

December 9, 2013

**XCG File No. 1-336-161-03**

Ms. Maegan Harrison  
Environmental Services  
Public Works and Government Services Canada  
4900 Yonge Street, 11th Floor  
Toronto, Ontario M2N 6A6

**Re: Designated Substances and Hazardous Materials Review and Select Sampling of Potential Asbestos-Containing Materials and Lead-Containing Coatings in Buildings WW03 and WW02 at Warkworth Institution, Warkworth, Ontario**

Dear Ms. Harrison:

XCG Consultants Ltd. (XCG) is pleased to submit this letter report describing the results of a Designated Substances and Hazardous Materials Review (DSHMR) and select sampling of potential Asbestos-Containing Materials (ACMs) and lead-containing coatings in the proposed work areas of Buildings WW02 and WW03, Warkworth Institution, Warkworth, Ontario.

## **1. BACKGROUND**

On behalf of Correctional Service Canada (CSC), Public Works and Government Services Canada (PWGSC) is proposing to undertake renovation activities to the heating, ventilation, and air conditioning (HVAC) systems including duct replacement at Buildings WW02 and WW03 at Warkworth Institution, Warkworth, Ontario.

Based on the previously identified presence of designated substances and hazardous materials in the work area, PWGSC Environmental Services required the services of an environmental consultant to provide the following:

- Review the existing Designated Substances and Hazardous Materials Surveys (DSHMS) and tender project drawings to confirm the findings of the existing DSHMS reports as they pertain to the proposed HVAC project in WW02 and WW03; and
- Collect samples of any previously untested materials suspected of being a designated substance or hazardous material found that may be disturbed as part of the proposed HVAC project.

The proposed work areas of buildings WW02 and WW03 are identified on the tender drawings provided to XCG by PWGSC. Please refer to Figures 1 and 2 located in Attachment A for the surveyed areas.



## **2. REVIEW OF HISTORIC DSHMS**

Part of XCG's assignment was the review of three existing DSHMSs pertaining to WW02 and WW03 as detailed in the following reports:

- Decommissioning Consulting Services Ltd. (DCS), "Designated Substances and Hazardous Materials Survey, Administration Building (WW03), Warkworth Institution, Warkworth, Ontario, PWGSC Project R.033225.001," dated April 2011;
- DST Consulting Engineers (DST), "Asbestos Update Survey, Warkworth Medium Security Institution, Campbellford, Ontario, Public Works and Government Services Canada (PWGSC) and Correctional Services Canada (CSC)," dated March 24, 2009; and
- XCG Consultants Ltd. (XCG), "Designated Substances and Hazardous Materials Survey, Warkworth Institution, Campbellford, Ontario," dated March 30, 2005.

These surveys identified ACMs and lead-containing paints within the buildings. PWGSC indicated that it is believed that these reports accurately reflect the current conditions in the buildings and that a confirmatory review was necessary to identify any additional designated substances not contained in the existing reports.

## **3. METHODOLOGY**

The survey included a visual inspection of the accessible areas that will be affected by the proposed renovation activities as part of the HVAC renovation project. Any designated substances observed that were not previously sampled were to be sampled as part of this assignment.

The sampling program was based on the requirements of Ontario Regulation (O. Reg.) 278/05, as amended. For bulk material samples, the minimum number of samples for each select type of material is provided in Table 1 of the regulation. ACMs are defined as materials containing greater than 0.5 percent asbestos fibres.

XCG collected representative samples of each suspect ACM material with care to include all distinct layers encountered. Any friable ACM samples to be collected were first wetted with water prior to sample collection, if required. Collected samples were sealed immediately into individual sample bags to eliminate the potential for cross-contamination of samples.

Surface coatings such as paint are considered lead-containing if they have lead concentrations above the permissible concentration of 90 parts per million (ppm) (0.009 percent by weight) as specified in the Federal Hazardous Products Act – Surface Coating Material Regulation (2005), as amended.

All ACM and paint coating samples were collected in accordance with recognised sampling techniques and in accordance with XCG's standard operations procedures, and health and safety requirements.

## **4. LABORATORY ANALYSIS**

Laboratory analysis of the ACM samples was completed using U.S. Environmental Protection Agency (EPA) 600/R-93/166, by Polarized Light Microscopy (PLM) methods and in the case of floor tiles followed Transmission Electron Microscope (TEM) methods. The laboratory techniques used are in accordance with the requirements of O. Reg. 278/05.



Laboratory analysis was completed by International Asbestos Testing Laboratory (IATL) in New Jersey, United States.

As requested by PWGSC, all non-detectable samples were additionally analyzed by TEM in accordance with ELAP 198.4 “Method for Identifying and Quantitating Asbestos in Non-Friable Organically Bound Bulk Samples,” Revised 1/11/2005 and EPA-600/R-93-116 Section 2.5 “Asbestos in Bulk Building Materials by TEM Gravimetry.”

Paint samples were collected and submitted for analysis of lead using the ASTM D3335-85A “Standard Method to Test for Low Concentrations of Lead in Paint by Atomic Absorption Spectrophotometry.” The lead analysis was completed by the International Asbestos Testing Laboratory in Mt. Laurel, New Jersey, USA.

## 5. FINDINGS

The sampling of suspected ACMs and lead-containing finishes was carried out by Mr. Greg Mallette and Mr. Dale White of XCG on November 25, 2013. During the investigation, XCG staff were escorted by a Commissionaire provided by the Warkworth Institution.

Eight suspected ACM samples were collected and submitted to IATL for PLM and/or TEM analyses. Of the eight samples, one sample’s distinguishable layer was additionally analyzed. Suspected ACMs sampled included: floor tile, floor tile mastic, and wall baseboard mastic.

The summarized analytical results for the samples collected from the proposed work area in Building WW03 are provided in Table 1. No newly suspected ACMs were observed in the work area in Building WW02; therefore, no samples were collected. Approximate ACM sampling locations are shown on Figure 1 located in Attachment A. Laboratory certificates of analysis for the samples collected have been included in Attachment B.

**Table 1 Summary of Asbestos Results for Building WW03 Warkworth Institution**

Sample ID	Sample Description	Sample Location	Asbestos Content PLM	Asbestos Content TEM
WW03-VFT-02A	Floor Tile – light pink with grey streaks (9”x 9”)	Building WW03 Room 110	PC 2.1 Chrysotile	-
	2 <sup>nd</sup> Layer - Black Mastic	-	PC 4.9 Chrysotile	-
WW03-VFT-02B	Floor Tile – light pink with grey streaks (9”x 9”)	Building WW03 Room 110	Not Analyzed	None Detected
WW03-VFT-02C	Floor Tile – light pink with grey streaks (9”x 9”)	Building WW03 Room 110	Not Analyzed	None Detected
WW03-VFT-01A	Floor Tile – white with grey streaks (12”x12”)	Building WW03 Room 126	None Detected	None Detected
WW03-VFT-01B	Floor Tile – white with grey streaks (12”x12”)	Building WW03 Room 126	Directly to TEM	None Detected
WW03-MAS-03A	Wall Baseboard Tan Mastic	Building WW03 Corridor 131	None Detected	Trace <0.25% Chrysotile



**Table 1 Summary of Asbestos Results for Building WW03 Warkworth Institution (cont'd)**

Sample ID	Sample Description	Sample Location	Asbestos Content PLM	Asbestos Content TEM
WW03-MAS-03B	Wall Baseboard Tan Mastic	Building WW03 Corridor 131	Directly to TEM	None Detected
WW03-MAS-03C	Wall Baseboard Tan Mastic	Building WW03 Corridor 131	Directly to TEM	None Detected
<b>Notes:</b> <b>Bold</b> Asbestos containing material with a concentration equal to or greater than 0.5% asbestos. <b>PC</b> Point Count. <b>PLM</b> Polarized Light Microscopy PLM Analytical Method: EPA 600/R-93/116. <b>TEM</b> Transmission Electron Microscopy (TEM) Analytical Method: ELAP 198.4 "Method for Identifying and Quantitating Asbestos in Non-Friable Organically Bound Bulk Samples," Revised 1/11/2005. EPA-600/R-93/116 Section 2.5 "Asbestos in Bulk Building Materials by TEM Gravimetry."				

The wall baseboard tan mastic from corridor 131 (WW03-MAS-03A) had detectable levels of chrysotile asbestos at concentrations less than 0.5 percent. As such, this material is not considered to be an ACM. One floor tile sample and mastic (WW03-VFT-02A) were determined to be asbestos-containing with asbestos concentrations of 2.1 percent and 4.9 percent chrysotile asbestos, respectively; thus, these two materials are considered to be asbestos-containing.

### 5.1 Lead-Based Paints

During the survey, one paint sample was collected from the proposed work areas of Building WW02 at Warkworth Institution. The analytical result for the sample collected is provided below in Table 2. The laboratory certificates of analysis are included in Attachment B.

The approximate sampling location is shown on Figure 2 in Attachment A. A laboratory certificate of analysis for the sample collected is included in Attachment B.

**Table 2 Analytical Lead Results, Building WW02 Warkworth Institution**

Sample ID	Sample Description	Sample Location	Condition Classification	Lead Concentration by % weight
WW02-Pb-01	Wall Paint Cream	Building WW02 Room 113	Poor	<b>0.057</b>
<b>Notes:</b> <b>Bold</b> Lead concentration exceeds of the Surface Coating Regulation standard of 90 ppm (0.009% by Weight).				

Based on the findings of the survey and laboratory analytical results, the cream paint in Building WW02 Room 113 was found to have lead concentrations above the permissible concentration of 90 ppm (0.009 percent by weight) as specified in the Federal Hazardous Products Act – Surface Coating Material Regulation (2005), as amended, and is considered to be lead-containing.



## **6. RECOMMENDATIONS**

### **6.1 Asbestos-Containing Materials**

Based on the findings of this survey and laboratory analytical results, the following additional materials were identified as asbestos-containing in the proposed work areas of Building WW03:

- Room 110 Floor Tile and Mastic – Pink with grey streaks (9 inches by 9 inches). These materials were found to have an asbestos concentration of 2.1 percent and 4.9 percent chrysotile asbestos, respectively.

If the identified asbestos-containing floor tiles and mastic are to be disturbed as part of the renovation activities, a minimum of Type 1 asbestos abatement procedures should be followed. Type 1 Operations are required if:

- “Installing or removing non-friable asbestos-containing material, other than ceiling tiles, if the material is installed or removed without being broken, cut, drilled, abraded, ground, sanded or vibrated.” O. Reg. 278/05, Section 12(2).
- Section 12(3) states Type 1 conditions also include: *breaking, cutting, drilling, abrading, grinding, sanding, or vibrating non-friable asbestos-containing material if the material is wetted to control the spread of dust or fibres and the work is done only by means of non-powered hand-held tools.*

Other than the above, no additional ACM materials beyond what was identified in the existing DSHMS reports were identified in the proposed work areas in Building WW02.

### **6.2 Lead-Containing Coatings**

Based on the findings of the survey and laboratory analytical results, the following materials were identified as lead-containing coatings as they were found to have lead concentrations above the permissible concentration of 90 ppm (0.009 percent by weight) as specified in the Federal Hazardous Products Act – Surface Coating Material Regulation (2005), as amended in October 2010:

- Building WW02 Room 182 Wall Coating – Cream.

XCG recommends that the above painted surfaces be treated as lead-containing and that any demolition/renovation activities that would involve the disturbance of this paint be conducted in accordance with O. Reg. 490/09 and the Ontario Ministry of Labour Guideline “Lead on Construction Projects,” dated April 2011. Workers are not at risk of being exposed to lead unless they are undertaking an activity that disturbs surfaces covered with lead-based paint.

## **7. LIMITATIONS**

The findings of this report are based upon visual observations and the analytical results of select sampling at Buildings WW02 and WW03 at Warkworth Institution, Warkworth, Ontario. Samples were collected from proposed work areas as indicated on tender drawings provided by PWGSC. While every effort was made to ensure that the samples collected were representative of the general sampling areas, it is possible that conditions outside the specific sampling locations may differ. XCG cannot be held responsible for conditions that were not apparent during XCG’s site visit.



The scope of this report is limited to the matters expressly covered. This report was prepared for the sole benefit of Public Works Government Services Canada (PWGSC) and Correctional Service Canada (CSC) and may not be relied upon by any other person or entity without the written authorization of XCG Consultants Limited. Any use or reuse of this document (or findings, conclusions, or recommendations represented herein) by parties other than Public Works Government Services Canada (PWGSC) and Correctional Service Canada (CSC) is at the sole risk of those parties.

## **8. CLOSURE**

We trust the enclosed is satisfactory. Should you require additional information or clarification, please do not hesitate to contact us.

Yours very truly,

XCG CONSULTANTS LTD.

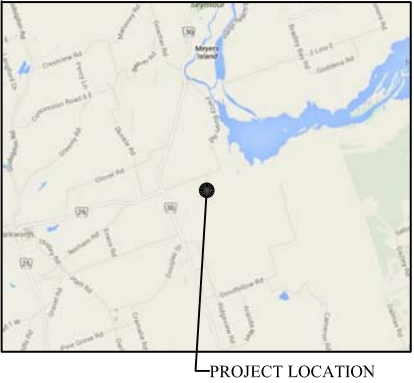
A handwritten signature in black ink, appearing to read 'Dale White'. The signature is fluid and cursive, with the first name 'Dale' and last name 'White' clearly distinguishable.

Dale White, Senior Technologist  
Senior Project Manager

Attachments: Attachment A - Figures  
Attachment B - Laboratory Certificate of Analysis

***ATTACHMENT A***  
***FIGURES***

KEY MAP



LEGEND

- CONFIRMED ASBESTOS CONTAINING MATERIAL > 0.5%
- NON-ASBESTOS CONTAINING MATERIAL
- ▲ CONFIRMED LEAD PAINT SAMPLING LOCATION
- △ NON-LEAD BASED PAINT SAMPLING LOCATION
- N/A NOT ANALYZED
- \* INSUFFICIENT SAMPLE TO ANALYZE
- OBSERVED AREA
- NEWLY IDENTIFIED ASBESTOS CONTAINING MATERIAL

DRAWING REFERENCE: Base drawing supplied by PWGSC and XCG field notes.  
NOTE: Location of building, underground utilities, etc. are for reference only and should not be relied upon for detailed design, renovation, or construction purposes. Property boundary and building locations shown may not represent actual surveyed boundaries.

TITLE:  
BUILDING WW03  
DSHMS SURVEY  
SAMPLE LOCATIONS

LOCATION:  
WARKWORTH INSTITUTION  
CAMPBELLFORD, ONTARIO



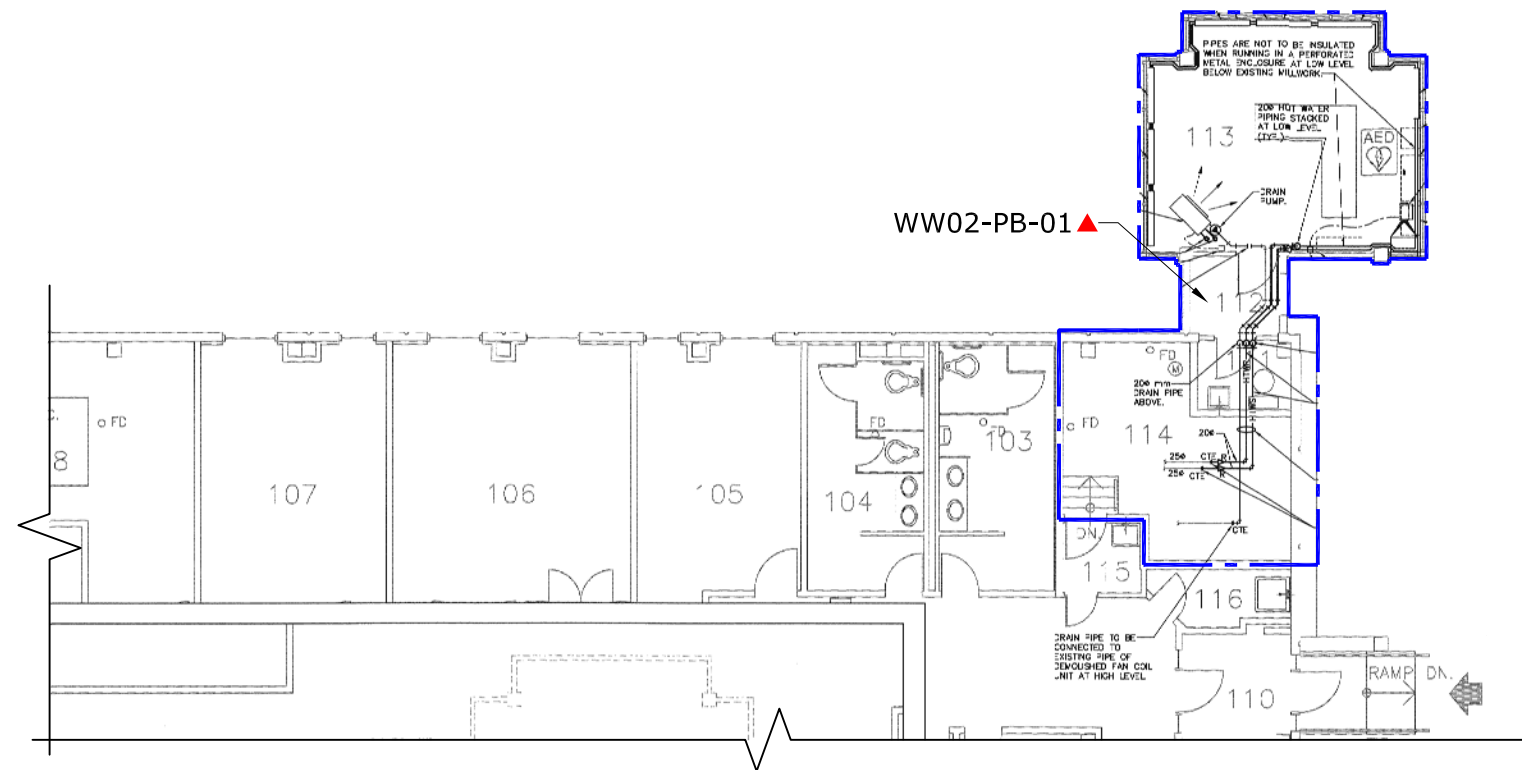
DATE: DEC. 2013	DRAWN: AW	FIGURE:  1
PROJECT No: 1-336-161-03		



BUILDING WW03

NOTE:  
1. BASE DRAWING REFERENCED FROM:  
AECOM BUILDING 3 FIRST FLOOR PLAN ARCHITECTURAL FINISHES  
DEMOLITION PLAN  
DRAWING NO. WDR-WW03-A-04

SCALE:  
N.T.S.



BUILDING WW02

SCALE:  
N.T.S.

NOTE:  
1. BASE DRAWING REFERENCED FROM:  
AECOM BDLG. WW02-SECURITY POST PART ROOF & 1ST FLR  
PLAN MECHANICAL - NEW WORK  
DRAWING NO. WDR-WW02-H-01

KEY MAP



LEGEND

- CONFIRMED ASBESTOS CONTAINING MATERIAL > 0.5%
- NON-ASBESTOS CONTAINING MATERIAL
- ▲ CONFIRMED LEAD PAINT SAMPLING LOCATION
- △ NON-LEAD BASED PAINT SAMPLING LOCATION
- N/A NOT ANALYZED
- \* INSUFFICIENT SAMPLE TO ANALYZE
- OBSERVED AREA

DRAWING REFERENCE: Base drawing supplied by PWGSC and XCG field notes.  
NOTE: Location of building, underground utilities, etc. are for reference only and should not be relied upon for detailed design, renovation, or construction purposes. Property boundary and building locations shown may not represent actual surveyed boundaries.

TITLE:  
BUILDING WW02  
DSHMS SURVEY  
SAMPLE LOCATIONS

LOCATION:  
WARKWORTH INSTITUTION  
CAMPBELLFORD, ONTARIO



DATE: DEC. 2013	DRAWN: AW	FIGURE:  2
PROJECT No: 1-336-161-03		

***ATTACHMENT B***  
***LABORATORY CERTIFICATE OF ANALYSIS***

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**CERTIFICATE OF ANALYSIS**

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**Client:** XCG Consultants Ltd.

6 Cataraqui St; Woolen Mill

Kingston

Ontario

K7K 1Z7

**Report Date:** 11/27/2013**Report No.:** 320154**Project:** Warkworth**Project No.:** 1-336-161-03

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**TEM BULK SAMPLE ANALYSIS SUMMARY**

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**IATL No.:** 135179395A**Description / Location:** Tan Mastic**Client No.:** WW03-MAS-03A

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**Organic Fraction:** 63.4 %**Gravimetrically Reduced Subsample:** 36.6 %**Percent Asbestos Detected:** Trace Chrysotile, Detected at < 0.25%**Percent Non-Asbestos Fibrous Material:** ND None Detected**Percent Non-Fibrous Material:** 36.6 % Other**Comments:**

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**NIST-NVLAP No. 101165-0****AIHA-LAP, LLC No. 100188****NYS-DOH No. 11021**

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Methodology: Transmission Electron Microscopy (TEM) In Accordance With :  
ELAP 198.4 "Method For Identifying And Quantitating Asbestos In Non-Friable Organically Bound Bulk Samples", Revised 1/11/2005.  
EPA-600/R-93/116 Section 2.5 "Asbestos In Bulk Building Materials By TEM Gravimetry."

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*IATL assumes that all sampling methods and data upon which these results are based have been accurately supplied by the client.*

*The "Gravimetrically Reduced Subsample" is the portion of the submitted sample remaining following the ashing and acid treatment processes. TEM analysis occurs on this portion of the sample. Final results are calculated to represent the sample as submitted.*

*This confidential report relates only to those item(s) tested and does not represent an endorsement by NIST-NVLAP, AIHA or any agency of the U.S. government.*

*Results are verifiable for only those operations and analyses performed in the laboratory.*

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**Analysis Performed By:** T. Barkley**Approved By:****Date:** 11/27/2013Frank E. Ehrenfeld, III  
Laboratory Director

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**CERTIFICATE OF ANALYSIS**

---

**Client:** XCG Consultants Ltd.

6 Cataraqui St; Woolen Mill

Kingston

Ontario

K7K 1Z7

**Report Date:** 11/27/2013**Report No.:** 320154**Project:** Warkworth**Project No.:** 1-336-161-03

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**TEM BULK SAMPLE ANALYSIS SUMMARY**

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**IATL No.:** 135179396A**Description / Location:** Tan Mastic**Client No.:** WW03-MAS-03B

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**Organic Fraction:** 70.7 %**Gravimetrically Reduced Subsample:** 29.3 %**Percent Asbestos Detected:** ND None Detected**Percent Non-Asbestos Fibrous Material:** ND None Detected**Percent Non-Fibrous Material:** 29.3 % Other**Comments:** Note: Insufficient material (<100mg) to verify results.

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**NIST-NVLAP No. 101165-0****AIHA-LAP, LLC No. 100188****NYS-DOH No. 11021**

---

Methodology: Transmission Electron Microscopy (TEM) In Accordance With :  
ELAP 198.4 "Method For Identifying And Quantitating Asbestos In Non-Friable Organically Bound Bulk Samples", Revised 1/11/2005.  
EPA-600/R-93/116 Section 2.5 "Asbestos In Bulk Building Materials By TEM Gravimetry."

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**Analysis Performed By:** T. Barkley**Date:** 11/27/2013

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## CERTIFICATE OF ANALYSIS

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**Client:** XCG Consultants Ltd.

6 Cataraqui St; Woolen Mill

Kingston

Ontario

K7K 1Z7

**Report Date:** 11/27/2013**Report No.:** 320154**Project:** Warkworth**Project No.:** 1-336-161-03

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### TEM BULK SAMPLE ANALYSIS SUMMARY

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**IATL No.:** 135179397A**Description / Location:** Tan Mastic**Client No.:** WW03-MAS-03C

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**Organic Fraction:** 65.0 %**Gravimetrically Reduced Subsample:** 35.0 %**Percent Asbestos Detected:** ND None Detected**Percent Non-Asbestos Fibrous Material:** ND None Detected**Percent Non-Fibrous Material:** 35.0 % Other**Comments:**

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**NIST-NVLAP No. 101165-0****AIHA-LAP, LLC No. 100188****NYS-DOH No. 11021**

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Methodology: Transmission Electron Microscopy (TEM) In Accordance With :  
ELAP 198.4 "Method For Identifying And Quantitating Asbestos In Non-Friable Organically Bound Bulk Samples", Revised 1/11/2005.  
EPA-600/R-93/116 Section 2.5 "Asbestos In Bulk Building Materials By TEM Gravimetry."

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*IATL assumes that all sampling methods and data upon which these results are based have been accurately supplied by the client.*

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**Analysis Performed By:** T. Barkley**Date:** 11/27/2013

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**CERTIFICATE OF ANALYSIS**

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**Client:** XCG Consultants Ltd.

6 Cataraqui St; Woolen Mill

Kingston

Ontario

K7K 1Z7

**Report Date:** 11/27/2013**Report No.:** 320154**Project:** Warkworth**Project No.:** 1-336-161-03

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**TEM BULK SAMPLE ANALYSIS SUMMARY**

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**IATL No.:** 135179398A**Description / Location:** Grey Vinyl Floor Tile**Client No.:** WW03-VFT-01A

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**Organic Fraction:** 47.7 %**Gravimetrically Reduced Subsample:** 52.3 %**Percent Asbestos Detected:** ND None Detected**Percent Non-Asbestos Fibrous Material:** ND None Detected**Percent Non-Fibrous Material:** 52.3 % Other**Comments:**

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**NIST-NVLAP No. 101165-0****AIHA-LAP, LLC No. 100188****NYS-DOH No. 11021**

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Methodology: Transmission Electron Microscopy (TEM) In Accordance With :  
ELAP 198.4 "Method For Identifying And Quantitating Asbestos In Non-Friable Organically Bound Bulk Samples", Revised 1/11/2005.  
EPA-600/R-93/116 Section 2.5 "Asbestos In Bulk Building Materials By TEM Gravimetry."

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*IATL assumes that all sampling methods and data upon which these results are based have been accurately supplied by the client.*

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*Results are verifiable for only those operations and analyses performed in the laboratory.*

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**Analysis Performed By:** T. Barkley**Date:** 11/27/2013

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**CERTIFICATE OF ANALYSIS**

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**Client:** XCG Consultants Ltd.

6 Cataraqui St; Woolen Mill

Kingston

Ontario

K7K 1Z7

**Report Date:** 11/27/2013**Report No.:** 320154**Project:** Warkworth**Project No.:** 1-336-161-03

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**TEM BULK SAMPLE ANALYSIS SUMMARY**

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**IATL No.:** 135179399A**Description / Location:** Grey Vinyl Floor Tile**Client No.:** WW03-VFT-01B

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**Organic Fraction:** 45.8 %**Gravimetrically Reduced Subsample:** 54.2 %**Percent Asbestos Detected:** ND None Detected**Percent Non-Asbestos Fibrous Material:** ND None Detected**Percent Non-Fibrous Material:** 54.2 % Other**Comments:**

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**NIST-NVLAP No. 101165-0****AIHA-LAP, LLC No. 100188****NYS-DOH No. 11021**

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Methodology: Transmission Electron Microscopy (TEM) In Accordance With :  
ELAP 198.4 "Method For Identifying And Quantitating Asbestos In Non-Friable Organically Bound Bulk Samples", Revised 1/11/2005.  
EPA-600/R-93/116 Section 2.5 "Asbestos In Bulk Building Materials By TEM Gravimetry."

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*IATL assumes that all sampling methods and data upon which these results are based have been accurately supplied by the client.*

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*Results are verifiable for only those operations and analyses performed in the laboratory.*

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**Analysis Performed By:** T. Barkley**Date:** 11/27/2013

## CERTIFICATE OF ANALYSIS

<b>Client:</b>	XCG Consultants Ltd.	<b>Report Date:</b>	11/27/2013
	6 Cataraqui St; Woolen Mill	<b>Report Number:</b>	320163
	Kingston Ontario K7K 1Z7	<b>Project:</b>	WarkWorth; 11/25/13
		<b>Project No.:</b>	1-336-161-03

## LEAD PAINT SAMPLE ANALYSIS SUMMARY

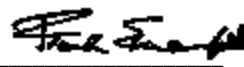
<u>Lab No.</u>	<u>Client No.</u>	<u>Location / Description</u>	<u>Concentration Lead By Weight (%)</u>
5179474	WW02-Pb-01	Cream Paint	0.057

**Accreditations:** **NATIONAL LEAD LABORATORY ACCREDITATION PROGRAM (NLLAP)**  
AIHA-LAP, LLC No. 100188 NYSDOH-ELAP No. 11021

**Analytical Methods:** ASTM D3335-85A "Standard Method To Test For Low Concentrations Of Lead In Paint By Atomic Absorption Spectrophotometry"  
EPA SW846-(3050B:7000B) "Standard Method To Test For Low Concentrations Of Lead In Soils, Sludges and Sediments By AAS"

**Comments:** Regulatory limit is 0.5% lead by weight (EPA/HUD guidelines). Recommend multiple sampling for all samples less than regulatory limit for confirmation. All results are based on the samples as received at the lab. IATL assumes that appropriate sampling methods have been used and the data upon which these results are based have been accurately supplied by the client. Method Detection Limit (MDL) per EPA Method 40CFR Part 136 Appendix B. Reporting Limit (RL) based upon Lowest Standard Determined (LSD) in accordance with AIHA-ELLAP policies. LSD=0.2 ppm MDL=0.0044% by weight. RL= 0.010% by weight (based upon 100 mg sampled). \* Insufficient sample provided to perform QC reanalysis (<200 mg) \*\* Not enough sample provided to analyze (<50 mg) \*\*\* Matrix / substrate interference possible. Sample results are not corrected for contamination by field or analytical blanks. This confidential report relates only to those item(s) tested and does not represent an endorsement by NIST-NVLAP, AIHA or any government agency. This report shall not be reproduced except in full, without written approval of the laboratory.

**Date Received:** 11/27/2013  
**Date Analyzed:** 11/27/2013  
**Analyst:** C. Shaffer

**Approved By:**   
Frank E. Ehrenfeld, III  
Laboratory Director

## CERTIFICATE OF ANALYSIS

<b>Client:</b>	XCG Consultants Ltd.	<b>Report Date:</b>	11/27/2013
	6 Cataragui St; Woolen Mill	<b>Report No.:</b>	320681
	Kingston Ontario K7K 1Z7	<b>Project:</b>	Warkworth
		<b>Project No.:</b>	1-336-161-03

### BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b>	5179392	<b>Description / Location:</b>	Tan Floor Tile; 9x9	
<b>Client No.:</b>	WW03-VFT-02A			
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
PC 2.1	Chrysotile	None Detected	None Detected	PC 97.9

<b>Lab No.:</b>	5179392	<b>Description / Location:</b>	Black Mastic	
<b>Client No.:</b>	WW03-VFT-02A			<b>Layer No.: 2</b>
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
PC 4.9	Chrysotile	None Detected	None Detected	PC 95.1

<b>Lab No.:</b>	5179393	<b>Description / Location:</b>	Sample Not Analyzed	
<b>Client No.:</b>	WW03-VFT-02B			
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
	Sample Not Analyzed		Sample Not Analyzed	

<b>Lab No.:</b>	5179394	<b>Description / Location:</b>	Sample Not Analyzed	
<b>Client No.:</b>	WW03-VFT-02C			
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
	Sample Not Analyzed		Sample Not Analyzed	


**Accreditations:** **NIST-NVLAP No. 101165-0** **NY-DOH No. 11021** **AIHA-LAP, LLC No. 100188**

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**Analytical Method:** EPA 600/R-93/116, by Polarized Light Microscopy

**Comments:** Quantification at <0.25% by volume is possible with this method. (PC) Indicates Stratified Point Count Method performed. (PC-Trace) means that asbestos was detected but is not quantifiable under the Point Counting regimen. Analysis includes all distinct separable layers in accordance with EPA 600 Method. If not reported or otherwise noted, layer is either not present or the client has specifically requested that it not be analyzed (ex. analyze until positive instructions). Small asbestos fibers may be missed by PLM due to resolution limitations of the optical microscope. Therefore, PLM is not consistently reliable in detecting asbestos in non-friable organically bound (NOB) materials. Quantitative transmission electron microscopy (TEM) is currently the only method that can pronounce materials as non-asbestos containing.

**Analysis Performed By:** R. Kennedy

**Approved By:** 

**Date:** 11/27/2013

Frank E. Ehrenfeld, III  
Laboratory Director

## CERTIFICATE OF ANALYSIS

<b>Client:</b>	XCG Consultants Ltd.	<b>Report Date:</b>	11/27/2013
	6 Cataraqui St; Woolen Mill	<b>Report No.:</b>	320681
	Kingston Ontario K7K 1Z7	<b>Project:</b>	Warkworth
		<b>Project No.:</b>	1-336-161-03

### BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b>	5179395	<b>Description / Location:</b>	Tan Mastic	
<b>Client No.:</b>	WW03-MAS-03A		A/W Wall Baseboard	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

<b>Lab No.:</b>	5179396	<b>Description / Location:</b>	Sample Not Analyzed	
<b>Client No.:</b>	WW03-MAS-03B		Directly To TEM-NOB Analysis	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
	Sample Not Analyzed		Sample Not Analyzed	

<b>Lab No.:</b>	5179397	<b>Description / Location:</b>	Sample Not Analyzed	
<b>Client No.:</b>	WW03-MAS-03C		Directly To TEM-NOB Analysis	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
	Sample Not Analyzed		Sample Not Analyzed	

<b>Lab No.:</b>	5179398	<b>Description / Location:</b>	Grey Floor Tile; 12x12	
<b>Client No.:</b>	WW03-VFT-01A			
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

**Accreditations:** **NIST-NVLAP No. 101165-0** **NY-DOH No. 11021** **AIHA-LAP, LLC No. 100188**

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**Analytical Method:** EPA 600/R-93/116, by Polarized Light Microscopy

**Comments:** Quantification at <0.25% by volume is possible with this method. (PC) Indicates Stratified Point Count Method performed. (PC-Trace) means that asbestos was detected but is not quantifiable under the Point Counting regimen. Analysis includes all distinct separable layers in accordance with EPA 600 Method. If not reported or otherwise noted, layer is either not present or the client has specifically requested that it not be analyzed (ex. analyze until positive instructions). Small asbestos fibers may be missed by PLM due to resolution limitations of the optical microscope. Therefore, PLM is not consistently reliable in detecting asbestos in non-friable organically bound (NOB) materials. Quantitative transmission electron microscopy (TEM) is currently the only method that can pronounce materials as non-asbestos containing.

**Analysis Performed By:** R. Kennedy

**Date:** 11/27/2013

## CERTIFICATE OF ANALYSIS

<b>Client:</b>	XCG Consultants Ltd.	<b>Report Date:</b>	11/27/2013
	6 Cataraqui St; Woolen Mill	<b>Report No.:</b>	320681
	Kingston Ontario K7K 1Z7	<b>Project:</b>	Warkworth
		<b>Project No.:</b>	1-336-161-03

## BULK SAMPLE ANALYSIS SUMMARY

<b>Lab No.:</b>	5179399	<b>Description / Location:</b>	Sample Not Analyzed
<b>Client No.:</b>	WW03-VFT-01B		Directly To TEM-NOB Analysis
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
	Sample Not Analyzed		Sample Not Analyzed

**Accreditations:** NIST-NVLAP No. 101165-0 NY-DOH No. 11021 AIHA-LAP, LLC No. 100188

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**Analytical Method:** EPA 600/R-93/116, by Polarized Light Microscopy

**Comments:** Quantification at <0.25% by volume is possible with this method. (PC) Indicates Stratified Point Count Method performed. (PC-Trace) means that asbestos was detected but is not quantifiable under the Point Counting regimen. Analysis includes all distinct separable layers in accordance with EPA 600 Method. If not reported or otherwise noted, layer is either not present or the client has specifically requested that it not be analyzed (ex. analyze until positive instructions). Small asbestos fibers may be missed by PLM due to resolution limitations of the optical microscope. Therefore, PLM is not consistently reliable in detecting asbestos in non-friable organically bound (NOB) materials. Quantitative transmission electron microscopy (TEM) is currently the only method that can pronounce materials as non-asbestos containing.

**Analysis Performed By:** R. Kennedy

**Date:** 11/27/2013