

PARKS CANADA AGENCY (PCA)

DESIGNATED SUBSTANCES SURVEY LOWER BREWERS BRIDGE AND BRASS POINT BRIDGE, KINGSTON, ONTARIO

AUGUST 06, 2021





DESIGNATED SUBSTANCES SURVEY

LOWER BREWERS
BRIDGE AND BRASS
POINT BRIDGE,
KINGSTON, ONTARIO

PARKS CANADA AGENCY (PCA)

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1 INTRODUCTION

1.1 BACKGROUND

WSP Canada Inc. (WSP) was retained by Parks Canada Agency (PCA) to carry out a Designated Substance & Hazardous Materials Survey (DSS) on two structures, the Lower Brewers Lock Bridge and the Brass Point Swing Bridge, in Kingston, Ontario. PCA has retained the services of WSP to undertake the planning, site inspection, investigation, design development, preparation of construction documents, technical assistance during the tender period, and construction for the Recapitalization of the Brass Point Swing and Fixed Bridges.

The Lower Brewers Structure is located on Washburn Road approximately 0.24 km west of Highway 15, north of the 401, and the Brass Point Structure is on Burnt Hills Road approximately 1.9 km west of Highway 15 in Kingston, Ontario.

The water crossing connecting Burnt Hills Road from County Road 11 in the west to Highway 15 to the east is made up of a two-span king post wooden swing bridge and a four-span half-through truss fixed bridge crossing Cranberry Lake. Both structures were constructed in 1979 and have not been part of a significant rehabilitation/upgrade since then. It is understood that the current swing bridge is a replica and is not considered a cultural resource, however any changes to either bridges would have to be assessed relative to their part in the cultural heritage landscape which is of national/UNESCO significance.

For the two structures, the overall project components that may affect designated substances or hazardous materials may consist of the following:

- Complete removal of the structures and reinstallation;
- Partial removals of concrete (abutments, centre pier, wingwalls, and ballast walls)
- Foundation improvements through shallow footings or micropiles and pile cap, as confirmed through a geotechnical investigation;
- Construction new wingwalls and associated footing (where necessary);
- Fabrication of new wheels, track, pivot, rocker, bridge stop, and refurbishing of the existing mechanical operating mechanisms (crab and chain);
- Approach works (grading, paving, drainage) to account for the 300 mm grade raise east and west of the structure;
- Installation of new bearings; and
- Repair of the concrete allowing for drainage.

The location of the two structures is shown on **Figure 1**.

1.2 SURVEY OBJECTIVES

This survey is required to satisfy technical requirements for “Contaminated Property Identification and Management” provided in Section 3.6 of the *Environmental Reference for Highway Design*, June 2012, and respective sections of the Environmental Guide for Contamination Property Identification and Management. Section 30 of the Ontario Occupational Health & Safety Act (OHSA) requires owners/constructors to determine if there are any Designated Substances present, prior to commencement of a project, which may involve construction, renovation or demolition related activities. This information allows workers to take appropriate steps to prevent accidental exposure to these harmful substances.

This report should be provided to all maintenance workers, prospective contractors (and in turn to their sub-trades) who are likely to handle, come into contact with, or disturb building materials. Contractors who may work in close

proximity to the identified materials and who may also disturb the materials should also be notified. Figure 1 shows the location of the structures within the Study Area. The primary objectives of the survey were to:

- Develop an up-to-date inventory and gain a better understanding of the Designated Substances and/or hazardous materials that are present within the structures scheduled for an upcoming repair/upgrade project;
- Document their locations, applications, concentrations, quantities and conditions in order to provide workers and prospective contractors with adequate information to prevent accidental exposure; and
- Provide recommendations for the safe removal, handling and disposal of identified Designated Substances and hazardous materials as necessary.

1.3 SCOPE OF WORK

The scope of this work program included a records review to identify suspect or potential Designated Substances or hazardous materials at the structures. More specifically, this DSS included the following tasks:

- A review of available drawings of the existing structures and/or bridge inspection reports;
- A visual inspection of the accessible areas for Designated Substances and hazardous materials (Photographs in **Appendix A**);
- Collection of bulk samples of materials suspected to contain asbestos according to the requirements stipulated in O.Reg. 278/05 (see **Table 1**);
- Collection of a representative number of bulk wood samples for arsenic and/or creosote testing;
- Collection of a representative number of bulk paint samples for lead testing;
- Assessment of the likelihood of exposure to Designated Substances with recommendations for appropriate correction action where required;
- Visual identification of suspected and/or obvious signs of mould, and other hazardous material; and
- Preparation of a summary report documenting the findings of the DSS.

The survey did not involve destructive sampling (i.e. inspection within abutment walls or ceilings, within light fixtures or electrical equipment), except those which may be accessed by moveable (non-fixed) barriers. These areas are considered not accessible to the surveyor and as such materials suspected to contain asbestos and other Designated Substances and hazardous materials may be present within these inaccessible areas.

2 REGULATORY CONTEXT

2.1 DESIGNATED SUBSTANCES

Section 30 of OHSA stipulates that prior to the commencement of a project, a list shall be prepared of all Designated Substances that are present at the project site (i.e. a Designated Substances survey). In accordance with the Act, the locations of Designated Substances must be identified in writing to all prospective contractors, contractors, and sub-contractors who may work, disturb or come into contact with this type of material, at the same time as, or prior to, project tendering.

The term “Designated Substance” refers to the eleven chemical or physical agents specifically identified within the Act. Each of these substances is governed by a consolidated regulation, Designated Substances – Ontario Regulation 490/09 (O.Reg. 490/09), that defines the minimum health and safety requires for assuring safe worker-substance interaction, as well as the obligations of employers and workers in workplaces containing these substances. O. Reg. 490/09 further stipulates the maximum concentrations of each of the respective substance to which a worker may be exposure, according to short-term exposure values and time-weighted average exposure values.

2.2 ADDITIONAL REGULATORY REQUIREMENTS FOR ASBESTOS

Among the Designated Substances, asbestos is unique in that it is governed by two regulations under the Act, one for the general mining and processing operations of asbestos and one for asbestos on construction projects and in buildings and repair operations.

The asbestos information in this survey report complies with the requirements of the OHSA, Ontario Regulation 278/05: Designated Substance – Asbestos on Construction Projects and in Building and Repair Operations (O.Reg. 278/05) with respect to asbestos-containing materials for the structures. O. Reg. 278/05 came into effect on November 1, 2005, with some sections containing therein becoming effective on November 1, 2007. This regulation revoked and replaced the previous asbestos regulation, O. Reg. 838/90.

Ontario Regulation 490/09 states that all necessary measures and procedures are to be taken to ensure the time-weighted average exposure of a worker to any form of airborne asbestos does not exceed 0.1 fibres per cubic centimetre of air, averaged over an 8-hour work period. In order to abide by this regulation, contractors specializing in asbestos removal are required to removal all asbestos-containing building materials from the buildings or structures prior to any renovation or demolition that will disturb these materials.

For Asbestos-Containing Material Evaluation Criteria, see **Appendix C**.

2.3 ADDITIONAL REGULATORY REQUIREMENTS FOR ARSENIC

Although there are no specific regulations for the use of arsenic-treated wood, under O.Reg. 490/09 and OHSA regulations in effect for Ontario, the occupational exposure limit (OEL) for arsenic is 0.01 mg of inorganic arsenic per cubic meter of air (0.01 mg/m³).

If future construction activities affect the integrity of materials containing arsenic, standard demolition dust control measures should be implemented where practical to ensure airborne dusts are controlled as per O. Reg. 490/09, as amended.

