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DESIGNATED SUBSTANCES AND HAZARDOUS MATERIALS SURVEY
PIN 673155
7797 16TH AVENUE
MARKHAM, ONTARIO

Prepared for:

PUBLIC SERVICES AND PROCUREMENT CANADA
4900 Yonge Street
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Toronto, Ontario M2N 6A6

On Behalf of

PARKS CANADA AGENCY
ROUGE NATIONAL URBAN PARK

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ES 1. EXECUTIVE SUMMARY

COLE Engineering Group Ltd. and XCG Consulting Limited, hereafter referred to as the COLE Engineering & XCG Consulting Joint Venture (COLE & XCG JV), were retained by Public Services and Procurement Canada (PSPC) on behalf of Parks Canada Agency (PCA) to complete a Designated Substances and Hazardous Material Survey (DSHMS) to update the asbestos inventory and to serve as a resource for PCA in the management of their buildings within the Rouge National Urban Park (RNUP). Properties at the RNUP are represented with a numerical Property Identification Number (PIN).

This DSHMS was conducted at PIN 673155 located at 7797 16th Avenue near Markham, Ontario (subject building). The investigation was completed to determine if designated substances and hazardous materials are present in the residential building, and what measures, if any, are required to mitigate potential exposure by persons entering the residential building and/or conducting any future demolition or renovations. It is understood that the barn and three sheds located east of the subject building are not included in this DSHMS and were therefore not inspected.

The DSHMS involved a review of background information pertaining to the design and use of the residential building, site visit, and collection and testing of building materials suspected of being asbestos-containing materials (ACMs) and potential lead-based paints (LBP). All of the designated substances defined by the Ontario Ministry of Labour (MOL) under Ontario Regulation 490/09 (O. Reg. 490/09), O. Reg. 278/05 for asbestos, polychlorinated biphenyls (PCBs), and other potentially hazardous materials listed in the table below were evaluated, as well as other materials identified by PSPC. The results of the investigation to determine the potential presence or absence of designated substances are summarized in the following table.

Substance	Not Identified	Potentially Present	Determined Present
Acrylonitrile	X		
Arsenic	X		
Asbestos		X	X
Benzene		X	X
Halocarbons		X	
Coke Oven Emissions	X		
Ethylene Oxides	X		
Isocyanates	X		
Lead		X	X
Mercury	X		
Mould	X		
Polychlorinated Biphenyls (PCBs)	X		
Silica		X	X
Urea Formaldehyde Foam Insulation (UFFI)	X		
Vinyl Chloride	X		
Chemical Storage	X		
Fuel Oil		X	X
Waste Oil	X		

The substances that were not identified on-site are not likely to be a concern and require no further evaluation or management. A further discussion of the substances that are present or potentially present is provided below.

Asbestos-Containing Materials

Thirteen types of materials were submitted for laboratory analysis of asbestos. Red painted texture coat in the living room was identified to be ACM. The texture coat was in good condition and does not require removal or abatement at this time. Roofing material sampled from the dwelling extension did not contain asbestos, but due to the potential presence of additional layers of roofing material these materials are presumed to be asbestos containing. It should be noted that roofing materials were not collected from the original portion of the dwelling due to the height and safety precautions, however some roofing materials are known to have been manufactured with asbestos and therefore these materials are presumed to be ACM.

Lead-Containing Paints

The paint in the building generally appeared to be in good to fair condition, with the exception of an interior floor paint, interior ceiling paint and exterior window sill paint, which were in poor condition. The 15 paint samples that were collected and submitted to the laboratory for analysis were found to have lead concentrations ranging from 6.4 parts per million (ppm) to 22,000 ppm. Paints in poor condition had concentrations ranging between 240 to 22,000 ppm. At the time of the survey, red paint on the floor of bedroom 4, white paint on the ceiling of bedroom 2 and white paint on the exterior window sill were in poor condition and had locations of flaking or peeling paint. Based on the locations of the window sill paint in exterior portions of the dwelling, and the small quantity of damage on the ceiling paint, the urgency level for repair is considered moderate. The red paint located on the floor of bedroom 4 was in poor condition as it was flaking and peeling in many areas. Based on the frequency of use (high traffic area), the urgency level for repair of the red floor paint is considered high. Flaking paints should be cleaned up or removed using power tools with a high-efficiency particulate air (HEPA) filter-equipped vacuum to limit the potential for the spread of lead dust.

Halocarbons

Based on observations made during the site visit, equipment potentially containing halocarbons were identified in a refrigerator in the kitchen and a freezer located in the basement. If present, removal or disposal of any refrigeration equipment and/or refrigerant containers is regulated under Federal Halocarbon Regulations, 2003, and should only be undertaken by qualified licensed individuals.

Mercury

Thermostats within the dwelling were digital and did not contain mercury. No samples were collected or submitted for laboratory analysis.

Mould

Suspect mould was not observed within the subject dwelling. Historically suspect mould was observed on the ceiling of the washroom within the subject

Polychlorinated Biphenyls (PCBs)

Fluorescent light ballasts were not observed inside in the dwelling. Historically a pole mounted transformer presumed to contain PCBs was observed at the subject dwelling. Other equipment potentially containing PCBs may also be present but were not located in the areas inspected during the site visit. Owners of PCB-containing equipment are allowed to continue to use the equipment until the end of its service life, with the storage, handling, transport, and destruction of the PCBs regulated by Environment Canada, SOR 2008-273.

Silica

Concrete and mortar-based building materials were observed, but do not represent a concern in their present state and condition.

Fuel, Oil, and Waste Oil Storage (Containing Benzene)

A 910-litre furnace oil above ground storage tank (AST) was located in the basement. Furnace oil is benzene-containing. A 20 litre jerry can of unknown fuel was located in the basement at the time of the site visit. All fuels and oils should be stored in accordance with the Storage Tank Systems for Petroleum Products and Allied Petroleum Products (SOR/2008-197) requirements.

Summary

In summary, designated substances indicated in the table below are present or likely to be present. During any renovations or demolition, PSPC and PCA representatives and project contractors should ensure that the materials are properly handled and disposed of in accordance with Federal and Provincial regulations.

Material	Sample ID	Description	Location	Quantity (square metres)	Condition	Action (Urgency Level)	Photo
Asbestos (Friable)	673155-TC-03-A,B,C	Red painted texture coat on drywall	Walls in living room	28	Good	Action 4 or 6 – routine surveillance. Type 3 removal if required.	Photo 2
Asbestos (Non-Friable)	Presumed	Roofing Material	Residence Roof	150	Good (Note: condition observed from ground level only)	Action 6 – Surveillance. Sample prior to any disturbance to confirm ACM, or undertake Type 1 abatement.	Photo 1
Lead Paint	673155-P-02	White layered paint	Living room window sill	5	Good	None.	Photo 2
Lead Paint	673155-P-03	Green paint	Staircase to basement wall	11	Good	None.	Photo 3
Lead Paint	673155-P-05	Green paint	Study room wall on texture coat	46	Good	None.	Photo 4
Lead Paint	673155-P-06	Red paint	Living room wall	29	Good	None.	Photo 2
Lead Paint	673155-P-08	Red paint	Bedroom 4 floor	84	Poor	Remove chipped or flaking paint and paint over damaged areas. (High)	Photo 5
Lead Paint	673155-P-13	White paint	Bedroom 2 ceiling	23	Poor	Remove chipped or flaking paint. Paint over damaged areas. (Moderate)	Photo 6
Lead Paint	673155-P-15	White paint	Exterior window	5	Poor	Remove chipped or flaking paint. Paint over damaged areas. (Moderate)	Photo 7
Refrigerant	-	One refrigerator One freezer	Kitchen Basement	-	Good	Dispose of appropriately.	Photos 8 & 9
Silica	-	Brick and mortar / concrete block / cement floor / drywall and plaster walls and ceiling / ceramic tiles	Exterior / basement foundation / basement floor / throughout / bathroom	-	Good	Prohibit drilling, grinding, cutting, and abrading silica-containing material unless safety precautions taken (wetting and HEPA filter)	-

Fuel oil	-	Furnace oil Unknown fuel	Steel AST in basement Plastic jerry can	910 litres 20 litres	Good	Manage any fuel oil tank and its contents in accordance with the Storage Tank Systems for Petroleum Products and Allied Petroleum Products (SOR/2008-197) requirements.	Photos 10 & 11
Notes: Urgency Level: Identified for ACMs or lead-containing paint in poor condition only. Additional information provided in Section 6.0 for each material. (High): Immediate repairs required. (Moderate): Repairs required. -: Not applicable.							

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1. INTRODUCTION

COLE Engineering Group Ltd. and XCG Consulting Limited, hereafter referred to as the COLE Engineering & XCG Consulting Joint Venture (COLE & XCG JV), were retained by Public Services and Procurement Canada (PSPC) on behalf of Parks Canada Agency (PCA) to complete a Designated Substances and Hazardous Material Survey (DSHMS) to update the asbestos inventory and to serve as a resource for PCA in the management of their buildings within the Rouge National Urban Park (RNUP). Properties at the RNUP are represented with a numerical Property Identification Number (PIN). The subject site is shown in Figures 1 through 6.

PCA as a federal department has asbestos management policy and guidance documents titled "Parks Canada Asbestos Management Standard" and "Parks Canada Asbestos Management Guide," both dated January 2014. The policy and guideline documents describe PCA's requirements for asbestos management on PCA properties.

The purpose of the DSHMS was to determine if any designated substances and other potentially hazardous materials are present at the subject building and provide references for the management as required to mitigate potential exposure by persons entering the building and/or conducting any demolition or renovation activities. The survey included all designated substances defined by the Ontario Ministry of Labour (MOL) and PCA, as well as other potentially hazardous materials, and included testing of potential asbestos-containing materials (ACMs) and lead-based paints (LBP). An inventory of designated substances and other potentially hazardous materials present or potentially present was developed.

1.1 Building Description

The subject building, PIN 673155 is located at 7797 16th Avenue, near Markham, Ontario. Currently the residential building is vacant. A photo of the exterior of the residential dwelling is included as Photo 1 in Appendix C.

The subject building consists of an original building and an extension. The construction dates are unknown. The interior construction of the building is comprised of lath and plaster walls, texture coat and drywall walls and ceilings, hardwood, and vinyl sheet flooring. It is understood that the barn and three sheds located east of the subject building are not included in this DSHMS and were therefore not inspected. The extension was also not surveyed, with the exception of the roof shingles.

1.2 Historic Reports

As part of this DSHMS a summary list of DSHMs present at the subject property was provided by PSPC and PCA. Only the summary was available for review, no additional documentation was provided (i.e. no figures, photographs or lab results).

Thermal insulation (tectum paper) sampled from air duct located in the basement contained asbestos and was abated. The interior window caulking was presumed to contain asbestos. Two lead-based paints were identified, and lead was suspected in cast iron drain pipe caulking, ceramic tile glazing and solder on copper pipes.

Silica was identified in plaster, ceramic tiles, brick and mortar, and concrete materials. Benzene was identified in an aboveground storage tank (AST). The contents and location of this container were not identified. Halocarbons were identified in refrigerator and freezer. Polychlorinated Biphenyls (PCBs) were identified in pole-mounted transformer. Suspected mould on ceiling in the washroom. Details are discussed in Section 5.

2. SCOPE OF WORK

The scope of work for the DSHMS included the following activities:

- Review of drawings and related information pertaining to the design and condition of the building;
- Inspection and sampling of potential hazardous materials within the subject building that could be reasonably accessed by occupants, workers and the general public;
- Documentation of the locations of potential hazardous materials and estimation of quantities;
- Submission of representative samples of potential hazardous materials for laboratory analysis; and
- Preparation of a report summarizing the results of the DSHMS for the building.

The field survey included an inspection of accessible areas of the subject building, and the visual identification of potential designated substances. Where confirmation was required to verify the presence or absence of certain designated substances (specifically lead and asbestos) within a building material, representative samples were collected and submitted for analysis to Maxxam Analytics International Corporation (Maxxam), a National Voluntary Laboratory Accreditation Program (NVLAP) and American Industrial Hygiene Association (AIHA) accredited laboratory.

2.1 Designated Substances

Table 1 lists the designated substances and other potentially hazardous materials that were evaluated and included in the survey.

Table 1 List of Designated Substances and Hazardous Materials Evaluated at the Subject Site

Designated Substances	Other Potentially Hazardous Materials
Acrylonitrile	Polychlorinated biphenyls (PCBs)
Arsenic	Halocarbons
Asbestos	Urea formaldehyde foam insulation (UFFI)
Benzene	Mould (limited)
Coke oven emissions	Chemical Storage
Ethylene oxide	Fuel Oil
Isocyanates	Waste Oil
Lead	
Mercury	
Silica	
Vinyl chloride	

3. REGULATIONS AND GUIDELINES

The site is considered a federal site and is governed by the *Canada Labour Code (Part II,* and associated regulations, specifically the *Canada Occupational Health and Safety Regulations (SOR/86-304)*. This code establishes responsibilities and requirements of employers, managers and supervisors who act on behalf of the employer and employees.

Since the standards and qualifications of working with ACMs and lead varies between each provincial and territorial region in Canada, PCA requires that the applicable regional requirements are met for any contracted work (including surveys, testing, removal, etc.). Therefore, the Ontario provincial regulations and guidelines, specifically, Ontario Regulation (O. Reg.) 278/05 *Designated Substance – Asbestos on Construction Projects and in Buildings and Repair Operations* (as amended), and the MOL guideline "*Lead on Construction Projects*", dated April 2011, documents have been consulted and referenced for this project.

3.1.1 Asbestos Containing Material (ACM)

Asbestos was used in building materials such as mechanical pipe insulation, fireproofing, and interior finishes, such as plaster and drywall joint compound until approximately the mid-1980s. Asbestos was also commonly used in vinyl and linoleum flooring products, acoustic ceiling tiles, adhesives, and caulking, among other materials.

PCA as a federal department has an asbestos management policy and guidance documents titled "Parks Canada Asbestos Management Standard" and "Parks Canada Asbestos Management Guide," both dated January 2014. The policy and guideline documents describe PCA's requirements for asbestos management on PCA properties.

Although, the RNUP is considered federal property and federal regulation apply, PCA uses the more stringent of the federal and provincial regulations. For projects in Ontario, O. Reg. 278/05 requirements are considered as a best practice. The management of ACMs is governed under Ontario Regulation (O. Reg.) 278/05 *Designated Substance – Asbestos on Construction Projects and in Buildings and Repair Operations* (as amended). Building materials found to have 0.5 percent or greater asbestos by dry weight are considered to be ACMs. This regulation describes the procedures and protocols for the identification and removal of ACM from buildings. If ACM is known or suspected to be present, then the locations of the material must be documented, and the material managed and removed in accordance with O. Reg. 278/05.

Disposal of ACM is governed under O. Reg. 347 General Waste Management (as amended) and requires that all ACM waste must be placed in a double sealed labelled container that is free of cuts, tears, or punctures and disposed of in a licensed waste facility that has been properly notified.

3.1.2 Lead-Based Paint

Lead is a heavy metal and is typically found in inorganic compounds often occurring as components of products such as pigments, varnishes, and paints. Lead exposure is

a particular concern from lead containing dust during renovation, demolition, or construction activities, or from deterioration of wall coverings.

The Surface Coating Materials Regulations under the Hazardous Products Act (HPA) states that paints having a lead content greater than 90 parts per million (ppm) (90 mg/kg) are considered lead-based. Although not a workplace, O. Reg. 490/09 (as amended) may be used as a best practice guide when renovations or demolition is being undertaken. O. Reg. 490/09 (as amended) stipulates that workers shall be protected from exposure to airborne lead if they are undertaking an activity that disturbs surfaces covered with lead-based paint. The MOL guideline "*Lead on Construction Projects*" dated April 2011, outlines procedures that should be used during renovation or demolition activities to ensure that worker exposure to lead does not exceed regulated limits specified in the Ontario Health and Safety Act (OHSA).

