- **Community & Government Services, Government of Nunavut**

Designated Substances Survey, Signal Hill Water Treatment Plant, Resolute Bay, Nunavut

Type of Document:
Final

Project Number:
OTT-00206333-B0

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Date Submitted:
March 18, 2019

Community and Government Services, Government of Nunavut

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Date Submitted:
March 18, 2019

Legal Notification

This report was prepared by EXP Services Inc. for the account of the **Government of Nunavut**.

Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. EXP Services Inc. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this project.

Executive Summary

EXP Services Inc. (EXP) was retained by the Community and Government Services Department, Government of Nunavut (CGS) to complete a designated substance survey (DSS) of the Signal Hill Water Treatment Plant building in Resolute Bay, Nunavut. It is our understanding that the client is completing this work as part of their due diligence prior to facility upgrades.

The subject building is constructed of steel framed/metal clad building on a poured concrete slab, and houses water pumps, boilers, and a water chlorination system. The exterior is entirely clad in factory painted metal panels. The interior is finished with more factory painted metal cladding on the walls and ceiling, with fibreglass insulation between both panel layers. The building is hexagonal in footprint with an interior area of approximately 10 m x 11 m. Below the floor slab are pipe runs linking the water storage tank to the system, as well as an outlflow to the utilidor water services.

The main objectives of the DSS were as follows:

- To identify the presence of designated substances and other special handling materials;
- To quantify the amounts of designated substances and special handling materials at the structure site; and,
- To evaluate if such substances pose a health risk to demolition contractors, and to make recommendations to eliminate such risks.

The survey included a review of the designated substances with particular emphasis placed on (but not limited to): asbestos-containing materials (ACMs); lead-based paints and lead-containing materials; mercury-based paints and mercury-containing equipment; and, potential sources of silica.

Based on the completion of the DSS, the following designated substances and special handling materials were identified at the site:

- Asbestos;
- Lead-based paints;
- Mercury;
- PCB (assumed); and,
- Silica.

No other designated substances or special handling materials were identified. The recommended remedial/management options for each of the designated substances and/or special handling materials identified during the survey are presented within the report.

Table EX-1: DSS Summary

Substance	Description	Recommendation
Asbestos	AS-1 Black fire-stop putty	If this material is to be disturbed, the fire stop putty is to be removed using a Low Risk procedure as per the Workers' Safety and Compensation Commission's (WSCC) *Code of Practice, Asbestos Abatement, September 2018,* Section 5.2 - *Low Risk Abatement Activities*. Disposal of the fire-stop putty must conform with Government of Nunavut Environmental Guideline for Waste Asbestos, January 2011.
Lead	SH-PS-1 Grey floor paint SH-PS-3 Dark grey wood backboard paint CL-PS-1 Exterior blue paint (assumed)	As part of any renovations or demolitions, site personnel should be provided with necessary protective equipment to reduce the risk of lead-dust inhalation to any workers if the painted surfaces are being disturbed. Activities involving abrasion or sanding of painted surfaces should be minimized. Appropriate personal protective equipment (i.e., respirators, gloves, and eye protection) should be worn when undertaking any such activities. It is recommended that the WSCC Code of Practice, Working with Lead Guideline, May 2017, be referred to when dealing with any painted surface. Prior to the disposal of building materials with lead-based paint firmly bound to the substrate, a leachate test (TCLP analysis) of representative demolition debris is recommended to determine the material's leachable concentration of lead. Potential disposal locations for demolition waste should be advised of the TCLP analytical results.
Mercury	28 Fluorescent Light tubes	As per the Government of Nunavut Environmental Guideline for Mercury-Containing Products and Waste Mercury, November 2010, due to the lack of any recycling facility in proximity to the territory, the disposal of fluorescent light tubes in the municipal landfills is at the discretion of that municipality. The Resolute Bay Hamlet Office is required to be consulted prior to disposal of any mercury equipment in the local landfill.
PCB	13 light fixture ballasts (potential PCBs)	When the fluorescent light ballasts are to be removed from service, they should be stockpiled and assessed for PCB content by comparing the coding on the surface of each ballast with the Environment Canada (publication EPS 2/CC/2 entitled "Identification of Lamp Ballasts Containing PCBs", revised August 1991). Ballasts that are found to be PCB-containing should be separated from non-PCB-containing ballasts and then taken to a licensed PCB destruction facility. Ballasts should be considered to contain PCBs if they were manufactured prior to July 1, 1980, do not have any marking to indicate their date of manufacture, or do not have any wording to indicate they do not contain PCBs.
Silica	Poured Concrete	It is recommended that the Ontario Ministry of Labour's Guideline "*Silica on Construction Projects*", April 2011, be referred to when dealing with silica-containing materials.

