

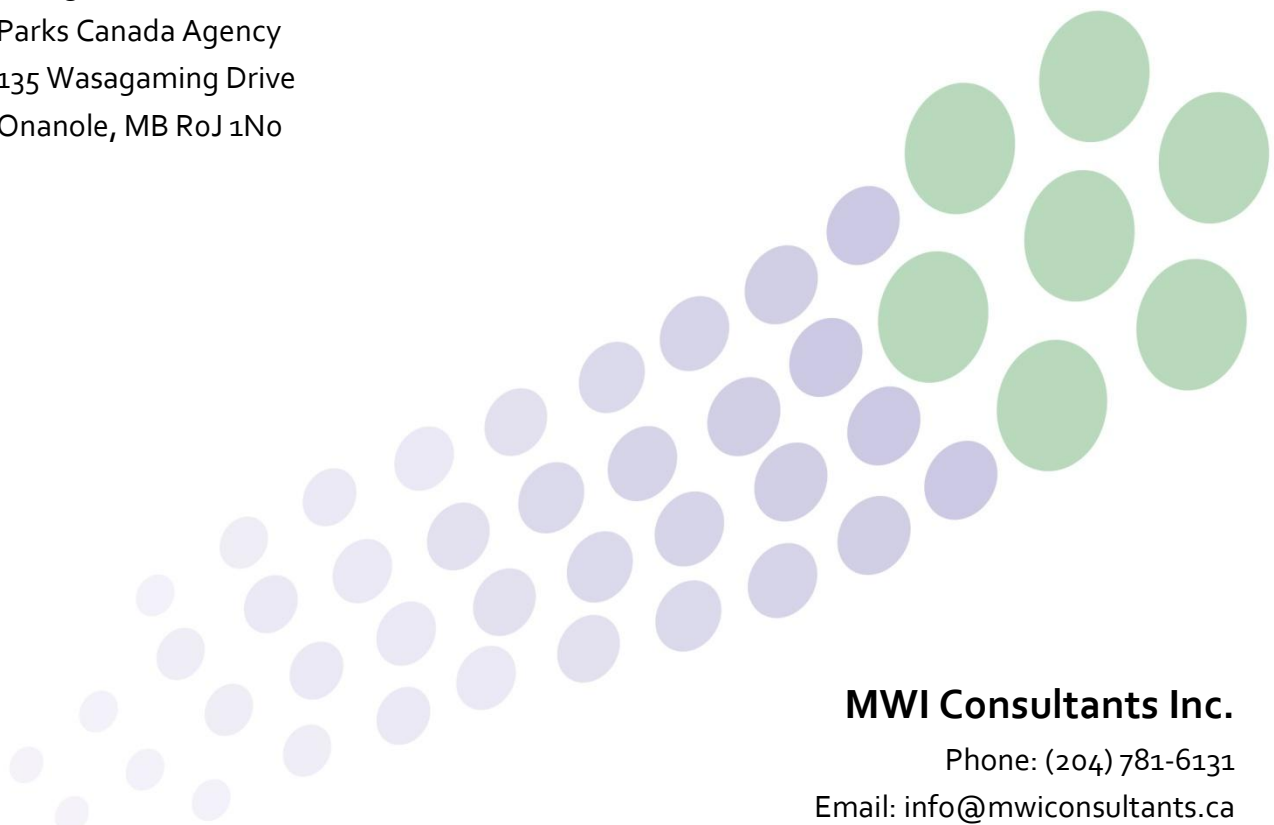


# Designated Substances Survey Report

## Ranger's Cabin, Riding Mountain National Park

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Prepared for:  
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Parks Canada Agency  
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## **Designated Substances and Hazardous Materials Survey Report**

**LOCATION:** Ranger's Cabin, East Park Gate  
Riding Mountain National Park, Manitoba

**INSPECTION DATE:** March 16, 2018

### **1.0 SUMMARY**

An evaluation of the Ranger's Cabin (residence) located at the East Gate in Riding Mountain National Park was completed by MWI Consultants.

The objective of the evaluation was to survey the building for the presence of designated substances and other hazardous materials. The survey intended to establish the location, condition and type of asbestos-containing materials (ACMs) and to identify the location of lead-based paints (LBPs) that are present within the building.

The drywall joint compound present in the main floor and the second floor of the home should be presumed to contain asbestos, for the purposes of planning renovations. Samples taken from the south-west office room and the second floor east bedroom were found to contain approximately 3% chrysotile asbestos.

The brown exterior paint, as sampled from the front porch ceiling, was found to contain small amounts of lead (0.1% w/w).

The thermostat located in the living room contains a mercury switch.

No other designated substances were suspected to be present based on the survey.

This report summarizes the results of the inspection and evaluation of the conditions within the building, as well as the results of the bulk sampling of suspected asbestos-containing materials (ACMs) and lead-based paints (LBPs).

## 2.0 DEFINITIONS

**Asbestos:** Asbestos is a naturally occurring silicate mineral with long, thin fibrous crystals. The mineral was widely used in a large number of applications, particularly as a flame retardant or insulating material.

