SECTION 2.0 EXECUTIVE SUMMARY

Hazardous materials identified at the dwelling during the March 2013 HBMS and the current demolition HMBA are summarized in Table E-2.

Table E-2: Hazardous Material Description

Hazardous Material	Regulatory Guidelines	Location	Quantity (Approx.)	Disposal
Asbestos-Containing Drywall Joint Compound	NL Asbestos Abatement Regulations (Reg. 111/98)	Interior Walls and Ceilings (Main Level)	300 m^2	Asbestos-containing materials cannot be disposed of at a Construction & Demolition Site; however, these materials can be disposed of at a Regional Solid Waste Landfill, provided permission is obtained from the facility.
Asbestos-Containing Asphalt Shingles		Roof	100 m^2	
Asbestos-Containing Tile Particle Board		Living Room/Kitchen and Washroom	36 m^2	
Asbestos-Containing Cement Board		Former Stove Pipe Opening to Chimney in Living Room/ Kitchen Note: Cement Board Material May Be Concealed Inside Wall Cavity Around Chimney	<1 m^2	
Leachable Lead-Based White Paint on Wooden Siding	Federal Hazardous Products Act (R.S.1985, c. H-3); NL Department of Environment 2003 Guidance Document for Leachable Toxic Waste and Disposal (GD-PPD-26.1); Federal Transportation of Dangerous Goods Act (1992, c. 34)	Site Building Exterior	120 m^2	These materials (painted wooden siding) are considered hazardous wastes and must be disposed according to NL policy and the Solid Waste Management Authority by an approved hazardous waste disposal company and transported under the federal Transportation of Dangerous Goods (TDG) Act.
Lead and Mercury-Based Paint		All Other Paint Finishes (Sampled for Lead and Mercury in Paint)	-	All painted materials that were sampled and analyzed for lead and mercury, with the exception of the painted wooden siding on the Site building exterior, may be disposed of at a Regional Solid Waste Landfill, provided permission is obtained from the facility.
Mould	Mould Guidelines for the Canadian Construction Industry, Canadian Construction Industry, 2004;	Site Building Interior	Large Amount of Suspected Mould (>10 m^2)	All mould impacted materials may be disposed of at a Regional Solid Waste Landfill, provided permission is obtained from the facility.

Hazardous Material	Regulatory Guidelines	Location	Quantity (Approx.)	Disposal
Mould (Continued)	Mould Abatement Guidelines, Environmental Abatement Council of Ontario (EACO), 2010.			
Potential Lead-Containing Plumbing Solder and Older Pipe Materials	Federal Hazardous Products Act (R.S.1985, c. H-3)	Site Building Interior	-	These materials can be disposed of at a metal recycling facility, provided permission is obtained from the facility.
Potential Ozone Depleting Substances and Halocarbons	Federal Hydrocarbon Regulations (SOR/2003-289)	Basement	Refrigerants in Two (2) Freezers	Equipment containing ozone depleting substances should be received by a contractor or facility that has the proper approvals to remove, handle and dispose of ozone depleting substances. The remaining materials can be disposed of at a metal recycling facility, provided permission is obtained from the facility.
Petroleum Hydrocarbons	Federal Hazardous Products Act (R.S.1985, c. H-3); Federal Transportation of Dangerous Goods Act (1992, c. 34)	Basement	Unknown (<909 L)	These materials are considered hazardous wastes and must be disposed according to NL policy and the Solid Waste Management Authority by an approved hazardous waste disposal company and transported under the federal TDG Act.
Silica Dust	American Conference of Governmental Industrial Hygienists (ACGIH), Threshold Limit Values (TLVs) and Biological Exposure Indices (BEIs), 2010	Concrete, Brick and Mortar Building Materials	-	All concrete, brick and mortar can be disposed of at a Construction & Demolition Site or at a Regional Solid Waste Disposal Facility.
Ash	Federal Hazardous Products Act (R.S.1985, c. H-3); NL Department of Environment 2003 Guidance Document for Leachable Toxic Waste and Disposal (GD-PPD-26.1)	Chimney	Small Amount (<0.05 m^3)	Small amounts of ash may be disposed of at a Regional Solid Waste Landfill, provided permission is obtained from the facility.
Bird and Animal Feces	Federal Hazardous Products Act (R.S.1985, c. H-3)	Site Building Interior	-	These materials may be disposed of at a Regional Solid Waste Landfill, provided permission is obtained from the facility.
Radioactive Materials	Federal Transportation of Dangerous Goods Act (1992, c. 34)	Living Room/Kitchen	Smoke Detector (1)	These low level radioactive materials must be transported, as per federal TDG regulations, to a licensed disposal facility.

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APPENDICES

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2.0 DWELLING

The dwelling (or lightkeeper's residence) is located on the main site area of the Bacalhao Island Lightstation (refer to Figures 1.1 and 1.2, Appendix A1 and Photos 1 and 2, Appendix B1). Based on the Directory of Federal Real Property, the lightkeeper's residence (Building No. 001407) on Bacalhao Island was constructed in 1975.

2.1 BUILDING DESCRIPTION

A description of the Site building is outlined in Table 2-1. Photographs of the dwelling are provided in Appendix B2.

Table 2-1: Site Building Description

Building Name	Dwelling	Photo (Appendix B2)
Number of Stories	One	Photo 1
Basement	Yes	Photos 14 to 17
Attic	Yes	Photo 19
Type of Structure	Wooden Frame	Photo 19
Type of Foundation	Painted Concrete	Photo 1
Exterior	Painted Wooden Siding	Photos 1, 2 and 3
Window/Door Frames	Painted Wooden Frames	Photos 1 and 2
Exterior Doors	Metal	Photo 13
Roofing Materials	Asphalt Shingles	Photos 2 and 20
Interior Walls Finishes (Main Level)	Painted Drywall	Photos 4 to 12
	Tile Particle Board	Photos 5, 7 and 8
	Painted Wooden Baseboards	Photos 8, 10 and 11
Ceiling Finishes (Main Level)	Painted Drywall	Photos 4 to 9
Floor Finishes (Main Level)	Vinyl Sheet Flooring	Photos 5, 8, 10 and 11
Interior Doors (Main Level)	Wooden	Photo 4
Interior Walls (Basement)	Painted Concrete	Photos 14, 16 and 17
Floors (Basement)	Painted Concrete	Photos 14, 16 and 17
Water Cistern/Confined Area (Basement)	Concrete	Photo 15
Interior Lighting	Incandescent	Photos 4 and 8
Exterior Lighting	Incandescent	Photo 20
Heating	Forced Air Oil-Fired Furnace	Photo 16
Chimney	Brick	Photos 2, 16 and 20
Aboveground Storage Tank (Basement)	909 L Furnace Oil	Photo 17
Plumbing	Cast Iron and Copper Piping	Photo 18

2.2 FINDINGS

The findings documented in this section are based on observations made by AMEC personnel at the time of the Site visits and laboratory analyses of samples collected from the dwelling.

2.2.1 Asbestos-Containing Materials (ACMs)

There are over 3,000 ACMs that are commercially available, which can be divided into two broad categories: friable and non-friable. Friable ACMs are defined as materials that can be crumbled, pulverized and reduced to powder when dry using hand pressure. Typical friable materials include acoustical or decorative spray applications, fireproofing and thermal insulation. Non-friable ACMs are hard or manufactured products such as floor tiles, fire blankets, pre-

formed manufactured cementitious insulation and wallboards, pipes, and siding, wherein the asbestos fibres are bound to the substrate.

Note that although a product may be considered non-friable when new, the product may release fine dust when disturbed (e.g., deterioration, removal, renovations) and the free dust is considered friable.

ACMs were discontinued from use in Canada in the late 1970s/early 1980s, although non-friable asbestos is still found in many more recent buildings.

A total of twenty-one (21) building material samples (BAC-AS-01 to BAC-AS-10, BAC-AS-01A, BAC-AS-03A, BAC-AS-07A, BAC-AS-28 to BAC-AS-35) plus one (1) field duplicate sample (BAC-AS-DUP-1; duplicate of BAC-AS-04) were collected from the dwelling and analyzed for asbestos content (refer to Photos 21 to 41, Appendix B2). Sample descriptions and analytical results are summarized in Table C2-1, Appendix C2. Sample locations and analytical results are graphically illustrated in Figure 2.1, Appendix A2.

2.2.1.1 Friable Materials

2.2.1.1.1 Spray-Applied Fireproofing, Insulation and Texture Finishes

No spray-applied fireproofing, insulation or texture finishes were observed within the dwelling during the Site visits; therefore, no samples were collected for analysis during the March 2013 HBMS and the current demolition HMBA.

2.2.1.2 Non-Friable and Potentially Friable Materials

2.2.1.2.1 Ceiling Tile

There were no ceiling tiles observed in the dwelling during the Site visits; therefore, no samples of ceiling tile were collected for analysis during the March 2013 HBMS and the current demolition HMBA.

2.2.1.2.2 Drywall Joint Compound

Painted drywall was observed on the walls and ceilings in the dwelling. One (1) sample of drywall joint compound (BAC-AS-10) was collected from an exterior wall in dwelling room 3 and analyzed for asbestos content (refer to Photo 30, Appendix B2). Chrysotile asbestos (2%) was detected in sample BAC-AS-10 at a level above the applicable *NL Asbestos Abatement Regulations (111/98)* (i.e., >1%) and therefore this material (i.e., drywall joint compound collected from the dwelling room 3) is considered to be an ACM.

It should be noted that it is common for the asbestos content in troweled on materials, such as drywall joint compound within older buildings, to vary in concentration depending on the methods used to mix and place these materials. Due to this variability in asbestos content, the drywall joint compound throughout the dwelling should be treated as an ACM.

The condition of the drywall and associated joint compound visible throughout the dwelling (covering an area of approximately 300 m^2) varied from good to poor condition.