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1 Introduction and Background

1.1 Introduction

EXP Services Inc. (EXP) was retained by the Community and Government Services Department, Government of Nunavut (CGS) to complete a designated substance survey (DSS) of the Signal Hill Water Treatment Plant building in Resolute Bay, Nunavut. It is our understanding that the client is completing this work as part of their due diligence prior to facility upgrades.

1.2 Background

The subject building is constructed of steel framed/metal clad building on a poured concrete slab, and houses water pumps, boilers, and a water chlorination system. The exterior is entirely clad in factory painted metal panels. The interior is finished with more factory painted metal cladding on the walls and ceiling, with fibreglass insulation between both panel layers. The building is hexagonal in footprint with an interior area of approximately 10 m x 11 m. Below the floor slab are pipe runs linking the water storage tank to the system, as well as an outlflow to the utilidor water services.

1.3 Objectives

The main objectives of the DSS were as follows:

- To identify the presence of designated substances and other special handling materials;
- To quantify the amounts of designated substances and special handling materials within the structure; and,
- To evaluate if such substances pose a health risk to demolition contractors, and to make recommendations to eliminate such risks.

1.4 Scope of Work

To accomplish the above-noted objectives, the following scope of work was followed:

- Conduct a systematic inspection of all accessible areas of the structure to document the location, type, quantity, and condition of designated substances and special handling materials;
- Collect and record representative building material samples for potential laboratory analysis;
- Submit representative bulk samples for asbestos analysis and paint samples for lead laboratory analyses; and,
- Interpret analytical results and prepare a detailed survey report identifying the type, location, and condition of the designated substances and special handling materials on the site.

The DSS survey included all of the designated substances defined by the OHSA. Although there are no specific Nunavut regulations for Designated Substance Surveys, CGS exercises its due diligence by completing a DSS prior to demolition. The survey includes, with particular emphasis placed on (but not limited to):

- Asbestos-containing materials;
- Lead-based paints and plumbing;

- Mercury-containing equipment; and,
- Potential sources of silica.

Special handling materials that were incorporated into the survey include:

- PCB-containing equipment;
- Ozone-depleting substances;
- Urea-formaldehyde foam insulation;
- Bird and animal droppings; and,
- Mould.

2 Survey Methodology and Assessment Criteria

2.1 Site Inspection

Carl Hentschel of EXP conducted the survey on March 6, 2019. The DSS consisted of a thorough systematic inspection of all accessible areas of the building to document the location, type, quantity, and condition of designated substances and special handling materials. The following **limitations** were present as part of the site visit:

- Visual observations in the mechanical areas below grade were limited to the extents visible from ground surface.
- Piping and mechanical equipment were not dismantled / disassembled as they were operational.
- Fluorescent light fixtures could not be dismantled in order to examine the ballasts as they were not accessible/no ladder was available.
- During the on-site assessment, snow cover restricted the inspection of the exterior surface of the floor slab / foundation of the subject structure.
- Both the active and de-activated water tanks attached to the main building were not assessed as part of this survey.

It is possible that designated substances may be present in concealed and inaccessible areas that was not feasibly assessed as part of this program. EXP's survey of the subject location was based on clear, unobstructed visual identification of suspect designated substances and hazardous building materials.

Selected photographs taken during the survey have been included in Appendix A. Details regarding the approach used in conducting the field investigation including sampling procedures and analytical methodologies are outlined in the following sections.

2.2 Asbestos-Containing Materials

The asbestos survey was undertaken in general conformance with the Workers' Safety and Compensation Commission's (WSCC) *Code of Practice, Asbestos Abatement, September 2018*, and specifically section *5.6.4 – Sampling of materials suspected to contain asbestos*.

During the survey, minor destructive test openings were made in some materials where access permitted. Potential ACMs were classified as being either friable or non-friable. Friable material is defined as: *material that, when dry, can be crumbled, pulverized or powdered by hand pressure, or is crumbled, pulverized or powdered*.

A total of three (3) samples from one (1) material were collected for asbestos analysis. The number of samples that were submitted for laboratory analysis was based on Table 1 which is a summary of sample requirements from the WSCC *Code of Practice, Asbestos Abatement*.

This number of samples was considered representative based on observations pertaining to like building materials and the minimum sampling requirements (see Table 1 below).

All asbestos samples were submitted to Paracel Laboratories Limited (Paracel) in Ottawa, which is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP) by the National Institute of Standards and Technology for analysis of bulk materials for asbestos.