Asbestos is considered a designated material under the Controlled Products Regulations and is a known carcinogen. Chronic exposure to asbestos can lead to asbestosis and mesothelioma (a type of lung cancer), amongst others.

Asbestos has also been found in many products around the home or office, including clapboard, roofing shingles, attic insulation (vermiculite), exterior siding, pipe and boiler covering, cement, caulking, roof patching material, furnace cement, driveway coatings, wallboard, textured and latex paints, acoustical ceiling tiles, wall plaster, vinyl floor tiles, appliance wiring, hair dryers, irons and ironing board pads.

Although asbestos has caused serious health problems for workers and continues to be a risk within building maintenance, renovation, construction and demolition trades, it does not pose a significant risk for the general occupants of a building. Airborne asbestos fibers are a significant health risk.

In general, the use of asbestos has been discontinued due to the adverse health effects from inhalation of asbestos fibers.

**Asbestos-Containing Material:** Commonly abbreviated as ACM.

In the Province of Manitoba, a material must be considered as an ACM as follows:

A friable material with 0.1% asbestos or greater.

A non-friable material with 1.0% asbestos or greater.

Vermiculite insulation that contains asbestos

Once asbestos is detected using polarized light microscopy, standard methodologies rely on a visual estimation method that cannot reliably quantify content less than 1% and so any positive result will be interpreted as meeting the definition of an asbestos-containing materials unless rigorous testing and extensive sampling is completed.

**Asbestos Dust:** Particles of asbestos or settled particles of asbestos which may become airborne in the workplace.

**Friable Material:** A material that when dry can be crumbled, crushed or powdered by hand pressure. Examples would include pipe wrap insulation, sprayed-on fireproofing, plaster, ceiling tiles and vermiculite.

**Non-Friable Material:** A material that when dry will not easily be crumbled by hand pressure. Examples of non-friable materials include vinyl asbestos floor tiles or sheets, drywall joint compound and gaskets. Non-friable materials may still generate airborne fibers if mishandled.

**Designated Substance:** A chemical substance that meets the criteria as a carcinogen, mutagen, respiratory sensitizer, reproductive toxin, fetotoxin or teratogen under the Controlled Products Regulations. Examples of some

commonly encountered designated substances include asbestos, lead, mercury, silica, arsenic, benzene and isocyanates.

**Occupational Exposure Limit (OEL):** According to Part 36, section 36.5(1) (b) of the Manitoba Workplace Safety and Health Regulation 217/2006, the occupational exposure limit of a designated material must be as close to zero as is reasonably practicable, but shall not exceed the Threshold Limit Value (TLV) established by the American Conference of Governmental Industrial Hygienists (ACGIH).

In Manitoba, the Workplace Safety and Health Regulation adopts the current ACGIH TLVs as the allowable OELs for those chemical and biological substances where a TLV exists. The TLV established by ACGIH for all forms of asbestos is 0.1 fibers per cubic centimeter of air (f/cc or f/cm<sup>3</sup>).

Following asbestos abatement activities, airborne asbestos fiber concentrations must be reduced to a maximum concentration of 0.01 f/cc of air for all forms of asbestos before the negative pressure enclosure is removed and workers and others are allowed to reoccupy an area where asbestos has been removed.

**Threshold Limit Value-Time-Weighted Average (TLV-TWA):** The TWA concentration for a conventional 8-hour workday and a 40-hour workweek, to which it is believed that nearly all workers may be repeatedly exposed, day after day, for a working lifetime without adverse effect. The TLVs established by ACGIH do not take into account individual sensitivities, pre-existing conditions or other health factors, such as cigarette smoking.

### **3.0 BUILDING AND SURVEY METHODOLOGY**

#### **3.1. [Background and History](#)**

The building surveyed is a residence referred to as the Ranger's Cabin located immediately inside the Riding Mountain National Park, at the East gate.

The survey included all accessible areas of the building, including the basement and the attic. The exterior of the building was surveyed.

Surveyors are not aware of any previous asbestos inventory or sampling completed at this property.

#### **3.2. [Scope of Work](#)**

The scope of the work was to survey the interior and exterior of the building for the presence of designated substances. Based on the nature of the subject property, which is being used as a residence, it was determined that the survey would focus on the following:

- Asbestos-Containing Material (ACM)
- Lead-Based Paint (LBP)
- Polychlorinated Biphenyls (PCBs)
- Mercury-Containing Equipment

The scope of work included the following:

- An inspection for and a collection of representative samples of suspect ACM for laboratory analysis.
- An inspection for and a collection of representative samples of paints/coating applied to building surfaces for laboratory analysis for lead content.
- Evaluation for the presence of building materials or equipment that may make use of hazardous lead, mercury, PCBs or other designated substances.
- Preparation of a report which identifies the type and location of all observed hazardous materials and general recommendations.

### 3.3. [Hazardous Materials Survey Methodology](#)

An essential element in a hazardous materials survey is the knowledge and experience of the surveyor. The surveyor must be familiar with building materials, products and equipment that may contain hazardous substances such as asbestos, lead, PCBs and mercury.

The use of hazardous substances in building materials, products and equipment was common until the late 1970s and the use of some products and equipment containing these types of hazardous materials is likely. Building constructed prior to 1990 may contain some suspect ACMs, and materials must be evaluated prior to renovation or demolition activities.

The most common building-related designated substances include asbestos, lead, formaldehyde and mercury. Additional designated substances which may be present in buildings or associated with certain work processes include acrylonitrile, arsenic, benzene, isocyanates, formaldehyde, ethylene oxide, vinyl chloride, microcrystalline silica, beryllium, hexavalent chromium compounds and coke oven emissions.

### 3.4. [Asbestos Methodologies](#)

The survey for asbestos was completed based on guidelines in ASTM E2356 *Standard Practice for Comprehensive Building Surveys* (ASTM, 2014). This standard describes procedures for evaluating buildings and facilities for the presence of asbestos-containing materials.

According to Manitoba Workplace Safety & Health legislation and guidelines, a survey for asbestos-containing materials is required prior to any renovations activities in buildings built prior to 1990.

Analysis was completed according to U.S. EPA Method 600/R-93/116, which uses polarized light microscopy (PLM) to identify the type of asbestos in bulk samples. The methodology can be used to estimate percent content for asbestos in the

material analyzed. All samples were analyzed by Quantem Laboratories, who are AIHA-accredited.

### 3.5. [Lead - Hazards and Exposures](#)

Lead is toxic. Lead is a suspected human carcinogen, mutagen and teratogen and has been shown to cause cancer in laboratory animals. Lead is a designated substance. Lead interferes with many body processes and is poisonous to most organs and tissues, including the bones, intestines, kidneys, nervous system, and reproductive organs. Lead can accumulate in the body making long-term or repetitive/constant exposures over time much more dangerous. All contractors or workers should be aware of the potential hazards.

Potential sources of exposure to lead from buildings and building materials include lead-based paints (LBPs) that was used during building construction or renovation in 1970s or earlier, as well as lead-based water pipes and lead-solder joints/fittings for copper lines. Paints made prior to 1950 may contain significant amounts of lead, with some lead-based paints containing 30% to 50% lead by weight. Additional sources can include wall insulation around x-rays or other equipment, as an additive in brass and other alloys, from batteries, cable and wire casing, cast iron pipes, gaskets and connections,

Acute lead poisoning (high exposure over a short period of time) can cause headaches, fatigue, anemia, constipation, abdominal pain and damage to the nervous system. Chronic lead poisoning (exposure over a longer period of time) can cause fatigue, joint pain, and weakness.

Lead poisoning can damage the fetus in pregnant female workers, and impair fertility in male workers.

Workers are exposed to lead when they inhale lead-containing dust or ingest lead residue from their hands (e.g., when eating, chewing gum, or smoking). Lead can migrate across the project (i.e. to lunchrooms) if workers are not meticulous with good hygiene procedures.

### 3.6. [Lead - Regulatory Review](#)

According to Part 36, section 36.5(1) (b) of the Manitoba Workplace Safety and Health Regulation 217/2006, the occupational exposure limit of a designated material must be as close to zero as is reasonably practicable, but shall not exceed the Threshold Limit Value (TLV) established by the American Conference of Governmental Industrial Hygienists (ACGIH). In Manitoba, the Workplace Safety and Health Regulations have adopted the current ACGIH TLVs as the allowable OEL for those chemical and biological substances where a TLV exists.

The current TLV for lead (elemental and inorganic compounds, as lead) is 0.05 mg/m<sup>3</sup>. For workers with chronic exposure to lead-containing dust or lead-based materials, biological testing to determine lead-blood content would be warranted. For lead, the Biological Exposure Index (BEI) is 30 µg/100 mL and

lower levels are specified for women of child-bearing potential. This would be intended for industrial workers with higher-level chronic exposures.

The removal and clean-up of the lead-based paint shall be performed according to procedures that address requirements in the Manitoba Workplace Safety & Health Division *Guideline for Working with Lead*<sup>1</sup> and/or as modified in these procedures. Any lead removal or abatement activities must be performed by qualified contractors with training in the applicable activities, as well as familiarity with the applicable legislation issued by the Manitoba Department of Labour Workplace Safety & Health Division.

Under the federal *Surface Coating Materials Regulations* (SOR/2016-193), coatings on consumer products cannot contain more than 90 mg/kg lead (or 0.009% w/w). This applies to some materials including children's toys or products used by children; products containing more than this level require specific labelling. These regulations do not address existing painted surfaces or workplace requirements for handling lead-based paints. In the absence of clear Canadian-based legislation and guidelines, guidelines and definitions available in the US Code of Federal Regulations (CFR) are used in this assessment as an evaluation guideline. The US Department of Housing and Urban Development has legislation providing definitions for lead-based paints, as it relates to lead-based paint poisoning prevention in certain residential structures.

According to definitions provided in 24 CFR Part 35.110, lead-based paint (LBP) is defined as any paint or coating with lead content equal to or greater than 1 mg/cm<sup>2</sup> or 5000 ppm or 5,000 mg/kg or 0.5% w/w. Canada's Hazardous Products Act (1976) cites the same 0.5 % w/w limit for indoor lead-based paints.

Work to remove painted surfaces where the painted or coated surface contains less than 0.5% w/w is not expected to generate airborne lead concentrations in excess of the TLV established for lead, provided hand tools are used to remove paint and the space is adequately ventilated. For removal of lead-containing paints above 0.009% w/w where power tools or blasting techniques are to be used, a risk assessment should be undertaken to determine safe work procedures.

### 3.7. Mercury - Regulatory Review

Mercury is a hazardous material and an environmental concern. The importation and manufacture of products containing mercury are prohibited by Canadian *Products Containing Mercury Regulations* (SOR/2014-254), with some exceptions.

Manitoba workplace safety and health legislation requires that hazardous materials including mercury be removed from the structure prior to demolition (MR217/2016 Sec. 33.4).

Mercury must be disposed of with a licensed hazardous waste facility.

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<sup>1</sup> A *Guideline for Working with Lead*. Manitoba Workplace Safety & Health Division. August 2002.



## 4.0 SURVEY RESULTS

### 4.1. [General](#)

All accessible areas of the building, including the basement and attic spaces were inspected. The exterior of the building was surveyed.

The subject property is a two-storey residence, reportedly originally built in 1933. The building is constructed as a log cabin. The interior walls are framed out with drywall.

### 4.2. [Asbestos-Containing Materials](#)

The drywall joint compound (DJC) sampled from the main floor south-west office with access to the front porch and the second floor east bedroom were found to contain approximately 3% chrysotile asbestos.

The asbestos content of joint compound is relatively low and the material is considered non-friable when in place. The condition of the material in the building is generally good.

DJC samples from the basement and from the main floor bathroom were negative. The colour of the DJC sampled from the office and from the bathroom on the main floor appeared to be different; there may be two different types of asbestos-containing DJC. Based on the results, all drywall on the main floor and second floor should be presumed to contain asbestos, unless additional sampling and analysis demonstrates otherwise.

Other suspect ACM included tile flooring present under newer sheet flooring in the entrance and presumably the kitchen area. These tiles were sampled and were not found to contain asbestos. The exterior of the building was evaluated and samples of the base cement, the mortar for stone foundation, stucco material and window glazing were all not found to contain asbestos.

The building is served by a forced air furnace. Ductwork exposed in the basement is un-insulated and no duct wrap materials present. Duct wrap material was not present at supply registers or at floor penetrations up from the basement.

The laboratory results for asbestos content are summarized in Appendix 1.

Photographs identifying sample locations are included as Appendix 2.

Full laboratory results are included as Appendix 3.

### 4.3. [Lead-Based Paints \(LBPs\)](#)

There were no suspect lead-based paints present within the interior of the residence. A sample of the exterior paint was taken. A summary of lab results is included in Table 1. The lead test results are included as Appendix 4.



Table1 - Lead Testing Results - Paint Samples

ID	Location	Description	Result (% w/w)	Lead-Containing Paint >0.009% w/w	Lead-Based Paints >0.5% w/w
1	Exterior	Brown Exterior Paint (Front Porch Ceiling)	0.101	Yes	No

The brown exterior paint was above the 0.009% threshold but well below the 0.5% threshold. These limits are described in Section 3.6.

The sample taken may represent multiple layers of paints/coatings, as reliable separation was not possible; the actual lead content of an individual layer may be higher than the reported result. All of the exterior brown paint should be presumed to contain similar lead concentrations.

#### 4.4. [Mercury](#)

The thermostat located in the main floor living room contains a mercury switch. Refer to Photo 10.

#### 4.5. [Silica](#)

Standard building materials known to contain silica such as glass, concrete, masonry, stone and mortar are present throughout the building and the building's foundation.

There are no health risks associated with the presence of these materials, however when these materials are disturbed, dust may be created and dust created may contain microcrystalline silica.

In Manitoba, the OEL for microcrystalline silica is  $0.025 \text{ mg/m}^3$ . Workplace exposure monitoring should be completed during dust-generating operations where airborne concentrations of crystalline silica may exceed OEL.

#### 4.6. [Urea-Formaldehyde Foam Insulation \(UFFI\)](#)

UFFI was used as a retrofitted insulating material in walls and ceiling spaces. No samples were collected or analyzed for formaldehyde concentrations. Destructive investigation was not completed.

#### 4.7. [Poly-Chlorinated Biphenyls \(PCBs\)](#)

PCBs may be present in some older fluorescent lighting ballasts. Older ballasts not identified as Non-PCB must be removed prior to demolition and be disposed of accordingly.

Fluorescent lighting is present within the building.

#### 4.8. Other Designated Substances

Other designated substances like arsenic, beryllium, ethylene oxide, vinyl chloride, isocyanates, carbon tetrachloride or benzene are generally inapplicable to the present survey, which is a personal residence. Gasoline or other solvents may contain benzene, other petroleum by-products or other designated substances. Some pesticides or herbicides may contain recognized carcinogens.

Products within the building were not specifically evaluated, although no unusual contents were noted or reported.

### 5.0 RECOMMENDATIONS

#### 5.1. Asbestos-Containing Materials - Recommendations

- 5.1.1. The drywall joint compound shall be removed using Type 1,2 or 3 Procedures, dependent on how much disturbance is required, as outlined in the Guide for Asbestos Management (Safe Work Manitoba, May 2017).
- 5.1.2. Prior to the start of the Type 2 or Type 3 removal, notification must be provided to the Workplace Safety and Health Branch at least five (5) days prior to the start of the work.
- 5.1.3. Notice should be provided by completing an online form, which can be accessed at: [www.gov.mb.ca/labour/safety/asbestos](http://www.gov.mb.ca/labour/safety/asbestos).
- 5.1.4. Type 1 procedures apply to small repair and renovation jobs that will not disturb drywall joint compound but only the drywall itself.
- 5.1.5. Type 2 procedures would apply to larger jobs where a significant amount of drywall joint compound will be disturbed and this risk of producing dust is high.
- 5.1.6. Type 3 procedures may apply to work performed using power tools without HEPA attachments or other types of work activities that may create significant airborne fibers, or where such procedures are warranted based on adjacent areas or other site-specific considerations.
- 5.1.7. All abatement or removal of asbestos-containing materials should be handled according to the Guide for Asbestos Management (May 2017) published by Safe Work Manitoba, and must be handled in compliance with Manitoba WSH legislation, specifically MR217/2006, Sec. 37.8.
- 5.1.8. If any additional suspect materials are noted which are not addressed in this report, additional sampling and analysis would be recommended.

#### 5.2. Lead-Based Paints - Recommendations

- 5.2.1. Certain additional precautions are warranted when removing lead-based paints, or paints containing lead at lower concentrations, depending on the type of work processes or work environments involved.

- 5.2.2. In general, a risk assessment should be undertaken to determine safe work procedures where removal of lead-containing paints is required.

### 5.3. Mercury-Containing Equipment - Recommendations

- 5.3.1. Mercury-containing equipment (MCE) must be removed and properly disposed of prior to any renovation or demolition activities that may disturb this equipment.
- 5.3.2. Manitoba regulations require hazardous materials including mercury be removed prior to building demolition (MR 217/2016 Sec 33.4).

### 5.4. General Recommendations

- 5.4.1. This report should be retained by the owner/employer for the building. The report may provide useful information for contractors or others seeking information related to asbestos or hazardous materials surveys.

## 6.0 GENERAL SURVEY LIMITATIONS

Asbestos-containing materials may be present in inaccessible areas of the building or may be integral to the structure of the building itself. These types of materials include caulking, fire rated doors, gaskets in use on equipment, wiring or electrical components, packing associated with cast iron fittings, mastics as well as some roofing materials.

As per ASTM E2356, a baseline survey is intended to provide a general sense of the overall location, type, quantity and condition of any asbestos-containing materials present. It is thorough in that most accessible functional spaces are inspected and bulk samples taken of suspect materials observed. The intent of the survey is to provide information needed to prepare an asbestos control plan, where ACM are either confirmed through testing or presumed based on the type of material.

A baseline survey is unobtrusive in that samples are not taken when doing so would result in objectionable damage to surfaces or where institutional barriers preclude access, and destructive testing is avoided.

A pre-renovation assessment is limited in scope to the areas and materials where renovations are planned. More destructive testing is performed however not all areas of the building are evaluated. With a pre-demolition survey, all areas of the building must be evaluated and there are no restrictions on the amount or degree of destructive testing that is warranted.

Generally and unless specifically requested, sampling for a baseline survey would not be completed if sampling was hazardous to the surveyor (electrical systems), if sampling the materials would cause consequential damage to the property (window glazing), if it would affect the integrity of the system (roofing membranes), or if materials cannot be accessed without significant demolition. The potential for

asbestos to be present in brake pads or similar occupant-owned inventory maintained onsite would be outside the scope of this survey. Every effort was made to complete a thorough inventory of all reasonably accessible areas, including crawlspaces, ceiling spaces, attics and similar areas where contractors would routinely access.

Based on the standard limitations inherent in any survey, MWI Consultants Inc cannot provide any assurance that all asbestos-containing materials have been identified. This survey has been undertaken and completed in a professional manner in accordance with generally accepted practices, including ASTM E2356.

