: 2	Fire proofing – white in colour from gypsum board above ceiling tiles	None detected (2)
26-A	Room: 6	Cement board – grey in colour from work bench	**11.7% chrysotile (2)**
27	Room: 32	Pipe fitting insulation – grey in colour	**60% chrysotile (2)**
28-A	Room: 1	Vermiculite – brown in colour from concrete block wall	None detected (2)
28-B	Room: 1	Vermiculite – brown in colour from concrete block wall	None detected (2)
28-C	Room: 2	Vermiculite – brown in colour from concrete block wall	None detected (2)
29-A	Room: 32	Drywall joint compound from column enclosure	None detected (2)
29-B	Room: 32	Drywall joint compound from column enclosure	**1.6% chrysotile (2)**
30-A	Room: 1	Mortar – from interior concrete block mortar	None detected (PLM) (2) None detected (TEM) (2)
30-B	Room: 2	Mortar – from interior concrete block mortar	<0.25% chrysotile (1,2)
30-C	Room: 19	Mortar – from interior concrete block mortar	<0.25% chrysotile (1,2)
31-A	Exterior: 1	Mortar – from exterior brick mortar	<0.25% chrysotile (PLM) (1,2) <0.40% chrysotile (TEM) (1,2)
31-B	Exterior: 2	Mortar – from exterior brick mortar	<0.25% chrysotile (1,2)
31-C	Exterior: 19	Mortar – from exterior brick mortar	<0.25% chrysotile (1,2)
32-A	Room: 1	Textured paint – from interior concrete block wall	None detected (2)
32-B	Room: 2	Textured paint – from interior concrete block wall	None detected (2)
32-C	Room: 19	Textured paint – from interior concrete block wall	None detected (2)

Sample No.	Sample Location	Sample description	Asbestos Content
33-A	Room: 14	Textured paint – from drywall ceiling	None detected (2)
33-B	Room: 14	Textured paint – from drywall ceiling	None detected (2)
33-C	Room: 14	Textured paint – from drywall ceiling	None detected (2)
34-A	Room: 1	2' x 4' ceiling tile – chicken feet fissure with pinholes	None detected (2)
34-B	Room: 2	2' x 4' ceiling tile – chicken feet fissure with pinholes	None detected (2)
34-C	Room: 2	2' x 4' ceiling tile – chicken feet fissure with pinholes	None detected (2)
35-A	Room: 1	12" x 12" ceiling tile – directional fissures with pinholes	None detected (2)
35-B	Room: 2	12" x 12" ceiling tile – directional fissures with pinholes	None detected (2)
35-C	Room: 2	12" x 12" ceiling tile – directional fissures with pinholes	None detected (2)
36-A	Room: 1	Ceiling mastic pucks – brown in colour under 12" x 12" ceiling tile	None detected (PLM) (2) None detected (TEM) (2)
36-B	Room: 2	Ceiling mastic pucks – brown in colour under 12" x 12" ceiling tile	None detected (2)
36-C	Room: 2	Ceiling mastic pucks – brown in colour under 12" x 12" ceiling tile	None detected (2)
37-A	Room: 1	2'x4' ceiling tile – fissures on 2' with pinholes	None detected (2)
37-B	Room: 2	2'x4' ceiling tile – fissures on 2' with pinholes	None detected (2)
37-C	Room: 2	2'x4' ceiling tile – fissures on 2' with pinholes	None detected (2)
38-A	Room: 1	12" x 12" ceiling tile – long directional fissure with pinholes	None detected (2)
38-B	Room: 2	12" x 12" ceiling tile – long directional fissure with pinholes	None detected (2)
38-C	Room: 2	12" x 12" ceiling tile – long directional fissure with pinholes	None detected (2)
39-A	Room: 32	2' x 4' ceiling tile – fissure on 4' with pinholes	None detected (2)
39-B	Room: 14	2' x 4' ceiling tile – fissure on 4' with pinholes	None detected (2)
39-C	Room: 19	2' x 4' ceiling tile – fissure on 4' with pinholes	None detected (2)
40-A	Room: 32	2' x 4' ceiling tile – random fissures with pinholes	None detected (2)
40-B	Room: 14	2' x 4' ceiling tile – random fissures with pinholes	None detected (2)
40-C	Room: 19	2' x 4' ceiling tile – random fissures with pinholes	None detected (2)

NOTES:

(1) "Asbestos-containing material" is defined as material that contains 0.5% or more asbestos by dry weight.

(2) Sample results derived from a report prepared by Arcadis for the Halton District School Board entitled *Survey of Asbestos-Containing Materials, Pauline Johnson Public School, 4350 Longmoor Drive, Burlington, Ontario* dated March 8, 2021.

(3) Material collected in the area have since been removed and are provided here for references purposes only.

Bulk samples were analyzed by Polarized Light Microscopy (PLM) analysis, except where "TEM" is noted, in which case Transmission Electron Microscopy analysis was also performed.

< = less than.

Chrysotile = Chrysotile asbestos.

Determination of the locations of asbestos-containing material was made based on the review of existing information, results of bulk sample analysis, visual observations and physical characteristics of the applications as well as our knowledge of the uses of asbestos in building materials.

Based on visual observations and results of laboratory analyses of samples collected by Arcadis Canada Inc., the following asbestos-containing materials were found to be present in the designated study areas:

- thermal insulation applied to pipe fittings above ceiling in Rooms 1C, 13, 13B, 14, 16, 16B, 20, 22, 23, 24, 28 and 32;
- joint compound on drywall applications above windows and column enclosures in Rooms 1, 2, 2B, 3, 4, 16, 19, 28 and 32;
- joint compound on drywall walls in Rooms 13, 13A, 13B,
- joint compound on drywall encasing HVAC units in Rooms 1, 2, 2B, 3, 4 and 30
- joint compound on drywall ceiling in Rooms 1D, 14, 16A, 18, 18A, 18B, 20, 21, 25, 26, 30A, 31, 31A and 31B;
- 9" x 9" vinyl floor tiles and associated mastics in Rooms 1A, 1B, 4A, 13, 13A and 18B;
- Cement board work bench in Room 6;
- Caulking located between wooden bulkheads and walls in Rooms 1, 2 and 2B; and
- Caulking on select door frames in Rooms 14, 15 and 32.