Table 1: Minimum of Asbestos Bulk Material Sample Requirements

Type of Material	Size of Area of Homogeneous Material	Minimum Number of Bulk Material Samples to be Collected
Any homogenous material, including but not limited to fireproofing, drywall joint compound, ceiling tile stucco, acoustical and stipple finishes and visually similar floor tiles.	Less than 90 m2 (<1000 ft^2)	3
	90 or more square metres, but less than 450 square metres (1000-5000 ft^2)	5
	450 or more square metres (>5000 ft^2)	7

Analyses were performed in accordance with:

- NIOSH Method 9002, Asbestos (bulk) by PLM;
- NIOSH Method 9000, Asbestos Chrysotile by XRD (if the material is chrysotile); or
- EPA/600/R-93-116 Method for the Determination of Asbestos in Bulk Building Materials.

In accordance with Government of Nunavut *Environmental Guideline for Waste Asbestos*, January 2011, ACM is defined as a material that contains 1% or more (dry weight) asbestos by volume with one sample of a homogenous material.

2.3 Lead-Based Paints and Lead Containing Materials

All painted areas of significant size and different colours were sampled and analyzed for lead. Areas, where several layers of paint existed, did not necessarily have identification of each layer unless the paint was in poor condition. However, every attempt to identify the number and colours of the layers was made.

Five (5) paint samples were collected, which is considered representative based on observations pertaining to contiguous areas showing similar painted surfaces. Since paint is processed in large batches, paint composition is assumed to be spatially consistent during and after application.

All paint chip samples were submitted to Paracel, which is accredited by the American Industrial Hygiene Association (AIHA) National Lead Laboratory Accreditation Program (NLLAP). Analyses were performed by Atomic Absorption Spectrophotometry (AAS).

According to the Government of Nunavut *Environmental Guideline for Waste Lead and Lead Paint*, *April 2014*, paints having a lead content greater than 100 mg/kg are considered to be lead-based.

The results of the lead sampling are summarized in **Section 3.2**.

2.4 Mercury-Containing Equipment

The structure was visibly inspected for equipment that could release mercury liquid/vapour during proposed demolition work programs. The results of the mercury inspection are summarized in **Section 3.3**.

2.5 Other Designated Substances

A visual survey of the structure was made to identify the presence of any other designated substances including:

- Silica;
- PCB-containing equipment;
- Ozone-depleting substances;
- Urea-formaldehyde foam insulation;
- Bird and animal droppings;
- Mould; and,
- Coke oven emissions, acrylonitrile, arsenic, benzene, ethylene oxide, isocyanates, and vinyl chloride.

The visual survey consisted of identifying the aforementioned substances or other materials/equipment that are commonly associated with these substances. The results are summarized in **Section 3.4** through **Section 3.10**.

3 Survey Findings and Recommendations

Pertinent site photographs are presented in Appendix A. A summary table of the wall/ceiling/floor construction of the structure, suspected asbestos materials, suspect lead paints, sampling locations, and associated analytical results is presented in Appendix B. The laboratory certificates for asbestos and lead analysis is included in Appendix C.

3.1 Asbestos-Containing Materials

3.1.1 Friable Materials

No potentially asbestos containing friable materials were observed, and therefore none were sampled as part of this survey.

3.1.2 Non-Friable

The following non-friable materials were observed at two intrusion points, sampled, and determined to contain asbestos:

- The black firestop putty observed around a few wall penetrations by power lines was determined to contain 10% chrysotile asbestos.

Recommendations: In the event of the disturbance or removal of the fire stop putty, a Low Risk procedure is to be followed as per the WSCC's *Code of Practice, Asbestos Abatement, September 2018*, *Section 5.2 - Low Risk Abatement Activities*.

Disposal of the fire-stop putty must conform with Government of Nunavut *Environmental Guideline for Waste Asbestos*, January 2011.

3.2 Lead-Based Paints and Lead-Containing Materials

The analytical results from the sampling program indicated that the two paint samples collected displayed lead levels that is above the applicable Territorial criteria of 100 mg/kg (100 ppm).

Based on the results, the following painted surfaces at the site are to be considered lead-based paints:

- SH-PS-01 (1390 ppm): Grey floor paint. The paint was deemed to be in fair to poor condition with areas of excessive peeling / flaking.
- SH-PS-03 (943 ppm): Dark grey wooden backing board paint. The paint was deemed to be in good condition with no evidence of excessive peeling / flaking.

Note: As no suitable location for the sampling of the exterior blue paint was available at this building, the visual similar exterior paint sample from the Char Lake Pump House was used. Laboratory analysis of this sample of the exterior blue paint (CL-PS-1) required an increase to mean detection limit that exceeded the regulatory baseline criteria for lead. As such, this paint coating can be assumed to be lead-based until further analysis is conducted.