2.2.1.2.3 Vinyl Flooring Products and Mastics

Two samples of vinyl sheet flooring (BAC-AS-07 and BAC-AS-07A) were collected from the dwelling porch and room 5 and analyzed for asbestos content (refer to Photos 27 and 33, Appendix B2). Asbestos was not detected in the vinyl sheet flooring samples collected and submitted for analysis.

2.2.1.2.4 Baseboard, Carpet and Stair Tread Adhesives/Mastics

There were no baseboard, carpet or stair tread adhesives/mastics observed in the dwelling during the Site visits; therefore, no samples of these types of adhesives/mastics were collected for analysis during the March 2013 HBMS and the current demolition HMBA.

2.2.1.2.5 Roofing Products

One (1) sample of asphalt shingle roofing material (BAC-AS-04) plus one field duplicate sample (BAC-AS-DUP-1, field duplicate of BAC-AS-04) were collected from the roof of the dwelling and analyzed for asbestos content (refer to Photo 24, Appendix B2). Chrysotile asbestos (ranging from 5.0% to 6.3%) was detected in samples BAC-AS-04/BAC-AS-DUP-1 (i.e. red/black asphalt shingles collected from the dwelling) at levels above the applicable *NL Asbestos Abatement Regulations (111/98)* (i.e., >1%). Therefore the roofing materials on the dwelling are considered to be ACMs.

The asphalt shingles visible on the roof of the dwelling (covering an area of approximately 100 m^2) as observed from the ground surface and the helicopter appeared to be generally intact and in good condition.

2.2.1.2.6 Thermal System Insulation

Two samples of pink fibreglass insulation with black paper backing (BAC-AS-09 and BAC-AS-33) were collected from dwelling rooms 1 and 3 and analyzed for asbestos content (refer to Photos 29 and 39, Appendix B2). One sample of yellow fibreglass insulation with black paper backing (BAC-AS-32) was also collected from dwelling room 2 and analyzed for asbestos content (refer to Photo 38, Appendix B2). Chrysotile asbestos (0.42%) was detected in sample BAC-AS-09 (i.e. pink fibreglass insulation with black paper backing collected from dwelling room 3) at a level below the applicable *NL Asbestos Abatement Regulations (111/98)* (i.e., >1%). Asbestos was not detected in the other pink and yellow fibreglass insulation with black paper backing samples collected and submitted for analysis.

2.2.1.2.7 Weather Stripping and Caulking

No samples of weather stripping were collected from the dwelling during the March 2013 HBMS or the current demolition HMBA.

Six (6) samples of caulking (BAC-AS-01, BAC-AS-02, BAC-AS-03, BAC-AS-05, BAC-AS-01A and BAC-AS-03A) were collected from the interior and exterior of the dwelling and analyzed for asbestos content (refer to Photos 21, 22, 23, 25, 31 and 32, Appendix B2). Chrysotile asbestos (<0.25%) was detected in samples BAC-AS-01 and BAC-AS-03 at levels below the applicable *NL Asbestos Abatement Regulations (111/98)* (i.e., >1%). Asbestos was not detected in any of the other caulking samples collected and submitted for analysis.

2.2.1.2.8 Mortar, Grout and Other Cementitious Materials

One sample of brick mortar (BAC-AS-06) was collected from the chimney in the dwelling basement and analyzed for asbestos content (refer to Photo 26, Appendix B2). Asbestos was not detected in the mortar sample collected and submitted for analysis.

One (1) sample of grey grout (BAC-AS-35) was collected from the former stove pipe opening to the brick chimney in the dwelling living room/kitchen and analyzed for asbestos content (refer to Photo 41, Appendix B2). Asbestos was not detected in the grout sample collected and submitted for analysis.

One sample of grey cement board (BAC-AS-34) was collected from the former stove pipe opening to the brick chimney in the dwelling living room/kitchen and analyzed for asbestos content (refer to Photo 40, Appendix B2). Chrysotile asbestos (10%) was detected in sample BAC-AS-34 at a level above the applicable *NL Asbestos Abatement Regulations (111/98)* (i.e., >1%) and therefore this material (i.e., grey cement board collected from the former stove pipe opening) is considered to be an ACM. The cement board (i.e. transite) observed on the former stove pipe opening (covering an area of approximately <1 m^2) appeared to be generally intact and in fair condition. It is important to note that additional cement board material may be concealed inside the wall cavity around the chimney.

2.2.1.2.9 Other Potential ACMs

One (1) sample of tile particle board (BAC-AS-08) was collected from a wall in the dwelling living room/kitchen and analyzed for asbestos content (refer to Photo 28, Appendix B2). Chrysotile asbestos (1.1%) was detected in sample BAC-AS-08 at a level above the applicable *NL Asbestos Abatement Regulations (111/98)* (i.e., >1%) and therefore this material (i.e., tile particle board collected from the dwelling living room/kitchen) is considered to be an ACM.

The painted tile particle board was observed in the living room/kitchen (covering an area of approximately 24 m^2) and washroom (covering an area of approximately 12 m^2) of the dwelling and was generally intact and in good condition.

Two (2) samples of electrical cable (BAC-AS-28 and BAC-AS-29) were collected from the exterior of the dwelling and analyzed for asbestos content (refer to Photos 34 and 35, Appendix B2). Asbestos was not detected in the electrical cable samples collected and submitted for analysis.

Two (2) samples of electrical wiring (BAC-AS-30 and BAC-AS-31) were collected from the dwelling basement and analyzed for asbestos content (refer to Photos 36 and 37, Appendix B2). Asbestos was not detected in the electrical wiring samples collected and submitted for analysis.

Other potential ACMs were observed and were not sampled due to the nature of the materials and/or hazards associated with sampling these materials. These materials included, but are not limited to, electrical and mechanical components and insulators such as wiring and gaskets inside electrical panels, electronic and/or mechanical equipment. Other possible hidden and inaccessible ACMs have the potential to be present at the Site but were not identified during the Site visits. These possible ACMs could include interior components of the chimney and furnace, packing associated with cast iron pipe joints, fire rated structures or building materials and underground infrastructure and piping (refer to Photos 16 and 18, Appendix B2).

2.2.2 Paint Finishes

The condition of the paint visible throughout the dwelling varied from good to poor condition. Peeling and flaking paint was observed on the exterior siding and foundation walls and on the basement floor of the dwelling (refer to Photos 1, 16 and 17, Appendix B2).

A total of fifteen (15) samples (BAC-PS-01 to BAC-PS-09, BAC-PS-26 to BAC-PS-28, BAC-PS-02A, BAC-PS-03A and BAC-PS-04A) plus one (1) field duplicate (BAC-PS-DUP-1; duplicate of BAC-PS-03) were collected from painted surfaces of the dwelling and analyzed for lead and mercury content (refer to Photos 42 to 56, Appendix B2). Two (2) paint samples (BAC-PS-02 and BAC-PS-03A) were also analyzed for PCB content (refer to Photos 43 and 55, Appendix B2). Sample descriptions and analytical results are summarized in Tables C2-2 to C2-4, Appendix C2. Sample locations and analytical results are graphically illustrated in Figure 2.1, Appendix A2.

Since, based on the results of the March 2013 HBMS, the concentrations of lead detected in two (2) paint samples (BAC-PS-02 and BAC-PS-04) exceeded the former Federal HPA criterion of 5,000 mg/kg, paint sample BAC-PS-02 was also tested for lead leachate using the TCLP to determine whether or not the paint would be considered hazardous waste upon removal from the Site. Paint sample BAC-PS-04 was not tested for lead leachate at that time due to low sample volume remaining after initial analysis. During the current demolition HMBA, two (2) supplemental paint samples (BAC-PS-02A and BAC-PS-04A), including the substrates, were collected from the same painted surfaces of the dwelling that originally exceeded the former Federal HPA criterion of 5,000 mg/kg (refer to Photos 54 and 56, Appendix B2). These supplemental paint samples were also tested for lead leachate using the TCLP to determine whether or not the paint would be considered hazardous waste upon removal from the Site. The laboratory results for lead leachate in paint are presented in Table C2-5, Appendix C2.

The concentration of mercury detected in one (1) paint sample (BAC-PS-02) was equal to the CCME CSQG of 24 mg/kg for mercury in soil at a commercial site. This paint sample was also tested for mercury leachate using the TCLP to determine whether or not the paint would be considered hazardous waste upon removal from the Site. The laboratory results for mercury leachate in paint are presented in Table C2-6, Appendix C2.

2.2.2.1 Lead in Paint

The concentrations of lead in the paint samples ranged from 280 mg/kg to 21,000 mg/kg (refer to Table C2-2, Appendix C2). Ten (10) of the 12 paint samples (BAC-PS-01, BAC-PS-03, BAC-PS-05 to BAC-PS-09 and BAC-PS-26 to BAC-PS-28), plus one (1) field duplicate sample (BAC-PS-DUP-1; duplicate of BAC-PS-03), contained lead at concentrations above the Federal HPA criterion of 90 mg/kg but below the former Federal HPA criterion of 5,000 mg/kg (refer to Photos 42, 44, 46 to 53, Appendix B2). Two (2) paint samples (BAC-PS-02 and BAC-PS-04) contained lead at concentrations above the former Federal HPA criterion of 5,000 mg/kg (refer to Photos 43 and 45, Appendix B2).

2.2.2.2 Leachable Lead in Paint

The concentration of leachable lead in paint sample BAC-PS-04A (0.045 mg/L) was below the Schedule II leachate criterion for lead (5.00 mg/L) provided in the provincial guidance document for leachable toxic waste (GD-PPD-26.1) (refer to Table C2-5, Appendix C2). Supplemental paint (green paint) and wood substrate sample BAC-PS-04A was collected from wood framing in the basement of the dwelling. Since the concentration of leachable lead in this paint is at a level that is not considered to be hazardous, this paint, if removed from the Site, can be disposed of at an approved landfill facility, pending regulatory and landfill operator approval.

