

**Final Report: Hazardous  
Materials Survey and  
Materials Quantification –  
Bedford Institute of  
Oceanography Fish Lab  
Building, Dartmouth, Nova  
Scotia**



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**FINAL REPORT: HAZARDOUS MATERIALS SURVEY AND MATERIALS QUANTIFICATION –  
BEDFORD INSTITUTE OF OCEANOGRAPHY FISH LAB BUILDING, DARTMOUTH, NOVA SCOTIA**

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## **Executive Summary**

Stantec Consulting Ltd. (Stantec) was retained by Public Services Procurement Canada (PSPC) to complete a Hazardous Materials Survey and Materials Quantification of the Fish Lab Building (subject building) located at the Bedford Institute of Oceanography (BIO) site, on Baffin Boulevard in Dartmouth, Nova Scotia.

The purpose of the work was to assess the subject building in order to identify the presence, location, and extent of asbestos-containing materials (ACM), lead-containing paints, lead-containing equipment, mercury-containing equipment, polychlorinated biphenyls (PCB)-containing materials, ozone depleting substances (ODSs), and mould, that may require special handling, disposal, or worker health and safety requirements during planned renovation activities.

The scope of work of the hazardous materials surveys consisted of the following:

- identifying and sampling suspected ACMs and lead-containing paints from the subject building, recording the location, condition, and collecting photographs;
- identifying lead-containing equipment, mercury-containing equipment, PCB-containing materials, ODSs, and mould from the subject building;
- submitting 123 bulk asbestos samples for asbestos analysis;
- submitting 10 bulk paint samples for lead analysis;
- submitting 7 mould tape-lift samples for analysis; and
- preparing this report detailing the assessment results.

### **Summary of Hazardous Materials Survey Results**

Based on the findings and observations the following hazardous materials were identified within the site building:

- ACMs;
- presumed ACMs;
- potential lead-containing equipment;
- potential PCB-containing equipment;
- mercury-containing equipment;
- ODS-containing equipment;
- mould growth;
- silica-containing materials; and
- rodent droppings.

The statements made in this Executive Summary text are subject to the same limitations included in the Closure Section 7, and are to be read in conjunction with the remainder of this report.

## **1.0 INTRODUCTION**

### **1.1 GENERAL**

Stantec Consulting Ltd. (Stantec) was retained by Public Services Procurement Canada (PSPC) to complete a Hazardous Materials Survey and Materials Quantification of the Fish Lab Building (subject building) located at the Bedford Institute of Oceanography (BIO) site, on Baffin Boulevard in Dartmouth, Nova Scotia.

The purpose of the work was to assess the subject building in order to identify the presence, location, and extent of asbestos-containing materials (ACM), lead-containing paints, lead-containing equipment, mercury-containing equipment, polychlorinated biphenyls (PCB)-containing materials, ozone depleting substances (ODSs), and mould that may require special handling, disposal, or worker health and safety requirements during planned renovation activities. at the subject building.

### **1.2 BACKGROUND**

The subject building is a two-story, multi-use facility with private offices, laboratories, large holding tanks for marine specimens, and mechanical rooms (i.e., boiler, generator, pump room), with an approximate foot print of 45 metres (m) x 70 m. The building was completely refit in 1998/1999 according to documents provided. The Directory of Federal Real Property lists the age of construction as 1965. However, based on the field observations the subject building has undergone various additions and modifications over the past 40+ years.

A previous asbestos-containing material survey was reportedly completed by ALL-TECH Environmental Services, and was not provided to Stantec Consulting Ltd. The current Asbestos Management Plan was available for review in the maintenance office. Based on this, Stantec noted that asbestos-containing exterior cement board had been identified in the previous report.

### **1.3 SCOPE OF WORK**

The scope of work for the hazardous materials survey and materials quantification was based on PSPC's Terms of Reference (TOR), dated January 2018 and Stantec's Proposal No. 1214991065 (dated February 7, 2018).

The scope of work of the hazardous materials survey consisted of the following:

- identifying and sampling suspected ACMs and lead-containing paints from the subject building, recording the location, condition, and collecting photographs;
- identifying lead-containing equipment, mercury-containing equipment, PCB-containing materials, ODSs, and mould from the subject building;
- submitting 123 bulk asbestos samples for asbestos analysis;

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- submitting 10 bulk paint samples for lead analysis;
- submitting 7 mould tape-lift samples for analysis; and
- preparing this report detailing the assessment results.

## 2.0 REFERENCE DOCUMENTATION

A summary of the regulations, guidelines and other reference documents used for this assessment is provided below. This information was used to evaluate results and make recommendations.

**Table 1 Summary of Applicable Regulations, Guidelines and Other Reference Documents**

Material	Reference Documentation
Asbestos	<p>Provincial:</p> <ul style="list-style-type: none"> <li>• Occupational Health and Safety Act, S.N.S. 1996, c. 7, Province of Nova Scotia, last updated in 2016, c.14</li> <li>• Workplace Health and Safety Regulations, N.S. Reg. 52/2013, Province of Nova Scotia</li> <li>• Occupational Health Regulations, N.S. Reg. 112/76, Province of Nova Scotia</li> <li>• Asbestos Waste Management Regulations, N.S. Reg. 53/95, Province of Nova Scotia, last updated on August 8, 2017</li> <li>• A Guide to Assessment and Management of Asbestos in the Workplace, Province of Nova Scotia, November 21, 2013</li> <li>• A Guide to Removal of Friable Asbestos Containing Material, Province of Nova Scotia, November 21, 2013</li> </ul> <p>Federal:</p> <ul style="list-style-type: none"> <li>• Hazardous Products Act, R.S.C., 1985, c. H-3, Government of Canada, current to October 13, 2017</li> <li>• Canada Labour Code, R.S.C., 1985, c.L-2, Government of Canada, current to October 13, 2017</li> <li>• Canada Occupational Health and Safety Regulations, SOR/86-304, Government of Canada, current to October 13, 2017</li> <li>• Public Services and Procurement Canada Asbestos Management Directive, dated June 5, 2017</li> <li>• Public Services and Procurement Canada Asbestos Management Standard, dated June 5, 2017</li> <li>• National Joint Council Occupational Health and Safety Directive – Part XI, Hazardous Substances, January 1, 2011</li> </ul> <p>Other:</p> <ul style="list-style-type: none"> <li>• Settled Asbestos Dust Sampling and Analysis, James R Millette &amp; Steve M. Hays, Lewis Publishers, 1994.</li> <li>• TLVs® and BEI® Based on the Documentation of the Threshold Limit Values for Chemical Substances and Physical Agents &amp; Biological Exposure Indices, American Conference of Governmental Industrial Hygienists (ACGIH), Signature Publications, 2017</li> </ul>
Paint (which may contain lead)	<ul style="list-style-type: none"> <li>• Canada Labour Code, Part II, R.S.C., 1985, c. L-2</li> <li>• Canada Occupational Health and Safety Regulations, SOR/86-304</li> <li>• Hazardous Products Act, R.S.C., 1985, c. H-3, SOR/2010-297</li> <li>• Surface Coating Materials Regulations, SOR/2005-109</li> <li>• Lead in the Workplace: A Guide to Working with Lead, NS Labour and Advanced Education, Rev September 18, 2015</li> <li>• Lead on Construction Projects, Ontario Ministry of Labour, updated April 2011</li> <li>• Guidelines for Disposal of Contaminated Solids in Landfills, March 22, 1994, Amended May 18, 2005</li> </ul>

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<b>Material</b>	<b>Reference Documentation</b>
Lead and Mercury	<ul style="list-style-type: none"> <li>• U.S. HUD Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing, Second Edition, July 2012</li> <li>• Risk Management Strategy for Lead, Health Canada, February 2013</li> <li>• Hazardous Products Act, R.S.C., 1985, c. H-3, SOR/2010-297</li> <li>• Canada Wide Standard for Mercury Containing Lamps, CCME, May 2001</li> <li>• Canada Wide Standard for Mercury Emissions, CCME, June 2000</li> <li>• Guidelines for Disposal of Contaminated Solids in Landfills, March 22, 1994, Amended May 18, 2005</li> </ul>
PCBs	<ul style="list-style-type: none"> <li>• PCB Management Regulations, N.S. Reg. 163/97</li> <li>• Dangerous Goods Management Regulations, N.S. Reg. 23/2002</li> <li>• Transportation of Dangerous Goods Act, 1992</li> <li>• Transportation of Dangerous Goods Regulations, SOR/2012-245</li> <li>• PCB Waste Export Regulations, 1996, SOR/97-109, as amended by SOR/2000-103</li> <li>• Federal Mobile PCB Treatment and Destruction Regulations, SOR/90-5, as amended by SOR/2000-105</li> <li>• PCB Regulations, SOR/2008-273</li> <li>• Identification of Lamp Ballasts Containing PCBs, Environment Canada Report EPA 2/CC/2, (revised) August 1991</li> <li>• Guidelines for Management of Wastes Containing PCBs, Environment Canada, September 1989</li> <li>• Handbook on PCBs in Electrical Equipment, 3<sup>rd</sup> Edn., Environment Canada, April 1988</li> </ul>
Ozone-Depleting Substances	<ul style="list-style-type: none"> <li>• Ozone Layer Protection Regulations, N.S Reg. 54/95</li> <li>• Federal Halocarbon Regulations, 2003 SOR/2003-289, as amended by SOR/2009-221</li> <li>• Ozone-Depleting Substances Regulations, 1998 SOR/99-7, as amended by SOR/2007-129</li> <li>• Code of Practice for Elimination of Fluorocarbon Emissions from Refrigeration and Air Conditioning Systems</li> </ul>
Mould	<ul style="list-style-type: none"> <li>• Position Statement on Mold and Dampness in the Built Environment. American Industrial Hygiene Association, 2013</li> <li>• Mould Guidelines for the Canadian Construction Industry (CCA, 2004)</li> <li>• “Guidelines on Assessment and Remediation of Fungi in Indoor Environment”, New York City Department of Health, Bureau of Environmental &amp; Occupational Disease Epidemiology, April 2000</li> <li>• Bioaerosols: Assessment and Control. American Conference of Governmental Industrial Hygienists (ACGIH), 1999;</li> <li>• Fungal Contamination in Public Buildings: A Guide to Recognition and Management, Federal-Provincial Committee on Environmental and Occupational Health, 2004.</li> </ul>
Other hazardous materials	<ul style="list-style-type: none"> <li>• Hazardous Products Act, R.S.C., 1985, c. H-3, SOR/2010-297</li> <li>• Occupational Health Regulations, N.S. Reg. 112/76, Province of Nova Scotia</li> <li>• Occupational Safety General Regulations, N.S. Reg. 44/99, Province of Nova Scotia</li> <li>• Workplace Health and Safety Regulations, N.S. Reg. 52/2013, Province of Nova Scotia</li> <li>• WorkSafe BC – Bulletin The dangers of breathing silica dust – WS2009-04</li> <li>• Ontario – Guideline - Silica on Construction Projects, April 2011</li> <li>• Petroleum Management Regulations, N.S. Reg. 44/2002</li> <li>• Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations, SOR/2008-197, As amended by: SOR/2012-99</li> <li>• Environmental Code of Practice for Aboveground and Underground Storage Tank Systems Containing Petroleum and Allied Petroleum Products, 2003</li> </ul>

Notes:

1. U.S. HUD-United States Department of Housing and Urban Development
2. CCME – Canadian Council of Ministers of the Environment

## **2.1 ASBESTOS-CONTAINING MATERIALS**

Asbestos is a set of six naturally occurring silicate minerals with similar chemical and physical properties. Known for its durability, strength, chemical and fire resistance, asbestos was mined and used extensively from the early 1900s until the 1970s. Between the 1970s and late 1980s the use of asbestos was largely phased out in common building materials with limited use in roofing materials, tars and cement based products.

The six mineral types commonly known as “asbestos” belong to the serpentine and amphibole mineral families: chrysotile, amosite, crocidolite, tremolite, anthophyllite, and actinolite. Chrysotile is the most commonly used form of asbestos and can be found today in various materials such as roof felts, asphalt shingles, tar, caulking, mastic, ceiling tiles, floor tiles, sheet flooring, pipe insulation, gaskets, and as a component in joint compound and plasters. Amosite was most frequently used in cement sheet and pipe insulation, and can also be found in insulating board, ceiling tiles and thermal insulation products. Crocidolite was commonly used to insulate steam engines, and was used in some spray-on coatings, pipe insulation and cement products. Tremolite, anthophyllite and actinolite were not used commercially, but can be found as a contaminant in some products.

Asbestos fibres are known to cause health effects in workers exposed to asbestos over an extended period of time. Based on the known health risks associated with asbestos, federal and provincial legislation have application to the regulatory control of asbestos in the workplace.

Federal employees working on federal properties are subject to the *Canada Labour Code* and its *Canada Occupational Health and Safety Regulations*. The *Canada Occupational Health and Safety Regulations* require the employer to manage and control hazards associated with hazardous substances like asbestos that are used, handled and stored in the work place.

Provincially, regulatory control of asbestos in the workplace is the responsibility of Nova Scotia Labour and Advanced Education (NSLAE) under the provisions of the *NS Occupational Health and Safety Act*. For the purposes of managing worker exposure during building maintenance, renovation and demolition, the NSLAE defines an ACM as “a material which contains greater than 0.5% asbestos by volume”. The Act, Regulations and Codes of Practice have established procedures for safe monitoring and abatement as well as the specific responsibilities of owners, employers, and employees. Some of the provincial Codes of Practice, Guidelines and Regulations pertaining to asbestos are presented below:

- A Guide to Assessment and Management of Asbestos in the Workplace, November 21, 2013
- A Guide to Removal of Friable Asbestos Containing Material, November 21, 2013

Materials containing less than 0.5% are not considered ACM according to provincial legislation. However, friable and potentially friable materials that contain low concentrations of asbestos have the potential to release asbestos fibres into the air.



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Nova Scotia Environment (NSE) regulates the disposal of certain ACM under the *Asbestos Waste Management Regulations* (April 11, 1995). Under the Regulations, “asbestos waste” refers to a friable waste material containing asbestos fibres or asbestos dust in a concentration greater than 0.5% by weight. Friable refers to a material that when dry can be crumbled, pulverized, or reduced to powder by hand pressure. Such materials must be managed and/or removed in accordance with the requirements of the regulations and disposed at approved disposal facilities.

