August 11, 2016 Project No. 16-139-37

VIA EMAIL: (sdgirvin@lakeheadu.ca)

Mr. Steve Girvin
Manager of Operations
Lakehead University
955 Oliver Road
Thunder Bay, ON P7B 5E1

Dear Mr. Girvin:

Re: Pre-Renovation Designated Substance and Hazardous Material Survey
Bartley Conference Centre Renovation
Lakehead University, Thunder Bay, ON

True Grit Consulting (TGCL) is pleased to provide to Lakehead University (LU) the results of a pre-renovation designated substance and hazardous material survey for selected areas of the Bartley Conference Centre, located on the Thunder Bay campus of LU at 955 Oliver Road in Thunder Bay, Ontario. The investigation was requested by Mr. Steve Girvin, Manager of Operations, for LU Physical Plant, in preparation for renovations planned in the building and in order to comply with the requirements of Ontario Regulation 278/05 - *Designated Substance – Asbestos on Construction Projects and In Buildings and Repair Operations* (O. Reg. 278/05) and the Occupational Health and Safety Act (OHSA).

Background and Scope

The Bartley Conference Centre is a part of the Bartley Student Residence at LU. The proposed renovation area on the main floor of the subject building includes washrooms, corridors and multi-purpose rooms. TGCL understands that the subject building was constructed in or around 1968.

There is currently a large database of information on designated and other hazardous materials for the subject building; however, a pre-renovation DSS is necessary to provide contractors with additional information about any hidden or previously unobserved materials. TGCL reviewed the renovation plans provided by LU to determine which areas of the subject building could be expected to be disturbed during the planned renovations. Based on the review of the renovation plans, Rooms M100 – M107 and corridor XM109 in the subject area are expected to be impacted by the renovation activities (NOTE: Room numbers are those assigned by LU and they are shown on the attached summary table and figures).

The subject area was investigated for the presence of the following designated substances and hazardous materials:

- Asbestos
- Lead
- Mercury
- Polychlorinated biphenyls (PCB)
- Ozone-depleting substances (ODS)

- Nuclear substances

Methodology

Casey Ladouceur, B.Eng., TGCL Air Quality Scientist, completed a site inspection at the subject building on July 22, 2016. Previous information on asbestos and lead containing material, available in the Lakehead University online database, was used in addition to the results obtained during the current moderately invasive investigation. Please note that the following areas and/or materials were not investigated as part of the current DSS:

- *Concrete block*: Concrete block is not expected to disturbed as part of the current renovations.; and
- *Roofing materials* – LU reports that the roof on the subject building was replaced in or around 2002. Roofing installed after 1995 is not expected to contain asbestos.

Methods used during the DSS are attached.

Results and Recommendations

TGCL provides the following information on designated and hazardous substances for the planned renovation area in the subject building (attached):

- A table summarizing the results of the updated site inspection completed on July 22, 2016, including new and existing information on designated substances in the subject area.
- Figures 1 and 2, showing the sample locations and general location of identified asbestos containing materials (ACM) for the subject area.
- Laboratory Certificate of Analysis for any additional samples collected as part of the current Pre-Renovation DSS.

The following table summarizes the findings of the DSS and provides general recommendations for safe handling and disposal of identified designated and other hazardous materials in the subject building.

Pre-Renovation DSS Results and Recommendations for Renovation Areas Bartley Conference Centre, Lakehead University 955 Oliver Road, Thunder Bay, ON		
Substance	**Results**	**Recommendations/Disposal Requirement**
Asbestos	***Asbestos*** Asbestos was detected in the following friable building materials in the subject area: • Thermal system insulation on pipe elbows in the ceiling space of rooms M106 and M102. Asbestos was detected in the following non-friable building materials observed in the subject area: • Transite piping in the ceiling space of room M107; • Mud joint compound associated with finished drywall ceilings and walls throughout the renovation area. ***Potential ACMs*** The following materials may contain asbestos; however, TGCL understands that they are not expected to be disturbed as part of the planned renovations and they were not sampled in order not to cause unsightly damage to the finished surfaces or to compromise the integrity of the building envelope: • Interior of hollow metal doors; • Insulating materials or gaskets inside pumps or other mechanical equipment; • Interior of hollow concrete block; and • Piping (insulated or composed of transite) that may be located inside wall cavities or above solid ceilings. ***Non-Asbestos*** The following materials within the renovation area were identified as non-asbestos-containing: • Mortar associated with concrete block throughout the renovation area; • Suspended acoustic ceiling tiles; • Fibreglass insulation observed on straight sections of piping; • Grey caulking around a window-mounted air conditioning unit (ACU); • Brown paper-like vapour barrier in the ceiling space of room M100; • Fibreglass insulation observed in the ceiling space of M100; and • Mud joint compound associated with a small section of finished drywall observed above the ceiling of room XM109.	Since asbestos-containing materials (ACM) were identified in the subject area, the requirements of O. Reg. 278/05 apply. All work involving ACM must follow procedures outlined in O. Reg. 278/05 and/or any specifications provided as part of the tendering of the renovation project. Areas and/or materials that have been identified as possible ACM should be investigated prior to renovations which will disturb them. Transportation of ACM (e.g. for disposal) can only be done by an Ontario Ministry of the Environment and Climate Change (MOECC)-licensed carrier. ACM can be disposed of in a licensed landfill willing to accept it. (Note: The City of Thunder Bay landfill site does not accept asbestos waste)

Pre-Renovation DSS Results and Recommendations for Renovation Areas Bartley Conference Centre, Lakehead University 955 Oliver Road, Thunder Bay, ON		
Substance	**Results**	**Recommendations/Disposal Requirement**
Lead	***Lead-Containing Materials*** The following lead containing materials were identified in the subject area: • Light brown paint on gypsum board walls. • Light brown paint on metal stalls. • Dark brown paint on metal frames. • White paint on gypsum board ceilings. • 2”x1” brown ceramic tile flooring. • 2”x1” tan ceramic tile flooring. • 4”x4” white ceramic tile wall finish. ***Non-Lead-Containing Materials*** The following materials were identified as non-lead-containing: • Light brown paint on concrete block walls. • Brown paint on wood doors.	Contractors and staff engaged in renovations which will disturb identified lead-containing materials (or materials identified as possibly lead-containing) should follow the Ontario Ministry of Labour (MOL) document, *Guideline – Lead on Construction Projects* and/or any specifications provided as part of the tendering of the renovation project. Prior to disposal of non-metallic lead-containing materials the leachate toxicity of the material must be determined. Representative samples must be collected and submitted for a Toxicity Characteristic Leaching Procedure (TCLP) test for lead in accordance with the requirements of Ontario Regulation 347 (O. Reg. 347) made under the Environmental Protection Act to determine if the materials can be disposed of as solid non-hazardous waste. If materials are determined to be leachate toxic then they must be disposed of as hazardous waste and registration of the site as a generator of leachate toxic waste is also required. TGCL recommends that painted metal be recycled since no special disposal procedures are required for metals with lead-containing surface coatings or solder (or possible lead-containing), as long as the materials will be re-cycled. If renovation plans change and materials identified as potential lead-containing will be disturbed, then samples of those materials should be collected and submitted for asbestos analysis prior to disturbance.
Mercury	Mercury-containing fluorescent light bulbs were observed in the renovation area.	If removed from service, fluorescent light tubes can be recycled.
PCB	Fluorescent light fixtures fitted with T8 bulbs were observed in the subject area. Due to the recent introduction of T8 light fixtures the ballasts associated with these lights are not expected to contain PCB.	None

Pre-Renovation DSS Results and Recommendations for Renovation Areas Bartley Conference Centre, Lakehead University 955 Oliver Road, Thunder Bay, ON		
Substance	**Results**	**Recommendations/Disposal Requirement**
ODS	Window mounted ACU were observed in various locations in the renovation area.	Prior to disposal of equipment that potentially contains ODS, retain the services of a licensed technician to purge refrigerants from the equipment. Purged and tagged equipment does not require special transportation or disposal.
Nuclear Substances	Equipment expected to contain nuclear substances was not observed in the subject area.	None.

This information should be provided to contractors involved in the renovations to meet the requirements under the Occupational Health and Safety Act and O. Reg. 278/05. Contractors should also be informed that information on designated substances in other areas of the building is available upon request.

Closure

We trust this is sufficient for your current requirements. If you have any questions or require further information, please do not hesitate to contact the undersigned at 807.626.5640

Sincerely,

True Grit Consulting LTD.

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MB/JE:ls

Enclosures Methods and Notes for Pre-Renovation DSS
Summary of Results for Pre-Renovation Designated Substance and Hazardous Material Update
Figures 1 and 2 – Sample Locations and General Location of Identified ACM
Laboratory Certificate of Analysis

TRUE GRIT CONSULTING LTD

Methods and Notes for Pre-Renovation DSS

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Methodsfor Pre-Renovation Designated Substance Survey (DSS)

TGCL understands that Lakehead University (LU) has a database of existing hazardous material information for the subject area that includes the location and description of asbestos, lead and mercury-containing materials. The following methods were used to confirm the presence of materials identified in existing reports and to identify any additional or other designated substances or hazardous materials (e.g. polychlorinated biphehyls (PCBs), ozone depleting substances (ODS) and nuclear substances).

Visual Assessment

A site inspection was completed by Ms. Casey Ladouceur B.Eng., TGCL Air Quality Scientist, on July 22, 2016. It involved a methodical visual assessment of the subject area for building materials that could contain asbestos, lead, mercury, polychlorinated biphenyls (PCB), ozone depleting substances (ODS) or nuclear substances.