The concentrations of leachable lead in paint sample BAC-PS-02 (52 mg/L) and supplemental paint and wood substrate sample BAC-PS-02A (17 mg/L) were above the Schedule II leachate criterion for lead (5.00 mg/L) provided in the provincial guidance document for leachable toxic waste (GD-PPD-26.1) (refer to Table C2-5, Appendix C2). Paint sample BAC-PS-02 (multiple layers of white paint) and supplemental paint and wood substrate sample BAC-PS-02A were collected from siding on the exterior of the dwelling. The paint on the exterior wood siding (covering an area of approximately 120 m^2) was generally in poor condition and flaking. Since the concentrations of leachable lead in the paint sample and the paint and wood substrate sample are at levels considered to be hazardous, these materials (painted wooden siding), if removed from the Site, must be disposed of at a hazardous waste treatment facility.

2.2.2.3 Mercury in Paint

The concentrations of mercury in the paint samples ranged from non-detect (<1.0 mg/kg) to 24 mg/kg (refer to Table C2-3, Appendix C2). One (1) paint sample (BAC-PS-08) contained mercury at a concentration equal to the Federal HPA criterion of 10 mg/kg and one (1) paint sample (BAC-PS-02) contained mercury at a concentration equal to the CCME CSQG of 24 mg/kg for mercury in soil at a commercial site (refer to Photos 43 and 49, Appendix B2). The

other 10 paint samples analyzed were either non-detect for mercury (i.e. <1.0 mg/kg) or contained mercury at concentrations below the applicable Federal HPA criterion (i.e. 10 mg/kg).

2.2.2.4 Leachable Mercury in Paint

The concentration of leachable mercury in paint sample BAC-PS-02 (0.0017 mg/L) was below the Schedule II leachate criterion for mercury (0.10 mg/L) provided in the provincial guidance document for leachable toxic waste (GD-PPD-26.1) (refer to Table C2-6, Appendix C2). The paint sample (multiple layers of white paint) was collected from siding on the exterior of the dwelling. The paint on the exterior wood siding was generally in poor condition and flaking. The concentration of leachable mercury in this paint is not at a level considered to be hazardous; however, this paint (including the wood substrate) was leachable for lead. Therefore, if removed from the Site, these materials (painted wooden siding) must be disposed of at a hazardous waste treatment facility.

2.2.2.5 PCBs in Paint

All of the paint samples analyzed for PCBs were non-detect (<5.0 mg/kg) and therefore did not exceed the CCME CSQG of 33 mg/kg for PCBs in soil at a commercial site or the criterion of 50 mg/kg for PCB solid provided in the provincial guidance document for leachable toxic waste (GD-PPD-26.1) (refer to Table C2-4, Appendix C2).

2.2.3 Urea Formaldehyde Foam Insulation (UFFI)

Visual indicators suggesting the potential presence of UFFI were not observed in the dwelling. The nature of the insulation in the walls and ceilings throughout the dwelling could not be confirmed at the time of the Site inspections. However, fibreglass insulation was observed in the exterior walls in dwelling rooms 1, 2 and 3 and in the attic (refer to Photos 19, 29, 38 and 39, Appendix B2). Since the dwelling was constructed in 1975, it is possible that UFFI may be present in some areas of the dwelling that were not investigated during the intrusive wall cavity inspections.

The CMHC state that “tests show that UFFI is not a source of over-exposure to formaldehyde after the initial curing and release of excess gas”. The general view based on studies concerning formaldehyde emissions is that as a product ages, the amount of formaldehyde off-gassed from the product decreases over time. The amount of formaldehyde released is reportedly dependant on temperature, humidity and whether or not the product is exposed to excessive moisture or water. According to the USEPA, increases in temperature, humidity and moisture conditions can cause increases in the amount of formaldehyde released from newer products that are considered to be sources of formaldehyde emissions. The USEPA report that “studies show that formaldehyde emissions from UFFI decline with time; therefore, homes in which UFFI was installed many years ago are unlikely to have high levels of formaldehyde now”.

2.2.4 Suspected Visible Mould Growth (SVG)

AMEC inspected the interior areas of the dwelling for visual or olfactory evidence of suspected mould. A malodour was noted upon entry into the main level of the dwelling. Peeling and flaking paint that can be a result of building materials compromised by moisture was observed on walls and ceilings of the dwelling (refer to Photo 47, Appendix B2). Areas of SVG and/or water damage were observed in several areas on the interior surfaces of the dwelling (refer to Photo 8, Appendix B2). One (1) sample (BAC-MD-01) was collected from the dwelling living room/kitchen (ceiling) and analyzed for mould growth (refer to Figure 2.1, Appendix A2 and Photo 57, Appendix B2). The laboratory results confirmed that abundant mould growth was present in the sample collected and submitted for analysis (refer to Table C2-7, Appendix C2). The types of mould identified in the sample were *Apergillus* and *Cladosporium*.

2.2.5 Mercury-Containing Thermostats

One (1) type of thermostat was identified inside the dwelling during the previous HBMS (refer to Photo 58, Appendix B2). Results of the thermostat inspection are summarized in Table 2-2.

Table 2-2: Thermostat Description

Description of Thermostat	Manufacturer	Location Observed	No. Observed	Thermostat Inspected (Yes/No)	Mercury Switch (Yes/No)
Beige rectangular casing, wall-mounted	White-Rodgers	Dwelling Living Room	1	Yes	No

2.2.6 PCB-Containing Light Ballasts

There were no fluorescent light fixtures observed in the dwelling during the Site inspections. Therefore, no fluorescent light ballasts were inspected for the presence or absence of PCB-containing dielectric fluid.

2.2.7 Potential Sources of ODSs and Halocarbons

Potential sources of ODSs identified during the previous HBMS included two (2) freezers in the dwelling basement (refer to Photo 59, Appendix B2). The types of refrigerant(s) were not confirmed for the freezers. The freezers appeared to be in poor condition (i.e. rusted, flaking paint).

2.2.8 Petroleum Storage Tanks

One (1) petroleum aboveground storage tank (AST) was identified inside the dwelling basement during the March 2013 HBMS and the current demolition HMBA (refer to Photo 17, Appendix B2). The AST and the results of the inspection are summarized in Table 2-3.

Table 2-3: Storage Tank Description

Name	Location	Storage Capacity	Type	Date Installed	Date on ULC Placard	Comments
AST 1: Furnace Oil Storage Tank (Red)	Dwelling Basement	909 L	Steel, horizontal.	Unknown.	Not visible.	Tank appears to be in poor condition (rust visible).

Two copper pipelines were identified inside a confined area adjacent to the water cistern and the location of the current AST inside the dwelling basement (refer to Photo 15, Appendix B2). This area may have contained a former AST or may have been part of the water cistern system.

2.2.9 Other Potentially Hazardous Building Materials or Substances

Other potentially hazardous building materials or substances identified during the March 2013 HBMS and the current demolition HMBA are presented in the following sections.

2.2.9.1 Mercury

Fluorescent light tubes and bulbs often contain limited quantities of mercury in a powder or vapour form; however, no light fluorescent light tubes or bulbs were observed within the dwelling during the March 2013 HBMS or the current demolition HMBA.

2.2.9.2 Lead

Lead is typically associated with plumbing solder and older pipe materials (e.g., cast iron pipe joints), as well as products such as radiation protective shielding and lead-acid batteries.

Samples of the drinking water in the dwelling were not collected by AMEC during the March 2013 HBMS or the current demolition HMBA and analyzed for the presence of lead. Since the dwelling was constructed in 1975, AMEC expects that lead solder is present in the plumbing (i.e. cast iron and copper piping) in the dwelling, as lead solder for use in potable water distribution pipes was not banned until the late 1980s. Based on information obtained from PWGSC, there is currently no drinking water available on-Site, as the water cistern located in the basement of the dwelling was previously used to store drinking water and is no longer in use. Any workers and visitors with access to the Site are expected to supply and use bottled water.

2.2.9.3 Silica

Silica is expected to be present in the concrete, brick and mortar building materials used to construct the dwelling. Precautions should be taken to prevent/reduce exposure to silica dust during any disturbance/demolition of silica-containing products.

2.2.9.4 Ash

Ash was observed inside the brick chimney in the dwelling basement. Solid wastes such as ash from chimneys or furnaces may contain heavy metals, polycyclic aromatic hydrocarbons (PAHs) and/or fuel oil components (i.e. benzene, toluene, ethylbenzene, xylene [BTEX] and total petroleum hydrocarbons [TPH]).

2.2.9.5 Bird and Animal Feces

Bird and/or animal droppings/feces were observed in several areas throughout the interior of the dwelling (refer to Photo 11, Appendix B2). Precautions should be taken to prevent/reduce exposure to potential microbiological contaminants (e.g. bacteria, viruses, etc.) often associated with bird or animal droppings/feces while working within the immediate area of the droppings/feces or during any disturbance/ demolition of building materials that may be impacted by the bird or animal droppings/feces.

2.2.9.6 Radioactive Materials

AMEC observed a smoke detector inside the living room/kitchen of the dwelling (refer to Photo 9, Appendix B2). The type of smoke detector observed commonly contains very small amounts of radioactive material (i.e. Americum 241). Smoke alarms that use radioactive material incorporated in an ionization chamber are called "ion chamber smoke alarms". The radioactive material emits alpha particles and low energy gamma rays. The alpha particles are absorbed within the alarm, while most of the gamma rays escape. The alpha particles collide with the air in the ionization chamber to produce charged particles called ions. A low-level electric voltage is applied to the chamber to collect these ions, causing a steady electric current to flow. Smoke or hot air entering the chamber changes the rate of ionization and, therefore the electric current level, which triggers an alarm. Domestic smoke alarms containing radioactive material are completely safe under all residential conditions[1].