3.1.3 Halocarbons

Halocarbons are chemical compounds that include most ozone depleting substances, chlorofluorocarbons and their halogenated replacements, many of which are greenhouse gases. The use and handling of halocarbons in refrigeration and air conditioning, fire-extinguishing, and solvent systems on federal lands are controlled by the Federal Halocarbon Regulations, 2003. "Small" systems, such as household appliances, are exempt from the annual leak test requirement.

3.1.4 Mercury

Mercury is contained within some thermostats and fluorescent light bulbs. Mercury exposure may occur from airborne vapours or through skin absorption. There is no personal, occupational or environmental concern associated with mercury in its current state and condition. Normal use of a thermostats and fluorescent light bulbs would not cause exposure to vapours. Therefore, residents in a home are unlikely to be exposed. However, if damage occurs to these materials, mercury could be released. Those at highest risk of exposure are construction workers during renovation, demolition, or construction activities. Manage mercury containing equipment in accordance with applicable legislative requirements.

3.1.5 Mould

The presence of mould was not included in the scope of work for this project. As such XCG and COLE did not conduct any inspections specific to mould growth. If significant mould growth was observed a note was made, however sampling of moulds was not conducted.

Mould spores are present in all indoor and outdoor environments and cannot be completely eliminated. Cellulose-based building materials provide a nutrient base for many mould species; however, moulds generally do not grow unless an adequate amount of moisture is present.

There are no clear regulatory standards for determining acceptable concentrations of mould in indoor air. Listed below are commonly used industry references used to help identify and evaluate mould contamination in buildings:

- "*Guidelines for the Investigation, Assessment, & Remediation of Mould in Workplaces,*" Manitoba Department of Labour and Immigration, Workplace Safety and Health Division, March 2001;
- "*Mold Remediation in Schools and Commercial Buildings,*" U.S. E.P.A. Office of Air and Radiation, Indoor Environments Division, September 2008;
- "Guidelines on Assessment and Remediation of Fungi in Indoor Environments," New York City Department of Health, November 2008;
- "Mould Guidelines for the Canadian Construction Industry," Standard Construction Document CCA 82, 2004; and
- "Mould Abatement Guidelines," Environmental Abatement Council of Ontario (EACO), Edition (3) 2015.

3.1.6 PCBs

PCBs were historically used as dielectric and coolant fluids in electrical equipment such as capacitors, transformers, heat exchangers, electric motors, and fluorescent light ballasts. PCBs are known carcinogens to mammals and humans; therefore, PCB sales were banned in Canada in 1977 and releasing the chemical into the environment was banned in 1985; however, owners of PCB-containing equipment are allowed to continue to use the equipment until the end of its service life, with the storage, handling, transport, and destruction of the PCBs regulated by Environment Canada, SOR 2008-273.

3.1.7 Silica

Silica occurs naturally as crystalline or amorphous material. It is normally found in concrete, mortar, acoustic ceiling tiles, and stucco finishes. Silica exposure is a particular concern from airborne silica dust during renovation, demolition, or construction activities There is no personal, occupational or environmental concern associated with silica in its current state and condition. Therefore, residents in a home are unlikely to be exposed. However, if dust creating disturbance occurs to these materials, silica could be released. Those at highest risk of exposure are construction workers during renovation, demolition, or construction activities.

Manage silica containing dust during renovations in accordance with applicable legislative requirements.

3.1.8 UFFI

UFFI is a type of insulation made from a foaming agent and compressed air used to insulate hard to reach areas, such as within pre-existing hollow walls. In Canada, UFFI was approved for use in 1977 and was banned in 1980; however, approximately 100,000 homes in Canada contain UFFI. During the curing process of the insulation, formaldehyde gas is emitted, which can cause eye irritation, respiratory problems, nausea, and headaches; however, many other household materials create formaldehyde gas, and humidity, mould, other airborne chemicals and a tightly sealed house can also cause the same symptoms as UFFI.

3.1.9 Other Designated Substances and Hazardous Materials

The other designated substances and hazardous materials that were part of the survey are regulated by the following Ontario or Canadian regulations include acrylonitrile, arsenic, benzene, coke oven emissions, ethylene oxide, isocyanates, and vinyl chloride.

These designated substances are typically found in industrial settings and are unlikely to be located within the residential dwelling, with the exception of benzene. Benzene is present within the furnace oil in the AST in the basement and presumed to be in the 20 litre jerry can also found in the basement.

4. SURVEY METHODOLOGY

Ms. Rhona Scott and Mr. Roland Verkaik of COLE conducted the DSHMS on October 19, 2018. At the time of the site visit the building was vacant.

The fieldwork was conducted in accordance with XCG and COLE's standard field procedures and health and safety measures. Details regarding the approach used in conducting the field investigations including sampling procedures and analytical methodologies are outlined in this section.

Where it was considered possible that designated substances or hazardous materials existed in areas that could not be accessed without employing destructive methods, such methods to access the area were not used as the building may be occupied in the future.

4.1 Site Observations

The survey included room by room visual observations of reasonably accessible areas to identify the presence of designated or hazardous materials in the project area. The survey was undertaken in a manner to minimize repetition of observations and sampling of like areas (e.g. painted surfaces).

The following building components were assessed individually during the survey as part of routine field procedures:

- Walls;
- Ceiling;
- Floors;
- Mechanical Systems (i.e. pipe wrap);
- Chemical Storage Areas; and
- Fuel, Oil, and Fuel Oil Storage Areas.

During the site survey, bulk samples for asbestos content analysis and paint chip samples for lead in paint analysis were collected and submitted under chain-of-custody to Maxxam for asbestos and lead analysis.

Observations were made of possible visible mould; however, no samples were submitted for laboratory analysis, as this was outside the scope of work for this project.

If fluorescent light ballasts were observed, a minimum of 10% of the light ballasts were visually inspected to identify whether or not PCBs were present within the ballast.

4.2 Confirmatory Sampling

A sufficient number of samples were collected to conclusively identify suspect materials. Duplicate sampling is included as part of the multiple asbestos samples collected (minimum of three) following O. Reg. 278/05. One sample of each paint colour was submitted for laboratory analysis; however, laboratory duplicates are analyzed on one of every 20 samples. Discretion was used to avoid testing duplicate

materials. The samples were collected and handled according to applicable occupational health and safety regulations.

4.3 Record Keeping

Prior to the on-site survey and sampling, a unique and logical sample identification system was developed. This sample identification consisted of the following:

- Property PIN identifier;
- Sample identification; and
- Sequential sample number.

The information on the sample identification, location collected, physical description, condition of material sampled, and quantity of material was collected during the survey.

4.3.1 Asbestos-Containing Material

Visual observations of accessible areas in the building were made in order to identify the presence of materials suspected of containing asbestos. The visual surveys were primarily limited to a survey of structures in areas with reasonable accessibility.

The following suspected ACMs were collected for sampling: brick motar, parging cement, cement, sheet flooring, texture coat, plaster, cellulose insulation, roofing materials, and caulking. It should be noted that roofing materials (shingles) were obtained from the edge of the roof on the extension of the dwelling and may not contain all roofing components. This sampling method was used in order to minimize damage and future leaks at the dwelling. It should be noted that roofing materials were not collected from the original portion of the dwelling due to the height and safety precautions, however some roofing materials are known to have been manufactured with asbestos and therefore these materials are presumed to be ACM. Bulk samples of materials suspected of containing asbestos were collected and were later submitted to Maxxam for analysis by polarized light microscopy (PLM) with dispersion staining, following USEPA Method 600/R-93/116 under chain of custody protocol or by the qualitative transmission electron microscopy (TEM) and gravimetric reduction method.

4.3.2 Sampling of Suspected Asbestos-Containing Materials

During the survey of the building, a sufficient number of bulk samples were collected to meet the requirements of O. Reg. 278/05 and the "Parks Canada Asbestos Management Standard" and "Parks Canada Asbestos Management Guide," both dated January 2014, and submitted for laboratory analysis in order to determine the existence and quantities of friable and non-friable asbestos containing materials present in the project area. Each of the layers of a material suspected of containing asbestos were sampled.

4.3.2.1 Sampling of Friable Materials

During the sampling of any friable materials suspected of containing asbestos, a respirator was worn, and the following sampling procedure was used.

1. The surface of the material to be sampled was first wetted using a spray bottle to apply the water.
2. A sample was obtained by slowly pushing the sampler (i.e. knife blade) into the material with a twisting motion, until the entire thickness was penetrated. Wetting was continued through the entire process. The sampler was then extracted.
3. The sample was then ejected into a sealable plastic sample bag and labelled as described in Section 4.3.
4. The sampler was thoroughly cleaned after the collection of each sample to avoid potential cross contamination of samples. This cleaning was done by wiping down the blade with water.

4.3.2.2 Sampling of Non-Friable Materials

The following sampling procedure was used during the sampling of any non-friable materials suspected of containing asbestos.

1. A sample was obtained by slowly pushing the sampler (i.e. knife blade) into the material with a twisting motion. The sampler was then extracted.
2. The sample was then ejected into a sealable plastic sample bag and labelled. In the case of vinyl tiles, a small portion of broken tile was collected, or a hammer and chisel were used to score the tile and then break a piece off.
3. The sampler was thoroughly cleaned after the collection of each sample to avoid potential cross contamination of samples by wiping down the sampler with water.

4.3.3 Accessibility and Action Matrix

The location, approximate volume/area, condition and accessibility of all potential ACMs was recorded in accordance with guidance provided in the Parks Canada Asbestos Management Guide (January 2014). Recommended asbestos control actions were identified based on the condition and accessibility of each confirmed/assumed ACM in accordance with the Action Matrix as defined in Table 6.1 of the Parks Canada Asbestos Management Guide, reproduced in Table 3 below.

The accessibility of building materials suspected of containing asbestos was rated in the field according to the criteria listed in Table 2.

Table 2 Accessibility of Building ACMs

Access Category	Definition
Access A	Areas of the building within reach (from floor level) of all building users.
Access B	Frequently entered maintenance areas within reach of maintenance staff, without the need of a ladder.
Access C (Exposed)	Areas of the building above 2.4 metres where use of a ladder is required to reach the ACM.
Access C (Concealed)	Areas of the building that require the removal of a building component, including lay-in ceilings and access panels into solid ceiling systems.
Access D	Areas of the building behind inaccessible solid ceiling systems, walls or mechanical equipment etc. where demolition of the ceiling, wall or equipment etc. is required to reach the ACM.

The PCA Action Matrix below establishes the recommended asbestos control action depending on two variables: the condition of the ACM and the access level. The actions that correspond to this table are described below the table.

Table 3 PCA Action Matrix

Access	ACM Condition			Debris
	Good	Fair	Poor	
(A)	ACTION 4 or 6[1]	ACTION 4 or 5[2]	ACTION 3	ACTION 1
(B)	ACTION 4 or 6	ACTION 5 or 4[3]	ACTION 3	ACTION 1
(C) exposed	ACTION 4 or 6	ACTION 4 or 5	ACTION 2	ACTION 2
(C) concealed	ACTION 4 or 6	ACTION 4 or 6	ACTION 2	ACTION 2
(D)	ACTION 4 or 6	ACTION 6	ACTION 6	ACTION 6

NOTES:

[1] If material in ACCESS (A)/GOOD condition is not removed, ACTION 6 is required.

[2] If material in ACCESS (A)/FAIR condition is not removed, ACTION 5 is required.

[3] Remove ACM in ACCESS (B)/FAIR condition if ACM is likely to be disturbed.

ACTION DESCRIPTIONS

ACTION 1 Immediate clean-up of debris that is likely to be disturbed

Restrict access that is likely to cause a disturbance of the ACM debris and arrange for immediate clean up of ACM debris in accordance with appropriate Work Type procedures.

ACTION 2 Limit/Restrict entry into areas where ACM is present and likely to be disturbed by access, or where ACM debris is present, until ACM or ACM debris is removed.

Restrict access to the area to authorized staff or asbestos contractor personnel. At locations where ACM debris can be temporarily isolated, use appropriate means to limit entry to the area until the ACM debris has been removed, and the source of the debris has been stabilized or removed.

ACTION 3 ACM removal

Arrange for removal of ACM in accordance with appropriate Work Type procedures.

ACTION 4 Optional ACM removal

If merited by a cost/benefit analysis, arrange for removal of ACM in lieu of repair, or at locations where the presence of asbestos in GOOD condition is not desirable.

ACTION 5 ACM repair

Arrange for repair ACM found in FAIR condition, and not likely to be damaged again or disturbed by normal use of the area or room. Upon completion of the repair work, treat ACM as material in GOOD condition and implement ACTION 6. If ACM is likely to be damaged or disturbed, during normal use of the area or room, implement ACTION 4.

ACTION 6 Routine surveillance

Institute routine surveillance of the ACM, in accordance with appropriate Work Type procedures.

4.3.4 Sampling of Suspected Lead-Based Paint

Samples from the subject building of visibly different paints were collected through small scrapings of the paint from the substrate and/or where paint was observed to be peeling or flaking. The location, approximate volume/area, and condition of each different paint was recorded based on visual observation. All paint samples were submitted to Maxxam and analyzed by USEPA Method SW-846 Flame Atomic Absorption Spectrophotometry.

4.4 Quality Assurance and Quality Control

Each sample was collected in a clean single use sample bag suitable for lead and asbestos sample collection. All sample bags were labelled with the appropriate sample ID at the time of sample collection. Additional quality assurance and control procedures included: dedicated one-use sealable sample bags, the use of disposable nitrile gloves for all sample collection activities; and cleaning tools between samples by damp wiping with a single use moist towelette, or a single use wet paper towel.

Asbestos sampling requires a minimum of three samples for each suspect sample material collected in determination of the asbestos fibre concentration. Duplicate samples are built into the required number of samples as per the regulation.

Lead in paint samples are collected as a single sample for each of the suspected lead containing surface coatings. Samples collected were representative of the colour of the top layer of paint, however, multiple layers of paint down to the base layer were collected if possible. Laboratory duplicates were relied upon, which for this project is one laboratory duplicate per 20 samples.

All requested sample analysis was filled into a laboratory chain of custody prior to shipment. All samples were shipped or dropped off at the laboratory with the corresponding chain of custody for confirmation of receipt at the laboratory. The laboratory's quality assurance program follows guidelines as documented in *General requirements for the competence of testing and calibration laboratories* (ISO/IEC 17025:2017). In addition, the program requirements of the AIHA and the NVLAP, the American Association for Laboratory Accreditation, the NELAC Institute, as well as other applicable regulatory requirements associated with laboratory accreditations/certifications are followed. Quality control is performed according to the scope of the laboratory's accreditation status and quality control requirement for each type of analysis. Asbestos analysis was completed following *Method For The Determination Of Asbestos In Bulk Building Materials* (EPA 600/R-93/116). Analysis of lead in paint chips was completed following Flame Atomic Absorption Spectrophotometry (EPA SW-846 Test Method 7000B).

5. SURVEY FINDINGS

5.1 Substance Identification

The likely presence or absence of designated substances and other potentially hazardous materials within the subject building was initially assessed through background research, visual observation and inspection, and discussions with personnel knowledgeable about the building.

Table 4 summarizes the potential presence or absence of each designated substance at the subject site, based on on-site observations and the results of sampling of potential asbestos containing and lead-containing materials.

Table 4 Suspected Designated Substances and Potentially Hazardous Materials

Substance	Not Identified	Potentially Present	Determined Present
Acrylonitrile	X		
Arsenic	X		
Asbestos		X	X
Benzene		X	X
Halocarbons		X	
Coke Oven Emissions	X		
Ethylene Oxides	X		
Isocyanates	X		
Lead		X	X
Mercury	X		
Mould	X		
Polychlorinated Biphenyls (PCBs)	X		
Silica		X	X
Urea Formaldehyde Foam Insulation (UFFI)	X		
Vinyl Chloride	X		
Chemical Storage	X		
Fuel Oil		X	X
Waste Oil	X		

The substances that were not identified on-site are not likely to be a concern and require no further evaluation or management. A further discussion of the substances that are present or potentially present is provided below.