Asbestos

Asbestos was used widely in building materials prior to 1995. Typical asbestos-containing building materials include, but are not limited to, thermal system insulation (TSI), flooring, plaster, stucco, mud joint compound (MJC) associated with finished drywall and ceiling tiles (CT). Building materials containing asbestos can still be purchased for limited applications (e.g. high temperature or corrosive applications); however, asbestos is not expected to be found in most building materials purchased and installed after 1995.

Building materials suspected of containing asbestos and that were not included in the existing LU hazardous materials database were collected and sampled in accordance with Ontario Regulation (O. Reg.) 278/05 *Designated Substance – Asbestos on Construction Projects and in Buildings and Repair Operations.* Samples were analyzed via Polarized Light Microscopy (PLM) following the U.S. Environmental Protection Agency Test Method EPA/600/R-93/116: *Method for the Determination of Asbestos in Bulk Building Materials*, June 1993. Where samples consisted of more than one distinct layer (i.e. vinyl floor tile, paper-type backing, mastic, etc.), each layer was analyzed and reported separately.

Materials found to contain 0.5% or more asbestos were identified as ACM (as per Ontario Regulation 278/05). All work involving ACM must follow procedures specified in Ontario Regulation 278/05 (O. Reg. 278/05). Transportation of ACM (e.g. for disposal) can only be done by a Ministry of Environment and Climate Change (MOECC) licensed carrier. ACM can be disposed of in a licensed landfill willing to accept it.

Lead

Lead can be expected to be found in older paints, ceramic tile glazing, pipe joint solder or as domestic water service piping. The Canadian Hazardous Products Act (CHPA) is responsible for defining surface coatings (including paint) as lead-containing. The CHPA definition of a lead-containing surface coating is one that contains more than 0.009% lead (weight %).

TGCL understands that the lead results listed in the existing LU hazardous materials database were obtained using a Niton X-Ray Fluorescence (XRF) analyzer. This method reports lead content in units of milligrams per square centimetre (mg/cm^2) of the examined surface area and there is no direct correlation between these XRF measurement units and other measurement units such as mass percent. This method has been shown to detect lead concentrations at or above the CHPA definition of 0.009% lead. XRF results are reported as either positive or negative for lead content.

Determination of lead content of painted materials is included in the DSS in order to specify work procedures and disposal considerations. Work involving building materials identified as lead-containing, must follow procedures outlined in the Ontario Ministry of Labour (MOL) document, *Guideline – Lead on Construction Projects*, dated 2004 (MOL Guideline).

Lead-containing non-metallic materials must not be disposed of until a sample of the material is subjected to a toxicity characteristic leaching procedure (TCLP), to determine if it is leachate toxic according to Schedule 4 of Ontario Regulation 347 (O. Reg. 347). Non-metallic materials that were found to contain greater than 0.009% lead should be submitted for TCLP analysis prior to disposal. Please note that metallic materials found to be lead-containing are not normally submitted for TCLP analysis, since it is standard practice to recycle metals as opposed to disposing of them and there are no restrictions on recycling metals with lead coatings.

Lead waste must be transported for disposal by an MOECC licensed carrier. Non-leachate toxic lead waste can be disposed of in a licensed landfill willing to accept it. Leachate toxic lead waste must be transported to, and disposed of or destroyed at a licensed disposal or destruction facility.

Mercury

A visual examination of the subject area was conducted for potential mercury containing equipment such as thermostats and switches. Fluorescent light tubes also contain mercury vapour and were noted.

If removed from service, fluorescent light tubes can be recycled and no special transportation or disposal requirements apply.

Mercury containing thermostats and thermometers are categorized as “common mercury waste” under O. Reg. 347. Common mercury waste can be transported to a common mercury recovery facility without being registered or manifested.

PCB

A visual examination of the subject area was conducted for fluorescent light fixtures. In older buildings, fluorescent light ballasts may contain PCB; however information from the building maintenance supervisor indicated that the fluorescent lighting in the building had been recently updated. Ballasts are not expected to contain PCB.

If removed from service, ballasts should be sorted and date codes should be compared to those published in the Environment Canada document entitled, *Identification of Fluorescent Lamp Ballasts Containing PCBs*, dated April 1986 (Lamp Ballast Document). Ballasts found to be PCB-containing or likely to be PCB-containing should be drummed and shipped for disposal via an MOE licensed carrier to an approved PCB waste processing facility. If more than 40 PCB ballasts will be disposed of at any one time registration of the site as a generator of PCB waste would be required.

ODS

A visual examination was conducted for equipment that could potentially contain ODS (eg. air conditioning units, fridges and coolers).

Prior to disposal of equipment that potentially contains ODS, retain the services of a licensed technician to purge refrigerants from the equipment. Purged and tagged equipment does not require special transportation or disposal.

Nuclear Substances

A visual examination was conducted for equipment that could potentially contain nuclear substances (eg. smoke detectors and alarms).

Smoke detectors can contain either americium 241 or radium which are both nuclear substances. If removed from service, smoke detectors should be carefully examined to determine the type and amount of nuclear substances inside them. Do not disassemble or take apart any of the interior components. If smoke detectors containing radium or more than 10

americium 241 units will be disposed of, contact a licensed waste carrier to package, remove and transport to a recycling facility. Smoke detectors can be transported to the recycling facility without being registered or manifested.

Summary of Results for Pre-Renovation Designated Substance and Hazardous Material Update

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Summary of Results for Designated Substance and Hazardous Materials Update
Lakehead University, Bartley Conference Centre
955 Oliver Road, Thunder Bay, ON
July 22, 2016

Room or Area Description (Room #)[1]	Designated Substance or Hazardous Material of Interest	Surface[2]	Type of Material[3]	System or Sample Description	Sample Identifier[4]	Present?[5]	For Asbestos: Type (Amount)	For Asbestos: Condition[6]	For Asbestos: Friable?	Comments
Men's Washroom (M106)	**Asbestos**	F	O	2"x1" ceramic tiles	visual ID	NO	--	--	--	--
		W	O	4"x4" ceramic tile	visual ID	NO	--	--	--	--
		W	MJC	white chalky material	S4a-c	YES	Chrysotile (2.1%)	E	N	White, chalky mud joint compound associated with finished gypsum board.
		W	O	concrete block	visual ID	POSSIBLE	--	--	--	Interior of concrete block was not investigated. Asbestos-containing vermiculite insulation may be present within the wall cavity. Concrete block walls were observed behind the finished gypsum board; however, they are not expected to be disturbed as part of the present renovation.
		W	O	mortar	S1b	NO	--	--	--	Mortar associated with concrete block walls.
		C	CT	2'x2', white, dot and dot pattern	S3c	NO	--	--	--	--
		C	O	metal decking	visual ID	NO	--	--	--	Observed above the suspended CT.
		O	O	uninsulated ductwork	visual ID	NO	--	--	--	Observed above the suspended CT.
		P	TSI	parging cement on elbows	S5a-c	YES	Chrysotile (25%)	F-P	Y	Observed on insulated piping above the suspended CT. 3 fittings were observed, one was in poor condition.
		P	TSI	fibreglass insulation under canvas wrap	visual ID	NO	--	--	--	Observed on insulated piping above the suspended CT. Non-asbestos fibreglass insulation was observed on the straight sections of the pipe.
	Lead	W	Paint	light brown	HMIS	YES	--	--	--	Paint was observed on gypsum board walls.
		O	Paint	light brown	HMIS	YES	--	--	--	Paint was observed on metal stalls.
		O	Paint	dark brown	HMIS	YES	--	--	--	Paint was observed on metal frame.
		O	O	2"x1" brown ceramic tile	HMIS	YES	--	--	--	Ceramic tile floor finish was observed in this room.
		O	O	2"x1" tan ceramic tile	HMIS	YES	--	--	--	Ceramic tile floor finish was observed in this room.
		O	O	4"x4" white ceramic tile	HMIS	YES	--	--	--	Ceramic tile wall covering was observed in this room.
		O	Paint	brown	HMIS	NO	--	--	--	Paint was observed on wood doors.
	PCB	O	O	Ballasts in fluorescent light fixtures	visual ID	NO	--	--	--	Fluorescent light fixtures observed in the area were fitted with T8 bulbs. Due to the recent introduction date of T8 light fixtures, the ballasts associated with these lights are not expected to contain PCB.
	Mercury	O	O	Fluorescent light bulbs	visual ID	YES	--	--	--	Fluorescent light tubes associated with the lighting in this room contain mercury vapour.
	ODS	--	--	See comments	--	NO	--	--	--	Equipment which might be expected to contain ODS (e.g. fridges and air conditioning units) was not observed in the subject area.
	Nuclear Substances	--	--	See comments	--	NO	--	--	--	Equipment which might be expected to contain nuclear substances (e.g. smoke detectors) was not observed in the subject area.

1.	Corresponds to room identifier on attached drawings. This Table is to be used in conjunction with the attached pre-renovation DSS report number 16-139-37A, dated August 3, 2016 (including drawings and laboratory certificates of analysis).			
2.	C = Ceiling; W = Wall; F = Floor; P = Piping; O = Other			
3.	TSI = Thermal system insulation; MJC = Mud joint compound (associated with gypsum board); O = Other			
4.	S#a,b,c = Sample collected and analyzed for asbestos content as part of the current pre-renovation DSS; HMIS = information about designated substances identified in the LU hazardous materials information system. NOTE: TGCL understands that paints and other materials were analyzed for lead content using x-ray fluorescence.; V S (###) = Visually similar to (###); Visual ID = materials visually assessed as being AC or non-AC or containing other designated or hazardous substances.			
5.	Red highlighted cells indicates identifies ACM.	Blue cells indicate identified lead containing material	Green cells indicate identified mercury containing material	Yellow cells indicate potential designated or hazardous material present
6.	Condition was assessed as follows: Excellent (no damage); G = Good (<10% damage); F = Fair (<25% damage); P = Poor (>25% damage)			
7.	If potential ACM are discovered during construction or renovation activities that have not been identified in the report (e.g. in wall cavities, ceiling spaces, other inaccessible area), work should cease immediately and samples should be collected and analyzed for asbestos.			