2.3 CONCLUSIONS AND RECOMMENDATIONS

Based on observations made and information gathered during the March 2013 HBMS and the current demolition HMBA, the following conclusions and recommendations are made with respect to the potential and actual presence of hazardous building materials at the dwelling:

Asbestos-Containing Materials (ACMs)

- Results of the asbestos sampling and analytical program revealed that there are building materials containing greater than 1% asbestos by dry weight, which are considered to be ACMs. Potentially friable asbestos is present in the form of drywall joint compound. Non-friable asbestos is present in the form of asphalt shingles, tile particle board and cement board (i.e. transite) around the stove pipe opening to the chimney. It should be noted that the condition of the drywall and associated joint compound visible throughout the dwelling varied from good to poor condition; therefore, priority should be given to the removal of the

[1] Nuclear Facts: How is nuclear technology used in smoke detectors? Canadian Nuclear Association. 18 March 2005 < http://www.cna.ca/english/Nuclear_Facts/18-Nuclear%20Facts-smoke%20detectors.pdf>.

deteriorated joint compound inside these areas of the dwelling.

- Results of the asbestos sampling and analytical program also revealed that there are building materials containing less than 1% asbestos by dry weight. These materials include fibreglass insulation with black paper backing and caulking.
- Other potential ACMs were observed and were not sampled due to the nature of the materials and/or hazards associated with sampling these materials. These materials included, but are not limited to, electrical and mechanical components and insulators such as wiring and gaskets inside electrical panels, electronic and/or mechanical equipment.
- Other possible hidden and inaccessible ACMs have the potential to be present at the Site but were not identified during the Site visits. These possible ACMs could include interior components of the chimney and furnace, packing associated with cast iron pipe joints, fire rated structures or building materials and underground infrastructure and piping.
- If other potential ACMs that could not be sampled as part of these assessments due to access issues are encountered in the future, these materials should be treated as ACMs or samples should be collected and tested to verify asbestos content. This should be done as soon as these materials are encountered and before these materials are disturbed. This includes materials that are currently concealed by walls and ceiling systems.
- In accordance with the NL Asbestos Abatement Regulations (Reg. 111/98), which provide the legislative requirements for safe handling of ACMs in workplaces in the Province of NL, the following is recommended:
    - Safe work procedures shall be established;
    - All buildings constructed during the period when asbestos was readily used in construction must have a written assessment and management plan (where applicable) for potential ACMs; and,
    - Prior to general disturbance activity (e.g., demolition, renovation or removal), all ACMs must be safely removed from the dwelling and disposed of in accordance with appropriate environmental guidelines by an asbestos abatement contractor registered with the Department of Labour, Occupational Health and Safety Branch.
- Prior to demolition, ACMs in good condition should be inspected on an annual basis. ACMs in poor condition should be removed from the dwelling and transported off-site for proper disposal in accordance with the Asbestos Abatement Regulations (111/98).

Lead, Mercury and PCBs in Paint

- Results of the paint sampling and analytical program revealed lead and mercury-based paint finishes on the interior and exterior of the dwelling (i.e., the concentrations of lead and mercury in some paint finishes were above the applicable Federal HPA criteria of 90 mg/kg for lead and 10 mg/kg for mercury).
    - The concentrations of lead in the paint samples ranged from 280 mg/kg to 21,000 mg/kg and the concentrations of mercury in the paint samples ranged from non-detect (<1.0 mg/kg) to 24 mg/kg.
    - Two (2) paint samples contained lead at concentrations above the former Federal HPA criterion of 5,000 mg/kg; therefore, two (2) supplemental paint samples, including the wooden substrates, were collected from the same painted surfaces of

the dwelling that exceeded the former Federal HPA criterion. These supplemental paint samples were tested for lead leachate using the TCLP to determine whether or not the paint would be considered hazardous waste upon removal from the Site.

- One (1) paint sample contained mercury at a concentration equal to the CCME CSQG of 24 mg/kg for mercury in soil at a commercial site. This paint sample was also tested for mercury leachate using the TCLP to determine whether or not the paint would be considered hazardous waste upon removal from the Site.

- Paint finishes with a lead concentration of less than 5,000 mg/kg or a mercury concentration of less than 24 mg/kg are not likely to be leachable and therefore may be disposed of at an approved landfill facility, pending landfill and regulatory approval.
  - Based on the results from the paint samples analyzed during the March 2013 HBMS and the current demolition HMBA, 11 of the 12 paint finishes that were sampled for lead and mercury in paint are not considered hazardous waste and can be disposed of at an approved landfill facility, pending regulatory and landfill operator approval.
  - The concentrations of leachable lead in one (1) paint sample and one (1) supplemental paint and wood substrate sample collected from siding on the exterior of the dwelling were above the Schedule II leachate criterion for lead (5.00 mg/L) provided in the provincial guidance document for leachable toxic waste (GD-PPD-26.1). Since the concentrations of leachable lead in the paint sample and the paint and wood substrate sample are at levels considered to be hazardous, these materials (painted wooden siding), if removed from the Site, must be disposed of at a hazardous waste treatment facility.
  - The white paint exceeding the lead leachate criterion is deteriorated (i.e. peeling and flaking); therefore, in order to help prevent impacts to the environment, priority should be given to the removal of this deteriorated paint.
- If potential lead or mercury containing paint finishes that were not sampled during the March 2013 HBMS and the current demolition HMBA are encountered in the future, samples should be obtained and tested to verify lead and mercury content. This should be done as soon as the paint is encountered and before it is disturbed. This includes materials that are currently concealed by walls and ceiling systems.
- All of the paint samples analyzed for PCBs were non-detect (<5.0 mg/kg) and therefore did not exceed the CCME CSQG of 33 mg/kg for PCBs in soil at a commercial site or the criterion of 50 mg/kg for PCB solid provided in the provincial guidance document for leachable toxic waste (GD-PPD-26.1).
- There are potential adverse human health impacts associated with disturbing (e.g., scraping) lead and mercury-based paint finishes. As a precautionary measure, AMEC recommends handling lead and mercury-based paint finishes during demolition, as follows:
  - In areas of minor peeling or flaking the paint should be removed using wet scraping techniques.
  - In areas of extensive peeling and flaking the paint should be removed and more extensive particulate control measures may be required.
  - In areas where lead or mercury-based paint finishes are present and in poor condition, an experienced contractor should be utilized for decommissioning/ demolition activities.

- Steps should be taken to ensure that workers and anyone present in and around areas being dismantled or demolished are protected. The contractor should also ensure that dust generation and migration is minimized.

Urea Formaldehyde Foam Insulation (UFFI)

- Visual indicators suggesting the potential presence of UFFI were not observed in the dwelling. The nature of the insulation in the walls and ceilings throughout the dwelling could not be confirmed at the time of the Site inspections. However, fibreglass insulation was observed in the exterior walls in dwelling rooms 1, 2 and 3 and in the attic. Since the dwelling was constructed in 1975, it is possible that UFFI may be present in some areas of the dwelling that were not investigated during the intrusive wall cavity inspections.
- Based on a visual intrusive inspection, there was no evidence that UFFI is present in this structure. However, the inferred age of the dwelling suggests that UFFI could be present in some areas of the dwelling that were not investigated during the intrusive wall cavity inspections. Based on the sources of information reviewed by AMEC to assess whether UFFI is considered to be a potential environmental concern at the Site (refer to Sections 1.5.3 and 2.2.3), it can be inferred that any UFFI present within the dwelling is unlikely to affect the indoor air quality due to the amount of time that has passed since the insulation was likely installed (i.e. prior to 1980) along with the likelihood that formaldehyde has off-gassed over this period of time. It should be noted that, the presence and concentration of formaldehyde cannot be determined or quantified without conducting Site-specific testing for formaldehyde.

Mould

- AMEC inspected the interior areas of the dwelling for visual or olfactory evidence of suspected mould. A malodour was noted upon entry into the main level of the dwelling. Peeling and flaking paint that can be a result of building materials compromised by moisture was observed on walls and ceilings of the dwelling. Areas of SVG and/or water damage were observed in several areas on the interior surfaces of the dwelling. One (1) sample was collected from the dwelling living room (ceiling) and analyzed for mould growth. Results of the mould sampling program revealed that abundant mould growth was present in the sample collected from the interior of the dwelling. Existing conditions in the dwelling (*e.g.,* roof and window leaks, improper ventilation, inadequate building heating, prolonged periods of increased moisture, areas open to the environment) may potentially contribute to or enhance mould growth inside the dwelling.
- Workers should don proper PPE to prevent/reduce exposure to mould while working within the dwelling or during any disturbance/demolition of building materials that may be impacted by mould growth.
- Should the structure not be demolished, prior to occupancy and based on the estimated areas of mould impacted materials observed in the dwelling, the mould impacted materials should be remediated using Level 3 abatement procedures (i.e. more than 10 m^2), as outlined in the 2010 Environmental Abatement Council of Ontario (EACO) Mould Abatement Guidelines.

- It should be noted that asbestos may be present in drywall joint compound in areas where mould is present on drywall.

Lead and Mercury-Containing Materials/Equipment

- Samples of the drinking water at the dwelling were not collected or analyzed during the March 2013 HBMS or the current demolition HMBA for the presence of lead. The dwelling was constructed in 1975; therefore, lead may be present in plumbing (i.e. cast iron and copper piping) in the dwelling, since the lead content in solders and fluxes was not limited to 0.2% in potable water systems until 1990 (*National Plumbing Code of Canada*). Based on information obtained from PWGSC, there is currently no drinking water available on-Site, as the water cistern located in the basement of the dwelling was previously used to store drinking water and is no longer in use. Any workers and visitors with access to the Site are expected to supply and use bottled water.
- The disturbance, control or disposal of lead-containing material/equipment (e.g., solder on copper or cast iron piping, etc.) should be carried out in accordance with applicable criteria/regulations (refer to Section 1.4). The presence/absence of lead in these materials should be confirmed through a contractor or consultant prior to disturbance or disposal of these materials. Typically these materials are sent to a metal recycling facility and not a landfill.