In Nova Scotia, the disposal of non-friable ACM is generally considered to be a construction and demolition waste. Some Construction and Demolition (C&D) Debris Disposal Sites accept non-friable ACM waste, others do not (i.e., it appears to be up to the operators’ discretion). There are designated asbestos waste disposal facilities in Nova Scotia that accept both friable and non-friable ACMs. Friable ACMs are materials containing detectable levels of asbestos and that, when dry, can be crumbled, pulverized, or reduced to powder by hand pressure. Potential friable ACMs include, but are not limited to, parging, mechanical insulation (jacketed and unjacketed), duct insulation, sprayed-on products (i.e., fireproofing, thermal and acoustic insulation; texture and decorative finishes), and compressed-mineral fibre ceiling tiles. Some materials like plaster, stucco, grout, mortar, drywall joint compound, and paper backing associated with vinyl sheet flooring, are treated as non-friable ACMs for management purposes when identified and maintained in good condition; however, these materials become friable if disturbed and must be treated as friable ACMs for abatement purposes. Friable ACMs also include dust or debris arising from friable ACMs and dust or debris arising from non-friable ACMs that are, or will become, crumbled, pulverized, or powdered, (i.e. disturbed by demolition, deterioration, or renovation).

Non-friable ACMs are materials containing detectable levels of asbestos and that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure. Potential non-friable ACMs include, but are not limited to, mastics, adhesives, caulking, wall board, floor tiles, and sheet flooring. Non-friable ACMs generally have little potential to release airborne fibres, even when damaged by mechanical breakage; however, with time and exposure to damaging forces (e.g., severe weather, chemicals, mechanical forces, etc.), non-friable ACMs may deteriorate to the extent that they may release fibres if disturbed. Non-friable ACMs that have deteriorated to the extent that they may release fibres if disturbed are treated as friable ACMs. Grinding, cutting, sanding, or abrading some non-friable ACMs could release airborne fibres.

Debris from friable or non-friable ACMs is debris generated from damaged, deteriorated, or delaminated friable or non-friable ACMs. The presence of debris from ACMs is noted separately from the source material. Debris from a non-friable ACM that has deteriorated to the extent that it may release fibres, if disturbed, is treated as debris from a friable ACM.

Presumed ACMs (PACMs) are materials that commonly contain asbestos, but have not been sampled to avoid premature damage and/or failure of the material. PACMs may include materials such as fire stopping, gasket materials, fire doors and wire coverings. Generally, PACMs are materials that have to be damaged in order to sample.

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### **2.1.1 Vermiculite**

Vermiculite is a naturally occurring clay-mineral that expands to many times its original volume when subjected to high temperature. The expanded material is light-weight, non-combustible (fire-resistant) odourless, and absorbent. Vermiculite has been used in numerous applications, including loose-fill insulation. Some vermiculite insulation may contain amphibole asbestos fibres. These products can cause health risks if disturbed during maintenance, renovation or demolition.

Health Canada issued a health bulletin in March 2004 to inform Canadians about the potential risks associated with certain asbestos-containing vermiculite insulation. However, there is currently no evidence of risk if insulation is sealed behind wallboards and floorboards, isolated in an attic or otherwise kept from exposure to the interior environment.

### **2.1.2 Asbestos Exposure**

The key values for determining workplace exposure to asbestos are provided under the *Canada Occupational Health and Safety Regulations* and the *NS Occupational Health Regulations*.

The *Canada Occupational Health and Safety Regulations* indicate that exposure for all forms of airborne asbestos fibre shall be to as close to zero as reasonably practicable and not exceed the value adopted by the ACGIH, of 0.1 fibre per cubic centimeter (f/cc). The Government of Canada now recognizes that breathing in asbestos fibres, all types, can cause cancer and other diseases.

The *NS Occupational Health Regulations* and the *NS Workplace Health and Safety Regulations* reference the most recent American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values-Time-Weighted Average (TLVs-TWA). From the ACGIH documentation, TWA concentration is based on "...a conventional 8-hour day and a 40-hour workweek, to which it is believed that nearly all workers may be repeatedly exposed...". For asbestos, the TLV-TWA is 0.1 f/cc as published by ACGIH.

The NS Guide to Removal of Friable Asbestos Containing Material published by NSLAE recommends 0.01 f/cc be used as a guideline for asbestos in air for monitoring in an indoor area where the negative air units discharge during asbestos abatement work and clearance testing inside an enclosure post-abatement.

## **2.2 PAINT**

Heavy metals are natural components of the Earth's crust. They cannot be degraded or destroyed. Due to their individual chemical properties, lead has been and continues to be used in a number of building products. Heavy metals can be toxic or poisonous at low concentrations in the human body. Therefore, there are a number of regulations, guidelines and codes of practice related to sale, handling and disposal of these materials.

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In the mid to late 1970s, the United States Department of Housing and Urban Development (HUD) set a criteria of 0.5% lead (by weight) or 5,000 parts per million (ppm) for evaluating whether lead is a hazard in a residential setting. In Canada, the use of lead in residential interior house paints was greatly reduced to less than 1,000 ppm by the early 1980s. Since then the “Surface Coating Materials Regulations” under the federal Hazardous Products Act provides a concentration of lead that must not be exceeded, without providing a warning label, in surface coatings that are sold in this country. This value reduces the allowable lead concentration from 600 ppm to 90 ppm. However, it is important to note that there is not a direct correlation between the concentrations of lead in a material and the potential occupational exposure if the material is disturbed.

NSLAE and NSE regulate the maintenance and removal of lead through various guidelines and Codes of Practice which are similar to those for asbestos. For renovation/demolition involving potential lead-containing substances (such as paint), the substances must be tested to determine lead concentrations. The substance may consist of paint and substrate if the paint is in good condition, or of paint chips only, if the paint is peeling or in poor condition. If the lead concentration exceeds 0.1% by weight (i.e. 1,000 mg/kg), the material is classified as a “lead-containing material” and must be handled and removed in accordance with NSLAE’s “Lead in the Workplace: A Guide to Working with Lead”. Where the lead content of a material is above 1,000 mg/kg, the use of appropriate personal protective equipment is required when disturbing the material, for example during renovation or demolition activities, in particular activities that involve dust generation such as cutting and grinding. The Ontario Ministry of Labour has published guidelines for managing lead on construction projects which contains information related to exposure and appropriate controls when working with lead.

Health Canada and the United States Environmental Protection Agency (USEPA) have identified lead levels in paint chips exceeding 5,000 mg/kg or 1 mg/cm<sup>2</sup> as indicative of lead-based paint and requiring precautions for sensitive individuals, particularly if the paint is peeling or in otherwise poor condition.

NSE has established guidelines which restrict certain materials from municipal landfills and construction and demolition (C&D) waste disposal facilities which could potentially leach/migrate into the ground and create an adverse environmental effect, including paints that contain metals (lead).

The “Guidelines for Disposal of Contaminated Solids in Landfills” requires that materials with metal concentrations exceeding landfill disposal guidelines undergo leachate testing for comparison to the landfill leachate guidelines. In this context “materials” may consist of paint and substrate if the paint is in good condition, or paint chips only, if the paint is peeling or in otherwise poor condition or it is not practical to collect a sample of paint and substrate, e.g. paint on metal or concrete surfaces. If metal leachate concentrations are below landfill disposal guidelines, the material is suitable for disposal at a NSE approved solid waste landfill or C&D waste disposal site (pending final authorization from the facility operator). If the material has leachate concentrations above landfill disposal guidelines, it is considered “leachate toxic” and must be disposed at an approved facility. There are currently no facilities in Nova Scotia capable of accepting “leachate toxic” waste and out-of-province disposal is required.

## **2.3 LEAD-CONTAINING EQUIPMENT**

Lead may be used in its pure metallic form or combined chemically with other elements to form lead compounds. Metallic lead is used to make products such as electric storage batteries, ammunition, lead solder, radiation shields, pipes and sheathes for electric cables. Metallic lead is sometimes combined with other metals such as copper, tin, and antimony as lead alloys for use in the manufacture of a variety of metal products.

Organic lead compounds contain a lead atom covalently bonded to carbon. Common examples of organic lead compounds include lead “soaps” such as lead oleates, high-pressure lubricants, and anti-knock agents in gasoline.

Inorganic lead compounds (or lead salts) result when lead is combined with an element other than carbon. Examples are lead oxide, lead chromate, lead carbonate and lead nitrate. Inorganic lead compounds may occur as solids or in solutions, and are used in insecticides, pigments, paints, glasses, plastics and rubber compounds.

Lead may affect the health of workers if it is in a form that may be inhaled, ingested or absorbed through the skin. Lead dust consists of small, solid particles of metallic lead or lead compounds that are generated by sanding, grinding, polishing and sawing operations. Lead fume is produced in significant amounts when solid lead or materials containing lead are heated to temperatures above 500°C, as in welding and flame cutting or burning.

## **2.4 MERCURY-CONTAINING EQUIPMENT**

Mercury can be found in thermostat reservoirs and in fluorescent and high intensity discharge (HID) light tubes. The Canadian Council of Ministers of the Environment (CCME) has developed Canada-Wide Standards for mercury lights and mercury emissions. The goal of the standards is to reduce release of mercury into the environment.

## **2.5 POLYCHLORINATED BIPHENYLS (PCBS)**

From the 1930s to the 1970s, PCBs were widely used in a number of industrial materials, including sealing and caulking compounds, inks and paint additives. They were also used to make coolants and lubricants for certain kinds of electrical equipment, including transformers and capacitors. PCBs are an environmental concern as they do not readily degrade and have been identified to bioaccumulate. In Canada, the federal Environmental Contaminants Act (1976) prohibited the use of PCBs in heat transfer and electrical equipment installed after September 1, 1977, and in transformers and capacitors installed after July 1, 1980. In addition, the storage and disposal of PCB waste materials is regulated.

The Environment Canada document “Identification of Lamp Ballasts Containing PCBs” Report EPS 2/CC/2 (revised) August 1991, can be used as a guide to identify PCB capacitors in fluorescent light ballasts and high intensity discharged (HID) light fixtures.

## **2.6 OZONE-DEPLETING SUBSTANCES**

The Federal Halocarbon Regulations, SOR/2003-289 and Ozone-Depleting Substances Regulations, SOR/99-7, were developed to amend controls on production and consumption of chlorofluorocarbons (CFCs), halons, carbon tetrachloride, and methyl chloroform.

In addition to the federal legislation, the Ozone Layer Protection Regulations, N.S. Reg. 54/95, apply to potential sources of Ozone-Depleting Substances (ODS) such as fire extinguishers, coolers and refrigerators, HVAC units, etc. ODS working instructions are also provided in the regulations. These regulations require ODSs to be removed from systems prior to disposal.

## **2.7 MOULD**

Mould (fungi) is part of the natural environment. Mould growth often occurs indoors as a result of chronic moisture occurrences that repeatedly affect building materials over time. However, mould growth can occur in as little as 24 to 48 hours after building materials are exposed to water if they are not properly dried. Most moulds reproduce by the production of spores, and as a result, movement by way of air currents is a routine method of mould spore dissemination in the environment.

Health effects related to the inhalation of microbial contaminants are detailed in the Health Canada report entitled “Fungal Contamination in Public Buildings: Health Effects and Investigation Methods” (2004). Several studies have found significant associations between exposure to mould and/or dampness, and respiratory allergies and irritation, including the development of respiratory diseases such as asthma. Current knowledge supports the need to prevent damp conditions and mould growth, and to remediate mould growth present in buildings.

Health Canada and NSE have both produced literature on mould, however, there are currently no Canadian regulations regarding mould. The Canadian Construction Association and New York City Guidelines are two of the most comprehensive guideline documents on mould assessment and abatement. In general, the presence of mould is a concern that should be addressed by the immediate removal of the mould-impacted material. The method of removal depends on the quantity of mould to be removed (i.e., impacted area in square meters). In addition to removing the mould-impacted areas, it is critical to investigate the source of the mould and the moisture conditions that promote its growth, and complete the necessary repairs to prevent re-growth of mould in the future.

## **2.8 SILICA**

Silica is the basic component of sand and rock. The best known and most abundant type of crystalline silica is quartz. Some common silica-containing materials include:

- Concrete, concrete block, cement, drywall, plaster, and mortar
- Masonry, tiles, brick, and refractory brick
- Granite, sand, fill dirt, and top soil
- Asphalt-containing rock or stone
- Abrasive used for blasting

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Silica is so common that any workplace activity that creates dust can expose workers to airborne silica.

British Columbia (WorkSafeBC) and Ontario (Occupational Health and Safety Branch, Ministry of Labour) have issued publications on the hazards associated with silica at construction sites; this includes the WorkSafeBC Bulletin “The Dangers of Breathing Silica Dust” and Ontario “Guideline for Silica on Construction Projects”. These documents provide clear instruction to control potential silica exposure related to construction projects. In Nova Scotia, silica is an acknowledged hazard and the occupational exposure limit for silica is specified in the Workplace Health and Safety Regulations, which references the ACGIH TLV-TWA of 0.025 mg/m<sup>3</sup>. Typically, there is no prior testing for the presence of silica in building materials due to its prevalence in common materials.

### **3.0 HAZARDOUS MATERIAL SURVEY**

The hazardous materials survey and materials quantification was carried out from March 8 to 9, 2018. The assessment was completed by Haley Newell and Chris Poirier of Stantec, following standard Stantec protocols.

For this project, samples were collected throughout accessible areas of the building, which will be disturbed during the renovation process. Suspected hazardous materials uncovered during the renovation, which were not previously analyzed, should be tested prior to removal.

#### **3.1 METHODOLOGY**

Suspected hazardous materials were identified based on visual observations and our experience with known hazardous materials. Samples were obtained by non-intrusive methods. Sampling locations and descriptions were recorded. Photographs were taken of various materials and sample locations, and a selection of photos are provided in Appendix C.

##### **3.1.1 Asbestos Sampling**

A visual assessment of readily accessible areas of the subject areas was conducted to identify the presence of suspected ACMs. Representative bulk samples of suspected ACMs were collected. The current state of suspected ACMs was noted during the assessment.

Suspected ACM bulk samples were collected by hand using clean tools, placed in clean plastic bags and transported by courier to EMSL Canada for analysis. EMSL Canada is certified under the National Voluntary Laboratory Accreditation Program (NVLAP) for asbestos analysis. Samples were analyzed by either Polarized Light Microscopy (PLM) or Non-Friable Organically Bound (NOB) Materials by PLM, determined by the nature of the specific sample.



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Asbestos analysis for manufactured materials (e.g., flooring, ceiling tiles and caulking), which generally contain a more uniform asbestos content, was performed using the “Positive Stop Rule”. This means when a positive result for asbestos is reported for any one of the grouping of representative samples collected of a material, the material was considered to be asbestos-containing and the laboratory did not analyze the remaining representative samples using the “Positive Stop Rule”. The laboratory reports the subsequent samples as “Positive Stop (Not Analyzed)”.

### **3.1.2 Vermiculite**

A visual assessment of wall systems was undertaken to check for the presence of vermiculite in the building. If asbestos is detected in vermiculite, even at trace concentrations, the material shall be considered as asbestos-containing.

### **3.1.3 Paint Sampling**

Stantec completed a visual assessment of the various colours of paint used throughout the subject areas. This included taking a knife (or similar tool) to cut the paint surface to assess the variability of the paint present.