Summary of Results for Designated Substance and Hazardous Materials Update
Lakehead University, Bartley Conference Centre
955 Oliver Road, Thunder Bay, ON
July 22, 2016

Room or Area Description (Room #)[1]	Designated Substance or Hazardous Material of Interest	Surface[2]	Type of Material[3]	System or Sample Description	Sample Identifier[4]	Present?[5]	For Asbestos: Type (Amount)	For Asbestos: Condition[6]	For Asbestos: Friable?	Comments
Women's Washroom (M107)	**Asbestos**	F	O	2"x1" ceramic tiles	visual ID	NO	--	--	--	--
		W	O	4"x4" ceramic tile	visual ID	NO	--	--	--	--
		W	MJC	white chalky material	S2a-c	YES	Chrysotile (1.8%)	E	N	White, chalky mud joint compound associated with finished gypsum board.
		W	O	concrete block	visual ID	POSSIBLE	--	--	--	Interior of concrete block was not investigated. Asbestos-containing vermiculite insulation may be present within the wall cavity. Concrete block walls were observed behind the finished gypsum board; however, they are not expected to be disturbed as part of the present renovation.
		W	O	mortar	S1a	NO	--	--	--	Mortar associated with concrete block walls.
		C	CT	2'x2', white, dot and dot pattern	S3a,b	NO	--	--	--	--
		C	O	metal decking	visual ID	NO	--	--	--	Observed above the suspended CT.
		O	O	uninsulated ductwork	visual ID	NO	--	--	--	Observed above the suspended CT.
		P	O	Transite rain water leader	HMIS	YES	see comments	E	N	Rain water leader pipe was observed above the suspended CT. The pipe was not safely accessible; however it is reported to be asbestos-containing transite.
	Lead	O	Paint	light brown	HMIS	YES	--	--	--	Paint was observed on metal stalls.
		O	Paint	dark brown	HMIS	YES	--	--	--	Paint was observed on metal frame.
		O	O	2"x1" brown ceramic tile	HMIS	YES	--	--	--	Ceramic tile floor finish was observed in this room.
		O	O	4"x4" white ceramic tile	HMIS	YES	--	--	--	Ceramic tile wall covering was observed in this room.
		O	Paint	brown	HMIS	NO	--	--	--	Paint was observed on wood doors.
	PCB	O	O	Ballasts in fluorescent light fixtures	visual ID	NO	--	--	--	Fluorescent light fixtures observed in the area were fitted with T8 bulbs. Due to the recent introduction date of T8 light fixtures, the ballasts associated with these lights are not expected to contain PCB.
	Mercury	O	O	Fluorescent light bulbs	visual ID	YES	--	--	--	Fluorescent light tubes associated with the lighting in this room contain mercury vapour.
	ODS	--	--	See comments	--	NO	--	--	--	Equipment which might be expected to contain ODS (e.g. fridges and air conditioning units) was not observed in the subject area.
	Nuclear Substances	--	--	See comments	--	NO	--	--	--	Equipment which might be expected to contain nuclear substances (e.g. smoke detectors) was not observed in the subject area.

1.	Corresponds to room identifier on attached drawings. This Table is to be used in conjunction with the attached pre-renovation DSS report number 16-139-37A, dated August 3, 2016 (including drawings and laboratory certificates of analysis).
2.	C = Ceiling; W = Wall; F = Floor; P = Piping; O = Other
3.	TSI = Thermal system insulation; MJC = Mud joint compound (associated with gypsum board); O = Other
4.	S#a,b,c = Sample collected and analyzed for asbestos content as part of the current pre-renovation DSS; HMIS = information about designated substances identified in the LU hazardous materials information system. NOTE: TGCL understands that paints and other materials were analyzed for lead content using x-ray fluorescence.; V S (###) = Visually similar to (###); Visual ID = materials visually assessed as being AC or non-AC or containing other designated or hazardous substances.
5.	Red highlighted cells indicates identifies ACM. / Blue cells indicate identified lead containing material / Green cells indicate identified mercury containing material / Yellow cells indicate potential designated or hazardous material present
6.	Condition was assessed as follows: Excellent (no damage); G = Good (<10% damage); F = Fair (<25% damage); P = Poor (>25% damage)
7.	If potential ACM are discovered during construction or renovation activities that have not been identified in the report (e.g. in wall cavities, ceiling spaces, other inaccessible area), work should cease immediately and samples should be collected and analyzed for asbestos.

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Lakehead University, Bartley Conference Centre
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Conference Room (M102)	**Asbestos**	F	O	carpet	visual ID	NO	--	--	--	--
		W/C	MJC	white chalky material	S6a-c		Chrysotile (0.75%)	E	N	White, chalky mud joint compound associated with finished gypsum board.
		W	O	concrete block	visual ID	POSSIBLE	--	--	--	Interior of concrete block was not investigated. Asbestos-containing vermiculite insulation may be present within the wall cavity. Concrete block walls were observed behind the finished gypsum board; however, they are not expected to be disturbed as part of the present renovation.
		W	O	mortar	VS:S1	NO	--	--	--	Mortar associated with concrete block walls.
		C	O	metal decking	visual ID	NO	--	--	--	Observed above the gypsum board ceiling.
		P	TSI	parging cement on elbows	VS:S5	YES	Chrysotile (25%)	F-P	Y	Observed on insulated piping above the gypsum board ceiling. 2 fittings were observed.
		P	TSI	fibreglass insulation under canvas wrap	visual ID	NO	--	--	--	Observed on insulated piping above the suspended CT. Non-asbestos fibreglass insulation was observed on the straight sections of the pipe.
	Lead	W	Paint	light brown	HMIS	YES	--	--	--	Paint was observed on gypsum board.
		O	Paint	dark brown	HMIS	YES	--	--	--	Paint was observed on metal frame.
		C	Paint	white	HMIS	YES	--	--	--	Paint was observed on gypsum board ceiling.
		O	Paint	brown	HMIS	NO	--	--	--	Paint was observed on wood doors.
	PCB	O	O	Ballasts in fluorescent light fixtures	visual ID	NO	--	--	--	Fluorescent light fixtures observed in the area were fitted with T8 bulbs. Due to the recent introduction date of T8 light fixtures, the ballasts associated with these lights are not expected to contain PCB.
	Mercury	O	O	Fluorescent light bulbs	visual ID	YES	--	--	--	Fluorescent light tubes associated with the lighting in this room contain mercury vapour.
	ODS	--	--	See comments	--	NO	--	--	--	Equipment which might be expected to contain ODS (e.g. fridges and air conditioning units) was not observed in the subject area.
	Nuclear Substances	--	--	See comments	--	NO	--	--	--	Equipment which might be expected to contain nuclear substances (e.g. smoke detectors) was not observed in the subject area.

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4.	S#a,b,c = Sample collected and analyzed for asbestos content as part of the current pre-renovation DSS; HMIS = information about designated substances identified in the LU hazardous materials information system. NOTE: TGCL understands that paints and other materials were analyzed for lead content using x-ray fluorescence.; V S (###) = Visually similar to (###); Visual ID = materials visually assessed as being AC or non-AC or containing other designated or hazardous substances.
5.	Red highlighted cells indicates identifies ACM. / Blue cells indicate identified lead containing material / Green cells indicate identified mercury containing material / Yellow cells indicate potential designated or hazardous material present
6.	Condition was assessed as follows: Excellent (no damage); G = Good (<10% damage); F = Fair (<25% damage); P = Poor (>25% damage)
7.	If potential ACM are discovered during construction or renovation activities that have not been identified in the report (e.g. in wall cavities, ceiling spaces, other inaccessible area), work should cease immediately and samples should be collected and analyzed for asbestos.