Potential Sources of ODSs and Halocarbons

- Potential sources of ODSs identified during the previous HBMS included two (2) freezers in the dwelling basement. The types of refrigerant(s) were not confirmed for the freezers at the time of this assessment.
- The use, storage, operation, maintenance, decommissioning, and disposal of ODS containing equipment in general is regulated at both a Provincial and Federal level and must comply with the most recent NL Halocarbon Regulations and the Federal Halocarbon Regulations. The status of the potential ODS containing equipment should be confirmed through a contractor or consultant. Equipment containing ozone depleting substances should be received by a contractor or facility that has the proper approvals to remove, handle and dispose of ozone depleting substances. Typically household refrigeration equipment, such as freezers, is sent to a metal recycling facility and not a landfill.

Petroleum Storage Tanks

- One (1) steel, horizontal, furnace oil AST (909 L) was observed inside the basement of the dwelling during the March 2013 HBMS and the current demolition HMBA.
- The requirements for regulatory compliance of the AST located inside the dwelling have not been determined by this assessment. The tank appeared to be in poor condition (i.e. visible rust); however, the condition and status of the AST can only be confirmed through test methods, such as magnetic testing, pressure testing or visual inspection.
- If the petroleum storage tank is no longer in use or connected to a heating appliance, it should be decommissioned in accordance with applicable regulations (refer to Section 1.4).

Silica Dust

- Silica is expected to be present in concrete, brick and mortar building materials used to construct the dwelling. Precautions should be taken to prevent/reduce exposure to silica dust during any disturbance/demolition of silica-containing products, such as wetting the surface of the materials to prevent dust emissions, donning respiratory protection, and cleaning tools and clothing prior to exiting the work area.

Ash

- Ash was observed inside the brick chimney in the dwelling basement. Solid wastes such as ash from chimneys or furnaces may contain heavy metals, PAHs and/or fuel oil components.
- According to the Leachable Toxic Waste, Testing and Disposal guidance document, regulatory approval from the NL Department of Environment and Conservation (ENVC) for landfill disposal of solid wastes is dependent upon the following conditions: 1) results of sample analysis by a Canadian Association for Laboratory Accreditation Inc. (CALA) certified laboratory either meet the CCME CSQG for industrial land use; or 2) results of sample analysis by a CALA certified laboratory pass the TCLP test for leachability for the parameters listed in Schedule II Leachate Test. Consideration should be given to the proper testing and disposal of ash at the Site; however, small quantities of chimney ash may be disposed of at an approved landfill facility, pending landfill and regulatory approval
- Workers handling the ash should don proper PPE to prevent/reduce exposure to potential contaminants (i.e. heavy metals, PAHs and/or fuel oil components) in the ash.

Bird and Animal Feces

- Bird and/or animal droppings/feces were observed in several areas throughout the interior of the dwelling. Workers should don proper PPE to prevent/reduce exposure to potential microbiological contaminants (e.g. bacteria, viruses, etc.) often associated with bird or animal droppings/feces while working within the immediate area of the droppings/feces or during any disturbance/demolition of building materials that may be impacted by the bird or animal droppings/feces.

Radioactive Materials

- AMEC observed a smoke detector inside the living room/kitchen of the dwelling. The type of smoke detector observed commonly contains very small amounts of radioactive material (i.e. Americum 241).
- The smoke detector should be removed intact, stored in a properly labeled container and transported, as per TDG regulations, to a licensed disposal facility.

Hazardous materials identified at the dwelling during the March 2013 HBMS and the current demolition HMBA are summarized in Table 2-4.

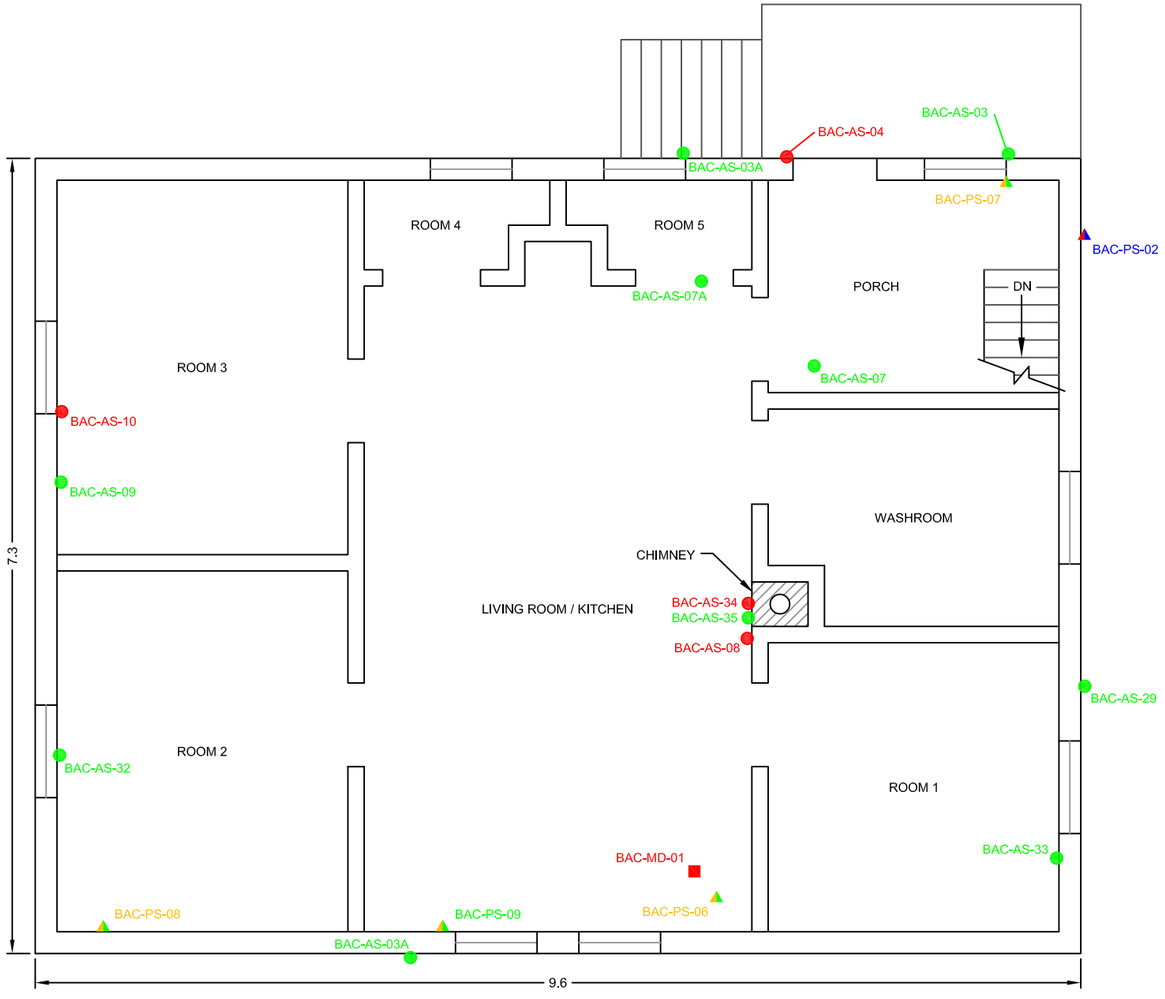
Table 2-4: Hazardous Material Description

Hazardous Material	Regulatory Guidelines	Location	Quantity (Approx.)	Disposal
Asbestos-Containing Drywall Joint Compound	NL Asbestos Abatement Regulations (Reg. 111/98)	Interior Walls and Ceilings (Main Level)	300 m^2	Asbestos-containing materials cannot be disposed of at a Construction & Demolition Site; however, these materials can be disposed of at a Regional Solid Waste Landfill, provided permission is obtained from the facility.
Asbestos-Containing Asphalt Shingles		Roof	100 m^2	
Asbestos-Containing Tile Particle Board		Living Room/Kitchen and Washroom	36 m^2	
Asbestos-Containing Cement Board		Former Stove Pipe Opening to Chimney in Living Room/ Kitchen <u>Note:</u> Cement Board Material May Be Concealed Inside Wall Cavity Around Chimney	<1 m^2	
Leachable Lead-Based White Paint on Wooden Siding	Federal Hazardous Products Act (R.S.1985, c. H-3); NL Department of Environment 2003 Guidance Document for Leachable Toxic Waste and Disposal (GD-PPD-26.1); Federal Transportation of Dangerous Goods Act (1992, c. 34)	Site Building Exterior	120 m^2	These materials (painted wooden siding) are considered hazardous wastes and must be disposed according to NL policy and the Solid Waste Management Authority by an approved hazardous waste disposal company and transported under the federal Transportation of <u>Dangerous Goods (TDG) Act</u>.
Lead and Mercury-Based Paint		All Other Paint Finishes (Sampled for Lead and Mercury in Paint)	-	All painted materials that were sampled and analyzed for lead and mercury, with the exception of the painted wooden siding on the Site building exterior, may be disposed of at a Regional Solid Waste Landfill, provided permission is obtained from the facility.
Mould	Mould Guidelines for the Canadian Construction Industry, Canadian Construction Industry, 2004; Mould Abatement Guidelines, Environmental Abatement Council of Ontario (EACO), 2010	Site Building Interior	Large Amount of Suspected Mould (>10 m^2)	All mould impacted materials may be disposed of at a Regional Solid Waste Landfill, provided permission is obtained from the facility.