Recommendations: As part of any renovations or demolitions, site personnel should be provided with necessary protective equipment to reduce the risk of lead-dust inhalation to any workers if the painted surfaces are being disturbed. Activities involving abrasion or sanding of painted surfaces should be minimized. Appropriate personal protective equipment (i.e., respirators, gloves, and eye protection) should be worn when undertaking any such activities. It is recommended that the WSCC *Code of Practice, Working with Lead Guideline*, *May 2017*, be referred to when dealing with any painted surface.

Prior to the disposal of building materials with lead-based paint firmly bound to the substrate, a leachate test (TCLP analysis) of representative demolition debris is recommended to determine the material's leachable concentration of lead. Potential disposal locations for demolition waste should be advised of the TCLP analytical results.

3.3 Mercury-Containing Equipment

Approximately twenty-eight (28) T12 fluorescent light tubes were observed during the survey. No other mercury-containing equipment was identified during the site visit.

Recommendations: As per the Government of Nunavut *Environmental Guideline for Mercury-Containing Products and Waste Mercury, November 2010*, due to the lack of any recycling facility in proximity to the territory, the disposal of fluorescent light tubes in the municipal landfills is at the discretion of that municipality. The Resolute Bay Hamlet Office is required to be consulted prior to disposal of any mercury equipment in the local landfill.

3.4 Silica

Materials that likely contain silica within the structure include:

- Poured concrete foundation.

No silica-associated debris was observed during the survey.

Recommendations: Airborne silica can be generated through such processes as blasting, grinding, crushing, and sandblasting silica-containing material. Precautions must be taken to prevent silica-containing particles from becoming airborne during the application of such processes. Such precautions include wetting of silica-containing area(s) to be disturbed and daily wet sweeping or HEPA vacuuming of silica dust. Additionally, appropriate respiratory protection and ventilation must be utilized during the disturbance of silica-containing structures. The aforementioned recommendations and precautions should be adhered to during the demolition of the structure.

In the absence of any Territorial guideline on silica (other than sandblasting), it is recommended that the Ontario Ministry of Labour's Guideline "*Silica on Construction Projects*", April 2011, be referred to when dealing with silica-containing materials during demolition.

3.5 Other Designated Substances

Based on field observations and the on-site activities, there is no reason to believe that the following substances are present in the construction materials of the structure in sufficient quantities to exceed the Ministry of Labour exposure limits: vinyl chloride, isocyanates, arsenic, ethylene oxide, benzene, or acrylonitrile.

3.6 PCB-Containing Equipment

Fluorescent light fixture ballasts were identified as the sole potential sources of PCBs during the survey, as they may contain PCB-bearing oils. However, these were not accessible during the site visit.

Recommendations: The handling and removal of any PCB-containing equipment, including storage, should be conducted as specified in Federal Regulations SOR/2008-273.

When the fluorescent light ballasts are to be removed from service, they should be stockpiled and assessed for PCB content by comparing the coding on the surface of each ballast with the Environment Canada (publication EPS 2/CC/2 entitled "*Identification of Lamp Ballasts Containing PCBs*", revised August 1991). Ballasts that are found to be PCB-containing should be separated from non-PCB-containing ballasts and then taken to a licensed PCB destruction facility. Ballasts should be considered to

contain PCBs if they were manufactured prior to July 1, 1980, do not have any marking to indicate their date of manufacture, or do not have any wording to indicate they do not contain PCBs.

3.7 Ozone-Depleting Substances

There was no equipment suspect of containing ODS's within the structure.

Recommendations: There are no recommendations regarding ODS's.

3.8 Urea-Formaldehyde Foam Insulation

No suspected urea-formaldehyde foam insulation or areas where the material would have been injected were identified during the site visit. No evidence of injection holes was observed.

Recommendations: There are no recommendations regarding UFFI.

3.9 Bird and Animal Droppings

Based on the site inspection, no widespread evidence of bird and/or animal droppings was identified by EXP.

Recommendations: There are no recommendations regarding the handling of animal and/or bird droppings.

3.10 Visible Mould

No evidence of mould was observed within the structure at the time of the inspection.

Recommendations: There are no recommendations regarding mould at this time.

4 General Limitations

The services performed and outlined herein were based in part upon visual observations of the site and attendant structures. Our opinion cannot be extended to portions of the site that were unavailable for direct observation by objects or coverings at the time of our observations.

Any of our observations relating to designated substances at the site are described in this report. Where testing was performed, it was executed in accordance with our contract for these services. It should be noted that other compounds or materials not tested for might be present in the building.