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Conference Room (M104)	**Asbestos**	F	O	carpet	visual ID	NO	--	--	--	--
		W/C	MJC	white chalky material	S8a-c	YES	Chrysotile (1.5%)	E	N	White, chalky mud joint compound associated with finished gypsum board.
		W	O	concrete block	visual ID	POSSIBLE	--	--	--	Interior of concrete block was not investigated. Asbestos-containing vermiculite insulation may be present within the wall cavity. Concrete block walls were observed behind the finished gypsum board; however, they are not expected to be disturbed as part of the present renovation.
		W	O	mortar	VS:S1	NO	--	--	--	Mortar associated with concrete block walls.
		O	O	grey caulking	VS:S10	NO	--	--	--	Observed around the ACU.
	Lead	W	Paint	light brown	HMIS	YES	--	--	--	Paint was observed on gypsum board.
		O	Paint	dark brown	HMIS	YES	--	--	--	Paint was observed on metal frame.
		C	Paint	white	HMIS	YES	--	--	--	Paint was observed on gypsum board ceiling.
		O	Paint	brown	HMIS	NO	--	--	--	Paint was observed on wood doors.
		W	Paint	light brown	HMIS	NO	--	--	--	Paint was observed on concrete block walls.
	PCB	O	O	Ballasts in fluorescent light fixtures	visual ID	NO	--	--	--	Fluorescent light fixtures observed in the area were fitted with T8 bulbs. Due to the recent introduction date of T8 light fixtures, the ballasts associated with these lights are not expected to contain PCB.
	Mercury	O	O	Fluorescent light bulbs	visual ID	YES	--	--	--	Fluorescent light tubes associated with the lighting in this room contain mercury vapour.
	ODS	O	O	air conditioning unit	visual ID	POSSIBLE	--	--	--	One window mounted air conditioning unit was observed in the subject area.
	Nuclear Substances	--	--	See comments	--	NO	--	--	--	Equipment which might be expected to contain nuclear substances (e.g. smoke detectors) was not observed in the subject area.
Conference Room (M105)	**Asbestos**	F	O	carpet	visual ID	NO	--	--	--	--
		W/C	MJC	white chalky material	S9a-c	YES	Chrysotile (1.9%)	E	N	White, chalky mud joint compound associated with finished gypsum board.
		W	O	concrete block	visual ID	POSSIBLE	--	--	--	Interior of concrete block was not investigated. Asbestos-containing vermiculite insulation may be present within the wall cavity. Concrete block walls were observed behind the finished gypsum board; however, they are not expected to be disturbed as part of the present renovation.
		W	O	mortar	VS:S1	NO	--	--	--	Mortar associated with concrete block walls.
		O	O	grey caulking	S10a,b	NO	--	--	--	Observed around the ACU.
	Lead	W	Paint	light brown	HMIS	YES	--	--	--	Paint was observed on gypsum board.
		O	Paint	dark brown	HMIS	YES	--	--	--	Paint was observed on metal frame.
		C	Paint	white	HMIS	YES	--	--	--	Paint was observed on gypsum board ceiling.
		O	Paint	brown	HMIS	NO	--	--	--	Paint was observed on wood doors.
		W	Paint	light brown	HMIS	NO	--	--	--	Paint was observed on concrete block walls.
	PCB	O	O	Ballasts in fluorescent light fixtures	visual ID	NO	--	--	--	Fluorescent light fixtures observed in the area were fitted with T8 bulbs. Due to the recent introduction date of T8 light fixtures, the ballasts associated with these lights are not expected to contain PCB.
	Mercury	O	O	Fluorescent light bulbs	visual ID	YES	--	--	--	Fluorescent light tubes associated with the lighting in this room contain mercury vapour.
	ODS	O	O	air conditioning unit	visual ID	POSSIBLE	--	--	--	One window mounted air conditioning unit was observed in the subject area.
	Nuclear Substances	--	--	See comments	--	NO	--	--	--	Equipment which might be expected to contain nuclear substances (e.g. smoke detectors) was not observed in the subject area.

1.	Corresponds to room identifier on attached drawings. This Table is to be used in conjunction with the attached pre-renovation DSS report number 16-139-37A, dated August 3, 2016 (including drawings and laboratory certificates of analysis).			
2.	C = Ceiling; W = Wall; F = Floor; P = Piping; O = Other			
3.	TSI = Thermal system insulation; MJC = Mud joint compound (associated with gypsum board); O = Other			
4.	S#a,b,c = Sample collected and analyzed for asbestos content as part of the current pre-renovation DSS; HMIS = information about designated substances identified in the LU hazardous materials information system. NOTE: TGCL understands that paints and other materials were analyzed for lead content using x-ray fluorescence.; V S (###) = Visually similar to (###); Visual ID = materials visually assessed as being AC or non-AC or containing other designated or hazardous substances.			
5.	Red highlighted cells indicates identifies ACM.	Blue cells indicate identified lead containing material	Green cells indicate identified mercury containing material	Yellow cells indicate potential designated or hazardous material present
6.	Condition was assessed as follows: Excellent (no damage); G = Good (<10% damage); F = Fair (<25% damage); P = Poor (>25% damage)			
7.	If potential ACM are discovered during construction or renovation activities that have not been identified in the report (e.g. in wall cavities, ceiling spaces, other inaccessible area), work should cease immediately and samples should be collected and analyzed for asbestos.			

Summary of Results for Designated Substance and Hazardous Materials Update
Lakehead University, Bartley Conference Centre
955 Oliver Road, Thunder Bay, ON
July 22, 2016

Room or Area Description (Room #)[1]	Designated Substance or Hazardous Material of Interest	Surface[2]	Type of Material[3]	System or Sample Description	Sample Identifier[4]	Present?[5]	For Asbestos: Type (Amount)	For Asbestos: Condition[6]	For Asbestos: Friable?	Comments
Hallway (XM109)	**Asbestos**	F	O	carpet	visual ID	NO	--	--	--	--
		C	MJC	white chalky material	S13a-c	YES	Chrysotile (2.2%)	E	N	White, chalky mud joint compound associated with finished gypsum board.
		C	MJC	white chalky material	S15a-c	NO	--	--	--	White, chalky mud joint compound associated with finished gypsum board. A small portion of gypsum board was observed above the existing gypsum board ceiling.
		W	O	concrete block	visual ID	POSSIBLE	--	--	--	Interior of concrete block was not investigated. Asbestos-containing vermiculite insulation may be present within the wall cavity. Concrete block walls were observed behind the finished gypsum board; however, they are not expected to be disturbed as part of the present renovation.
		W	O	mortar	VS:S1	NO	--	--	--	Mortar associated with concrete block walls.
	Lead	O	Paint	dark brown	HMIS	YES	--	--	--	Paint was observed on metal frame.
		C	Paint	white	HMIS	YES	--	--	--	Paint was observed on gypsum board ceiling.
		O	Paint	brown	HMIS	NO	--	--	--	Paint was observed on wood doors.
		W	Paint	light brown	HMIS	NO	--	--	--	Paint was observed on concrete block walls.
	PCB	O	O	Ballasts in fluorescent light fixtures	visual ID	NO	--	--	--	Fluorescent light fixtures observed in the area were fitted with T8 bulbs. Due to the recent introduction date of T8 light fixtures, the ballasts associated with these lights are not expected to contain PCB.
	Mercury	O	O	Fluorescent light bulbs	visual ID	YES	--	--	--	Fluorescent light tubes associated with the lighting in this room contain mercury vapour.
	ODS	--	--	See comments	--	NO	--	--	--	Equipment which might be expected to contain ODS (e.g. fridges and air conditioning units) was not observed in the subject area.
	Nuclear Substances	--	--	See comments	--	NO	--	--	--	Equipment which might be expected to contain nuclear substances (e.g. smoke detectors) was not observed in the subject area.

1.	Corresponds to room identifier on attached drawings. This Table is to be used in conjunction with the attached pre-renovation DSS report number 16-139-37A, dated August 3, 2016 (including drawings and laboratory certificates of analysis).			
2.	C = Ceiling; W = Wall; F = Floor; P = Piping; O = Other			
3.	TSI = Thermal system insulation; MJC = Mud joint compound (associated with gypsum board); O = Other			
4.	S#a,b,c = Sample collected and analyzed for asbestos content as part of the current pre-renovation DSS; HMIS = information about designated substances identified in the LU hazardous materials information system. NOTE: TGCL understands that paints and other materials were analyzed for lead content using x-ray fluorescence.; V S (###) = Visually similar to (###); Visual ID = materials visually assessed as being AC or non-AC or containing other designated or hazardous substances.			
5.	Red highlighted cells indicates identifies ACM.	Blue cells indicate identified lead containing material	Green cells indicate identified mercury containing material	Yellow cells indicate potential designated or hazardous material present
6.	Condition was assessed as follows: Excellent (no damage); G = Good (<10% damage); F = Fair (<25% damage); P = Poor (>25% damage)			
7.	If potential ACM are discovered during construction or renovation activities that have not been identified in the report (e.g. in wall cavities, ceiling spaces, other inaccessible area), work should cease immediately and samples should be collected and analyzed for asbestos.			

Summary of Results for Designated Substance and Hazardous Materials Update
Lakehead University, Bartley Conference Centre
955 Oliver Road, Thunder Bay, ON
July 22, 2016

Room or Area Description (Room #)[1]	Designated Substance or Hazardous Material of Interest	Surface[2]	Type of Material[3]	System or Sample Description	Sample Identifier[4]	Present?[5]	For Asbestos: Type (Amount)	For Asbestos: Condition[6]	For Asbestos: Friable?	Comments
Conference Room (M101)	**Asbestos**	F	O	carpet	visual ID	NO	--	--	--	--
		W/C	MJC	white chalky material	S11a-c	YES	Chrysotile (1.2%)	E	N	White, chalky mud joint compound associated with finished gypsum board.
		W	O	concrete block	visual ID	POSSIBLE	--	--	--	Interior of concrete block was not investigated. Asbestos-containing vermiculite insulation may be present within the wall cavity. Concrete block walls were observed behind the finished gypsum board; however, they are not expected to be disturbed as part of the present renovation.
		W	O	mortar	VS:S1	NO	--	--	--	Mortar associated with concrete block walls.
		O	O	grey caulking	S10c	NO	--	--	--	Observed around the ACU.
		C	O	metal decking	visual ID	NO	--	--	--	Observed above the gypsum board ceiling.
		O	O	fibreglass insulation	visual ID	NO	--	--	--	Observed above the gypsum board ceiling.
	Lead	W	Paint	light brown	HMIS	YES	--	--	--	Paint was observed on gypsum board.
		O	Paint	dark brown	HMIS	YES	--	--	--	Paint was observed on metal frame.
		C	Paint	white	HMIS	YES	--	--	--	Paint was observed on gypsum board ceiling.
		O	Paint	brown	HMIS	NO	--	--	--	Paint was observed on wood doors.
		W	Paint	light brown	HMIS	NO	--	--	--	Paint was observed on concrete block walls.
	PCB	O	O	Ballasts in fluorescent light fixtures	visual ID	NO	--	--	--	Fluorescent light fixtures observed in the area were fitted with T8 bulbs. Due to the recent introduction date of T8 light fixtures, the ballasts associated with these lights are not expected to contain PCB.
	Mercury	O	O	Fluorescent light bulbs	visual ID	YES	--	--	--	Fluorescent light tubes associated with the lighting in this room contain mercury vapour.
	ODS	O	O	air conditioning unit	visual ID	POSSIBLE	--	--	--	One window mounted air conditioning unit was observed in the subject area.
	Nuclear Substances	--	--	See comments	--	NO	--	--	--	Equipment which might be expected to contain nuclear substances (e.g. smoke detectors) was not observed in the subject area.