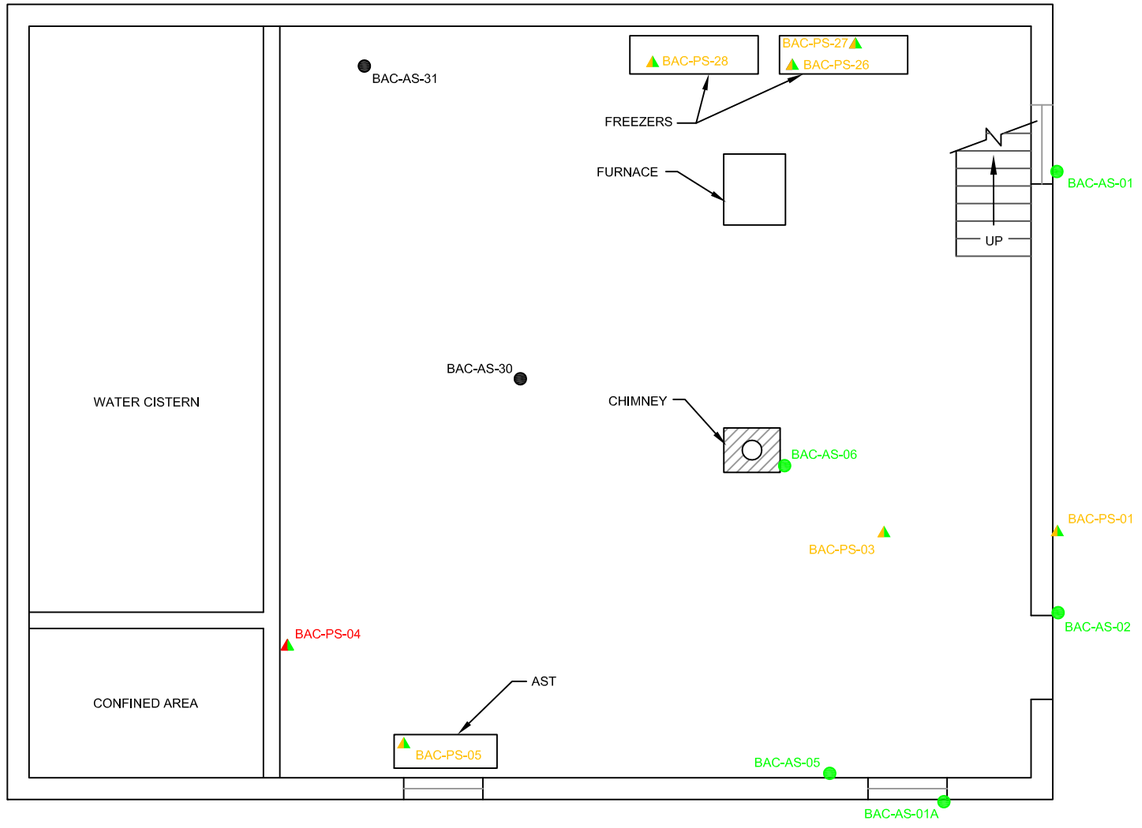
Hazardous Material	Regulatory Guidelines	Location	Quantity (Approx.)	Disposal
Potential Lead-Containing Plumbing Solder and Older Pipe Materials	Federal Hazardous Products Act (R.S.1985, c. H-3)	Site Building Interior	-	These materials can be disposed of at a metal recycling facility, provided permission is obtained from the facility.
Potential Ozone Depleting Substances and Halocarbons	Federal Hydrocarbon Regulations (SOR/2003-289)	Basement	Refrigerants in Two (2) Freezers	Equipment containing ozone depleting substances should be received by a contractor or facility that has the proper approvals to remove, handle and dispose of ozone depleting substances. The remaining materials can be disposed of at a metal recycling facility, provided permission is obtained from the facility.
Petroleum Hydrocarbons	Federal Hazardous Products Act (R.S.1985, c. H-3); Federal Transportation of Dangerous Goods Act (1992, c. 34)	Basement	Unknown (<909 L)	These materials are considered hazardous wastes and must be disposed according to NL policy and the Solid Waste Management Authority by an approved hazardous waste disposal company and transported under the federal TDG Act.
Silica Dust	American Conference of Governmental Industrial Hygienists (ACGIH), Threshold Limit Values (TLVs) and Biological Exposure Indices (BEIs), 2010	Concrete, Brick and Mortar Building Materials	-	All concrete, brick and mortar can be disposed of at a Construction & Demolition Site or at a Regional Solid Waste Disposal Facility.
Ash	Federal Hazardous Products Act (R.S.1985, c. H-3); NL Department of Environment 2003 Guidance Document for Leachable Toxic Waste and Disposal (GD-PPD-26.1)	Chimney	Small Amount (<0.05 m^3)	Small amounts of ash may be disposed of at a Regional Solid Waste Landfill, provided permission is obtained from the facility.
Bird and Animal Feces	Federal Hazardous Products Act (R.S.1985, c. H-3)	Site Building Interior	-	These materials may be disposed of at a Regional Solid Waste Landfill, provided permission is obtained from the facility.
Radioactive Materials	Federal Transportation of Dangerous Goods Act (1992, c. 34)	Living Room/Kitchen	Smoke Detector (1)	These low level radioactive materials must be transported, as per federal TDG regulations, to a licensed disposal facility.

APPENDIX A2

FIGURES



MAIN FLOOR



BASEMENT

LEGEND:

- PAINT SAMPLE LOCATION - RESULTS EXCEED 90 mg/kg AND LESS THAN 5000 mg/kg FOR LEAD AND NO CRITERIA EXCEEDANCES FOR MERCURY
- PAINT SAMPLE LOCATION - RESULTS EXCEED 5000 mg/kg FOR LEAD AND NO CRITERIA EXCEEDANCES FOR MERCURY
- PAINT SAMPLE LOCATION - RESULTS EXCEED 5000 mg/kg LEAD AND EXCEED 10 mg/kg AND LESS OR EQUAL TO THAN 24 mg/kg FOR MERCURY
- ASBESTOS SAMPLE LOCATION - ASBESTOS NOT DETECTED OR RESULTS < 1% FOR ASBESTOS
- ASBESTOS SAMPLE LOCATION - RESULTS > 1% FOR ASBESTOS
- MOULD SAMPLE LOCATION - MOULD GROWTH IDENTIFIED

NOTE:

1. ALL DIMENSIONS ARE IN METRES.
2. DO NOT SCALE FROM FIGURE.
3. THIS FIGURE IS INTENDED TO SHOW RELATIVE LOCATIONS AND CONFIGURATION OF THE STUDY AREA IN SUPPORT OF THIS REPORT.
4. ALL LOCATIONS, DIMENSIONS, AND ORIENTATIONS ARE APPROXIMATE.
5. THIS FIGURE SHOULD NOT BE USED FOR PURPOSES OTHER THAN THOSE OUTLINED ABOVE.
6. THIS FIGURE CONTAINS INTELLECTUAL PROPERTY OF PUBLIC WORKS AND GOVERNMENT SERVICES CANADA AND MAY NOT BE REPRODUCED OR COPIED WITHOUT THEIR WRITTEN CONSENT.
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DWN BY: H. Ryan
CHK'D BY: L. Wiseman
SCALE: As Shown

PROJECT: DEMOLITION HAZARDOUS BUILDING MATERIALS ASSESSMENT AND INVENTORY, BACALHAO ISLAND LIGHTSTATION BACALHAO ISLAND, NL

TITLE: LIGHTKEEPER'S DWELLING SAMPLE LOCATION PLAN

DATE: February 2014
PROJECT No.: TF13076513
REV. No.: 0
FIGURE No.: 2.1

APPENDIX B2

PHOTOGRAPHIC RECORD

Photo 1: View of south side of dwelling.

Photo 2: View of east side of dwelling.

Photo 3: View of west side of dwelling and videograph building.

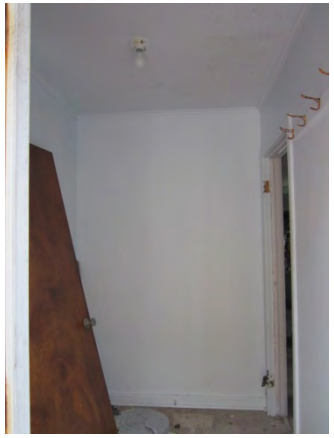

Photo 4: View of porch in dwelling.

Photo 5: View of washroom in dwelling.

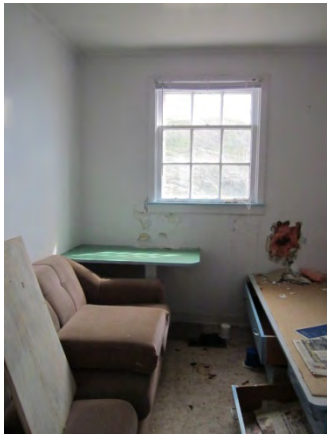

Photo 6: View of room 1 in dwelling.

Photo 7: View of kitchen in dwelling.

Photo 8: View of living room/kitchen in dwelling. Note: SVG on ceiling/cupboards.

Photo 9: View of smoke detector in living room/kitchen in dwelling.

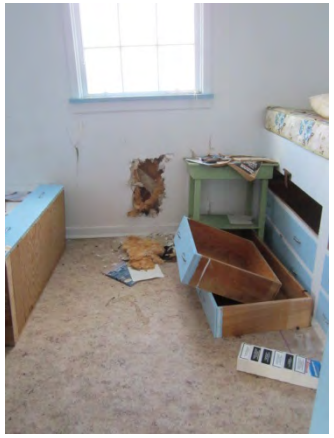

Photo 10: View of room 2 in dwelling.

Photo 11: View of room 3 in dwelling. Note: bird or animal feces.