2.4 ADDITIONAL REGULATORY REQUIREMENTS FOR CREOSOTE

Although creosote is not a Designated Substance, it is a complex mixture of organic compounds that is considered to be a toxic substance and is often used for treated wood.

If future construction activities affect the integrity of materials containing creosote, standard demolition dust control measures should be implemented where practical to ensure airborne dusts are controlled.

2.5 ADDITIONAL REGULATORY REQUIREMENTS FOR LEAD

The Ontario Ministry of Labour (MOL) has not prescribed specific criteria for classification of lead-containing paints or other surface coatings and construction materials. The Surface Coating Materials and Regulation (SOR/2005-109) made under the federal Hazardous Products Act (HPA) prescribes an acceptable level of 0.009% (90 ppm) lead by dry weight or less, as determined by bulk chemical analysis in accordance with good laboratory practices. Under the SOR/2005-109, Section 4.2, the following paints and surface coatings are excluded from the above noted acceptable lead level:

- 1 As an anti-corrosive or anti-weather coating applied on the interior or exterior surface of any building or equipment that is used for an agricultural or industrial purpose;
- 2 As an anti-corrosive or anti-weathering coating applied on any structure other than a building, that is used for an agricultural, industrial or public purpose;
- 3 As a touch-up coating for metal surfaces;
- 4 On traffic signs;
- 5 For graphic art on billboards or similar displays;
- 6 For identification marks in industrial buildings; or
- 7 As materials for the purposes of arts, crafts or hobbies, other than material for use by children.

However, Environmental Abatement Council of Ontario (EACO), an industry group representing consultants and contractors in the Ontario abatement industry, released *Lead Guideline for Construction, Renovation, Maintenance or Repair* (October 2014). This document supports the position of various occupational and workplace safety authorities and agencies who consider that any detectable amount of lead in paint and similar materials has the potential to produce an airborne hazard to workers and building occupants when these materials are disturbed.

As such, for the purpose of this survey, WSP has classified any material containing detectable/measurable amounts of lead as “lead-containing” materials and recommends that all disturbances to these materials be conducted in accordance with the EACO or MOL document Guidelines, Lead on Construction Projects.

2.6 ADDITIONAL REGULATORY REQUIREMENTS FOR WASTE MANAGEMENT

The disposal of Designated Substances is regulated under the Ontario Environmental Protection Act, specifically R.R.O. 1990, Regulation 347, General – Waste Management. The regulation and its amendments detail the minimum requirements for the appropriate transport and disposal of wastes.

2.7 OTHER APPLICABLE REGULATIONS OR GUIDELINES

The following regulations and guidance documents may also apply to this survey:

- Guideline for Lead on Construction Projects (MOL, September 2004, as amended)

- Guideline for Silica on Construction Projects (MOL, September 2004, as amended);
- O. Reg. 213/91 Construction Projects, as amended;
- O. Reg. 347/90 General Waste Management;
- O.Reg. 833/90 Control of Exposure to Biological or Chemical Agents;
- Canadian Construction Association document CCA 82/2004 ; and
- Lead Guideline for Construction, Renovation, Maintenance or Repair (EACO – October 2014).

3 METHODOLOGY

3.1 GENERAL SURVEY METHODOLOGY

WSP's survey focused on identifying the eleven substances defined as Designated Substances under OHSA including: asbestos (friable and non-friable), lead, mercury, silica, benzene, acrylonitrile, arsenic, coke oven emissions, ethylene oxide, isocyanates, and vinyl chloride. In addition, other hazardous materials, such as polychlorinated biphenyls (PCBs), ozone-depleting substances (ODS), urea-formaldehyde foam insulation (UFFI), creosote, and other stored chemicals and wastes were included in the survey scope.

WSP's surveyors performed a systematic survey of the structures for the purposes of identifying Designated Substances and hazardous materials and documenting observations made about their locations, estimated quantities and respective conditions. These observations form the basis for developing the recommendations provided within this report.

The survey of the structure for Designated Substances consisted of a walkthrough and physical examination of the suspected materials in accessible areas of the bridge structure. In situations where asbestos-containing materials or other Designated Substances extended into a non-accessible area, such as asbestos-containing caulking in the bridge joints, it was assumed that the asbestos-containing materials were also present in these areas and were reported as such.

Silica is present in materials such as glass, concrete, masonry, stone and mortar which are prevalent materials in building construction. As per MTO's Highway Standards Branch – Design Policy for Identification of Designated Substances #2014-05, October 2014, it is assumed that silica will be present throughout the work area, therefore no samples were collected or analyzed for silica.

Survey procedures specific to asbestos, arsenic and lead are documented in the following sections of this report. Samples were submitted to EMSL Analytical Inc. (EMSL) for accredited analyses certified by NELAP Certifications or EMC Scientific Inc. (EMC) accredited by NVLAP for bulk analysis of asbestos.

3.2 ASBESTOS SURVEY METHODOLOGY

The survey included the identification of potential friable and non-friable asbestos containing materials within the structures. Asbestos means any of the following fibrous silicates: actinolite, amosite, anthophyllite, chrysotile, crocidolite or tremolite. According to the above-mentioned Ontario Regulation 278/05, the term 'friable material' is applied to a material that when dry, can be crumbled, pulverized or powdered with moderate hand pressure. Common friable asbestos-containing building materials used in the past include sprayed fireproofing, stucco texture coat, and thermal pipe and jacket insulation.

Common non-friable asbestos containing materials include vinyl floor tiles, gasket materials, asbestos cement (Transite™) pipe, Transite™ board and asbestos textiles. If these materials release fine dust due to deterioration or during removal, the free dust is considered friable.

The surveyors inspected the structures for the presence of friable and non-friable asbestos containing materials (ACM). Examples of ACM commonly found in bridges may include:

- Conduits/dusts, pipe coverings;
- Insulating block and cement;
- Transite board;
- Fireproofing spray;
- Joint Compound;
- Mastics;

- Bearing components; and
- Coatings.

Bulk samples were collected from suspect materials (i.e. materials known as having the potential to be asbestos containing) and analyzed to identify or confirm the presence/absence of asbestos. Asbestos samples are collected by taking a small volume of material (approximately two square centimeters) from either intact material or preferably from a damaged section. The collected samples were placed in zippered storage plastic bags, sealed and forwarded to EMSL.

Samples were collected from various materials and locations at the structures. The bulk samples collected were submitted to an accredited, independent laboratory for analysis (accompanied by a chain of custody form) of asbestos content via US EPA Method EPA/600/R-93/116: Method for the Determination of Asbestos in Bulk Building Materials in accordance with the requirements of O. Reg. 278/05. The laboratory was instructed to use “stop-positive” analysis when asbestos is identified via Polarized Light Microscopy (PLM) analysis. Certificates of Analysis and laboratory analytical results are listed in **Appendix B**.

The number of bulk samples required, in order to establish whether a material is asbestos-containing according O. Reg. 278/05, is summarized in **Table 1**.

Table 1 Minimum Number of Bulk Samples under O.Reg. 278/05

TYPE OF MATERIAL	SIZE OF HOMOGENOUS MATERIAL	MINIMUM NUMBER OF BULK SAMPLES
Surfacing material, including without limitation material that is applied to surfaces by spraying, by toweling or otherwise, such as acoustical plaster on ceilings, fireproofing materials on structural members and plaster.	Less than 90 m ²	3
	90 m ² or more, but less than 450 m ²	5
	450 m ² or more	7
Thermal insulation, except as described below	Any size	3
Therma insulation patch	Less than 2m or 0.5 m ²	1
Other material	Any size	3

As per the requirements set out in Table 1 of O.Reg. 278/05, a total of twelve (12) samples , six (6) from the Lower Brewers structure and six (6) from the Brass Point structure, were collected and submitted for asbestos analysis as part of this survey.