5.1.1 Asbestos

The thirteen types of materials submitted for laboratory analysis of asbestos included: brick mortar from the basement surrounding the furnace HVAC, one type of parging cement from the basement walls, one type of cement patching from the chimney at the ash clean out, one type of cement from the exterior foundation, one type of sheet flooring from the living room floor at the landing to the basement staircase, one type of texture coat (painted green) from the study wall, one type of texture coat (painted red) from the living room, one type of plaster from bedroom 1 and bedroom 1 closet, one type of caulking from bedroom 1 window, one type of caulking caulking from an exterior window, one type of cellulose insulation from the attic, and one type of roofing material from the exterior extension of the dwelling. Roofing material sampled

from the dwelling extension did not contain asbestos, but due to the potential presence of additional layers of roofing material these materials are presumed to be asbestos containing. It should be noted that roofing materials were not collected from the original dwelling due to the height and safety precautions, however some roofing materials are known to have been manufactured with asbestos and therefore these materials are presumed to be ACM. The details for each ACM material are provided below in Section 5.2.1.

5.1.2 Lead

Potential lead-containing paints were visually identified in the building. Samples of these paints were collected and submitted for laboratory analysis.

5.1.3 Halocarbons

Based on observations made during the site visit, equipment potentially containing halocarbons were identified in a refrigerator in the kitchen and freezer located in the basement.

5.1.4 Mercury

Thermostats within the dwelling were digital and did not contain mercury.

5.1.5 Mould

Suspect mould was not observed at the subject dwelling. Historically suspect mould was observed on the ceiling in the washroom.

5.1.6 PCBs

Fluorescent light ballasts were not observed inside in the dwelling. Other equipment potentially containing PCBs may also be present but were not located in the areas inspected during the site visit. Historic reports indicate PCBs were identified in pole-mounted transformer, not part of the subject building.

5.1.7 Silica

Free crystalline silica is expected to be present within all concrete and mortar-based building materials within the building. No samples were collected or submitted for laboratory analysis.

5.1.8 Fuel, Oil, and Waste Oil Storage (Containing Benzene)

A 910-litre furnace oil AST was located in the basement for the residential heating system. Furnace oil is benzene-containing. The AST was manufactured in 2013. A plastic 20 litre jerry can of unknown fuel was located in the basement at the time of the site visit. Photos of the furnace oil AST and jerry can are shown in Photos 10 and 11 (respectively) in Appendix C. All fuels and oils should be stored in accordance with the Storage Tank Systems for Petroleum Products and Allied Petroleum Products (SOR/2008-197).

5.2 Summary of Laboratory Results

Figure 1 identifies the sample collection locations for both ACM and lead-based paint in the first floor of the subject building. Figure 2 identifies the sample collection locations for both ACM and lead-based paint on the second floor of the subject building. Figure 3 identifies the sample collection locations for both ACM and lead-based paint in the basement of the subject building. Figure 4 identifies the location of the confirmed designated substances on the first floor. Figure 5 identifies the location of the confirmed designated substances on the second floor. Figure 6 identifies the location of the confirmed designated substances in the basement. Laboratory certificates of analysis from the laboratory are provided in Appendix B. Select photographs showing ACM and lead-based paint locations within the building are presented in Appendix C.

5.2.1 Asbestos Containing Materials

Table 5 provides a summary of the results of the asbestos analysis for the surveyed areas at the subject building.

5.2.2 Lead-Based Paint

Table 6 provides a summary of the paint samples analysed for the surveyed areas within the subject building.

Table 5 Summary of Asbestos Results

Sample ID	Sample Description	Location	Asbestos Content	Historic Results	Quantity[1]	Condition[2]	Accessibility[3]	Friability[4]	Action Level[5] (Urgency Level[6])	Comments	Photo
2018 DSHMS											
673155-MO-01-A,B,C	Brick mortar	Basement furnace HVAC	ND	-	-	-	-	-	-	-	-
673155-PC-01-A,B,C	Parging cement	Basement wall	ND	-	-	-	-	-	-	-	-
673155-CM-01-A,B,C	Grey cement patch	Basement on chimney at ash clean out	ND	-	-	-	-	-	-	-	-
673155-SF-01-A,B,C	Sheet flooring brown square pattern	Landing of basement stairs	ND	-	-	-	-	-	-	-	-
673155-TC-01-A,B,C	White texture coat	Living room wall near washroom	ND	-	-	-	-	-	-	-	-
673155-TC-02-A,B,C	Green painted texture coat	Study room wall	ND	-	-	-	-	-	-	-	-
673155-TC-03-A,B,C	**Red painted texture coat on drywall**	**Living room wall**	**2% Chrysotile**	**-**	**28 m²**	**Good**	**A**	**Friable**	**Action 4 or 6**	**Routine surveillance or Type 3 abatement if required.**	**Photo 2**
673155-PL-01-A,B,C,D,E	White/grey plaster	Bedroom 1 walls	ND	-	-	-	-	-	-	-	-
673155-CK-01-A,B,C	White caulking	Bedroom 1 windows	ND	-	-	-	-	-	-	-	-
673155-CI-01-A,B,C	Brown cellulose insulation	Attic	ND	-	-	-	-	-	-	-	-
673155-CK-02-A,B,C	White caulking	Exterior	ND	-	-	-	-	-	-	-	-
673155-RM-01-A,B,C, D, E	Shingles	Roof of building extension	ND	-	-	-	-	-	-	-	-
673155-CM-02-A,B,C	Cement parging	Exterior foundation walls	ND	-	-	-	-	-	-	-	-

Table 5 Summary of Asbestos Results

Sample ID	Sample Description	Location	Asbestos Content	Historic Results	Quantity[1]	Condition[2]	Accessibility[3]	Friability[4]	Action Level[5] (Urgency Level[6])	Comments	Photo
Presumed	**Roofing materials**	**Roof**	**Presumed**	**-**	**150 m²**	**Good**	**C (exposed)**	**Non-Friable**	**Action 4 or 6**	**Routine surveillance or Type 1 abatement if required.**	**Photo 1**
Previous DSHMS Information provided by PCA and PSPC											
Historic Samples	Thermal insulation	Air duct in basement	-	Chrysotile	-	-	-	-	Abated	-	-
None-Previously Presumed	Window caulking	Interior windows	ND	Presumed	-	-	-	-	-	-	-

Table 5 Summary of Asbestos Results

Sample ID	Sample Description	Location	Asbestos Content	Historic Results	Quantity[1]	Condition[2]	Accessibility[3]	Friability[4]	Action Level[5] (Urgency Level[6])	Comments	Photo

Notes:

ND Asbestos not detected.

Bold Asbestos containing material with a concentration equal to or greater than 0.5% asbestos.

1. Quantity is provided for only materials found or suspected to be asbestos-containing.
2. Condition is ranked as Good, Fair, or Poor in accordance with PCA Asbestos Management Guide – 2014.
3. Accessibility is rated (for friable, asbestos-containing samples only) as discussed in Section 4.3.3:
   - A - Areas of the building within reach (from floor level) of all building users;
   - B - Frequently entered maintenance areas within reach of maintenance staff, without the need of a ladder;
   - C (exposed) - Areas of the building above 2.4 m where use of a ladder is required to reach the asbestos-containing material;
   - C (concealed) - Areas of the building that require the removal of a building component, including lay-in ceilings and access panels into solid ceiling systems;
   - D - Areas of the building behind inaccessible solid ceiling systems, walls or mechanical equipment etc. where demolition of the ceiling, wall or equipment, etc. is required to reach the asbestos containing material.
4. Friability is assessed as friable or non-friable.
5. Action Level is ranked based on PCA Asbestos Management Guide – 2014 as discussed in Section 4.3.3:
   - ACTION 1 Immediate clean-up of debris that is likely to be disturbed;
   - ACTION 2 Limit/Restrict entry into areas where ACM is present and likely to be disturbed by access, or where ACM debris is present, until ACM or ACM debris is removed;
   - ACTION 3 ACM removal;
   - ACTION 4 Optional ACM removal (cost/benefit analysis);
   - ACTION 5 ACM repair (Arrange for repair ACM found in FAIR condition, and not likely to be damaged again or disturbed by normal use of the area or room. Upon completion of the repair work, treat ACM as material in GOOD condition and implement ACTION 6. If ACM is likely to be damaged or disturbed, during normal use of the area or room, implement ACTION 4); and
   - ACTION 6 Routine surveillance.
6. Urgency Level: Identified for ACMs in poor condition only. Additional information provided in Section 6.0 for each material.
   (High): Immediate repairs required.
   (Moderate): Repairs required.

Table 6 Summary of Suspect Lead-Based Paint Results

Sample Number	Description	Location	Concentration Lead, (ppm)	Historic Results (ppm)	Approximate Quantity (square metres)	Condition	Action Level (Urgency Level)	Photo
2018 DSHMS								
673155-P-01	White paint	Basement wall	26	-	-	-	-	-
673155-P-02	**White layered paint**	**Living room window sill**	**14,000**	**-**	**5**	**Good**	**None**	**Photo 2**
673155-P-03	**Green paint**	**Basement staircase**	**7,000**	**-**	**11**	**Good**	**None**	**Photo 3**
673155-P-04	Brown paint	Kitchen wall	52	-	-	-	-	-
673155-P-05	**Green paint**	**Study room wall on texture coat**	**150**	**-**	**46**	**Good**	**None**	**Photo 4**
673155-P-06	**Red paint**	**Living room wall**	**110**	-	**29**	**Good**	-	**Photo 2**
673155-P-07	Beige paint	Kitchen floor	47	-	-	-	-	-
673155-P-08	**Red over green and blue paint**	**Bedroom 4 floor**	**22,000**	**-**	**84**	**Poor**	**Remove chipped or flaking paint and paint over damaged areas. (High)**	**Photo 5**
673155-P-09	Yellow paint	Bedroom 1 wall	12	-	-	-	-	-
673155-P-10	Dark blue paint	Second floor hallway wall	14	-	-	-	-	-
673155-P-11	Light green paint	Bedroom 2 wall	22	-	-	-	-	-
673155-P-12	White paint	Second floor hallway	6.4	-	-	-	-	-
673155-P-13	**White paint**	**Bedroom 2 ceiling**	**240**	**-**	**23**	**Poor**	**Remove chipped or flaking paint and paint over damaged areas. (Moderate)**	**Photo 6**
673155-P-14	Light blue paint	Bedroom 3 wall	4.3	-	-	-	-	-
673155-P-15	**White paint**	**Exterior window**	**8,300**	**-**	**5**	**Poor**	**Remove chipped or flaking paint and paint over damaged areas. (Moderate)**	**Photo 7**

Sample Number	Description	Location	Concentration Lead, (ppm)	Historic Results (ppm)	Approximate Quantity (square metres)	Condition	Action Level (Urgency Level)	Photo
Previous DSHMS Information provided by PCA and PSPC								
Historic sample	White Trim Paint	Unknown	-	66,000	-	-	-	-
Historic sample	Red Paint	Bedroom Wood Floors	22,000	25,000	84	Poor	Remove chipped or flaking paint and paint over damaged areas. (High)	Photo 5

Notes:

Bold Lead-containing paint with a concentration equal to or greater than 90 ppm.

Urgency Level: Identified for lead-containing paint in poor condition only. Additional information provided in Section 6.0 for each material.

(High): Immediate repairs required.

(Moderate): Repairs required.

-: Not applicable

Table A-1 provides a summary of the results of the asbestos analysis for the subject building. Table A-2 provides a summary of the paint samples analysed for lead in the surveyed areas within the subject building. Table A-3 provides a summary of mercury and PCB-containing equipment observed within the subject building. Tables A-1 to A-3 are presented in Appendix A.

Figures 1, 2 and 3 identify sample collection locations for both ACM and lead-based paint at the subject building on the first floor, second floor and basement, respectively. Figures 4, 5 and 6 indicate confirmed designated substances and hazardous materials locations on the first floor, second floor, and basement, respectively.

Laboratory certificates of analysis from the laboratory are provided in Appendix B. Select photographs showing the designated substance locations within the building are presented in Appendix C and identified on Tables 5 and 6, above.

6. DISCUSSION AND RECOMMENDATIONS

Asbestos-containing materials and lead-based paint were confirmed in select samples collected from the building. Building materials or equipment suspected to contain halocarbons, and silica were observed at the subject building. Chemical storage consisted of household paints, cylinder of unknown compressed gas, cylinder of propane gas (for BBQ), 20 litre can of unknown fuel, and a can of liquid sander (paint remover). Furnace oil was stored in an AST located in the basement, used for heating purposes. Based on the conditions observed, building materials containing designated substances or potentially hazardous materials can remain in place provided they are managed accordingly and not damaged or disturbed.

Prior to any demolition or renovation activities, PCA, and their selected contractors must ensure that the materials are properly handled and disposed of in accordance with the PCA Asbestos Management Guide as applicable, OHSA and associated regulations, as summarized below.

Asbestos-Containing Materials

The laboratory results indicated that the red painted texture coat in the living room was identified to be ACM. The texture coat was in good condition and does not require removal or abatement at this time. Roofing material sampled from the dwelling extension did not contain asbestos, but due to the potential presence of additional layers of roofing material these materials are presumed to be asbestos containing. It should be noted that roofing materials were not collected from the original portion of the dwelling due to the height and safety precautions, however some roofing materials are known to have been manufactured with asbestos and therefore these materials are presumed to be ACM.

Airborne asbestos fibres can be generated through such processes as drilling, grinding, cutting, and abrading non-friable asbestos-containing material, or by crumbling or deteriorating friable asbestos-containing materials. Precautions must be taken to prevent asbestos-containing particles from becoming airborne during the application of such processes. All handling and removal of asbestos should be conducted as specified in O. Reg. 278/05 (amended to O. Reg. 493/09) and PCA Guide.

The type of repair and/or removal procedures to be conducted is defined on a case-by-case basis. The ACM texture coat in good condition is not a concern in its present condition if left undisturbed. This texture coat should be inspected on a regular basis or removed if required using Type 3 procedures (Action 4 or 6). All ACM materials should remain undisturbed by building occupants. Prior to disturbance, resample all roofing material layers to confirm ACM or undertake Type 1 abatement if required.

Any suspect material encountered should be treated as asbestos-containing unless otherwise indicated by sampling and analytical testing. If additional asbestos materials (currently hidden or inaccessible) are identified as future renovation or demolition work proceeds, these materials should be examined, tested, and handled appropriately. Any asbestos removal should be completed by a trained abatement contractor.

Lead

The paint in the building generally appeared to be in good condition, with the exception of the floor of bedroom 4, ceiling of bedroom 2, and the exterior window sill which were both in poor condition.

A total of 15 paint samples were collected and submitted for lead analysis as part of this survey. The 15 paint samples were found to have lead concentrations ranging from 4.3 ppm to 22,000 ppm. Lead-containing paints with concentrations between 240 to 22,000 ppm were in poor condition. At the time of the survey, red paint on the floor of bedroom 4, white paint on the ceiling of bedroom 2 and white paint on the exterior window sill were in poor condition and had locations of flaking or peeling paint. Based on the locations of the window sill paint in exterior portions of the dwelling, and the small quantity of damage on the ceiling paint, the urgency level for repair is considered moderate. The red paint located on the bedroom 4 floor was in poor condition and had locations of flaking and peeling in many areas. Based on the frequency of use (high traffic area), the urgency level for repair of the red floor paint is considered high. If lead-containing paints are not flaking, they may be painted over to reduce further deterioration. Flaking paints should be cleaned up or removed to limit the potential for the spread of lead dust, including the use of a drop-sheet and a HEPA filter equipped vacuum.

This should be done following, at minimum, Type 1 procedures as outlined the MOL guideline "*Lead on Construction Projects*" dated April 2011. Lead containing paints should not be disturbed by sanding, heat gun removal etc. as this leads to airborne lead. If paint is to be disturbed, the above referenced MOL guideline outlines a classification system and control measures to limit worker exposure and should be consulted. In particular, if flaking paints are to be removed by scraping or sanding using non-powered hand tools, the use of a half-mask particulate respirator with N-, R-, or P-series filter and 95, 99, or 100% efficiency is recommended. During any demolition or renovation activities, lead containing paints should be managed in accordance with O. Reg. 490/09 and the MOL guideline. Any suspect lead-based paint encountered should be treated as such unless otherwise indicated by sampling and analytical testing. If additional lead-based paint (currently hidden or inaccessible) is identified, these materials should be examined, tested, and handled appropriately.

