Metal Based Paint and Supplemental Asbestos Assessment

Parks Canada Buildings and Structures at Georgina Point (Active Pass) Lightstation, East Point (Saturna Island) Lightstation; Portlock Point Lightstation and Russell Island

Prepared for:
Parks Canada Agency

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Abbreviations

ACGIH	American Conference of Governmental Industrial Hygienists
ACM	asbestos-containing material
AIHA	American Industrial Hygiene Association
BAPAT	Bulk Asbestos Proficiency Analytical Testing
EMSL	EMSL Canada Inc.
GINPR	Gulf Islands National Park Reserve
HVAC	heating, ventilation and air conditioning
IHPAT	Industrial Hygiene Proficiency Analytical Testing
LCP	lead-containing paint
NVLAP	National Voluntary Laboratory Accreditation Program
OEL	occupational exposure limit
TCLP	toxicity characteristic leaching procedure

1.0 INTRODUCTION

Stantec Consulting Ltd. (Stantec) was commissioned by the Parks Canada Agency (Parks Canada) to conduct a metal based paint and supplemental asbestos assessment of four sites (further referred to as the subject sites) and the associated structures (further referred to as the subject structures) located in Gulf Islands National Park Reserve (GINPR), British Columbia as follows:

Site Name	Structure	FCSI #
Georgina Point (Active Pass) Lightstation	Light Keepers House	00023457
	Weather Station (Radio/Engine Room)	00023457
	Beacon (Light Tower)	00023457
	Garage	00023457
	Shed (former Fuel Shed)	00023457
	Seasonal Washroom	00023457
	Outhouse	00023457
	NAV Canada Shed (Solar Panel/Battery Room)	00023457
	Gazebo	00023457
East Point (Saturna Island) Lightstation	Light Tower and Shed	00023462
	Garage	00023462
	Bunkhouse	00023462
	Fog Horn Building	00023462
Portlock Point	Lighthouse (Major Shorelight)	00023458
Russell Island	Mahoi House	00024299
	Caretakers Shed	00024299
	Water Tower	00024299
	Generator Shed	00024299

The assessment was commissioned by Parks Canada in order to support the development of a remedial action plan (RAP) for metal based paint abatement and remediation at the subject sites.

The site work was conducted by Keith Irwin and Steve Chou on September 19, 20, and 21, 2017.

2.0 BACKGROUND

Stantec understands that contaminants including lead (Pb), mercury (Hg) and other metals in paint have been identified (or are potentially present) on various structural (building-related) components (both interior and exterior) and potentially in soils and groundwater, at the subject sites and associated with the subject structures. Stantec further understands that the Parks Canada Remediation and Risk Management Plan (currently in draft) recommends that the contaminated paint is abated and/or remediated as a means of removing the source of lead (and other metals) that may pose health and safety risks to visitors and staff at these sites, and that may contribute to potential environmental contamination at the subject sites.

In support of meeting the objectives of the Parks Canada Remediation and Risk Management Plan, this assessment was requested in support of the development of a remedial action plan (RAP) and tender package (including technical specifications) for Pb and other metal based paint abatement and remediation at the subject sites.

2.1 DOCUMENT REVIEW

The following report pertaining to hazardous building materials as the subject sites was reviewed prior to undertaking the assessment (further referred to herein as the "initial assessment"):

- Stantec Report No. 123220330 entitled *Hazardous Building Materials Assessment, 45 Buildings at the Gulf Islands National Park, BC* dated March 22, 2016, prepared for Public Works and Government Services Canada on behalf of Parks Canada (initial assessment)

The pertinent information from the documentation listed above has been incorporated into this report.

2.1.1 Supplemental Documents

The following additional documents were provided by Parks Canada, and were reviewed for background information related to various actual or potential sources of contamination at the subject sites (further referred to herein as the "previous environmental assessment reports"):

- Parks Canada Agency March 2016 DRAFT document *Portlock Point Major Shorelight, Prevost Island: Remediation and Risk Management Plan*
- Parks Canada Agency March 2016 document *Active Pass Lightstation Georgina Point, Mayne Island Remediation and Risk Management Plan*
- Parks Canada Agency July 2016 DRAFT document *Saturna Island (East Point) Lightstation: Remediation and Risk Management Plan*
- The Environmental Services Group Royal Military College of Canada August 2014 document *Gulf Islands National Park – 2014 Site Closure Review – Active Pass, East Point, Portlock Point*
- The Environmental Services Group Royal Military College of Canada July 2015 document *Summary Report for Gulf Islands National Park Reserve, British Columbia – Results and*

Recommendations of the 2014 Sampling Program – Human Health Risk Assessment; Ecological Risk Assessment Review; Site Closure Tool Initiation

- The Environmental Services Group Royal Military College of Canada March 2015 document *Gulf Islands 2014 Sampling Report, Gulf Islands National Park Reserve, British Columbia – 2014 Additional Sampling Program*
- Canadian Coast Guard May 2005 document *Ecological Risk Assessment of Environmental Contamination at Six De-Staffed Lightstations*
- Morrow Environmental June 3, 2005 document *Human Health Risk Assessment of Environmental Contamination at the De-Staffed Active Pass Lightstation Site*
- Morrow Environmental June 3, 2005 document *Human Health Risk Assessment of Environmental Contamination at the De-Staffed East Point Lightstation Site*
- Golder Associates April 11, 2016 document *Supplemental Phase III Environmental Site Assessment and PQRA – Russell Island, BC*
- Franz Environmental Inc. March 2011 document *Remedial Options Evaluation – Russell Island, BC, Gulf Islands National Park Reserve of Canada*

3.0 SCOPE OF WORK

3.1 METALS IN PAINT

Although Pb, Hg and other metals may be present in paint, Pb is the constituent that was historically used to the greatest extent. The lead content of paint will typically significantly exceed that of Hg or other metals in paint.

Based on the above and on our experience in conducting hazardous building materials assessments throughout Canada, Pb is the paint constituent that Stantec believes poses the most significant risk from both a health (exposure) and an environmental (contamination) standpoint.

In addition, the ecological and human health risks associated with other metals such as mercury and arsenic are discussed in the previous environmental assessment reports, primarily as they pertain to significant site-related sources for these metals, such as mercury bath lamps (for mercury) and historic waste disposal practices (for arsenic). Contributions to ecological or human health risks from the presence of metals other than Pb in paint do not appear to have been considered as significant contamination sources.

As such, this report has been prepared to primarily assess for lead in paint, with the expectation that appropriately handling painted building materials to control risks associated with lead will also appropriately control the risks associated with Hg and other metals in paint.

3.2 ASSESSMENT SCOPE

The scope of work completed by Stantec during this assessment involved the following:

- Review of previous reports and documents pertaining to Pb and other metal contamination in paint at the subject sites
- Site visits to collect additional information regarding the following:
  - Current condition of paints, including documentation of the various substrates to which paints are applied on the subject structures, and the condition as it relates to each separate substrate
  - Collection of samples to determine the Pb content of paints not previously sampled, if any
  - Collection of samples to determine the asbestos content of building materials that may be altered by the remediation work, for materials and buildings where such information was not on-file
  - Collection of samples to determine the leachable Pb content of materials with painted surfaces, where such bulk materials (paint and substrate) may be considered for removal and landfill disposal (as opposed to removal of the paint from the substrate) to determine whether the material may, in disposal form, be considered toxic waste
  - Soil or ground surface conditions as they relate to visible contamination from paint debris containing Pbor other metals, if necessary

It should be noted that the Georgina Point Gazebo and the East Point Garage were not included in the initial assessment. As such, an assessment for lead-containing paints (LCPs) and asbestos-containing materials (ACMs) that may require remediation or that may be disturbed during remediation was conducted at those additional sites as part of this assessment.

4.0 REFERENCE STANDARDS AND ANALYTICAL METHODOLOGY

4.1 LEAD IN PAINT

When discussing exposure risks associated with the lead content of paint that has been applied to building materials (and has dried to form a coating), it is important to understand the various ways in which the lead content of paint is measured and/or considered.

When painted building materials are disturbed, the various processes by which this occurs (e.g. torch-cutting, grinding, manual demolition, etc.) can create airborne, lead-containing particulate. In this respect, applicable regulations present their "allowable" limits for worker exposure in relation to the airborne concentration of lead particles, which is expressed in milligrams per cubic metre (mg/m^3). Both the *Canada Labour Code, Part II* (Canada Labour Code) and British Columbia's Occupational Health and Safety Regulation (BC Reg. 296/97) refer to an occupational exposure limit (OEL) for lead of 0.05 mg/m^3.

When assessing how much a particular paint coating may contribute to lead exposure risks upon disturbance, the total lead content of the paint coating is considered. This is measured either in percent weight, or in milligrams per kilogram (mg/kg, which is equivalent to parts per million [ppm]). In this respect, the 2011 WorkSafeBC manual titled *Lead-Containing Paint and Coatings: Preventing Exposure in the Construction Industry*, indicates the following:

- Improper removal of lead paint containing 600 mg/kg lead results in airborne lead concentrations that exceed half of the exposure limit
  - This potential for exposure exceeding half of the occupational exposure limit would be the trigger for implementation of an exposure control plan
- Lead concentrations as low as 90 mg/kg may present a risk to pregnant women and children
  - Any risk assessment should include for the presence of high risk individuals within the workplace

In addition to the above, the 2017 WorkSafeBC publication *Safe Work Practices for Handling Lead* (Lead Guideline) indicates the following:

> Unlike for asbestos-containing material, WorkSafeBC does not numerically define what would be considered a lead-containing paint or coating. All suspected paints or coatings should be tested for lead because, depending on the nature of the work, even a small amount could pose a risk to workers. In order to determine which controls and personal protective equipment would be required for a particular job, a qualified person must consider this information as part of the risk assessment.

When reviewing the above, although "high risk" individuals may be present at the subject sites periodically as users, such individuals are not expected to be present in situations associated with building material alteration activities (i.e., remediation) that would create significant disturbance to paint and airborne, inhalable particulate matter (i.e., typical exposure risks) with such individuals present. As such, and as the risk of ingestion of paint debris can reasonably be deemed low for periodic users, Stantec will reference a value of greater than 600 ppm in defining paints as "lead-containing", such that appropriate risk assessments can be completed for the RAP.

Based on the above, samples of potential LCPs were collected from major paint applications (either previously un-sampled paints, or to confirm previous results), in sufficient quantity to conduct analysis for total lead content. The sampling of paint applications involved the collection of paint chip samples of paint layers to the substrate, where possible. A minimum volume of 5 cc or a half teaspoon of paint chips was typically collected. Wherever necessary and possible, paint was separated from any backing material such as paper, concrete or wood and placed in a sealed, clearly labelled plastic bag.