In accordance with the analysis techniques required by O.Reg. 278/05:

- For layered materials, subsamples are taken from each individual or discrete layer and each subsample is then treated as a discrete sample; and
- If a material is found to contain greater than 0.5% asbestos, additional bulk material samples taken from the same homogenous material are not required to be analyzed.

3.3 LEAD SURVEY METHODOLOGY

Lead can be present in paint and/or other coatings on steel elements (guiderails, conduits, bracing, girders, diaphragms, beams, etc.), bearing plates and steel/rebar of culverts and structures.

Bulk paint chips were collected and placed in a clear bag with a tight closure, uniquely labelled and then placed in a second, similar bag. A chain of custody was completed and accompanied the bulk samples to an accredited,

independent laboratory for analysis of lead content. Six (6) samples, three (3) from the Lower Brewers structure and three (3) from the Brass Point Structure, were analyzed by the laboratory for this assessment. Certificates of Analysis and laboratory analytical results are listed in **Appendix B**.

3.4 ARSENIC AND CREOSOTE SURVEY METHODOLOGY

Arsenic is a naturally occurring mineral and can be present in hot-mix asphalt (also referred to as asphalt concrete), pressure treated lumber (guiderail posts, supports, etc.), paint coatings on steel elements (guiderails, conduit, bracing, girders, beams, etc.) and creosote coatings (wood culverts, retaining walls, etc.).

Creosote is utilized as a heavy-duty wood preservative for railway ties, bridge timbers, pilings, and large-sized lumber materials. It is composed of hundreds of compounds, including the largest group polycyclic aromatic hydrocarbons (PAHs).

Bulk samples (wood) were collected and placed in a clear bag with a tight closure, uniquely labelled and then placed in a second, similar bag. A chain of custody form was completed and accompanied the bulk samples to an accredited, independent laboratory for analysis of arsenic and/or creosote content. Five (5) samples, two (2) from the Lower Brewers Structure and three (3) from the Brass Point Structure, were analyzed by the laboratory for this assessment. Certificates of Analysis and laboratory analytical results are listed in **Appendix B**.

4 STRUCTURE OVERVIEW

4.1 DOCUMENTS REVIEW

4.1.1 LOWER BREWERS SWING BRIDGE DRAWINGS, PCA 1984

Drawings for the Lower Brewers Swing Bridge from 1984 were reviewed. Significant highlights are noted below:

- Steel elements (girders, bolts, etc.) were noted in the drawings and may have potential for coatings that may contain lead;
 - Grout was also noted in the abutment construction details and may be ACM; and
 - No other evidence of ACM or other Designated Substances were noted in the drawings.
-

4.1.2 BRASS POINT BRIDGE AS-BUILT DRAWINGS, INDIAN AFFAIRS AND NORTHERN DEVELOPMENT 1979

Drawings for the Brass Point Bridge from 1979 were reviewed. Significant highlights are noted below:

- Timbers and wood handrails were noted within the deck construction. Wood used in construction is likely treated with arsenic and/or creosote treated wood for preservation;
 - Grout was also noted in the abutment construction details and may be ACM;
 - Steel elements (girders, rods, bolts, etc.) were noted in the drawings and these have potential for coatings that contain lead; and
 - No other evidence of ACM or other Designated Substances were noted in the drawings.
-

4.1.3 2014 RIDEAU CANAL B.I.M. INSPECTIONS – BRASS POINT FIXED BRIDGE

McCormick Rankin (MCR) was retained by PCA in July 2014 to conduct a Comprehensive Detailed Inspection at the Brass Point Fixed Bridge along the Rideau Canal. Significant highlights of the report are:

- The construction of the original bridge is unknown, however “as-built” drawings of the current bridge structure are dated 1979;
- The existing bridge consists of a series of four through truss spans, supported on crib piers and piled foundations. The fixed bridge leads to the swing bridge, which was not part of the review;
- A summary of deficiencies and inspection observations were noted for the structure:
 - The structure is load posted at 15 tonnes which is more than 15% below the loading requirements;
 - The structure would benefit from addressing the light surface rusting and tightening of the cross-bracing elements;
 - The bridge’s barriers, curbs and approaches do not meet current standards;
 - The north truss of span 1 appears to have a loose bolt. Some cross-bracing elements are not taut and should be reviewed in cold weather and retightened;
 - Potential tears in the steel plate that connects the top chord to the inclined end posts were observed at spans 3 and 4;
 - Missing grout pad was noted at the south east bearing of span 1;

- Current speed bump spacing was noted to influence the shaking and bouncing of the bridge, affecting its load; and
- One wearing surface timber was noted to be loose on span 3, and was recommended for replacement; and
- MRC recommended the speed bumps be moved from the area of high movement where they increase the impact to areas over the foundation support. The bridge barriers with end protection treatments are required to bring the bridge to the current standards, and rusted areas should be cleaned, and coatings reinstated to preserve the integrity of the element from further deteriorating (particularly the floor beams). MRC also recommended the loose bolt at span 1 should be tightened, bearing reinstatement at span 1 to ensure full bearing pad contact, and regular continued monitoring of areas with tears in the steel plates and the loose timber wearing surface boards.

4.1.4 2018 DETAILED CONDITION INSPECTION REPORT – LOWER BREWERS SWING BRIDGE & ASSOCIATED STRUCTURES

SNC-Lavalin (SNCL) was retained by PCA in February 2019 to rate the condition and function of the bridge structure as per the Public Works and Government Services Canada (PWGSC) Architecture and Engineering Services' Bridge Inspection Manual (BIM). As part of this work, SNCL also conducted a structural analysis on the bridge superstructure. Significant highlights of the report are:

- The bridge foundations were constructed in 1872 and the superstructure was constructed in 1984;
- A summary of deficiencies and inspection observations were noted for the structure:
 - There were severe crack and joint deterioration on the foundation of the pivot pier and west abutment;
 - East wingwalls were not upright and cracking was noted. Inadequate connection between the north east railing support block and the wingwall was observed;
 - The east nosepiece has medium to severe wood splitting along the length;
 - The King post truss structure leans slightly toward the east, and the king post braces have severe splitting along the length. The King post bottom brace connections to deck structure are not thoroughly bolted and are therefore not able to resist upward vertical loading;
 - The northeast stay rod has deformation;
 - Excess vibration in the stay rods on the east side of the bridge. The stay rod connections to the girders are inadequate;
 - The steel plate connection of a stringer to beam at the east end of the bridge was observed to be dethatched;
 - The timber deck boards are worn, loose and not evenly spaced. The timber barriers along the bridge are not test level barriers;
 - The approach guiderails do not meet guidelines for bridge approaches. The connections of the timber railing posts to the bridge deck structure have medium corrosion and some buckling;
 - The bridge does not appear to be aligned centrally with the abutments when in its closed position;
 - The wooden traffic gates at the approaches do not meet the requirements for minimum distance to the movable span of the bridge. Also, no audible sound signals to alert traffic of the bridge opening; and
 - The grade of roadway at the approaches does not provide a clear view of opposing traffic; and
- SNCL's included four options: minor rehabilitation (not recommended by SNCL); rehabilitation with minor changes to the greatest extent possible; full replacement of structural components while maintaining the historic character of the structure, or complete replacement with a modern steel swing bridge.

4.2 STRUCTURE DESCRIPTION AND SITE OBSERVATIONS

A site reconnaissance was completed on December 9, 2019 by WSP representatives. The weather was cloudy and 5°C. Photographs are presented in **Appendix A**.