Asbestos-containing thermal insulation applied to pipe fittings is a white-coloured cementitious material.

Glass fibre insulation is readily visually distinguishable (typically yellow in colour) from asbestos-containing insulation materials and was, therefore, not tested for asbestos content.

Vinyl floor tiles, floor tile mastics, caulking and cement board are non-friable materials. The removal, alteration and/or disturbance of these non-friable asbestos-containing materials can be performed as a Type 1 operation as specified in O. Reg. 278/05 if the material is wetted and the work is done only using non-powered, hand-held tools (see Table C-1 in Appendix C). If the removal, alteration and/or disturbance work is done using power tools that are attached to dust-collecting devices equipped with HEPA filters, then the work is classified as Type 2. If the power tools do not have HEPA filtered dust collecting devices, then the work is Type 3.

The removal, alteration and/or disturbance of less than one square metre of drywall in which asbestos-containing joint filling compounds have been used is classified as a Type 1 operation. The removal,

alteration and/or disturbance of one square metre or more of drywall with asbestos-containing joint compounds is a Type 2 operation.

Thermal insulation is a friable material. The removal, alteration and/or disturbance of less than 1 m^2 of friable asbestos-containing materials is classified as a Type 2 enclosure operation as specified in O.Reg. 278/05. The removal, alteration and/or disturbance of more than 1 m^2 of friable asbestos-containing materials is classified as a Type 3 operation.

Asbestos may also be present in materials which were not sampled during the course of the asbestos survey carried out by Arcadis, including, but not limited to, areas outside the designated study areas, roofing materials, fire doors, gaskets in piping, internal components of boilers, components of electrical equipment (e.g. electric wiring insulation, non-metallic sheathed cable, electrical panel partitions, arc chutes, high-grade electrical paper, etc.), cement, asphaltic pavement, etc., and/or in locations that are presently inaccessible (e.g., in pipe chases, behind walls, above suspended gypsum board or plaster ceilings, and below carpets). Confirmatory testing of any such materials could be undertaken as the need arises (i.e., at the time of renovations, modifications or demolition) or the materials can be assumed to contain asbestos based on findings in adjacent areas.

If any materials which may contain asbestos and which were not tested during the course of the designated substances and hazardous materials survey are discovered during any construction activities, the work shall not proceed until such time as the required notifications have been made and an appropriate course of action is determined.

3.2 Lead

During the course of our site investigation, bulk samples of the predominant paints observed in the study areas were collected by Arcadis staff. The samples were forwarded to Bureau Veritas Laboratories for lead analyses. Results of bulk sample analysis for lead content are provided in Table 3.2. The laboratory report is provided in Appendix B.

Table 3.2. Summary of Results of Analyses of Bulk Samples for Lead Content

Pauline Johnson Public School – June 17, 2021

Sample No.	Sample Location	Sample Description	Lead Content
P-1	Room 20	Beige paint on concrete block	**1,200 mg/kg**
P-2	Room 3	Beige paint on drywall	**580 mg/kg**

NOTE:

< = less than.

mg/Kg = milligrams lead per kilogram paint.

1 mg/Kg - 1 part per million (ppm).

Lead was detected at levels above the criteria of 90 mg/kg (Surface Coating Materials Regulations criterion value) in the samples of beige paint observed in the study areas.

Lead may also be present in lead pipe, mortar, glazing on ceramic tiles, in the solder on the seals of bell joints of any cast iron drainpipe and in the solder on the sweated-on joints between copper pipe and fittings.

The Ministry of Labour *Guideline – Lead on Construction Projects*, dated April 2011, provides guidance in the measures and procedures that should be followed when handling lead containing materials during construction projects. In the guideline, lead-containing construction operations are classified into three groups - Type 1 (low risk), Type 2 (medium risk) and Type 3 (high risk) based on presumed airborne concentrations of lead, as shown in Appendix C, Table C-2. Any operation that may expose a worker to lead that is not a Type 1, Type 2, or Type 3b operation, is classified as a Type 3a operation.

In addition, the *EACO Lead Abatement Guidelines*, *2014 — Edition 1,* Environmental Abatement Council of Ontario, also provides guidance and recommended work practices.

3.3 Mercury

During the course of our site investigation, fluorescent lights were identified in the designated study areas. Mercury should be assumed to be present as a gas in all fluorescent light tubes and in all paint applications, albeit at low levels. The fluorescent light tubes should be recycled for mercury, if the lights are removed.

Proper procedures for removing and handling mercury-containing fluorescent light tubes typically involve:

- ensuring that electrical power to light fixtures has been disconnected and locked out;
- taking all necessary precautions to ensure that fluorescent lamp tubes are removed in a manner that prevents breakage; and
- transporting fluorescent lamp tubes to a licensed processing location for separation and recovery of mercury.

The measures and procedures outlined in the MOL *Guideline, Lead on Construction Projects* for control of potential exposure to lead in paint during construction activities will also serve to control potential exposure to any mercury in paint.

3.4 Silica

Materials observed in the designated study areas which should be considered to contain silica included gypsum board, drywall joint compound, concrete, mortar, concrete block, cement board and vinyl floor tiles.

Silica can also be assumed to be present in any gravel ballast on roofs and will also be found in asphalt roofing materials if rock or stone are present in the asphalt.