Bulk paint samples were collected using clean tools to cut a representative sample of each surface, as required. For each sampling location a sample of paint chips was collected (including all layers of paint where possible). Where the paint was in good condition and adhered to its substrate, samples were not collected. Each sample was stored in a clean plastic bag and transported to Maxxam Analytics Inc. in Bedford, NS, lead analysis.

Paint with substrate samples were not obtained as this would have required physical damage to building materials, therefore paint sampling was limited to areas of flaking damaged paint or discreet areas only. Well adhered paint on concrete was not sampled as part of this project.

### **3.1.4 Lead**

An assessment for equipment and/or materials that may contain lead (e.g., batteries, pipe solder and pipe joints) was completed at the site building.

### **3.1.5 Mercury**

An assessment for equipment that may contain mercury (i.e., gauges, switches, batteries and thermometers) was completed at the site building. Information on the type of equipment, manufacturer, model number, serial number and quantities was recorded, where available.

### **3.1.6 Polychlorinated Biphenyls (PCBs)**

An assessment for equipment and/or materials that may contain PCBs (e.g., lamp ballasts, transformers, hydraulic fluid, compressors, switchgear and capacitors) was completed at the site building. Information on the type of equipment and quantities was recorded, where available.

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### **3.1.7 Ozone-Depleting Substances**

An assessment for equipment that may contain ODS (e.g., refrigerators, freezers, water coolers and air conditioning units) was completed at the site building. Information on the type of equipment, as well as the type and quantity of refrigerants was recorded, where available.

### **3.1.8 Mould**

An assessment for the potential presence of mould was completed at the site building. This included a visual assessment of exterior and interior surfaces for evidence of moisture/water damage and staining suggesting mould growth. Bulk samples (tape-lifts) of building materials with suspected mould growth were collected and submitted to Sporometrics Inc. for analysis. Sporometrics Inc. is an accredited laboratory with the American Industrial Hygiene Association Laboratory Accreditation Program, Limited Liability Company ((AIHA-LAP LLC).

### **3.1.9 Other Hazardous Materials/Substances**

An assessment for the potential presence of other hazardous materials/substances (e.g., biohazards, rodent droppings and chemicals) was completed at the subject building. This involved a visual assessment of the exterior and interior of the building to locate other materials/substances that may need to be managed at the time of renovation activities.

## **3.2 HAZARDOUS MATERIALS SURVEY RESULTS**

The assessment is presented below with results and discussion sections describing the samples collected. Associated with this report are site plan showing the sample locations, selected photographs of hazardous materials identified, and applicable laboratory certificates of analysis.

### **3.2.1 Asbestos Assessment Results**

Stantec collected a total of 123 bulk samples of suspected ACMs from the interior and exterior the subject building. The main building roof was not assessed at the time of the site visit. The site supervisor (John McNamara) informed Stantec that the roof had been replaced down to steel decking within the past three years. Sections of other minor roofing areas that were separate from the main roof were assessed from the ground level. A summary of the sampling locations and analytical results is presented in Table A-1 (Appendix A), and generally discussed below. Sample locations are presented on the drawings in Appendix B. Selected photographs are presented in Appendix C and laboratory analytical results are located in the Appendix D.

Analytical results indicated that asbestos (>0.50%) was detected in the following materials:

- BS004A – Non-friable sealant (brown) in good condition associated with ductwork (1.8% Chrysotile); sampled on insulated ducts;
- BS015A – Non-friable tar (black) in good condition associated with historical roof vents (3.1% Chrysotile); sampled and identified on historical roof penetrations (previous ventilation); and



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- BS034A – Friable exterior texture coat in good condition (2% Chrysotile); sampled and identified on exterior entrance ceilings over cement board.

Brown sealant associated with ductwork was noted on both the insulated and un-insulated ductwork. Quantities reported below in Table 3 are an approximate linear measurement of ductwork and not the brown sealant associated with the material. For the cost estimate it was assumed that the duct work plus mastic would be removed as a system and that individual abatement of each joint was not going to be completed. For the tar (black) associated with historical roof penetrations it was assumed that this material may be present across the entire roof as part of the vapour barrier and remains beneath the new roofing materials. For the purpose of the estimate we have assumed the worst case that this tar was associated with the vapour barrier and covers the entire roof under the new roofing materials, but may in fact only be associated with an area directly associated with the roof penetrations.

The following PACMs were observed within the building:

- Cement board associated with the exterior entrances;
- Cement board associated with fume hoods;
- Gasket material associated with fume hoods;
- Gasket material associated with mechanical equipment;
- Heat shields associated with light fixtures; and
- Fire doors

Other samples collected for asbestos analysis had no asbestos detected.

There were rooms which were not made available to the assessors during the assessment, as noted on the site plans.

There is potential for additional asbestos-containing materials to be present, including in concealed locations. Should other material(s) suspected to contain asbestos, be uncovered during renovation activities, work must be stopped, and the material(s) tested to determine whether asbestos is present.

Vermiculite was not observed in the subject area. Should vermiculite be discovered during renovation activities, work in that area must be stopped. The vermiculite must be treated as a PACM or a sample must be collected and submitted for analysis to determine whether asbestos fibres are present.

### **3.2.2 Paint Assessment Results**

Stantec collected a total of ten paint samples throughout the subject building. A summary of the sampling locations and analytical results is presented in Table A-2 located in the Appendix A, and generally discussed below. Sample locations are presented on the drawings in Appendix B. Selected photographs are presented in Appendix C and laboratory analytical results are located in Appendix D.

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Seven paint samples collected during this program were found to contain lead concentrations below the Canadian Surface Coating Materials Regulations (90 mg/kg) and the landfill disposal guideline for lead (1,000 mg/kg).

Three paint samples collected during this program were found to contain lead above the Canadian Surface Coating Materials Regulations (90 mg/kg), however, lead was below the landfill disposal guideline (1,000 mg/kg). Worker protection is required when disturbing these materials.

- PS001: Olive green paint on drywall in good condition – 140 mg/kg;
- PS002: Blue paint on concrete floor in good condition – 350 mg/kg; and
- PS010: Green decorative paint on drywall and concrete in fair condition – 370 mg/kg.

Based on the results, lead leachate analysis was not required.

### **3.2.3 Lead-Containing Equipment Identification**

An assessment for equipment likely to contain lead was completed within the subject building. Information on the type of and quantity of equipment was recorded, where available.

Based on the age of the building lead may be associated with the water distribution system in solder on copper pipes, or bell and gasket fittings associated with drainage piping. Other potential lead materials typical of research facilities were not noted such as lead lined walls for x-ray use.

Should equipment suspected of containing lead be uncovered during future demolition activities, they should be removed from service and properly disposed of to avoid the release of lead into the environment.

### **3.2.4 PCB-Containing Equipment Identification**

An assessment for equipment likely to contain PCBs was completed within the subject building. Information on the type of and quantity of equipment was recorded, where available.

Fluorescent light ballasts were observed throughout the building but appeared to have been replaced recently. Two large switch stations and one small transformer were observed in the Generator Room and Electrical Room and also appeared relatively new.

Should other equipment suspected of containing PCBs be uncovered during future demolition activities, they should be removed from service and properly disposed of to avoid the release of PCBs into the environment.

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### **3.2.5 Mercury-Containing Equipment Identification**

An assessment for equipment likely to contain mercury was completed within the subject building. Information on the type of and quantity of equipment was recorded, where available.

Approximately 60 thermostats and thermometers were noted throughout the building that potentially contained mercury. Thermometers were associated with mechanical equipment while thermostats were in occupied rooms.

Fluorescent style light fixtures were observed throughout the subject building however, the lighting appeared to be an LED style bulb instead of a fluorescent tube. Fluorescent tubes (which contain mercury) may be present in fixtures not converted to LED bulbs.

Should other mercury-containing equipment be uncovered during renovation activities, they should be removed from service and properly disposed of to avoid the release of mercury into the environment.

### **3.2.6 ODS-Containing Equipment Identification**

An assessment for equipment likely to contain ODS was completed at the subject building.

Stantec reviewed a report entitled “Assessing Potential Energy Conservation Activities Associated with Refrigerator and Freezer Use at The Bedford Institute of Oceanography”, prepared by Stantec for Public Works and Government Services Canada dated March 29, 2016. The report identified that the Fish Lab portion of the BIO site contained 49 refrigerant sources. Of these 49 sources, 12 contained R-12 while the other 37 were other various refrigerants.

During our March 2018 assessment, Stantec noted approximately 40 refrigerant containing sources. Each source had “Ozone Depleting Substance MAR” tags with an identification number. Sources included fridges, freezers, condensing units, evaporation units, and dehumidifiers. During this site visit no sources were found to contain the refrigerant R-12, however some units were inaccessible at the time of the assessment.

Should any equipment suspected of containing ODSs be uncovered during future activities, they should be managed until end of service and properly disposed of, according to regulations, too avoid the release of ODSs into the environment.

### **3.2.7 Mould Assessment**

Stantec collected a total of seven bulk (tape-lift) samples throughout the subject building. Table 2 below summarizes the analysis of bulk (tape-lift) samples that were analyzed for the presence of active mould growth. Sample locations are presented on the drawings in Appendix B. Selected photographs are presented in Appendix C and laboratory analytical results are located in Appendix D.

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**Table 2                      Mould Bulk Sample Analysis – March 8-9, 2018**

Sample	Location / Description	Active Growth Identified	
MS001	Drywall wall in FL-144	--	No
MS002	Drywall ceiling in FLG-60	--	No
MS003	Deep freeze exterior in FLG-47	<i>Cladosporium</i> NOS	Yes
MS004	Drywall beam in FLG-39	<i>Cladosporium</i> NOS	Yes
MS005	Drywall wall in FLG-43	<i>Cladosporium</i> NOS	Yes
MS006	Drywall wall in FLG-52	--	No
MS007	Concrete ceiling in FLG-33	<i>Cladosporium</i> NOS	Yes

\*NOS means “not otherwise specified”

The visual assessment within the subject building identified areas of apparent water damage on various materials including ceiling tiles and drywall ceilings throughout the building. Active mould growth was identified in four areas of the subject building:

- MS003 – the exterior of deep freeze in Room FLG-47;
- MS004 – on drywall in Room FLG-39;
- MS005 – on drywall in Room FLG-43; and
- MS007 – on drywall in Room FLG-33.

The subject building is currently occupied by a fish laboratory including open water storage, water handling area, humidity controlled areas, and areas for wet materials to drip dry. The different levels of humidity in this mixed laboratory/office environment results in competing levels of moisture, which increases the potential for condensation in concealed and un-expected areas (e.g., wall cavities). The presence of condensation creates an optimal condition for mould growth to occur. Water stained ceiling tiles should be replaced as a matter of course to monitor possible water leaks in the ceiling space going forward.

### **3.2.8 Silica**

Building materials that contain silica, including concrete, drywall, brick and mortar were observed in the subject building. Although there are no special disposal requirements for materials containing silica, exposure to dust generated during renovation activities can be hazardous to workers. Appropriate worker protection procedures must be implemented during the disturbance and removal of silica-containing materials. This includes such methods of control as dust suppression, enclosures, barriers and personal protective equipment (i.e., eye protection, respiratory protection).

### **3.2.9 Miscellaneous Hazardous Materials Identification**

Based on the observations made during the assessment, the following additional item was noted:

Rodent droppings were noted above the ceiling tiles in some areas. The dust from dry rodent droppings may present health risks to exposed workers and appropriate measures must be taken to prevent the dust from becoming airborne during renovation activities. This may require the development of a safe work practice, which contains the methods of control, including dust suppression and the use of personal protective equipment (notably respiratory protection). Prior to reinstatement of new materials, the area should be thoroughly cleaned.

## **4.0 NOT USED**

Not Used.

## **5.0 CONCLUSIONS AND RECOMMENDATIONS**

The purpose of the work was to assess areas of the subject building which will be disturbed during renovation activities, and identify the presence, locations, and quantities for the hazardous materials identified.

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Based on the findings and observations from the assessment, ACMs, PACMs, potential lead-containing equipment, potential PCB-containing equipment, mercury-containing equipment, ODS-containing equipment, mould, silica-containing materials, and rodent droppings were identified in the subject building.

Findings, observations, and recommendations associated with the hazardous materials assessment completed in the subject building are summarized in the table below.

**Table 3 Summary of Findings and Recommendations**

<b>Hazard</b>	<b>Material Identified</b>	<b>Quantity</b>	<b>Recommendations</b>	
ACMs	Sealant (brown) in good condition associated with ductwork (1.8% Chrysotile)	1,000 lm	Material should be removed using Type I Asbestos Abatement Procedures – Minimum Precautions and disposed of a non-friable asbestos-containing waste at an approved disposal facility.	
	Tar (black) in good condition associated with historical roof penetrations (3.1% Chrysotile)	3,150 m <sup>2</sup>		
	Exterior texture coat in good condition (2% Chrysotile)	5 m <sup>2</sup>	Friable material should be removed using Type 3 Asbestos Abatement Procedures – Maximum Precautions and dispose of a friable asbestos-containing waste at an approved disposal facility.	
PACMs	Cement board in good condition associated with the exterior entrances	5 m <sup>2</sup>	Material should be tested to confirm the presence/absence of asbestos or removed using Type 1 Asbestos Abatement Procedures – Minimum Precautions and disposed of a non-friable asbestos-containing waste at an approved disposal facility. Heat shields due to their small size can be managed as a low-risk removal but are typically a friable material.	
	Cement board in good condition associated with fume hoods	5 m <sup>2</sup>		
	Gasket material in good condition associated with fume hoods	20 lin. m		

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Hazard	Material Identified	Quantity	Recommendations	
	Gasket material in good condition associated with mechanical equipment	Approx. 175 units		
	Heat shields in good condition associated with lights	Approx. 40 units		
	Fire doors in good condition	Approx. 40 units		
Lead in paint	Olive green paint on drywall substrate Blue paint on concrete floor Green decorative paint on drywall substrate	N/A	Appropriate worker protection is required if generating dust from well adhered paint. These samples were submitted for lead content analysis, and returned results less than the NS Landfill Disposal Guidelines.	
Potential lead-containing equipment	Solder on concealed copper piping	N/A	Solder on copper piping was visually identified. The removal and handling of suspect lead products (solder) must be conducted in accordance with the Nova Scotia Code of Practice for Working with lead.	
Potential PCB-containing equipment	Large switch station	2 units	Check small transformer oil and switch station for PCB content prior to removal. If the oil is PCB-containing remove and place in sealed containers and dispose of PCB-containing transformer oil at an approved disposal facility.	
	Small transformer	1 unit		
Mercury-containing equipment	Possible mercury-containing thermostats/thermometers	Approx. 60 units	Check mercury-containing equipment prior to renovation activities. Ensure mercury-containing equipment remains intact to limit worker exposure. Once removed, place in sealed containers and dispose of mercury-containing equipment at an approved disposal facility.	