The Lower Brewers Structure was observed to be in moderate to poor condition (**Photograph 1** and **Photograph 2**). During the site reconnaissance, a total of eleven (11) samples were collected from the structure: Six (6) concrete samples, two (2) wood samples, and three (3) paint samples.

The concrete samples were taken from the parapet wall and abutment structure (**Photograph 3** and **Photograph 4**), the wood samples were collected from the bridge deck and bridge railing (**Photograph 5**), and the paint samples were collected from the approach railing, the north east safety rail post, and the swing base (**Photograph 6**, **Photograph 7** and **Photograph 8**).

The Brass Point Structure was observed to be in moderate to poor condition (**Photograph 9** and **Photograph 10**). During the site reconnaissance, a total of twelve (12) samples were collected from the structure: Six (6) concrete samples, three (3) wood samples, and three (3) paint samples.

The concrete samples were taken from the west abutments and approach railings (**Photograph 11** and **Photograph 12**), the wood samples were collected from the bridge deck, south side guide rail and deck support (**Photograph 13**, **Photograph 14** and **Photograph 15**), and the paint samples were collected from the deck safety rails, the south side of the swing, and the wooden stairs (**Photograph 16**, **Photograph 17** and **Photograph 18**).

4.3 ANALYTICAL RESULTS

The analytical results indicated that the concrete from the parapet wall and abutment structure (Lower Brewers Structure) and the concrete from the west abutments and approach railing posts (Brass Point Structure) did not contain asbestos. The wood from the south side guiderail and deck structure (Brass Point Structure) contained a concentration of creosote (1000 mg/kg and 800 mg/kg, respectively). The other wood samples did not identify concentrations of arsenic and/or creosote. The paint samples collected from the approach railing and north side deck (Lower Brewers Structure) and south side steel coating under swing (Brass Point Structure) identified lead concentrations (0.32 % wt, 0.81 % wt, and 0.095 % wt, respectively). The results are provided in **Table 2** and the Laboratory Certificates of Analysis are presented in **Appendix B**.

Table 2 Summary of Analytical Results

SAMPLE ID	SAMPLE DESCRIPTION	SAMPLE LOCATION	PARAMETER	ANALYTICAL RESULTS
Lower Brewers Structure				
CRT-1A, 1B, 1C	Concrete	Parapet wall	Asbestos	None detected
CRT-2A, 2B, 2C	Concrete	Abutment structure	Asbestos	None detected
Wood-1	Wood piece	Bridge deck, south side	Arsenic and Creosote	Creosote: Non-detect Arsenic: Non-detect
Wood-2	Wood piece	Wood bridge railing	Creosote	Creosote: Non-detect
PNT-1	Black paint	Approach railing	Lead	Lead Concentration 0.32 % wt
PNT-2	White general use paint	North east safety rail post	Lead	Lead Concentration 0.81% wt

SAMPLE ID	SAMPLE DESCRIPTION	SAMPLE LOCATION	PARAMETER	ANALYTICAL RESULTS
PNT-3	Grey	Swing base	Lead	Lead concentration <0.0080% wt
Brass Point Structure				
CRT-1A, 1B, 1C	Concrete	West Abutments	Asbestos	None detected
CRT-2A, 2B, 2C	Concrete	Posts (approaching railing)	Asbestos	None detected
Wood-1	Wood piece	Bridge deck, south side	Arsenic and Creosote	Creosote: Non-detect Arsenic: Non-detect
Wood-2	Wood piece	Guide rail, south side	Arsenic and Creosote	Creosote: 1000 mg/kg Arsenic: Non-detect
Wood-3	Wood piece	Deck Structure, north side	Creosote	Creosote: 800 mg/kg
PNT-1	White general use paint	North side of deck, safety rail	Lead	Lead Concentration <0.0081% wt
PNT-2	Grey paint (steel under swing)	South side	Lead	Lead concentration 0.095% wt
PNT-3	Brown paint	Wood stairs, south side	Lead	Lead Concentration <0.0081% wt

5 CONCLUSIONS AND RECOMMENDATIONS

Information in this section of the report should be provided to all prospective contractors, tenants, and/or workers who are likely to handle, come into contact with, or disturb asbestos or other Designated Substances. Detailed specifications that outline specific abatement procedures are recommended when tendering the renovation/demolition work.

In accordance with the *Occupational Health and Safety Act, R.S.O. 1990, c. 0.1*, the Contractor is advised of the presence of the following Designated Substances:

Table 3 Summary of Designated Substance Locations

SUBSTANCE	LOCATION
Arsenic	No concentrations of arsenic were identified in the analyzed samples at either of the bridge structures.
Asbestos on Construction Projects and in Structures and Repair Operations (O.Reg.278/05)	<p>No asbestos was identified in the analyzed samples taken from the abutment structure and parapet walls of the Lower Brewers Structure, or the west abutments and approach railing posts on the Brass Point Structure.</p> <p>Suspected ACM that may not be evident on finished surfaces but is encountered during bridge rehabilitation should be sampled at that time to confirm the presence or absence of asbestos and determine appropriate management options.</p> <p>In accordance with Ontario Regulation 490/09, all necessary measures and procedures should be taken to ensure the time-weighted average exposure of a worker to any form of airborne asbestos does not exceed 0.1 fibres per cubic centimetre of air, averaged over an 8-hour work period.</p>
Creosote	<ul style="list-style-type: none"> - Samples obtained from the guide rail on the south site and the deck structure from the Brass Point Structure indicated concentrations of creosote (1000 mg/kg and 800 mg/kg, respectively). <p>If future construction activities affect the integrity of materials containing creosote, standard demolition dust control measures should be implemented where practical to ensure airborne dusts are controlled as per O. Reg. 490/09, as amended.</p>
Lead	<ul style="list-style-type: none"> - Samples obtained from the approach railing (black paint) and general use paint (white paint) on the Lower Brewers Structure were identified as lead-based paints (0.32 % wt and 0.81% wt, respectively). - Samples obtained from the grey paint from the steel under swing on the south side of the Brass Point Structure was identified to be lead-based (0.095% wt). <p>If future construction activities affect the integrity of materials containing lead, standard demolition dust control measures should be implemented where practical to ensure airborne dusts are controlled as per the MOL's Guideline for Lead on Construction Projects.</p>

SUBSTANCE	LOCATION
Silica	<ul style="list-style-type: none"> - Silica is present in concrete and mortar. Standard dust control measures should be implemented where practical to ensure airborne dusts are controlled during construction activities as per the Guideline for Silica on Construction Projects (MOL, September 2004, as amended).
Benzene	None Identified.
Vinyl Chloride, Coke Oven Emissions, Ethylene Oxide, Acrylonitrile, and Isocyanates	None Identified.
Mercury	None Identified.

Notes to the Contractor:

Materials that become exposed during construction activities (i.e. insulation, electrical wiring, asphalt, cables and piping) that support the suspicion of asbestos, polychlorinated biphenyls (PCBs), or other Designated Substances should be sampled at that time to confirm the presence or absence in support of appropriate management options.

The disposal of Designated Substances is regulated under the Ontario Environmental Protection Act, specifically R.R.O. 1990, Regulation 347, General – Waste Management (most recently amended by O.Reg. 334/13). The regulation details the minimum requirements for the appropriate transport and disposal of wastes. In addition, all other waste generated during construction activities must be handled in accordance with the applicable regulations.

6 LIMITATIONS

WSP prepared this report solely for the use of the intended recipient, Parks Canada Agency, in accordance with the professional services agreement between the parties. In the event a contract has not been executed, the parties agree that the WSP General Terms for Consultant shall govern their business relationship which was provided to you prior to the preparation of this report.

