



SECTION 8.0 EXECUTIVE SUMMARY

Hazardous materials identified at solar shed 2 during the March 2013 HBMS are summarized in Table E-8. It should be noted that solar shed 2 is not slated for demolition.

Table E-8: Hazardous Material Description

Hazardous Material	Regulatory Guidelines	Location	Quantity (Approx.)	Disposal
Lead Acid Batteries	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	-	Not Applicable.
Silica Dust	American Conference of Governmental Industrial Hygienists (ACGIH), Threshold Limit Values (TLVs) and Biological Exposure Indices (BEIs), 2010	Concrete Building Materials	-	Not Applicable.



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8.0 SOLAR SHED 2

Solar shed 2 is located on the satellite solar array area of the Bacalhao Island Lightstation (refer to Figures 1.1 and 1.2, Appendix A1 and Photo 5, Appendix B1). The date that solar shed 2 was constructed on Bacalhao Island is not known; however, the shed is not shown on an as-built survey plan for the Bacalhao Island Lighthouse Station dated January 1999. Therefore, solar shed 2 is inferred to have been constructed at the Site after 1999 or later in that same year. It should be noted that solar shed 2 is not slated for demolition.

8.1 BUILDING DESCRIPTION

A description of the Site building is outlined in Table 8-1. Photographs of the solar shed 2 are provided in Appendix B8.

Table 8-1: Site Building Description

Building Name	Solar Shed 2	Photo (Appendix B8)
Number of Stories	One	Photos 1 and 2
Basement	No	Not Applicable
Attic	No	Not Applicable
Type of Structure	Wooden Frame	Photo 9
Type of Foundation	Unpainted Concrete	Photos 1 and 9
Exterior	Painted Wooden Siding	Photos 2, 4 and 8
Window/Door Frames	Painted Wooden Frames	Photo 1
Exterior Doors	Metal	Photo 1
Roofing Materials	Painted Wooden Shingles	Photos 2 and 4
Interior Walls Finishes	Unpainted Plywood	Photo 9
Ceiling Finishes	Unpainted Plywood	Photo 9
Floor Finishes	Unpainted Concrete	Photo 9
Interior Doors	Wooden	Not Applicable
Interior Lighting	Incandescent	None
Exterior Lighting	None	Not Applicable
Heating	None	Not Applicable
Chimney	None	Not Applicable
Aboveground Storage Tank	None	Not Applicable
Plumbing	None	Not Applicable

8.2 FINDINGS

The findings documented in this section are based on observations made by AMEC personnel at the time of the Site visit and laboratory analyses of samples collected from solar shed 2 during the March 2013 HBMS.

8.2.1 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-25, BAC-AS-26 and BAC-AS-27), plus one (1) field duplicate sample (BAC-AS-DUP-3; duplicate BAC-AS-25), were collected from solar shed 2 and analyzed for asbestos content (refer to Photos 5, 6 and 7, Appendix B8). Sample descriptions and analytical results are summarized in Table C8-1, Appendix C8. Sample locations and analytical results are graphically illustrated in Figure 8.1, Appendix A8.

8.2.1.1 Friable Materials

8.2.1.1.1 Spray-Applied Fireproofing, Insulation and Texture Finishes

No spray-applied fireproofing, insulation or texture finishes were observed within solar shed 2 during the Site visit; therefore, no samples were collected for analysis during the March 2013 HBMS.

8.2.1.2 Non-Friable and Potentially Friable Materials

8.2.1.2.1 Ceiling Tile

There were no ceiling tiles observed in solar shed 2 during the Site visit; therefore, no samples of ceiling tile were not collected for analysis during the March 2013 HBMS.

8.2.1.2.2 Drywall Joint Compound

There was no drywall or associated joint compound observed in solar shed 2 during the Site visit; therefore, no samples of drywall joint compound were collected for analysis during the March 2013 HBMS.

8.2.1.2.3 Vinyl Flooring Products and Mastics

There was no vinyl flooring or associated mastics observed in solar shed 2 during the Site visit; therefore, no samples of vinyl flooring or mastics were collected for analysis during the March 2013 HBMS.

8.2.1.2.4 Baseboard, Carpet and Stair Tread Adhesives/Mastics

There were no baseboard, carpet or stair tread adhesives/mastics observed in solar shed 2 during the Site visit; therefore, no samples of these types of adhesives/mastics were collected for analysis during the March 2013 HBMS.

