SECTION 4.0 EXECUTIVE SUMMARY

Hazardous materials identified at the tramway storage shed during the March 2013 HBMS and the current demolition HMBA are summarized in Table E-4.

Table E-4: Hazardous Material Description

Hazardous Material	Regulatory Guidelines	Location	Quantity (Approx.)	Disposal
Asbestos-Containing Asphalt Shingles	NL Asbestos Abatement Regulations (Reg. 111/98)	Roof	50 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 Window Caulking		Windows	15 linear m	
Leachable Lead-Based White Paint on Wooden Siding and Framing	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	70 m^2	These materials (painted wooden siding and framing) 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 and framing on the Site building exterior, may be disposed of at a Regional Solid Waste Landfill, provided permission is obtained from the facility.
Mercury-Containing Fluorescent Light Tubes	Federal Hazardous Products Act (R.S.1985, c. H-3)	Site Building Interior	One (1) fluorescent light fixture. It is assumed that there are two (2) light tubes for each fixture.	These materials can be disposed of at a recycling facility.
Potential PCB-Containing Fluorescent Light Ballasts	Canadian Environmental Protection Act (CEPA) regulations and interim orders under the Act that pertain to commercial chemicals; Federal Transportation of Dangerous Goods Act (1992, c. 34)	Site Building Interior	One (1) fluorescent light fixture. It is assumed that there is one (1) ballast for each fixture.	Prior to disposal, all ballasts should be checked to determine if they contain PCBs (if possible). Ballasts containing PCBs should be transported, as per the TDG regulations, by a hazardous materials waste company approved to handle PCBs.

Hazardous Material	Regulatory Guidelines	Location	Quantity (Approx.)	Disposal
Silica Dust	American Conference of Governmental Industrial Hygienists (ACGIH), Threshold Limit Values (TLVs) and Biological Exposure Indices (BEIs), 2010	Concrete Building Materials	-	All concrete can be disposed of at a Construction & Demolition Site or at a Regional Solid Waste Disposal Facility.
Solid Waste	NL Asbestos Abatement Regulations (Reg. 111/98); 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 Interior	Various items were observed in the attic of the tramway storage shed, including but not limited to, canvas sails and rope, cardboard boxes, and various pieces of wood and metal; there also appeared to be an old electrical motor or generator in the attic.	Some of these materials may be 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 Act. 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. Metal parts that are not contaminated with petroleum hydrocarbons can be sent to a recycling facility.

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APPENDICES

4.0 TRAMWAY STORAGE SHED

The tramway storage shed 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). The date that the tramway storage shed was constructed on Bacalhao Island is not known; however, based on similar building materials, the shed may have been constructed around the same time as the dwelling and equipment building (i.e. 1975-1980). It should be noted that the assessment completed for the tramway is included in Section 9.0 of this report.

4.1 BUILDING DESCRIPTION

A description of the Site building is outlined in Table 4-1. Photographs of the tramway storage shed are provided in Appendix B4.

Table 4-1: Site Building Description

Building Name	Tramway Storage Shed	Photo (Appendix B4)
Number of Stories	One	Photo 1
Basement	No	Not Applicable
Attic	Yes	Photo 4
Type of Structure	Wooden Frame	Photo 5
Type of Foundation	Painted Concrete	Photos 1 and 13
Exterior	Painted Wooden Siding	Photos 10 and 12
Window/Door Frames	Painted Wooden Frames	Photos 9 and 15
Exterior Doors	Wooden	Photos 3 and 7
Roofing Materials	Asphalt Shingles	Photos 2 and 3
Interior Walls Finishes	Unfinished with Some Painted Wood	Photos 5 and 14
Ceiling Finishes	Unfinished	Photo 6
Floor Finishes	Unpainted Concrete	Photos 5 and 7
Interior Doors	None	Not Applicable
Interior Lighting	None	Not Applicable
Exterior Lighting	None	Not Applicable
Heating	None	Not Applicable
Chimney	None	Not Applicable
Aboveground Storage Tank	None	Not Applicable
Plumbing	None	Not Applicable

It is important to note that the wooden stairs to the tramway storage shed and the wooden platform located between the tramway storage shed and the tramway are in a state of disrepair (i.e. rotted wood, damaged/missing handrail, etc.) (refer to Photos 7 and 8, Appendix B4).