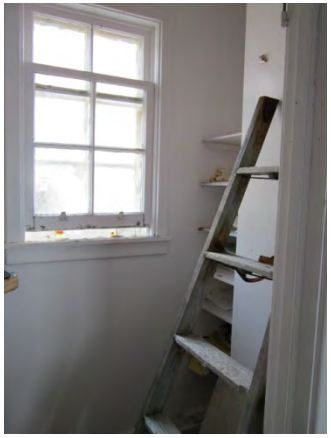

Photo 12: View of room 4 in dwelling.

Photo 13: View of exterior metal door from main entrance of dwelling.

Photo 14: View of basement in dwelling.

Photo 15: View of confined area in dwelling basement. Note: copper pipelines.

Photo 16: View of furnace in basement of dwelling.

Photo 17: View of 909 L furnace oil AST in basement of dwelling.

Photo 18: View of cast iron piping in dwelling basement.

Photo 19: View of attic in dwelling.

Photo 20: View of exterior lighting and chimney on dwelling.

Photo 21: View of window caulking sample BAC-AS-01.

Photo 22: View of door frame caulking sample BAC-AS-02.

Photo 23: View of window caulking sample BAC-AS-03.

Photo 24: View of asphalt shingle sample BAC-AS-04.

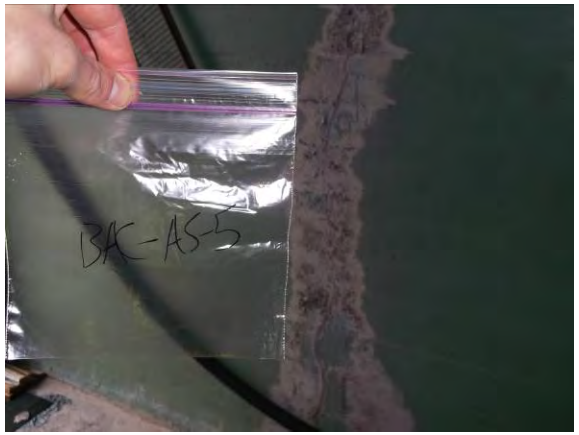

Photo 25: View of caulking sample BAC-AS-05.

Photo 26: View of brick mortar sample BAC-AS-06.


Photo 27: View of vinyl sheet flooring sample BAC-AS-07.

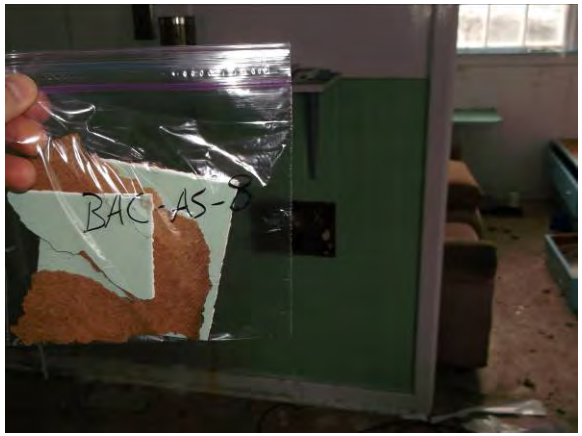

Photo 28: View of tile particle board sample BAC-AS-08.

Photo 29: View of insulation and paper backing sample BAC-AS-09.

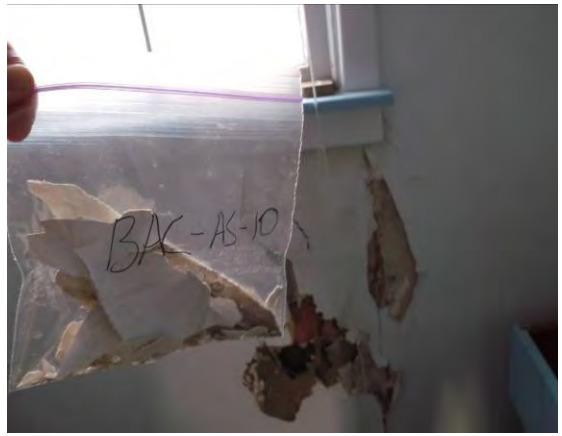

Photo 30: View of drywall joint compound sample BAC-AS-10.

Photo 31: View of window caulking sample BAC-AS-01A.

Photo 32: View of window caulking sample BAC-AS-03A

Photo 33: View of location of vinyl sheet flooring sample BAC-AS-07A.

Photo 34: View of electrical cable sample BAC-AS-28.

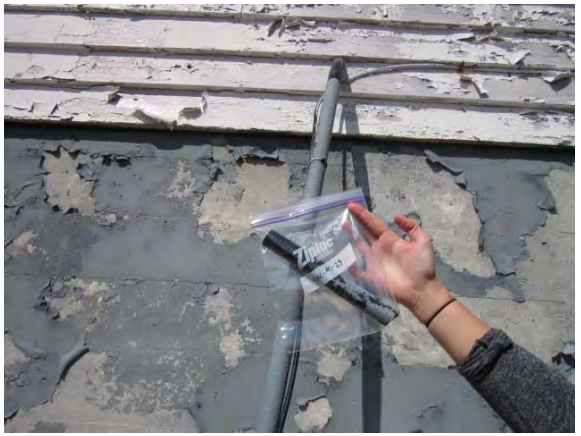

Photo 35: View of electrical cable sample BAC-AS-29.

Photo 36: View of electrical wiring sample BAC-AS-30.

Photo 37: View of electrical wiring sample BAC-AS-31.

Photo 38: View of insulation and paper backing sample BAC-AS-32.

Photo 39: View of insulation and paper backing sample BAC-AS-33.

Photo 40: View of cement board sample BAC-AS-34.

Photo 41: View of grout sample BAC-AS-35.

Photo 42: View of paint sample BAC-PS-01

Photo 43: View of paint sample BAC-PS-02


Photo 44: View of paint sample BAC-PS-03


Photo 45: View of paint sample BAC-PS-04

Photo 46: View of paint sample BAC-PS-05

Photo 47: View of paint sample BAC-PS-06

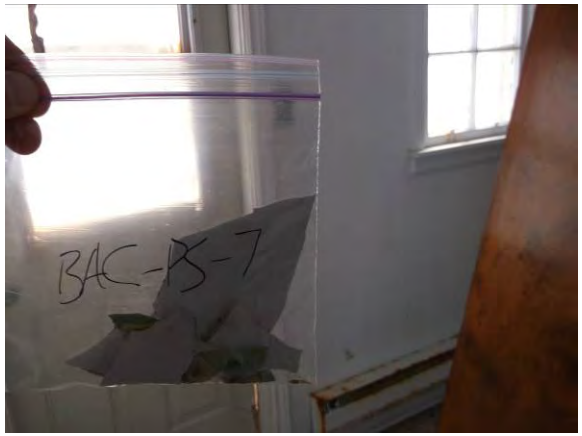

Photo 48: View of paint sample BAC-PS-07

Photo 49: View of paint sample BAC-PS-08

Photo 50: View of paint sample BAC-PS-09


Photo 51: View of paint sample BAC-PS-26

Photo 52: View of paint sample BAC-PS-27

Photo 53: View of paint sample BAC-PS-28


Photo 54: View of paint sample BAC-PS-02A.

Photo 55: View of paint sample BAC-PS-03A.

Photo 56: View of paint sample BAC-PS-04A.

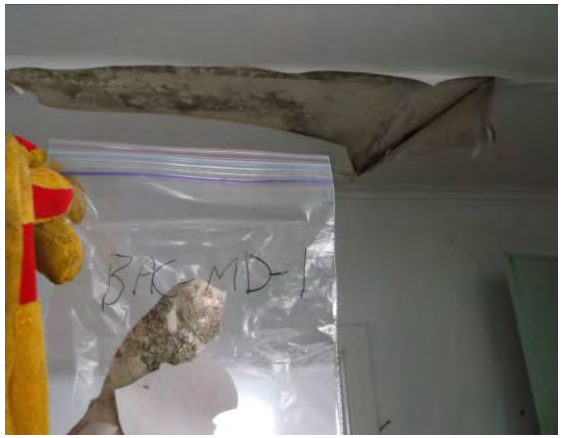

Photo 57: View of mould sample BAC-MD-01.

Photo 58: View of White-Rogers thermostat

Photo 59: View of freezers in dwelling basement.

APPENDIX C2

SAMPLE AND ANALYTICAL SUMMARY TABLES

Table C2-1: Asbestos Sample Descriptions and Analytical Results

Sample ID	Material (Layer) Analyzed	Detailed Material Description	Room	Analytical Result
BAC-AS-01	Caulking	Beige window caulking; mix of clear silicone with solid beige caulking.	Dwelling Exterior	<0.25% Chrysotile
BAC-AS-02	Caulking	White caulking on bottom of door frame over yellow foam.	Dwelling Exterior	ND
BAC-AS-03	Caulking	White window caulking.	Dwelling Exterior	<0.25% Chrysotile
BAC-AS-04	Asphalt Shingle	Red/Black asphalt shingles.	Dwelling Exterior	6.3% Chrysotile
BAC-AS-05	Caulking	Clear caulking on a crack in a concrete wall.	Dwelling Basement	ND
BAC-AS-06	Brick Mortar	Grey mortar on red painted brick chimney.	Dwelling Basement	ND
BAC-AS-07	Vinyl Sheet Flooring	Vinyl sheet flooring with mesh and beige adhesive.	Dwelling Porch	ND
BAC-AS-08	Tile Particle Board	Green tile-like particle board sheeting with black adhesive.	Dwelling Living Room/Kitchen	1.1% Chrysotile
BAC-AS-09	Insulation	Pink fibreglass with black paper backing.	Dwelling Room 3	0.42% Chrysotile
BAC-AS-10	Drywall Joint Compound	Light blue painted drywall and drywall joint compound.	Dwelling Room 3	2.0% Chrysotile
BAC-AS-DUP-1	Asphalt Shingle	Red/black asphalt shingles.	Dwelling Exterior	5.0% Chrysotile