Samples collected were submitted to EMSL Analytical, Inc. in Indianapolis, Indiana (EMSL) for analysis of total lead content using EPA Method SW 846 3050B*/7000B. EMSL's analytical laboratory is accredited by the AIHA Environmental Lead Laboratory Approval Program (ELLAP).

4.1.1 Assessment of Paint Condition

The criteria for condition evaluation pertaining to LCPs described herein are generally based on the United States Housing and Urban Development (HUD) 2012 *Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing*.

When evaluating the condition of LCPs, an attempt should be made to determine whether the deterioration is due to a moisture problem or some other existing building deficiency.

"Poor" surfaces are considered to be a hazard and should be corrected. "**Fair"** surfaces should be repaired, but are not yet considered to be a hazard; if not repaired, they should be monitored frequently. "**Good/intact"** surfaces should be monitored to ensure that they remain in a nonhazardous condition.

In addition, the presence of paint debris must be considered in evaluating condition. Given the variety of paint uses, there are many applications that can have a tendency for the paint to "wear" from the surface slowly, over an extended period of time. Conditions where paint has worn from a surface are worth noting for maintenance discussions (i.e., related to re-coating the surface should, for example, the coating provide weather protection), however, in the absence of loose paint chip debris/dust, such conditions would not represent a potential exposure situation related to lead.

The condition evaluation criteria for LCPs are summarized in Table 4-1.

4.1.2 Building Materials—Leachable Lead Content

Once the exposure risks associated with generating airborne particulate when disturbing building materials coated with LCPs have been addressed, and the painted building materials become waste, we must also consider disposal options.

According to the British Columbia Hazardous Waste Regulation (BC Reg. 63/88), lead waste (including building material waste coated with LCPs) may be considered a toxic leachate (and require special disposal) if lead is in a dispersible form and its leachate contains greater than 5.0 mg/L lead.

Table 4-1 LCP Condition Categories

Type of Building Component[1]	Total Area of Deteriorated Paint on Each Component		
	Good/Intact	Fair[2]	Poor[3]
Exterior components with large surface areas.	Entire surface is intact.	Less than or equal to 10 ft^2	More than 10 ft^2
Interior components with large surface areas (walls, ceilings, floors, doors.	Entire surface is intact.	Less than or equal to 2 ft^2	More than 2 ft^2
Interior and exterior components with small surface areas (window sills, baseboards, soffits, trim).	Entire surface is intact.	Less than or equal to 10% of the total surface area of the component.	More than 10% of the total surface area of the component

NOTES:

1 Building component in this table refers to each individual component or side of building, not the combined surface area of all similar components in a room (e.g., a wall with 1 ft^2 of deteriorated paint is in "fair" condition, even if the other three walls in a room are intact).

2 Surfaces in "fair" condition should be repaired and/or monitored, but are not considered to be "LCP hazards".

3 Surfaces in "poor" condition are considered to be "LCP hazards" and should be addressed through abatement or interim controls.

Based on the above, bulk samples of painted building materials that would be expected to be disposed-of via landfill were collected in a form presumed to be representative of waste generated during renovation or demolition, each sample containing over 50 g in weight. The samples were submitted to EMSL for leachate analysis through Toxicity Characteristic Leaching Procedure (TCLP), using US EPA Method SW846, 1311/7420.

4.2 ASBESTOS

The presence of asbestos in federal workplaces, and pertaining to federally regulated workers is governed by the Canada Labour Code. The presence of asbestos in the workplace in British Columbia pertaining to provincially regulated workers is governed by BC Reg. 296/97. As both federally regulated workers and provincially regulated workers (e.g., contractors) are expected to carry out work activities within the subject structures, and as the provincial regulations are generally more prescriptive pertaining to asbestos (and generally include the requirements noted in the Canada Labour Code), this assessment was conducted to meet the requirements of BC Reg. 296/97.

According to the current version of BC Reg. 296/97, ACM means any material containing at least 0.5% asbestos, or vermiculite insulation with any asbestos.

Based on these criteria, a visual assessment of accessible areas was undertaken in order to check for the presence of additional materials suspected of containing asbestos (those that were not assessed or sampled per the initial assessment) that may be disturbed during the remediation work. Locations to collect discrete bulk asbestos samples of suspect building materials were identified. Samples of representative materials were then collected at these locations.

Multiple samples were collected from each "homogenous application" of observed suspected ACMs (materials suspected to contain asbestos that are uniform in material type, colour, texture application and estimated installation date) and submitted to EMSL Canada Inc. in Burnaby, BC for analysis of asbestos content using polarized light microscopy (PLM) with dispersion staining, in accordance with the United States Environmental Protection Agency (EPA) 600/R-93/116 method. EMSL Canada Inc.'s analytical laboratory is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP).

The number of samples to be collected for each homogenous application of a suspected ACM was based on the recommendations provided in the WorkSafeBC 2017 publication *Safe Work Practices for Handling Asbestos* (Asbestos Guide), along with the assessor's experience and understanding of the consistency of that building material's application.

4.2.1 Sample Results Interpretation

When asbestos is detected in concentrations greater than 0.5% in one of the samples within a set that was collected to represent a "homogenous application" of a particular material (or detected in any concentration, in a set of samples collected for applications of vermiculite), the entire sample set and the entire application of that material was then considered to be an ACM.

In addition to the above, a "positive stop" option was used during the laboratory analysis of the building material samples submitted for asbestos analysis. The "positive stop" option is utilized by the laboratory when asbestos is detected at a concentration of greater than one percent in one of the samples within a set that was collected to represent a "homogenous application" of that material. At this point, further analysis of subsequent samples within the set is deemed to be unnecessary (as the entire set will be considered an ACM, per above), and the remainder of the samples within the set are not analyzed.

4.2.2 Asbestos Sampling Quality Assurance/Quality Control

Sampling activities pertaining to asbestos were conducted in accordance with Stantec's SWPs, which take into account current provincial regulations pertaining to such work (i.e., sampling procedures, required number of samples, and laboratory analytical procedures).

Representative bulk samples were collected of accessible suspect ACMs in sufficient quantities for laboratory analyses. Suspect ACM samples were sealed in polyethylene zip-lock bags labeled with the sample number, suspect material description, and sample location. As part of sampling procedures, sampling tools were cleaned between sample collection events to avoid the potential for cross-contamination of samples.

Sample bags were compiled in order and placed into a single container accompanied with a Chain of Custody form outlining the project information, date, building location, number of samples, and sample description. Samples were submitted to the analytical laboratory in a sealed container via courier.

5.0 LIMITATIONS

In preparation of this report, Stantec used professional judgment based on experience. The work was conducted in accordance with generally accepted professional standards. Stantec relied on information gathered during the site investigation and laboratory analytical reports.

This report reflects the observations made within accessible and accessed areas of the subject structures, and the results of analyses performed on the specific material sampled during the assessment or previously sampled by Stantec. Analytical results reflect the sampled materials at the specific sample locations.

This report has been prepared for the exclusive use of the Parks Canada for the purpose of assessing general conditions in the subject building. Any use that a third party makes of this report, or reliance on, or decisions to be made on it, are the responsibility of such third parties. Stantec accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

5.1 PHYSICAL AND SAMPLING LIMITATIONS

Sampling was conducted pertaining to suspected LCPs and suspected ACMs only. Sampling for metals other than lead that may be present in paint was not conducted. Concealed spaces were inspected via existing access panels, where present. Interior and exterior finishes, solid ceilings, walls, flooring and structural elements were not removed to access concealed areas.

5.1.1 Lead in Paint

Although the painted surfaces where samples were collected may be covered with more than one coat of paint, the paint samples are described by the surface (visible) colour only. Attempts were made to represent all layers of paint in the samples collected. As analytical results are referenced to the surface paint colour only, the lead content of all painted surfaces similar to that represented by the surface paint colour were presumed to be the same, regardless of differing sub surface paints, if any.

Sampling for analysis of lead leachate was conducted such that building material samples were collected in a form presumed to be representative of waste generated during demolition. The lead leachate samples are meant to represent the general waste that would be created when painted surfaces are demolished, without having paint removed.

5.1.2 Asbestos

Assessment for asbestos was conducted only pertaining to buildings or materials that had not previously been assessed and sampled (per the initial assessment). Suspected ACMs that were not sampled included, but were not limited to, the following (where present, based on building construction or as otherwise noted):

- Interior components of mechanical equipment (e.g., inner linings or gaskets in boilers)
- Interior components of HVAC units
- Heat protection materials inside mechanical installations (e.g., gaskets) and light fixtures (e.g., paper backing in sealed incandescent fixtures)
- Drywall and/or wall plaster and associated finish materials concealed behind new and/or additional walls or ceilings
- Woven tape inside duct connection joints or inner ducting insulation
- Materials within sealed/hard wall cavities or hard ceiling cavities without appropriate access points
- Insulation materials inside fire doors

If encountered during remediation activities, any suspected ACMs not identified within this report or the initial assessment should be presumed to contain asbestos and handled as such until otherwise proven, through analytical testing.

5.2 AREAS NOT ACCESSED

The following areas were not accessed, for the reasons indicated:

- Georgina Point Light Keeper's House:
  - Attic space ("Do not enter" sign on door access, unsafe due to the presence of mercury vapour)
  - Second floor hallway closet ("Do not enter" sign on door access, unsafe due to the presence of mercury vapour)
  - Second floor north bedroom and closet (locked bedroom, key didn't work)
- Georgina Point Weather Station:
  - Interior of the weather turret on the roof (no safe roof access)
  - The fenced off antenna area (high voltage warning)
- Interior of the Georgina Point Shed (a key for the padlock was not provided)
- Bedroom 1 within the East Point Bunkhouse (locked bedroom—access not provided by tenant)

As such, limited comments, if any, will be provided regarding the presence, quantity or condition of LCPs or ACMs within the above-noted areas.

5.3 INFORMATION FROM PREVIOUS REPORTS

Stantec reviewed the previous report(s) outlined herein for information purposes, and the information provided was considered in developing the current assessment and sampling plan.

Supplemental sampling of previously sampled materials was not conducted. Where previous sampling and analytical data indicated the presence of an LCP or ACM the material was considered to be an LCP or ACM.

6.0 FINDINGS

6.1 LEAD

6.1.1 Previously Identified LCPs

The initial assessment (Stantec 2016) indicated the presence of the following LCPs:

- Georgina Point Light Keeper's House
  - Grey colored paint on the basement floor
  - White colored paint on the exterior siding
  - Grey colored paint on the exterior trim
  - Red colored paint on the exterior under the porch
- Georgina Point Weather Station
  - Grey colored paint on the electrical room floor
  - Grey colored paint on the HVAC ducting
  - Red colored paint on the exterior trim
- Georgina Point Beacon
  - White colored paint on the interior walls and ceiling of the upper level
  - Red colored paint on the upper level floor and staircase
  - Red colored paint on the upper level exterior
  - White colored paint on the exterior of the tower
  - Grey colored paint on the exterior of the tower base and stairs
- Georgina Point Garage
  - Grey colored paint on the interior floor
  - Grey colored paint on the exterior doors
  - White colored paint on the exterior trim
- Georgina Point Shed
  - White colored paint on the exterior
  - Grey colored paint on the exterior floor
- East Point Light Tower and Shed
  - White colored paint on the interior walls and ceiling of the Shed
  - Red colored paint on the light tower

- East Point Bunkhouse
  - White colored paint on the exterior walls
  - Light brown colored paint on the interior doors and trim
- East Point Fog Horn Building
  - White coloured paint on the interior walls
  - Grey coloured paint on the interior trim
  - White coloured paint on the exterior walls
- Portlock Point Lighthouse
  - White colored paint on the exterior trim
  - Grey colored paint on the interior light post and floors
  - White colored paint on the interior upper level walls and ceiling
  - Red colored paint on the exterior upper walls and railings
- Mahoi House
  - Cream colored paint on the interior bedroom
  - White colored paint on the exterior
  - Green colored paint on the exterior window trim
  - Gold colored paint on the exterior window frame
- Russell Island Caretaker's Shed
  - White colored paint on the exterior
  - Green colored paint on the exterior trim
- Russell Island Water Tower
  - Beige colored paint on the exterior trim
- Russell Island Generator Shed
  - Green colored paint on the exterior walls

6.1.2 Additional Suspected LCP Sampling

Paint chip samples were obtained from the various applications which had not been previously sampled within the subject structures. A summary of the sample types, locations and analytical results is presented in Table 5-1, below. A copy of the certificate of analysis provided by EMSL for the suspected LCP samples submitted is attached to this Appendix A.

Table 5-1 Additional Suspected LCP Sample Collection and Analysis Summary GINPR, BC

Sample Number	Paint Description	Location	Result (PPM Lead)
Georgina Point Light Keepers House			
GPH-P-06	**White on concrete deck edge**	**Exterior southeast under deck**	**37,000**
GPH-P-07	**Red on wood hand railing**	**Exterior southeast deck**	**2,000**
N/A	**Red paint on flagpole concrete base**	**Flagpole concrete base**	**Presumed LCP See 6.1.2.1**
Georgina Point Weather Station			
GPB-PB-04	White on concrete exterior walls	South wall	110

Table 5-1 Additional Suspected LCP Sample Collection and Analysis Summary GINPR, BC

Sample Number	Paint Description	Location	Result (PPM Lead)
GPB-PB-06	**Grey on concrete exterior slab**	**Northeast exterior**	**700**
Georgina Point Beacon			
GPL-PB-06	**Cream on metal door (Interior?)**	**Tower base**	**2,300**
GPL-PB-07	**Grey on interior concrete floor**	**Tower base**	**2,400**
Georgina Point Gazebo			
GG-PB-01	Brown wood	Exterior	<100
East Point Light Tower and Shed			
EL-PB-04	**White on concrete tower footing**	**Tower base**	**1,100**
East Point Garage			
EPG-PB-01	White interior drywall	Meeting room	320
EPG-PB-02	**Beige interior drywall**	**Garage 2**	**860**
EPG-PB-03	Grey interior wood trim	Office	<140
EPG-PB-04	Grey exterior concrete foundation wall	Northeast exterior	<100
East Point Bunkhouse			
EB-PB-07	Beige on concrete foundation walls	East basement	<100
EB-PB-08	**Grey on structural steel posts and beams**	**West basement**	**2,000**
EB-PB-00	Red on structural steel posts and beams	West basement	<100
Mahoi House			
MH-PB-07	**White/grey exterior plywood deck**	**North exterior**	**1,200**
NOTE: **Bold, orange highlighted text indicates confirmed LCP (paint with lead content >600 ppm)**			

Based on our observations and on our interpretations of suspected LCP sample analytical results, the additional paints presented in Table 5-2, below are also considered LCPs:

Table 6-2 Summary of Additional Identified LCPs GINPR, BC

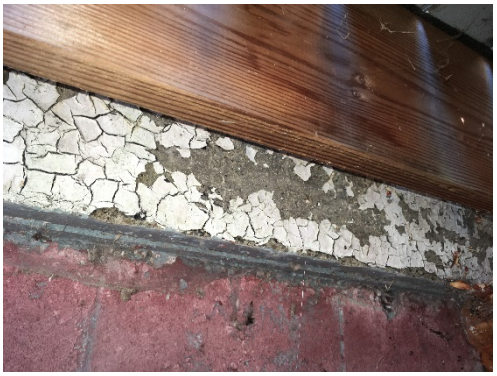
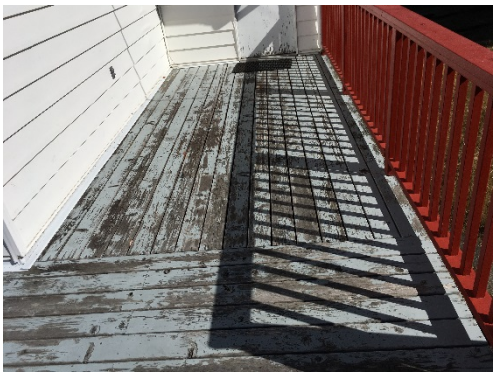
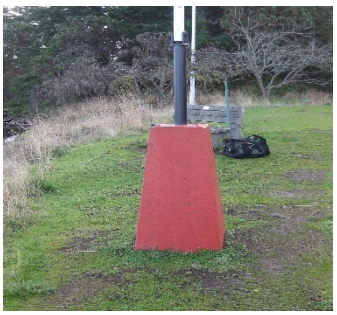
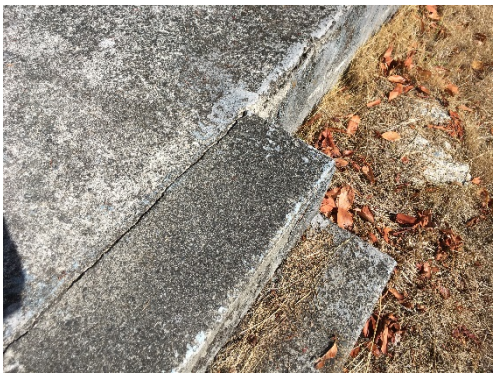
Additional Identified LCP Description		Photo
Site/Structure	Georgina Point Light Keeper's House	
Paint colour	White	
Substrate	Concrete	
Location/approx. extent	Deck edge	
Lead content	37,000 ppm	
Condition	Poor	
Site/Structure	Georgina Point Light Keeper's House	
Paint colour	Red	
Substrate	Wood	
Location/approx. extent	Deck hand railing	
Lead content	2,000 ppm	
Condition	Good	
Site/Structure	Georgina Point Light Keeper's House – detached flagpole	
Paint colour	Red	
Substrate	Concrete	
Location/approx. extent	Flagpole base	
Lead content	Presumed LCP – see 6.1.2.1	
Condition	Good (reported)	
Site/Structure	Georgina Point Weather Station	
Paint colour	Grey	
Substrate	Concrete	
Location/approx. extent	Exterior concrete slab	
Lead content	700 ppm	
Condition	Paint worn from surface	

Table 6-2 Summary of Additional Identified LCPs GINPR, BC

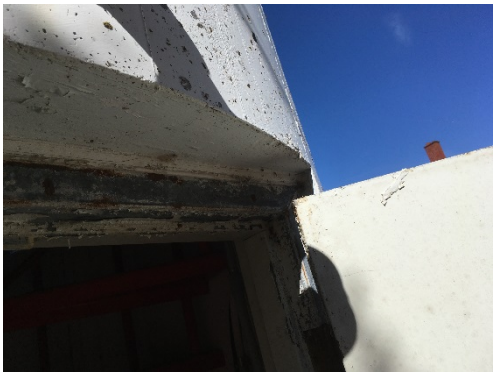
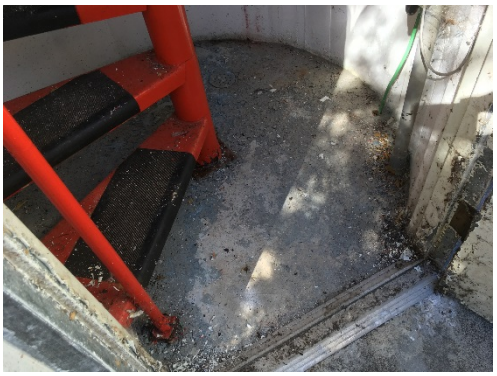
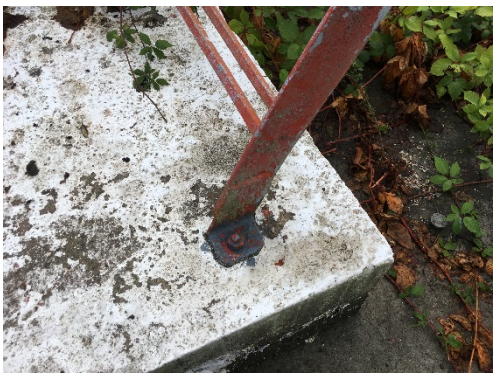
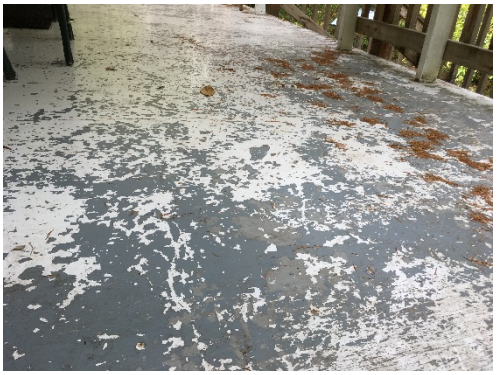
Additional Identified LCP Description		Photo
Site/Structure	Georgina Point Beacon	
Paint colour	Cream	
Substrate	Metal	
Location/approx. extent	Door and door frame	
Lead content	2,300 ppm	
Condition	Poor	
Site/Structure	Georgina Point Beacon	
Paint colour	Grey	
Substrate	Concrete	
Location/approx. extent	Tower base	
Lead content	2,400 ppm	
Condition	Poor	
Site/Structure	East Point light tower	
Paint colour	White	
Substrate	Concrete	
Location/approx. extent	Footings	
Lead content	1,100 ppm	
Condition	Poor	
Site/Structure	East Point Garage	No Photo
Paint colour	Beige	
Substrate	Drywall	
Location/approx. extent	Garage 2 interior walls	
Lead content	860 ppm	
Condition	Good	

Table 6-2 Summary of Additional Identified LCPs GINPR, BC

Additional Identified LCP Description		Photo
Site/Structure	East Point Bunkhouse	No Photo
Paint colour	Grey	
Substrate	Steel	
Location/approx. extent	Basement structural steel posts and beams	
Lead content	2,000 ppm	
Condition	Good	
Site/Structure	Mahoi House	
Paint colour	White/grey	
Substrate	Plywood	
Location/approx. extent	Exterior north deck	
Lead content	1,200 ppm	
Condition	Poor	

6.1.2.1 Red Paint on Flagpole Base

Although the flagpole was not listed as a structure to be included in our assessment, it has been reported that the red paint on the base of the flagpole, adjacent to the Georgina Point Light Keeper's House, is suspected to be LCP and is in good condition having been recently repainted. Given that various other visually similar red paints on other structures at the subject site have been tested and confirmed to be lead-containing, the red paint on the concrete base of the flagpole should also be presumed to be lead-containing.

6.1.3 Building Materials—Leachable Lead Content

Bulk (full-thickness, where possible) samples of building materials that are coated with the LCPs identified both through the initial assessment and through this assessment were collected. The samples were collected only from those materials that could potentially be removed with paint on them, and disposed of via landfill.

Each sample was collected in a form presumed to be representative of waste generated during the remediation project, and submitted to EMSL for analysis of leachable lead content.

A summary of the sample types, locations and analytical results is presented in Table 5-3, below. A copy of the certificate of analysis provided by EMSL for the bulk painted building material samples submitted is included in Appendix B.

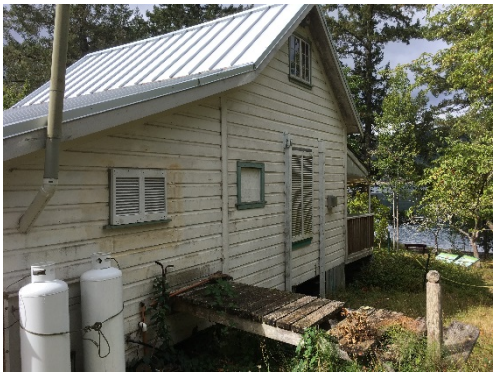
Table 5-3 Painted Building Material Sample Collection and Lead Leachate Analysis Summary GINPR, BC

Sample Number	Paint Description and Application	Initial Result (Total Lead, ppm)	Leachate Result (mg/L)
Georgina Point Light Keeper's House			
GPH-LL-03	White exterior wood trim (basement door)	1,800	<0.40
GPH-LL-04	Grey exterior wood trim (wooden slats around the southwest deck)	91,000	<0.40
GPH-LL-07	Red on exterior wood hand railing	2,000	<0.40
East Point Light Tower and Shed			
EL-LL-03	Red steel frame of tower	39,000	0.89
East Point Bunkhouse			
EB-LL-02	White exterior wood siding	2,000	<0.40
East Point Fog Horn Building			
EF-LL-02	Grey interior wood trim	1,200	1.4
EF-LL-03	White exterior wood siding	3,300	<0.40
Portlock Point Lighthouse			
PP-LL-01	White exterior wood trim	72,000	0.58
PP-LL-02	Grey interior wood stairs	5,400	<0.40
PP-LL-04	Red exterior wood trim	110,000	2.9
Mahoi House			
MH-LL-03	**White exterior wood siding**	**56,000**	**6.8**
Russell Island Caretaker's Shed			
MHCS-LL-01	White exterior wood siding	1,700	<0.40
Russell Island Generator Shed			
MHGS-LL-01	Green wood exterior	6,500	1.1

NOTE:
Bold highlighted text indicates material that contains lead in a dispersible form such that its leachate contains greater than **5.0 mg/L lead**.

As indicated above, analytical results indicate that the paint presented in Table 5-4, below contains lead in a dispersible form such that its leachate contains greater than 5.0 mg/L lead, and will require segregation and special disposal during renovation or demolition.

Table 5-4 Summary of Lead Leachable Paints GINPR, BC

Identified LCP Description		Photo
Site/Structure	Mahoi House	
Paint colour	White	
Substrate	Wood	
Location/approx. extent	Exterior siding	
Leachate Result	6.8 mg/L	
Condition	Generally good with localized areas of flaking and peeling	

With the exception of the above-noted white paint on the wood siding of the Mahoi House, the other LCPs identified through this assessment and the initial assessment would not appear to be posing a significant environmental contamination hazard, in their current condition.

6.1.3.1 Metal or Concrete Materials Coated with LCPs

Materials such as metal and concrete that are coated with LCPs are typically not tested for leachable lead content for the following reasons:

- If removed with paint in-tact, these materials are expected to be recycled, not disposed of via landfill. As such, the leachable lead content will not impact the "disposal" option, as recycling facilities will typically accept metal or concrete with lead-containing paint.
- If removal of the paint from the substrate is considered, the waste associated with that process (paint chips and removal substrate – sand, beads, etc.) is typically presumed to be hazardous waste (leachable for lead in excess of 5.0 mg/L), or must be tested in its actual form (once removed, with the removal substrate) to confirm.
  - In most cases, during an initial assessment, it is not practical to try to remove sufficient paint from the substrate in order to appropriately analyze for lead leachate, as a significant area would have to be "scraped" (100 g of sample is required).

During our assessment, and pertaining to the red paint on the steel frame of the East Point light tower, this paint was significantly flaking and delaminating such that a sufficient amount was available for lead leachate sampling. Although paint waste from this structure would not appear to be hazardous waste (0.89 mg/L lead detected in leachate for the paint alone), the expected paint chip waste that would result in removal of LCP from metal or concrete surfaces from any other structures considered herein will be presumed to be hazardous (i.e., presumed to contain leachable lead in excess of 5 mg/L).

6.2 ASBESTOS

6.2.1 Previously Identified ACMs

The initial assessment (Stantec 2016) indicated the presence of the following ACMs:

- Georgina Point Light Keeper's House
  - White woven tape on seams of furnace ducting throughout
  - Heat shields in round incandescent light fixtures throughout
  - Joint compound on drywall walls and ceilings throughout
  - Black window pane caulking on the windows throughout
- Georgina Point Weather Station
  - Brown 12 in. x 12 in. vinyl floor tile in the Weather room
  - Joint compound on drywall walls and ceilings
- Georgina Point Beacon
  - Black window pane caulking on the windows throughout
- Georgina Point NAV Canada Shed
  - Black window pane caulking on the window
- East Point Light Tower and Shed
  - Black window pane caulking on the window in the east wall of the Shed
- East Point Bunkhouse
  - Drywall joint compound on walls and ceilings throughout
- Portlock Point Lighthouse
  - Black building tar on the interior walls
  - Black window pane caulking on the north side window

6.2.2 Additional Suspected ACM Sampling

Stantec identified and sampled various additional suspected ACMs that may be disturbed by the remediation work. The samples collected were submitted to EMSL for analysis of asbestos content and nature.

A summary of the sampled materials, sample locations and analytical results is presented in Table 6-5, below. A copy of the certificate of analysis provided by EMSL for the suspected ACM samples submitted is attached at the end of this Appendix C.

Table 6-5 Suspected ACM Sample Collection and Analysis Summary GINPR, BC

Sample Number	Material Description	Sample Location	Result (%/type asbestos)
Georgina Point Weather Station			
GPB-VFT-01	Black floor tile mastic	Weather room	<0.25% Chrysotile
East Point Garage			
EPG-DJC-01A	Drywall joint compound	Garage 1	None Detected
EPG-DJC-01B	Drywall joint compound	Garage 2	None Detected

Table 6-5 Suspected ACM Sample Collection and Analysis Summary GINPR, BC

Sample Number	Material Description	Sample Location	Result (%/type asbestos)
EPG-DJC-01C	Drywall joint compound	Garage 2	None Detected
EPG-WPC-01A	**Black window pane caulking**	**Office**	**0.72% Chrysotile**
EPG-WPC-01B	**Black window pane caulking**	**Meeting room**	**Positive Stop (Not Analyzed)**
EPG-WPC-01C	**Black window pane caulking**	**Office**	**Positive Stop (Not Analyzed)**
Russell Island Caretakers Shed			
MHCS-CP-01	**Cement panel**	**Northwest exterior**	**20% Chrysotile**

NOTE:
Bold, highlighted text indicates confirmed **>0.5% ACM**

Based on our observations of building construction (estimated vintage of interior finishes and uniformity of building material use) and on our interpretations of suspected ACM sample analytical results, the additional materials presented in Table 6-6, below were also identified as ACMs.

Table 6-6 Summary of Additional Identified ACMs GINPR, BC

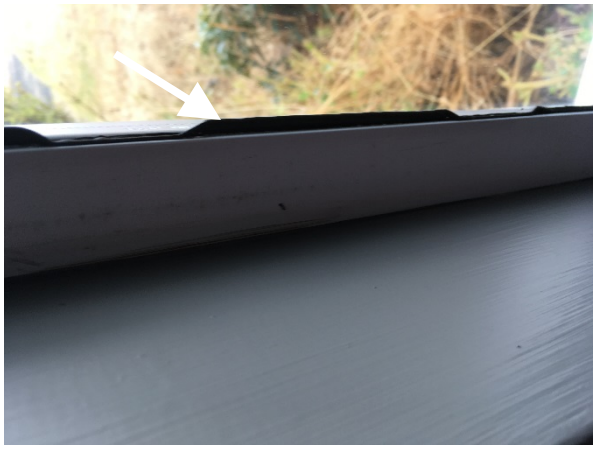
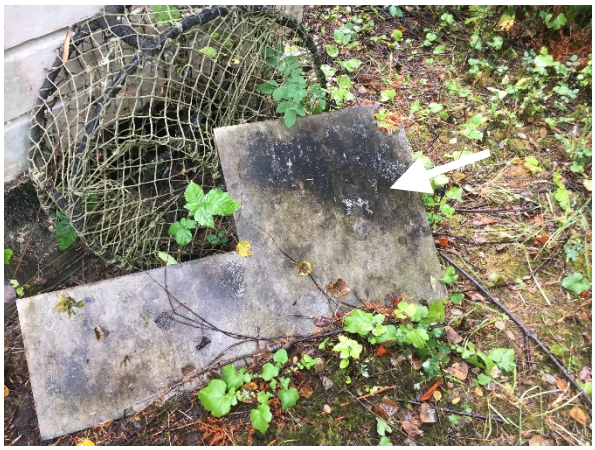
Identified ACM Description and Condition Information		Photo
East Point Garage – Black window pane caulking		
Friability	Non-friable	
Condition	Good	
Total Quantity	Approximately 15 linear meters	
Content	0.72% Chrysotile	

Table 6-6 Summary of Additional Identified ACMs GINPR, BC

Identified ACM Description and Condition Information		Photo
Russell Island Caretakers Shed – Cement panel stored outside		
Friability	Non-friable	
Condition	Good	
Total Quantity	Approximately 1 m^2	
Content	20% Chrysotile	

6.2.2.1 Non-Friable Materials Containing Less Than 0.5% Asbestos

One sample of black floor tile mastic was collected from the Georgina Point Weather Station Weather room. The analytical result for that sample indicates its asbestos content to be less than 0.25%. The number of samples collected for this material would be adequate to appropriately characterize its asbestos content based on its extent and published standards for sampling of homogenous applications of suspected ACMs (e.g., the Asbestos Guide). Given the analytical result and the non-friable nature of this material, it would not be considered an ACM. Note that the overlying vinyl floor tile in the Weather room was identified as an ACM by the initial assessment.

7.0 GENERAL RECOMMENDATIONS

7.1 LEAD

LCPs can be managed in place, where in good condition, and where well adhered to substrates. Health and safety and/or environmental contamination risks posed by LCPs in good condition are expected to be negligible, with the possible exception of exposure risks associated with children that may chew on surfaces (e.g., window ledges/trim) coated with LCPs.

Where paints are in poor condition, health and safety risks may be present and as such, remedial action should be undertaken. Remedial action can include various options, including, but not limited to those summarized in Table 7-1 below.

Note that we have assumed that in all instances where paint will be removed, new paint would be installed.

Table 7-1 Remedial Actions Summary GINPR, BC

Action Description	Advantages	Disadvantages
Localized removal of LCP from substrate: Removal of damaged/poor condition LCP from surfaces only, with or without re-painting	Simplest, most cost-effective solution	LCP remains on the structure for the most part. Further damage/delamination can occur in the future, requiring repeated remediation in other areas. Would require regular surveillance of remaining LCP to address future damage as it happens.
Comprehensive removal of LCP from substrate: Removal of all LCP from a particular substrate (regardless of LCP condition – both good and poor condition paint), with or without re-painting	Exposure risks associated with LCP are removed. Residual that remains will not pose exposure risk as it will be extremely well adhered to the substrate. Often effective for substrates like concrete or metal that may not otherwise require full removal.	Residual LCP will remain, for most removal methods. Cost can be high depending on the amount of substrate, and some paint that would otherwise not require action for many years may also be removed – incurring additional costs for re-painting that may not have otherwise been necessary.
Localized substrate removal: Removal of substrates (with LCP in-tact) in only those areas where damaged/poor condition LCPs are present, with re-installation of new substrates (painted to match existing) in those locations only.	Often can be easier/more efficient to remove the substrates than just removing the paint. Typically effective for discrete substrates like trim.	Significant "patchwork" can be required, if substrates are present (for example) in the middle of a wall – carrying additional risks associated with building envelope failure at remediation points.
Comprehensive substrate removal: Removal of substrates (with LCP in-tact) throughout a structure (regardless of LCP condition – substrates with both good and poor condition paint), with re-installation of new substrates (painted to match existing)	Exposure risks associated with LCP are removed.	Cost can be high depending on the amount of substrate, and some substrates that would otherwise not require action for many years may also be removed – incurring additional costs for re-installation that may not have otherwise been necessary. Not practical for some substrates (e.g., concrete foundations)

When undertaking remedial actions on LCPs, ensure compliance with the following:

- Exposure protection requirements of BC Reg. 296/97, including the provisions of the Lead Guideline
- Transportation and disposal requirements of BC Reg. 63/88
- Transportation requirements of the Federal Transportation of Dangerous Goods Regulation

Corrective action or remedial work on paint applications containing any concentration of lead should be undertaken in a manner so as to avoid generating fine particulate matter or dust (i.e., avoid sanding). Airborne lead dust or fumes should not exceed the Canada Labour Code and BC Reg. 296/97 8-hour OEL of 0.05 mg/m^3 during the removal of paints and products containing any concentration of lead. The use of personal protective equipment is recommended to reduce the potential for over-exposure to lead dust. This can be achieved by:

- Providing workers with protective clothing and PPE or devices as necessary to protect the worker against the hazards to which the worker may be exposed
- Providing workers with adequate and training in the care and use of clothing, equipment or device before wearing or using it
- Wetting the surface of the materials to prevent dust emissions
- Providing workers with washing facilities with clean water, soap and individual towels to properly wash prior to exiting the work area

To avoid the inhalation of lead, it is essential to have the following control methods in place:

- Engineering controls
- Work practices and hygiene practices
- Respirators and personal protective equipment
- Training

The work tasks required and the ways in which LCPs will be impacted will determine the appropriate respirators, measures and procedures that should be followed to protect workers from lead exposure.

7.2 ASBESTOS

For buildings with identified ACMs, Stantec recommends the following with regards to meeting the requirements of the Canada Labour Code and BC Reg. 296/97 as they pertain to managing asbestos in the workplace:

- Identified ACMs in good condition can be managed in place
- Suspected ACMs deemed visually similar to the ACMs identified in this report (on a building-by-building basis) should be considered ACMs and handled as such, unless proven otherwise, through analytical testing
- ACMs that may be impacted during LCP remediation should be removed by appropriately trained personnel (e.g., asbestos abatement contractor personnel), in accordance with the requirements of BC Reg. 296/97 and the Asbestos Guide, and prior to the initiation of project work that will disturb them
- Should a material suspected to contain asbestos fibres become uncovered during LCP remediation or other activities, all work in the areas that may disturb the material should be stopped. Samples of the suspect material should be submitted for laboratory analysis to

determine if asbestos fibres are present. Confirmed asbestos materials should be handled in accordance with applicable guidelines and regulations.

- Asbestos-containing cement pipe may be present below ground–caution should be used at any time when excavation is required
- Ensure asbestos containing waste is handled, stored, and disposed of in accordance with the requirements of the Federal Transportation of Dangerous Goods Regulation and the British Columbia Hazardous Waste Regulation (BC Reg. 63/88)

8.0 LCP CONDITION ASSESSMENT AND REMEDIAL OPTIONS

Table 8-1 below summarizes the findings and recommendations of this assessment with regards to each identified LCP present at the subject sites, including options for remedial actions, based on current condition of LCPs and the substrates to which they are applied.

With respect to the remedial actions, the various options have been highlighted as follows:

Option recommended by Stantec

Other option available for consideration by Parks Canada

Option not recommended due to health and safety risks or practicality

Preliminary cost estimates have also been included in Table 8-1 below, on a task-by-task basis. Regarding these cost estimates, the following notes are provided:

- The cost estimates were derived through providing general descriptions of the required work to an experienced abatement contractor, who offered "order of magnitude" costs for each task, given appropriate information about general site location and materials to be addressed. The contractor estimated costs using their knowledge of the man-days required to complete the work, as well as associated logistics for travel, living-out and waste disposal.
  - The contractors was NOT provided with site-specific information that would preclude them from bidding on the resulting remediation project.
- The cost estimates, as provided, are task-specific, and have not considered completion of multiple tasks at the same site (or in the same building) simultaneously.
- Cost savings would likely be realized by combining tasks.
- The overall cost for addressing paints in poor condition at each of the subject sites will be dependent on the final scope to be completed.
- Cost estimates have not been provided for options deemed "not recommended".
- Cost estimates do not include consulting fees associated with on-site monitoring that may be required. The costs for such services cannot be determined until the overall scope for abatement work is understood, as well as the methods that will be employed by the contractor that completes the abatement work. For example, limited monitoring may be required for situations where substrates will be removed (with paint in-tact), while projects that will involve removal of paints from substrates may require a more significant level of involvement of a consultant to conduct monitoring.

- Cost estimates include abatement tasks only. These estimates do not include tasks such as re-painting or reinstatement of removed building materials. Such estimates can be provided as part of the Class A Cost Estimate for the final Remedial Action Plan, which will be provided under separate cover.
- Cost estimates do not include for addressing other issues that may arise due to abatement work conducted (e.g. compromised structural integrity if all siding is removed; alteration of siding and/or siding removal/replacement required to remove windows/frames; etc.).
- Cost estimates provided herein were intended to provide PSPC and Parks Canada with additional context to assist them in distinguishing between the various remedial options. Through preliminary review of this document, PSPC and Parks Canada have evaluated the options and indicated their chosen option, in the "Proceed with RAP" column.

Table 8-1 Summary of Remedial Action Options GINPR, BC

Building	Paint Description/ Condition/Quantity	Paint Lead Concentration (ppm)	Leachate Concentration (mg/L)	Remedial Action Options	Preliminary Cost Estimate	Proceed with RAP
Georgina Point Light Keeper's House	Grey on concrete basement floor is in poor condition, flaking and peeling throughout—approximately 33 m^2	41,000	Leachate sampling not practical	Manage in place		
				Localized LCP removal from substrate	$6,900	
				Comprehensive removal of LCP from substrate	$6,900	Yes
				Localized substrate removal		
				Comprehensive substrate removal		
	White on wood exterior siding is in good condition except for localized flaking on the rear basement door—approximately 1.5 m^2 in poor condition	1,800	<0.40	Manage in place		
				Localized LCP removal from substrate	$2,500	Yes
				Comprehensive removal of LCP from substrate	$10,700	
				Localized substrate removal	$2,500	
				Comprehensive substrate removal	$9,000	
	Grey on wood and stucco exterior trim is in good condition throughout except for the surface of the decks where some paint is worn from the surface—approximately 33 m^2 in poor condition	91,000	<0.40	Manage in place	$0	Agree
				Localized LCP removal from substrate	$6,900	
				Comprehensive removal of LCP from substrate	$10,000	
				Localized substrate removal	$9,000	
				Comprehensive substrate removal	$15,000	
Georgina Point Light Keeper's House (cont'd)	Red on concrete exterior foundation wall under porch is in poor condition, flaking and peeling throughout - Approximately 14.5 m^2 Note that some flaking paint was observed to be present on the surface of the soil below	6,700	Leachate sampling not practical	Manage in place		
				Localized LCP removal from substrate		
				Comprehensive removal of LCP from substrate • Remove the top inch of soil along the wall where flaking paint is present	$12,500	Yes
				Localized substrate removal		
				Comprehensive substrate removal		
	White on concrete edge of deck under porch is in poor condition, flaking and peeling throughout - Approximately 1 m^2	37,000	Leachate sampling not practical	Manage in place		
				Localized LCP removal from substrate		
				Comprehensive removal of LCP from substrate	$2,500	Yes
				Localized substrate removal		
				Comprehensive substrate removal		
	Red on wood exterior handrails is in good condition throughout	2,000	<0.40	Manage in place	$0	Agree
				Localized LCP removal from substrate	$2,500	
				Comprehensive removal of LCP from substrate	$2,500	
				Localized substrate removal	$2,500	
				Comprehensive substrate removal	$2,500	
	Red paint on concrete base of detached flagpole is in poor condition throughout – Approximately 1 m^2	Presumed LCP	Leachate sampling not practical	Manage in place		
				Localized LCP removal from substrate		
				Comprehensive removal of LCP from substrate	$2,500	Yes
				Localized substrate removal		
				Comprehensive substrate removal		

Table 8-1 Summary of Remedial Action Options GINPR, BC

Building	Paint Description/ Condition/Quantity	Paint Lead Concentration (ppm)	Leachate Concentration (mg/L)	Remedial Action Options	Preliminary Cost Estimate	Proceed with RAP
Georgina Point Weather Station	Grey on concrete floor in the electrical room is in poor condition, flaking and peeling throughout - Approximately 37 m^2	2,200	Leachate sampling not practical	Manage in place		
				Localized LCP removal from substrate	$7,000	
				Comprehensive removal of LCP from substrate	$7,000	Yes
				Localized substrate removal		
				Comprehensive substrate removal		
	Grey on metal exterior vent is in good condition throughout	1,700	Leachate sampling not practical	Manage in place	$0	Agree
				Localized LCP removal from substrate	$2,500	
				Comprehensive removal of LCP from substrate	$2,500	
				Localized substrate removal	$2,500	
				Comprehensive substrate removal	$2,500	
	Red on concrete exterior trim is in poor condition, flaking and peeling throughout - Approximately 5.5 m^2	56,000	Leachate sampling not practical	Manage in place		
				Localized LCP removal from substrate		
				Comprehensive removal of LCP from substrate	$2,500	Yes
				Localized substrate removal		
				Comprehensive substrate removal		
	Grey on concrete exterior slab is worn from the surface throughout - Approximately 36.5 m^2	700	Leachate sampling not practical	Manage in place	$0	Agree
				Localized LCP removal from substrate		
				Comprehensive removal of LCP from substrate	$7,000	
				Localized substrate removal		
				Comprehensive substrate removal		
Georgina Point Weather Station (cont'd)	Red and white on metal antenna is in poor condition, flaking and peeling throughout - Approximately 11 m^2	Not sampled as it could not be safely accessed (high voltage warning)	Leachate sampling not practical	Undertake sampling prior to developing an action plan	$8,500, assuming paint is lead-containing and scope would be to remove paint throughout.	Yes
Georgina Point Beacon	White on metal interior of upper level walls and ceiling is in poor condition, flaking and peeling throughout - Approximately 2.5 m^2	7,500	Leachate sampling not practical	Manage in place		
				Localized LCP removal from substrate		
				Comprehensive removal of LCP from substrate • If ACM window caulking will be disturbed it should be removed prior to LCP remediation	$2,500 if ACM not disturbed; $5,000 if ACM disturbed	Yes
				Localized substrate removal		
				Comprehensive substrate removal • If ACM window caulking will be disturbed it should be removed prior to LCP remediation	$5,000, assuming ACM will be disturbed	
	Red on metal upper level floor and staircase is in poor condition, flaking and peeling throughout - Approximately 10 m^2	67,000	Leachate sampling not practical	Manage in place		
				Localized LCP removal from substrate		
				Comprehensive removal of LCP from substrate	$10,000	Yes
				Localized substrate removal		
				Comprehensive substrate removal	$60,000	

Table 8-1 Summary of Remedial Action Options GINPR, BC

Building	Paint Description/ Condition/Quantity	Paint Lead Concentration (ppm)	Leachate Concentration (mg/L)	Remedial Action Options	Preliminary Cost Estimate	Proceed with RAP
Georgina Point Beacon (cont'd)	Red on metal upper level exterior and railing is in poor condition, flaking and peeling throughout - Approximately 10 m^2	100,000	Leachate sampling not practical	Manage in place		
				Localized LCP removal from substrate		
				Comprehensive removal of LCP from substrate • If ACM window caulking will be disturbed it should be removed prior to LCP remediation	$10,000	Yes
				Localized substrate removal		
				Comprehensive substrate removal • If ACM window caulking will be disturbed it should be removed prior to LCP remediation	$60,000	
	White on exterior of tower is in good condition throughout	2,700	Leachate sampling not practical	Manage in place	$0	Agree
				Localized LCP removal from substrate		
				Comprehensive removal of LCP from substrate	$75,000	
				Localized substrate removal		
				Comprehensive substrate removal		
	Grey on concrete exterior foundation and steps is mostly worn from the surface of the concrete (reportedly previously abated) - Approximately 7.5 m^2	1,300	Leachate sampling not practical	Manage in place	$0	
				Localized LCP removal from substrate		
				Comprehensive removal of LCP from substrate (to remove amounts left behind by previous abatement)	$8,000	Yes
				Localized substrate removal		
				Comprehensive substrate removal		
	Cream on the interior side of the metal door and frame is in poor condition, flaking and peeling throughout - Approximately 2.5 m^2	2,300	Leachate sampling not practical	Manage in place		
				Localized LCP removal from substrate		
				Comprehensive removal of LCP from substrate	$3,000	Yes
				Localized substrate removal		
				Comprehensive substrate removal	$2,500	
	Grey on interior? concrete floor base is in poor condition, flaking and peeling throughout - Approximately 2.5 m^2	2,400	Leachate sampling not practical	Manage in place		
				Localized LCP removal from substrate		
				Comprehensive removal of LCP from substrate	$2,500	Yes
				Localized substrate removal		
				Comprehensive substrate removal		
Georgina Point Garage	Grey on concrete floor is in poor condition, flaking and peeling throughout - Approximately 23.5 m^2	1,200	Leachate sampling not practical	Manage in place		
				Localized LCP removal from substrate		
				Comprehensive removal of LCP from substrate	$7,500	Yes
				Localized substrate removal		
				Comprehensive substrate removal		
	Grey on metal doors is in good condition throughout	2,900	Leachate sampling not practical	Manage in place	$0	Agree
				Localized LCP removal from substrate	$2,500	
				Comprehensive removal of LCP from substrate	$3,000	
				Localized substrate removal		
				Comprehensive substrate removal	$2,500	

Table 8-1 Summary of Remedial Action Options GINPR, BC

Building	Paint Description/ Condition/Quantity	Paint Lead Concentration (ppm)	Leachate Concentration (mg/L)	Remedial Action Options	Preliminary Cost Estimate	Proceed with RAP
Georgina Point Garage (cont'd)	White on wood exterior fascia is in poor condition, flaking and peeling throughout - Approximately 4 m^2	1,100	No sample collected as no discrete location was identified	Manage in place		
				Localized LCP removal from substrate		
				Comprehensive removal of LCP from substrate	$2,500	
				Localized substrate removal		
				Comprehensive substrate removal • Although it is unlikely that this material is lead leachable waste based on the lead concertation of the paint TCLP testing may be required prior to its disposal at a landfill	$2,500 Add $2,500 if material is leachable (unlikely)	Yes
Georgina Point Shed	White on wood exterior siding is in good condition except for localized flaking on the door – Approximately 3 m^2 in poor condition	190,000	No sample collected as no discrete location was identified	Manage in place		
				Localized LCP removal from substrate		
				Comprehensive removal of LCP from substrate	$3,000	Yes
				Localized substrate removal • TCLP testing will be required prior to disposal at a landfill	$2,500 Add $2,500 if material is leachable	
				Comprehensive substrate removal • TCLP testing will be required prior to disposal at a landfill	$3,000 Add $2,500 if material is leachable	
	Grey on concrete front step is in poor condition, flaking and peeling throughout - Approximately 1 m2	4,400	Leachate sampling not practical	Manage in place		
				Localized LCP removal from substrate		
				Comprehensive removal of LCP from substrate	$2,500	Yes
				Localized substrate removal		
				Comprehensive substrate removal		
Georgina Point Seasonal Washroom	No LCPs have been identified for this building.					
Georgina Point Outhouse	No LCPs have been identified for this building.					
Georgina Point NAV Canada Shed	No LCPs have been identified for this building.					
Georgina Point Gazebo	No LCPs have been identified for this building.					
East Point Light Tower and Shed	White on wood interior and exterior shed walls is in good condition throughout	1,200	No sample collected as no discrete location was identified and the paint does not require remedial action based on condition	Manage in place	$0	Agree
				Localized LCP removal from substrate		
				Comprehensive removal of LCP from substrate	$10,000	
				Localized substrate removal		
				Comprehensive substrate removal	$5,000	
	Red on the steel tower structure is in poor condition, flaking and peeling throughout - Approximately 120 $m2^s$	39,000	0.89	Manage in place		
				Localized LCP removal from substrate		
				Comprehensive removal of LCP from substrate	$75,000	Yes
				Localized substrate removal		
				Comprehensive substrate removal		

Table 8-1 Summary of Remedial Action Options GINPR, BC

Building	Paint Description/ Condition/Quantity	Paint Lead Concentration (ppm)	Leachate Concentration (mg/L)	Remedial Action Options	Preliminary Cost Estimate	Proceed with RAP
East Point Light Tower and Shed (cont'd)	White on concrete tower footings is in poor condition, flaking and peeling throughout - Approximately 18 m^2	1,100	Leachate sampling not practical	Manage in place		
				Localized LCP removal from substrate		
				Comprehensive removal of LCP from substrate	$5,000	Yes
				Localized substrate removal		
				Comprehensive substrate removal		
East Point Garage	Beige on interior drywall is in good condition throughout	860	No sample collected as no discrete location was identified and the paint does not require remedial action based on condition	Manage in place	$0	Agree
				Localized LCP removal from substrate		
				Comprehensive removal of LCP from substrate		
				Localized substrate removal		
				Comprehensive substrate removal	$10,000	
East Point Bunkhouse	White on wood exterior siding is in poor condition flaking and peeling over a significant portion of the building - Approximately 70 m^2 in poor condition	2,000	<0.40	Manage in place		
				Localized LCP removal from substrate	$17,500	
				Comprehensive removal of LCP from substrate	$43,750	
				Localized substrate removal	$7,500	
				Comprehensive substrate removal	$15,000	Yes
	Light brown on wood interior doors and trim is in good condition throughout	2,800	No sample collected as no discrete location was identified and the paint does not require remedial action based on condition	Manage in place	$0	Agree
				Localized LCP removal from substrate		
				Comprehensive removal of LCP from substrate		
				Localized substrate removal	$2,500	
				Comprehensive substrate removal	$5,000	
	Grey on structural steel posts and beams in the basement is in good condition throughout	2,000	Leachate sampling not practical	Manage in place	$0	Agree
				Localized LCP removal from substrate		
				Comprehensive removal of LCP from substrate	$5,000	
				Localized substrate removal		
				Comprehensive substrate removal	$3,000	
East Point Fog Horn Building	White on wood interior walls is in good condition throughout	1,400	No sample collected as no discrete location was identified and the paint does not require remedial action based on condition	Manage in place	$0	Agree
				Localized LCP removal from substrate		
				Comprehensive removal of LCP from substrate		
				Localized substrate removal		
				Comprehensive substrate removal	$10,000	
	Grey on wood interior trim is in good condition throughout	1,200	1.4	Manage in place	$0	Agree
				Localized LCP removal from substrate		
				Comprehensive removal of LCP from substrate		
				Localized substrate removal		
				Comprehensive substrate removal	$2,500	

Table 8-1 Summary of Remedial Action Options GINPR, BC

Building	Paint Description/ Condition/Quantity	Paint Lead Concentration (ppm)	Leachate Concentration (mg/L)	Remedial Action Options	Preliminary Cost Estimate	Proceed with RAP
East Point Fog Horn Building (cont'd)	White on wood exterior siding is generally in good condition with minor flaking and peeling in some locations - Approximately 5 m^2 Note that some flaking paint was observed to be present on the surface of the soil below	3,300	<0.40	Manage in place		
				Localized LCP removal from substrate • Remove the top inch of soil along the wall where flaking paint is present	$6,500	Yes
				Comprehensive removal of LCP from substrate • Remove the top inch of soil along the wall where flaking paint is present	$21,150	
				Localized substrate removal • Remove the top inch of soil along the wall where flaking paint is present	$6,500	
				Comprehensive substrate removal • Remove the top inch of soil along the wall where flaking paint is present	$9,000	
Portlock Point Lighthouse	White on wood exterior is flaking and peeling in some locations (window trim and door) - Approximately 4.5 m^2 Note that some of the wood window trim is deteriorating due to moisture	72,000	0.58	Manage in place		
				Localized LCP removal from substrate		
				Comprehensive removal of LCP from substrate • If ACM building tar and/or window caulking will be disturbed it should be removed prior to LCP remediation	$3,500	Yes
				Localized substrate removal		
				Comprehensive substrate removal • If ACM building tar and/or window caulking will be disturbed it should be removed prior to LCP remediation	$3,500	
	Grey on metal and wood interior trim and stairs is generally in good condition with minor flaking and peeling around the base of the metal light post - Approximately 1 m^2	5,400	<0.40	Manage in place		
				Localized LCP removal from substrate	$3,500	
				Comprehensive removal of LCP from substrate	$3,500	Yes
				Localized substrate removal		
				Comprehensive substrate removal		
	White on interior metal walls and ceiling on the upper level is flaking and peeling throughout - Approximately 15 m^2	2,900	Leachate sampling not practical	Manage in place		
				Localized LCP removal from substrate		
				Comprehensive removal of LCP from substrate • If ACM building tar and/or window caulking will be disturbed it should be removed prior to LCP remediation	$9,000	Yes
				Localized substrate removal		
				Comprehensive substrate removal		
Portlock Point Lighthouse (cont'd)	Red on exterior metal walls and roof on the upper level is flaking and peeling throughout - Approximately 30 m^2 Note that wood trim is present directly below the windows and that the window trim is deteriorating due to moisture	110,000	2.9 for the wood trim which is present directly below the windows No metal sample as leachate sampling not practical	Manage in place		
				Localized LCP removal from substrate		
				Comprehensive removal of LCP from substrate • Remove and replace wood trim • If ACM building tar and/or window caulking will be disturbed it should be removed prior to LCP remediation	$18,000	Yes
				Localized substrate removal		
				Comprehensive substrate removal		

Table 8-1 Summary of Remedial Action Options GINPR, BC

Building	Paint Description/ Condition/Quantity	Paint Lead Concentration (ppm)	Leachate Concentration (mg/L)	Remedial Action Options	Preliminary Cost Estimate	Proceed with RAP
Mahoi House	Cream on wood panel interior walls is in good condition throughout	3,700	No sample collected as no discrete location was identified and the paint does not require remedial action based on condition	Manage in place	$0	Agree
				Localized LCP removal from substrate		
				Comprehensive removal of LCP from substrate		
				Localized substrate removal		
				Comprehensive substrate removal	$5,500	
	White on wood exterior siding is generally in good condition with minor flaking and peeling in some locations - Approximately 40 m^2 in poor condition	56,000	6.8	Manage in place		
				Localized LCP removal from substrate	$20,000	Yes
				Comprehensive removal of LCP from substrate	$80,000	
				Localized substrate removal • Note that wood exterior siding will require disposal as lead leachable waste based on the TCLP results	$40,000	
				Comprehensive substrate removal • Note that wood exterior siding will require disposal as lead leachable waste based on the TCLP results	$50,000	
	Green on wood exterior window trim is in good condition throughout	15,000	No sample collected as no discrete location was identified and the paint does not require remedial action based on condition	Manage in place	$0	Agree
				Localized LCP removal from substrate		
				Comprehensive removal of LCP from substrate	$7,000	
				Localized substrate removal		
				Comprehensive substrate removal	$7,000	
	Gold on wood exterior window frame is in good condition throughout	42,000	No sample collected as no discrete location was identified and the paint does not require remedial action based on condition	Manage in place	$0	Agree
				Localized LCP removal from substrate		
				Comprehensive removal of LCP from substrate	$7,000	
				Localized substrate removal		
				Comprehensive substrate removal	$7,000	
	White/grey on plywood exterior north deck is worn from the surface throughout - Approximately 10 m^2	1,200	No sample collected as no discrete location was identified	Manage in place	$0	Agree
				Localized LCP removal from substrate		
				Comprehensive removal of LCP from substrate	$10,000	
				Localized substrate removal • Although it is unlikely that this material is lead leachable waste based on the lead concertation of the paint TCLP testing may be required prior to its disposal at a landfill		
				Comprehensive substrate removal • Although it is unlikely that this material is lead leachable waste based on the lead concertation of the paint TCLP testing may be required prior to its disposal at a landfill	$8,000	

Table 8-1 Summary of Remedial Action Options GINPR, BC

Building	Paint Description/ Condition/Quantity	Paint Lead Concentration (ppm)	Leachate Concentration (mg/L)	Remedial Action Options	Preliminary Cost Estimate	Proceed with RAP
Russel Island Caretaker's Shed	White on wood exterior siding is in flaking and peeling over a significant portion of the building - Approximately 20 m^2 in poor condition	1,700	<0.40	Manage in place		
				Localized LCP removal from substrate	$12,000	
				Comprehensive removal of LCP from substrate	$20,000	
				Localized substrate removal	$6,000	
				Comprehensive substrate removal	$10,000	Yes
	Green on wood exterior trim is in good condition throughout	2,100	No sample collected as no discrete location was identified and the paint does not require remedial action based on condition	Manage in place	$0	Agree
				Localized LCP removal from substrate		
				Comprehensive removal of LCP from substrate	$7,000	
				Localized substrate removal		
				Comprehensive substrate removal	$3,500	
Russel Island Water Tower	Beige on wood exterior trim is flaking and peeling throughout - Approximately 2 m^2	1,800	No sample collected as no discrete location was identified	Manage in place		
				Localized LCP removal from substrate		
				Comprehensive removal of LCP from substrate	$3,500	
				Localized substrate removal		
				Comprehensive substrate removal • Although it is unlikely that this material is lead leachable waste based on the lead concentration of the paint TCLP testing may be required prior to its disposal at a landfill	$3,500	Yes
Russel Island Generator Shed	Green on wood exterior walls is in good condition throughout	6,500	1.1	Manage in place	$0	Agree
				Localized LCP removal from substrate		
				Comprehensive removal of LCP from substrate	$10,000	
				Localized substrate removal		
				Comprehensive substrate removal	$5,000	

NOTES:
"Leachate sampling not practical" – Indicates substrates that were either not anticipated to be removed for landfill disposal (e.g., metal, concrete); substrates that could not be removed for structural reasons (e.g., concrete floors or foundations); or paints that could not be removed in sufficient quantity to allow for leachate testing of the paint only.
"No sample collected as no discrete location was identified" – Indicates a building with heritage value where the sampling process would effectively create visible damage to the building.

9.0 CLOSURE

This report has been prepared for the sole benefit of the Parks Canada Agency. Any use which a third party makes of this report, or any reliance on decisions based on it, is the responsibility of such third parties. Stantec Consulting Ltd. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

The information and conclusions contained in this report are based upon work undertaken by trained professionals and technical staff in accordance with generally accepted engineering, scientific and occupational health and safety practices current at the time the work was performed. Conclusions presented in this report should not be construed as legal advice.

The conclusions presented in this report represent the best technical judgment of Stantec Consulting Ltd. based on the data obtained from the work. The conclusions are based on the site conditions encountered by Stantec Consulting Ltd. at the time the work was performed at the specific assessment and/or sampling locations, and can only be extrapolated to an undefined limited area around these locations. The extent of the limited area depends on building construction and conditions, weather, building usage and other factors. Due to the nature of the investigation and the limited data available, Stantec Consulting Ltd. cannot warrant against undiscovered environmental or health and safety liabilities.

If any conditions become apparent that differ significantly from our understanding of conditions as presented in this report, we request that we be notified immediately to reassess the conclusions provided herein.

Closure
January 19, 2018

We trust that the above is satisfactory for your purposes at this time. Should you have any questions or concerns, or require additional information, please do not hesitate to contact the Stantec Project Manager at your convenience.

Regards,

STANTEC CONSULTING LTD.

Keith Irwin, Dipl.Tech.
Technologist
Phone: (604) 412-3016
Keith.Irwin@stantec.com

Tiffany Waite, B.Sc.
Associate
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This report was approved for transmittal by:

Sean Brigden, B.Sc., P.B.Dipl, CRSP
Senior Associate
Phone: (250) 655-6062
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APPENDIX A
LABORATORY ANALYTICAL REPORT—
LEAD: PAINT CHIP ANALYSIS

EMSL Analytical, Inc.
6340 CastlePlace Dr., Indianapolis, IN 46250
Phone/Fax: (317) 803-2997 / (317) 803-3047
http://www.EMSL.com indianapolislab@emsl.com

EMSL Order: 161718958
CustomerID: JACQ30L
CustomerPO:
ProjectID:

Attn: **Keith Irwin**
Stantec Consulting, LTD
500 - 4730 Kingsway
Burnaby, BC V5H 0C6

Phone: (604) 412-3004
Fax:
Received: 10/05/17 10:00 AM
Collected:

Project: **123220964**

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

Client SampleDescription	*Collected*	*Analyzed*	*RDL*	*Lead Concentration*
GPB-PB-04		10/5/2017	100 ppm	110 ppm
161718958-0001	Site: S Wall - White on Concrete Exterior Walls			
GPB-PB-06		10/5/2017	100 ppm	700 ppm
161718958-0002	Site: NE Exterior - Grey on Concrete Exterior Slab			
GPL-PB-06		10/5/2017	100 ppm	2300 ppm
161718958-0003	Site: Tower Base - Cream on Metal Door			
GPL-PB-07		10/5/2017	100 ppm	2400 ppm
161718958-0004	Site: Tower Base - Grey on Concrete Floor			
GPH-P-06		10/5/2017	2500 ppm	37000 ppm
161718958-0005	Site: Exterior SE Under Deck - White on Concrete Deck Edge			
GPH-P-07		10/5/2017	100 ppm	2000 ppm
161718958-0006	Site: Exterior SE Deck - Red onWood Hand Railing			
EB-PB-07		10/5/2017	100 ppm	<100 ppm
161718958-0007	Site: E Basement - Beige on Concrete Foundation Walls			
EB-PB-08		10/5/2017	100 ppm	2000 ppm
161718958-0008	Site: W Basement - Grey on Structural Steel Posts & Beams			
EB-PB-00		10/5/2017	100 ppm	<100 ppm
161718958-0009	Site: W Basement - Red on Structural Steel Posts & Beams			
EL-PB-04		10/5/2017	100 ppm	1100 ppm
161718958-0010	Site: Tower Base - White on Concrete Tower Footing			
EPG-PB-01		10/5/2017	100 ppm	320 ppm
161718958-0011	Site: Meeting Room - White Interior Drywall			

Doug Wiegand, Laboratory Manager
or other approved signatory

*Analysis following Lead in Paint by EMSL SOP/Determination of Environmental Lead by FLAA. Reporting limit is 0.010 % 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 that 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 Analytical, Inc. Indianapolis, IN AIHA-LAP, LLC--ELLAP 157245, OH E10040

Initial report from 10/05/2017 15:17:01

EMSL Analytical, Inc.
6340 CastlePlace Dr., Indianapolis, IN 46250
Phone/Fax: (317) 803-2997 / (317) 803-3047
http://www.EMSL.com indianapolislab@emsl.com

EMSL Order: 161718958
CustomerID: JACQ30L
CustomerPO:
ProjectID:

Attn: **Keith Irwin**
Stantec Consulting, LTD
500 - 4730 Kingsway
Burnaby, BC V5H 0C6

Phone: (604) 412-3004
Fax:
Received: 10/05/17 10:00 AM
Collected:

Project: **123220964**

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

Client SampleDescription	*Collected*	*Analyzed*	*RDL*	*Lead Concentration*
EPG-PB-02		10/5/2017	100 ppm	860 ppm
161718958-0012	Site: Garage 2 - Beige Interior Drywall			
EPG-PB-03		10/5/2017	140 ppm	<140 ppm
161718958-0013	Site: Office - Grey Interior Wood Trim			
EPG-PB-04		10/5/2017	100 ppm	<100 ppm
161718958-0014	Site: NE Exterior - Grey Exterior Concrete Foundation Wall			
GG-PB-01		10/5/2017	100 ppm	<100 ppm
161718958-0015	Site: Exterior - Brown Wood			
MH-PB-07		10/5/2017	100 ppm	1200 ppm
161718958-0016	Site: N Exterior White/Grey Exterior Plywood Deck			

Doug Wiegand, Laboratory Manager
or other approved signatory

*Analysis following Lead in Paint by EMSL SOP/Determination of Environmental Lead by FLAA. Reporting limit is 0.010 % 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 that 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 Analytical, Inc. Indianapolis, IN AIHA-LAP, LLC--ELLAP 157245, OH E10040

Initial report from 10/05/2017 15:17:01

APPENDIX B
LABORATORY ANALYTICAL REPORT—
LEAD: TCLP

EMSL Analytical, Inc.
6340 CastlePlace Dr., Indianapolis, IN 46250
Phone/Fax: (317) 803-2997 / (317) 803-3047
http://www.EMSL.com indianapolislab@emsl.com

EMSL Order:	161718978
CustomerID:	JACQ30L
CustomerPO:	123220964
ProjectID:	

Attn: **Keith Irwin**
Stantec Consulting, LTD
500 - 4730 Kingsway
Burnaby, BC V5H 0C6

Phone: (604) 412-3004
Fax:
Received: 10/05/17 10:00 AM
Collected:

Project: **123220964**

Test Report: Toxicity Characteristic Leaching Procedure (SW846, 1311/7420)

Client SampleDescription	*Collected*	*Analyzed*	*RDL*	*Lead Concentration*
EL-LL-03		10/6/2017	0.40 mg/L	0.89 mg/L
161718978-0001	Site: Tower Base - Red Steel Frame			
MHGS-LL-01		10/6/2017	0.40 mg/L	1.1 mg/L
161718978-0002	Site: Exterior Green Wood			
GPH-LL-03		10/6/2017	0.40 mg/L	<0.40 mg/L
161718978-0003	Site: Exterior North - White Exterior Wood Siding			
GPH-LL-04		10/6/2017	0.40 mg/L	<0.40 mg/L
161718978-0004	Site: Exterior SE - Grey Exterior Wood Trim			
GPH-LL-07		10/6/2017	0.40 mg/L	<0.40 mg/L
161718978-0005	Site: Exterior SE - Red on Wood Hand Railing			
EB-LL-02		10/6/2017	0.40 mg/L	<0.40 mg/L
161718978-0006	Site: Exterior W - White Exterior Wood Siding			
MHCS-LL-01		10/6/2017	0.40 mg/L	<0.40 mg/L
161718978-0007	Site: Exterior NW - White Exterior Wood Siding			
EF-LL-02		10/6/2017	0.40 mg/L	1.4 mg/L
161718978-0008	Site: Stairs at Attic - Grey Interior Wood Trim			
EF-LL-03		10/6/2017	0.40 mg/L	<0.40 mg/L
161718978-0009	Site: Exterior N - White Exterior Wood Siding			
PP-LL-01		10/6/2017	0.40 mg/L	0.58 mg/L
161718978-0010	Site: Window - White Exterior Wood Trim			
PP-LL-02		10/6/2017	0.40 mg/L	<0.40 mg/L
161718978-0011	Site: Stairs - Grey Interior Wood Stairs			

Doug Wiegand, Laboratory Manager
or other approved signatory

This report relates only to those items tested. Samples received in good condition unless otherwise noted. Quality Control Data associated with this sample set is within acceptable limits, unless otherwise noted

Samples analyzed by EMSL Analytical, Inc. Indianapolis, IN

Initial report from 10/06/2017 16:22:14

EMSL Analytical, Inc.
6340 CastlePlace Dr., Indianapolis, IN 46250
Phone/Fax: (317) 803-2997 / (317) 803-3047
http://www.EMSL.com indianapolislab@emsl.com

EMSL Order:	161718978
CustomerID:	JACQ30L
CustomerPO:	123220964
ProjectID:	

Attn: **Keith Irwin**
Stantec Consulting, LTD
500 - 4730 Kingsway
Burnaby, BC V5H 0C6

Phone: (604) 412-3004
Fax:
Received: 10/05/17 10:00 AM
Collected:

Project: **123220964**

Test Report: Toxicity Characteristic Leaching Procedure (SW846, 1311/7420)

Client SampleDescription	*Collected*	*Analyzed*	*RDL*	*Lead Concentration*
PP-LL-04		10/6/2017	0.40 mg/L	2.9 mg/L
161718978-0012	Site: Light Tower Exterior - Red Exterior Wood			
MH-LL-03		10/6/2017	0.40 mg/L	6.8 mg/L
161718978-0013	Site: Exterior SE - White Exterior Wood Siding			

Doug Wiegand, Laboratory Manager
or other approved signatory

This report relates only to those items tested. Samples received in good condition unless otherwise noted. Quality Control Data associated with this sample set is within acceptable limits, unless otherwise noted

Samples analyzed by EMSL Analytical, Inc. Indianapolis, IN

Initial report from 10/06/2017 16:22:14

APPENDIX C
LABORATORY ANALYTICAL REPORT—ASBESTOS: BULK MATERIAL ANALYSIS

EMSL Canada Inc.

4506 Dawson Street Burnaby, BC V5C 4C1
Phone/Fax: 604-757-3158 / (604) 757-4731
http://www.EMSL.com / vancouverlab@EMSL.com

EMSL Canada Order 691702357
Customer ID: 55JACQ30L
Customer PO:
Project ID:

Attn: Keith Irwin
Stantec Consulting, Ltd.
500 - 4730 Kingsway
Burnaby, BC V5H 0C6

Phone: (604) 412-3004
Fax:
Collected:
Received: 10/04/2017
Analyzed: 10/05/2017

Proj: 123220964 - GEORGINA POINT WEATHER STATION, MAHOI HOUSE CARETAKERS SHED, EAST POINT GARAGE

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: GPB-VFT-01 ***Lab Sample ID:*** **691702357-0001**
Sample Description: BLACK FLOOR TILE MASTIC/WEATHER ROOM

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
400 PLM PtCt Grav. Red.	10/05/2017	Brown	0.0%	100%	**<0.25% Chrysotile**	

Client Sample ID: MHCS-CP-01 ***Lab Sample ID:*** **691702357-0002**
Sample Description: CEMENT PANEL/NORTHWEST EXTERIOR

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	10/05/2017	Gray	0%	80%	**20% Chrysotile**	

Client Sample ID: EPG-DJC-01A ***Lab Sample ID:*** **691702357-0003**
Sample Description: DRYWALL JOINT COMPOUND/GARAGE 1

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	10/05/2017	White	0%	100%	None Detected	

Client Sample ID: EPG-DJC-01B ***Lab Sample ID:*** **691702357-0004**
Sample Description: DRYWALL JOINT COMPOUND/GARAGE 2

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	10/05/2017	White	0%	100%	None Detected	

Client Sample ID: EPG-DJC-01C ***Lab Sample ID:*** **691702357-0005**
Sample Description: DRYWALL JOINT COMPOUND/GARAGE 3

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	10/05/2017	White	0%	100%	None Detected	

Client Sample ID: EPG-WPC-01A ***Lab Sample ID:*** **691702357-0006**
Sample Description: BLACK WINDOW PANE CAULKING/OFFICE

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	10/05/2017	Black	0.0%	99.3%	**0.72% Chrysotile**	

Client Sample ID: EPG-WPC-01B ***Lab Sample ID:*** **691702357-0007**
Sample Description: BLACK WINDOW PANE CAULKING/MEETING ROOM

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	10/05/2017				Positive Stop (Not Analyzed)	

EMSL Canada Inc.

4506 Dawson Street Burnaby, BC V5C 4C1
Phone/Fax: 604-757-3158 / (604) 757-4731
http://www.EMSL.com / vancouverlab@EMSL.com

EMSL Canada Order 691702357
Customer ID: 55JACQ30L
Customer PO:
Project ID:

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: EPG-WPC-01C ***Lab Sample ID:*** **691702357-0008**

Sample Description: BLACK WINDOW PANE CAULKING/OFFICE

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	10/05/2017				Positive Stop (Not Analyzed)	

Analyst(s):

Kathleen Cruz PLM (4)
400 PLM PtCt Grav. Red (1)
PLM Grav. Reduction (1)

Reviewed and approved by:

Nicole Yeo, Laboratory Manager
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 of the U.S. Government.

Samples analyzed by EMSL Canada Inc. Burnaby, BC

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