Given the age of the building, it is possible that some of the plumbing might contain lead-based solder and/or lead-based pipe. Historically lead was suspected in cast iron drain pipe caulking, ceramic tile glazing and solder on copper pipes. Disturbance of lead containing materials should be managed to ensure lead dust is not generated during any demolition or renovation activities. During any demolition or renovation activities, these materials should be managed in accordance with O. Reg. 490/09. If the materials are not to be recycled, the materials should be disposed of in accordance with O. Reg. 347 as amended.

Halocarbons

Based on observations made during the site visit, equipment potentially containing halocarbons were identified in a refrigerator in the kitchen, and a freezer located in the basement. Removal or disposal of any refrigeration equipment and/or refrigerant

containers is regulated under the Federal Halocarbons Regulation, 2003 and should only be undertaken by qualified licensed individuals.

Mercury

Thermostats within the dwelling were digital and did not contain mercury. There is no occupational or environmental concern associated with the small amount of mercury that might be present in the light fixtures and thermostats. Should they be encountered during demolition or renovations to the building, the fluorescent lights that may be disturbed must be handled and if necessary, disposed of in accordance with O. Reg. 490/09 (as amended).

Mould

Suspect mould was not observed within the subject dwelling. Historically suspect mould was observed on the ceiling in the washroom.

Polychlorinated Biphenyls (PCBs)

Fluorescent light ballasts were not observed inside in the dwelling. Other equipment potentially containing PCBs may also be present but were not located in the areas inspected during the site visit. Owners of PCB-containing equipment are allowed to continue to use the equipment until the end of its service life, with the storage, handling, transport, and destruction of the PCBs regulated by Environment Canada, SOR 2008-273. Historically, a pole mounted transformer was observed, the location of which is unknown.

Silica

Concrete and mortar-based building materials were observed at the building and are likely to contain silica. Exposure to airborne silica is regulated under O. Reg. 490/09 (as amended). Airborne silica can be generated through such processes as drilling, grinding, cutting, and abrading silica-containing material. Precautions must be taken to prevent silica-containing particles from becoming airborne during the application of such processes. Such precautions include wetting of silica-containing area(s) to be disturbed and daily wet sweeping or HEPA vacuuming of silica dust. Additionally, appropriate respiratory protection, personal protective clothing, hand and face washing, and ventilation must be utilized during disturbance of silica-containing structures.

Fuel, Oil, and Waste Oil Storage (Containing Benzene)

A 910-litre furnace oil AST was located in the basement. Furnace oil is benzene-containing. A 20 litre jerry can of unknown fuel was located in the basement at the time of the site visit. All fuels and oils should be stored in accordance with the Storage Tank Systems for Petroleum Products and Allied Petroleum Products (SOR/2008-197) requirements.

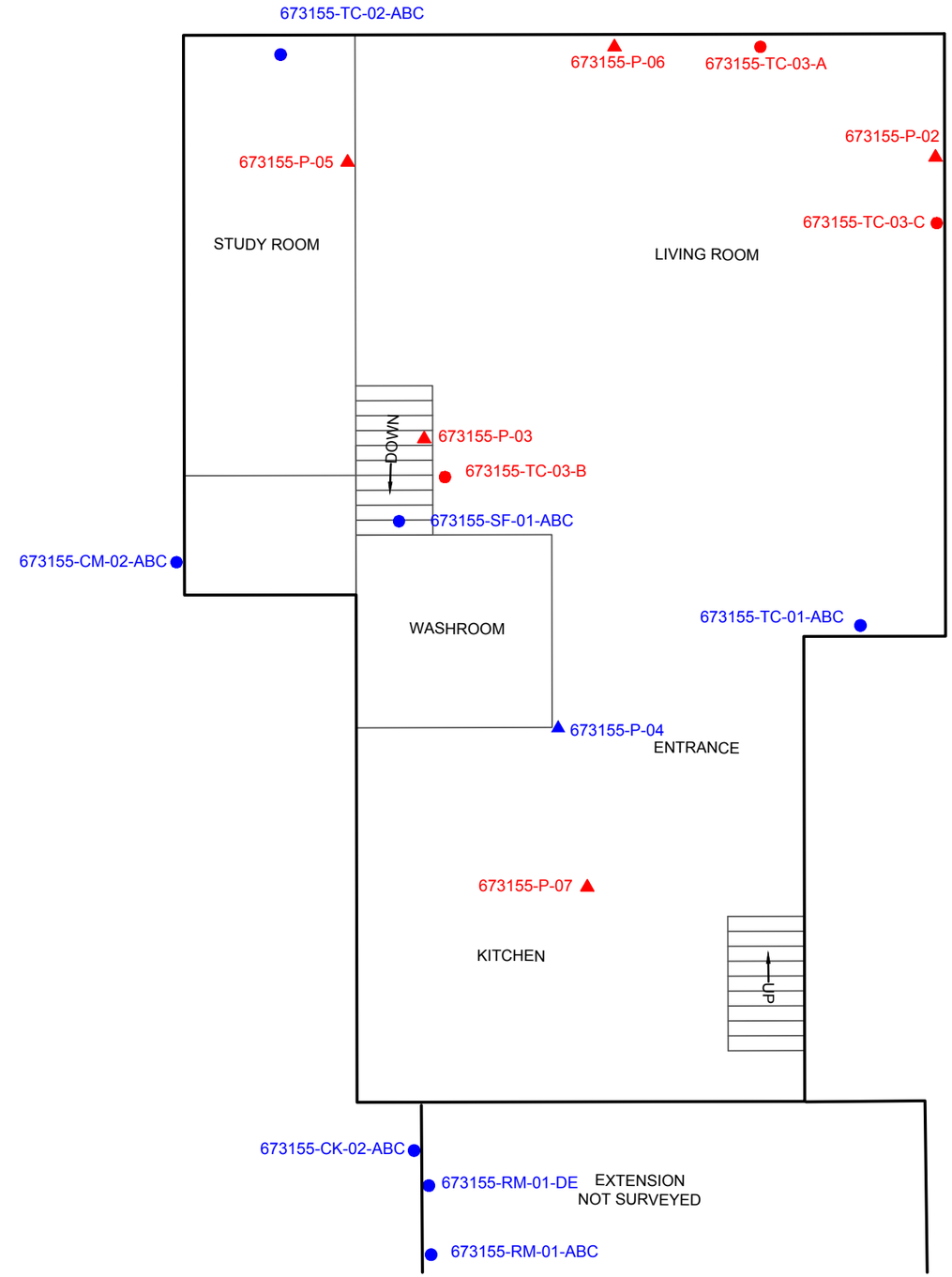
7. LIMITATIONS

Limited sampling of building materials and paints was undertaken as part of this investigation. As such, detailed investigations or testing in subsequent studies may encounter conditions not apparent at this time or at other locations. While every attempt was made to ensure that samples collected were representative of the general sampling area, it is possible that conditions outside specific sampling locations may differ. Therefore, users of this report are advised to observe conditions prior to conducting any demolition or renovation activities. COLE Engineering & XCG Consulting Joint Venture cannot be held responsible for conditions that were not apparent from documentation supplied to COLE Engineering & XCG Consulting Joint Venture.

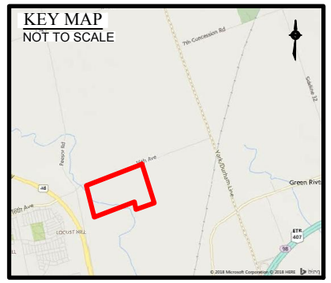
The conclusions presented in this report are professional opinions based on visual observations, limited information provided by persons familiar with the subject building and analytical results. As such, COLE Engineering & XCG Consulting Joint Venture cannot be held responsible for environmental conditions at the building that were not apparent from the available information.

The scope of this work is limited to the matters expressly covered. This report is prepared for the sole benefit of the current owner and the current owner's authorized contractors, and should not be relied upon by any other person or entity. The scope of services performed in the execution of this investigation may not be appropriate to satisfy the needs of other users, and any use or reuse of this document or the findings and conclusions represented herein is at the sole risk of the said users.

8. FIGURES



KEY MAP
NOT TO SCALE



- NON-ASBESTOS CONTAINING SAMPLES
- CONFIRMED ASBESTOS CONTAINING SAMPLES
- PAINT SAMPLES NOT EXCEEDING LEAD STANDARDS
- CONFIRMED LEAD CONTAINING PAINT SAMPLES

NOT TO SCALE

SAMPLING LOCATIONS
FIRST FLOOR

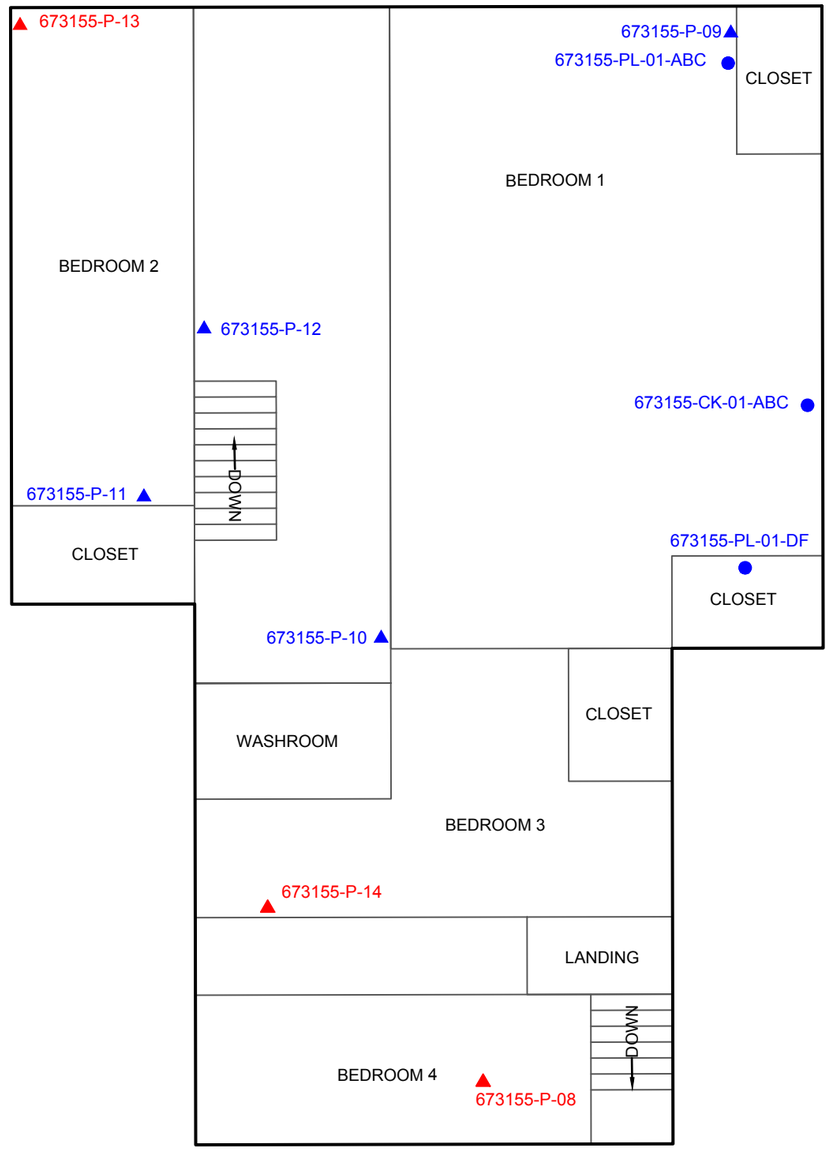
PIN 673155
7977 16TH AVENUE
MARKHAM, ONTARIO

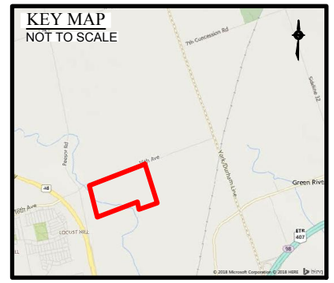
XCG Environmental Engineers & Scientists
COLE

DATE	JOB NO.	FIGURE NO.
MAR. 2019	2018-0565	1

DRAWING REFERENCE: Figure based on York Region online mapping and COLE field notes.
NOTE: Location of building, underground utilities, etc. are for reference only and should not be relied upon for detailed design, renovation, or construction purposes. Property boundary and building locations shown may not represent actual surveyed boundaries.

SHEET: DSS533620001023FIG01.pdf
FILE: 2018-0565_673155_7797 16th Ave MM.dwg





- NON-ASBESTOS CONTAINING SAMPLES
- CONFIRMED ASBESTOS CONTAINING SAMPLES
- PAINT SAMPLES NOT EXCEEDING LEAD STANDARDS
- CONFIRMED LEAD CONTAINING PAINT SAMPLES

NOT TO SCALE

SAMPLING LOCATIONS
SECOND FLOOR

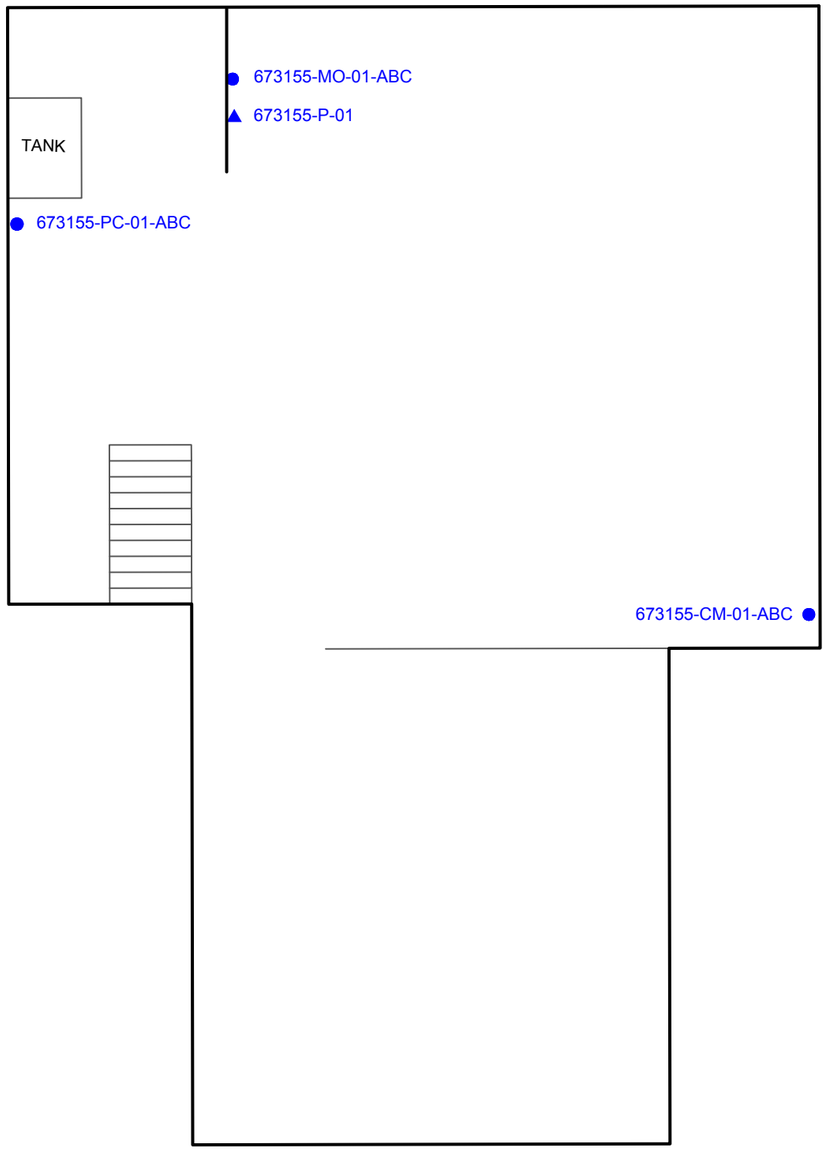
PIN 673155
7977 16TH AVENUE
MARKHAM, ONTARIO

XCG Environmental Engineers & Scientists
COLE

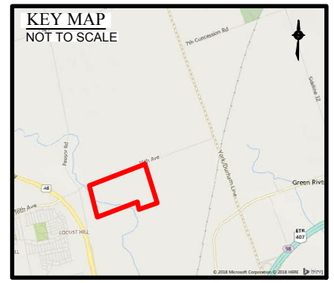
DATE	JOB NO.	FIGURE NO.
MAR. 2019	2018-0565	2

DRAWING REFERENCE: Figure based on York Region online mapping and COLE field notes.
NOTE: Location of building, underground utilities, etc. are for reference only and should not be relied upon for detailed design, renovation, or construction purposes. Property boundary and building locations shown may not represent actual surveyed boundaries.