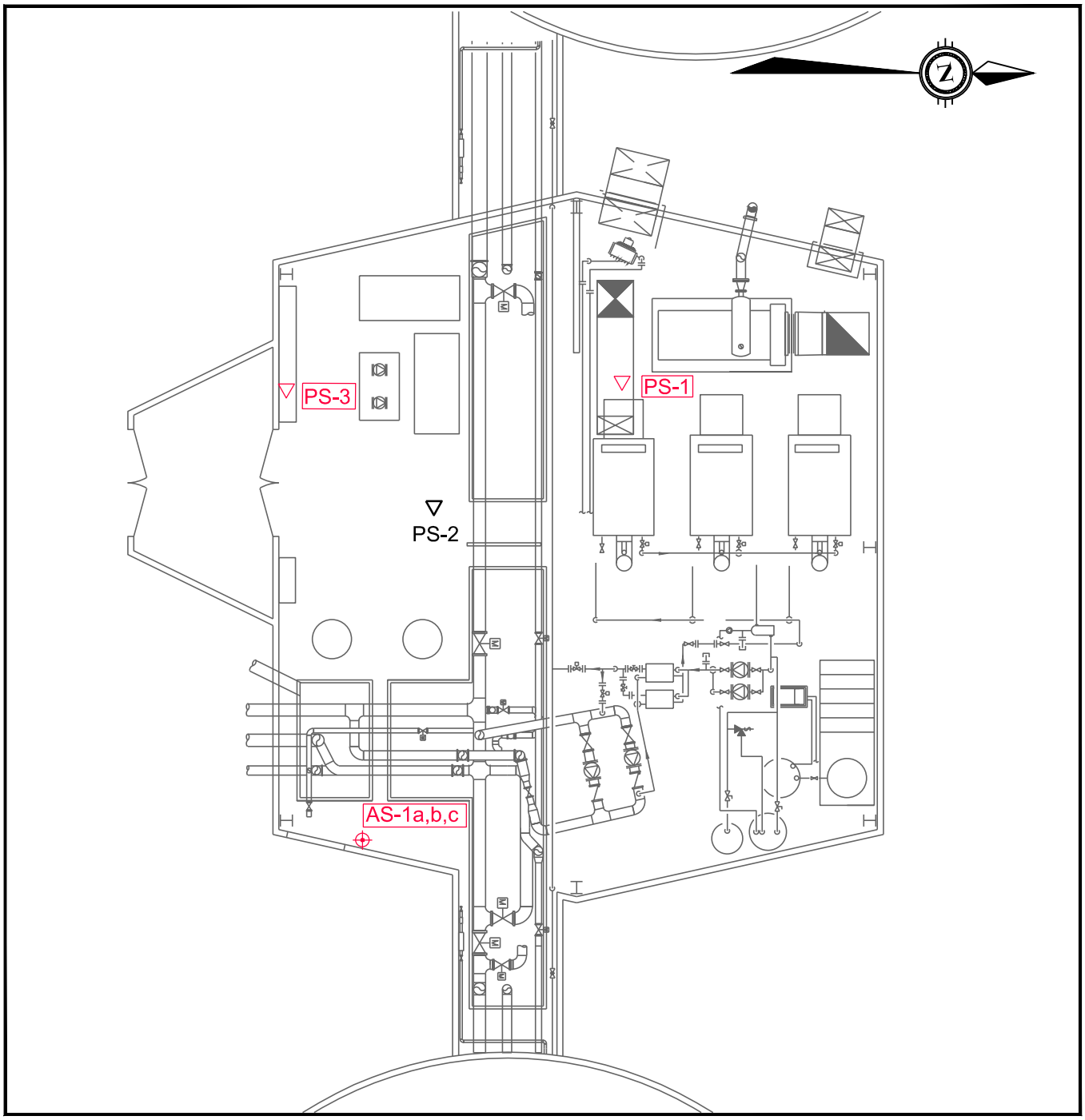
The objective of this report was to survey the environmental conditions at the site within the context of our contract with respect to the existing regulations within the applicable jurisdiction. Compliance of past and current owners with applicable local, territorial, and federal government laws and regulations was not included in our contract for services.

The conclusions of this report are based, in part, on the information provided by others and any testing and analyses described in the report. The possibility remains that unexpected environmental conditions may be encountered at the site locations not explored. Should such an event occur, EXP should be notified in order that we may determine if modifications to our conclusions are necessary.

This report has been prepared in accordance with generally accepted environmental study and/or engineering practices. No other warranties, expressed or implied, are made as to the professional service provided under the terms of our contract and included in this report.

We trust this report is satisfactory for your purposes. If you have any questions regarding our submission, please do not hesitate to contact this office.