1.	Corresponds to room identifier on attached drawings. This Table is to be used in conjunction with the attached pre-renovation DSS report number 16-139-37A, dated August 3, 2016 (including drawings and laboratory certificates of analysis).
2.	C = Ceiling; W = Wall; F = Floor; P = Piping; O = Other
3.	TSI = Thermal system insulation; MJC = Mud joint compound (associated with gypsum board); O = Other
4.	S#a,b,c = Sample collected and analyzed for asbestos content as part of the current pre-renovation DSS; HMIS = information about designated substances identified in the LU hazardous materials information system. NOTE: TGCL understands that paints and other materials were analyzed for lead content using x-ray fluorescence.; V S (###) = Visually similar to (###); Visual ID = materials visually assessed as being AC or non-AC or containing other designated or hazardous substances.
5.	Red highlighted cells indicates identifies ACM. / Blue cells indicate identified lead containing material / Green cells indicate identified mercury containing material / Yellow cells indicate potential designated or hazardous material present
6.	Condition was assessed as follows: Excellent (no damage); G = Good (<10% damage); F = Fair (<25% damage); P = Poor (>25% damage)
7.	If potential ACM are discovered during construction or renovation activities that have not been identified in the report (e.g. in wall cavities, ceiling spaces, other inaccessible area), work should cease immediately and samples should be collected and analyzed for asbestos.

Summary of Results for Designated Substance and Hazardous Materials Update
Lakehead University, Bartley Conference Centre
955 Oliver Road, Thunder Bay, ON
July 22, 2016

Room or Area Description (Room #)[1]	Designated Substance or Hazardous Material of Interest	Surface[2]	Type of Material[3]	System or Sample Description	Sample Identifier[4]	Present?[5]	For Asbestos: Type (Amount)	For Asbestos: Condition[6]	For Asbestos: Friable?	Comments
Conference Room (M100)	**Asbestos**	F	O	carpet	visual ID	NO	--	--	--	--
		W/C	MJC	white chalky material	S12a-c	YES	Chrysotile (2.3%)	E	N	White, chalky mud joint compound associated with finished gypsum board.
		W	O	concrete block	visual ID	POSSIBLE	--	--	--	Interior of concrete block was not investigated. Asbestos-containing vermiculite insulation may be present within the wall cavity. Concrete block walls were observed behind the finished gypsum board; however, they are not expected to be disturbed as part of the present renovation.
		W	O	mortar	S1c	NO	--	--	--	Mortar associated with concrete block walls.
		O	O	grey caulking	VS:S10	NO	--	--	--	Observed around the ACU.
		C	O	metal decking	visual ID	NO	--	--	--	Observed above the gypsum board ceiling.
		O	O	brown fibrous paper	S14a-c	NO	--	--	--	Associated with the fibreglass batt insulation observed above the gypsum board ceiling.
		O	O	fibreglass insulation	visual ID	NO	--	--	--	Observed above the gypsum board ceiling.
	Lead	W	Paint	light brown	HMIS	YES	--	--	--	Paint was observed on gypsum board.
		O	Paint	dark brown	HMIS	YES	--	--	--	Paint was observed on metal frame.
		C	Paint	white	HMIS	YES	--	--	--	Paint was observed on gypsum board ceiling.
		W	Paint	light brown	HMIS	NO	--	--	--	Paint was observed on concrete block walls.
	PCB	O	O	Ballasts in fluorescent light fixtures	visual ID	NO	--	--	--	Fluorescent light fixtures observed in the area were fitted with T8 bulbs. Due to the recent introduction date of T8 light fixtures, the ballasts associated with these lights are not expected to contain PCB.
	Mercury	O	O	Fluorescent light bulbs	visual ID	YES	--	--	--	Fluorescent light tubes associated with the lighting in this room contain mercury vapour.
	ODS	O	O	air conditioning unit	visual ID	POSSIBLE	--	--	--	One window mounted air conditioning unit was observed in the subject area.
	Nuclear Substances	--	--	See comments	--	NO	--	--	--	Equipment which might be expected to contain nuclear substances (e.g. smoke detectors) was not observed in the subject area.
Conference Room (M103)	**Asbestos**	F	O	carpet	visual ID	NO	--	--	--	--
		W/C	MJC	white chalky material	S7a-c	YES	Chrysotile (1.4%)	E	N	White, chalky mud joint compound associated with finished gypsum board.
		W	O	concrete block	visual ID	POSSIBLE	--	--	--	Interior of concrete block was not investigated. Asbestos-containing vermiculite insulation may be present within the wall cavity. Concrete block walls were observed behind the finished gypsum board; however, they are not expected to be disturbed as part of the present renovation.
		W	O	mortar	S1c	NO	--	--	--	Mortar associated with concrete block walls.
	Lead	W	Paint	light brown	HMIS	YES	--	--	--	Paint was observed on gypsum board.
		O	Paint	dark brown	HMIS	YES	--	--	--	Paint was observed on metal frame.
		C	Paint	white	HMIS	YES	--	--	--	Paint was observed on gypsum board ceiling.
	PCB	O	O	Ballasts in fluorescent light fixtures	visual ID	NO	--	--	--	Fluorescent light fixtures observed in the area were fitted with T8 bulbs. Due to the recent introduction date of T8 light fixtures, the ballasts associated with these lights are not expected to contain PCB.
	Mercury	O	O	Fluorescent light bulbs	visual ID	YES	--	--	--	Fluorescent light tubes associated with the lighting in this room contain mercury vapour.
	ODS	O	O	air conditioning unit	visual ID	POSSIBLE	--	--	--	One wall mounted air conditioning unit was observed in the subject area.
	Nuclear Substances	--	--	See comments	--	NO	--	--	--	Equipment which might be expected to contain nuclear substances (e.g. smoke detectors) was not observed in the subject area.

1.	Corresponds to room identifier on attached drawings. This Table is to be used in conjunction with the attached pre-renovation DSS report number 16-139-37A, dated August 3, 2016 (including drawings and laboratory certificates of analysis).
2.	C = Ceiling; W = Wall; F = Floor; P = Piping; O = Other
3.	TSI = Thermal system insulation; MJC = Mud joint compound (associated with gypsum board); O = Other
4.	S#a,b,c = Sample collected and analyzed for asbestos content as part of the current pre-renovation DSS; HMIS = information about designated substances identified in the LU hazardous materials information system. NOTE: TGCL understands that paints and other materials were analyzed for lead content using x-ray fluorescence.; V S (###) = Visually similar to (###); Visual ID = materials visually assessed as being AC or non-AC or containing other designated or hazardous substances.
5.	Red highlighted cells indicates identifies ACM. / Blue cells indicate identified lead containing material / Green cells indicate identified mercury containing material / Yellow cells indicate potential designated or hazardous material present
6.	Condition was assessed as follows: Excellent (no damage); G = Good (<10% damage); F = Fair (<25% damage); P = Poor (>25% damage)
7.	If potential ACM are discovered during construction or renovation activities that have not been identified in the report (e.g. in wall cavities, ceiling spaces, other inaccessible area), work should cease immediately and samples should be collected and analyzed for asbestos.

Figures - Sample Locations and General Location of Identified ACM

1263 Innovation Drive, Thunder Bay, ON, P7B 0A2
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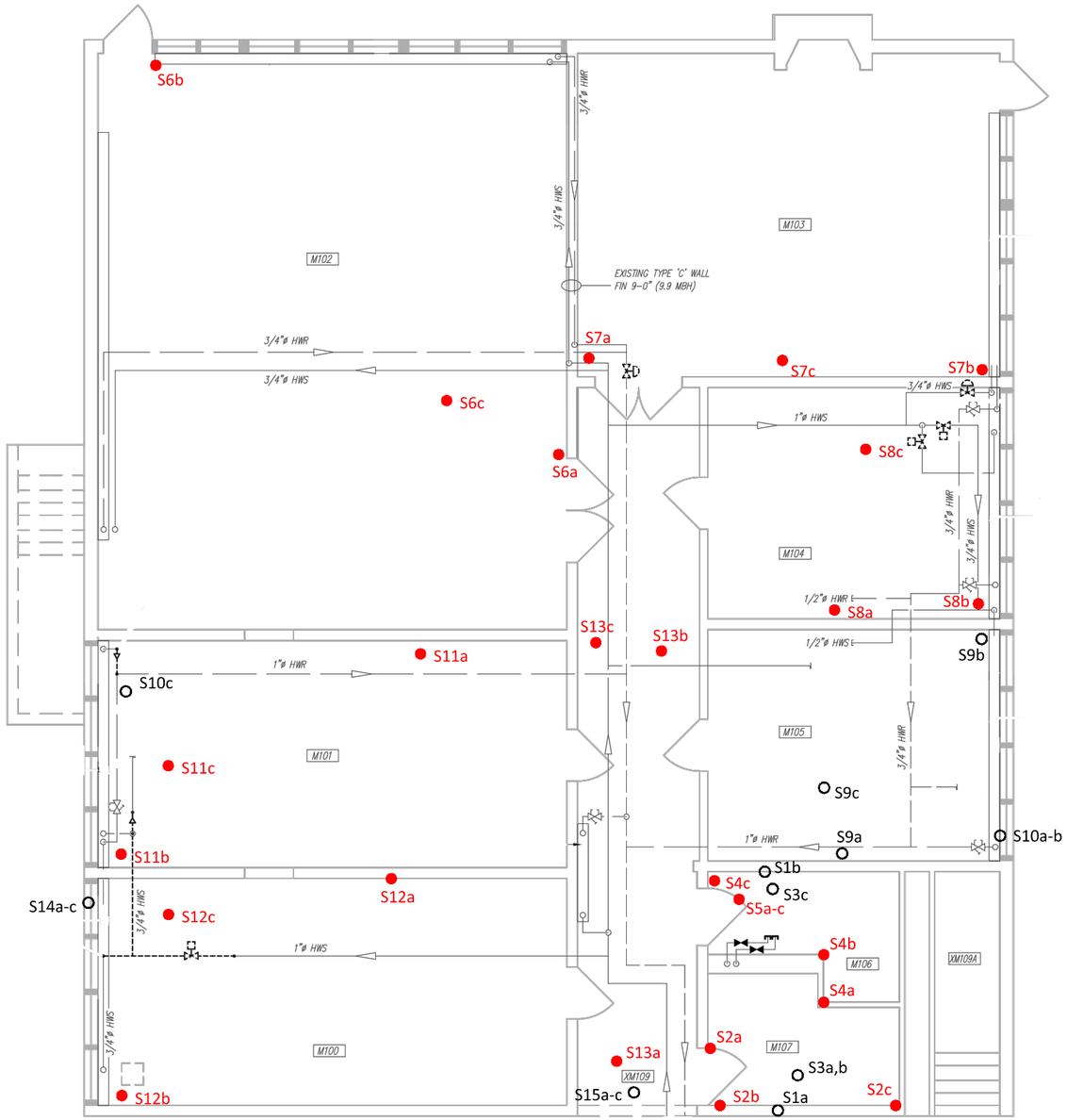
Plot Size: ANSI EXPAND B (11.00 X 17.00 INCHES)