SHEET: DSS533620001023FIG01.pdf
FILE: 2018-0565_673155_7797 16th Ave MM.dwg



KEY MAP
NOT TO SCALE



- NON-ASBESTOS CONTAINING SAMPLES
- CONFIRMED ASBESTOS CONTAINING SAMPLES
- PAINT SAMPLES NOT EXCEEDING LEAD STANDARDS
- CONFIRMED LEAD CONTAINING PAINT SAMPLES

NOT TO SCALE

SAMPLING LOCATIONS
BASEMENT

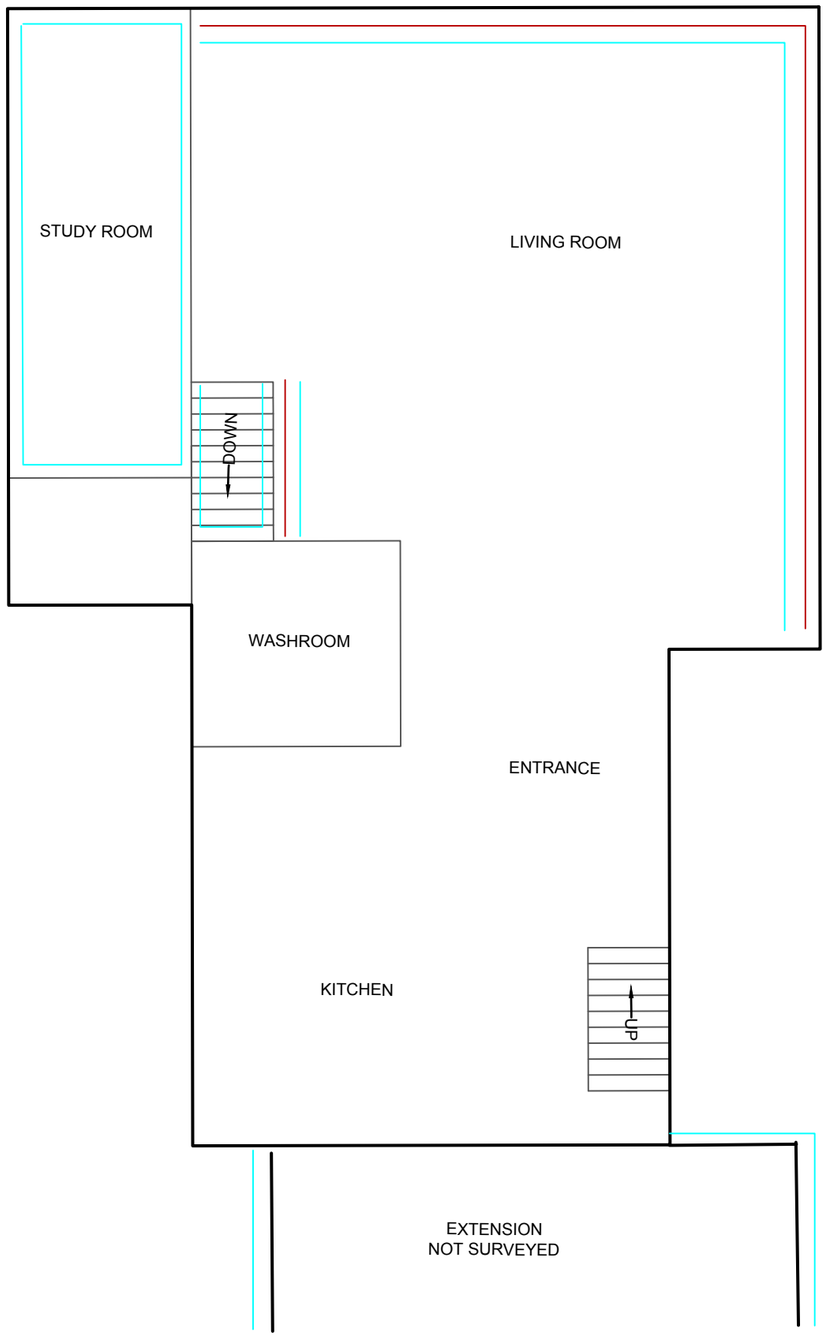
PIN 673155
7977 16TH AVENUE
MARKHAM, ONTARIO

XCG Environmental Engineers & Scientists
COLE

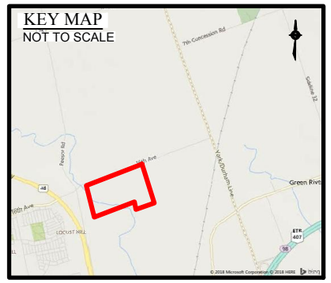
DATE	JOB NO.	FIGURE NO.
MAR. 2019	2018-0565	3

DRAWING REFERENCE: Figure based on York Region online mapping and COLE field notes.
NOTE: Location of building, underground utilities, etc. are for reference only and should not be relied upon for detailed design, renovation, or construction purposes. Property boundary and building locations shown may not represent actual surveyed boundaries.

SHEET: DSS533620001023FIG01.pdf
FILE: 2018-0565_673155_7797 16th Ave MM.dwg



KEY MAP
NOT TO SCALE



CONFIRMED LEAD CONTAINING PAINT (WALL)

LOCATION OF CONFIRMED ACM

NOT TO SCALE

DSHMS LOCATIONS
FIRST FLOOR

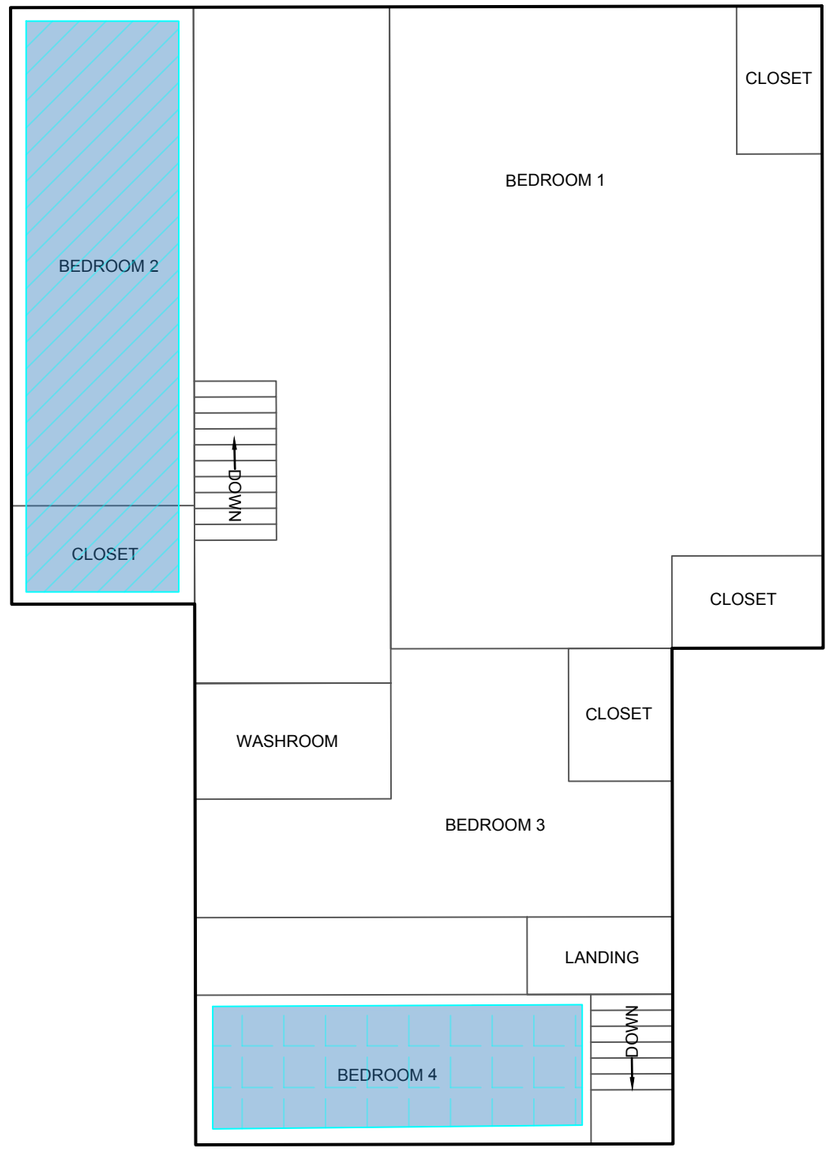
PIN 673155
7977 16TH AVENUE
MARKHAM, ONTARIO

XCG Environmental Engineers & Scientists
COLE

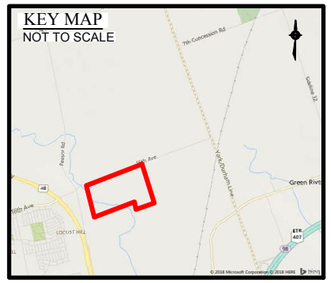
DATE	JOB NO.	FIGURE NO.
MAR. 2019	2018-0565	4

DRAWING REFERENCE: Figure based on York Region online mapping and COLE field notes.
NOTE: Location of building, underground utilities, etc. are for reference only and should not be relied upon for detailed design, renovation, or construction purposes. Property boundary and building locations shown may not represent actual surveyed boundaries.

SHEET: DSS533620001023FIG01.pdf
FILE: 2018-0565_673155_7797 16th Ave MM.dwg



KEY MAP
NOT TO SCALE



CONFIRMED LEAD CONTAINING PAINT (FLOOR)

CONFIRMED LEAD CONTAINING PAINT (CEILING)

NOT TO SCALE

DSHMS LOCATIONS
SECOND FLOOR

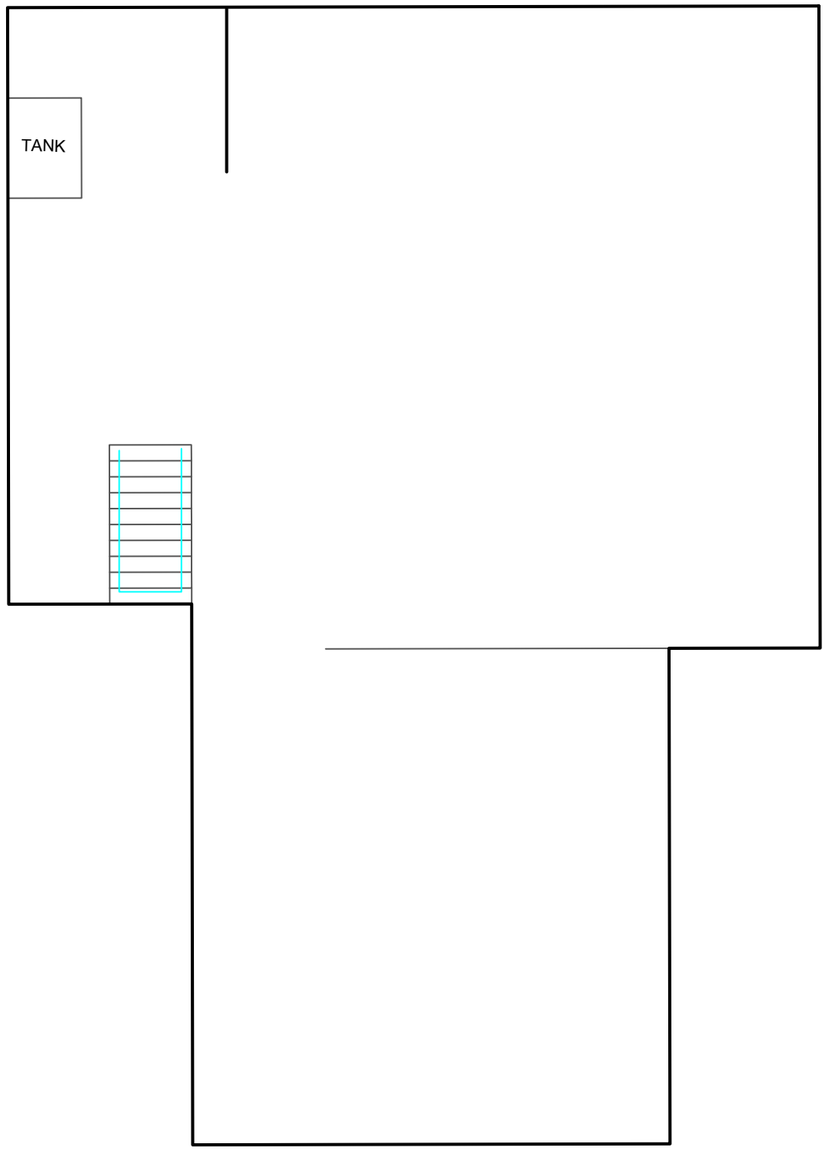
PIN 673155
7977 16TH AVENUE
MARKHAM, ONTARIO

XCG Environmental Engineers & Scientists
COLE

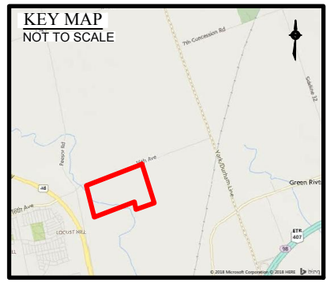
DATE	JOB NO.	FIGURE NO.
MAR. 2019	2018-0565	5

DRAWING REFERENCE: Figure based on York Region online mapping and COLE field notes.
NOTE: Location of building, underground utilities, etc. are for reference only and should not be relied upon for detailed design, renovation, or construction purposes. Property boundary and building locations shown may not represent actual surveyed boundaries.

SHEET: DSS533620001023FIG01.pdf
FILE: 2018-0565_673155_7797 16th Ave MM.dwg



KEY MAP
NOT TO SCALE



CONFIRMED LEAD CONTAINING PAINT (WALL)

NOT TO SCALE

DSHMS LOCATIONS
BASEMENT

PIN 673155
7977 16TH AVENUE
MARKHAM, ONTARIO

XCG Environmental Engineers & Scientists
COLE

DATE	JOB NO.	FIGURE NO.
MAR. 2019	2018-0565	6

DRAWING REFERENCE: Figure based on York Region online mapping and COLE field notes.
NOTE: Location of building, underground utilities, etc. are for reference only and should not be relied upon for detailed design, renovation, or construction purposes. Property boundary and building locations shown may not represent actual surveyed boundaries.

SHEET: DSS533620001023FIG01.pdf
FILE: 2018-0565_673155_7797 16th Ave MM.dwg

APPENDIX A
TABLES

Asbestos Inventory - 7797 16th Avenue, Markham

Location Reference	Floor	Room	Specific Location	Material Description	Accessibility	Friability (Friable, Non-Friable)	Asbestos Type	% Present	Condition (Good, Fair, Poor, Abated, None)	Approximate Quantity	Sample I.D.	Date	Control Action (Urgency Level)	Comments
673155	First	Living room	Wall	Red painted texture coat on drywall	A	Non-Friable	Chrysotile	2%	Good	28 m^2	673155-TC-03-A,B,C	19-Oct-18	Action 4 or 6 - Routine surveillance or Type 1 abatement if required.	-
673155	Roof	Roof	Roof	Roofing materials	C (exposed)	Non-Friable	Presumed	Presumed	Good	150 m^2	NA	19-Oct-18	Action 4 or 6 - no action required. Type 1 removal if required.	Roofing materials were not collected due to height and safety precautions; therefore sampling should be completed before any disturbance.