4.2 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 tramway storage shed.

4.2.1 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 three (3) building material samples (BAC-AS-17, BAC-AS-18, BAC-AS-18A) plus one (1) field duplicate sample (BAC-AS-DUP-2; duplicate of BAC-AS-18) were collected from the tramway storage shed and analyzed for asbestos content (refer to Photos 9, 10 and 11, Appendix B4). Sample descriptions and analytical results are summarized in Table C4-1, Appendix C4. Sample locations and analytical results are graphically illustrated in Figure 4.1, Appendix A4.

4.2.1.1 Friable Materials

4.2.1.1.1 Spray-Applied Fireproofing, Insulation and Texture Finishes

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

4.2.1.2 Non-Friable and Potentially Friable Materials

4.2.1.2.1 Ceiling Tile

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

4.2.1.2.2 Drywall Joint Compound

There was no drywall or associated joint compound observed in the tramway storage shed during the Site visits; therefore, no samples of drywall joint compound were collected for analysis during the March 2013 HBMS and the current demolition HMBA.

4.2.1.2.3 Vinyl Flooring Products and Mastics

There was no vinyl flooring or associated mastics observed in the tramway storage shed during the Site visits; therefore, no samples of vinyl flooring or mastics were collected for analysis during the March 2013 HBMS and the current demolition HMBA.

4.2.1.2.4 Baseboard, Carpet and Stair Tread Adhesives/Mastics

There were no baseboard, carpet or stair tread adhesives/mastics observed in the tramway storage shed 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.

4.2.1.2.5 Roofing Products

One (1) sample of asphalt shingle roofing material (BAC-AS-17) was collected from the roof of the tramway storage shed and analyzed for asbestos content (refer to Photo 9, Appendix B4). Chrysotile asbestos (1.2%) was detected in sample BAC-AS-17 (i.e. red/black asphalt shingle collected from the tramway storage shed) at a level above the applicable *NL Asbestos Abatement Regulations (111/98)* (i.e., >1%). Therefore the roofing materials on the tramway storage shed are considered to be ACMs.

The asphalt shingles visible on the roof of the tramway storage shed (covering an area of approximately 50 m^2) as observed from the ground surface and the helicopter appeared to be generally intact and in good condition.

4.2.1.2.6 Thermal System Insulation

There was no insulation observed in the tramway storage shed during the Site visits; therefore, no samples of insulation were collected for analysis during the March 2013 HBMS and the current demolition HMBA.

4.2.1.2.7 Weather Stripping and Caulking

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

Two (2) samples of caulking (BAC-AS-18 and BAC-AS-18A) plus one (1) field duplicate sample (BAC-AS-DUP-2; duplicate of BAC-AS-18) were collected from the exterior of the tramway storage shed and analyzed for asbestos content (refer to Photos 10 and 11, Appendix B4). Prior to analysis, sample BAC-AS18A was separated by the laboratory into two (2) sub-samples (BAC-AS-18A-Caulking and BAC-AS-18A-Weathered Caulk). Chrysotile asbestos (ranging from 0.84% to 1%) was detected in samples BAC-AS-18 and BAC-AS-18A-Weathered Caulk 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.

The window caulking observed on the exterior of the tramway storage shed (approximately 15 m) appeared to be weathered and varied in condition from fair to poor. Therefore, due to the potentially friable nature of the window caulking, it is recommended that this material be treated as an ACM.

4.2.1.2.8 Mortar, Grout and Other Cementitious Materials

No samples of mortar, grout or other cementitious materials were collected from the tramway storage shed during the March 2013 HBMS or the current demolition HMBA.

4.2.1.2.9 Other Potential ACMs

Other potential ACMs were observed and were not sampled due to the nature of the materials. These materials included, but are not limited to, electrical and mechanical components such as wiring and gaskets inside mechanical equipment (i.e. possible motor or generator in the attic of tramway shed). 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 fire rated structures or building materials and underground infrastructure and piping.