Appendix A –
Figures & Site Photographs



LEGEND

AS-X	ASBESTOS SAMPLING LOCATION
AS-X	ASBESTOS EXCEEDENCE OF REGULATORY CRITERIA
PS-X	LEAD PAINT SAMPLING LOCATION
PS-X	LEAD PAINT EXCEEDENCE OF REGULATORY CRITERIA

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Ottawa, ON K2B 8H6, Canada

DATE: MARCH 2019	CLIENT: GOVERNMENT OF NUNAVUT SIGNAL HILL WATER TREATMENT PLANT	project no. OTT-00206333-B0
DESIGN: C.H. / CHECKED: R.R.		scale: 1:100
DRAWN BY: M.N.	TITLE: DSS SURVEY PLAN	FIG 1

Filename: r:\20000\206000\206333-b0 phase 2 char lake pump house\environmental\ott-00206333-b0.dwg
Last Saved: 3/14/2019 10:38:57 AM
Last Plotted:3/14/2019 12:17:43 PM Plotted by: nugentm Pen Table:: trow standard, july 01, 2004.ctb

Photograph No. 1

Overview of the Signal Hill Water Treatment system building (blue structure).
The white water tanks seen to the left and right were not part of the survey scope.

Photograph No. 2

Rear of building

Photograph No. 3

Overview of interior.

Photograph No. 4

Grey on grey floor paint (SH-PS-1)

Photograph No. 5

Silver paint on electrical equipment mounting backboard (SH-PS-2)

Photograph No. 6

Dark grey paint on electrical equipment mounting backboard (SH-PS-3)

Photograph No. 7

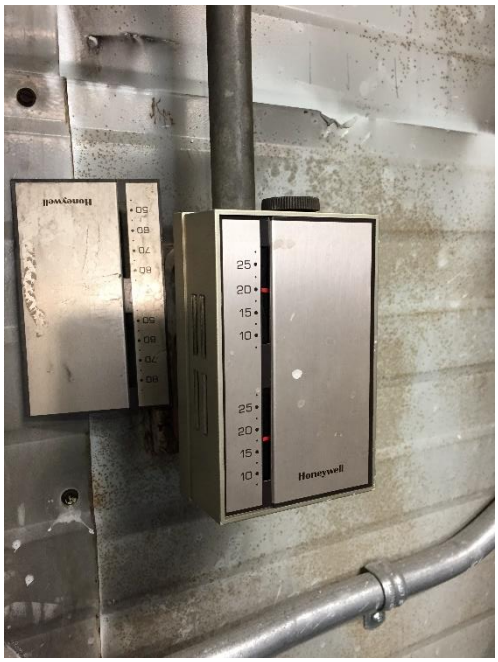
Dark blue paint on metal beams (SH-PS-4)

Photograph No. 8

Black fire-stop putty (SH-AS-1)

Photograph No. 9

Example of fluorescent tube lighting unit



Photograph No. 10

Non-mercury containing thermostat

Appendix B – Summary Table

Signal Hill
Building Summary Table
OTT-00206333-B0

Building Section	General Building Construction					Potential Asbestos-Containing Materials				Lead				Mercury		PCBs	ODS	Mould
	Walls	Floor	Ceiling	Piping / Ductwork	Other	Asbestos Sample Description	Friability (F/NF)	Sample Number	Laboratory Result	Paint	Paint Sample ID	Laboratory Result (ppm)	Condition	Thermostat	Fluorescent Lights			
Exterior	Pre-painted metal cladding	Not visible	Pre-painted metal cladding	--	Painted wood garage door and pre-painted metal doors	No Suspect Materials Identified				Exterior blue	vs CL-PS-1	non-lead*	Good to fair	None	None	None	None	None
Interior	Pre-painted metal sheet with exposed painted metal beams, over fibreglass insulation Layer	Poured concrete	Pre-painted metal sheet with exposed painted metal beams, over fibreglass insulation Layer	Fibreglass insulated pipework throughout the mechanical room	Painted wood garage door and pre-painted metal doors	Black fire-stop putty	NF	AS-01a,b,c	10% [c]	Grey (on darker grey) floor paint	SH-PS-1	906 ppm	Poor/some chipping	None	28 x T12 tubes	14 unknown ballasts	None	None
										Silver wood backboard paint	SH-PS-2	<20 ppm	Good					
										Dark grey wood backboard paint	SH-PS-3	1,140	Good					
										Dark blue beam paint	SH-PS-4 (vs CL-PS-3)	<667*	Good					

ND = not
NA = not
shaded = exceedance of criteria
ASBESTOS = material determined homogeneous with identified asbestos containing material
non-asbestos = material homogenous with sample that does not exceed asbestos criteria
[C] = chrysotile
LEAD = similar paint colour determined to contain lead over regulation criteria
non-lead = similar paint colour determined to not contain lead over regulation criteria
vs = visually similar

Appendix C –
Laboratory Certificates of Analysis

PARACEL LABORATORIES LTD.