Notes:
1. Asbestos disturbance, abatement, transportation, and disposal shall be performed in accordance with requirements of (O.Reg. 278/05, O.Reg. 347/90).
2. All quantities, as provided, are approximations. Quantities, conditions, and locations of asbestos-containing materials are to be confirmed on-site by contractors prior to project bidding, removal or disturbance.
3. The survey did not include an intrusive, destructive investigation for concealed materials in every room. As a result, materials that may be present behind or above solid building material finishes are not included as part of the above database, unless otherwise stated.
4. '-' indicates 'not applicable'.
5. Urgency levels identified for ACMs in poor condition only. High: Immediate repairs required. Moderate: Repairs required.

Lead Paint Inventory -7797 16th Avenue, Markham

Location Reference	Floor	Room	Specific Location	Material Description	Lead Content (ppm)	Condition (Good, Fair, Poor, Abated, None)	Approximate Quantity	Sample I.D.	Date	Recommendation (Urgency Level)	Comments
673155	First floor	Living room	window sill	White layered paint	14,000	Good	5 m^2	673155-P-02	19-Oct-18	None	-
673155	Basement	Staircase	Wall	Green paint	7,000	Good	11 m^2	673155-P-03	19-Oct-18	None	-
673155	First floor	Study room	Wall on texture coat	Green paint	150	Good	46 m^2	673155-P-05	19-Oct-18	None	-
673155	First floor	Living room	Wall	Red paint	110	Good	29 m^2	673155-P-06	19-Oct-18	None	-
673155	Second floor	Bedroom 4	Floor	Red paint	22,000	Poor	84 m^2	673155-P-08	19-Oct-18	Remove chipped or flaking paint and paint over damaged areas. (High)	-
673155	Second floor	Bedroom 2	Ceiling	White paint	240	Poor	23 m^2	673155-P-13	19-Oct-18	Remove chipped or flaking paint and paint over damaged areas. (Moderate)	-
673155	Exterior	Ground level	Window	White paint	8,300	Poor	5 m^2	673155-P-15	19-Oct-18	Remove chipped or flaking paint and paint over damaged areas. (Moderate)	-

Notes:
1. Lead disturbance, abatement, transportation and disposal shall be performed in accordance with requirements of O. Reg. 490/09, as amended, O. Reg. 347, as amended, and the Ontario Ministry of Labour “Guideline – Lead on Construction Projects,” dated April 2011.
2. All quantities, as provided, are approximations. Quantities, conditions, and locations of lead-based materials are to be confirmed on-site by contractors prior to project bidding, removal or disturbance.
3. The survey did not include an intrusive, destructive investigation for concealed materials in every room. As a result, materials that may be present behind or above solid building material finishes are not included as part of the above database, unless otherwise stated.
4. '-' indicates 'not applicable'.
5. Urgency levels identified for paints in poor condition only. High: Immediate repairs required. Moderate: Repairs required.

Mercury/PCB Inventory - 7797 16th Avenue, Markham

Location Reference	Floor	Room	Specific Location	Material Description	Equipment Type	Approximate Quantity	Date	Control Action	Comments
673155	-	-	-	PCBs	Pole mounted transformer	-	Pre-2018	-	
673155	-	-	-	-	-	-	19-Oct-18	-	No fluorescent lights or mercury-containing thermostats observed. Digital thermostat observed.

Note:
1. The survey did not include an intrusive, destructive investigation for concealed materials in every room. As a result, materials that may be present behind or above solid building material finishes are not included as part of the above database, unless otherwise stated.
- Not applicable

APPENDIX B
LABORATORY CERTIFICATES OF ANALYSIS

Maxxam
A Bureau Veritas Group Company

Your Project #: 5-336-200-01
Your C.O.C. #: na

Attention: Amy Cardiff

XCG Consulting Limited
820 Trillium Dr
Kitchener, ON
CANADA N2R 1K4

Report Date: 2019/01/09
Report #: R5551889
Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B8S0648
Received: 2018/10/22, 19:50

Sample Matrix: Soil
Samples Received: 43

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Asbestos by PLM - 0.5 RDL (2)	10	N/A	2018/10/25	COR3SOP-00002	EPA 600R-93/116
Asbestos by PLM - 0.5 RDL (2)	33	N/A	N/A	COR3SOP-00002	EPA 600R-93/116
Asbestos by T.E.M. (1)	3	N/A	N/A		

Remarks:

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

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing. Maxxam is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Maxxam, results relate to the supplied samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Maxxam Analytics' Asbestos Laboratory is accredited by NVLAP for bulk asbestos analysis by polarized light microscopy, NVLAP Code 600136-0.

This report may not be reproduced, except in full, without the written approval of Maxxam Analytics. This report may not be used by the client to claim product endorsement by NVLAP, NIST or any other agency of the U.S. Government.

Maxxam Analytics' scope of accreditation includes EPA-600/M4-82-020: "Interim Method for the Determination of Asbestos in Bulk Insulation Samples" and EPA-600/R-93/116: "Method for the Determination of Asbestos in Bulk Building Materials".

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) This test was performed by Bureau Veritas Georgia

(2) P.O.B. - Percent of Bulk

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Your Project #: 5-336-200-01
Your C.O.C. #: na

Attention: Amy Cardiff

XCG Consulting Limited
820 Trillium Dr
Kitchener, ON
CANADA N2R 1K4

Report Date: 2019/01/09
Report #: R5551889
Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B8S0648
Received: 2018/10/22, 19:50

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Marijane Cruz, Senior Project Manager
Email: MCruz@maxxam.ca
Phone# (905)817-5756

==========

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

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: B8S0648
Report Date: 2019/01/09

XCG Consulting Limited
Client Project #: 5-336-200-01
Sampler Initials: RV

SUBCONTRACTED ANALYSIS (SOIL)

Maxxam ID		ICE154	ICE155	ICE156	
Sampling Date		2018/10/19	2018/10/19	2018/10/19	
COC Number		na	na	na	
	UNITS	**673155-SF-01-A**	**673155-SF-01-B**	**673155-SF-01-C**	**QC Batch**
Subcontracted Analysis					
Subcontract Parameter	%	ATTACHED	ATTACHED	ATTACHED	5920712
QC Batch = Quality Control Batch					

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: B8S0648
Report Date: 2019/01/09

XCG Consulting Limited
Client Project #: 5-336-200-01
Sampler Initials: RV

Asbestos Analytical Results

EPA/600R-93/116 by Polarized Light Microscopy

673155-MO-01-A

Maxxam ID: ICE145 Date Analyzed: 2018/10/25

	P.O.B	Sample Morphology	Asbestos	Other Fibres	Particulate
Layer 1	100	Homogeneous grey mortar	Not Detected		Non-Fibrous

673155-MO-01-B

Maxxam ID: ICE146 Date Analyzed: 2018/10/25

	P.O.B	Sample Morphology	Asbestos	Other Fibres	Particulate
Layer 1	100	Homogeneous grey mortar	Not Detected		Non-Fibrous

673155-MO-01-C

Maxxam ID: ICE147 Date Analyzed: 2018/10/25

	P.O.B	Sample Morphology	Asbestos	Other Fibres	Particulate
Layer 1	100	Homogeneous grey mortar	Not Detected		Non-Fibrous

673155-PC-01-A

Maxxam ID: ICE148 Date Analyzed: 2018/10/25

	P.O.B	Sample Morphology	Asbestos	Other Fibres	Particulate
Layer 1	100	Homogeneous grey plaster	Not Detected		Non-Fibrous

The limit of quantitation is 0.50%, although asbestos may be qualitatively detected at concentrations less than 0.50%. Samples for which asbestos is detected at <0.50% are reported as trace, "<0.50%". "Not Detected" indicates that no asbestos fibres were observed.

Calibrated Visual Estimate (%)
Date Format : yyyy/mm/dd

Maxxam Job #: B8S0648
Report Date: 2019/01/09

XCG Consulting Limited
Client Project #: 5-336-200-01
Sampler Initials: RV

Asbestos Analytical Results

EPA/600R-93/116 by Polarized Light Microscopy

673155-PC-01-B

Maxxam ID: ICE149 Date Analyzed: 2018/10/25

	P.O.B	Sample Morphology	Asbestos	Other Fibres	Particulate
Layer 1	100	Homogeneous grey plaster	Not Detected		Non-Fibrous

673155-PC-01-C

Maxxam ID: ICE150 Date Analyzed: 2018/10/25

	P.O.B	Sample Morphology	Asbestos	Other Fibres	Particulate
Layer 1	100	Homogeneous grey plaster	Not Detected		Non-Fibrous

673155-CM-01-A

Maxxam ID: ICE151 Date Analyzed: 2018/10/25

	P.O.B	Sample Morphology	Asbestos	Other Fibres	Particulate
Layer 1	100	Homogeneous grey cementitious material	Not Detected		Non-Fibrous

673155-CM-01-B

Maxxam ID: ICE152 Date Analyzed: 2018/10/25

	P.O.B	Sample Morphology	Asbestos	Other Fibres	Particulate
Layer 1	100	Homogeneous grey cementitious material	Not Detected		Non-Fibrous

The limit of quantitation is 0.50%, although asbestos may be qualitatively detected at concentrations less than 0.50%. Samples for which asbestos is detected at <0.50% are reported as trace, "<0.50%". "Not Detected" indicates that no asbestos fibres were observed.

Calibrated Visual Estimate (%)
Date Format : yyyy/mm/dd

Maxxam Job #: B8S0648
Report Date: 2019/01/09

XCG Consulting Limited
Client Project #: 5-336-200-01
Sampler Initials: RV

Asbestos Analytical Results

EPA/600R-93/116 by Polarized Light Microscopy

673155-CM-01-C

Maxxam ID: ICE153 Date Analyzed: 2018/10/25

	P.O.B	Sample Morphology	Asbestos	Other Fibres		Particulate
Layer 1	100	Homogeneous grey cementitious material	Not Detected			Non-Fibrous

673155-SF-01-A

Maxxam ID: ICE154 Date Analyzed: 2018/10/25

	P.O.B	Sample Morphology	Asbestos	Other Fibres		Particulate
Layer 1	100	Homogeneous brown/green sheet flooring	Not Detected	Cellulose	10%	Non-Fibrous

673155-SF-01-B

Maxxam ID: ICE155 Date Analyzed: 2018/10/25

	P.O.B	Sample Morphology	Asbestos	Other Fibres		Particulate
Layer 1	100	Homogeneous brown/green sheet flooring	Not Detected	Cellulose	10%	Non-Fibrous

673155-SF-01-C

Maxxam ID: ICE156 Date Analyzed: 2018/10/25

	P.O.B	Sample Morphology	Asbestos	Other Fibres		Particulate
Layer 1	100	Homogeneous brown/green sheet flooring	Not Detected	Cellulose	10%	Non-Fibrous

The limit of quantitation is 0.50%, although asbestos may be qualitatively detected at concentrations less than 0.50%. Samples for which asbestos is detected at <0.50% are reported as trace, "<0.50%". "Not Detected" indicates that no asbestos fibres were observed.

Calibrated Visual Estimate (%)
Date Format : yyyy/mm/dd

Maxxam Job #: B8S0648
Report Date: 2019/01/09

XCG Consulting Limited
Client Project #: 5-336-200-01
Sampler Initials: RV

Asbestos Analytical Results

EPA/600R-93/116 by Polarized Light Microscopy

673155-TC-01-A

Maxxam ID: ICE157 Date Analyzed: 2018/10/25

	P.O.B	Sample Morphology	Asbestos	Other Fibres	Particulate
Layer 1	100	Homogeneous white texture coat	Not Detected		Non-Fibrous

673155-TC-01-B

Maxxam ID: ICE158 Date Analyzed: 2018/10/25

	P.O.B	Sample Morphology	Asbestos	Other Fibres	Particulate
Layer 1	100	Homogeneous white texture coat	Not Detected		Non-Fibrous

673155-TC-01-C

Maxxam ID: ICE159 Date Analyzed: 2018/10/25

	P.O.B	Sample Morphology	Asbestos	Other Fibres	Particulate
Layer 1	100	Homogeneous white texture coat	Not Detected		Non-Fibrous

673155-TC-02-A

Maxxam ID: ICE160 Date Analyzed: 2018/10/25

	P.O.B	Sample Morphology	Asbestos	Other Fibres		Particulate
Layer 1	100	Homogeneous white/green texture coat	Not Detected	Cellulose	5%	Non-Fibrous

The limit of quantitation is 0.50%, although asbestos may be qualitatively detected at concentrations less than 0.50%. Samples for which asbestos is detected at <0.50% are reported as trace, "<0.50%". "Not Detected" indicates that no asbestos fibres were observed.

Calibrated Visual Estimate (%)
Date Format : yyyy/mm/dd

Maxxam Job #: B8S0648
Report Date: 2019/01/09

XCG Consulting Limited
Client Project #: 5-336-200-01
Sampler Initials: RV

Asbestos Analytical Results

EPA/600R-93/116 by Polarized Light Microscopy

673155-TC-02-B

Maxxam ID: ICE161 Date Analyzed: 2018/10/25

	P.O.B	Sample Morphology	Asbestos		Other Fibres		Particulate
Layer 1	100	Homogeneous white/green texture coat	Not Detected		Cellulose	5%	Non-Fibrous

673155-TC-02-C

Maxxam ID: ICE162 Date Analyzed: 2018/10/25

	P.O.B	Sample Morphology	Asbestos		Other Fibres		Particulate
Layer 1	100	Homogeneous white/green texture coat	Not Detected		Cellulose	5%	Non-Fibrous

673155-TC-03-A

Maxxam ID: ICE163 Date Analyzed: 2018/10/25

	P.O.B	Sample Morphology	Asbestos		Other Fibres		Particulate
Layer 1	100	Homogeneous white/red texture coat	**Chrysotile**	2%			Non-Fibrous

673155-TC-03-B

Maxxam ID: ICE164 Date Analyzed: 2018/10/25

	P.O.B	Sample Morphology	Asbestos	Other Fibres	Particulate
Layer 1			N/A		
	Comment:	Not analyzed - positive stop			

The limit of quantitation is 0.50%, although asbestos may be qualitatively detected at concentrations less than 0.50%. Samples for which asbestos is detected at <0.50% are reported as trace, "<0.50%". "Not Detected" indicates that no asbestos fibres were observed.

Calibrated Visual Estimate (%)
Date Format : yyyy/mm/dd

Maxxam Job #: B8S0648
Report Date: 2019/01/09

XCG Consulting Limited
Client Project #: 5-336-200-01
Sampler Initials: RV

Asbestos Analytical Results

EPA/600R-93/116 by Polarized Light Microscopy

673155-TC-03-C

Maxxam ID: ICE165 Date Analyzed: 2018/10/25

	P.O.B	Sample Morphology	Asbestos	Other Fibres	Particulate
Layer 1			N/A		

Comment: Not analyzed - positive stop

673155-PL-01-A

Maxxam ID: ICE166 Date Analyzed: 2018/10/25

	P.O.B	Sample Morphology	Asbestos	Other Fibres	Particulate
Layer 1	20	Homogeneous white plaster	Not Detected		Non-Fibrous
Layer 2	80	Homogeneous grey plaster	Not Detected		Non-Fibrous

673155-PL-01-B

Maxxam ID: ICE167 Date Analyzed: 2018/10/25

	P.O.B	Sample Morphology	Asbestos	Other Fibres	Particulate
Layer 1	20	Homogeneous white plaster	Not Detected		Non-Fibrous
Layer 2	80	Homogeneous grey plaster	Not Detected		Non-Fibrous

The limit of quantitation is 0.50%, although asbestos may be qualitatively detected at concentrations less than 0.50%. Samples for which asbestos is detected at <0.50% are reported as trace, "<0.50%". "Not Detected" indicates that no asbestos fibres were observed.

Calibrated Visual Estimate (%)
Date Format : yyyy/mm/dd

Maxxam Job #: B8S0648
Report Date: 2019/01/09

XCG Consulting Limited
Client Project #: 5-336-200-01
Sampler Initials: RV

Asbestos Analytical Results

EPA/600R-93/116 by Polarized Light Microscopy

673155-PL-01-C

Maxxam ID: ICE168 Date Analyzed: 2018/10/25

	P.O.B	Sample Morphology	Asbestos	Other Fibres	Particulate
Layer 1	20	Homogeneous white plaster	Not Detected		Non-Fibrous
Layer 2	80	Homogeneous grey plaster	Not Detected		Non-Fibrous

673155-PL-01-D

Maxxam ID: ICE169 Date Analyzed: 2018/10/25

	P.O.B	Sample Morphology	Asbestos	Other Fibres	Particulate
Layer 1	20	Homogeneous white plaster	Not Detected		Non-Fibrous
Layer 2	80	Homogeneous grey plaster	Not Detected		Non-Fibrous

673155-PL-01-E

Maxxam ID: ICE170 Date Analyzed: 2018/10/25

	P.O.B	Sample Morphology	Asbestos	Other Fibres	Particulate
Layer 1	20	Homogeneous white plaster	Not Detected		Non-Fibrous
Layer 2	80	Homogeneous grey plaster	Not Detected		Non-Fibrous

The limit of quantitation is 0.50%, although asbestos may be qualitatively detected at concentrations less than 0.50%. Samples for which asbestos is detected at <0.50% are reported as trace, "<0.50%". "Not Detected" indicates that no asbestos fibres were observed.

Calibrated Visual Estimate (%)
Date Format : yyyy/mm/dd

Maxxam Job #: B8S0648
Report Date: 2019/01/09

XCG Consulting Limited
Client Project #: 5-336-200-01
Sampler Initials: RV

Asbestos Analytical Results

EPA/600R-93/116 by Polarized Light Microscopy

673155-CK-01-A

Maxxam ID: ICE171 Date Analyzed: 2018/10/25

	P.O.B	Sample Morphology	Asbestos	Other Fibres		Particulate
Layer 1	100	Homogeneous white caulking	Not Detected			Non-Fibrous

673155-CK-01-B

Maxxam ID: ICE172 Date Analyzed: 2018/10/25

	P.O.B	Sample Morphology	Asbestos	Other Fibres		Particulate
Layer 1	100	Homogeneous white caulking	Not Detected			Non-Fibrous

673155-CK-01-C

Maxxam ID: ICE173 Date Analyzed: 2018/10/25

	P.O.B	Sample Morphology	Asbestos	Other Fibres		Particulate
Layer 1	100	Homogeneous white caulking	Not Detected			Non-Fibrous

673155-CI-01-A

Maxxam ID: ICE174 Date Analyzed: 2018/10/25

	P.O.B	Sample Morphology	Asbestos	Other Fibres		Particulate
Layer 1	100	Homogeneous brown insulation	Not Detected	Cellulose	95%	Non-Fibrous

The limit of quantitation is 0.50%, although asbestos may be qualitatively detected at concentrations less than 0.50%. Samples for which asbestos is detected at <0.50% are reported as trace, "<0.50%". "Not Detected" indicates that no asbestos fibres were observed.

Calibrated Visual Estimate (%)
Date Format : yyyy/mm/dd

Maxxam Job #: B8S0648
Report Date: 2019/01/09

XCG Consulting Limited
Client Project #: 5-336-200-01
Sampler Initials: RV

Asbestos Analytical Results

EPA/600R-93/116 by Polarized Light Microscopy

673155-CI-01-B

Maxxam ID: ICE175 Date Analyzed: 2018/10/25

	P.O.B	Sample Morphology	Asbestos	Other Fibres		Particulate
Layer 1	100	Homogeneous brown insulation	Not Detected	Cellulose	95%	Non-Fibrous

673155-CI-01-C

Maxxam ID: ICE176 Date Analyzed: 2018/10/25

	P.O.B	Sample Morphology	Asbestos	Other Fibres		Particulate
Layer 1	100	Homogeneous brown insulation	Not Detected	Cellulose	95%	Non-Fibrous

673155-CK-02-A

Maxxam ID: ICE177 Date Analyzed: 2018/10/25

	P.O.B	Sample Morphology	Asbestos	Other Fibres	Particulate
Layer 1	100	Homogeneous white caulking	Not Detected		Non-Fibrous

673155-CK-02-B

Maxxam ID: ICE178 Date Analyzed: 2018/10/25

	P.O.B	Sample Morphology	Asbestos	Other Fibres	Particulate
Layer 1	100	Homogeneous white caulking	Not Detected		Non-Fibrous

The limit of quantitation is 0.50%, although asbestos may be qualitatively detected at concentrations less than 0.50%. Samples for which asbestos is detected at <0.50% are reported as trace, "<0.50%". "Not Detected" indicates that no asbestos fibres were observed.

Calibrated Visual Estimate (%)
Date Format : yyyy/mm/dd

Maxxam Job #: B8S0648
Report Date: 2019/01/09

XCG Consulting Limited
Client Project #: 5-336-200-01
Sampler Initials: RV

Asbestos Analytical Results

EPA/600R-93/116 by Polarized Light Microscopy

673155-CK-02-C

Maxxam ID: ICE179 Date Analyzed: 2018/10/25

	P.O.B	Sample Morphology	Asbestos	Other Fibres		Particulate
Layer 1	100	Homogeneous white caulking	Not Detected			Non-Fibrous

673155-RM-01-A

Maxxam ID: ICE180 Date Analyzed: 2018/10/25

	P.O.B	Sample Morphology	Asbestos	Other Fibres		Particulate
Layer 1	100	Homogeneous black roofing material	Not Detected	Cellulose	20%	Tar Non-Fibrous

673155-RM-01-B

Maxxam ID: ICE181 Date Analyzed: 2018/10/25

	P.O.B	Sample Morphology	Asbestos	Other Fibres		Particulate
Layer 1	100	Homogeneous black roofing material	Not Detected	Cellulose	20%	Tar Non-Fibrous

673155-RM-01-C

Maxxam ID: ICE182 Date Analyzed: 2018/10/25

	P.O.B	Sample Morphology	Asbestos	Other Fibres		Particulate
Layer 1	100	Homogeneous black roofing material	Not Detected	Cellulose	20%	Tar Non-Fibrous

The limit of quantitation is 0.50%, although asbestos may be qualitatively detected at concentrations less than 0.50%. Samples for which asbestos is detected at <0.50% are reported as trace, "<0.50%". "Not Detected" indicates that no asbestos fibres were observed.

Calibrated Visual Estimate (%)
Date Format : yyyy/mm/dd

Maxxam Job #: B8S0648
Report Date: 2019/01/09

XCG Consulting Limited
Client Project #: 5-336-200-01
Sampler Initials: RV

Asbestos Analytical Results

EPA/600R-93/116 by Polarized Light Microscopy

673155-RM-01-D

Maxxam ID: ICE183 Date Analyzed: 2018/10/25

	P.O.B	Sample Morphology	Asbestos	Other Fibres		Particulate
Layer 1	100	Homogeneous black roofing material	Not Detected	Cellulose	20%	Tar Non-Fibrous

673155-RM-01-E

Maxxam ID: ICE184 Date Analyzed: 2018/10/25

	P.O.B	Sample Morphology	Asbestos	Other Fibres		Particulate
Layer 1	100	Homogeneous black roofing material	Not Detected	Cellulose	20%	Tar Non-Fibrous

673155-CM-02-A

Maxxam ID: ICE185 Date Analyzed: 2018/10/25

	P.O.B	Sample Morphology	Asbestos	Other Fibres	Particulate
Layer 1	100	Homogeneous grey cementitious material	Not Detected		Non-Fibrous

673155-CM-02-B

Maxxam ID: ICE186 Date Analyzed: 2018/10/25

	P.O.B	Sample Morphology	Asbestos	Other Fibres	Particulate
Layer 1	100	Homogeneous grey cementitious material	Not Detected		Non-Fibrous

The limit of quantitation is 0.50%, although asbestos may be qualitatively detected at concentrations less than 0.50%. Samples for which asbestos is detected at <0.50% are reported as trace, "<0.50%". "Not Detected" indicates that no asbestos fibres were observed.

Calibrated Visual Estimate (%)
Date Format : yyyy/mm/dd

Maxxam Job #: B8S0648
Report Date: 2019/01/09

XCG Consulting Limited
Client Project #: 5-336-200-01
Sampler Initials: RV

Asbestos Analytical Results

EPA/600R-93/116 by Polarized Light Microscopy

673155-CM-02-C

Maxxam ID: ICE187 Date Analyzed: 2018/10/25

	P.O.B	Sample Morphology	Asbestos	Other Fibres	Particulate
Layer 1	100	Homogeneous grey cementitious material	Not Detected		Non-Fibrous

The limit of quantitation is 0.50%, although asbestos may be qualitatively detected at concentrations less than 0.50%. Samples for which asbestos is detected at <0.50% are reported as trace, "<0.50%". "Not Detected" indicates that no asbestos fibres were observed.

Calibrated Visual Estimate (%)
Date Format : yyyy/mm/dd

TEST SUMMARY

Maxxam ID: ICE145 **Collected:** 2018/10/19
Sample ID: 673155-MO-01-A **Shipped:**
Matrix: Soil **Received:** 2018/10/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	5802205	N/A	2018/10/25	Romeo Samson

Maxxam ID: ICE146 **Collected:** 2018/10/19
Sample ID: 673155-MO-01-B **Shipped:**
Matrix: Soil **Received:** 2018/10/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	5802205	N/A	2018/10/25	Romeo Samson

Maxxam ID: ICE146 Dup **Collected:** 2018/10/19
Sample ID: 673155-MO-01-B **Shipped:**
Matrix: Soil **Received:** 2018/10/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	5802205	N/A	2018/10/25	Romeo Samson

Maxxam ID: ICE147 **Collected:** 2018/10/19
Sample ID: 673155-MO-01-C **Shipped:**
Matrix: Soil **Received:** 2018/10/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	5802205	N/A	2018/10/25	Romeo Samson

Maxxam ID: ICE148 **Collected:** 2018/10/19
Sample ID: 673155-PC-01-A **Shipped:**
Matrix: Soil **Received:** 2018/10/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	5802205	N/A	2018/10/25	Romeo Samson

Maxxam ID: ICE149 **Collected:** 2018/10/19
Sample ID: 673155-PC-01-B **Shipped:**
Matrix: Soil **Received:** 2018/10/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	5802205	N/A	2018/10/25	Romeo Samson

Maxxam ID: ICE150 **Collected:** 2018/10/19
Sample ID: 673155-PC-01-C **Shipped:**
Matrix: Soil **Received:** 2018/10/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	5802205	N/A	2018/10/25	Romeo Samson

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TEST SUMMARY

Maxxam ID: ICE151 **Collected:** 2018/10/19
Sample ID: 673155-CM-01-A **Shipped:**
Matrix: Soil **Received:** 2018/10/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	5802205	N/A	2018/10/25	Romeo Samson

Maxxam ID: ICE152 **Collected:** 2018/10/19
Sample ID: 673155-CM-01-B **Shipped:**
Matrix: Soil **Received:** 2018/10/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	5802205	N/A	2018/10/25	Romeo Samson

Maxxam ID: ICE153 **Collected:** 2018/10/19
Sample ID: 673155-CM-01-C **Shipped:**
Matrix: Soil **Received:** 2018/10/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	5802205	N/A	2018/10/25	Romeo Samson

Maxxam ID: ICE154 **Collected:** 2018/10/19
Sample ID: 673155-SF-01-A **Shipped:**
Matrix: Soil **Received:** 2018/10/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	5802205	N/A	2018/10/25	Romeo Samson
Asbestos by T.E.M.		5920712	2019/01/09		Ashton Gibson

Maxxam ID: ICE155 **Collected:** 2018/10/19
Sample ID: 673155-SF-01-B **Shipped:**
Matrix: Soil **Received:** 2018/10/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	5802205	N/A		Romeo Samson
Asbestos by T.E.M.		5920712	2019/01/09		Ashton Gibson

Maxxam ID: ICE156 **Collected:** 2018/10/19
Sample ID: 673155-SF-01-C **Shipped:**
Matrix: Soil **Received:** 2018/10/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	5802205	N/A		Romeo Samson
Asbestos by T.E.M.		5920712	2019/01/09		Ashton Gibson

Maxxam ID: ICE156 Dup **Collected:** 2018/10/19
Sample ID: 673155-SF-01-C **Shipped:**
Matrix: Soil **Received:** 2018/10/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	5802205	N/A		Romeo Samson

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TEST SUMMARY

Maxxam ID: ICE157 **Collected:** 2018/10/19
Sample ID: 673155-TC-01-A **Shipped:**
Matrix: Soil **Received:** 2018/10/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	5802205	N/A		Romeo Samson

Maxxam ID: ICE158 **Collected:** 2018/10/19
Sample ID: 673155-TC-01-B **Shipped:**
Matrix: Soil **Received:** 2018/10/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	5802205	N/A		Romeo Samson

Maxxam ID: ICE159 **Collected:** 2018/10/19
Sample ID: 673155-TC-01-C **Shipped:**
Matrix: Soil **Received:** 2018/10/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	5802205	N/A		Romeo Samson

Maxxam ID: ICE160 **Collected:** 2018/10/19
Sample ID: 673155-TC-02-A **Shipped:**
Matrix: Soil **Received:** 2018/10/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	5802205	N/A		Romeo Samson

Maxxam ID: ICE161 **Collected:** 2018/10/19
Sample ID: 673155-TC-02-B **Shipped:**
Matrix: Soil **Received:** 2018/10/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	5802205	N/A		Romeo Samson

Maxxam ID: ICE162 **Collected:** 2018/10/19
Sample ID: 673155-TC-02-C **Shipped:**
Matrix: Soil **Received:** 2018/10/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	5802205	N/A		Romeo Samson

Maxxam ID: ICE163 **Collected:** 2018/10/19
Sample ID: 673155-TC-03-A **Shipped:**
Matrix: Soil **Received:** 2018/10/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	5802205	N/A		Romeo Samson

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TEST SUMMARY

Maxxam ID: ICE164 **Collected:** 2018/10/19
Sample ID: 673155-TC-03-B **Shipped:**
Matrix: Soil **Received:** 2018/10/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	5802205	N/A		Romeo Samson

Maxxam ID: ICE165 **Collected:** 2018/10/19
Sample ID: 673155-TC-03-C **Shipped:**
Matrix: Soil **Received:** 2018/10/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	5802205	N/A		Romeo Samson

Maxxam ID: ICE166 **Collected:** 2018/10/19
Sample ID: 673155-PL-01-A **Shipped:**
Matrix: Soil **Received:** 2018/10/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	5802205	N/A		Romeo Samson

Maxxam ID: ICE166 Dup **Collected:** 2018/10/19
Sample ID: 673155-PL-01-A **Shipped:**
Matrix: Soil **Received:** 2018/10/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	5802205	N/A		Romeo Samson

Maxxam ID: ICE167 **Collected:** 2018/10/19
Sample ID: 673155-PL-01-B **Shipped:**
Matrix: Soil **Received:** 2018/10/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	5802205	N/A		Romeo Samson

Maxxam ID: ICE168 **Collected:** 2018/10/19
Sample ID: 673155-PL-01-C **Shipped:**
Matrix: Soil **Received:** 2018/10/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	5802205	N/A		Romeo Samson

Maxxam ID: ICE169 **Collected:** 2018/10/19
Sample ID: 673155-PL-01-D **Shipped:**
Matrix: Soil **Received:** 2018/10/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	5802205	N/A		Romeo Samson

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TEST SUMMARY

Maxxam ID: ICE170 **Collected:** 2018/10/19
Sample ID: 673155-PL-01-E **Shipped:**
Matrix: Soil **Received:** 2018/10/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	5802205	N/A		Romeo Samson

Maxxam ID: ICE171 **Collected:** 2018/10/19
Sample ID: 673155-CK-01-A **Shipped:**
Matrix: Soil **Received:** 2018/10/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	5802205	N/A		Romeo Samson