8.2.1.2.5 Roofing Products

There were no asphalt shingles observed on the roof of solar shed 2; therefore, no samples of these types of roofing products were collected for analysis during the March 2013 HBMS.

8.2.1.2.6 Thermal System Insulation

White polystyrene insulation was observed on the upper walls and ceiling inside solar shed 2, no other insulation was observed in the shed during the Site visit; therefore, no samples of insulation were collected for analysis during the March 2013 HBMS.

8.2.1.2.7 Weather Stripping and Caulking

No samples of weather stripping were collected from solar shed 2 during the March 2013 HBMS.

One (1) sample of caulking (BAC-AS-26) was collected from the exterior of solar shed 2 and analyzed for asbestos content (refer to Photo 6, Appendix B8). Asbestos was not detected in the caulking sample collected from solar shed 2.

8.2.1.2.8 Mortar, Grout and Other Cementitious Materials

No samples of mortar, grout or other cementitious materials were collected from solar shed 2 during the March 2013 HBMS.

8.2.1.2.9 Other Potential ACMs

One (1) sample of waterproofing membrane material (BAC-AS-25), plus one (1) field duplicate sample (BAC-AS-DUP-3; duplicate BAC-AS-25), and one (1) sample of vapour barrier material (BAC-AS-27) were collected from the exterior of solar shed 2 and analyzed for asbestos content (refer to Figure 8.1, Appendix A1 and Photos 5 and 7, Appendix B8). Asbestos was not detected in the waterproofing membrane or vapour barrier material samples collected from solar shed 2.

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 components and insulators such as wiring and gaskets inside electrical panels and/or electronic equipment for operation of the solar array (30 panel) and solar batteries inside the shed. Other possible hidden and inaccessible ACMs have the potential to be present at the Site but were not identified during the Site

investigations. These possible ACMs could include fire rated structures or building materials and underground infrastructure and piping.

8.2.2 Paint Finishes

The condition of the paint visible on the exterior of solar shed 2 was generally in good condition.

One (1) sample (BAC-PS-20) was collected from painted surfaces of solar shed 2 and analyzed for lead and mercury content (refer to Photo 8, Appendix B8). Sample descriptions and analytical results are summarized in Tables C8-2 and C8-3, Appendix C8. Sample locations and analytical results are graphically illustrated in Figure 8.1, Appendix A8.

8.2.2.1 Lead in Paint

Lead was detected in the paint sample analyzed at a concentration of 6.4 mg/kg (refer to Table C8-2, Appendix C8). Therefore, the paint sample contained lead at a concentration below the Federal HPA criterion of 90 mg/kg and the former Federal HPA criterion of 5,000 mg/kg.

8.2.2.2 Mercury in Paint

Mercury was not detected (<1.0 mg/kg) in the paint sample analyzed and therefore did not exceed the Federal HPA criterion of 10 mg/kg for mercury in paint or the CCME CSQG of 24 mg/kg for mercury in soil at a commercial site (refer to Table C8-3, Appendix C8).

8.2.3 Urea Formaldehyde Foam Insulation (UFFI)

Visual indicators suggesting the potential presence of UFFI was not observed in solar shed 2. Polystyrene insulation was observed on the upper walls and ceiling inside solar shed 2. The nature of the insulation in the walls and ceiling of solar shed 2 could not be confirmed at the time of the March 2013 HBMS Site inspection. Since solar shed 2 is inferred to have been constructed after 1999 or later in that same year, it is not likely that UFFI is present in the building.

8.2.4 Suspected Visible Mould Growth (SVG)

AMEC inspected the interior areas of solar shed 2 for visual or olfactory evidence of suspected mould. No building cavity inspections were performed by AMEC during the March 2013 HBMS. No areas of SVG and/or water damage were observed on the interior surfaces of solar shed 2 at the time of the Site visit.

8.2.5 Mercury-Containing Thermostats

There were no thermostats observed in solar shed 2 during the March 2013 HBMS Site visit.

8.2.6 PCB-Containing Light Ballasts

There were no fluorescent light fixtures observed in solar shed 2 during the March 2013 HBMS Site visit. Therefore, no fluorescent light ballasts were inspected for the presence or absence of PCB-containing dielectric fluid.

8.2.7 Potential Sources of ODSs and Halocarbons

No potential sources of ODSs were identified in solar shed 2 during the March 2013 HBMS Site visit.

8.2.8 Other Potentially Hazardous Building Materials or Substances

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

8.2.8.1 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 in solar shed 2 during the March 2013 HBMS Site visit.

8.2.8.2 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.