The Ministry of Labour *Guideline, Silica on Construction Projects*, April 2011, provides guidance in controlling exposure to silica dust during construction activities. In the guideline, silica-containing construction operations are classified into three groups - Type 1 (low risk), Type 2 (medium risk) and Type 3 (high risk) based on presumed airborne concentrations of silica, as shown in Appendix C, Table C-3.

Additional precautionary measures should also be implemented for certain types of materials (e.g., plaster and texture coat materials, including non-asbestos applications, concrete block, etc.). For minor disturbances such as drilling, a HEPA-filtered attachment should be used. For removal of more than a minor amount of material, enclosures should be constructed for dust control and separation of the work area from adjacent areas.

3.5 Vinyl Chloride

As mentioned in Section 2.5 above, vinyl chloride would only be a potential exposure concern in the event of combustion of PVC products.

3.6 Acrylonitrile

As mentioned in Section 2.6 above, acrylonitrile would only be a potential exposure concern in the event of combustion of ABS products.

3.7 Other Designated Substances

No other designated substances (benzene, isocyanates, arsenic, ethylene oxide and coke oven emissions) were observed to be present in the designated study areas, and none would be expected to be encountered in any building materials in a form that would represent an exposure concern. Arsenic may be present at low levels in paint applications. The measures and procedures outlined in the MOL *Guideline, Lead on Construction Projects* for control of potential exposure to lead in paint during construction activities will also serve to control potential exposure to any arsenic (or mercury) in paint.

3.8 Polychlorinated Biphenyls (PCBs)

Fluorescent lights were observed in the designated study areas during the course of our site investigations. Light ballasts, such as those associated with the type of fluorescent lights (T8s) observed in the designated study areas, are usually an electronic-type which do not contain PCBs, however, this would be confirmed by an electrician at the time of dismantling of the lights.

3.9 Ozone-Depleting Substances (ODS) and Other Halocarbons

Equipment potentially containing ozone-depleting substances was not observed during the course of the site investigation.

3.10 Mould

Readily evident mould was not observed during the course of the site investigation. The inspection of mould was limited to visual observations of readily-accessible surfaces and did not include intrusive inspections of wall cavities. During renovations or interior demolition work, any mould-impacted materials uncovered/discovered should be remediated following the measures and procedures outlined in the *Canadian Construction Association Standard Construction Document CCA-82 2004 - Mould Guidelines for the Canadian Construction Industry*.

4 USE AND LIMITATIONS OF THIS PRE-RENOVATION DESIGNATED SUBSTANCES AND HAZARDOUS MATERIALS SURVEY REPORT

This report, prepared for the Halton District School Board, does not provide certification or warranty, expressed or implied, that the investigation conducted by Arcadis Canada Inc. identified all designated substances (as defined in the Ontario *Occupational Health and Safety Act*) in the designated study areas at the subject facility. The work undertaken by Arcadis Canada Inc. was directed to provide information on the presence of designated substances in building construction materials based on review of existing information, visual investigation of readily accessible areas in the designated study areas of the building and on the results of laboratory analysis of a limited number of bulk samples of material for asbestos content and laboratory analysis of a limited number of paint samples for lead content. The survey did not include for identification of asbestos in process materials, equipment (including electrical equipment and wiring), furniture (e.g., chairs, table tops, etc.), nor material outside of the building (e.g., asphaltic pavement).

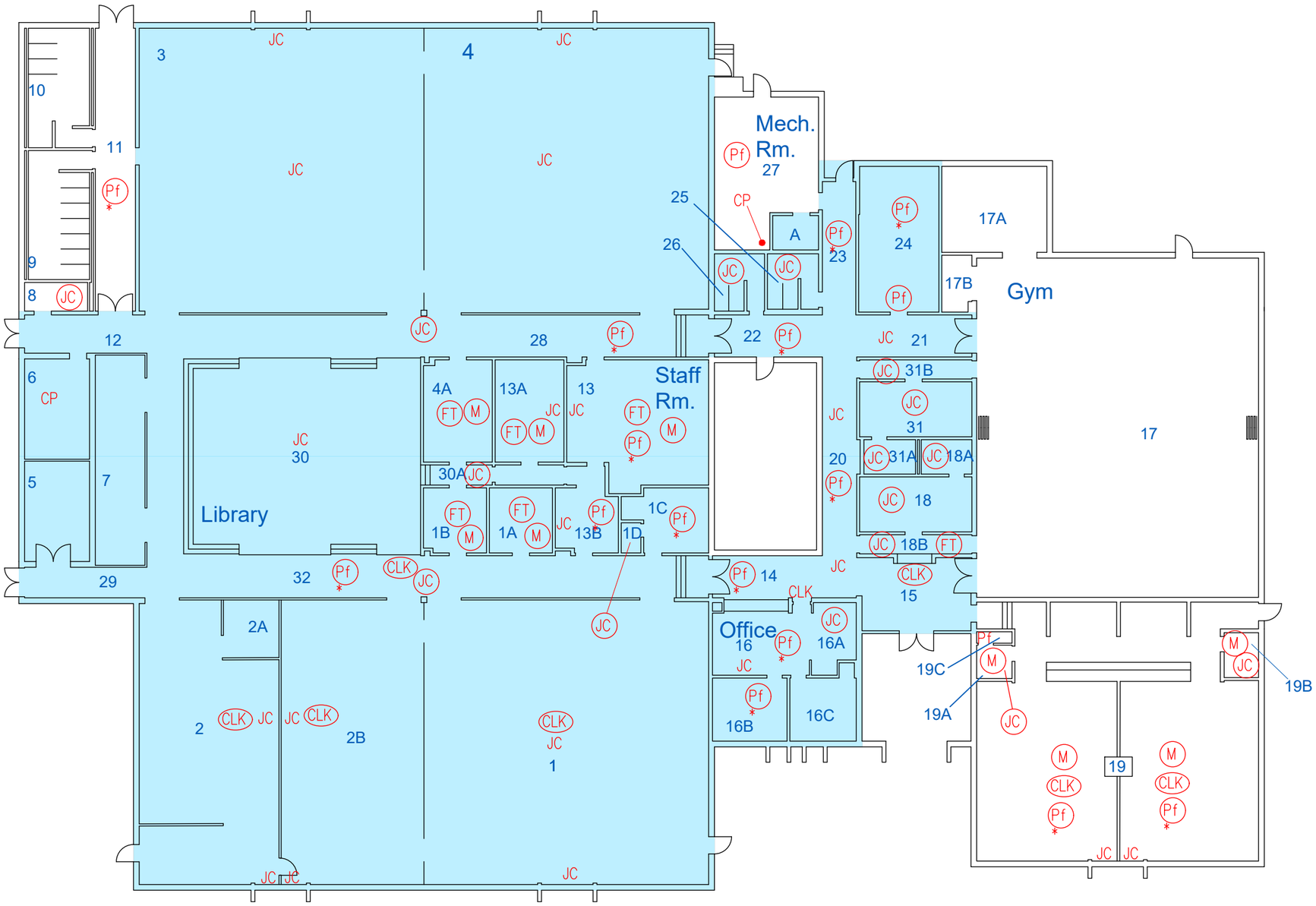
The material in this report reflects Arcadis Canada Inc.'s best judgment in light of the information available at the time of the investigation, which was performed on June 17, 2021.