Maxxam ID: ICE172 **Collected:** 2018/10/19
Sample ID: 673155-CK-01-B **Shipped:**
Matrix: Soil **Received:** 2018/10/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	5802205	N/A		Romeo Samson

Maxxam ID: ICE173 **Collected:** 2018/10/19
Sample ID: 673155-CK-01-C **Shipped:**
Matrix: Soil **Received:** 2018/10/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	5802205	N/A		Romeo Samson

Maxxam ID: ICE174 **Collected:** 2018/10/19
Sample ID: 673155-CI-01-A **Shipped:**
Matrix: Soil **Received:** 2018/10/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	5802205	N/A		Romeo Samson

Maxxam ID: ICE175 **Collected:** 2018/10/19
Sample ID: 673155-CI-01-B **Shipped:**
Matrix: Soil **Received:** 2018/10/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	5802205	N/A		Romeo Samson

Maxxam ID: ICE176 **Collected:** 2018/10/19
Sample ID: 673155-CI-01-C **Shipped:**
Matrix: Soil **Received:** 2018/10/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	5802205	N/A		Romeo Samson

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TEST SUMMARY

Maxxam ID: ICE176 Dup
Sample ID: 673155-CI-01-C
Matrix: Soil
Collected: 2018/10/19
Shipped:
Received: 2018/10/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	5802205	N/A		Romeo Samson

Maxxam ID: ICE177
Sample ID: 673155-CK-02-A
Matrix: Soil
Collected: 2018/10/19
Shipped:
Received: 2018/10/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	5802205	N/A		Romeo Samson

Maxxam ID: ICE178
Sample ID: 673155-CK-02-B
Matrix: Soil
Collected: 2018/10/19
Shipped:
Received: 2018/10/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	5802205	N/A		Romeo Samson

Maxxam ID: ICE179
Sample ID: 673155-CK-02-C
Matrix: Soil
Collected: 2018/10/19
Shipped:
Received: 2018/10/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	5802205	N/A		Romeo Samson

Maxxam ID: ICE180
Sample ID: 673155-RM-01-A
Matrix: Soil
Collected: 2018/10/19
Shipped:
Received: 2018/10/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	5802205	N/A		Romeo Samson

Maxxam ID: ICE181
Sample ID: 673155-RM-01-B
Matrix: Soil
Collected: 2018/10/19
Shipped:
Received: 2018/10/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	5802205	N/A		Romeo Samson

Maxxam ID: ICE182
Sample ID: 673155-RM-01-C
Matrix: Soil
Collected: 2018/10/19
Shipped:
Received: 2018/10/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	5802205	N/A		Romeo Samson

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Maxxam Job #: B8S0648
Report Date: 2019/01/09

XCG Consulting Limited
Client Project #: 5-336-200-01
Sampler Initials: RV

TEST SUMMARY

Maxxam ID: ICE183 **Collected:** 2018/10/19
Sample ID: 673155-RM-01-D **Shipped:**
Matrix: Soil **Received:** 2018/10/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	5802205	N/A		Romeo Samson

Maxxam ID: ICE184 **Collected:** 2018/10/19
Sample ID: 673155-RM-01-E **Shipped:**
Matrix: Soil **Received:** 2018/10/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	5802205	N/A		Romeo Samson

Maxxam ID: ICE185 **Collected:** 2018/10/19
Sample ID: 673155-CM-02-A **Shipped:**
Matrix: Soil **Received:** 2018/10/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	5802205	N/A		Romeo Samson

Maxxam ID: ICE186 **Collected:** 2018/10/19
Sample ID: 673155-CM-02-B **Shipped:**
Matrix: Soil **Received:** 2018/10/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	5802205	N/A		Romeo Samson

Maxxam ID: ICE186 Dup **Collected:** 2018/10/19
Sample ID: 673155-CM-02-B **Shipped:**
Matrix: Soil **Received:** 2018/10/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	5802205	N/A		Romeo Samson

Maxxam ID: ICE187 **Collected:** 2018/10/19
Sample ID: 673155-CM-02-C **Shipped:**
Matrix: Soil **Received:** 2018/10/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	5802205	N/A		Romeo Samson

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Maxxam Job #: B8S0648
Report Date: 2019/01/09

XCG Consulting Limited
Client Project #: 5-336-200-01
Sampler Initials: RV

GENERAL COMMENTS

Revised Report (2019/01/08) : Asbestos by TEM added to certificate of analysis.

Sample ICE145 [673155-MO-01-A] : Revised Report (2019/01/08) : Asbestos by TEM added to certificate of analysis.

Results relate only to the items tested.

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Maxxam Job #: B8S0648
Report Date: 2019/01/09

XCG Consulting Limited
Client Project #: 5-336-200-01
Sampler Initials: RV

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Ashton Gibson, Project Manager

Banu Gurgen-Keough, Supervisor

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Maxxam
A Bureau Veritas Group Company

Your Project #: 2018-0565
Site Location: 673155
Your C.O.C. #: na

Attention: Amy Cardiff

XCG Consulting Limited
820 Trillium Dr
Kitchener, ON
CANADA N2R 1K4

Report Date: 2019/01/03
Report #: R5545847
Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B8S0305
Received: 2018/10/22, 19:51

Sample Matrix: Paint
Samples Received: 15

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Metals in Paint	1	2018/10/25	2018/10/26	CAM SOP-00408	EPA 6010D m
Metals in Paint	9	2018/10/25	2018/10/27	CAM SOP-00408	EPA 6010D m
Metals in Paint	5	2018/10/25	2018/10/29	CAM SOP-00408	EPA 6010D m

Remarks:

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

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing. Maxxam is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Maxxam, results relate to the supplied samples tested.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Marijane Cruz, Senior Project Manager
Email: MCruz@maxxam.ca
Phone# (905)817-5756
==========

Your Project #: 2018-0565
Site Location: 673155
Your C.O.C. #: na

Attention: Amy Cardiff

XCG Consulting Limited
820 Trillium Dr
Kitchener, ON
CANADA N2R 1K4

Report Date: 2019/01/03
Report #: R5545847
Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B8S0305
Received: 2018/10/22, 19:51

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Maxxam Job #: B8S0305
Report Date: 2019/01/03

XCG Consulting Limited
Client Project #: 2018-0565
Site Location: 673155
Sampler Initials: DW

ELEMENTS BY ATOMIC SPECTROSCOPY (PAINT)

Maxxam ID		ICB447	ICB447		ICB448		ICB449		ICB450		
Sampling Date		2018/10/19	2018/10/19		2018/10/19		2018/10/19		2018/10/19		
COC Number		na	na		na		na		na		
	UNITS	673155-P-01	673155-P-01 Lab-Dup	RDL	673155-P-02	RDL	673155-P-03	RDL	673155-P-04	RDL	QC Batch
Metals											
Lead (Pb)	mg/kg	26	24	1.0	14000	100	7000	40	52	1.3	5803313

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

Maxxam ID		ICB451	ICB452		ICB453		ICB454		ICB455		
Sampling Date		2018/10/19	2018/10/19		2018/10/19		2018/10/19		2018/10/19		
COC Number		na	na		na		na		na		
	UNITS	673155-P-05	673155-P-06	RDL	673155-P-07	RDL	673155-P-08	RDL	673155-P-09	RDL	QC Batch
Metals											
Lead (Pb)	mg/kg	150	110	1.0	47	1.3	22000	63	12	2.0	5803313

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		ICB456		ICB457		ICB458		ICB459	ICB460		
Sampling Date		2018/10/19		2018/10/19		2018/10/19		2018/10/19	2018/10/19		
COC Number		na		na		na		na	na		
	UNITS	673155-P-10	RDL	673155-P-11	RDL	673155-P-12	RDL	673155-P-13	673155-P-14	RDL	QC Batch
Metals											
Lead (Pb)	mg/kg	14	5.0	22	3.3	6.4	1.4	240	4.3	1.0	5803313

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		ICB686		
Sampling Date				
COC Number		na		
	UNITS	673155-P-15	RDL	QC Batch
Metals				
Lead (Pb)	mg/kg	8300	10	5803313

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B8S0305
Report Date: 2019/01/03

XCG Consulting Limited
Client Project #: 2018-0565
Site Location: 673155
Sampler Initials: DW

TEST SUMMARY

Maxxam ID: ICB447 **Collected:** 2018/10/19
Sample ID: 673155-P-01 **Shipped:**
Matrix: Paint **Received:** 2018/10/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Metals in Paint	ICP	5803313	2018/10/25	2018/10/26	Archana Patel

Maxxam ID: ICB447 Dup **Collected:** 2018/10/19
Sample ID: 673155-P-01 **Shipped:**
Matrix: Paint **Received:** 2018/10/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Metals in Paint	ICP	5803313	2018/10/25	2018/10/26	Archana Patel

Maxxam ID: ICB448 **Collected:** 2018/10/19
Sample ID: 673155-P-02 **Shipped:**
Matrix: Paint **Received:** 2018/10/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Metals in Paint	ICP	5803313	2018/10/25	2018/10/29	Archana Patel

Maxxam ID: ICB449 **Collected:** 2018/10/19
Sample ID: 673155-P-03 **Shipped:**
Matrix: Paint **Received:** 2018/10/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Metals in Paint	ICP	5803313	2018/10/25	2018/10/29	Archana Patel

Maxxam ID: ICB450 **Collected:** 2018/10/19
Sample ID: 673155-P-04 **Shipped:**
Matrix: Paint **Received:** 2018/10/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Metals in Paint	ICP	5803313	2018/10/25	2018/10/27	Archana Patel

Maxxam ID: ICB451 **Collected:** 2018/10/19
Sample ID: 673155-P-05 **Shipped:**
Matrix: Paint **Received:** 2018/10/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Metals in Paint	ICP	5803313	2018/10/25	2018/10/27	Archana Patel

Maxxam ID: ICB452 **Collected:** 2018/10/19
Sample ID: 673155-P-06 **Shipped:**
Matrix: Paint **Received:** 2018/10/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Metals in Paint	ICP	5803313	2018/10/25	2018/10/27	Archana Patel

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Maxxam Job #: B8S0305
Report Date: 2019/01/03

XCG Consulting Limited
Client Project #: 2018-0565
Site Location: 673155
Sampler Initials: DW

TEST SUMMARY

Maxxam ID: ICB453 **Collected:** 2018/10/19
Sample ID: 673155-P-07 **Shipped:**
Matrix: Paint **Received:** 2018/10/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Metals in Paint	ICP	5803313	2018/10/25	2018/10/29	Archana Patel

Maxxam ID: ICB454 **Collected:** 2018/10/19
Sample ID: 673155-P-08 **Shipped:**
Matrix: Paint **Received:** 2018/10/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Metals in Paint	ICP	5803313	2018/10/25	2018/10/29	Archana Patel

Maxxam ID: ICB455 **Collected:** 2018/10/19
Sample ID: 673155-P-09 **Shipped:**
Matrix: Paint **Received:** 2018/10/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Metals in Paint	ICP	5803313	2018/10/25	2018/10/27	Archana Patel

Maxxam ID: ICB456 **Collected:** 2018/10/19
Sample ID: 673155-P-10 **Shipped:**
Matrix: Paint **Received:** 2018/10/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Metals in Paint	ICP	5803313	2018/10/25	2018/10/27	Archana Patel

Maxxam ID: ICB457 **Collected:** 2018/10/19
Sample ID: 673155-P-11 **Shipped:**
Matrix: Paint **Received:** 2018/10/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Metals in Paint	ICP	5803313	2018/10/25	2018/10/27	Archana Patel

Maxxam ID: ICB458 **Collected:** 2018/10/19
Sample ID: 673155-P-12 **Shipped:**
Matrix: Paint **Received:** 2018/10/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Metals in Paint	ICP	5803313	2018/10/25	2018/10/27	Archana Patel

Maxxam ID: ICB459 **Collected:** 2018/10/19
Sample ID: 673155-P-13 **Shipped:**
Matrix: Paint **Received:** 2018/10/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Metals in Paint	ICP	5803313	2018/10/25	2018/10/27	Archana Patel

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Maxxam Job #: B8S0305
Report Date: 2019/01/03

XCG Consulting Limited
Client Project #: 2018-0565
Site Location: 673155
Sampler Initials: DW

TEST SUMMARY

Maxxam ID: ICB460
Sample ID: 673155-P-14
Matrix: Paint

Collected: 2018/10/19
Shipped:
Received: 2018/10/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Metals in Paint	ICP	5803313	2018/10/25	2018/10/27	Archana Patel

Maxxam ID: ICB686
Sample ID: 673155-P-15
Matrix: Paint

Collected:
Shipped:
Received: 2018/10/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Metals in Paint	ICP	5803313	2018/10/25	2018/10/29	Archana Patel

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GENERAL COMMENTS

Revised Report (2019/01/03) : Project number amended.

Sample ICB449 [673155-P-03] : Metals: Due to limited amount of sample available for analysis, a smaller than usual portion of the sample was used. Detection limits were adjusted accordingly.

Sample ICB450 [673155-P-04] : Metals: Due to limited amount of sample available for analysis, a smaller than usual portion of the sample was used. Detection limits were adjusted accordingly.

Sample ICB453 [673155-P-07] : Metals: Due to limited amount of sample available for analysis, a smaller than usual portion of the sample was used. Detection limits were adjusted accordingly.

Sample ICB454 [673155-P-08] : Metals: Due to limited amount of sample available for analysis, a smaller than usual portion of the sample was used. Detection limits were adjusted accordingly.

Sample ICB455 [673155-P-09] : Metals: Due to limited amount of sample available for analysis, a smaller than usual portion of the sample was used. Detection limits were adjusted accordingly.

Sample ICB456 [673155-P-10] : Metals: Due to limited amount of sample available for analysis, a smaller than usual portion of the sample was used. Detection limits were adjusted accordingly.

Sample ICB457 [673155-P-11] : Metals: Due to limited amount of sample available for analysis, a smaller than usual portion of the sample was used. Detection limits were adjusted accordingly.

Sample ICB458 [673155-P-12] : Metals: Due to limited amount of sample available for analysis, a smaller than usual portion of the sample was used. Detection limits were adjusted accordingly.

Results relate only to the items tested.

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Maxxam Job #: B8S0305
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QUALITY ASSURANCE REPORT

XCG Consulting Limited
Client Project #: 2018-0565
Site Location: 673155
Sampler Initials: DW

			Matrix Spike		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
5803313	Lead (Pb)	2018/10/26	87 (1)	75 - 125	<1.0	mg/kg	8.0 (2)	35	101	75 - 125

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

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

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

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

(1) Matrix Spike Parent ID [ICB447-01]

(2) Duplicate Parent ID [ICB447-01]

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XCG Consulting Limited
Client Project #: 2018-0565
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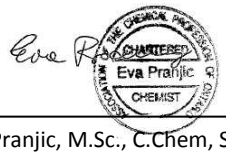
Sampler Initials: DW

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Ewa Pranjic, M.Sc., C.Chem, Scientific Specialist

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

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APPENDIX C
SITE PHOTOGRAPHS

Photo 1: View of the exterior of the residential dwelling.

Photo 2: View of the asbestos-containing texture coat (Sample 673155-TC-03-A,B,C and red lead-based paint (Sample 673155-P-06) on walls in the living room and white lead-based paint on the living room window sill (Sample 673155-P-02).

Photo 3: View of the green lead-based paint (Sample 673155-P-03) on the staircase wall.

Photo 4: View of green lead-based paint (Sample 673155-P-05) on the wall of the study room of the dwelling.

Photo 5: View of the red lead-based paint (Sample 673155-P-08) on the floor of bedroom 4 of the dwelling

Photo 6: View of white lead-based paint (Sample 673155-P-13) on the ceiling in the bedroom 2 of the dwelling.

Photo 7: View of white lead-based paint (Sample 673155-P-15) on the exterior window sill of the dwelling.

Photo 8: View of refrigerator potentially containing halocarbons at the dwelling.

Photo 9: View of freezer potentially containing halocarbons in the basement of the dwelling.

Photo 10: View of the furnace oil AST located in the basement of the dwelling.

Photo 11: View of the 20 liter jerry can of fuel located in the basement of the dwelling.