Several potential lead-acid batteries (i.e., solar batteries) were noted inside solar shed 2 at the time of the March 2013 HBMS Site inspection (refer to Photo 9, Appendix B8).

8.2.8.3 Silica

Silica is expected to be present in the concrete used to construct the foundation for solar shed 2. Precaution should be taken to prevent/reduce exposure to silica dust during any disturbance/demolition of silica-containing products.

8.2.8.4 Ash

Solid wastes such as ash from chimneys or furnaces were not observed within solar shed 2 during the March 2013 HBMS Site visit.

8.3 CONCLUSIONS AND RECOMMENDATIONS

Based on observations made and information gathered during the March 2013 HBMS, the following conclusions and recommendations are made with respect to the potential and actual presence of hazardous building materials at solar shed 2:

Asbestos-Containing Materials (ACMs)

- Results of the asbestos sampling and analytical program revealed that none of the building materials sampled during the assessment contain asbestos.
- 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 components and insulators such as wiring and gaskets inside electrical panels and/or electronic equipment for operation of the solar array (30 panel) and solar batteries inside the shed.
- Other possible hidden and inaccessible ACMs have the potential to be present at the Site but were not identified during the Site visit. 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 by walls and ceiling systems.

Lead and Mercury in Paint

- Results of the paint sampling and analytical program revealed that the paint finish sampled during the assessment did not contain lead or mercury at concentrations above the applicable Federal HPA criteria of 90 mg/kg for lead and 10 mg/kg for mercury.
- 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.
- If potential lead or mercury containing paint finishes that were not sampled during the March 2013 HBMS 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.

Urea Formaldehyde Foam Insulation (UFFI)

- Visual indicators suggesting the potential presence of UFFI was not observed in solar shed 2. Polystyrene insulation was observed on the upper walls and ceiling inside solar shed 2. The nature of the insulation in the walls and ceiling of solar shed 2 could not be confirmed at the time of the March 2013 HBMS Site inspection. Since solar shed 2 is inferred to have been constructed after 1999 or later in that same year, it is not likely that UFFI is present in the building.



Lead-Containing Materials/Equipment

- Several potential lead-acid batteries (i.e., solar batteries) were noted inside solar shed 2 at the time of the March 2013 HBMS Site inspection.
- The disturbance, control or disposal of lead-containing material/equipment (e.g., batteries, 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 recycling facility and not a landfill.
- If required, removal of lead-containing batteries should be completed in a manner that ensures structural integrity and no loss of fluid from the batteries. Should disposal be required, disposal of lead-containing batteries should be completed in accordance with hazardous waste procedures/guidelines (i.e. at an approved facility).

Silica Dust

- Silica is expected to be present in concrete used to construct the foundation of solar shed 2. 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.

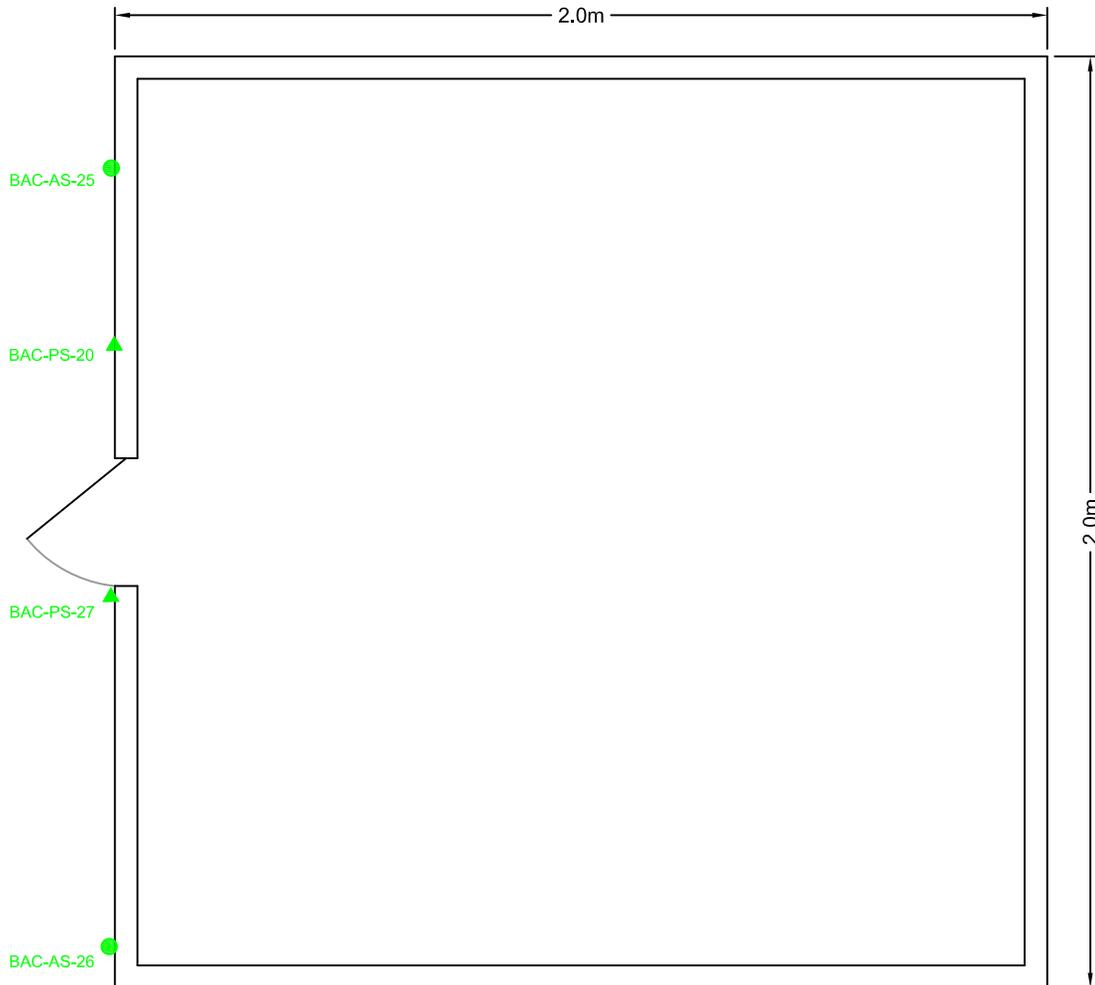
Hazardous materials identified at solar shed 2 during the March 2013 HBMS are summarized in Table 8-2. It should be noted that solar shed 2 is not slated for demolition.

Table 8-2: Hazardous Material Description

Hazardous Material	Regulatory Guidelines	Location	Quantity (Approx.)	Disposal
Lead Acid Batteries	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	-	Not Applicable.
Silica Dust	American Conference of Governmental Industrial Hygienists (ACGIH), Threshold Limit Values (TLVs) and Biological Exposure Indices (BEIs), 2010	Concrete Building Materials	-	Not Applicable.

APPENDIX A8

FIGURES



LEGEND:

- ▲ PAINT SAMPLE LOCATION - RESULTS DID NOT EXCEED
- ASBESTOS SAMPLE LOCATION - ASBESTOS NOT DETECTED OR 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: SOLAR STORAGE SHED 2 SAMPLE LOCATION PLAN		
Approved by: L. Wiseman	Scale: As Shown	Project No.: TF13076513	Figure No.: 8.1

APPENDIX B8
PHOTOGRAPHIC RECORD



Photo 1: View of solar shed 2.



Photo 2: View of solar shed 2.



Photo 3: View of solar shed 2 and the solar array in the background.



Photo 4: View of wooden shingles on solar shed 2.



Photo 5: View of waterproofing membrane sample BAC-AS-25.



Photo 6: View of caulking sample BAC-AS-26.



Photo 7: View of vapour barrier sample BAC-AS-27.



Photo 8: View of paint sample BAC-PS-20.
Note: This paint sample was re-labelled.



Photo 9: View of solar batteries in solar shed 2.

APPENDIX C8

SAMPLE AND ANALYTICAL SUMMARY TABLES

Table C8-1: Asbestos Sample Descriptions and Analytical Results

Sample ID	Material (Layer) Analyzed	Detailed Material Description	Room	Analytical Result
BAC-AS-25	Membrane	Black waterproofing membrane material.	Solar Shed 2 Exterior	ND
BAC-AS-26	Caulking	White caulking on siding.	Solar Shed 2 Exterior	ND
BAC-AS-27	Vapour Barrier	Vapour barrier material.	Solar Shed 2 Exterior	ND
BAC-AS-DUP-3	Membrane	Black waterproofing membrane material.	Solar Shed 2 Exterior	ND

Notes:

ND: non-detect

ND = <1% asbestos

BAC-AS-DUP-3 is a duplicate of BAC-AS-25

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 C8-2: 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-20	White	Wood	Solar Shed 2 Exterior	5.0	6.4

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 C8-3: 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-20	White	Wood	Solar Shed 2 Exterior	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)