LEGEND

M#	LU Room Number
S#a-c	Asbestos Sample Location
S#a-c	Asbestos Containing Sample Location

Notes:

1. Building dimensions and layout are approximate and may not be exactly as shown.
2. This drawing should be printed in colour.
3. This drawing shows the general location of identified ACM and should be read in conjunction with the attached Pre-Renovation Designated Substance (DSS) Report (16-139-37).
4. Drawing is referenced from TBT Engineering Consulting Group (*Bartley Conference Center A/C Upgrade, Main Floor Plan, Hydronic Heating, Demolition & Renovation, dated May 2016).*

File No. 16-139-37

TRUE GRIT CONSULTING LTD

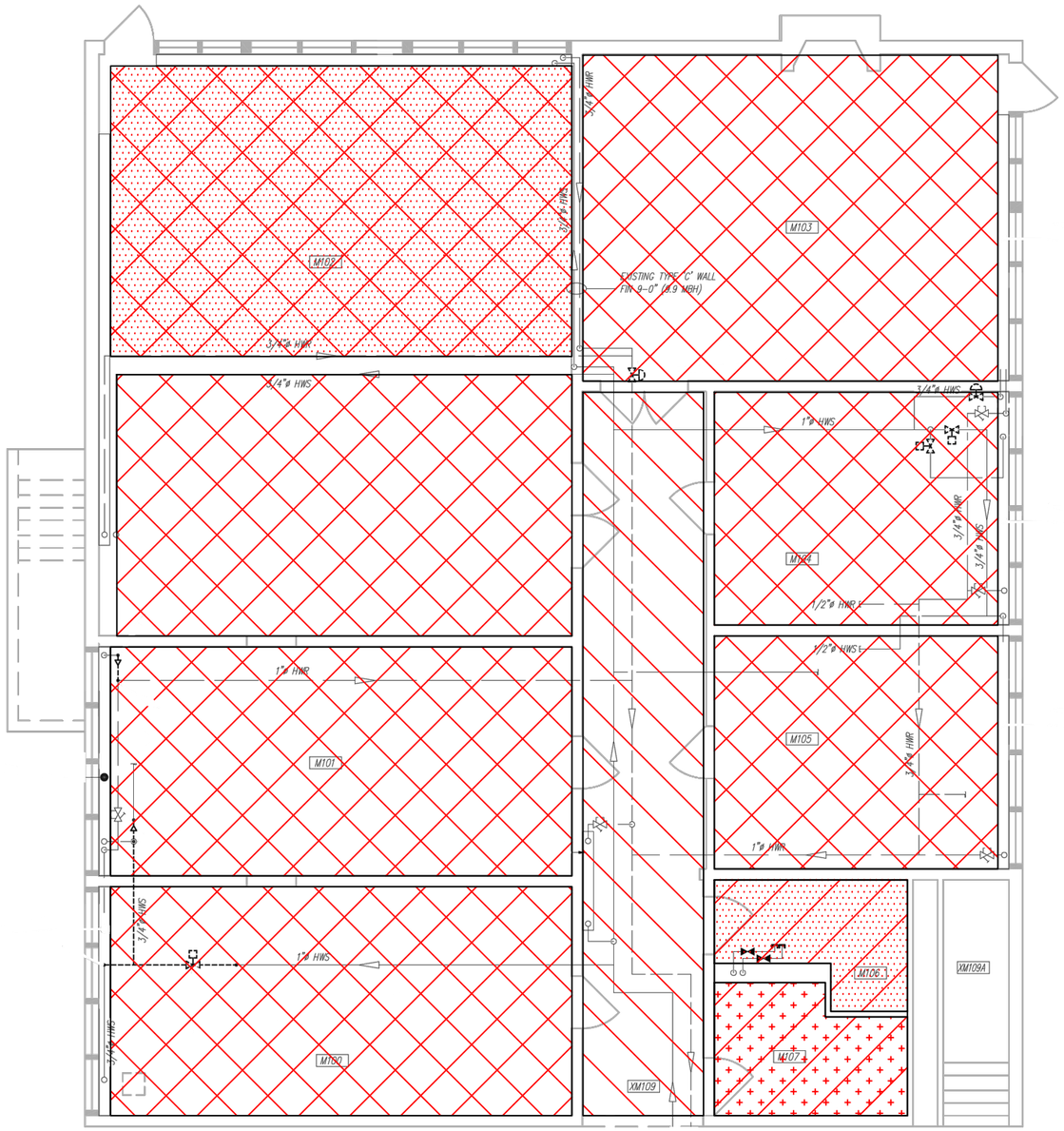
Designed By: AS
Approved By: JE
Date: August 4, 2016

Lakehead University
Pre-Renovation Designated Substance Survey
Bartley Conference Centre, A/C Upgrade
955 Oliver Road, Thunder Bay, ON

Sample Locations

FIGURE 1

Plot Size: ANSI EXPAND B (11.00 X 17.00 INCHES)



LEGEND

- Walls with AC MJC
- Ceiling with AC MJC
- AC TSI Above Ceiling
- AC Transite Above Ceiling

Notes:

1. Building dimensions and layout are approximate and may not be exactly as shown.
2. This drawing should be printed in colour.
3. This drawing shows the general location of identified ACM and should be read in conjunction with the attached Pre-Renovation Designated Substance (DSS) Report (16-139-37).
4. Drawing is referenced from TBT Engineering Consulting Group (*Bartley Conference Center A/C Upgrade, Main Floor Plan, Hydronic Heating, Demolition & Renovation, dated May 2016).*

File No. 16-139-37

TRUE GRIT CONSULTING LTD

Designed By: AS
Approved By: JE
Date: August 4, 2016

Lakehead University
Pre-Renovation Designated Substance Survey
Bartley Conference Centre, A/C Upgrade
955 Oliver Road, Thunder Bay, ON

Location of Identified ACM

FIGURE 2

TRUE GRIT CONSULTING LTD

Laboratory Certificates of Analysis

1263 Innovation Drive, Thunder Bay, ON, P7B 0A2
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CERTIFICATE OF ANALYSIS

Client: True Grit Consulting Ltd.
1263 Innovation Drive
Thunder Bay ON P7B 0A2

Client: TRU571

Report Date: 8/1/2016
Report No.: 515747 - PLM
Project: LU-Bartley Conference Centre
Project No.: 16-139-37

PLM BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 5992704 **Client No.:** S1a	**Description:** Grey Cementitious **Facility:**	**Location:**
Percent Asbestos: *None Detected*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 100
Lab No.: 5992705 **Client No.:** S1b	**Description:** Grey Cementitious **Facility:**	**Location:**
Percent Asbestos: *None Detected*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 100
Lab No.: 5992706 **Client No.:** S1c	**Description:** Grey Cementitious **Facility:**	**Location:**
Percent Asbestos: *None Detected*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 100
Lab No.: 5992707 **Client No.:** S2a	**Description:** Off-White Joint Compound **Facility:**	**Location:** Rm M107
Percent Asbestos: ***PC 1.8*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.2
Lab No.: 5992708 **Client No.:** S2b	**Description:** Sample Not Analyzed **Facility:**	**Location:** Rm M107
Percent Asbestos: *Sample Not Analyzed*	Percent Non-Asbestos Fibrous Material: Sample Not Analyzed	Percent Non-Fibrous Material:
Lab No.: 5992709 **Client No.:** S2c	**Description:** Sample Not Analyzed **Facility:**	**Location:** Rm M107
Percent Asbestos: *Sample Not Analyzed*	Percent Non-Asbestos Fibrous Material: Sample Not Analyzed	Percent Non-Fibrous Material:

Analytical Method -**US EPA 600, R93-116**. Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 7/26/2016
Date Analyzed: 08/01/2016
Signature:
Analyst: Shane Cone

Approved By:
Frank E. Ehrenfeld, III
Laboratory Director

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CERTIFICATE OF ANALYSIS

Client: True Grit Consulting Ltd.
1263 Innovation Drive
Thunder Bay ON P7B 0A2

Client: TRU571

Report Date: 8/1/2016
Report No.: 515747 - PLM
Project: LU-Bartley Conference Centre
Project No.: 16-139-37

PLM BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 5992710 **Client No.:** S3a	**Description:** Off-White Ceiling Tile; 2x2 **Facility:**	**Location:**
Percent Asbestos: *None Detected*	Percent Non-Asbestos Fibrous Material: 40 Cellulose 30 Fibrous Glass	Percent Non-Fibrous Material: 30
Lab No.: 5992711 **Client No.:** S3b	**Description:** Off-White Ceiling Tile; 2x2 **Facility:**	**Location:**
Percent Asbestos: *None Detected*	Percent Non-Asbestos Fibrous Material: 40 Cellulose 30 Fibrous Glass	Percent Non-Fibrous Material: 30
Lab No.: 5992712 **Client No.:** S3c	**Description:** Off-White Ceiling Tile; 2x2 **Facility:**	**Location:**
Percent Asbestos: *None Detected*	Percent Non-Asbestos Fibrous Material: 40 Cellulose 30 Fibrous Glass	Percent Non-Fibrous Material: 30
Lab No.: 5992713 **Client No.:** S4a	**Description:** Off-White Joint Compound **Facility:**	**Location:** Rm M106
Percent Asbestos: ***PC 2.1*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 97.9
Lab No.: 5992714 **Client No.:** S4b	**Description:** Sample Not Analyzed **Facility:**	**Location:** Rm M106
Percent Asbestos: *Sample Not Analyzed*	Percent Non-Asbestos Fibrous Material: Sample Not Analyzed	Percent Non-Fibrous Material:
Lab No.: 5992715 **Client No.:** S4c	**Description:** Sample Not Analyzed **Facility:**	**Location:** Rm M106
Percent Asbestos: *Sample Not Analyzed*	Percent Non-Asbestos Fibrous Material: Sample Not Analyzed	Percent Non-Fibrous Material:

Analytical Method -**US EPA 600, R93-116**. Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 7/26/2016
Date Analyzed: 08/01/2016
Signature:
Analyst: Shane Cone

Approved By:
Frank E. Ehrenfeld, III
Laboratory Director

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CERTIFICATE OF ANALYSIS

Client: True Grit Consulting Ltd.
1263 Innovation Drive
Thunder Bay ON P7B 0A2

Client: TRU571

Report Date: 8/1/2016
Report No.: 515747 - PLM
Project: LU-Bartley Conference Centre
Project No.: 16-139-37

PLM BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 5992716 **Client No.:** S5a	**Description:** Tan Insulation **Facility:**	**Location:**
Percent Asbestos: ***25*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 75
Lab No.: 5992717 **Client No.:** S5b	**Description:** Sample Not Analyzed **Facility:**	**Location:**
Percent Asbestos: *Sample Not Analyzed*	Percent Non-Asbestos Fibrous Material: Sample Not Analyzed	Percent Non-Fibrous Material:
Lab No.: 5992718 **Client No.:** S5c	**Description:** Sample Not Analyzed **Facility:**	**Location:**
Percent Asbestos: *Sample Not Analyzed*	Percent Non-Asbestos Fibrous Material: Sample Not Analyzed	Percent Non-Fibrous Material:
Lab No.: 5992719 **Client No.:** S6a	**Description:** White Joint Compound **Facility:**	**Location:** Rm M102
Percent Asbestos: *None Detected*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 100
Lab No.: 5992720 **Client No.:** S6b	**Description:** White Joint Compound **Facility:**	**Location:** Rm M102
Percent Asbestos: *None Detected*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 100
Lab No.: 5992721 **Client No.:** S6c	**Description:** Off-White Joint Compound **Facility:**	**Location:** Rm M102
Percent Asbestos: ***PC 0.75*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 99.25

Analytical Method -**US EPA 600, R93-116**. Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 7/26/2016
Date Analyzed: 08/01/2016
Signature:
Analyst: Shane Cone

Approved By:
Frank E. Ehrenfeld, III
Laboratory Director

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ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: True Grit Consulting Ltd.
1263 Innovation Drive
Thunder Bay ON P7B 0A2

Client: TRU571

Report Date: 8/1/2016
Report No.: 515747 - PLM
Project: LU-Bartley Conference Centre
Project No.: 16-139-37

PLM BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 5992722 **Client No.:** S7a	**Description:** Off-White Joint Compound **Facility:**	**Location:** Rm M103
Percent Asbestos: ***PC 1.4*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.6
Lab No.: 5992723 **Client No.:** S7b	**Description:** Sample Not Analyzed **Facility:**	**Location:** Rm M103
Percent Asbestos: *Sample Not Analyzed*	Percent Non-Asbestos Fibrous Material: Sample Not Analyzed	Percent Non-Fibrous Material:
Lab No.: 5992724 **Client No.:** S7c	**Description:** Sample Not Analyzed **Facility:**	**Location:** Rm M103
Percent Asbestos: *Sample Not Analyzed*	Percent Non-Asbestos Fibrous Material: Sample Not Analyzed	Percent Non-Fibrous Material:
Lab No.: 5992725 **Client No.:** S8a	**Description:** Off-White Joint Compound **Facility:**	**Location:** Rm M104
Percent Asbestos: ***PC 1.5*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.5
Lab No.: 5992726 **Client No.:** S8b	**Description:** Sample Not Analyzed **Facility:**	**Location:** Rm M104
Percent Asbestos: *Sample Not Analyzed*	Percent Non-Asbestos Fibrous Material: Sample Not Analyzed	Percent Non-Fibrous Material:
Lab No.: 5992727 **Client No.:** S8c	**Description:** Sample Not Analyzed **Facility:**	**Location:** Rm M104
Percent Asbestos: *Sample Not Analyzed*	Percent Non-Asbestos Fibrous Material: Sample Not Analyzed	Percent Non-Fibrous Material:

Analytical Method -**US EPA 600, R93-116**. Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 7/26/2016
Date Analyzed: 08/01/2016
Signature:
Analyst: Shane Cone

Approved By:
Frank E. Ehrenfeld, III
Laboratory Director

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Project No.: 16-139-37

PLM BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 5992728 **Client No.:** S9a	**Description:** Off-White Joint Compound **Facility:**	**Location:** Rm M105
Percent Asbestos: ***PC 1.9*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.1
Lab No.: 5992729 **Client No.:** S9b	**Description:** Sample Not Analyzed **Facility:**	**Location:** Rm M105
Percent Asbestos: *Sample Not Analyzed*	Percent Non-Asbestos Fibrous Material: Sample Not Analyzed	Percent Non-Fibrous Material:
Lab No.: 5992730 **Client No.:** S9c	**Description:** Sample Not Analyzed **Facility:**	**Location:** Rm M105
Percent Asbestos: *Sample Not Analyzed*	Percent Non-Asbestos Fibrous Material: Sample Not Analyzed	Percent Non-Fibrous Material:
Lab No.: 5992731 **Client No.:** S10a	**Description:** Grey Caulk **Facility:**	**Location:**
Percent Asbestos: *None Detected*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 100
Lab No.: 5992732 **Client No.:** S10b	**Description:** Grey Caulk **Facility:**	**Location:**
Percent Asbestos: *None Detected*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 100
Lab No.: 5992733 **Client No.:** S10c	**Description:** Grey Caulk **Facility:**	**Location:**
Percent Asbestos: *None Detected*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 100

Analytical Method -**US EPA 600, R93-116**. Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 7/26/2016
Date Analyzed: 08/01/2016
Signature:
Analyst: Shane Cone

Approved By:
Frank E. Ehrenfeld, III
Laboratory Director

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PLM BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 5992734 **Client No.:** S11a	**Description:** Off-White Joint Compound **Facility:**	**Location:** Rm M101
Percent Asbestos: ***PC 1.2*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.8
Lab No.: 5992735 **Client No.:** S11b	**Description:** Sample Not Analyzed **Facility:**	**Location:** Rm M101
Percent Asbestos: *Sample Not Analyzed*	Percent Non-Asbestos Fibrous Material: Sample Not Analyzed	Percent Non-Fibrous Material:
Lab No.: 5992736 **Client No.:** S11c	**Description:** Sample Not Analyzed **Facility:**	**Location:** Rm M101
Percent Asbestos: *Sample Not Analyzed*	Percent Non-Asbestos Fibrous Material: Sample Not Analyzed	Percent Non-Fibrous Material:
Lab No.: 5992737 **Client No.:** S12a	**Description:** Off-White Joint Compound **Facility:**	**Location:** Rm M100
Percent Asbestos: ***PC 2.3*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 97.7
Lab No.: 5992738 **Client No.:** S12b	**Description:** Sample Not Analyzed **Facility:**	**Location:** Rm M100
Percent Asbestos: *Sample Not Analyzed*	Percent Non-Asbestos Fibrous Material: Sample Not Analyzed	Percent Non-Fibrous Material:
Lab No.: 5992739 **Client No.:** S12c	**Description:** Sample Not Analyzed **Facility:**	**Location:** Rm M100
Percent Asbestos: *Sample Not Analyzed*	Percent Non-Asbestos Fibrous Material: Sample Not Analyzed	Percent Non-Fibrous Material:

Analytical Method -**US EPA 600, R93-116**. Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 7/26/2016
Date Analyzed: 08/01/2016
Signature:
Analyst: Shane Cone

Approved By:
Frank E. Ehrenfeld, III
Laboratory Director

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Report Date: 8/1/2016
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PLM BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 5992740 **Client No.:** S13a	**Description:** Off-White Sheetrock **Facility:**	**Location:** Hallway
Percent Asbestos: *None Detected*	Percent Non-Asbestos Fibrous Material: 10 Cellulose	Percent Non-Fibrous Material: 90
Lab No.: 5992741 **Client No.:** S13b	**Description:** Off-White Joint Compound **Facility:**	**Location:** Hallway
Percent Asbestos: ***PC 2.2*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 97.8
Lab No.: 5992742 **Client No.:** S13c	**Description:** Sample Not Analyzed **Facility:**	**Location:** Hallway
Percent Asbestos: *Sample Not Analyzed*	Percent Non-Asbestos Fibrous Material: Sample Not Analyzed	Percent Non-Fibrous Material:
Lab No.: 5992743 **Client No.:** S14a	**Description:** Brown/Black Insulation **Facility:**	**Location:**
Percent Asbestos: *None Detected*	Percent Non-Asbestos Fibrous Material: 30 Cellulose	Percent Non-Fibrous Material: 70
Lab No.: 5992744 **Client No.:** S14b	**Description:** Brown/Black Insulation **Facility:**	**Location:**
Percent Asbestos: *None Detected*	Percent Non-Asbestos Fibrous Material: 30 Cellulose	Percent Non-Fibrous Material: 70
Lab No.: 5992745 **Client No.:** S14c	**Description:** Brown/Black Insulation **Facility:**	**Location:**
Percent Asbestos: *None Detected*	Percent Non-Asbestos Fibrous Material: 30 Cellulose	Percent Non-Fibrous Material: 70

Analytical Method -**US EPA 600, R93-116**. Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 7/26/2016
Date Analyzed: 08/01/2016
Signature:
Analyst: Shane Cone

Approved By:
Frank E. Ehrenfeld, III
Laboratory Director

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Client: TRU571

Report Date: 8/1/2016
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PLM BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 5992746 **Client No.:** S15a	**Description:** White Joint Compound **Facility:**	**Location:** Hallway
Percent Asbestos: *None Detected*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 100
Lab No.: 5992747 **Client No.:** S15b	**Description:** White Joint Compound **Facility:**	**Location:** Hallway
Percent Asbestos: *None Detected*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 100
Lab No.: 5992748 **Client No.:** S15c	**Description:** White Joint Compound **Facility:**	**Location:** Hallway
Percent Asbestos: *None Detected*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 100

Analytical Method -**US EPA 600, R93-116**. Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 7/26/2016
Date Analyzed: 08/01/2016
Signature:
Analyst: Shane Cone

Approved By:
Frank E. Ehrenfeld, III
Laboratory Director

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Appendix to Analytical Report

Customer Contact:
Analysis: US EPA 600, R93-116

This appendix seeks to promote greater understanding of any observations, exceptions, special instructions, or circumstances that the laboratory needs to communicate to the client concerning the above samples. The information below is used to help promote your ability to make the most informed decisions for you and your customers. Please note the following points of contact for any questions you may have.

iATL Customer Service: customerservice@iatl.com
iATL Office Manager: cdavis@iatl.com
iATL Account Representative: Shirley Clark
Sample Login Notes: See Batch Sheet Attached
Sample Matrix: Bulk Building Materials
Exceptions Noted: See Following Pages

General Terms, Warrants, Limits, Qualifiers:

General information about iATL capabilities and client/laboratory relationships and responsibilities are spelled out in iATL policies that are listed at www.iATL.com and in our Quality Assurance Manual per ISO 17025 standard requirements. The information therein is a representation of iATL definitions and policies for turnaround times, sample submittal, collection media, blank definitions, quantification issues and limit of detection, analytical methods and procedures, sub-contracting policies, results reporting options, fees, terms, and discounts, confidentiality, sample archival and disposal, and data interpretation.

iATL warrants the test results to be of a precision normal for the type and methodology employed for each sample submitted. iATL disclaims any other warrants, expressed or implied, including warranty of fitness for a particular purpose and warranty of merchantability. iATL accepts no legal responsibility for the purpose for which the client uses test results. Any analytical work performed must be governed by our Standard Terms and Conditions. Prices, methods and detection limits may be changed without notification. Please contact your Customer Service Representative for the most current information.

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Information Pertinent to this Report:

Analysis by US EPA 600 93-116: Determination of Asbestos in Bulk Building Materials by Polarized Light Microscopy (PLM).

Certifications:

- NIST-NVLAP No. 101165-0
- NY-DOH No. 11021
- AIHA-LAP, LLC No. 100188

Quantification at <0.25% by volume is possible with this method. (PC) Indicates Stratified Point Count Method performed. (PC-Trace) means that asbestos was detected but is not quantifiable under the Point Counting regimen. Analysis includes all distinct separable layers in accordance with EPA 600 Method. If not reported or otherwise noted, layer is either not present or the client has specifically requested that it not be analyzed (ex. analyze until positive instructions). Small asbestos fibers may be missed by PLM due to resolution limitations of the optical microscope. Therefore, PLM is not consistently reliable in detecting asbestos in non-friable organically bound (NOB) materials. Quantitative transmission electron microscopy (TEM) is currently the only method that can pronounce materials as non-asbestos containing.

Analytical Methodology Alternatives: Your initial request for analysis may not have accounted for recent advances in regulatory requirements or advances in technology that are routinely used in similar situations for other qualified projects. You may have the option to explore additional analysis for further information. Below are a few options, listed as the matrix followed by the appropriate methodology. Also included are links to more information on our website.

Bulk Building Materials that are Non-Friable Organically Bound (NOB) by Gravimetric Reduction techniques employing PLM and TEM: ELAP 198.6 (PLM-NOB), ELAP 198.4 (TEM-NOB)

Loose Fill Vermiculite Insulation, Attic Insulation, Zonolite (copyright), etc.: US EPA 600 R-4/004 (multi-tiered analytical process)
Sprayed On Insulation/Fireproofing with Vermiculite (SOF-V): ELAP 198.8 (PLM-SOF-V)>

Soil, sludge, sediment, aggregate, and like materials analyzed for asbestos or other elongated mineral particles (ex. erionite, etc.): ASTM D7521, CARB 435, and other options available

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Asbestos in Surface Dust according to one of ASTM's Methods (very dependent on sampling collection technique – by TEM): ASTM D 5755, D5756, or D6480

Various other asbestos matrices (air, water, etc.) and analytical methods are available.

Disclaimers / Qualifiers:

There may be some samples in this project that have a "NOTE:" associated with a sample result. We use added disclaimers or qualifiers to inform the client about something that requires further explanation. Here is a list with highlighted disclaimers that may be pertinent to this project. For a full explanation of these and other disclaimers, please inquire at **customerservice@iatl.com**.

1) Note: No mastic provided for analysis.
2) Note: Insufficient mastic provided for analysis.
3) Note: Insufficient material provided for analysis.
4) Note: Insufficient sample provided for QC reanalysis.
5) Note: Different material than indicated on Sample Log / Description.
6) Note: Sample not submitted.
7) Note: Attached to asbestos containing material.
8) Note: Received wet.
9) Note: Possible surface contamination.
10) Note: Not building material. 1% threshold may not apply.
11) Note: Recommend TEM-NOB analysis as per EPA recommendations.
12) Note: Asbestos detected but not quantifiable.
13) Note: Multiple identical samples submitted, only one analyzed.
14) Note: Analyzed by EPA 600/R-93/116. Point Counting detection limit at 0.080%.
15) Note: Analyzed by EPA 600/R-93/116. Point Counting detection limit at 0.125%.

Recommendations for Vermiculite Analysis:

Several analytical protocols exist for the analysis of asbestos in vermiculite. These analytical approaches vary depending upon the nature of the vermiculite mineral being tested (e.g. un-processed gange, homogeneous exfoliated books of mica, or mixed mineral composites).Please contact your client representative for pricing and turnaround time options available.

iATL recommends initial testing using the EPA 600/R-93/116 method. This method is specifically designed for the analysis of asbestos in bulk building materials. It provides an acceptable starting point for primary screening of vermiculite for possible asbestos.

Results from this testing may be inconclusive. EPA suggests proceeding to a multi-tiered analysis involving wet separation techniques in conjunction with PLM and TEM gravimetric analysis (EPA 600/R-04/004).

Further information on this method and other vermiculite and asbestos issues can be found at the following: Agency for Toxic Substances and Disease Registry (ATSDR) www.atsdr.cdc.gov, United States Geological Survey (USGS) www.minerals.usgs.gov/minerals/, US EPA www.epa.gov/asbestos. The USEPA also has an informative brochure "Current Best Practices for Vermiculite Attic Insulation" EPA 747F03001 May 2003, that may assist the health and remediation professional.

The following is a summary of the analytical process outlines in the EPA 600/R-04/004 Method:

1)**Analytical Step/Method:** Initial Screening by PLM, EPA 600R-93/116
Requirements/Comments: Minimum of 0.1 g of sample. ~0.25% LOQ for most samples.

2)**Analytical Step/Method:** Wet Separation by PLM Gravimetric Technique, EPA R-04/004
Requirements/Comments: Minimum 50g** of dry sample. Analysis of "Sinks" only.

3)**Analytical Step/Method:** Wet Separation by PLM Gravimetric Technique, EPA R-04/004
Requirements/Comments: Minimum 50g** of dry sample. Analysis of "Floats" only.

4)**Analytical Step/Method:** Wet Separation by TEM Gravimetric Technique, EPA R-04/004
Requirements/Comments: Minimum 50g** of dry sample. Analysis of "Sinks" only.

5)**Analytical Step/Method:** Wet Separation by TEM Gravimetric Technique, EPA R-04/004
Requirements/Comments: Minimum 50g** of dry sample. Analysis of "Suspension" only.

LOQ, Limit of Quantitation estimates for mass and volume analyses.
*With advance notice and confirmation by the laboratory.
**Approximately 1 Liter of sample in double-bagged container (~9x6 inch bag of sample).