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Hazard	Material Identified	Quantity	Recommendations	
ODSs	Potential ODS-containing refrigerators, refrigerator-freezers, and freezers		Not used.	
Mould	Mould was identified on drywall walls, drywall and concrete ceilings and pieces of equipment in the building. Individual areas of surficial mould growth were typically less than 2 m x 2 m.	1 freezer Approx. 20 m <sup>2</sup> drywall	<p>Appropriate worker protection is required when disturbing these materials. Recommendations provided in the document titled “Mould Guidelines for the Canadian Construction Industry” issued in 2004 should be followed for any work disturbing the apparent mould-impacted materials.</p> <p>There may be concealed mould or apparent mould found in other locations once planned renovations commence. If discovered, further testing should be completed to determine appropriate recommendations for removal.</p> <p>There are no special disposal requirements for mould impacted materials.</p>	
Silica	Concrete, brick, mortar, and drywall	Not quantified	<p>Appropriate worker protection is required when disturbing these materials. Ensure workers performing activities that generate silica dust such as cutting, sanding, or abrading are not exposed to materials containing crystalline silica in excess of the TLV-TWA of 0.025 mg/m<sup>3</sup> (ACGIH) by implementing appropriate dust control practices, and eye and respiratory protection.</p> <p>Silica does not require special disposal requirements. Depending on the planned renovations contractors may need to erect dust control barriers and institute dust mitigation with negative air and water suppression.</p>	



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Hazard	Material Identified	Quantity	Recommendations	
Rodent Droppings	Rodent droppings were identified on top of the lay-in ceilings tiles in various locations within the building	n/a	Workers removing lay-in ceiling tiles should be made aware of the potential presence of rodent droppings on top of the tiles. A plan / procedure should be developed for assessing areas above tiles to determine if pre-cleaning is required or if routine dust control measures during renovation will be sufficient. Workers may require respiratory protection as part of their personal protective equipment. Prior to reinstatement of new materials, the area should be thoroughly cleaned.	

Notes:

1. Quantities are approximations.

Should any other material(s) suspected to contain regulated material or mould, be uncovered during renovation activities, work must stop, and the material(s) tested to determine whether present.

## **6.0 CLOSURE**

This report documents work that was performed in accordance with generally accepted professional standards at the time and location in which the services were provided. No other representations, warranties or guarantees are made concerning the accuracy or completeness of the data or conclusions contained within this report, including no assurance that this work has uncovered all potential liabilities associated with the identified property.

This report provides an evaluation of selected environmental conditions associated with the identified portion of the property that was assessed at the time the work was conducted and is based on information obtained by and/or provided to Stantec at that time. There are no assurances regarding the accuracy and completeness of this information. All information received from the client or third parties in the preparation of this report has been assumed by Stantec to be correct. Stantec assumes no responsibility for any deficiency or inaccuracy in information received from others.

The opinions in this report can only be relied upon as they relate to the condition of the portion of the identified property that was assessed at the time the work was conducted. Activities at the property subsequent to Stantec's assessment may have significantly altered the property's condition. Stantec cannot comment on other areas of the property that were not assessed.

Conclusions made within this report consist of Stantec's professional opinion as of the time of the writing of this report, and are based solely on the scope of work described in the report, the limited data available and the results of the work. They are not a certification of the property's environmental condition. This report should not be construed as legal advice.

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This report has been prepared for the exclusive use of the client identified herein and any use by any third party is prohibited. Stantec assumes no responsibility for losses, damages, liabilities or claims, howsoever arising, from third party use of this report.

The locations of any utilities, buildings and structures, and property boundaries illustrated in or described within this report, if any, including pole lines, conduits, water mains, sewers and other surface or sub-surface utilities and structures are not guaranteed. Before starting work, the exact location of all such utilities and structures should be confirmed and Stantec assumes no liability for damage to them.

The conclusions are based on the site conditions encountered by Stantec at the time the work was performed at the specific testing and/or sampling locations, and conditions may vary among sampling locations. Factors such as areas of potential concern identified in previous studies, site conditions (e.g., utilities) and cost may have constrained the sampling locations used in this assessment. In addition, analysis has been carried out for only a limited number of chemical parameters, and it should not be inferred that other chemical species are not present. Due to the nature of the investigation and the limited data available, Stantec does not warrant against undiscovered environmental liabilities nor that the sampling results are indicative of the condition of the entire site. As the purpose of this report is to identify site conditions which may pose an environmental risk; the identification of non-environmental risks to structures or people on the site is beyond the scope of this assessment.

Should additional information become available which differs significantly from our understanding of conditions presented in this report, Stantec specifically disclaims any responsibility to update the conclusions in this report.

This report was prepared by Haley Newell CET, Ep.t and reviewed by Patrick Turner B.Sc., P.Eng.

Yours very truly,

**STANTEC CONSULTING LTD.**



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Environmental Technician



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Senior Technical Reviewer

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# **APPENDIX A**

Result Tables

**Table A.1 - Summary of Asbestos Results**

<b>Sample Number</b>	<b>Building</b>	<b>Floor</b>	<b>Room</b>	<b>Description of Sampled Material</b>	<b>Asbestos Type and Content</b>
BS001A- FLOOR TILE	Fish Lab	2	FL-120	Vinyl floor tile 12" x 12" (white with green streaks)	None Detected
BS001A-MASTIC	Fish Lab	2	FL-120	Vinyl floor tile 12" x 12" (white with green streaks)	None Detected
BS001B-FLOOR TILE	Fish Lab	Ground	FLG-67	Vinyl floor tile 12" x 12" (white with green streaks)	None Detected
BS001B-MASTIC	Fish Lab	Ground	FLG-67	Vinyl floor tile 12" x 12" (white with green streaks)	None Detected
BS001C- FLOOR TILE	Fish Lab	Ground	FL-GE7-10	Vinyl floor tile 12" x 12" (white with green streaks)	None Detected
BS001C- MASTIC	Fish Lab	Ground	FL-GE7-10	Vinyl floor tile 12" x 12" (white with green streaks)	None Detected
BS002A	Fish Lab	2	FL-120	Ceiling tile 2" x 2" (large fissures)	None Detected
BS002B	Fish Lab	Ground	FLG-67	Ceiling tile 2" x 2" (large fissures)	None Detected
BS002C	Fish Lab	Ground	FLG-67	Ceiling tile 2" x 2" (large fissures)	None Detected
BS003A	Fish Lab	2	FL-120	Joint compound (drywall) associated with second floor	None Detected
BS003B	Fish Lab	2	FL-137	Joint compound (drywall) associated with second floor	None Detected
BS003C	Fish Lab	2	FL-139	Joint compound (drywall) associated with second floor	None Detected

**27-Mar-18**

**1**

For this project, materials and visually similar materials, which returned results of >0.5% asbestos are considered to be asbestos-containing.

**Table A.1 - Summary of Asbestos Results**

<b>Sample Number</b>	<b>Building</b>	<b>Floor</b>	<b>Room</b>	<b>Description of Sampled Material</b>	<b>Asbestos Type and Content</b>
BS003D	Fish Lab	2	FL-1C2-54	Joint compound (drywall) associated with second floor	None Detected
BS003E	Fish Lab	2	FL-MF3-31	Joint compound (drywall) associated with second floor	None Detected
BS003F	Fish Lab	2	FL-1B3-03	Joint compound (drywall) associated with second floor	None Detected
BS003G	Fish Lab	2	FL-116	Joint compound (drywall) associated with second floor	None Detected
BS004A	Fish Lab	2	FL-120	Sealant (brown) associated with ductwork	<b>1.8% Chrysotile</b>
BS004B	Fish Lab	2	FL-140	Sealant (brown) associated with ductwork	Positive Stop (Not Analyzed)
BS004C	Fish Lab	Ground	FLG-67	Sealant (brown) associated with ductwork	Positive Stop (Not Analyzed)
BS005A	Fish Lab	2	FL-120	Ceiling tile 2" x 2" (small fissures)	None Detected
BS005B	Fish Lab	2	FL-1C2-54	Ceiling tile 2" x 2" (small fissures)	None Detected
BS005C	Fish Lab	Ground	FLG-67	Ceiling tile 2" x 2" (small fissures)	None Detected
BS006A	Fish Lab	2	FL-121	Mastic (yellow) associated with dove cove	None Detected
BS006B	Fish Lab	2	FL-137	Mastic (yellow) associated with dove cove	None Detected

**Table A.1 - Summary of Asbestos Results**

<b>Sample Number</b>	<b>Building</b>	<b>Floor</b>	<b>Room</b>	<b>Description of Sampled Material</b>	<b>Asbestos Type and Content</b>
BS006C	Fish Lab	Ground	FLG-67	Mastic (yellow) associated with dove cove	None Detected
BS007A-INSULATION	Fish Lab	2	FL-137	Insulation (woven fabric wrap) associated with ductwork (FL-137)	None Detected
BS007A-INSULATION-PAINT/CANVAS	Fish Lab	2	FL-137	Insulation (woven fabric wrap) associated with ductwork (FL-137)	None Detected
BS007B-INSULATION	Fish Lab	2	FL-137	Insulation (woven fabric wrap) associated with ductwork (FL-137)	None Detected
BS007B-PAINT/CANVAS	Fish Lab	2	FL-137	Insulation (woven fabric wrap) associated with ductwork (FL-137)	None Detected
BS007C-INSULATION	Fish Lab	2	FL-137	Insulation (woven fabric wrap) associated with ductwork (FL-137)	None Detected
BS007C-PAINT/CANVAS	Fish Lab	2	FL-137	Insulation (woven fabric wrap) associated with ductwork (FL-137)	None Detected
BS008A	Fish Lab	2	FL-137	Caulking (white) associated with ductwork	None Detected
BS008B	Fish Lab	2	FL-137	Caulking (white) associated with ductwork	None Detected
BS008C	Fish Lab	2	FL-137	Caulking (white) associated with ductwork	None Detected
BS009A	Fish Lab	2	FL-120	Mastic associated with vinyl floor tile 12" x 12" (white with green streaks)	None Detected
BS009B	Fish Lab	Ground	FLG-67	Mastic associated with vinyl floor tile 12" x 12" (white with green streaks)	None Detected

**Table A.1 - Summary of Asbestos Results**

<b>Sample Number</b>	<b>Building</b>	<b>Floor</b>	<b>Room</b>	<b>Description of Sampled Material</b>	<b>Asbestos Type and Content</b>
BS009C	Fish Lab	Ground	FL-GE7-10	Mastic associated with vinyl floor tile 12" x 12" (white with green streaks)	None Detected
BS010A	Fish Lab	2	FL-137	Caulking (black) associated with water lines	None Detected
BS010B	Fish Lab	2	FL-137	Caulking (black) associated with water lines	None Detected
BS010C	Fish Lab	2	FL-137	Caulking (black) associated with water lines	None Detected
BS011A-ADHESIVE	Fish Lab	2	FL-1B3-03	Insulation (concealed black paper) associated with ductwork	None Detected
BS011A-INSULATION	Fish Lab	2	FL-1B3-03	Insulation (concealed black paper) associated with ductwork	None Detected
BS011B-ADHESIVE	Fish Lab	2	FL-1B3-03	Insulation (concealed black paper) associated with ductwork	None Detected
BS011B-INSULATION	Fish Lab	2	FL-1B3-03	Insulation (concealed black paper) associated with ductwork	None Detected
BS011C-ADHESIVE	Fish Lab	2	FL-1B3-03	Insulation (concealed black paper) associated with ductwork	None Detected
BS011C-INSULATION	Fish Lab	2	FL-1B3-03	Insulation (concealed black paper) associated with ductwork	None Detected
BS012A-INSULATION	Fish Lab	2	FL-143	Insulation (woven fabric wrap) associated with ductwork (FL-143)	None Detected
BS012A-PAINT/CANVAS	Fish Lab	2	FL-143	Insulation (woven fabric wrap) associated with ductwork (FL-143)	None Detected

**27-Mar-18**

**4**

For this project, materials and visually similar materials, which returned results of >0.5% asbestos are considered to be asbestos-containing.

**Table A.1 - Summary of Asbestos Results**

Sample Number	Building	Floor	Room	Description of Sampled Material	Asbestos Type and Content
BS012B	Fish Lab	2	FL-143	Insulation (woven fabric wrap) associated with ductwork (FL-143)	None Detected
BS012C-INSULATION	Fish Lab	2	FL-143	Insulation (woven fabric wrap) associated with ductwork (FL-143)	None Detected
BS012C-PAINT/CANVAS	Fish Lab	2	FL-143	Insulation (woven fabric wrap) associated with ductwork (FL-143)	None Detected
BS013A	Fish Lab	2	FL-103	Ceiling tile 2" x 2" (large fissures with pinholes)	None Detected
BS013B	Fish Lab	2	FL-103	Ceiling tile 2" x 2" (large fissures with pinholes)	None Detected
BS013C	Fish Lab	2	FL-103	Ceiling tile 2" x 2" (large fissures with pinholes)	None Detected
BS014A	Fish Lab	2	FL-105A	Ceiling tile 2" x 2" (pinholes)	None Detected
BS014B	Fish Lab	2	FL116	Ceiling tile 2" x 2" (pinholes)	None Detected
BS014C	Fish Lab	2	FL-105A	Ceiling tile 2" x 2" (pinholes)	None Detected
BS015A	Fish Lab	2	FL-219	Tar (black) associated with historical roof vents	<b>3.1% Chrysotile</b>
BS015B	Fish Lab	2	FL-219	Tar (black) associated with historical roof vents	Positive Stop (Not Analyzed)
BS015C	Fish Lab	2	FL-219	Tar (black) associated with historical roof vents	Positive Stop (Not Analyzed)



**Table A.1 - Summary of Asbestos Results**

<b>Sample Number</b>	<b>Building</b>	<b>Floor</b>	<b>Room</b>	<b>Description of Sampled Material</b>	<b>Asbestos Type and Content</b>
BS016A	Fish Lab	2	FL-111	Grout associated with ceramic tile	None Detected
BS016B	Fish Lab	2	FL-111	Grout associated with ceramic tile	None Detected
BS016C	Fish Lab	2	FL-111	Grout associated with ceramic tile	None Detected
BS017A	Fish Lab	2	FL-118	Sealant (grey) associated with ductwork	None Detected
BS017B	Fish Lab	2	FL-118	Sealant (grey) associated with ductwork	None Detected
BS017C	Fish Lab	2	FL-118	Sealant (grey) associated with ductwork	None Detected
BS018A	Fish Lab	2	FL-137	Mortar (concrete block)	None Detected
BS018B	Fish Lab	2	FL-118	Mortar (concrete block)	None Detected
BS018C	Fish Lab	Ground	FLG-67	Mortar (concrete block)	None Detected
BS018D	Fish Lab	Ground	FLG-48	Mortar (concrete block)	None Detected
BS018E	Fish Lab	Ground	FLG-GD-77	Mortar (concrete block)	None Detected
BS018F	Fish Lab	Ground	FLG-08	Mortar (concrete block)	None Detected

**27-Mar-18****6**

For this project, materials and visually similar materials, which returned results of >0.5% asbestos are considered to be asbestos-containing.

**Table A.1 - Summary of Asbestos Results**

<b>Sample Number</b>	<b>Building</b>	<b>Floor</b>	<b>Room</b>	<b>Description of Sampled Material</b>	<b>Asbestos Type and Content</b>
BS018G	Fish Lab	Ground	FLG-07	Mortar (concrete block)	None Detected
BS019A	Fish Lab	Ground	FLG-68	Levelling Compound (grey)	None Detected
BS019B	Fish Lab	Ground	FLG-68	Levelling Compound (grey)	None Detected
BS019C	Fish Lab	Ground	FLG-68	Levelling Compound (grey)	None Detected
BS020A	Fish Lab	Ground	FLG-67	Levelling Compound (white)	None Detected
BS020B	Fish Lab	Ground	FLG-67	Levelling Compound (white)	None Detected
BS020C	Fish Lab	Ground	FLG-67	Levelling Compound (white)	None Detected
BS021A-GREY	Fish Lab	Ground	FLG-67	Joint compound (drywall) associated with first floor	None Detected
BS021A-WHITE	Fish Lab	Ground	FLG-67	Joint compound (drywall) associated with first floor	None Detected
BS021B	Fish Lab	Ground	FLG-61	Joint compound (drywall) associated with first floor	None Detected
BS021C	Fish Lab	Ground	FLG-48	Joint compound (drywall) associated with first floor	None Detected
BS021D	Fish Lab	Ground	FLG-33	Joint compound (drywall) associated with first floor	None Detected

**27-Mar-18****7**

For this project, materials and visually similar materials, which returned results of >0.5% asbestos are considered to be asbestos-containing.

**Table A.1 - Summary of Asbestos Results**

Sample Number	Building	Floor	Room	Description of Sampled Material	Asbestos Type and Content
BS021E	Fish Lab	Ground	FL-GD2-77	Joint compound (drywall) associated with first floor	None Detected
BS021F	Fish Lab	Ground	FLG-23	Joint compound (drywall) associated with first floor	None Detected
BS021G	Fish Lab	Ground	FLG-31	Joint compound (drywall) associated with first floor	None Detected
BS022A	Fish Lab	Ground	FLG-67	Caulking (white) associated with expansion joint	None Detected
BS022B	Fish Lab	Ground	FLG-67	Caulking (white) associated with expansion joint	None Detected
BS022C	Fish Lab	Ground	FLG-67	Caulking (white) associated with expansion joint	None Detected
BS023A	Fish Lab	Ground	FLG-75	Vinyl floor tile 12" x 12" (white with small green streaks)	None Detected
BS023B	Fish Lab	Ground	FLG-77	Vinyl floor tile 12" x 12" (white with small green streaks)	None Detected
BS023C	Fish Lab	2	FL-1C2-54	Vinyl floor tile 12" x 12" (white with small green streaks)	None Detected
BS024A-CEMENT	Fish Lab	Ground	FLG-61	Fibreglass type wall material	None Detected
BS024A-FINISH COAT	Fish Lab	Ground	FLG-61	Fibreglass type wall material	None Detected
BS024B-CEMENT	Fish Lab	Ground	FLG-61	Fibreglass type wall material	None Detected

**27-Mar-18**

**8**

For this project, materials and visually similar materials, which returned results of >0.5% asbestos are considered to be asbestos-containing.

**Table A.1 - Summary of Asbestos Results**

<b>Sample Number</b>	<b>Building</b>	<b>Floor</b>	<b>Room</b>	<b>Description of Sampled Material</b>	<b>Asbestos Type and Content</b>
BS024B-FINISH COAT	Fish Lab	Ground	FLG-61	Fibreglass type wall material	None Detected
BS024C-CEMNT	Fish Lab	Ground	FLG-61	Fibreglass type wall material	None Detected
BS024C-FINISH COAT	Fish Lab	Ground	FLG-61	Fibreglass type wall material	None Detected
BS025A	Fish Lab	Ground	FLG-65	Vinyl sheet flooring (green)	None Detected
BS025B	Fish Lab	Ground	FLG-65	Vinyl sheet flooring (green)	None Detected
BS025C	Fish Lab	Ground	FLG-65	Vinyl sheet flooring (green)	None Detected
BS026A	Fish Lab	Ground	FLG-09	Fireproofing (red putty)	None Detected
BS026B	Fish Lab	Ground	FLG-09	Fireproofing (red putty)	None Detected
BS026C	Fish Lab	Ground	FLG-09	Fireproofing (red putty)	None Detected
BS027A	Fish Lab	Ground	FL-GD2-77	Vinyl sheet flooring (tan)	None Detected
BS027B	Fish Lab	Ground	FL-GD2-77	Vinyl sheet flooring (tan)	None Detected
BS027C	Fish Lab	Ground	FLG-23	Vinyl sheet flooring (tan)	None Detected

**27-Mar-18****9**

For this project, materials and visually similar materials, which returned results of >0.5% asbestos are considered to be asbestos-containing.

**Table A.1 - Summary of Asbestos Results**

<b>Sample Number</b>	<b>Building</b>	<b>Floor</b>	<b>Room</b>	<b>Description of Sampled Material</b>	<b>Asbestos Type and Content</b>
BS028A	Fish Lab	Ground	FL-GD2-77	Ceiling tile 2" x 4" (large fissures with pinholes)	None Detected
BS028B	Fish Lab	Ground	FL-GD2-77	Ceiling tile 2" x 4" (large fissures with pinholes)	None Detected
BS028C	Fish Lab	Ground	FL-GD2-77	Ceiling tile 2" x 4" (large fissures with pinholes)	None Detected
BS029A	Fish Lab	Ground	FL-GD2-77	Fireproofing (spray insulation)	None Detected
BS029B	Fish Lab	Ground	FL-GD2-77	Fireproofing (spray insulation)	None Detected
BS029C	Fish Lab	Ground	FL-GD2-77	Fireproofing (spray insulation)	None Detected
BS030A	Fish Lab	Ground	FLG-52	Concrete wall material	None Detected
BS030B	Fish Lab	Ground	FLG-52	Concrete wall material	None Detected
BS030C	Fish Lab	Ground	FLG-52	Concrete wall material	None Detected
BS031A	Fish Lab	Ground	FLG-08	Caulking (white) associated with pipe insulation	None Detected
BS031B	Fish Lab	Ground	FLG-08	Caulking (white) associated with pipe insulation	None Detected
BS031C	Fish Lab	Ground	FLG-08	Caulking (white) associated with pipe insulation	None Detected

**Table A.1 - Summary of Asbestos Results**

<b>Sample Number</b>	<b>Building</b>	<b>Floor</b>	<b>Room</b>	<b>Description of Sampled Material</b>	<b>Asbestos Type and Content</b>
BS032A	Fish Lab	Roof	Pump Room Roof	Asphalt shingle (red) of Pump Room	None Detected
BS032B	Fish Lab	Roof	Pump Room Roof	Asphalt shingle (red) of Pump Room	None Detected
BS032C	Fish Lab	Roof	Pump Room Roof	Asphalt shingle (red) of Pump Room	None Detected
BS033A	Fish Lab	Roof	Pump Room Roof	Asphalt shingle (black) of Pump Room	None Detected
BS033B	Fish Lab	Roof	Pump Room Roof	Asphalt shingle (black) of Pump Room	None Detected
BS033C	Fish Lab	Roof	Pump Room Roof	Asphalt shingle (black) of Pump Room	None Detected
BS034A	Fish Lab	Exterior	Exterior Vestibule	Texture coat (white)	<b>2% Chrysotile</b>
BS034B	Fish Lab	Exterior	Exterior Vestibule	Texture coat (white)	Positive Stop (Not Analyzed)
BS034C	Fish Lab	Exterior	Exterior Vestibule	Texture coat (white)	Positive Stop (Not Analyzed)
BS035A	Fish Lab	Exterior	Exterior	Caulking (brown) associated with doors and windows	None Detected
BS035B	Fish Lab	Exterior	Exterior	Caulking (brown) associated with doors and windows	None Detected
BS035C	Fish Lab	Exterior	Exterior	Caulking (brown) associated with doors and windows	None Detected

**Table A.1 - Summary of Asbestos Results**

<b>Sample Number</b>	<b>Building</b>	<b>Floor</b>	<b>Room</b>	<b>Description of Sampled Material</b>	<b>Asbestos Type and Content</b>
BS036A	Fish Lab	Exterior	Exterior	Caulking (brown) associated with exterior hole fill	None Detected
BS036B	Fish Lab	Exterior	Exterior	Caulking (brown) associated with exterior hole fill	None Detected
BS036C	Fish Lab	Exterior	Exterior	Caulking (brown) associated with exterior hole fill	None Detected
BS037A	Fish Lab	Exterior	Exterior	Caulking associated with quarantine windows and doors	None Detected
BS037B	Fish Lab	Exterior	Exterior	Caulking associated with quarantine windows and doors	None Detected
BS037C	Fish Lab	Exterior	Exterior	Caulking associated with quarantine windows and doors	None Detected

Table A-2 – Summary of Results of Analysis of Paint Samples

Sample	Floor	Sampling Location	Description of Paint	Lead Content (mg/kg)	Lead Leachate Content (mg/L)
PS001	2	FL-137	Olive green on drywall	<u>140</u>	--
PS002	2	FL-137	Blue on concrete	<u>350</u>	--
PS003	2	FL-143	Grey on drywall	35	--
PS004	2	FL-144	Beige on drywall	8.9	--
PS005	2	FLM-07	Cream on drywall	<5.0	--
PS006	Ground	FLG-48	Beige on drywall	<5.0	--
PS007	Ground	FLG-47	White on ceiling drywall	<5.0	--
PS008	Ground	FLG-59	Cream on drywall	<5.0	--
PS009	Ground	FLG-61	Grey on concrete floor	54	--
PS010	Ground	FLG-39	Green decorative painting	<u>370</u>	--
<b>NS Landfill Disposal Guidelines</b>				<b>1000</b>	<b>5</b>
<b>Canadian Surface Coating Materials Regulations</b>				<b>90</b>	<b>--</b>

**Notes:**

mg/kg – milligrams per kilogram

mg/L – milligrams per litre

**Bold – Above NS Guidelines for Disposal of Contaminated Solids in Landfills**

**Underlined – Above Canadian Surface Coating Materials Regulations**



# **APPENDIX B**






Site Drawings

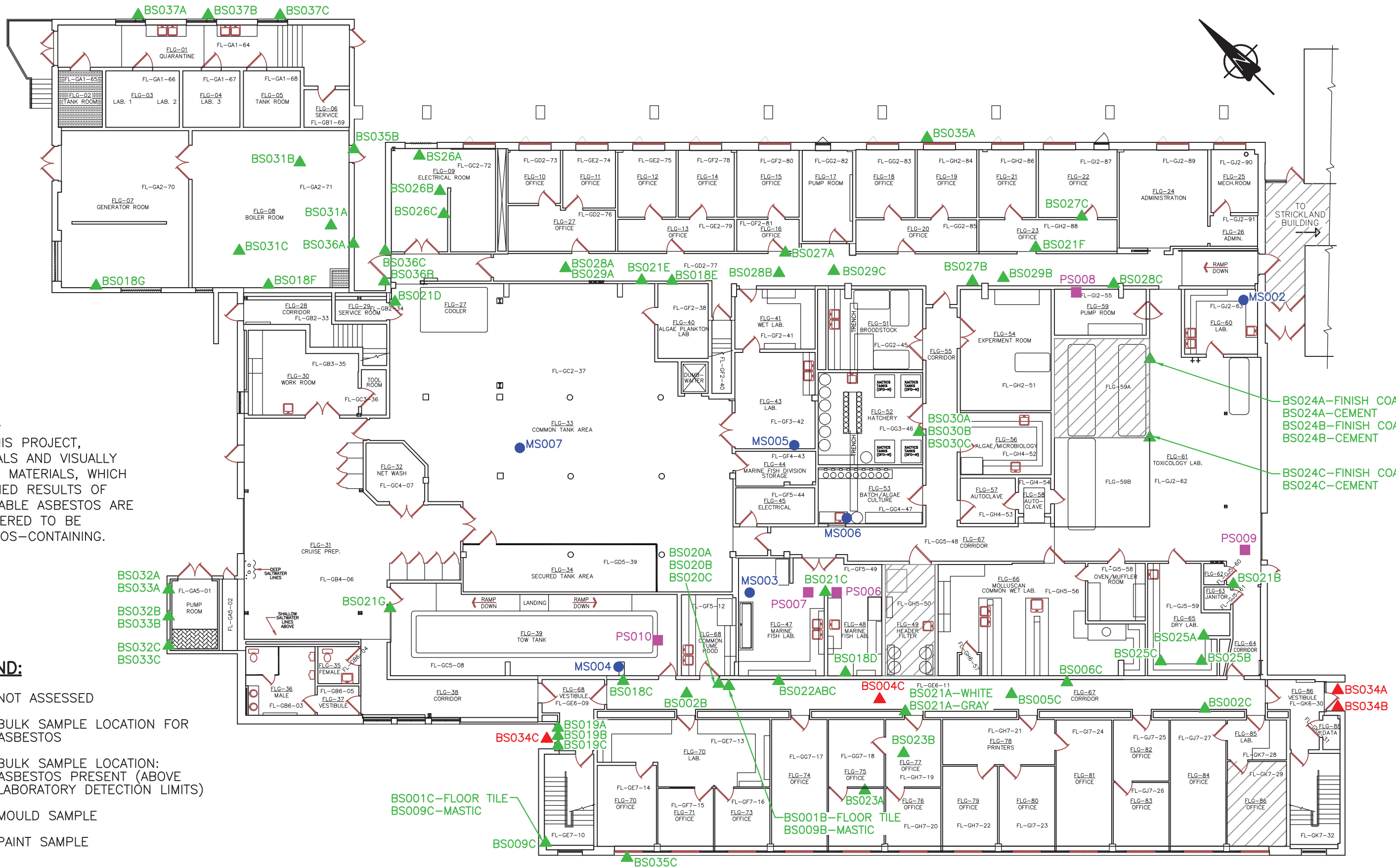
T:\Autocad\Drawings\Project Drawings\2018\121415543\_Sampling Locations.dwg 2018/03/23 - 2:07pm gbriones

#### NOTE:

FOR THIS PROJECT, MATERIALS AND VISUALLY SIMILAR MATERIALS, WHICH RETURNED RESULTS OF DETECTABLE ASBESTOS ARE CONSIDERED TO BE ASBESTOS-CONTAINING.

#### LEGEND:

-  NOT ASSESSED
-  BULK SAMPLE LOCATION FOR ASBESTOS
-  BULK SAMPLE LOCATION: ASBESTOS PRESENT (ABOVE LABORATORY DETECTION LIMITS)
-  MOULD SAMPLE
-  PAINT SAMPLE



Reference:  
CLIENT SUPPLIED CAD FILE

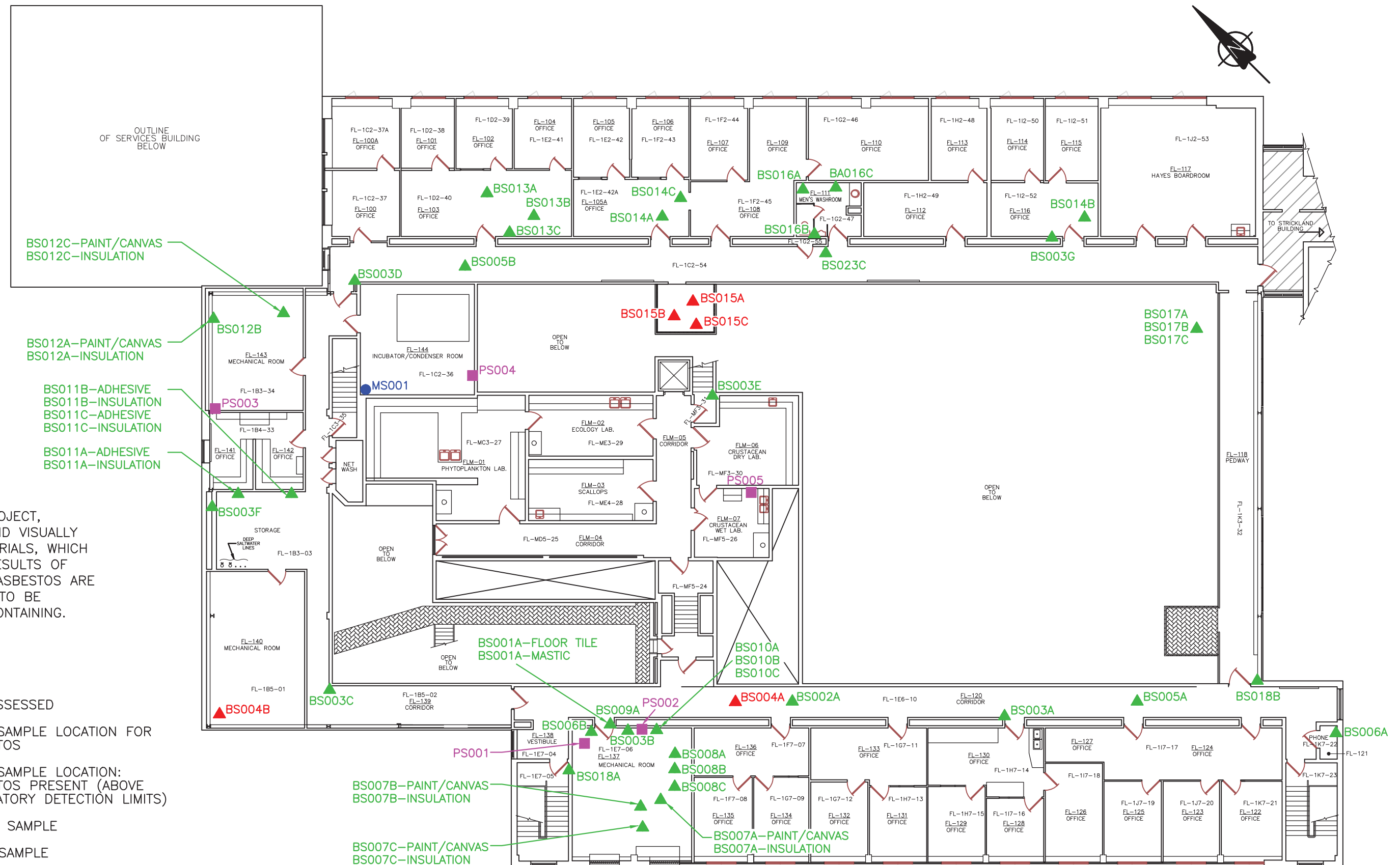
Job No.: 121415543  
Scale: N.T.S.  
Date: 2018/03/23  
Dwn. By: GBB  
App'd By:

Client: PUBLIC WORKS AND GOVERNMENT SERVICES CANADA  
Site Address BEDFORD INSTITUTE OF OCEANOGRAPHY FISH LAB BUILDING, DARTMOUTH, NOVA SCOTIA

Project: HAZARDOUS MATERIALS SURVEY AND MATERIALS QUANTIFICATION

Drawing Title: BEDFORD INSTITUTE OF OCEANOGRAPHY FISH LAB BUILDING GROUND LEVEL SAMPLING LOCATIONS






 **Stantec**  
Dwg. No.: FISH LAB-1




NOTE:

FOR THIS PROJECT,  
MATERIALS AND VISUALLY  
SIMILAR MATERIALS, WHICH  
RETURNED RESULTS OF  
DETECTABLE ASBESTOS ARE  
CONSIDERED TO BE  
ASBESTOS-CONTAINING.

**LEGEND:**

-  NOT ASSESSED  
 BULK SAMPLE LOCATION FOR ASBESTOS  
 BULK SAMPLE LOCATION: ASBESTOS PRESENT (ABOVE LABORATORY DETECTION LIMITS)  
 MOULD SAMPLE  
 PAINT SAMPLE

Reference: CLIENT SUPPLIED CAD FILE	Job No.: 121415543	Client: PUBLIC WORKS AND GOVERNMENT SERVICES CANADA	Project: HAZARDOUS MATERIALS SURVEY AND MATERIALS QUANTIFICATION	Drawing Title: BEDFORD INSTITUTE OF OCEANOGRAPHY FISH LAB BUILDING SECOND LEVEL SAMPLING LOCATIONS	
	Scale: N.T.S.				
	Date: 2018/03/23	Site Address BEDFORD INSTITUTE OF OCEANOGRAPHY FISH LAB BUILDING, DARTMOUTH, NOVA SCOTIA			
	Dwn. By: GBB				
	App'd By:				
					Dwg. No.: FISH LAB-2

# **APPENDIX C**

Photographs





**Photo 1: Exterior view**



**Photo 2: Exterior view**



**Photo 3: Asbestos-containing exterior texture coat (BS034C) on PACM cement board**



**Photo 4: Asbestos-containing exterior texture coat (BS034A & 34B) on PACM cement board**



**Photo 5: Asbestos-containing tar (black) associated with historical roof vents (BS015)**



**Photo 6: Asbestos-containing sealant (brown) associated with ductwork (BS004A)**



**Photo 7: Asbestos-containing sealant (brown) associated with ductwork (BS004B)**



**Photo 8: View of second floor open area**



**Photo 9: View of typical refrigeration equipment**



**Photo 10: PACM Gasket material**



**Photo 11: Mechanical equipment with PACM gaskets and asbestos-containing sealant associated with ductwork**



**Photo 12: PACM Fire Door**





**Photo 13: Water damage on acoustic ceiling tile – typical example**



**Photo 14: Deep freeze exterior in FLG-47 (MS003)**



**Photo 15: View of drywall beam in FLG-39 (MS004)**



**Photo 16: Drywall beam in FLG-39 (MS004)**



**Photo 17: Concrete ceiling in FLG-33 (MS007)**



**Photo 18: Potential mercury-containing Thermostat**

# **APPENDIX D**

Laboratory Certificates





# EMSL Canada Inc.

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<http://www.EMSL.com> / [torontolab@emsl.com](mailto:torontolab@emsl.com)

EMSL Canada Order 551802126  
 Customer ID: 55JACQ30EE  
 Customer PO: 121415543  
 Project ID:

**Attn:** Karen Cameron  
 Stantec Consulting Ltd.  
 102-40 Highfield Park Drive  
 Suite 102  
 Dartmouth, NS B3A 0A3

**Phone:** (902) 468-7777  
**Fax:** (902) 468-9009  
**Collected:**  
**Received:** 2/23/2018  
**Analyzed:** 3/02/2018

**Proj:** 121415543/BIO FISH

## Test Report: Asbestos Analysis of Bulk Materials for Nova Scotia Code of Practice Section 66 OHS Act - Asbestos in the Workplace via EPA600/R-93/116 Method

**Client Sample ID:** BS001A-Floor Tile **Lab Sample ID:** 551802126-0001

**Sample Description:** Vinyl floor tile 12" x 12" (white with green streaks)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	3/02/2018	Gray/Green	0.0%	100%	None Detected	

**Client Sample ID:** BS001A-Mastic

**Lab Sample ID:** 551802126-0001A

**Sample Description:** Vinyl floor tile 12" x 12" (white with green streaks)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/02/2018	Black	0%	100%	None Detected	

**Client Sample ID:** BS001B-Floor Tile

**Lab Sample ID:** 551802126-0002

**Sample Description:** Vinyl floor tile 12" x 12" (white with green streaks)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	3/02/2018	Gray/Green	0.0%	100%	None Detected	

**Client Sample ID:** BS001B-Mastic

**Lab Sample ID:** 551802126-0002A

**Sample Description:** Vinyl floor tile 12" x 12" (white with green streaks)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/02/2018	Black	0%	100%	None Detected	

**Client Sample ID:** BS001C-Floor Tile

**Lab Sample ID:** 551802126-0003

**Sample Description:** Vinyl floor tile 12" x 12" (white with green streaks)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	3/02/2018	Gray/Green	0.0%	100%	None Detected	

**Client Sample ID:** BS001C-Mastic

**Lab Sample ID:** 551802126-0003A

**Sample Description:** Vinyl floor tile 12" x 12" (white with green streaks)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/02/2018	Black	0%	100%	None Detected	

**Client Sample ID:** BS002A

**Lab Sample ID:** 551802126-0004

**Sample Description:** Ceiling tile 2" x 2" (large fissures)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/02/2018	Gray/White	80%	20%	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](mailto:torontolab@emsl.com)

EMSL Canada Order 551802126  
Customer ID: 55JACQ30EE  
Customer PO: 121415543  
Project ID:

## Test Report: Asbestos Analysis of Bulk Materials for Nova Scotia Code of Practice Section 66 OHS Act - Asbestos in the Workplace via EPA600/R-93/116 Method

**Client Sample ID:** BS002B **Lab Sample ID:** 551802126-0005

**Sample Description:** Ceiling tile 2" x 2" (large fissures)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/02/2018	Gray/White	80%	20%	None Detected	

**Client Sample ID:** BS002C **Lab Sample ID:** 551802126-0006

**Sample Description:** Ceiling tile 2" x 2" (large fissures)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/02/2018	Gray	80%	20%	None Detected	

**Client Sample ID:** BS003A **Lab Sample ID:** 551802126-0007

**Sample Description:** Joint compound (drywall) associated with second floor

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/02/2018	White	0%	100%	None Detected	

**Client Sample ID:** BS003B **Lab Sample ID:** 551802126-0008

**Sample Description:** Joint compound (drywall) associated with second floor

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/02/2018	White	0%	100%	None Detected	

**Client Sample ID:** BS003C **Lab Sample ID:** 551802126-0009

**Sample Description:** Joint compound (drywall) associated with second floor

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/02/2018	White	0%	100%	None Detected	

**Client Sample ID:** BS003D **Lab Sample ID:** 551802126-0010

**Sample Description:** Joint compound (drywall) associated with second floor

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/02/2018	White	0%	100%	None Detected	

**Client Sample ID:** BS003E **Lab Sample ID:** 551802126-0011

**Sample Description:** Joint compound (drywall) associated with second floor

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/02/2018	White	0%	100%	None Detected	

**Client Sample ID:** BS003F **Lab Sample ID:** 551802126-0012

**Sample Description:** Joint compound (drywall) associated with second floor

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/02/2018	White	0%	100%	None Detected	



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EMSL Canada Order 551802126  
Customer ID: 55JACQ30EE  
Customer PO: 121415543  
Project ID:

## Test Report: Asbestos Analysis of Bulk Materials for Nova Scotia Code of Practice Section 66 OHS Act - Asbestos in the Workplace via EPA600/R-93/116 Method

**Client Sample ID:** BS003G **Lab Sample ID:** 551802126-0013

**Sample Description:** Joint compound (drywall) associated with second floor

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/02/2018	White	0%	100%	None Detected	

**Client Sample ID:** BS004A **Lab Sample ID:** 551802126-0014

**Sample Description:** Sealant (brown) associated with ductwork

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	3/02/2018	Brown	5.3%	92.9%	1.8% Chrysotile	

**Client Sample ID:** BS004B **Lab Sample ID:** 551802126-0015

**Sample Description:** Sealant (brown) associated with ductwork

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	3/02/2018				Positive Stop (Not Analyzed)	

**Client Sample ID:** BS004C **Lab Sample ID:** 551802126-0016

**Sample Description:** Sealant (brown) associated with ductwork

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	3/02/2018				Positive Stop (Not Analyzed)	

**Client Sample ID:** BS005A **Lab Sample ID:** 551802126-0017

**Sample Description:** Ceiling tile 2" x 2" (small fissures)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/02/2018	Gray/White	80%	20%	None Detected	

**Client Sample ID:** BS005B **Lab Sample ID:** 551802126-0018

**Sample Description:** Ceiling tile 2" x 2" (small fissures)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/02/2018	Gray/White	80%	20%	None Detected	

**Client Sample ID:** BS005C **Lab Sample ID:** 551802126-0019

**Sample Description:** Ceiling tile 2" x 2" (small fissures)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/02/2018	Gray	80%	20%	None Detected	

**Client Sample ID:** BS006A **Lab Sample ID:** 551802126-0020

**Sample Description:** Mastix (yellow) associated with dove cove

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	3/02/2018	Yellow	0.0%	100%	None Detected	



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## Test Report: Asbestos Analysis of Bulk Materials for Nova Scotia Code of Practice Section 66 OHS Act - Asbestos in the Workplace via EPA600/R-93/116 Method

**Client Sample ID:** BS006B **Lab Sample ID:** 551802126-0021

**Sample Description:** Mastic (yellow) associated with dove cove

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	3/02/2018	Yellow	0.0%	100%	None Detected	

**Client Sample ID:** BS006C **Lab Sample ID:** 551802126-0022

**Sample Description:** Mastic (yellow) associated with dove cove

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	3/02/2018	Yellow	0.0%	100%	None Detected	

**Client Sample ID:** BS007A-Paint/Canvas **Lab Sample ID:** 551802126-0023

**Sample Description:** Insulation (woven fabric wrap) associated with ductwork (FL-137)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/02/2018	White	65%	35%	None Detected	

**Client Sample ID:** BS007A-Insulation **Lab Sample ID:** 551802126-0023A

**Sample Description:** Insulation (woven fabric wrap) associated with ductwork (FL-137)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/02/2018	Yellow	90%	10%	None Detected	

**Client Sample ID:** BS007B-Paint/Canvas **Lab Sample ID:** 551802126-0024

**Sample Description:** Insulation (woven fabric wrap) associated with ductwork (FL-137)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/02/2018	White	60%	40%	None Detected	

**Client Sample ID:** BS007B-Insulation **Lab Sample ID:** 551802126-0024A

**Sample Description:** Insulation (woven fabric wrap) associated with ductwork (FL-137)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/02/2018	Yellow	90%	10%	None Detected	

**Client Sample ID:** BS007C-Paint/Canvas **Lab Sample ID:** 551802126-0025

**Sample Description:** Insulation (woven fabric wrap) associated with ductwork (FL-137)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/02/2018	White	50%	50%	None Detected	

**Client Sample ID:** BS007C-Insulation **Lab Sample ID:** 551802126-0025A

**Sample Description:** Insulation (woven fabric wrap) associated with ductwork (FL-137)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/02/2018	Yellow	70%	30%	None Detected	



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## Test Report: Asbestos Analysis of Bulk Materials for Nova Scotia Code of Practice Section 66 OHS Act - Asbestos in the Workplace via EPA600/R-93/116 Method

**Client Sample ID:** BS008A **Lab Sample ID:** 551802126-0026

**Sample Description:** Caulking (white) associated with ductwork

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	3/02/2018	Gray	0.0%	100%	None Detected	

**Client Sample ID:** BS008B **Lab Sample ID:** 551802126-0027

**Sample Description:** Caulking (white) associated with ductwork

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	3/02/2018	Gray	0.0%	100%	None Detected	

**Client Sample ID:** BS008C **Lab Sample ID:** 551802126-0028

**Sample Description:** Caulking (white) associated with ductwork

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	3/02/2018	Gray	0.0%	100%	None Detected	

**Client Sample ID:** BS009A **Lab Sample ID:** 551802126-0029

**Sample Description:** Mastic associated with vinyl floor tile 12" x 12" (white with green streaks)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	3/02/2018	Black	0.0%	100%	None Detected	

**Client Sample ID:** BS009B **Lab Sample ID:** 551802126-0030

**Sample Description:** Mastic associated with vinyl floor tile 12" x 12" (white with green streaks)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	3/02/2018	Black	0.0%	100%	None Detected	

**Client Sample ID:** BS009C **Lab Sample ID:** 551802126-0031

**Sample Description:** Mastic associated with vinyl floor tile 12" x 12" (white with green streaks)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	3/02/2018	Black	0.0%	100%	None Detected	

**Client Sample ID:** BS010A **Lab Sample ID:** 551802126-0032

**Sample Description:** Caulking (black) associated with water lines

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	3/02/2018	Black	0.0%	100%	None Detected	

**Client Sample ID:** BS010B **Lab Sample ID:** 551802126-0033

**Sample Description:** Caulking (black) associated with water lines

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	3/02/2018	Black	0.0%	100%	None Detected	



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 Project ID:

## Test Report: Asbestos Analysis of Bulk Materials for Nova Scotia Code of Practice Section 66 OHS Act - Asbestos in the Workplace via EPA600/R-93/116 Method

**Client Sample ID:** BS010C **Lab Sample ID:** 551802126-0034

**Sample Description:** Caulking (black) associated with water lines

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	3/02/2018	Black	0.0%	100%	None Detected	

**Client Sample ID:** BS011A-Adhesive **Lab Sample ID:** 551802126-0035

**Sample Description:** Insulation (concealed black paper) associated with ductwork

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/02/2018	Gray/White	30%	70%	None Detected	

**Client Sample ID:** BS011A-Insulation **Lab Sample ID:** 551802126-0035A

**Sample Description:** Insulation (concealed black paper) associated with ductwork

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/02/2018	Gray	85%	15%	None Detected	

**Client Sample ID:** BS011B-Adhesive **Lab Sample ID:** 551802126-0036

**Sample Description:** Insulation (concealed black paper) associated with ductwork

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/02/2018	Gray/White	30%	70%	None Detected	

**Client Sample ID:** BS011B-Insulation **Lab Sample ID:** 551802126-0036A

**Sample Description:** Insulation (concealed black paper) associated with ductwork

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/02/2018	Gray	85%	15%	None Detected	

**Client Sample ID:** BS011C-Adhesive **Lab Sample ID:** 551802126-0037

**Sample Description:** Insulation (concealed black paper) associated with ductwork

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/02/2018	Gray/White	40%	60%	None Detected	

**Client Sample ID:** BS011C-Insulation **Lab Sample ID:** 551802126-0037A

**Sample Description:** Insulation (concealed black paper) associated with ductwork

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/02/2018	Gray	90%	10%	None Detected	

**Client Sample ID:** BS012A-Paint/Canvas **Lab Sample ID:** 551802126-0038

**Sample Description:** Insulation (woven fabric wrap) associated with ductwork (FL-143)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/02/2018	White	65%	35%	None Detected	



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Project ID:

## Test Report: Asbestos Analysis of Bulk Materials for Nova Scotia Code of Practice Section 66 OHS Act - Asbestos in the Workplace via EPA600/R-93/116 Method

**Client Sample ID:** BS012A-Insulation **Lab Sample ID:** 551802126-0038A

**Sample Description:** Insulation (woven fabric wrap) associated with ductwork (FL-143)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/02/2018	Yellow	90%	10%	None Detected	

**Client Sample ID:** BS012B **Lab Sample ID:** 551802126-0039

**Sample Description:** Insulation (woven fabric wrap) associated with ductwork (FL-143)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/02/2018	White	65%	35%	None Detected	

**Client Sample ID:** BS012C-Paint/Canvas **Lab Sample ID:** 551802126-0040

**Sample Description:** Insulation (woven fabric wrap) associated with ductwork (FL-143)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/02/2018	White	90%	10%	None Detected	

**Client Sample ID:** BS012C-Insulation **Lab Sample ID:** 551802126-0040A

**Sample Description:** Insulation (woven fabric wrap) associated with ductwork (FL-143)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/02/2018	Yellow	90%	10%	None Detected	

**Client Sample ID:** BS013A **Lab Sample ID:** 551802126-0041

**Sample Description:** Ceiling tile 2" x 2" (large fissures with pinholes)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/02/2018	Gray/White	80%	20%	None Detected	

**Client Sample ID:** BS013B **Lab Sample ID:** 551802126-0042

**Sample Description:** Ceiling tile 2" x 2" (large fissures with pinholes)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/02/2018	Gray/White	80%	20%	None Detected	

**Client Sample ID:** BS013C **Lab Sample ID:** 551802126-0043

**Sample Description:** Ceiling tile 2" x 2" (large fissures with pinholes)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/02/2018	Gray	80%	20%	None Detected	

**Client Sample ID:** BS014A **Lab Sample ID:** 551802126-0044

**Sample Description:** Ceiling tile 2" x 2" (pinholes)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/02/2018	Gray/White	80%	20%	None Detected	





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## Test Report: Asbestos Analysis of Bulk Materials for Nova Scotia Code of Practice Section 66 OHS Act - Asbestos in the Workplace via EPA600/R-93/116 Method

<b>Client Sample ID:</b> BS014B		<b>Lab Sample ID:</b> 551802126-0045				
<b>Sample Description:</b> Ceiling tile 2" x 2" (pinholes)						
TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/02/2018	Gray/White	80%	20%	None Detected	
<b>Client Sample ID:</b> BS014C		<b>Lab Sample ID:</b> 551802126-0046				
<b>Sample Description:</b> Ceiling tile 2" x 2" (pinholes)						
TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/02/2018	Gray	80%	20%	None Detected	
<b>Client Sample ID:</b> BS015A		<b>Lab Sample ID:</b> 551802126-0047				
<b>Sample Description:</b> Tar (black) associated with historical roof vents						
TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	3/02/2018	Black	2.4%	94.5%	3.1% Chrysotile	
<b>Client Sample ID:</b> BS015B		<b>Lab Sample ID:</b> 551802126-0048				
<b>Sample Description:</b> Tar (black) associated with historical roof vents						
TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	3/02/2018				Positive Stop (Not Analyzed)	
<b>Client Sample ID:</b> BS015C		<b>Lab Sample ID:</b> 551802126-0049				
<b>Sample Description:</b> Tar (black) associated with historical roof vents						
TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	3/02/2018				Positive Stop (Not Analyzed)	
<b>Client Sample ID:</b> BS016A		<b>Lab Sample ID:</b> 551802126-0050				
<b>Sample Description:</b> Grout associated with ceramic tile						
TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/02/2018	Gray	0%	100%	None Detected	
<b>Client Sample ID:</b> BS016B		<b>Lab Sample ID:</b> 551802126-0051				
<b>Sample Description:</b> Grout associated with ceramic tile						
TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/02/2018	Gray	0%	100%	None Detected	
<b>Client Sample ID:</b> BS016C		<b>Lab Sample ID:</b> 551802126-0052				
<b>Sample Description:</b> Grout associated with ceramic tile						
TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/02/2018	Gray	0%	100%	None Detected	





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## Test Report: Asbestos Analysis of Bulk Materials for Nova Scotia Code of Practice Section 66 OHS Act - Asbestos in the Workplace via EPA600/R-93/116 Method

**Client Sample ID:** BS017A **Lab Sample ID:** 551802126-0053

**Sample Description:** Sealant (grey) associated with ductwork

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	3/02/2018	Gray	0.0%	100%	None Detected	

**Client Sample ID:** BS017B **Lab Sample ID:** 551802126-0054

**Sample Description:** Sealant (grey) associated with ductwork

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	3/02/2018	Gray	0.0%	100%	None Detected	

**Client Sample ID:** BS017C **Lab Sample ID:** 551802126-0055

**Sample Description:** Sealant (grey) associated with ductwork

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	3/02/2018	Gray	0.0%	100%	None Detected	

**Client Sample ID:** BS018A **Lab Sample ID:** 551802126-0056

**Sample Description:** Mortar (concrete block)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/02/2018	Gray	0%	100%	None Detected	

**Client Sample ID:** BS018B **Lab Sample ID:** 551802126-0057

**Sample Description:** Mortar (concrete block)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/02/2018	Gray	0%	100%	None Detected	

**Client Sample ID:** BS018C **Lab Sample ID:** 551802126-0058

**Sample Description:** Mortar (concrete block)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/02/2018	Gray	0%	100%	None Detected	

**Client Sample ID:** BS018D **Lab Sample ID:** 551802126-0059

**Sample Description:** Mortar (concrete block)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/02/2018	Gray	0%	100%	None Detected	

**Client Sample ID:** BS018E **Lab Sample ID:** 551802126-0060

**Sample Description:** Mortar (concrete block)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/02/2018	Gray	0%	100%	None Detected	



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## Test Report: Asbestos Analysis of Bulk Materials for Nova Scotia Code of Practice Section 66 OHS Act - Asbestos in the Workplace via EPA600/R-93/116 Method

**Client Sample ID:** BS018F **Lab Sample ID:** 551802126-0061  
**Sample Description:** Mortar (concrete block)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/02/2018	Gray	0%	100%	None Detected	

**Client Sample ID:** BS018G **Lab Sample ID:** 551802126-0062  
**Sample Description:** Mortar (concrete block)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/02/2018	Gray	0%	100%	None Detected	

**Client Sample ID:** BS019A **Lab Sample ID:** 551802126-0063  
**Sample Description:** Levelling Compound (grey)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/02/2018	Gray	3%	97%	None Detected	

**Client Sample ID:** BS019B **Lab Sample ID:** 551802126-0064  
**Sample Description:** Levelling Compound (grey)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/02/2018	Gray	3%	97%	None Detected	

**Client Sample ID:** BS019C **Lab Sample ID:** 551802126-0065  
**Sample Description:** Levelling Compound (grey)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/02/2018	Gray	0%	100%	None Detected	

**Client Sample ID:** BS020A **Lab Sample ID:** 551802126-0066  
**Sample Description:** Levelling Compound (white)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/02/2018	Gray	0%	100%	None Detected	

**Client Sample ID:** BS020B **Lab Sample ID:** 551802126-0067  
**Sample Description:** Levelling Compound (white)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/02/2018	Gray	0%	100%	None Detected	

**Client Sample ID:** BS020C **Lab Sample ID:** 551802126-0068  
**Sample Description:** Levelling Compound (white)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/02/2018	White	0%	100%	None Detected	



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EMSL Canada Order 551802126  
Customer ID: 55JACQ30EE  
Customer PO: 121415543  
Project ID:

## Test Report: Asbestos Analysis of Bulk Materials for Nova Scotia Code of Practice Section 66 OHS Act - Asbestos in the Workplace via EPA600/R-93/116 Method

<b>Client Sample ID:</b> BS021A-White			<b>Lab Sample ID:</b> 551802126-0069			
<b>Sample Description:</b> Joint compound (drywall) associated with first floor						
TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/02/2018	White	0%	100%	None Detected	
<b>Client Sample ID:</b> BS021A-Gray			<b>Lab Sample ID:</b> 551802126-0069A			
<b>Sample Description:</b> Joint compound (drywall) associated with first floor						
TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/02/2018	Gray	0%	100%	None Detected	
<b>Client Sample ID:</b> BS021B			<b>Lab Sample ID:</b> 551802126-0070			
<b>Sample Description:</b> Joint compound (drywall) associated with first floor						
TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/02/2018	White	0%	100%	None Detected	
<b>Client Sample ID:</b> BS021C			<b>Lab Sample ID:</b> 551802126-0071			
<b>Sample Description:</b> Joint compound (drywall) associated with first floor						
TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/02/2018	White	0%	100%	None Detected	
<b>Client Sample ID:</b> BS021D			<b>Lab Sample ID:</b> 551802126-0072			
<b>Sample Description:</b> Joint compound (drywall) associated with first floor						
TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/02/2018	White	0%	100%	None Detected	
<b>Client Sample ID:</b> BS021E			<b>Lab Sample ID:</b> 551802126-0073			
<b>Sample Description:</b> Joint compound (drywall) associated with first floor						
TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/02/2018	White	0%	100%	None Detected	
<b>Client Sample ID:</b> BS021F			<b>Lab Sample ID:</b> 551802126-0074			
<b>Sample Description:</b> Joint compound (drywall) associated with first floor						
TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/02/2018	White	0%	100%	None Detected	
<b>Client Sample ID:</b> BS021G			<b>Lab Sample ID:</b> 551802126-0075			
<b>Sample Description:</b> Joint compound (drywall) associated with first floor						
TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/02/2018	White	0%	100%	None Detected	



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EMSL Canada Order 551802126  
Customer ID: 55JACQ30EE  
Customer PO: 121415543  
Project ID:

## Test Report: Asbestos Analysis of Bulk Materials for Nova Scotia Code of Practice Section 66 OHS Act - Asbestos in the Workplace via EPA600/R-93/116 Method

**Client Sample ID:** BS022A **Lab Sample ID:** 551802126-0076

**Sample Description:** Caulking (white) associated with expansion joint

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	3/02/2018	White	0.0%	100%	None Detected	

**Client Sample ID:** BS022B **Lab Sample ID:** 551802126-0077

**Sample Description:** Caulking (white) associated with expansion joint

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	3/02/2018	White	0.0%	100%	None Detected	

**Client Sample ID:** BS022C **Lab Sample ID:** 551802126-0078

**Sample Description:** Caulking (white) associated with expansion joint

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	3/02/2018	White	0.0%	100%	None Detected	

**Client Sample ID:** BS023A **Lab Sample ID:** 551802126-0079

**Sample Description:** Vinyl floor tile 12" x 12" (white with small green streaks)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	3/02/2018	White/Green	0.0%	100%	None Detected	

**Client Sample ID:** BS023B **Lab Sample ID:** 551802126-0080

**Sample Description:** Vinyl floor tile 12" x 12" (white with small green streaks)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	3/02/2018	White/Green	0.0%	100%	None Detected	

**Client Sample ID:** BS023C **Lab Sample ID:** 551802126-0081

**Sample Description:** Vinyl floor tile 12" x 12" (white with small green streaks)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	3/02/2018	White/Green	0.0%	100%	None Detected	

**Client Sample ID:** BS024A-Finish Coat **Lab Sample ID:** 551802126-0082

**Sample Description:** Fibreglass type wall material

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/02/2018	White	0%	100%	None Detected	

**Client Sample ID:** BS024A-Cement **Lab Sample ID:** 551802126-0082A

**Sample Description:** Fibreglass type wall material

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/02/2018	Gray	0%	100%	None Detected	



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EMSL Canada Order 551802126  
 Customer ID: 55JACQ30EE  
 Customer PO: 121415543  
 Project ID:

## Test Report: Asbestos Analysis of Bulk Materials for Nova Scotia Code of Practice Section 66 OHS Act - Asbestos in the Workplace via EPA600/R-93/116 Method

**Client Sample ID:** BS024B-Finish Coat **Lab Sample ID:** 551802126-0083  
**Sample Description:** Fibreglass type wall material

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/02/2018	White	0%	100%	None Detected	

**Client Sample ID:** BS024B-Cement **Lab Sample ID:** 551802126-0083A  
**Sample Description:** Fibreglass type wall material

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/02/2018	Gray	0%	100%	None Detected	

**Client Sample ID:** BS024C-Finish Coat **Lab Sample ID:** 551802126-0084  
**Sample Description:** Fibreglass type wall material

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/02/2018	White	0%	100%	None Detected	

**Client Sample ID:** BS024C-Cement **Lab Sample ID:** 551802126-0084A  
**Sample Description:** Fibreglass type wall material

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/02/2018	Gray	0%	100%	None Detected	

**Client Sample ID:** BS025A **Lab Sample ID:** 551802126-0085  
**Sample Description:** Vinyl sheet flooring (green)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	3/02/2018	Tan/Green	0.0%	100%	None Detected	

**Client Sample ID:** BS025B **Lab Sample ID:** 551802126-0086  
**Sample Description:** Vinyl sheet flooring (green)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	3/02/2018	Tan/Green	0.0%	100%	None Detected	

**Client Sample ID:** BS025C **Lab Sample ID:** 551802126-0087  
**Sample Description:** Vinyl sheet flooring (green)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	3/02/2018	Tan/Green	0.0%	100%	None Detected	

**Client Sample ID:** BS026A **Lab Sample ID:** 551802126-0088  
**Sample Description:** Fireproofing (red putty)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	3/02/2018	Red	0.0%	100%	None Detected	



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EMSL Canada Order 551802126  
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## Test Report: Asbestos Analysis of Bulk Materials for Nova Scotia Code of Practice Section 66 OHS Act - Asbestos in the Workplace via EPA600/R-93/116 Method

**Client Sample ID:** BS026B **Lab Sample ID:** 551802126-0089

**Sample Description:** Fireproofing (red putty)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	3/02/2018	Red	0.0%	100%	None Detected	

**Client Sample ID:** BS026C **Lab Sample ID:** 551802126-0090

**Sample Description:** Fireproofing (red putty)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	3/02/2018	Red	0.0%	100%	None Detected	

**Client Sample ID:** BS027A **Lab Sample ID:** 551802126-0091

**Sample Description:** Vinyl sheet flooring (tan)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	3/02/2018	Gray	0.0%	100%	None Detected	

**Client Sample ID:** BS027B **Lab Sample ID:** 551802126-0092

**Sample Description:** Vinyl sheet flooring (tan)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	3/02/2018	Gray	0.0%	100%	None Detected	

**Client Sample ID:** BS027C **Lab Sample ID:** 551802126-0093

**Sample Description:** Vinyl sheet flooring (tan)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	3/02/2018	Gray	0.0%	100%	None Detected	

**Client Sample ID:** BS028A **Lab Sample ID:** 551802126-0094

**Sample Description:** Ceiling tile 2" x 4" (large fissures with pinholes)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/02/2018	Gray/White	80%	20%	None Detected	

**Client Sample ID:** BS028B **Lab Sample ID:** 551802126-0095

**Sample Description:** Ceiling tile 2" x 4" (large fissures with pinholes)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/02/2018	Gray/White	80%	20%	None Detected	

**Client Sample ID:** BS028C **Lab Sample ID:** 551802126-0096

**Sample Description:** Ceiling tile 2" x 4" (large fissures with pinholes)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/02/2018	Gray	80%	20%	None Detected	



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<b>Client Sample ID:</b> BS029A			<b>Lab Sample ID:</b> 551802126-0097			
<b>Sample Description:</b> Fireproofing (spray insulation)						
TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/02/2018	Gray	25%	75%	None Detected	
<b>Client Sample ID:</b> BS029B			<b>Lab Sample ID:</b> 551802126-0098			
<b>Sample Description:</b> Fireproofing (spray insulation)						
TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/02/2018	Gray	25%	75%	None Detected	
<b>Client Sample ID:</b> BS029C			<b>Lab Sample ID:</b> 551802126-0099			
<b>Sample Description:</b> Fireproofing (spray insulation)						
TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/02/2018	Gray	20%	80%	None Detected	
<b>Client Sample ID:</b> BS030A			<b>Lab Sample ID:</b> 551802126-0100			
<b>Sample Description:</b> Concrete wall material						
TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/02/2018	Gray	0%	100%	None Detected	
<b>Client Sample ID:</b> BS030B			<b>Lab Sample ID:</b> 551802126-0101			
<b>Sample Description:</b> Concrete wall material						
TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/02/2018	Gray	0%	100%	None Detected	
<b>Client Sample ID:</b> BS030C			<b>Lab Sample ID:</b> 551802126-0102			
<b>Sample Description:</b> Concrete wall material						
TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/02/2018	Gray	0%	100%	None Detected	
<b>Client Sample ID:</b> BS031A			<b>Lab Sample ID:</b> 551802126-0103			
<b>Sample Description:</b> Caulking (white) associated with pipe insulation						
TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	3/02/2018	White	0.0%	100%	None Detected	
<b>Client Sample ID:</b> BS031B			<b>Lab Sample ID:</b> 551802126-0104			
<b>Sample Description:</b> Caulking (white) associated with pipe insulation						
TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	3/02/2018	White	0.0%	100%	None Detected	





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## Test Report: Asbestos Analysis of Bulk Materials for Nova Scotia Code of Practice Section 66 OHS Act - Asbestos in the Workplace via EPA600/R-93/116 Method

**Client Sample ID:** BS031C **Lab Sample ID:** 551802126-0105

**Sample Description:** Caulking (white) associated with pipe insulation

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	3/02/2018	White	0.0%	100%	None Detected	

**Client Sample ID:** BS032A **Lab Sample ID:** 551802126-0106

**Sample Description:** Asphalt shingle (red)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	3/02/2018	Black	0.0%	100%	None Detected	

**Client Sample ID:** BS032B **Lab Sample ID:** 551802126-0107

**Sample Description:** Asphalt shingle (red)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	3/02/2018	Black	0.0%	100%	None Detected	

**Client Sample ID:** BS032C **Lab Sample ID:** 551802126-0108

**Sample Description:** Asphalt shingle (red)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	3/02/2018	Black	0.0%	100%	None Detected	

**Client Sample ID:** BS033A **Lab Sample ID:** 551802126-0109

**Sample Description:** Asphalt shingle (black)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	3/02/2018	Black	0.0%	100%	None Detected	

**Client Sample ID:** BS033B **Lab Sample ID:** 551802126-0110

**Sample Description:** Asphalt shingle (black)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	3/02/2018	Black	0.0%	100%	None Detected	

**Client Sample ID:** BS033C **Lab Sample ID:** 551802126-0111

**Sample Description:** Asphalt shingle (black)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	3/02/2018	Black	0.0%	100%	None Detected	

**Client Sample ID:** BS034A **Lab Sample ID:** 551802126-0112

**Sample Description:** Texture coat (white)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/02/2018	White	0%	98%	2% Chrysotile	





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<b>Client Sample ID:</b> BS034B		<b>Lab Sample ID:</b> 551802126-0113				
<b>Sample Description:</b> Texture coat (white)						
TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/02/2018					Positive Stop (Not Analyzed)
<b>Client Sample ID:</b> BS034C		<b>Lab Sample ID:</b> 551802126-0114				
<b>Sample Description:</b> Texture coat (white)						
TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/02/2018					Positive Stop (Not Analyzed)
<b>Client Sample ID:</b> BS035A		<b>Lab Sample ID:</b> 551802126-0115				
<b>Sample Description:</b> Caulking (brown) associated with doors and windows						
TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	3/02/2018	Gray	0.0%	100%	None Detected	
<b>Client Sample ID:</b> BS035B		<b>Lab Sample ID:</b> 551802126-0116				
<b>Sample Description:</b> Caulking (brown) associated with doors and windows						
TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	3/02/2018	Brown	0.0%	100%	None Detected	
<b>Client Sample ID:</b> BS035C		<b>Lab Sample ID:</b> 551802126-0117				
<b>Sample Description:</b> Caulking (brown) associated with doors and windows						
TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	3/02/2018	Black	0.0%	100%	None Detected	
<b>Client Sample ID:</b> BS036A		<b>Lab Sample ID:</b> 551802126-0118				
<b>Sample Description:</b> Caulking (brown) associated with exterior hole fill						
TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	3/02/2018	Black	0.0%	100%	None Detected	
<b>Client Sample ID:</b> BS036B		<b>Lab Sample ID:</b> 551802126-0119				
<b>Sample Description:</b> Caulking (brown) associated with exterior hole fill						
TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	3/02/2018	Black	0.0%	100%	None Detected	
<b>Client Sample ID:</b> BS036C		<b>Lab Sample ID:</b> 551802126-0120				
<b>Sample Description:</b> Caulking (brown) associated with exterior hole fill						
TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	3/02/2018	Black	0.0%	100%	None Detected	



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### Test Report: Asbestos Analysis of Bulk Materials for Nova Scotia Code of Practice Section 66 OHS Act - Asbestos in the Workplace via EPA600/R-93/116 Method

**Client Sample ID:** BS037A **Lab Sample ID:** 551802126-0121

**Sample Description:** Caulking associated with quarantine windows and doors

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	3/02/2018	Gray	0.0%	100%	None Detected	

**Client Sample ID:** BS037B **Lab Sample ID:** 551802126-0122

**Sample Description:** Caulking associated with quarantine windows and doors

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	3/02/2018	Gray	0.0%	100%	None Detected	

**Client Sample ID:** BS037C **Lab Sample ID:** 551802126-0123

**Sample Description:** Caulking associated with quarantine windows and doors

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	3/02/2018	Gray	0.0%	100%	None Detected	

#### Analyst(s):

Anne Balayboa PLM (22)  
PLM Grav. Reduction (39)  
Caroline Allen PLM Grav. Reduction (14)  
Ioana Taina PLM (57)

#### Reviewed and approved by:

Matthew Davis or other approved signatory  
or Other Approved Signatory

None Detected = <0.1%. EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. Samples received in good condition unless otherwise noted. This report must not be used to claim product endorsement by NVLAP of any agency of the U.S. Government.

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

Initial report from: 03/02/2018 18:59:23

Your Project #: 121415543

Site Location: BIO

Your C.O.C. #: N/A

**Attention: Haley Newell**

Stantec Consulting Ltd  
40 Highfield Park Drive  
Suite 102  
Dartmouth, NS  
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**Report Date: 2018/02/28**

Report #: R5024389

Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: B841003**

**Received: 2018/02/22, 14:53**

Sample Matrix: Paint  
# Samples Received: 10

Analyses	Date		Date Analyzed	Laboratory Method	Reference
	Quantity	Extracted			
Metals Paint Acid Extr. ICPMS	10	2018/02/27	2018/02/28	ATL SOP 00058	EPA 6020A R1 m

**Remarks:**

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam 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.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam 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 Maxxam, unless otherwise agreed in writing.

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.

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.

Your Project #: 121415543  
Site Location: BIO  
Your C.O.C. #: N/A

**Attention: Haley Newell**

Stantec Consulting Ltd  
40 Highfield Park Drive  
Suite 102  
Dartmouth, NS  
B3A 0A3

**Report Date: 2018/02/28**  
Report #: R5024389  
Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: B841003**  
**Received: 2018/02/22, 14:53**

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Marie Muise, Key Account Specialist

Email: MMuise@maxxam.ca

Phone# (902)420-0203 Ext:253

=====

This report has been generated and distributed using a secure automated process.

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Job #: B841003  
Report Date: 2018/02/28

Stantec Consulting Ltd  
Client Project #: 121415543  
Site Location: BIO  
Sampler Initials: HN

### ELEMENTS BY ATOMIC SPECTROSCOPY (PAINT)

Maxxam ID		GDF841	GDF842	GDF843	GDF844	GDF845	GDF846	GDF847		
Sampling Date		2018/02/20	2018/02/20	2018/02/20	2018/02/20	2018/02/20	2018/02/21	2018/02/21		
	<b>UNITS</b>	<b>PS001</b>	<b>PS002</b>	<b>PS003</b>	<b>PS004</b>	<b>PS005</b>	<b>PS006</b>	<b>PS007</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Metals</b>										
Acid Extractable Lead (Pb)	mg/kg	140	350	35	8.9	<5.0	<5.0	<5.0	5.0	5416306
RDL = Reportable Detection Limit										
QC Batch = Quality Control Batch										

Maxxam ID		GDF848	GDF849	GDF850		
Sampling Date		2018/02/21	2018/02/21	2018/02/21		
	<b>UNITS</b>	<b>PS008</b>	<b>PS009</b>	<b>PS010</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Metals</b>						
Acid Extractable Lead (Pb)	mg/kg	<5.0	54	370	5.0	5416306
RDL = Reportable Detection Limit						
QC Batch = Quality Control Batch						

### GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	17.0°C
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**Results relate only to the items tested.**

## QUALITY ASSURANCE REPORT

Stantec Consulting Ltd  
Client Project #: 121415543  
Site Location: BIO  
Sampler Initials: HN

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5416306	Acid Extractable Lead (Pb)	2018/02/27	103	75 - 125	97	75 - 125	<5.0	mg/kg	NC	35

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

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

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

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

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference  $\leq 2 \times \text{RDL}$ ).