This report is not intended to be used as a scope of work or technical specification for remediation of designated substances or hazardous materials.

This report was prepared by Arcadis Canada Inc. for the Halton District School Board. Any use which any other party makes of the report, or reliance on, or decisions to be based on it, is the responsibility of such parties.

APPENDIX A

Floor Plans



LEGEND:

1	FUNCTIONAL SPACE
◯	THROUGHOUT FUNCTIONAL SPACE
*	ABOVE CEILING ASSEMBLY
Pf	ASBESTOS ON PIPE FITTINGS (FRIABLE)
JC	ASBESTOS DRYWALL JOINT COMPOUND (NON-FRIABLE)
FT	ASBESTOS FLOOR TILE (NON-FRIABLE)
CLK	ASBESTOS CAULKING (NON-FRIABLE)
M	ASBESTOS FLOOR TILE MASTIC (NON-FRIABLE)
CP	ASBESTOS CEMENT PRODUCT (NON-FRIABLE)
▭	STUDY AREA

NOTES:

1. INTERIORS OF ALL FIRE DOORS ARE ASSUMED TO CONTAIN ASBESTOS.

REVISIONS:

No.	Date:	By:	Revisions

REFERENCE:

1.

ARCADIS

HALTON DISTRICT SCHOOL BOARD

PRE-RENOVATION DESIGNATED SUBSTANCE AND HAZARDOUS MATERIAL SURVEY

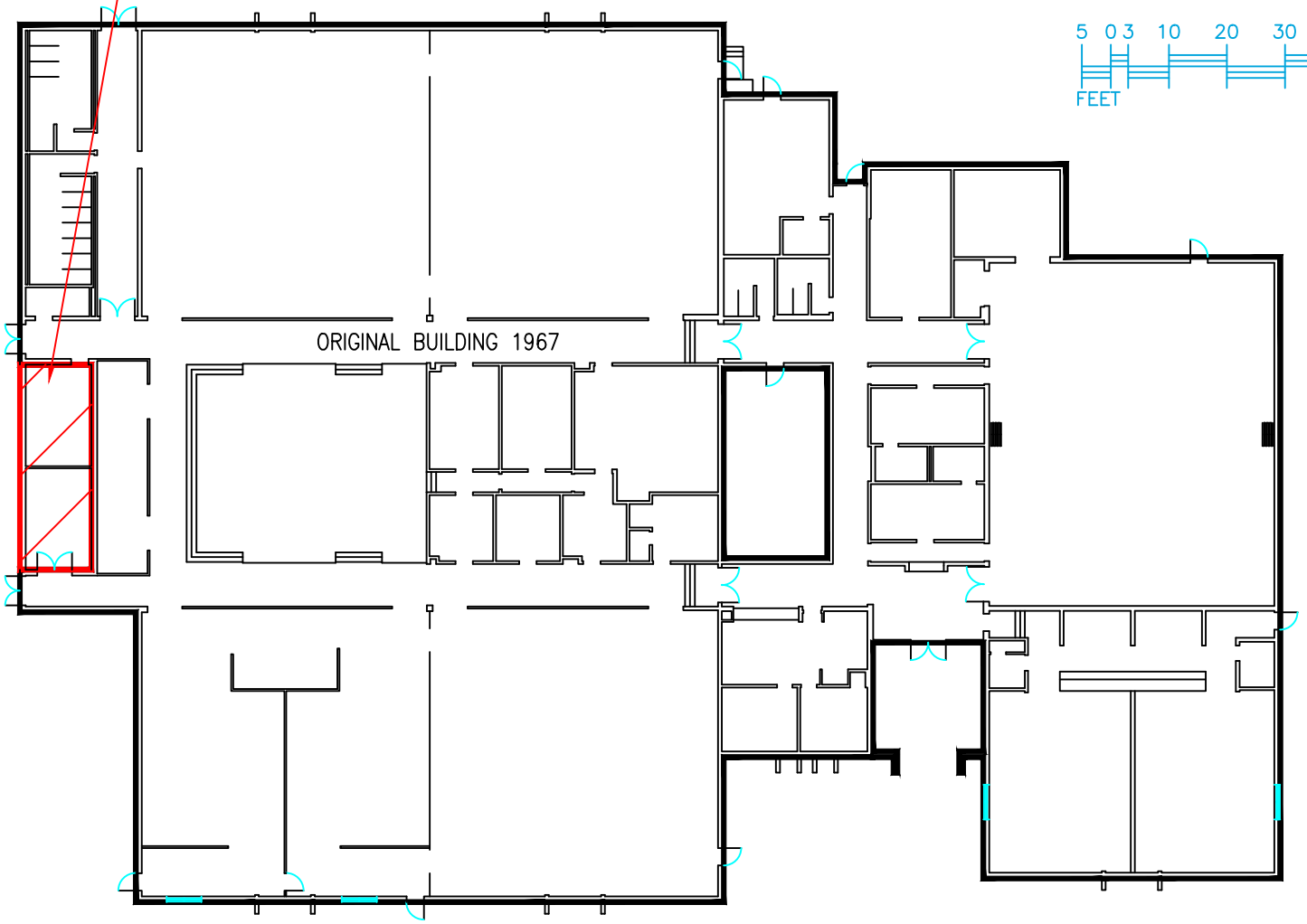
LOCATIONS OF ASBESTOS-CONTAINING MATERIALS AND STUDY AREAS

PAULINE JOHNSON PUBLIC SCHOOL
4350 LONGMOOR DRIVE, BURLINGTON, ON

FIRST FLOOR

Drawn By: M.S	Approved By: D.K.	Project No: 30089648
Date: JUNE 2021	Scale: N.T.S	Drawing No: 30089648-1

Jun 25, 2021 – 2:43pm – USER ms0285
C:\Users\ms0285\BIM 360\Arcadis\ANA-Halton District School Board\Project Files\Pauline Johnson PS\2021\30089648\01-DWG\30089648 Pauline Johnson PS Pre Renovation.dwg



Scale

5 0 1 2 3 4 5 10 15 20
METRES

5 0 3 10 20 30 40 50
FEET

Pauline Johnson Public School

4360 LONGMOOR DRIVE
BURLINGTON, ONTARIO

LAST UPDATED	11 NOVEMBER 2014
PREVIOUS UPDATE	3 MAY 2011
DRAWN	JK-6
SCALE	1"=30'-0"
DESIGN	RDZ
CONTRACT DATE STARTED	24 OCT 2011
YEAR BUILT	1974
AREA SQ. FT.	26919 (2501m²)
CAD FILE NAME	PAJPS

SHEET TITLE

FIRST FLOOR PLAN

PROJECT NAME

AREA

SHEET B | NUMBER 2

APPENDIX B

Laboratory Reports

EMSL Canada Inc.

2756 Slough Street Mississauga, ON L4T 1G3
Phone/Fax: (289) 997-4602 / (289) 997-4607