The report is intended to be used in its entirety. No excerpts may be taken to be representative of the findings in the assessment.

The conclusions presented in this report are based on work performed by trained, professional and technical staff, in accordance with their reasonable interpretation of current and accepted engineering and scientific practices at the time the work was performed.

The content and opinions contained in the present report are based on the observations and/or information available to WSP at the time of preparation, using investigation techniques and engineering analysis methods consistent with those ordinarily exercised by WSP and other engineering/scientific practitioners working under similar conditions, and subject to the same time, financial and physical constraints applicable to this project.

WSP disclaims any obligation to update this report if, after the date of this report, any conditions appear to differ significantly from those presented in this report; however, WSP reserves the right to amend or supplement this report based on additional information, documentation or evidence.

WSP makes no other representations whatsoever concerning the legal significance of its findings.

The intended recipient is solely responsible for the disclosure of any information contained in this report. If a third party makes use of, relies on, or makes decisions in accordance with this report, said third party is solely responsible for such use, reliance or decisions. WSP does not accept responsibility for damages, if any, suffered by any third party as a result of decisions made or actions taken by said third party based on this report.

WSP has provided services to the intended recipient in accordance with the professional services agreement between the parties and in a manner consistent with that degree of care, skill and diligence normally provided by members of the same profession performing the same or comparable services in respect of projects of a similar nature in similar circumstances. It is understood and agreed by WSP and the recipient of this report that WSP provides no warranty, express or implied, of any kind. Without limiting the generality of the foregoing, it is agreed and understood by WSP and the recipient of this report that WSP makes no representation or warranty whatsoever as to the sufficiency of its scope of work for the purpose sought by the recipient of this report.

In preparing this report, WSP has relied in good faith on information provided by others, as noted in the report. WSP has reasonably assumed that the information provided is correct and WSP is not responsible for the accuracy or completeness of such information.

Benchmark and elevations used in this report are primarily to establish relative elevation differences between the specific testing and/or sampling locations and should not be used for other purposes, such as grading, excavating, overall conditions can only be extrapolated to an undefined limited area around these testing and sampling locations. The conditions that WSP interprets to exist between testing and sampling points may differ from those that actually exist. The accuracy of any extrapolation and interpretation beyond the sampling locations will depend on natural conditions, the history of Site development and changes through construction and other activities. In addition, analysis has been carried out for the identified chemical and physical parameters only, and it should not be inferred that other chemical species or physical conditions are not present. WSP cannot warrant against undiscovered environmental liabilities or adverse impacts off-Site.

The original of this digital file will be kept by WSP for a period of not less than 10 years. As the digital file transmitted to the intended recipient is no longer under the control of WSP, its integrity cannot be assured. As such, WSP does not guarantee any modifications made to this digital file subsequent to its transmission to the intended recipient.

This limitations statement is considered an integral part of this report.

APPENDIX

A SITE PHOTOGRAPHS

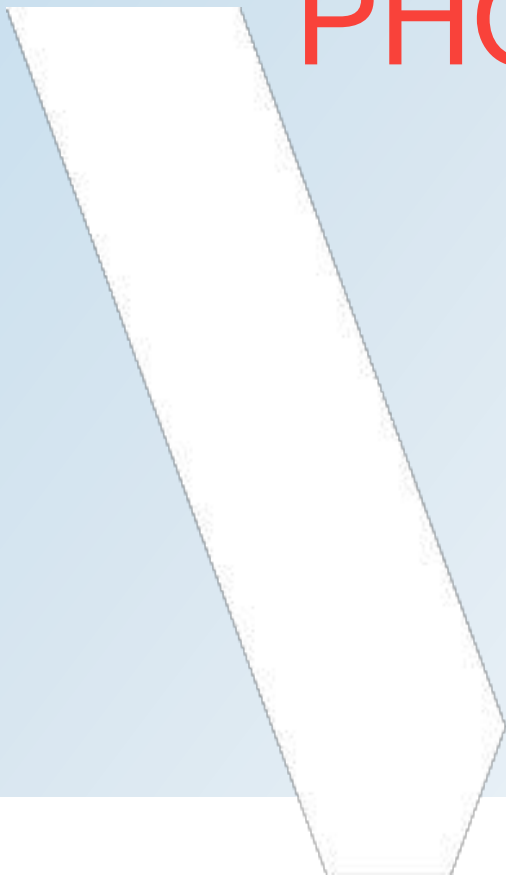



PHOTO NO.	MATERIAL DESCRIPTION & LOCATION	PHOTO
1	<u>The Lower Brewers Structure facing west.</u>	
2	<u>The Lower Brewers Structure facing east.</u>	
3	<u>Concrete Sample CRT-1A, 1B and 1C collected from the south parapet wall.</u>	

PHOTO NO.	MATERIAL DESCRIPTION & LOCATION	PHOTO
4	<p><u>Concrete Sample CRT-2A, 2B, and 2C</u> collected from the north abutment structures.</p>	
5	<p><u>Wood sample Wood-2</u> collected from the south side wood bridge railing.</p>	
6	<p><u>Paint Sample PNT-1</u> collected from the approach railing on the south west side of the structure.</p>	

PHOTO NO.	MATERIAL DESCRIPTION & LOCATION	PHOTO
7	<p><u>Paint sample PNT-2</u> collected from the north east deck safety rail post.</p>	
8	<p><u>Paint Sample PNT-3</u> Collected from the swing base on the south side of the structure.</p>	
9	<p><u>Brass Point Structure</u> observed facing west.</p>	





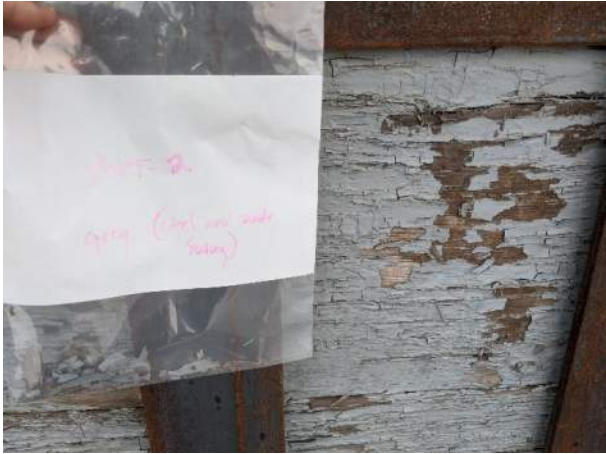

PHOTO NO.	MATERIAL DESCRIPTION & LOCATION	PHOTO
10	<p><u>Brass Point Structure</u> observed facing north east. Wooden stairs on the west side of the structure also observed.</p>	
11	<p><u>Concrete sample CRT-1A, 1B, and 1C</u> observed and collected from the abutment structures.</p>	
12	<p><u>Concrete sample CRT-2A, 2B, and 2C</u> observed and collected from the approach railing posts.</p>	

PHOTO NO.	MATERIAL DESCRIPTION & LOCATION	PHOTO
13	<p><u>Wood sample Wood-1</u> observed and collected from the south side of the bridge deck.</p>	
14	<p><u>Wood sample Wood-2</u> observed and collected from the south side guiderail.</p>	
15	<p><u>Wood sample Wood-3</u> observed and collected from the deck support on the north side of the structure.</p>	

PHOTO NO.	MATERIAL DESCRIPTION & LOCATION	PHOTO
16	<p><u>Paint sample PNT-1</u> observed and collected from the safety rail on the north side of the deck.</p>	
17	<p><u>Paint sample PNT-2</u> observed and collected from the south side of the deck, under the swing.</p>	
18	<p><u>Paint sample PNT-3</u> observed and collected from the wood stairs on the south west side of the structure.</p>	

APPENDIX

B CERTIFICATES OF ANALYSIS





EMSL Analytical, Inc.

200 Route 130 North, Cinnaminson, NJ 08077

Phone: (856) 303-2500 Fax: (856) 858-4571 Email: EnvChemistry2@emsl.com

Attn:

Annette Blazeiko
WSP Canada Group Limited
610 Chartwell Rd
Oakville, ON L6J4A5

12/30/2019

Phone: (905) 823-49881517
Fax:

The following analytical report covers the analysis performed on samples submitted to EMSL Analytical, Inc. on 12/16/2019. The results are tabulated on the attached data pages for the following client designated project:

19M-01599-00-RS2 Brass Point

The reference number for these samples is EMSL Order #011915824. Please use this reference when calling about these samples. If you have any questions, please do not hesitate to contact me at (856) 303-2500.

Approved By:

Phillip Worby, Environmental Chemistry
Laboratory Director



The test results contained within this report meet the requirements of NELAP and/or the specific certification program that is applicable, unless otherwise noted.
NELAP Certifications: NJ 03036, NY 10872, PA 68-00367, CA ELAP 1877

The samples associated with this report were received in good condition unless otherwise noted. This report relates only to those items tested as received by the laboratory. The QC data associated with the sample results meet the recovery and precision requirements established by the NELAP, unless specifically indicated. All results for soil samples are reported on a dry weight basis, unless otherwise noted. This report may not be reproduced except in full and without written approval by EMSL Analytical, Inc.

**EMSL Analytical, Inc.**

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 Phone/Fax: (856) 303-2500 / (856) 858-4571
<http://www.EMSL.com> EnvChemistry2@emsl.com

EMSL Order: 011915824
 CustomerID: MMMG42
 CustomerPO: 551915188
 ProjectID:

Attn: **Annette Blazeiko**
WSP Canada Group Limited
610 Chartwell Rd
Oakville, ON L6J4A5

Phone: (905) 823-49881517
 Fax:
 Received: 12/16/19 9:00 AM

Project: 19M-01599-00-RS2 Brass Point

Analytical Results

Client Sample Description Wood-1
 Bridge deck **Collected:** 12/9/2019 **Lab ID:** 011915824-0001

Method	Parameter	Result	RL	Units	Prep Date & Analyst	Analysis Date & Analyst
--------	-----------	--------	----	-------	---------------------	-------------------------

GC-SVOA

8015D Modified	Creosote	ND		20 mg/Kg	12/20/2019 AF	12/24/19 0:00 AC
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METALS

3050B/6010D	Arsenic	ND		4.2 mg/Kg	12/26/2019 AM	12/26/19 21:57 DM
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Client Sample Description Wood-2
 Guard rail **Collected:** 12/9/2019 **Lab ID:** 011915824-0002

Method	Parameter	Result	RL	Units	Prep Date & Analyst	Analysis Date & Analyst
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GC-SVOA

8015D Modified	Creosote	1100		50 mg/Kg	12/20/2019 AF	12/24/19 0:00 AC
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METALS

3050B/6010D	Arsenic	ND		4.7 mg/Kg	12/26/2019 AM	12/26/19 22:01 DM
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Client Sample Description Wood-3
 Deck structure **Collected:** 12/9/2019 **Lab ID:** 011915824-0003

Method	Parameter	Result	RL	Units	Prep Date & Analyst	Analysis Date & Analyst
--------	-----------	--------	----	-------	---------------------	-------------------------

GC-SVOA

8015D Modified	Creosote	800		50 mg/Kg	12/20/2019 AF	12/24/19 0:00 AC
----------------	----------	-----	--	----------	---------------	------------------

Definitions:

MDL - method detection limit
 J - Result was below the reporting limit, but at or above the MDL
 ND - indicates that the analyte was not detected at the reporting limit
 RL - Reporting Limit (Analytical)
 D - Dilution



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12/30/2019

Phone: (905) 823-49881517
Fax:

The following analytical report covers the analysis performed on samples submitted to EMSL Analytical, Inc. on 12/16/2019. The results are tabulated on the attached data pages for the following client designated project:

19M-01599-00-RS2 Lower Brewers

The reference number for these samples is EMSL Order #011915826. Please use this reference when calling about these samples. If you have any questions, please do not hesitate to contact me at (856) 303-2500.

Approved By:

Phillip Worby, Environmental Chemistry
Laboratory Director



The test results contained within this report meet the requirements of NELAP and/or the specific certification program that is applicable, unless otherwise noted.
NELAP Certifications: NJ 03036, NY 10872, PA 68-00367, CA ELAP 1877

The samples associated with this report were received in good condition unless otherwise noted. This report relates only to those items tested as received by the laboratory. The QC data associated with the sample results meet the recovery and precision requirements established by the NELAP, unless specifically indicated. All results for soil samples are reported on a dry weight basis, unless otherwise noted. This report may not be reproduced except in full and without written approval by EMSL Analytical, Inc.

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CustomerPO: 551915187

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Fax:

Received: 12/16/19 8:40 AM

Project: 19M-01599-00-RS2 Lower Brewers

Analytical Results

Client Sample Description Wood-1
Bridge deck **Collected:** 12/9/2019 **Lab ID:** 011915826-0001

Method	Parameter	Result	RL	Units	Prep Date & Analyst	Analysis Date & Analyst
GC-SVOA						
8015D Modified	Creosote	ND		20 mg/Kg	12/20/2019 AF	12/24/19 0:00 AC
METALS						
3050B/6010D	Arsenic	ND		3.8 mg/Kg	12/26/2019 AM	12/26/19 22:04 DM

Client Sample Description Wood-2
Wood bridge **Collected:** 12/9/2019 **Lab ID:** 011915826-0002

Method	Parameter	Result	RL	Units	Prep Date & Analyst	Analysis Date & Analyst
GC-SVOA						
8015D Modified	Creosote	ND		43 mg/Kg	12/20/2019 AF	12/24/19 0:00 AC

Definitions:

MDL - method detection limit

J - Result was below the reporting limit, but at or above the MDL

ND - indicates that the analyte was not detected at the reporting limit

RL - Reporting Limit (Analytical)

D - Dilution



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EMSL Canada Order 551915169
Customer ID: 55MMM42
Customer PO: 19M-01599-00
Project ID:

Attn: Annette Blazeiko
WSP Canada Group Limited
610 Chartwell Road
Suite 300
Oakville, ON L6J 4A5
Proj: 19M-01599-00-RS2 Lower Brewers

Phone: (905) 823-8500
Fax:
Collected: 12/ 9/2019
Received: 12/12/2019
Analyzed: 12/19/2019

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Client Sample ID: CRT-1A-Texture **Lab Sample ID:** 551915169-0001
Sample Description: Parpet Wall

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/19/2019	White	0.0%	100.0%	None Detected	

Client Sample ID: CRT-1A-Base Coat **Lab Sample ID:** 551915169-0001A
Sample Description: Parpet Wall

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/19/2019	Gray	0.0%	100.0%	None Detected	

Client Sample ID: CRT-1B **Lab Sample ID:** 551915169-0002
Sample Description: Parpet Wall

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/19/2019	Gray	0.0%	100.0%	None Detected	

Client Sample ID: CRT-1C **Lab Sample ID:** 551915169-0003
Sample Description: Parpet Wall

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/19/2019	Gray	0.0%	100.0%	None Detected	

Client Sample ID: CRT-2A **Lab Sample ID:** 551915169-0004
Sample Description: Abutment Structure

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/19/2019	Gray	0.0%	100.0%	None Detected	

Client Sample ID: CRT-2B **Lab Sample ID:** 551915169-0005
Sample Description: Abutment Structure

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/19/2019	Gray	0.0%	100.0%	None Detected	

Client Sample ID: CRT-2C **Lab Sample ID:** 551915169-0006
Sample Description: Abutment Structure

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/19/2019	Gray	0.0%	100.0%	None Detected	



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EMSL Canada Order 551915169
Customer ID: 55MMMG42
Customer PO: 19M-01599-00
Project ID:

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Analyst(s):

Natalie D'Amico PLM (5)
Tiffany Pilon PLM (2)

Reviewed and approved by:

Matthew Davis or other approved signatory
or Other Approved Signatory

None Detected = <0.1%. EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. Samples received in good condition unless otherwise noted. This report must not be used to claim product endorsement by NVLAP of any agency or the U.S. Government

Samples analyzed by EMSL Canada Inc. Mississauga, ON NVLAP Lab Code 200877-0

Initial report from: 12/19/2019 14:38:31



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EMSL Canada Order 551915170
Customer ID: 55MMMG42
Customer PO: 19M-01599-00
Project ID:

Attn: Annette Blazeiko Phone: (905) 823-8500
WSP Canada Group Limited Fax:
610 Chartwell Road Collected: 12/ 9/2019
Suite 300 Received: 12/12/2019
Oakville, ON L6J 4A5 Analyzed: 12/19/2019
Proj: 19M-01599-00-RS2 Brass Point

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Client Sample ID: CRT-1A **Lab Sample ID:** 551915170-0001
Sample Description: Abutment Structure

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/19/2019	Gray	0.0%	100.0%	None Detected	

Client Sample ID: CRT-1B **Lab Sample ID:** 551915170-0002
Sample Description: Abutment Structure

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/19/2019	Gray	0.0%	100.0%	None Detected	

Client Sample ID: CRT-1C **Lab Sample ID:** 551915170-0003
Sample Description: Abutment Structure

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/19/2019	Gray	0.0%	100.0%	None Detected	

Client Sample ID: CRT-2A **Lab Sample ID:** 551915170-0004
Sample Description: Posts (Approach Railing)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/19/2019	Gray	0.0%	100.0%	None Detected	

Client Sample ID: CRT-2B **Lab Sample ID:** 551915170-0005
Sample Description: Posts (Approach Railing)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/19/2019	Gray	0.0%	100.0%	None Detected	

Client Sample ID: CRT-2C **Lab Sample ID:** 551915170-0006
Sample Description: Posts (Approach Railing)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/19/2019	Gray	0.0%	100.0%	None Detected	



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EMSL Canada Order 551915170
Customer ID: 55MMMG42
Customer PO: 19M-01599-00
Project ID:

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Analyst(s):

Natalie D'Amico PLM (4)
Stephanie Achaiya PLM (2)

Reviewed and approved by:

Matthew Davis or other approved signatory
or Other Approved Signatory

None Detected = <0.1%. EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. Samples received in good condition unless otherwise noted. This report must not be used to claim product endorsement by NVLAP of any agency or the U.S. Government

Samples analyzed by EMSL Canada Inc. Mississauga, ON NVLAP Lab Code 200877-0

Initial report from: 12/19/2019 13:27:35



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CustomerID: 55MMMMG42
CustomerPO: 19M-01599-00
ProjectID:

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Suite 300
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Phone: (905) 823-8500
Fax:
Received: 12/12/19 10:35 AM
Collected: 12/9/2019
Project: **19M-01599-00-RS2 Brass Point**

Test Report: Lead in Paint Chips by Flame AAS (SW 846 3050B/7000B)*

<i>Client SampleDescription</i>	<i>Collected</i>	<i>Analyzed</i>	<i>Weight</i>	<i>RDL</i>	<i>Lead Concentration</i>
PNT-1 551915171-0001	12/9/2019	12/12/2019 Site: White (General Use)	0.2470 g	0.0081 % wt	<0.0081 % wt
PNT-2 551915171-0002	12/9/2019	12/12/2019 Site: Grey (Steel & Under Swing)	0.2432 g	0.0082 % wt	0.095 % wt
PNT-3 551915171-0003	12/9/2019	12/12/2019 Site: Brown (Wood Stairs)	0.2455 g	0.0081 % wt	<0.0081 % wt

Rowena Fanto, Lead Supervisor
or other approved signatory

*Analysis following Lead in Paint by EMSL SOP/Determination of Environmental Lead by FLAA. Reporting limit is 0.008 % wt based on the minimum sample weight per our SOP. Unless noted, results in this report are not blank corrected. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities. Samples received in good condition unless otherwise noted. "<" (less than) result signifies the analyte was not detected at or above the reporting limit. Measurement of uncertainty is available upon request. The QC data associated with the sample results included in this report meet the recovery and precision requirements unless specifically indicated otherwise. Definitions of modifications are available upon request.
Samples analyzed by EMSL Canada Inc. Mississauga, ON A2LA Accredited Cert #2845.08; AIHA-LAP, LLC - ELLAP #196142

Initial report from 12/19/2019 09:16:59



EMSL Canada Inc.

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EMSL Canada Or 551915172
CustomerID: 55MMMMG42
CustomerPO: 19M-01599-00
ProjectID:

Attn: **Annette Blazeiko**
WSP Canada Group Limited
610 Chartwell Road
Suite 300
Oakville, ON L6J 4A5

Phone: (905) 823-8500
Fax:
Received: 12/12/19 10:36 AM
Collected: 12/9/2019

Project: **19M-01599-00-RS2 Lower Brewers**

Test Report: Lead in Paint Chips by Flame AAS (SW 846 3050B/7000B)*

<i>Client SampleDescription</i>	<i>Collected</i>	<i>Analyzed</i>	<i>Weight</i>	<i>RDL</i>	<i>Lead Concentration</i>
PNT-1 551915172-0001	12/9/2019	12/12/2019 Site: Black (Approach Railing)	0.2429 g	0.0082 % wt	0.32 % wt
PNT-2 551915172-0002	12/9/2019	12/12/2019 Site: White (General Use)	0.2515 g	0.040 % wt	0.81 % wt
PNT-3 551915172-0003	12/9/2019	12/12/2019 Site: Grey (Swing Base)	0.2526 g	0.0080 % wt	<0.0080 % wt

Rowena Fanto, Lead Supervisor
or other approved signatory

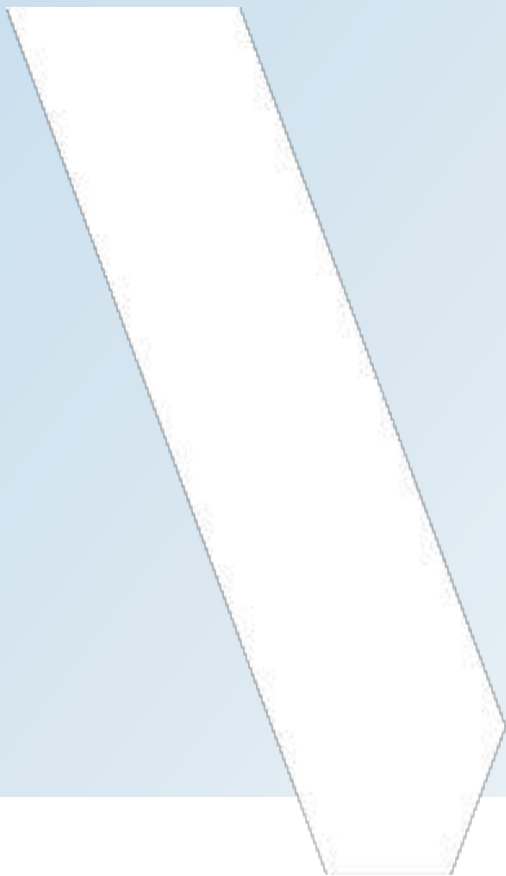
*Analysis following Lead in Paint by EMSL SOP/Determination of Environmental Lead by FLAA. Reporting limit is 0.008 % wt based on the minimum sample weight per our SOP. Unless noted, results in this report are not blank corrected. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities. Samples received in good condition unless otherwise noted. "<" (less than) result signifies the analyte was not detected at or above the reporting limit. Measurement of uncertainty is available upon request. The QC data associated with the sample results included in this report meet the recovery and precision requirements unless specifically indicated otherwise. Definitions of modifications are available upon request.
Samples analyzed by EMSL Canada Inc. Mississauga, ON A2LA Accredited Cert #2845.08; AIHA-LAP, LLC - ELLAP #196142