Notes:
ND: non-detect
ND = <1% asbestos
BAC-AS-DUP-1 is a duplicate of BAC-AS-04
Shaded results greater than 1% asbestos by dry weight are considered to be asbestos-containing materials (ACMs) as outlined in the Newfoundland and Labrador Asbestos Abatement Regulations (Reg. 111/98)

Table C2-1: Asbestos Sample Descriptions and Analytical Results (Continued)

Sample ID	Material (Layer) Analyzed	Detailed Material Description	Room	Analytical Result
BAC-AS-01A	Caulking	Yellowish window caulking underneath clear caulking on exterior of basement window.	Dwelling Exterior	ND
BAC-AS-03A	Caulking	White window caulking on exterior of main floor window.	Dwelling Exterior	ND
BAC-AS-07A	Vinyl Sheet Flooring	Vinyl sheet flooring with mesh and beige adhesive.	Dwelling Room 5	ND
BAC-AS-28	Cable	Black cable coating over a light grey layer and a plastic layer encasing three copper cables, each with a black coating.	Dwelling Exterior	ND
BAC-AS-29	Cable	Black cable coating over a copper layer, a fiber-like layer and a copper layer.	Dwelling Exterior	ND
BAC-AS-30	Wiring	Green coating over a possible cardboard or wood layer and a black layer over copper wiring.	Dwelling Basement	ND
BAC-AS-31	Wiring	Blue coating over a possible cardboard or wood layer and a black layer over copper wiring.	Dwelling Basement	ND
BAC-AS-32	Insulation	Yellow fibreglass insulation with black paper backing	Dwelling Room 2	ND
BAC-AS-33	Insulation	Pink fiberglass innsulation with black paper backing	Dwelling Room 1	ND
BAC-AS-34	Sheeting	Grey cement board around former steel pipe opening to brick chimney.	Dwelling Living Room/Kitchen	10% Chrysotile
BAC-AS-35	Grout	Grey grout around former stove pipe opening to brick chimney.	Dwelling Living Room/Kitchen	ND

Notes:
ND: non-detect
ND = <1% asbestos
Shaded results greater than 1% asbestos by dry weight are considered to be asbestos-containing materials (ACMs) as outlined in the Newfoundland and Labrador Asbestos Abatement Regulations (Reg. 111/98)

Table C2-2: Paint Sample Descriptions and Lead Analytical Results

Sample ID	Colour Description	Substrate	Sample Location (Room No.)	RDL (mg/kg)	Total Lead (mg/kg)
BAC-PS-01	Multiple layers of grey	Concrete	Dwelling Exterior	5.0	**1,200**
BAC-PS-02	Multiple layers of white	Wood Board	Dwelling Exterior	5.0	**11,000**
BAC-PS-03	Multiple layers of grey	Concrete	Dwelling Basement	5.0	**480**
BAC-PS-04	Green	Concrete	Dwelling Basement	5.0	**21,000**
BAC-PS-05	Red	Metal Tank	Dwelling Basement	5.0	**700**
BAC-PS-06	White	Drywall	Dwelling Living Room	5.0	**730**
BAC-PS-07	White over blue over green	Drywall	Dwelling Porch	5.0	**2,700**
BAC-PS-08	Light blue	Drywall	Dwelling Room 2	5.0	**1,100**
BAC-PS-09	Multiple layers of green	Wood Board	Dwelling Living Room	5.0	**4,700**
BAC-PS-DUP-1	Multiple layers of grey	Concrete	Dwelling Basement	5.0	**760**

Notes:
RDL: Reportable detection limit
<X: Non Detect
HPA: Hazardous Products Act
BAC-PS-DUP-1 is a duplicate of BAC-PS-03
Bold and shaded results indicate that lead concentration is above the relevant Federal HPA criterion of 90 mg/kg
Shaded results indicate that lead concentration is above the former Federal HPA criterion of 5000 mg/kg

Table C2-2: Paint Sample Descriptions and Lead Analytical Results (Continued)

Sample ID	Colour Description	Substrate	Sample Location (Room No.)	RDL (mg/kg)	Total Lead (mg/kg)
BAC-PS-26	White	Metal Freezer Exterior	Dwelling Basement	5.0	**300**
BAC-PS-27	Light green over white over light blue	Metal Freezer Interior	Dwelling Basement	5.0	**330**
BAC-PS-28	White	Metal Freezer Exterior	Dwelling Basement	5.0	**280**

Notes:
RDL: Reportable detection limit
<X: Non Detect
HPA: Hazardous Products Act

Bold and shaded results indicate that lead concentration is above the relevant Federal HPA criterion of 90 mg/kg
Shaded results indicate that lead concentration is above the former Federal HPA criterion of 5000 mg/kg

Table C2-3: Paint Sample Descriptions and Mercury Analytical Results

Sample ID	Colour Description	Substrate	Sample Location (Room No.)	RDL (mg/kg)	Total Mercury (mg/kg)
BAC-PS-01	Multiple layers of grey	Concrete	Dwelling Exterior	1.0	2.3
BAC-PS-02	Multiple layers of white	Wood Board	Dwelling Exterior	1.0	***24***
BAC-PS-03	Multiple layers of grey	Concrete	Dwelling Basement	1.0	1.1
BAC-PS-04	Green	Concrete	Dwelling Basement	1.0	1.6
BAC-PS-05	Red	Metal Tank	Dwelling Basement	1.0	<1.0
BAC-PS-06	White	Drywall	Dwelling Living Room	1.0	<1.0
BAC-PS-07	White over blue over green	Drywall	Dwelling Porch	1.0	1.4
BAC-PS-08	Light blue	Drywall	Dwelling Room 2	1.0	10
BAC-PS-09	Multiple layers of green	Wood Board	Dwelling Living Room	1.0	1.8
BAC-PS-DUP-1	Multiple layers of grey	Concrete	Dwelling Basement	1.0	<1.0

Notes:
RDL: Reportable detection limit
<X: Non Detect
HPA: Hazardous Products Act
BAC-PS-DUP-1 is a duplicate of BAC-PS-03
Bolded, italicized and underlined results indicate that mercury concentration is above the Federal HPA criterion of 10 mg/kg
Bolded, and shaded results indicate that mercury concentration is above the Canadian Council of Ministers of the Environment Canadian Soil Quality Guidelines for mercury in soil at a commercial site (24 mg/kg)

Table C2-3: Paint Sample Descriptions and Mercury Analytical Results (Continued)

Sample ID	Colour Description	Substrate	Sample Location (Room No.)	RDL (mg/kg)	Total Mercury (mg/kg)
BAC-PS-26	White	Metal Freezer Exterior	Dwelling Basement	1.0	1.4
BAC-PS-27	Light green over white over light blue	Metal Freezer Interior	Dwelling Basement	1.0	<1.0
BAC-PS-28	White	Metal Freezer Exterior	Dwelling Basement	1.0	<1.0

Notes:
RDL: Reportable detection limit
<X: Non Detect
HPA: Hazardous Products Act
Bolded, italicized and underlined results indicate that mercury concentration is above the Federal HPA criterion of 10 mg/kg
Bolded, and shaded results indicate that mercury concentration is above the Canadian Council of Ministers of the Environment Canadian Soil Quality Guidelines for mercury in soil at a commercial site (24 mg/kg)

Table C2-4: Paint Sample Descriptions and PCB Analytical Results

Sample ID	Colour Description	Substrate	Sample Location (Room No.)	RDL (mg/kg)	Total PCB (mg/kg)
BAC-PS-02	Multiple layers of white	Wood Board	Dwelling Exterior	5.0	<5.0
BAC-PS-03A	Grey	Concrete	Dwelling Basement	5.0	<5.0

Notes:
RDL: Reportable detection limit
<X: Non Detect
Bold and shaded results indicate that PCB concentration is above the Canadian Council of Ministers of the Environment Canadian Soil Quality Guidelines for PCBs in soil at a commercial site (33 mg/kg)

Table C2-5: Paint Sample Descriptions and Lead Leachate Analytical Results

Sample ID	Colour Description	Substrate	Sample Location (Room No.)	RDL (mg/L)	Lead Leachate (mg/L)
BAC-PS-02	Multiple layers of white	Wood	Dwelling Exterior	0.005	52
BAC-PS-02A	Multiple layers of white	Wood	Dwelling Exterior	0.005	17
BAC-PS-04A	Green	Wood	Dwelling Basement	0.005	0.045

Notes:
RDL: Reportable detection limit
Shaded results indicate that lead leachate concentration is above the provincial guidance document for leachable toxic waste criterion for lead (5.00 mg/L)

Table C2-6: Paint Sample Descriptions and Mercury Leachate Analytical Results

Sample ID	Colour Description	Substrate	Sample Location (Room No.)	RDL (mg/L)	Mercury Leachate (mg/L)
BAC-PS-02	Multiple layers of white	Wood	Dwelling Exterior	0.0001	0.0017

Notes:
RDL: Reportable detection limit
Shaded results indicate that mercury leachate concentration is above the provincial guidance document for leachable toxic waste criterion for mercury (0.10 mg/L)

Table C2-7: Mould Sample Descriptions and Direct Microscopic Examination Results

Sample ID	Sample Description	Sample Location (Room No.)	Mould Identified, in Rank Order	Mould Growth
BAC-MD-01	Painted drywall	Dwelling Living Room/Kitchen	*Apergillus* *Cladosporium*	Abundant

Notes:
1. Mould growth is subjectively assessed with description terms sparse, moderate and abundant.
2. The presence of spores (lacking other fungal structures associated) is assessed as following:
   a few spores (< 10 spores average per microscopic field at 400X), some spores (10 - 100 spores average per microscopic field at 400X), many spores (> 100 spores average per microscopic field at 400X).
3. The presence of a few spores generally represents settled spores on the surface of the sample rather than indicating mould growth.
4. The results are only related to the samples analyzed.