## Appendix 1 – Bulk Asbestos Sampling and ACM Inventory

Lab Number	ID	Area/ Floor	Description / Location	Date Sampled	Asbestos Content	Amount	ACM Condition
292042	01	Basement	Parging at Exhaust Penetration on Chimney	Mar 16/18	None	N/A	N/A
292042	02	Basement	Parging at Exhaust Penetration on Chimney	Mar 16/18	None	N/A	N/A
292042	03	Basement	Chimney Mortar	Mar 16/18	None	N/A	N/A
292042	04	Basement	Chimney Mortar	Mar 16/18	None	N/A	N/A
292042	05	Basement	Drywall Joint Compound - Bottom of Stairs	Mar 16/18	None	N/A	N/A
292042	06	Basement	Foundation Wall - South Basement Wall	Mar 16/18	None	N/A	N/A
292042	07	Basement	Drywall Joint Compound - West Exterior Window	Mar 16/18	None	N/A	N/A
292042	08	Main Floor	Green Floor Tile - Entrance Area (Under Top Layer)	Mar 16/18	None	N/A	N/A
292042	09	Main Floor	Beige Floor Tile - Entrance Area (Under Top Layer)	Mar 16/18	None	N/A	N/A
292042	10	Main Floor	Kitchen Flooring (Top Layer)	Mar 16/18	None	N/A	N/A
292042	11	Main Floor	Drywall Joint Compound - Wall in West Office	Mar 16/18	3% Chrysotile	Presume joint compound in all areas of main and second floor contain asbestos, unless additional testing demonstrates otherwise.	Good Condition
292042	12	Main Floor	Drywall Joint Compound - Bathroom	Mar 16/18	None	N/A	N/A

Lab Number	ID	Area/ Floor	Description / Location	Date Sampled	Asbestos Content	Amount	ACM Condition
292042	13	Second Floor	Drywall Joint Compound - Second Floor East Bedroom	Mar 16/18	3% Chrysotile	Presume joint compound in all areas of main and second floor contain asbestos, unless additional testing demonstrates otherwise.	Good Condition
292042	14	Exterior	Stucco at Gable Ends - West Side	Mar 16/18	None	N/A	N/A
292042	15	Exterior	Mortar for Stone Foundation	Mar 16/18	None	N/A	N/A
292042	16	Exterior	Base Cement/Skim Material	Mar 16/18	None	N/A	N/A
292042	17	Exterior	Exterior Window Glazing - West Side	Mar 16/18	None	N/A	N/A

## Appendix 2– Photographs

### Photo 1

Exterior of subject property, facing the south-east corner of the building.



### Photo 2

Photo shows the south-west room being used as an office, which contains an exterior door (front porch).

The sample of drywall joint compound taken from this room was found to contain approximately 3% chrysotile asbestos. Location of Sample 11.

A sample taken on the second floor was also positive. All drywall joint compound present throughout the main floor and second floor should be presumed to contain asbestos unless additional testing demonstrates otherwise.



### Photo 3

Photo shows the second floor east bedroom.

A sample of joint compound taken from the closet wall was found to contain approximately 3% chrysotile asbestos. Location of Sample 13.

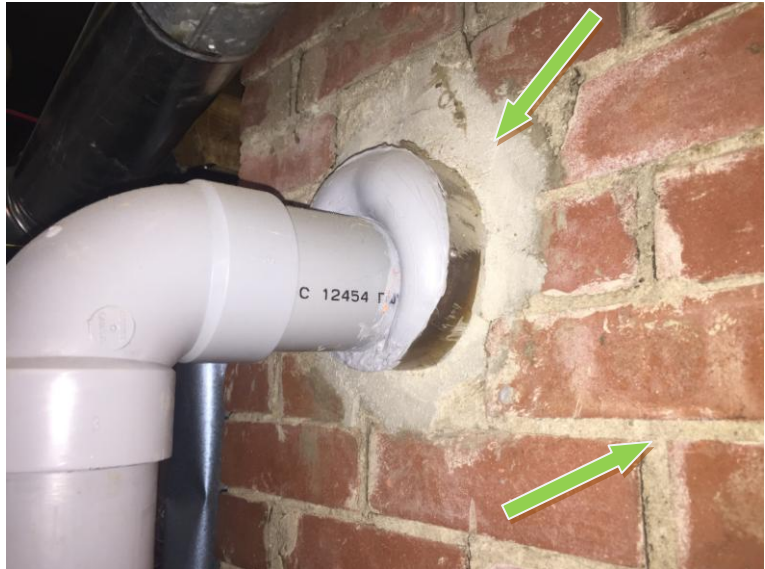
A sample taken on the main floor was also positive. All drywall joint compound present throughout the main floor and second floor should be presumed to contain asbestos unless additional testing demonstrates otherwise.



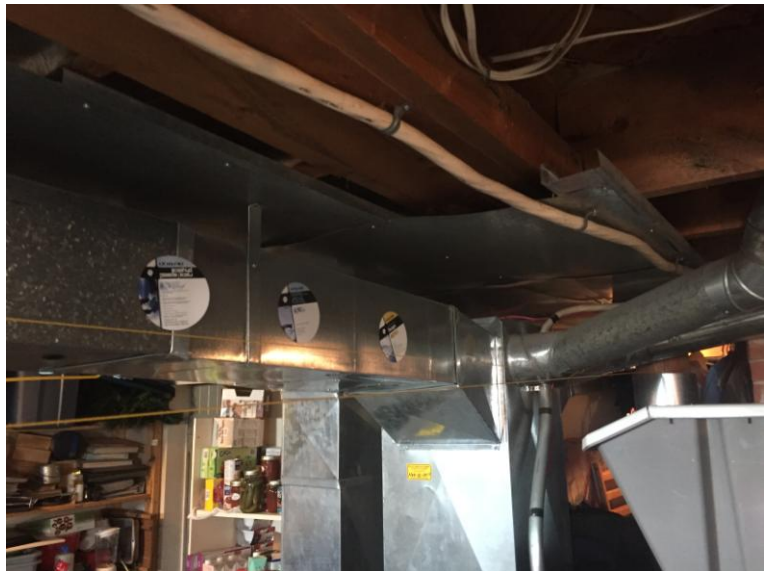


**Photo 4**

Parging cement around penetrations into the chimney was sampled and was not found to contain asbestos (samples 1 and 2). The mortar in place with the bricks forming the chimney was also sampled and was also not found to contain asbestos (samples 3 and 4).