http://www.EMSL.com / torontolab@emsl.com

EMSL Canada Order 552109823
Customer ID: 55DCSL97
Customer PO: 30089648
Project ID:

Attn: Dwayne Kellyman
ARCADIS Canada Inc.
121 Granton Drive
Unit 12
Richmond Hill, ON L4B 3N4

Phone: (905) 882-5984
Fax: (905) 882-8962
Collected:
Received: 6/18/2021
Analyzed: 6/21/2021

Proj: 30089648 / Pauline Johnson PS

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

Client Sample ID: 1A ***Lab Sample ID:*** **552109823-0001**

Sample Description: interior concrete block mortar (era 1986) Room 5

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	6/21/2021	Gray	3.0%	97.0%	**<1% Chrysotile**	
400 PLM Pt Ct	6/21/2021	Gray	0.0%	100.0%	**<0.25% Chrysotile**	

Client Sample ID: 1B ***Lab Sample ID:*** **552109823-0002**

Sample Description: interior concrete block mortar (era 1986) Room 6

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	6/21/2021	Gray	3.0%	97.0%	**<1% Chrysotile**	
400 PLM Pt Ct	6/21/2021	Gray	0.0%	100.0%	**<0.25% Chrysotile**	

Client Sample ID: 1C ***Lab Sample ID:*** **552109823-0003**

Sample Description: interior concrete block mortar (era 1986) Room 5

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	6/21/2021	Gray	0.0%	100.0%	**<1% Chrysotile**	
400 PLM Pt Ct	6/21/2021	Gray	0.00%	99.75%	**0.25% Chrysotile**	

Client Sample ID: 2A ***Lab Sample ID:*** **552109823-0004**

Sample Description: Concrete block-filler paint (era 1986) Room 5

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	6/21/2021	Gray/White/Red	3.0%	97.0%	None Detected	

Client Sample ID: 2B ***Lab Sample ID:*** **552109823-0005**

Sample Description: Concrete block-filler paint (era 1986) Room 6

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	6/21/2021	Gray/White/Red	3.0%	97.0%	None Detected	

Client Sample ID: 2C ***Lab Sample ID:*** **552109823-0006**

Sample Description: Concrete block-filler paint (era 1986) Room 6

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	6/21/2021	Gray/White/Red	0.0%	100.0%	None Detected	

EMSL Canada Inc.

2756 Slough Street Mississauga, ON L4T 1G3
Phone/Fax: (289) 997-4602 / (289) 997-4607
http://www.EMSL.com / torontolab@emsl.com

EMSL Canada Order 552109823
Customer ID: 55DCSL97
Customer PO: 30089648
Project ID:

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

Client Sample ID: 3A ***Lab Sample ID:*** **552109823-0007**
Sample Description: 9" vinyl floor tile mastic Room 4A

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	6/21/2021	Black	0.0%	95.0%	**5% Chrysotile**	

Client Sample ID: 3B ***Lab Sample ID:*** **552109823-0008**
Sample Description: 9" vinyl floor tile mastic Room 13

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	6/21/2021				Positive Stop (Not Analyzed)	

Client Sample ID: 3C ***Lab Sample ID:*** **552109823-0009**
Sample Description: 9" vinyl floor tile mastic Room 13A

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	6/21/2021				Positive Stop (Not Analyzed)	

Analyst(s):

Delaney Breen	PLM (5) 400 PLM Pt Ct (2)
Tiffany Pilon	PLM (2) 400 PLM Pt Ct (1)

Reviewed and approved by:

Matthew Davis or other approved signatory
or Other Approved Signatory

None Detected = <0.1%. EMSL maintains liability limited to cost of analysis. Interpretation and use of test results are the responsibility of the client. This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. The report reflects the samples as received. Results are generated from the field sampling data (sampling volumes and areas, locations, etc.) provided by the client on the Chain of Custody. Samples are within quality control criteria and met method specifications unless otherwise noted. Estimation of uncertainty available upon request. This report is a summary of multiple methods of analysis, fully compliant reports are available upon request. A combination of PLM and TEM analysis may be necessary to ensure consistently reliable detection of asbestos. This report must not be used to claim product endorsement by NVLAP of any agency or the U.S. Government.

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

Initial report from: 06/21/202110:05:47

Your Project #: 30089648
Site Location: PAULINE JOHNSON P.S
Your C.O.C. #: 165894

Attention: Dwayne Kellyman

ARCADIS Canada Inc
121 Granton Dr
Unit 12
Richmond Hill, ON
CANADA L4B 3N4

Report Date: 2021/06/22
Report #: R6687693
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C1G8353
Received: 2021/06/18, 13:39

Sample Matrix: Paint
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Metals in Paint	2	2021/06/21	2021/06/22	CAM SOP-00408	EPA 6010D m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA. Where applicable, the analytical testing herein was performed in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act. All methodologies comply with this document and are validated for use in the laboratory. The methods and techniques employed in this analysis conform to the performance criteria (detection limits, accuracy and precision) as outlined in the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act. Bureau Veritas is accredited by SCC (Lab ID 97) for all specific parameters as required by Ontario Regulation 153/04.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

Your Project #: 30089648
Site Location: PAULINE JOHNSON P.S
Your C.O.C. #: 165894

Attention: Dwayne Kellyman

ARCADIS Canada Inc
121 Granton Dr
Unit 12
Richmond Hill, ON
CANADA L4B 3N4

Report Date: 2021/06/22
Report #: R6687693
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C1G8353
Received: 2021/06/18, 13:39

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Marijane Cruz, Senior Project Manager
Email: Marijane.Cruz@bureauveritas.com
Phone# (905)817-5756
==========
BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C1G8353
Report Date: 2021/06/22

ARCADIS Canada Inc
Client Project #: 30089648
Site Location: PAULINE JOHNSON P.S
Sampler Initials: DK

ELEMENTS BY ATOMIC SPECTROSCOPY (PAINT)

BV Labs ID		PWJ378		PWJ379		
Sampling Date		2021/06/17 13:00		2021/06/17 13:00		
COC Number		165894		165894		
	UNITS	**P-1 BEIGE PAINT ON CONCRETE BLOCK RM 20**	**RDL**	**P-2 BEIGE PAINT ON DRYWALL RM 3**	**RDL**	**QC Batch**
Metals						
Lead (Pb)	mg/kg	1200	10	580	1.3	7419523

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

BV Labs Job #: C1G8353
Report Date: 2021/06/22

ARCADIS Canada Inc
Client Project #: 30089648
Site Location: PAULINE JOHNSON P.S
Sampler Initials: DK

TEST SUMMARY

BV Labs ID: PWJ378
Sample ID: P-1 BEIGE PAINT ON CONCRETE BLOCK RM 20
Matrix: Paint

Collected: 2021/06/17
Shipped:
Received: 2021/06/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Metals in Paint	ICP	7419523	2021/06/21	2021/06/22	Medhat Nasr

BV Labs ID: PWJ379
Sample ID: P-2 BEIGE PAINT ON DRYWALL RM 3
Matrix: Paint

Collected: 2021/06/17
Shipped:
Received: 2021/06/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Metals in Paint	ICP	7419523	2021/06/21	2021/06/22	Medhat Nasr

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

BV Labs Job #: C1G8353
Report Date: 2021/06/22

ARCADIS Canada Inc
Client Project #: 30089648
Site Location: PAULINE JOHNSON P.S
Sampler Initials: DK

GENERAL COMMENTS

Sample PWJ378 [P-1 BEIGE PAINT ON CONCRETE BLOCK RM 20] : Metals Analysis: Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly.

Sample PWJ379 [P-2 BEIGE PAINT ON DRYWALL RM 3] : Metals: Due to limited amount of sample available for analysis, a smaller than usual portion of the sample was used. Detection limits were adjusted accordingly.

Results relate only to the items tested.

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

BV Labs Job #: C1G8353
Report Date: 2021/06/22

QUALITY ASSURANCE REPORT

ARCADIS Canada Inc
Client Project #: 30089648
Site Location: PAULINE JOHNSON P.S
Sampler Initials: DK

			Matrix Spike		Method Blank		QC Standard	
QC Batch	**Parameter**	**Date**	**% Recovery**	**QC Limits**	**Value**	**UNITS**	**% Recovery**	**QC Limits**
7419523	Lead (Pb)	2021/06/22	NC	75 - 125	<1.0	mg/kg	106	75 - 125

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

BV Labs Job #: C1G8353
Report Date: 2021/06/22

ARCADIS Canada Inc
Client Project #: 30089648
Site Location: PAULINE JOHNSON P.S
Sampler Initials: DK

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

Anastassia Hamanov, Scientific Specialist

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports.
For Service Group specific validation please refer to the Validation Signature Page.

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

BUREAU VERITAS

RUSH!

6740 Campobello Road, Mississauga, Ontario L5N 2L8
Phone: 905-817-5700 Fax: 905-817-5779 Toll Free: 800-563-6266
CAM FCD-01191/6

CHAIN OF CUSTODY RECORD 165894

Page ____ of ____

Invoice Information	Report Information (if differs from invoice)	Project Information (where applicable)	Turnaround Time (TAT) Required
Company Name: Arcadis Canada Inc.	Company Name:	Quotation #:	☐ Regular TAT (5-7 days) Most analyses
Contact Name: Dwayne Kellyman	Contact Name:	P.O. #/ AFE#:	PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS
Address: 121 Granton Drive Suite #12	Address:	Project #: 30089648	Rush TAT (Surcharges will be applied)
		Site Location: Pauline Johnson PS	☐ 1 Day ☒ 2 Days ☐ 3-4 Days
Phone: Fax:	Phone: Fax:	Site #:	
Email: dwayne.kellyman@arcadis.com	Email:	Site Location Province:	Date Required:
MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE BUREAU VERITAS LABORATORIES' DRINKING WATER CHAIN OF CUSTODY		Sampled By:	Rush Confirmation #:

Regulation 153	Other Regulations
☐ Table 1 ☐ Res/Park ☐ Med/ Fine	☐ CCME ☐ Sanitary Sewer Bylaw
☐ Table 2 ☐ Ind/Comm ☐ Coarse	☐ MISA ☐ Storm Sewer Bylaw
☐ Table 3 ☐ Agri/ Other	☐ PWQO Region ____
☐ Table ____	☐ Other (Specify) ____
FOR RSC (PLEASE CIRCLE) Y / N	☐ REG 558 (MIN. 3 DAY TAT REQUIRED)
	☐ REG 406 Table ____

Include Criteria on Certificate of Analysis: Y / N

SAMPLES MUST BE KEPT COOL (< 10 °C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BUREAU VERITAS

Analysis Requested

	SAMPLE IDENTIFICATION	DATE SAMPLED (YYYY/MM/DD)	TIME SAMPLED (HH:MM)	MATRIX	# OF CONTAINERS SUBMITTED	FIELD FILTERED (CIRCLE) Metals / Hg / CrVI	BTEX/ PHC F1	PHCs F2 - F4	VOCs	REG 153 METALS & INORGANICS	REG 153 ICPMS METALS	REG 153 METALS (Hg, Cr VI, ICPMS Metals, HWS - B)	LEAD								HOLD- DO NOT ANALYZE
1	P-1 beige paint on concrete block Rm 20			Paint									X								
2	P-2 Beige paint on drywall Rm 3			Paint									X								
3																					
4																					
5																					
6																					
7																					
8																					
9																					
10																					

LABORATORY USE ONLY

CUSTODY SEAL Y / N		COOLER TEMPERATURES
Present	Intact	
Y	Y	

COOLING MEDIA PRESENT: Y / N

COMMENTS

18-Jun-21 13:39
Marijane Cruz
C1G8353
URE ENV-1170

RELINQUISHED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	BV JOB #
Dwayne Kellyman	2021/06/18	1:35 pm		2021/06/18	13:39	

Unless otherwise agreed to in writing, work submitted on this Chain of Custody is subject to Bureau Veritas Laboratories' standard Terms and Conditions. Signing of this Chain of Custody document is acknowledgment and acceptance of our terms available at http://www.bvlabs.com/terms-and-conditions

COC-1004 (06/19)

White: BV Labs - Yellow: Client

APPENDIX C

Summary of Asbestos, Lead and Silica Work Classifications

TABLE C-1
SUMMARY OF CLASSIFICATION OF TYPE 1, 2 AND 3 OPERATIONS (Ont. Reg. 278/05)

TYPE 1 OPERATIONS

- removing less than 7.5 m^2 asbestos-containing ceiling tiles;
- removing non-friable asbestos-containing material other than ceiling tiles, if the material is removed without being broken, cut, drilled, abraded, ground, sanded or vibrated;
- breaking, cutting, drilling, abrading, grinding, sanding or vibrating non-friable asbestos-containing material if the material is wetted and the work is done only using non-powered, hand-held tools; and
- removing less than 1 m^2 of drywall in which asbestos-containing joint compounds have been used.

TYPE 2 OPERATIONS

- removing all or part of a false ceiling to obtain access to a work area, if asbestos-containing material is likely to be lying on the surface of the false ceiling;
- removal of one square metre or less of friable asbestos-containing material;
- enclosing friable asbestos-containing material;
- applying tape or a sealant or other covering to asbestos-containing pipe or boiler insulation;
- removing 7.5 m^2 or more asbestos-containing ceiling tiles (if removed without being broken, cut, drilled, abraded, ground, sanded or vibrated);
- breaking, cutting, drilling, abrading, grinding, sanding or vibrating non-friable asbestos-containing material if the material is not wetted and the work is done only using non-powered, hand-held tools;
- removal of one square metre or more of drywall in which asbestos-containing joint compounds have been used;
- breaking, cutting, drilling, abrading, grinding, sanding or vibrating non-friable asbestos-containing material if the work is done using power tools that are attached to dust-collecting devices equipped with HEPA filters;
- cleaning or removing filters used in air-handling equipment in a building that has asbestos-containing sprayed fireproofing.

TABLE C-1 (Continued)
SUMMARY OF CLASSIFICATION OF TYPE 1, 2 AND 3 OPERATIONS (Ont. Reg. 278/05)

TYPE 3 OPERATIONS

- removal of more than one square metre of friable asbestos-containing material;
- spray application of a sealant to friable asbestos-containing material;
- cleaning or removing air-handling equipment, including rigid ducting but not including filters, in a building that has sprayed asbestos-containing fireproofing;
- repairing or demolishing a kiln, metallurgical furnace or similar structure that is made in part of asbestos-containing refractory materials;
- breaking, cutting, drilling, abrading, grinding, sanding or vibrating non-friable asbestos-containing materials, if the work is done using power tools that are not attached to dust-collecting devices equipped with HEPA filters.

TABLE C-2

SUMMARY OF CLASSIFICATION OF LEAD-CONTAINING CONSTRUCTION TASKS

MOL GUIDELINE – LEAD ON CONSTRUCTION PROJECTS, APRIL 2011

Type 1 Operations	Type 2 Operations		Type 3 Operations	
	Type 2a	Type 2b	Type 3a	Type 3b
<0.05 mg/m^3	>0.05 to 0.50 mg/m^3	>0.50 to 1.25 mg/m^3	>1.25 to 2.50 mg/m^3	>2.50 mg/m^3

Note: The classification of Type 1, 2 and 3 operations is based on presumed airborne concentrations of lead, as shown above.

TYPE 1 OPERATIONS

- application of lead-containing coatings with a brush or roller;
- removal of lead-containing coatings with a chemical gel or paste and fibrous laminated cloth wrap;
- removal of lead-containing coatings or materials using a power tool that has an effective dust collection system equipped with a HEPA filter;
- installation or removal of lead-containing sheet metal;
- installation or removal of lead-containing packing, babbit or similar material;
- removal of lead-containing coatings or materials using non-powered hand tools, other than manual scraping or sanding;
- soldering.

TYPE 2 OPERATIONS

Type 2a Operations

- welding or high temperature cutting of lead-containing coatings or materials outdoors. This operation is considered a Type 2a operation only if it is short-term, not repeated, and if the material has been stripped prior to welding or high temperature cutting. Otherwise it will be considered a Type 3a operation;
- removal of lead-containing coatings or materials by scraping or sanding using non-powered hand tools;
- manual demolition of lead-painted plaster walls or building components by striking a wall with a sledgehammer or similar tool.

Type 2b Operations

- spray application of lead-containing coatings.

TABLE C-2 (Continued)
SUMMARY OF CLASSIFICATION OF LEAD-CONTAINING CONSTRUCTION TASKS
MOL GUIDELINE – LEAD ON CONSTRUCTION PROJECTS, APRIL 2011

TYPE 3 OPERATIONS

Type 3a Operations

- welding or high temperature cutting of lead-containing coatings or materials indoors or in a confined space;
- burning of a surface containing lead;
- dry removal of lead-containing mortar using an electric or pneumatic cutting device;
- removal of lead-containing coatings or materials using power tools without an effective dust collection system equipped with a HEPA filter;
- removal or repair of a ventilation system used for controlling lead exposure;
- demolition or cleanup of a facility where lead-containing products were manufactured;
- an operation that may expose a worker to lead dust, fume or mist that is not a Type 1, Type 2, or Type 3b operation

Type 3b Operations

- abrasive blasting of lead-containing coatings or materials;
- removal of lead-containing dust using an air mist extraction system.

TABLE C-3

SUMMARY OF CLASSIFICATION OF SILICA-CONTAINING CONSTRUCTION TASKS
MOL GUIDELINE, SILICA ON CONSTRUCTION PROJECTS, APRIL 2011

	Type 1 Operations	Type 2 Operations	Type 3 Operations
Cristobalite and Tridymite	>0.05 to 0.50 mg/m^3	>0.50 to 2.50 mg/m^3	>2.5 mg/m^3
Quartz and Tripoli	>0.10 to 1.0 mg/m^3	>1.0 to 5.0 mg/m^3	>5.0 mg/m^3

Note: The classification of silica-containing construction tasks is based on presumed concentrations of respirable crystalline silica, as shown above.

TYPE 1 OPERATIONS

- The drilling of holes in concrete or rock that is not part of a tunnelling operation or road construction.
- Milling of asphalt from concrete highway pavement.
- Charging mixers and hoppers with silica sand (sand consisting of at least 95 per cent silica) or silica flour (finely ground sand consisting of at least 95 per cent silica).
- Any other operation at a project that requires the handling of silica-containing material in a way that may result in a worker being exposed to airborne silica.
- Entry into a dry mortar removal or abrasive blasting area while airborne dust is visible for less than 15 minutes for inspection and/or sampling.
- Working within 25 metres of an area where compressed air is being used to remove silica-containing dust outdoors.

TYPE 2 OPERATIONS

- Removal of silica containing refractory materials with a jackhammer.
- The drilling of holes in concrete or rock that is part of a tunnelling or road construction.
- The use of a power tool to cut, grind, or polish concrete, masonry, terrazzo or refractory materials.
- The use of a power tool to remove silica containing materials.
- Tunnelling (operation of the tunnel boring machine, tunnel drilling, tunnel mesh installation).
- Tuckpoint and surface grinding.
- Dry mortar removal with an electric or pneumatic cutting device.
- Dry method dust cleanup from abrasive blasting operations.
- The use of compressed air outdoors for removing silica dust.
- Entry into area where abrasive blasting is being carried out for more than 15 minutes.

TABLE C-3 (Continued)

SUMMARY OF CLASSIFICATION OF SILICA-CONTAINING CONSTRUCTION TASKS
MOL GUIDELINE, SILICA ON CONSTRUCTION PROJECTS, APRIL 2011

TYPE 3 OPERATIONS

- Abrasive blasting with an abrasive that contains ≥ 1 per cent silica.
- Abrasive blasting of a material that contains ≥ 1 per cent silica.

Arcadis Canada Inc.

121 Granton Drive, Suite 12, Richmond Hill, Ontario L4B 3N4

Tel 905 764 9380

www.arcadis.com