Initial report from 12/19/2019 09:17:55

APPENDIX

C

ACM EVALUATION CRITERIA



A description of the criteria used in evaluating the condition, accessibility and exposure risk of asbestos-containing materials (ACM) is provided below.

Assessment of Condition

Spray-Applied Fireproofing, Insulation and Textured Finishes

In evaluating the condition of ACM spray applied as fireproofing, thermal insulation or texture, decorative or acoustic finishes, the following criteria apply:

Good

Surface of material shows no significant signs of damage, deterioration or delamination. Up to one percent visible damage to surface is allowed within range of GOOD. Evaluation of sprayed fireproofing requires the Assessor to be familiar with the irregular surface texture typical of sprayed asbestos products. GOOD condition includes unencapsulated or unpainted fireproofing or texture finishes, where no delamination or damage is observed, and encapsulated fireproofing or texture finishes where the encapsulation has been applied after the damage or fallout occurred.

Poor

Sprayed materials show signs of damage, delamination or deterioration. More than one percent damage to surface of ACM spray.

In observation areas, where damage exists in isolated locations, both GOOD and POOR condition may be reported. The extent or percentage of each condition will be recorded on the Assessor reassessment form.

FAIR condition is not utilized or considered as a valid criterion in the evaluation of sprayed fireproofing, sprayed insulation, or texture coat finishes.

The evaluation of ACM spray applied as fireproofing, non-mechanical thermal insulation, or texture, decorative or acoustic finishes which are present above ceilings, may be limited by the number of observations made, and by building components such as ducts or full height walls that obstruct the above ceiling observations. Persons entering the ceiling area are advised to be watchful for ACM DEBRIS prior to accessing or working above ceilings in areas of building with ACM, regardless of the reported condition.

Other ACM

In evaluating the condition of mechanical insulation (on boilers, breaching, ductwork, piping, tanks, equipment etc.) the following criteria are used:

Good

Insulation is completely covered in jacketing and exhibits no evidence of damage or deterioration. No insulation is exposed. Includes conditions where the jacketing has minor surface damage (i.e., scuffs or stains), but the jacketing is not penetrated.

Fair

Minor penetration damage to jacketed insulation (cuts, tears, nicks, deterioration or delamination) or undamaged insulation that has never been jacketed. Insulation is exposed but not showing surface disintegration. The extent of missing insulation ranges should be minor to none.

Poor

Original insulation jacket is missing, damaged, deteriorated or delaminated. Insulation is exposed and significant areas have been dislodged. Damage cannot be readily repaired. The evaluation of mechanical insulation may be limited by the number of observations made and building components such as ducts or full height walls that obstruct observations. In these circumstances, it is not possible to observe each foot of mechanical insulation from all angles.



Non-Friable and Potentially Friable Materials

Non-friable materials generally have little potential to release airborne fibres, even when damaged by mechanical breakage. However, some non-friable materials, i.e., exterior asbestos cement products, may have deteriorated so that the binder no longer effectively contains the asbestos fibres. In such cases of significantly deteriorated non-friable material, the material will be treated as a friable product.

Evaluation of Accessibility

The accessibility of building materials known or suspected of being ACM is rated according to the following criteria:

Access (A)

Areas of the building within reach of all building users. Includes areas such as gymnasiums, workshops, and storage areas where activities of the building users may result in disturbance of ACM not normally within reach from floor level.

Access (B)

Frequently entered maintenance areas within reach of maintenance staff, without the need for a ladder. Includes: frequently entered pipe chases, tunnels and service areas or areas within reach from a fixed ladder or catwalk, i.e., tops of equipment, mezzanines.

Access (C) Exposed

Areas of the building above 8'0" where use of a ladder is required to reach the ACM. Only refers to ACM materials that are exposed to view, from the floor or ladder, without removing or opening other building components such as ceiling tiles, or service access doors or hatches. Does not include infrequently accessed service areas of the building.

Access (C) Concealed

Areas of the building which require the removal of a building component, including lay-in ceilings and access panels into solid ceiling systems. Includes rarely entered crawl spaces, attic spaces, etc. Observations are limited to the extent visible from the access points.

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. Evaluation of the condition and extent of ACM is limited or impossible, depending on the Assessor's ability to visually examine the materials in Access D.

Definition of Action Levels

Based on the results of the inspection and bulk sample analysis of samples collected and submitted for testing, recommendations were provided for compliance with regulation. These include assigned “Action Levels” to assist in the prioritization of corrective measures. The measures that are to be taken for each “Action Level” are described in full in the following table:

Action Level	Required Action
“Action 1”	<p>Immediate Clean-Up of Debris that is Likely to Be Disturbed</p> <p>Restrict access that is likely to cause a disturbance of the ACM DEBRIS and clean up ACM DEBRIS immediately. Utilize correct asbestos procedures. This action is required for compliance with regulatory requirements. The surveyor will immediately notify the owner of this condition.</p>



<p>“Action 2”</p>	<p>Type 2 Precautions for Entry into Areas with ACM DEBRIS</p> <p>At locations where ACM DEBRIS can be isolated in lieu of removal or cleaned up, use appropriate means to limit entry to the area. Restrict access to the area to persons utilizing Type 2 asbestos precautions. The precautions will be required until the ACM DEBRIS has been cleaned up, and the source of the DEBRIS has been stabilized or removed.</p>
<p>“Action 3”</p>	<p>ACM Removal Required for Compliance</p> <p>Remove ACM for compliance with regulatory requirements. Utilize asbestos procedures appropriate to the scope of the removal work.</p>
<p>“Action 4”</p>	<p>Type 2 Precautions for Access into Areas Where ACM is Present and Likely to be Disturbed by Access</p> <p>Use Type 2 asbestos precautions when entry or access into an area is likely to disturb the ACM. ACTION 4 must be used until the ACM is removed (Use ACTION 1 or 2 if DEBRIS is present).</p>
<p>“Action 5”</p>	<p>Proactive ACM Removal</p> <p>Remove ACM in lieu of repair, or at locations where the presence of asbestos in GOOD condition is not desirable.</p>
<p>“Action 6”</p>	<p>ACM Repair</p> <p>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 7. If ACM is likely to be damaged or disturbed, during normal use of the area or room, implement ACTION 5.</p>
<p>“Action 7”</p>	<p>Asbestos Management Program with Routine Surveillance</p> <p>Implement an Asbestos Management Program, including routine surveillance of ACM. Trained workers or contractors must use appropriate asbestos precautions (Type 1, Type 2 or Type 3) during disturbance of the remaining ACM.</p>