**Photo 5**

Ductwork present in the basement is uninsulated, and mastics which might be suspect ACM were not present. Duct wrap is not present at seams and was not observed at supply registers.

**Photo 6**

The entrance flooring is newer vinyl sheet flooring over top of a subfloor, which is over top beige and green floor tiles, which are presumed to be original. All flooring materials were sampled and materials were not found to contain asbestos (samples 8 - 10). Similar materials are presumed to be under kitchen flooring.



**Photo 7**

The exterior base of the building consists of a cement foundation and stones.

The cement base (sample 16) and the mortar used with the stones (sample 15) were sampled and were not found to contain asbestos.

**Photo 8**

The stucco material for the top portion of the gable end (sample 14) on the west side of the building and the exterior window glazing material (sample 17) were sampled and were not found to contain asbestos.

**Photo 9**

A sample taken of the brown paint present on front (south) porch was found to contain 0.1% w/w lead (lead sample 1).

The paint appears to be similar to paint applied all exterior surfaces, however additional testing would be required to determine if different areas have different lead content.



**Photo 10**

The wall thermostat located in the living room contains a mercury switch.

Mercury is toxic and mercury must be removed from the building prior to its demolition. Mercury waste must be disposed of with a licensed hazardous waste facility.





## Appendix 3- Bulk Sampling Laboratory Results (Asbestos)



2033 HERITAGE PARK DR, OKLAHOMA CITY, OK 73120 | 1.800.822.1650

### Polarized Light Microscopy Asbestos Analysis Report

QuanTEM Lab No. 292042	Client: MWI Consultants, Inc.
Account Number: B663	377 De La Seigneurie Blvd.
Date Received: 03/19/2018	Winnipeg, MB R3X2C7
Received By: Jenifer Comito	Canada
Date Analyzed: 03/19/2018	Project: Ranger's Cabin
Analyzed By: Carter Cox	Project Location: East Gate, Riding Mountain
Methodology: EPA/600/R-93/116	Project Number: N/A

QuanTEM Sample ID	Client Sample ID	Composition	Color / Description	Asbestos (%)	Non-Asbestos Fiber (%)	Non Fibrous
001	Parge1	Layered	Gray Parging	Asbestos Not Present	NA	Sand CaCO3
001a		Layered	Tan Parging	Asbestos Not Present	NA	Sand CaCO3
002	Parge2	Layered	Gray Parging	Asbestos Not Present	NA	Sand CaCO3
002a		Layered	Tan Parging	Asbestos Not Present	NA	Sand CaCO3
003	Mortar1	Homogeneous	Gray Mortar	Asbestos Not Present	NA	Sand CaCO3
004	Mortar2	Homogeneous	Gray Mortar	Asbestos Not Present	NA	Sand CaCO3
005	DJC1	Homogeneous	White Joint Compound	Asbestos Not Present	NA	CaCO3 Paint

Unless otherwise noted, upon receipt the condition of the sample was acceptable for analysis.

Quantem is a NVLAP accredited PLM laboratory (Lab Code: 101959-0). This report relates only to the specific items tested. NVLAP accreditation applies only to analysis performed utilizing EPA/600/M4-82-020 and EPA/600/R-93/116 methods. This report may not be used to claim product endorsement by NVLAP or any agency of the US Government. This report may not be reproduced except in full, without the written approval of the laboratory.



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Date Analyzed: 03/19/2018	Project: Ranger's Cabin
Analyzed By: Carter Cox	Project Location: East Gate, Riding Mountain
Methodology: EPA/600/R-93/116	Project Number: N/A

Quantem Sample ID	Client Sample ID	Composition	Color / Description	Asbestos (%)	Non-Asbestos Fiber (%)	Non Fibrous
006	Cement1	Homogeneous	Gray Cement	Asbestos Not Present	NA	Sand CaCO3
007	DJC2	Homogeneous	White Joint Compound	Asbestos Not Present	NA	CaCO3 Paint
008	Tile1	Layered	Green Linoleum	Asbestos Not Present	Synthetic	40 Vinyl Tar
008a		Layered	Brown Mastic	Asbestos Not Present	NA	Glue
009	Tile2	Layered	Beige Linoleum	Asbestos Not Present	Synthetic	40 Vinyl Tar
009a		Layered	Brown Mastic	Asbestos Not Present	NA	Glue

Unless otherwise noted, upon receipt the condition of the sample was acceptable for analysis.

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### Polarized Light Microscopy Asbestos Analysis Report

Quantem Lab No.	292042	Client:	MWI Consultants, Inc.
Account Number:	B663		377 De La Seigneurie Blvd.
Date Received:	03/19/2018		Winnipeg, MB R3X2C7
Received By:	Jenifer Comito		Canada
Date Analyzed:	03/19/2018	Project:	Ranger's Cabin
Analyzed By:	Carter Cox	Project Location:	East Gate, Riding Mountain
Methodology:	EPA/600/R-93/116	Project Number:	N/A

Quantem Sample ID	Client Sample ID	Composition	Color / Description	Asbestos (%)	Non-Asbestos Fiber (%)	Non Fibrous
010	Floor1	Layered	White Sheet Vinyl	Asbestos Not Present	Cellulose 25	Vinyl CaCO3
010a		Layered	Yellow Mastic	Asbestos Not Present	NA	Glue
011	DJC3	Homogeneous	Tan Joint Compound	Asbestos Present Chrysotile 3	NA	CaCO3 Paint
012	DJC4	Homogeneous	White Joint Compound	Asbestos Not Present	NA	CaCO3 Paint
013	DJC5	Homogeneous	White Joint Compound	Asbestos Present Chrysotile 3	NA	CaCO3 Paint
014	Stucco1	Homogeneous	Gray Stucco	Asbestos Not Present	NA	Sand CaCO3
015	Mortar3	Homogeneous	Gray Mortar	Asbestos Not Present	NA	Sand CaCO3

Unless otherwise noted, upon receipt the condition of the sample was acceptable for analysis.

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Analyzed By:	Carter Cox	Project Location:	East Gate, Riding Mountain
Methodology:	EPA/600/R-93/116	Project Number:	N/A

Quantem Sample ID	Client Sample ID	Composition	Color / Description	Asbestos (%)	Non-Asbestos Fiber (%)	Non Fibrous
016	Stucco2	Homogeneous	Gray Cement	Asbestos Not Present	NA	Sand CaCO <sub>3</sub>
017	Glaze	Homogeneous	Gray Window Glazing	Asbestos Not Present	NA	CaCO <sub>3</sub>

*Carter Cox*

Carter W. Cox, Analyst

3/19/2018

Date of Report

Unless otherwise noted, upon receipt the condition of the sample was acceptable for analysis.

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## Appendix 4- Lead Sampling Laboratory Results



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### Environmental Chemistry Analysis Report

**Quantem Set ID:** 292047  
**Date Received:** 03/19/18  
**Received By:** Amber Bassett  
**Date Sampled:**  
**Time Sampled:**  
**Analyst:** CR  
**Date of Report:** 03/20/18

**Client:** MWI Consultants, Inc.  
 377 De La Seigneurie Blvd.  
 Winnipeg, MB R3X2C7  
 Canada

**Acct. No.:** B663

**Project:** Ranger's Cabin  
**Location:** East Gate, Riding Mountain

**Project No.:** NA

AIHA ID: 101352

Quantem ID	Client ID	Matrix	Parameter	Results	Reporting Limits	Units	Date/Time Analyzed	Method
001	1	Paint	Lead	0.101	0.00496	%	03/20/18 10:34	P EPA 7000B (1)

Authorized Signature:

Cherry Rossen, Technical Manager

Note: Sample results have not been corrected for blank values.

This report applies only to the standards or procedures indicated and to the specific samples tested. It is not indicative of the qualities of apparently identical or similar products or procedures, nor does it represent an ongoing assurance program unless so noted. These reports are for the exclusive use of the client and are not to be reproduced without specific written permission. Quantem is not responsible for user-supplied data used in calculations.

Unless otherwise noted, upon receipt the condition of the sample was acceptable for analysis.

Wipe materials must meet ASTM E1792 criteria. Method detection limits and resultant reporting limits may not be valid for non-ASTM E1792 wipe material.

EPA Method 7000B (1) = EPA 600/R-93/200 Preparation Modified. EPA 7000B Analysis Modified

EPA Method 7082 (2) = EPA 600/R-93/200 Preparation Modified. EPA 7082 Analysis Modified

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**Supplemental Report  
QAQC Results****QA ID:** 16113**Test:** Lead**Date:** 3/20/2018**Matrix:** Paint**Lab Number:** 292047**Approved By:** Cherry Rossen**Date Approved:** 3/20/2018**Notes:** RPD: Statistical Anomaly**Blank Data:**

Type of Blank	Blank Value
FCB	0
ICB	0
Matrix Blank	0

**Standards Data:**

Standard	Low Limit	Obtained	High Limit
CCV	4.5	4.7	5.5
FCV	4.5	5	5.5
ICV	0.9	1	1.1
RLVS	0.05	0.07	0.15

**Duplicate Data:**

Sample Number	Result	Duplicate	% RPD
292047-001	2.046	3.486	52.1

**Recovery Data:**

Sample Number	Result	Spike Level	Result + Spike	% Recovery	Dup. Result + Spike	% Dup. Recovery	% Spike RPD
LCS-P1	0.000	1.982	1.799	90.8	1.981	99.9	9.6
292047-001	3.485	2.000	5.350	93.3			

**Authorized Signature:**