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Ottawa, ON, K1G 4J8
1-800-749-1947
www.paracellabs.com

Certificate of Analysis

exp Services Inc. (Ottawa)

100-2650 Queensview Dr.
Ottawa, ON K2B 8K2
Attn: Carl Hentschel

Client PO:
Project: OTT00206333-B
Custody: 36681

Report Date: 12-Mar-2019
Order Date: 11-Mar-2019

Order #: 1911021

This Certificate of Analysis contains analytical data applicable to the following samples as submitted:

Paracel ID	Client ID
1911021-01	CL-AS-1a
1911021-02	CL-AS-1b
1911021-03	CL-AS-1c
1911021-04	SH-AS-1a
1911021-05	SH-AS-1b
1911021-06	SH-AS-1c

Approved By:

Harling Caro
Senior Analyst

PARACEL LABORATORIES LTD.

Order #: 1911021

Certificate of Analysis

Report Date: 12-Mar-2019

Client: exp Services Inc. (Ottawa)

Order Date: 11-Mar-2019

Client PO:

Project Description: OTT00206333-B

Asbestos, PLM Visual Estimation **MDL - 1.0%**

Paracel ID	Sample Date	Colour	Description	Asbestos Detected	Material Identification	% Content
1911021-01	06-Mar-19	Black	Putty	No	**Client ID: CL-AS-1a**	
					Cellulose	5
					Non-Fibers	95
1911021-02	06-Mar-19	Black	Putty	No	**Client ID: CL-AS-1b**	
					Cellulose	5
					Non-Fibers	95
1911021-03	06-Mar-19	Black	Putty	No	**Client ID: CL-AS-1c**	
					Cellulose	5
					Non-Fibers	95
1911021-04	06-Mar-19	Black	Putty	**Yes**	**Client ID: SH-AS-1a**	
					Chrysotile	10
					Non-Fibers	90
1911021-05	06-Mar-19				**Client ID: SH-AS-1b**	
					not analyzed	
1911021-06	06-Mar-19				**Client ID: SH-AS-1c**	
					not analyzed	

**** Analytes in bold indicate asbestos mineral content.**

Analysis Summary Table

Analysis	Method Reference/Description	Lab Location	NVLAP Lab Code *	Analysis Date
Asbestos, PLM Visual Estimation	by EPA 600/R-93/116	- Ottawa West Lal	200812-0	11-Mar-19

* Reference to the NVLAP term does not permit the user of this report to claim product certification , approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

Work Order Revisions | Comments

None

PARACEL LABORATORIES LTD.

1911021

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acel@paracellabs.com

Chain of Custody
(Lab Use Only)
№ 36681

Page 1 of 1

Client Name: EXP SERVICES	Project Reference: 206337-B
Contact Name: CARL HENTSCHEL	Quote #:
Address:	PO #:
Telephone: 613.277.7578	Email Address: CARL.HENTSCHEL@EXP.COM

Turnaround Time:
- ☐ Immediate
- ☒ 1 Day
- ☐ 4 Hour
- ☐ 2 Day
- ☐ 8 Hour
- ☐ 3 Day
- ☐ Regular

Date Required: _____

ASBESTOS & MOLD ANALYSIS

Matrix: ☐ Air ☐ Bulk ☐ Tape Lift ☐ Swab ☒ Other **Regulatory Guideline:** ☐ ON ☐ QC ☐ AB ☐ SK ☒ Other: NU

Analyses: ☐ Microscopic Mold ☐ Culturable Mold ☐ Bacteria GRAM ☒ PCM Asbestos ☐ PLM Asbestos ☐ Chatfield Asbestos ☐ TEM Asbestos

	Paracel Order Number: 1911021 / Sample ID	Sampling Date	Air Volume (L)	Analysis Required	Asbestos - Bulk: Identify Distinct Building Materials to Be Analyzed (if not specified, all materials identified will be analyzed) *	Positive Stop?
1	CL-AS-1a-c	March			BLACK PUTTY	☑
2	SH-AS-1a-c	↓			BLACK PUTTY	☑
3						☐
4						☐
5						☐
6						☐
7						☐
8						☐
9						☐
10						☐
11						☐
12						☐

* If left blank, all distinct materials identified in the samples will be analyzed and reported separately as per EPA 600/R-93/116. Additional charges will apply.