4.2.2 Paint Finishes

The condition of the paint visible on the exterior of the tramway storage shed varied from fair to poor condition. Peeling and flaking paint was observed on the exterior siding and foundation of the tramway storage shed (refer to Photos 1, 10, 12 and 13, Appendix B4).

A total of three (3) samples (BAC-PS-16, BAC-PS-17 and BAC-PS-31) were collected from painted surfaces of the tramway storage shed and analyzed for lead and mercury content (refer to Photos 12, 13 and 14, Appendix B4). Sample descriptions and analytical results are summarized in Tables C4-2 and C4-3, Appendix C4. Sample locations and analytical results are graphically illustrated in Figure 4.1, Appendix A4.

Since, based on the results of the March 2013 HBMS, the concentration of lead detected in one (1) paint sample (BAC-PS-16) exceeded the former Federal HPA criterion of 5,000 mg/kg, paint sample BAC-PS-16 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. During the current demolition HMBA, one (1) supplemental paint sample (BAC-PS-16A), including the substrate, was collected from the same painted surface of the tramway storage shed that originally exceeded the former Federal HPA criterion of 5,000 mg/kg (refer to Photo 15, Appendix B4). This supplemental paint sample 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. The laboratory results for lead leachate in paint are presented in Table C4-4, Appendix C4.

4.2.2.1 Lead in Paint

The concentrations of lead in the paint samples ranged from 1,000 mg/kg to 11,000 mg/kg (refer to Table C4-2, Appendix C4). Two (2) of the three (3) samples (BAC-PS-17 and BAC-AS-31) 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 13 and 14, Appendix B4). One (1) paint sample (BAC-PS-16) contained lead at a concentration above the former Federal HPA criterion of 5,000 mg/kg (refer to Photo 12, Appendix B4).

4.2.2.2 Leachable Lead in Paint

The concentrations of leachable lead in paint sample BAC-PS-16 (12 mg/L) and supplemental paint and wood substrate sample BAC-PS-16A (13 mg/kg) 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 C4-4, Appendix C4). Paint sample BAC-PS-16 (white paint) and supplemental paint and wood substrate sample BAC-PS-16A were collected from siding and a door frame on the exterior of the tramway storage shed. The paint on the exterior wood siding (covering an area of approximately 70 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 and wooden framing), if removed from the Site, must be disposed of at a hazardous waste treatment facility.

4.2.2.3 Mercury in Paint

The concentrations of mercury in the paint samples ranged from non-detect (<1.0 mg/kg) to 16 mg/kg (refer to Table C4-3, Appendix C4). One (1) paint sample (BAC-PS-16) contained mercury at a concentration above the Federal HPA criterion of 10 mg/kg but below the CCME CSQG of 24 mg/kg for mercury in soil at a commercial site. All of the other paint samples analyzed were either non-detect for mercury (i.e. <1.0 mg/kg) or contained mercury at a concentration below the applicable Federal HPA criterion (i.e. 10 mg/kg).

4.2.3 Urea Formaldehyde Foam Insulation (UFFI)

Visual indicators suggesting the potential presence of UFFI were not observed in the tramway storage shed. The walls and ceiling of the shed are unfinished and there was no insulation observed in the tramway storage shed during the Site visits.

4.2.4 Suspected Visible Mould Growth (SVG)

AMEC inspected the interior areas of the tramway storage shed for visual or olfactory evidence of suspected mould. No areas of SVG and/or water damage were observed within the tramway storage shed at the time of the Site visits.

4.2.5 Mercury-Containing Thermostats

There were no thermostats observed in the tramway storage shed during the March 2013 HBMS and the current demolition HMBA Site visits.

4.2.6 PCB-Containing Light Ballasts

One (1) fluorescent light fixture appeared to be stored in the ceiling rafters of the tramway storage shed (i.e. the fixture did not appear to be connected to a power source). An attempt was made to inspect the light ballast(s) in the fixture for the presence or absence of PCB-

containing dielectric fluid; however, an inspection of the internal components of the fixture was not possible due to safety concerns related to the size, weight and location of the fluorescent light fixture. The casing of the light fixture appeared to be in poor condition and rusted. Since it could not be determined from the inspection if the ballast(s) are either non-PCB or potential-PCB, the light ballast(s) within the fluorescent light fixture that is stored inside the tramway storage shed should be treated as PCB-containing ballast(s).

4.2.7 Potential Sources of ODSs and Halocarbons

No potential sources of ODSs were identified in the tramway storage shed during the March 2013 HBMS and the current demolition HMBA Site visits.

4.2.8 Petroleum Storage Tanks

No petroleum ASTs were identified inside or in close proximity to the tramway storage shed during the March 2013 HBMS and the current demolition HMBA Site visits.

4.2.9 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.

4.2.9.1 Mercury

Mercury may be present in fluorescent light tubes in the fluorescent light fixture that is stored in the ceiling rafters of the tramway storage shed. The light tubes in these light fixtures often contain limited quantities of mercury in a powder or vapour form.

4.2.9.2 Lead

Lead is typically associated with plumbing solder and older pipe materials, as well as products such as radiation protective shielding and lead-acid batteries.

No potential sources of lead were identified in the tramway storage shed during the March 2013 HBMS or the current demolition HMBA Site visits.

4.2.9.3 Silica

Silica is expected to be present in the concrete used to construct the foundation for the tramway storage shed. Precaution should be taken to prevent/reduce exposure to silica dust during any disturbance/demolition of silica-containing products.

4.2.9.4 Solid Waste

Various items were observed in the attic of the tramway storage shed, including but not limited to, canvas sails and rope, cardboard boxes, and various pieces of wood and metal; there also appeared to be an old electrical motor or generator in the attic (refer to Photo 4, Appendix B4).

4.2.9.5 Ash

Solid wastes such as ash from chimneys or furnaces were not observed within the tramway storage shed during the March 2013 HBMS or the current demolition HMBA Site visits.

4.3 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 tramway storage shed:

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. Non-friable asbestos is present in the form of asphalt shingles.
- Results of the asbestos sampling and analytical program also revealed that there is window caulking containing less than and equal to 1% asbestos by dry weight. The window caulking observed on the exterior of the tramway storage shed appeared to be weathered and varied in condition from fair to poor. Therefore, due to the potentially friable nature of the window caulking, it is recommended that this material be treated as an ACM.
- Other potential ACMs were observed and were not sampled due to the nature of the materials. These materials included, but are not limited to, electrical and mechanical components such as wiring and gaskets inside mechanical equipment (i.e. possible motor or generator in the attic of tramway shed).
- 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 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.
- 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 tramway storage shed 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 tramway storage shed and transported off-site for proper disposal in accordance with the Asbestos Abatement Regulations (111/98).

Lead and Mercury in Paint

- Results of the paint sampling and analytical program revealed lead and mercury-based paint finishes on the interior and exterior of the tramway storage shed (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 1,000 mg/kg to 11,000 mg/kg and the concentrations of mercury in the paint samples ranged from non-detect (<1.0 mg/kg) to 16 mg/kg.
  - One (1) paint sample contained lead at a concentration above the Federal HPA criterion of 5,000 mg/kg; therefore, one (1) supplemental paint sample, including the wooden substrate, was collected from the same painted surface of the tramway storage shed that exceeded the former Federal HPA criterion. This supplemental paint sample was 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 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, two (2) of the three (3) 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 and a door frame on the exterior of the tramway storage shed 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 and wooden trim), 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.
- 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.

Mercury-Containing Materials/Equipment

- Suspected mercury-containing fluorescent light tubes may be present in the fluorescent light fixture stored in the ceiling rafters of the tramway storage shed.
- The disturbance, control or disposal of mercury-containing material/equipment (e.g., light tubes) should be carried out in accordance with applicable criteria/regulations (refer to Section 1.4). The presence/absence of mercury 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 recycling or hazardous waste disposal facility and not a landfill.
- Mercury-containing fluorescent light tubes should be removed intact and returned to the manufacturer for recycling, or disposed of at an approved hazardous waste disposal facility.

PCB Containing Equipment

- One (1) fluorescent light fixture was observed in the tramway storage shed. Based on similar building materials, the shed may have been constructed around the same time as the dwelling and equipment building (i.e. 1975-1980); therefore, the light ballast(s) may contain PCBs since the use of PCBs in light ballasts was not discontinued until the early 1980s. It could not be determined from the inspection if the ballast(s) are either non-PCB or potential-PCB; therefore, all ballasts should be treated as PCB-containing ballasts.

- The PCB content in all light ballasts should be confirmed prior to disposal. All ballasts that are removed should be placed in a proper storage container(s). Leaks or stained areas should be cleaned and/or removed in accordance with applicable regulations or industry standards.
- All PCB-containing equipment should be handled, decontaminated, transported and disposed of as per current Federal and Provincial acts and regulations. Any PCB-containing equipment requiring removal from the tramway storage shed should be transported and disposed of by a registered hazardous waste transporter in accordance with applicable regulations.

Silica Dust

- Silica is expected to be present in concrete used to construct the foundation of the tramway storage shed. 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.

Solid Waste

- Various items were observed in the attic of the tramway storage shed, including but not limited to, canvas sails and rope, cardboard boxes, and various pieces of wood and metal; there also appeared to be an old electrical motor or generator in the attic
- The miscellaneous items and solid waste in the attic of the tramway storage shed should be properly disposed of in accordance with applicable regulations.

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

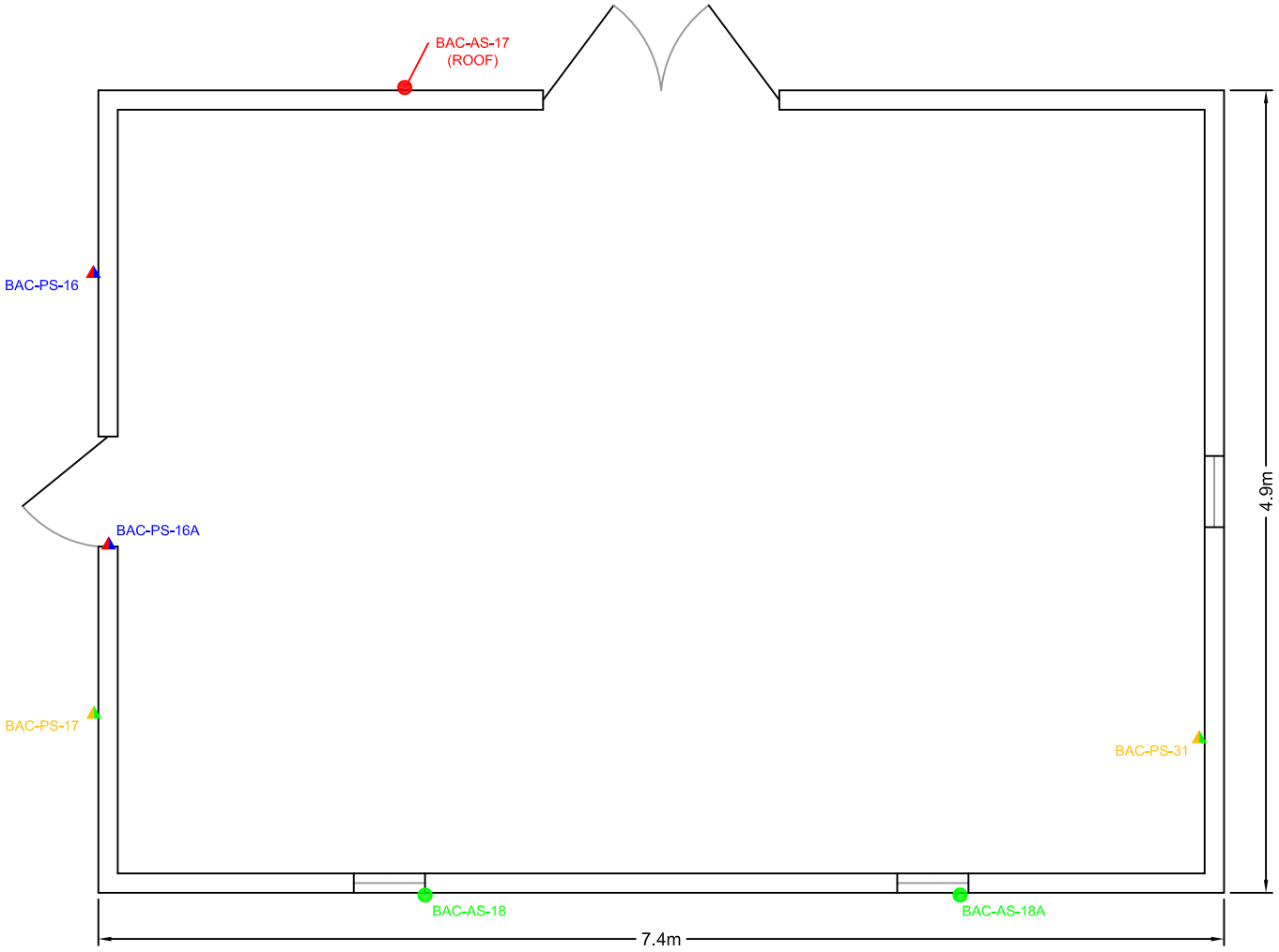
Table 4-2: Hazardous Material Description

Hazardous Material	Regulatory Guidelines	Location	Quantity (Approx.)	Disposal
Asbestos-Containing Asphalt Shingles	NL Asbestos Abatement Regulations (Reg. 111/98)	Roof	50 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 Window Caulking		Windows	15 linear m	
Leachable Lead-Based White Paint on Wooden Siding and Framing	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	70 m^2	These materials (painted wooden siding and framing) 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.

Hazardous Material	Regulatory Guidelines	Location	Quantity (Approx.)	Disposal
Lead and Mercury-Based Paint	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)	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 and framing on the Site building exterior, may be disposed of at a Regional Solid Waste Landfill, provided permission is obtained from the facility.
Mercury-Containing Fluorescent Light Tubes	Federal Hazardous Products Act (R.S.1985, c. H-3)	Site Building Interior	One (1) fluorescent light fixture. It is assumed that there are two (2) light tubes for each fixture.	These materials can be disposed of at a recycling facility.
Potential PCB-Containing Fluorescent Light Ballasts	Canadian Environmental Protection Act (CEPA) regulations and interim orders under the Act that pertain to commercial chemicals; Federal Transportation of Dangerous Goods Act (1992, c. 34)	Site Building Interior	One (1) fluorescent light fixture. It is assumed that there is one (1) ballast for each fixture.	Prior to disposal, all ballasts should be checked to determine if they contain PCBs (if possible). Ballasts containing PCBs should be transported, as per the TDG regulations, by a hazardous materials waste company approved to handle PCBs.
Silica Dust	American Conference of Governmental Industrial Hygienists (ACGIH), Threshold Limit Values (TLVs) and Biological Exposure Indices (BEIs), 2010	Concrete Building Materials	-	All concrete can be disposed of at a Construction & Demolition Site or at a Regional Solid Waste Disposal Facility.
Solid Waste	NL Asbestos Abatement Regulations (Reg. 111/98); 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 Interior	Various items were observed in the attic of the tramway storage shed, including but not limited to, canvas sails and rope, cardboard boxes, and various pieces of wood and metal; there also appeared to be an old electrical motor or generator in the attic.	Some of these materials may be 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 Act. 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. Metal parts that are not contaminated with petroleum hydrocarbons can be sent to a recycling facility.

APPENDIX A4

FIGURES



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 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

NOTES:
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.
7. THIS FIGURE WAS PRODUCED FROM FIELD NOTES.

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Date: February 2014	Project: DEMOLITION HAZARDOUS BUILDING MATERIALS ASSESSMENT AND INVENTORY, BACALHAO ISLAND LIGHTSTATION BACALHAO ISLAND, NL		
Drawn by: H. Ryan	Title: TRAMWAY STORAGE SHED SAMPLE LOCATION PLAN		
Approved by: L. Wiseman	Scale: As Shown	Project No.: TF13076513	Figure No.: 4.1

APPENDIX B4

PHOTOGRAPHIC RECORD

Photo 1: View of the south side of the tramway storage shed.

Photo 2: View of the north and east sides of the tramway storage shed.

Photo 3: View of the west side of the tramway storage shed.

Photo 4: View of attic in tramway storage shed.

Photo 5: View of tramway storage shed interior.

Photo 6: View of fluorescent light fixture stored in ceiling of tramway storage shed.

Photo 7: View of wooden stairs and door to tramway storage shed.

Photo 8: View of wooden platform between tramway storage shed and tramway.

Photo 9: View of asphalt shingle sample BAC-AS-17.

Photo 10: View of window caulking sample BAC-AS-18.

Photo 11: View of window caulking sample BAC-AS-18A.

Photo 12: View of paint sample BAC-PS-16.

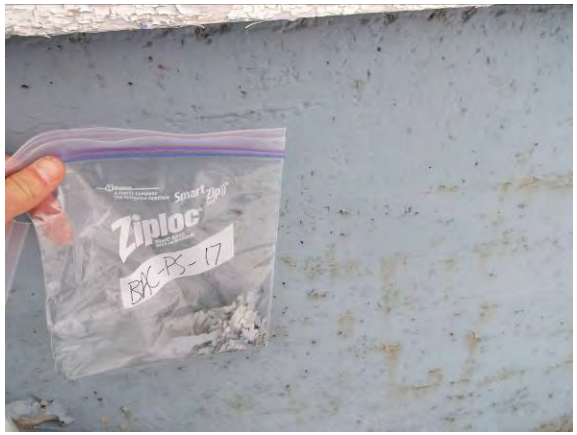

Photo 13: View of paint sample BAC-PS-17.

Photo 14: View of paint sample BAC-PS-31.

Photo 15: View of paint sample BAC-PS-16A.

APPENDIX C4

SAMPLE AND ANALYTICAL SUMMARY TABLES

Table C4-1: Asbestos Sample Descriptions and Analytical Results

Sample ID	Material (Layer) Analyzed	Detailed Material Description	Room	Analytical Result
BAC-AS-17	Asphalt Shingle	Red/black asphalt shingle.	Tramway Storage Shed Exterior	1.2% Chrysotile
BAC-AS-18	Caulking	White window caulking.	Tramway Storage Shed Exterior	0.84% Chrysotile
BAC-AS-DUP-2	Caulking	White window caulking.	Tramway Storage Shed Exterior	ND
BAC-AS-18A-Caulking	Caulking	White window caulking.	Tramway Storage Shed Exterior	ND
BAC-AS-18A-Weathered Caulk	Caulking	Grey window caulking.	Tramway Storage Shed Exterior	1% Chrysotile

Notes:
ND: non-detect
ND = <1% asbestos
BAC-AS-DUP-2 is a duplicate of BAC-AS-18
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 C4-2: 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-16	White	Wood	Tramway Storage Shed Exterior	5.0	**11,000**
BAC-PS-17	Grey	Concrete	Tramway Storage Shed Exterior	5.0	**2,000**
BAC-PS-31	Weathered Red	Wood	Tramway Storage Shed Interior	5.0	**1,000**

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 C4-3: 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-16	White	Wood	Tramway Storage Shed Exterior	1.0	***16***
BAC-PS-17	Grey	Concrete	Tramway Storage Shed Exterior	1.0	1.2
BAC-PS-31	Weathered Red	Wood	Tramway Storage Shed Interior	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 C4-4: 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-16	White	Wood	Tramway Storage Shed Exterior	0.005	12
BAC-PS-16A	White	Wood	Tramway Storage Shed Exterior	0.005	13

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)