Comments:

Method of Delivery: walk in

Relinquished By (Sign):	Received at Depot: Kim Stewart	Received at Lab: Karen Cull	Verified By: Karen Cull
Relinquished By (Print): CARL H.			
Date/Time: MAR 11, 2019	Date/Time: March 11, 19 9:08	Date/Time: Mar 11/19 10:02	Date/Time: Mar 11/19 10:08

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1-800-749-1947
www.paracellabs.com

Certificate of Analysis

exp Services Inc. (Ottawa)

100-2650 Queensview Dr.
Ottawa, ON K2B 8K2
Attn: Carl Hentschel

Client PO:
Project: OTT000206333B
Custody: 47000

Report Date: 12-Mar-2019
Order Date: 11-Mar-2019

Order #: 1911042

This Certificate of Analysis contains analytical data applicable to the following samples as submitted:

Paracel ID	Client ID
1911042-01	CL-PS-1
1911042-02	CL-PS-2
1911042-03	CL-PS-3
1911042-04	CL-PS-4
1911042-05	CL-PS-5
1911042-06	SH-PS-1
1911042-07	SH-PS-2
1911042-08	SH-PS-3
1911042-09	SH-PS-4

Approved By: Mark Foto

Mark Foto, M.Sc.
Lab Supervisor

Certificate of Analysis
Client: exp Services Inc. (Ottawa)
Client PO:

Report Date: 12-Mar-2019
Order Date: 11-Mar-2019
Project Description: OTT000206333B

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Metals, ICP-OES	based on MOE E3470, ICP-OES	12-Mar-19	12-Mar-19

Sample and QC Qualifiers Notes

2- GEN01 :Elevated Reporting Limits due to limited sample volume.
1- Gen-19 :Complete separation of paint from substrate not possible for this sample and a small amount of substrate has been included in the paint digestion.

Sample Data Revisions

None

Work Order Revisions/Comments:

None

Other Report Notes:

n/a: not applicable
ND: Not Detected
MDL: Method Detection Limit
Source Result: Data used as source for matrix and duplicate samples
%REC: Percent recovery.
RPD: Relative percent difference.

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Client PO:

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Sample Results

Lead

Matrix: Paint
Sample Date: 06-Mar-19

Paracel ID	Client ID	Units	MDL	Result
1911042-01	CL-PS-1	ug/g	20	<400 [2]
1911042-02	CL-PS-2	ug/g	20	1390
1911042-03	CL-PS-3	ug/g	20	88 [1]
1911042-04	CL-PS-4	ug/g	20	<20 [1]
1911042-05	CL-PS-5	ug/g	20	943 [1]
1911042-06	SH-PS-1	ug/g	20	906
1911042-07	SH-PS-2	ug/g	20	<20 [1]
1911042-08	SH-PS-3	ug/g	20	1140
1911042-09	SH-PS-4	ug/g	20	<667 [2]

Laboratory Internal QA/QC

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Matrix Blank									
Lead	**ND**	**20**	**ug/g**						
Matrix Duplicate									
Lead	**728**	**20**	**ug/g**	**711**			**2.4**	**30**	
Matrix Spike									
Lead	632		ug/L	355	111	70-130			

PARACEL LABORATORIES LTD

Paracel ID: 1911042

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Chain of Custody
(Lab Use Only)
№ 47000

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Client Name: EXP SERVICES	Project Reference: 206333-B
Contact Name: CARL HENTSCHEL	Quote #
Address: 100-2650 Queensview Drive, Ottawa ON	PO #
Telephone: 613.277.7578	Email Address: CARL.HENTSCHEL@EXP.COM

Turnaround Time:
☒ 1 Day ☐ 3 Day
☐ 2 Day ☐ Regular
Date Required: _____

Criteria: ☐ O. Reg. 153/04 (As Amended) Table __ ☐ RSC Filing ☐ O. Reg. 558/00 ☐ PWQO ☐ CCME ☐ SUB (Storm) ☐ SUB (Sanitary) Municipality: _____ ☐ Other: _____

Matrix Type: S (Soil Sed.) GW (Ground Water) SW (Surface Water) SS (Storm Sanitary Sewer) P (Paint) A (Air) O (Other)

Paracel Order Number: 1911042

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken: Date	Sample Taken: Time	Required Analyses: PP
1	CL-PS-1	P		1	MAR 6	AM	✓
2	CL-PS-2						✓
3	CL-PS-3						✓
4	CL-PS-4						✓
5	CL-PS-5						✓
6	SH-PS-1						✓
7	SH-PS-2						✓
8	SH-PS-3						✓
9	SH-PS-4 (* IF POSSIBLE)						✓
10							

Comments:

Method of Delivery: Walk in

Relinquished By (Sign):	Received by Driver/Depot:	Received at Lab: Kim Stewart	Verified By: Kim Stewart
Relinquished By (Print): CARL H.	Date/Time:	Date/Time: March 11, 19 9.08	Date/Time: 11 March 19 11:03
Date/Time: MAR 11, 2019	Temperature: °C	Temperature: °C	pH Verified [ ] By: