FINAL REPORT
Asbestos-Containing Building Material Assessment
Toronto Catholic District School Board
St. Gerard Majella Catholic School, 35 Heavitree Drive
North York, Ontario
PROJECT NO. 1025760
PROJECT NO. 1025760

REPORT TO
Toronto Catholic District School Board
80 Sheppard Avenue East
Toronto, Ontario
M2N 6E8

FOR
Asbestos-Containing Building Materials Assessment – Final Report

ON
St. Gerard Majella Catholic School
35 Heavitree Drive
North York, Ontario

February 26, 2008

Jacques Whitford
7271 Warden Avenue
Markham, Ontario
L3R 5X5

Phone: 905-474-7700
Fax: 905-479-9326

www.jacqueswhitford.com
EXECUTIVE SUMMARY

Jacques Whitford Limited (Jacques Whitford) was commissioned by the Toronto Catholic District School Board (TCDSB) to conduct an Asbestos-Containing Building Materials Assessment of St. Gerard Majella Catholic School, located at 35 Heavitree Drive in North York, Ontario.

The purpose of the assessment was to assist the TCDSB to meet the requirements of the new asbestos regulation, Ontario Regulation 278/05 made under the Occupational Health and Safety Act (OHSA), effective November 1, 2005. The assessment also includes the identification of asbestos-containing materials (ACMs) that may require special attention.

The assessment was performed for the purposes of long term management of asbestos, and not for construction or renovations purposes. Additional intrusive testing may be required prior to using this information for construction or renovation.

The work was carried out in accordance with the requirements of the OHSA.

Based on visual assessment and laboratory analysis, asbestos-containing materials were identified to be present at the subject facility. Table 1 below provides a summary of the materials identified and recommendations on their management.

<table>
<thead>
<tr>
<th>Issue</th>
<th>Comments</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asbestos</td>
<td>Friable asbestos-containing materials were identified to be present in the form of insulating cement on pipe fittings, and hot water tank body insulation (parging cement). These materials were observed to be in good condition. Non-friable asbestos-containing materials were identified to be present in the form of 12”x12” vinyl floor tiles. These materials were observed to be in good condition. Presumed asbestos-containing materials (PACMs) were identified to be present in the form of cement pipe, caulk materials, roofing materials, mastics and chalkboards. These materials were observed to be in good condition and were not sampled to preserve their integrity.</td>
<td>Prior to demolition or renovation work, undertake testing of presumed asbestos-containing materials to determine their asbestos content. Asbestos-containing materials should be removed prior to the start of renovation work that may impact the material, in accordance with O. Reg. 278/05. Should a material suspected to contain asbestos fibres become uncovered during demolition or renovation 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 O. Reg. 278/05.</td>
</tr>
</tbody>
</table>

The statements made in this Executive Summary text are subject to the same limitations included in the Closure Section 8.0, and are to be read in conjunction with the remainder of this report.
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ASBESTOS-CONTAINING BUILDING MATERIALS ASSESSMENT

1.0 INTRODUCTION

Jacques Whitford Limited (Jacques Whitford) was commissioned by the Toronto Catholic District School Board (TCDSB) to conduct an Asbestos-Containing Building Materials Assessment of St. Gerard Majella Catholic School, located at 35 Heavitree Drive in North York, Ontario.

The purpose of the assessment was to assist the TCDSB to meet the requirements of the new asbestos regulation, Ontario Regulation 278/05 made under the Occupational Health and Safety Act (OHSA), effective November 1, 2005. The assessment also includes the identification of asbestos-containing materials (ACMs) that may require special attention.

The assessment was performed for the purposes of long term management of asbestos, and not for construction or renovations purposes. Additional intrusive testing may be required prior to using this information for construction or renovation.

The work was carried out in accordance with the requirements of the OHSA.

1.1 Assessment Objectives

The objective of the assessment was to:

- prepare an assessment report that identifies asbestos-containing materials present at the subject facility; and,
- provide recommendations for the management of these materials.

1.2 Scope of Work

The scope of work for this assessment involved the following:

- a “room-by-room” visual assessment of readily accessible room spaces of the subject facility for the presence of asbestos-containing building materials;
- an inventory of building materials/components that are suspected to contain asbestos;
- the collection of representative bulk samples from building materials suspected of containing asbestos fibres;
- laboratory analysis for the determination of the type and concentration of asbestos present in the samples submitted; and,
- preparation of a report documenting the results of the assessment, providing an interpretation of the laboratory analysis results and recommendations for the management of any asbestos containing materials.
2.0 ASSESSMENT METHODOLOGY

A room-by-room visual assessment of the subject facility was made in order to check for the presence of materials suspected of containing asbestos.

During the assessment, locations to collect discrete bulk asbestos samples of suspect building materials were identified. Samples of representative materials were then collected at these locations in accordance with the requirements of Ontario Regulation 278/05 made under the Occupational Health and Safety Act.

An assessment of the condition, accessibility and exposure risk was completed for each occurrence of an asbestos-containing material. The Public Works and Government Services Canada (PWGSC) document entitled “Deputy Ministers Directive 057 – Asbestos Management” (Last Revised June 16th, 1999) was used as the basis for the criteria that was applied in evaluating the presence of asbestos-containing materials at the subject areas, where applicable.

Samples of suspect ACMs from various building materials were collected and submitted to EMSL Laboratories Inc. (EMSL) located in Westmont, New Jersey, for analysis using Polarized Light Microscopy (PLM) with dispersion staining. The analysis was conducted following the U.S. EPA/600/R-93/116 Methods. EMSL is certified under the National Voluntary Laboratory Accreditation Program (NVLAP) to perform asbestos analysis of bulk samples.

The number of bulk samples was based on the requirements of the new asbestos regulation that specifies the minimum number of samples of a particular building material that should be collected and tested to consider a material non-asbestos-containing. A positive stop option was used during the laboratory analysis of the building materials suspected to contain asbestos. Multiple samples of visually similar material were collected and submitted for laboratory analysis.

The positive stop option involves testing a series of samples from a particular building material until test results indicate the presence of asbestos. When this occurs, the remaining samples are not tested. This is a cost effective method of limiting the number of samples that are ultimately tested.

Additionally, materials that had been previously sampled and identified to contain asbestos were referenced from available reports and not re-tested.

A summary list of the bulk samples collected by Jacques Whitford, including a description of the material, sampling location, type of analysis and laboratory test results is provided in Appendix 2.

3.0 ASSESSMENT LIMITATIONS

This report reflects the observations made within the subject facility only, and the results of analyses performed on specific materials sampled during the assessment. Analytical results reflect the sampled materials at the specific sampling locations.

Due to access restrictions imposed by working in occupied and operational spaces, the asbestos content of some building materials could not be determined at some locations. Where applicable, building materials that were not sampled but that may contain asbestos include, but are not limited to the following:
- sub-grade materials;
- curtains;
- flooring material concealed beneath carpeting, ceramic tile, brickwork, hardwood flooring and/or concealed beneath existing sub-floors;
- drywall and/or wall plaster materials concealed behind new and/or additional walls;
- woven tape inside duct connection joints;
- inner ducting insulation;
- refractory brick;
- insulation material present inside walls (i.e. suspected asbestos-containing vermiculite insulation inside concrete block and/or brick walls);
- pipe straight-run and pipe elbow insulation within wall cavities, inaccessible ceiling spaces or crawlspaces;
- insulation materials inside fire doors;
- the mechanical inner linings of heating, ventilation and air conditioning (HVAC) units; and,
- heat protection materials inside mechanical installations and light fixtures.

If encountered during renovation or other activities, any suspected ACMs not identified within this report should be presumed to contain asbestos and handled as such until otherwise shown to be non-asbestos-containing through analytical testing.

4.0 REGULATORY FRAMEWORK

Asbestos is included in the Designated Substances Regulations made under Ontario’s OHSA. The Designated Substance Regulation respecting Asbestos (R.R.O. 1990, Reg. 837, amended to O. Reg. 279/05) primarily regulates worker exposure to asbestos during manufacturing of asbestos containing products, but also includes requirements related to respiratory equipment, measurement of airborne fibres, and medical surveillance of exposed workers.

The Ontario Regulation 278/05 made under the OHSA for Asbestos on Construction Projects and in Buildings and Repair Operations, clearly defines asbestos-containing material as a material that contains 0.5 per cent or more asbestos by dry weight. The new asbestos regulation (O. Reg. 278/05) became effective as of November 1, 2005.

The General Waste Management Regulation (O. Reg. 347/90), under the Environmental Protection Act (EPA) of Ontario, sets out the requirements for the proper disposal of asbestos waste in Ontario.

The waste must be placed in a double sealed container, properly labeled, free of cuts, tears or punctures and disposed of at a licensed waste station which has been properly notified of the presence of asbestos waste.
5.0 ASSESSMENT RESULTS AND DISCUSSION

The result of the assessment for asbestos-containing building materials is discussed below. The evaluation criterion for assessing asbestos-containing materials is provided in Appendix 5. A list of definitions for technical terms used in this report is provided in Appendix 6.

Asbestos-containing materials are grouped into two classifications, friable and non-friable materials. Friable ACMs are those that can easily be crumbled or broken apart by mere hand pressure. When these materials break apart asbestos fibres are then released into the atmosphere. Non-friable ACMs or “manufactured products” are materials that by the nature of their manufacturing/construction do not readily allow the release of asbestos fibres. These materials should not be cut or shaped with power tools, since this procedure may allow for the release of the asbestos fibres.

O. Reg. 278/05 requires that an Asbestos Management Program (AMP) be implemented in buildings that have been identified to contain friable and non-friable ACMs.

A summary list of the bulk samples that were collected during the assessment including a description of the material, sampling location, type of analysis and laboratory test results is provided in Appendix 2.

A copy of the PLM laboratory Certificate of Analysis is provided in Appendix 4.

A summary of occurrences of asbestos-containing materials for areas that were inspected is provided in Appendix 3. Each ACM occurrence includes the following information:

- room component that contains ACM;
- location of the ACM within the room space;
- ACM description;
- estimated quantity;
- original sample number or representative sample number;
- friability; and,
- condition.

5.1 Friable Asbestos-Containing Materials

During the assessment, friable ACMs were identified by laboratory analysis to be present at the subject facility in the form of:

- Insulating cement on pipe fittings;
- Hot water tank insulation (parging cement).

Refer to Appendix 2 for the type and asbestos content; and Appendix 3 for specific location and condition of these ACMs.

5.2 Non-Friable Asbestos-Containing Materials

During the assessment, non-friable ACMs were identified by laboratory analysis to be present at the subject facility in the form of:
5.3 Presumed Asbestos-Containing Materials

Presumed asbestos-containing materials were observed to be present at the subject facility. The following materials were identified but not sampled:

- Window and door caulking materials;
- Roof caulking materials;
- Roofing materials;
- Mastics;
- Chalkboards; and,
- Cement pipe.

The cement pipe was not accessible for sampling. The other materials were not sampled during the assessment to avoid damage. The materials were observed to be in good condition. As these materials are known to have been manufactured with asbestos, they should be presumed to be asbestos-containing unless proven otherwise by laboratory analysis. A list of presumed asbestos containing materials is included in Appendix 3.

5.4 Non-Asbestos-Containing Materials

Refer to Appendix 2 for a list of materials identified as non-asbestos containing through sampling and laboratory analysis.

6.0 RECOMMENDATIONS

Based on visual assessment and laboratory analysis, Jacques Whitford recommends the following with regards to the ACMs and PACMs in the facility assessed:

- Prior to demolition or renovation work, undertake testing of presumed asbestos-containing materials to determine their asbestos content;
- Asbestos-containing materials should be removed prior to the start of renovation work that may impact the material, in accordance with O. Reg. 278/05; and,
- Should a material suspected to contain asbestos fibres become uncovered during demolition or renovation 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 O. Reg. 278/05.
7.0 CLOSURE

This report has been prepared for the sole benefit of the Toronto Catholic District School Board. The report may not be used by any other person or entity without the express written consent of Jacques Whitford Limited and the Toronto Catholic District School Board.

Any use which a third party makes of this report, or any reliance on decisions based on it, are the responsibility of such third parties. Jacques Whitford Limited 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 professional and technical staff in accordance with generally accepted engineering and scientific 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 Jacques Whitford Limited based on the data obtained from the work. The conclusions are based on the site conditions encountered by Jacques Whitford Limited 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, Jacques Whitford Limited cannot warrant against undiscovered environmental 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.

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 undersigned at your convenience.

This report was prepared by Anil Panchal and reviewed by Martin Ling and Steven D. Fulford.

Sincerely,

JACQUES WHITFORD LIMITED

Anil Panchal, BASc
Report Author

Steven D. Fulford
Senior Technical Reviewer

Martin Ling
Project Manager

Enclosures

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APPENDIX 1

Floor Plans Showing Locations of Asbestos-Containing Materials
APPENDIX 2

Summary of Results of Analysis of Bulk Samples for Asbestos Content
## Summary of Bulk Sample Analysis for Asbestos Type and Content

<table>
<thead>
<tr>
<th>Sample Number</th>
<th>Sampling Location</th>
<th>Description of Sampled Material</th>
<th>Asbestos Type and Content</th>
<th>Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>346-BS-01A</td>
<td>Room 119B</td>
<td>12&quot; x 12&quot; vinyl floor tile - grey and white smears</td>
<td>None Detected</td>
<td>PLM</td>
</tr>
<tr>
<td>346-BS-01B</td>
<td>Room 201A</td>
<td>12&quot; x 12&quot; vinyl floor tile - grey and white smears</td>
<td>None Detected</td>
<td>PLM</td>
</tr>
<tr>
<td>346-BS-01C</td>
<td>Room 201A</td>
<td>12&quot; x 12&quot; vinyl floor tile - grey and white smears</td>
<td>None Detected</td>
<td>PLM</td>
</tr>
<tr>
<td>346-BS-02A</td>
<td>Room 115C</td>
<td>2’ x 4’ acoustical ceiling tile - small fissure pinhole pattern</td>
<td>None Detected</td>
<td>PLM</td>
</tr>
<tr>
<td>346-BS-02B</td>
<td>Room 106</td>
<td>2’ x 4’ acoustical ceiling tile - small fissure pinhole pattern</td>
<td>None Detected</td>
<td>PLM</td>
</tr>
<tr>
<td>346-BS-02C</td>
<td>Room 201C</td>
<td>2’ x 4’ acoustical ceiling tile - small fissure pinhole pattern</td>
<td>None Detected</td>
<td>PLM</td>
</tr>
<tr>
<td>346-BS-03A</td>
<td>Room 117</td>
<td>12&quot; x 12&quot; vinyl floor tile - beige with brown streaks</td>
<td>None Detected</td>
<td>PLM</td>
</tr>
<tr>
<td>346-BS-03B</td>
<td>Room 117B</td>
<td>12&quot; x 12&quot; vinyl floor tile - beige with brown streaks</td>
<td>2% Chrysotile</td>
<td>PLM</td>
</tr>
<tr>
<td>346-BS-03C</td>
<td>Room 117C</td>
<td>12&quot; x 12&quot; vinyl floor tile - beige with brown streaks</td>
<td>SP</td>
<td>PLM</td>
</tr>
<tr>
<td>346-BS-04A</td>
<td>Room 106</td>
<td>12&quot; x 12&quot; vinyl floor tile - beige with green streaks</td>
<td>4% Chrysotile</td>
<td>PLM</td>
</tr>
<tr>
<td>346-BS-04B</td>
<td>Room 106</td>
<td>12&quot; x 12&quot; vinyl floor tile - beige with green streaks</td>
<td>SP</td>
<td>PLM</td>
</tr>
<tr>
<td>346-BS-04C</td>
<td>Room 106</td>
<td>12&quot; x 12&quot; vinyl floor tile - beige with green streaks</td>
<td>SP</td>
<td>PLM</td>
</tr>
<tr>
<td>346-BS-05A</td>
<td>Room 105G</td>
<td>12&quot; x 12&quot; vinyl floor tile - white with black and grey specks</td>
<td>None Detected</td>
<td>PLM</td>
</tr>
<tr>
<td>346-BS-05B</td>
<td>Room 105B</td>
<td>12&quot; x 12&quot; vinyl floor tile - white with black and grey specks</td>
<td>None Detected</td>
<td>PLM</td>
</tr>
<tr>
<td>346-BS-05C</td>
<td>Room 105E</td>
<td>12&quot; x 12&quot; vinyl floor tile - white with black and grey specks</td>
<td>None Detected</td>
<td>PLM</td>
</tr>
<tr>
<td>346-BS-06A</td>
<td>Room 113A</td>
<td>hot water tank body insulation (parging cement)</td>
<td>65% Chrysotile</td>
<td>PLM</td>
</tr>
</tbody>
</table>

26-Feb-2008

**Notes:**

- PLM - Polarized Light Microscopy
- TEM - Transmission Electron Microscopy
- BS - Bulk Sample
- nd - None Detected
- SP - Stop Positive (not analyzed)
<table>
<thead>
<tr>
<th>Sample Number</th>
<th>Sampling Location</th>
<th>Description of Sampled Material</th>
<th>Asbestos Type and Content</th>
<th>Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>346-BS-06B</td>
<td>Room 113A</td>
<td>hot water tank body insulation (pargrning cement)</td>
<td>SP</td>
<td>PLM</td>
</tr>
<tr>
<td>346-BS-06C</td>
<td>Room 113A</td>
<td>hot water tank body insulation (parging cement)</td>
<td>SP</td>
<td>PLM</td>
</tr>
<tr>
<td>346-BS-07A</td>
<td>Room 113A</td>
<td>insulating cement on pipe fitting</td>
<td>65% Chrysotile</td>
<td>PLM</td>
</tr>
<tr>
<td>346-BS-07B</td>
<td>Room 113A</td>
<td>insulating cement on pipe fitting</td>
<td>SP</td>
<td>PLM</td>
</tr>
<tr>
<td>346-BS-07C</td>
<td>Room 113A</td>
<td>insulating cement on pipe fitting</td>
<td>SP</td>
<td>PLM</td>
</tr>
<tr>
<td>346-BS-08A</td>
<td>Room 108</td>
<td>12&quot; x 12&quot; vinyl floor tile - white with blue specks</td>
<td>None Detected</td>
<td>PLM</td>
</tr>
<tr>
<td>346-BS-08B</td>
<td>Room 108</td>
<td>12&quot; x 12&quot; vinyl floor tile - white with blue specks</td>
<td>None Detected</td>
<td>PLM</td>
</tr>
<tr>
<td>346-BS-08C</td>
<td>Room 108</td>
<td>12&quot; x 12&quot; vinyl floor tile - white with blue specks</td>
<td>None Detected</td>
<td>PLM</td>
</tr>
<tr>
<td>346-BS-09A</td>
<td>Room 112A</td>
<td>vinyl sheet flooring - black</td>
<td>None Detected</td>
<td>PLM</td>
</tr>
<tr>
<td>346-BS-09B</td>
<td>Room 112A</td>
<td>vinyl sheet flooring - black</td>
<td>None Detected</td>
<td>PLM</td>
</tr>
<tr>
<td>346-BS-09C</td>
<td>Room 112A</td>
<td>vinyl sheet flooring - black</td>
<td>None Detected</td>
<td>PLM</td>
</tr>
<tr>
<td>346-BS-10A</td>
<td>Room 211</td>
<td>12&quot; x 12&quot; vinyl floor tile - pink with white specks</td>
<td>None Detected</td>
<td>PLM</td>
</tr>
<tr>
<td>346-BS-10B</td>
<td>Room 211</td>
<td>12&quot; x 12&quot; vinyl floor tile - pink with white specks</td>
<td>None Detected</td>
<td>PLM</td>
</tr>
<tr>
<td>346-BS-10C</td>
<td>Room 211</td>
<td>12&quot; x 12&quot; vinyl floor tile - pink with white specks</td>
<td>None Detected</td>
<td>PLM</td>
</tr>
</tbody>
</table>

Notes:
PLM - Polarized Light Microscopy
TEM - Transmission Electron Microscopy
BS - Bulk Sample
nd - None Detected
SP - Stop Positive (not analyzed)
APPENDIX 3

Summary of Occurrences of Asbestos Containing Materials
### Summary of Occurrences of Asbestos-Containing Materials

<table>
<thead>
<tr>
<th>Level</th>
<th>Room</th>
<th>Specific Location</th>
<th>ACM Location</th>
<th>ACM Type Description</th>
<th>Estimated Quantity</th>
<th>Sample Number</th>
<th>Original Sample?</th>
<th>Asbestos Content</th>
<th>Friable?</th>
<th>Visibility</th>
<th>Access.</th>
<th>ACM Condition</th>
<th>Comments/Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>104, 105/D/F, 113, 113B, 113C 117, 117C,</td>
<td>floor</td>
<td>floor</td>
<td>12&quot; x 12&quot; vinyl floor tile - beige with brown streaks</td>
<td>300 sq. m</td>
<td>ref 346-BS-03B</td>
<td>No</td>
<td>2% Chrysotile</td>
<td>No</td>
<td>Yes</td>
<td>A</td>
<td>good</td>
<td>ACM</td>
</tr>
<tr>
<td>1</td>
<td>105B, 115, 115A, 115B, 115C,</td>
<td>floor</td>
<td>floor</td>
<td>12&quot; x 12&quot; vinyl floor tile - beige with green streaks</td>
<td>25 sq. m</td>
<td>ref 346-BS-04A</td>
<td>No</td>
<td>4% Chrysotile</td>
<td>No</td>
<td>Yes</td>
<td>A</td>
<td>good</td>
<td>ACM</td>
</tr>
<tr>
<td>1</td>
<td>106</td>
<td>floor</td>
<td>floor</td>
<td>12&quot; x 12&quot; vinyl floor tile - beige with green streaks</td>
<td>30 sq. m</td>
<td>346-BS-04A</td>
<td>Yes</td>
<td>4% Chrysotile</td>
<td>No</td>
<td>Yes</td>
<td>A</td>
<td>good</td>
<td>ACM</td>
</tr>
<tr>
<td>1</td>
<td>113A</td>
<td>below ceiling</td>
<td>hot water tank</td>
<td>Insulating cement on hot water tank</td>
<td>10 sq. m</td>
<td>346-BS-06A</td>
<td>Yes</td>
<td>65% Chrysotile</td>
<td>Yes</td>
<td>Yes</td>
<td>B</td>
<td>good</td>
<td>ACM</td>
</tr>
<tr>
<td>1</td>
<td>113A</td>
<td>below ceiling</td>
<td>below ceiling</td>
<td>Insulating cement on pipe fitting</td>
<td>70</td>
<td>346-BS-07A</td>
<td>Yes</td>
<td>65% Chrysotile</td>
<td>Yes</td>
<td>Yes</td>
<td>B</td>
<td>good</td>
<td>ACM</td>
</tr>
<tr>
<td>1</td>
<td>117</td>
<td>below ceiling</td>
<td>below ceiling</td>
<td>Cement pipe</td>
<td>4 m</td>
<td>ns</td>
<td>No</td>
<td>ns</td>
<td>No</td>
<td>Yes</td>
<td>C</td>
<td>good</td>
<td>PACM</td>
</tr>
<tr>
<td>1</td>
<td>117B</td>
<td>floor</td>
<td>floor</td>
<td>12&quot; x 12&quot; vinyl floor tile - beige with brown streaks</td>
<td>15 sq. m</td>
<td>346-BS-03B</td>
<td>Yes</td>
<td>2% Chrysotile</td>
<td>No</td>
<td>Yes</td>
<td>A</td>
<td>good</td>
<td>ACM</td>
</tr>
<tr>
<td>2</td>
<td>202, 202A, 208, 210,</td>
<td>floor</td>
<td>floor</td>
<td>12&quot; x 12&quot; vinyl floor tile - beige with green streaks</td>
<td>90 sq. m</td>
<td>ref 346-BS-04A</td>
<td>No</td>
<td>4% Chrysotile</td>
<td>No</td>
<td>Yes</td>
<td>A</td>
<td>good</td>
<td>ACM</td>
</tr>
<tr>
<td>2</td>
<td>203, 209, 204</td>
<td>floor</td>
<td>floor</td>
<td>12&quot; x 12&quot; vinyl floor tile - beige with brown streaks</td>
<td>80 sq. m</td>
<td>ref 346-BS-03B</td>
<td>No</td>
<td>2% Chrysotile</td>
<td>No</td>
<td>Yes</td>
<td>A</td>
<td>good</td>
<td>ACM</td>
</tr>
</tbody>
</table>

**26-Feb-2008**

### Accessibility Classification

- **A**: Areas of the building within reach (from floor level) of all building users
- **B**: Frequently entered maintenance areas within reach of maintenance staff, without the need for a ladder
- **C**: Areas of the building above 2.4 m where use of a ladder is required to reach the asbestos
- **D**: Areas of the building behind inaccessible solid ceiling systems, walls, or mechanical equipment, etc., where demolition of the ceiling, wall, or equipment, etc., is required to reach the asbestos

### Visibility

- **Yes**: Suspect material is visible without opening hatches or lifting ceiling tiles
- **No**: Suspect material can only be viewed if access hatches are opened or ceiling tiles lifted.

* Based on a non-intrusive inspection of visible surfaces within the room space.
APPENDIX 4

Laboratory Analytical Report – Asbestos:
Polarized Light Microscopy
## Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

<table>
<thead>
<tr>
<th>Sample</th>
<th>Location</th>
<th>Appearance</th>
<th>Non-Asbestos</th>
<th>Asbestos</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Fibrous %</td>
<td>Non-Fibrous %</td>
</tr>
<tr>
<td>346-BS-01A</td>
<td>12x12 Vinyl Floor Tile-Grey</td>
<td>Gray/White/Yellow Non-Fibrous Layers: 2</td>
<td>&lt;1% Cellulose</td>
<td>100% Non-fibrous (other)</td>
</tr>
<tr>
<td>346-BS-01B</td>
<td>12x12 Vinyl Floor Tile-Grey</td>
<td>Gray/White/Black Non-Fibrous Layers: 2</td>
<td>&lt;1% Cellulose</td>
<td>100% Non-fibrous (other)</td>
</tr>
<tr>
<td>346-BS-01C</td>
<td>12x12 Vinyl Floor Tile-Grey</td>
<td>Gray/White/Black Non-Fibrous Layers: 2</td>
<td>&lt;1% Cellulose</td>
<td>100% Non-fibrous (other)</td>
</tr>
<tr>
<td>346-BS-02A</td>
<td>2x4 Acoustical Ceiling Tile</td>
<td>Gray/White Fibrous Heterogeneous</td>
<td>45% Cellulose</td>
<td>30% Non-fibrous (other)</td>
</tr>
<tr>
<td>346-BS-02B</td>
<td>2x4 Acoustical Ceiling Tile</td>
<td>Tan/White Fibrous Heterogeneous</td>
<td>20% Cellulose</td>
<td>20% Non-fibrous (other)</td>
</tr>
<tr>
<td>346-BS-02C</td>
<td>2x4 Acoustical Ceiling Tile</td>
<td>Tan/White Fibrous Heterogeneous</td>
<td>20% Cellulose</td>
<td>20% Non-fibrous (other)</td>
</tr>
<tr>
<td>346-BS-03A</td>
<td>12x12 Vinyl Floor Tile-Beige</td>
<td>Tan/Brown/Gray/Gold Non-Fibrous Layers: 3</td>
<td>&lt;1% Cellulose</td>
<td>100% Non-fibrous (other)</td>
</tr>
<tr>
<td>346-BS-03B</td>
<td>12x12 Vinyl Floor Tile-Beige</td>
<td>Tan/Brown/Black Non-Fibrous Layers: 2</td>
<td>&lt;1% Cellulose</td>
<td>98% Non-fibrous (other)</td>
</tr>
</tbody>
</table>

**Analysis(s)**

| Scott Combs (30) |

**Due to magnification limitations inherent in PLM, asbestos fibers in dimensions below the resolution capability of PLM may not be detected. Samples reported as <1% or none detected may require additional testing by TEM to confirm asbestos quantities. The limit of detection as stated in the method is 1%. The above test report relates only to the items tested and may not be reproduced in any form without the express written approval of EMSL Analytical, Inc. EMSL's liability is limited to the cost of analysis. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. The test results contained within this report meet the requirements of NELAC unless otherwise noted. Samples received in good condition unless otherwise noted.**

Analysis performed by EMSL Greensboro (NVLAP lab code #102104-0, Virginia ID# is 3333-000228 West Virginia ID# is LT000297, Texas – Lab ID# 300301)
Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

<table>
<thead>
<tr>
<th>Sample</th>
<th>Location</th>
<th>Appearance</th>
<th>Non-Asbestos</th>
<th>Asbestos</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>% Fibrous</td>
<td>% Non-Fibrous</td>
</tr>
<tr>
<td>346-BS-03C</td>
<td>12x12 Vinyl Floor</td>
<td>Tile-Beige</td>
<td>&lt;1% Cellulose</td>
<td>97% Non-fibrous (other)</td>
</tr>
<tr>
<td></td>
<td>020705116-0009</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>346-BS-04A</td>
<td>12x12 Vinyl Floor</td>
<td>Gray/Tan/Black</td>
<td>&lt;1% Cellulose</td>
<td>97% Non-fibrous (other)</td>
</tr>
<tr>
<td></td>
<td>020705116-0010</td>
<td>Tile-Beige</td>
<td></td>
<td></td>
</tr>
<tr>
<td>346-BS-04B</td>
<td>12x12 Vinyl Floor</td>
<td>White/Gray/Yellow</td>
<td>&lt;1% Cellulose</td>
<td>100% Non-fibrous (other)</td>
</tr>
<tr>
<td></td>
<td>020705116-0011</td>
<td>Tile-Beige</td>
<td></td>
<td></td>
</tr>
<tr>
<td>346-BS-05A</td>
<td>12x12 Vinyl Floor</td>
<td>White/Gray/Yellow</td>
<td>&lt;1% Cellulose</td>
<td>100% Non-fibrous (other)</td>
</tr>
<tr>
<td></td>
<td>020705116-0013</td>
<td>Tile-White</td>
<td></td>
<td></td>
</tr>
<tr>
<td>346-BS-05B</td>
<td>12x12 Vinyl Floor</td>
<td>White/Gray/Yellow</td>
<td>&lt;1% Cellulose</td>
<td>100% Non-fibrous (other)</td>
</tr>
<tr>
<td></td>
<td>020705116-0014</td>
<td>Tile-White</td>
<td></td>
<td></td>
</tr>
<tr>
<td>346-BS-05C</td>
<td>12x12 Vinyl Floor</td>
<td>White/Gray/Yellow</td>
<td>&lt;1% Cellulose</td>
<td>100% Non-fibrous (other)</td>
</tr>
<tr>
<td></td>
<td>020705116-0015</td>
<td>Tile-White</td>
<td></td>
<td></td>
</tr>
<tr>
<td>346-BS-06A</td>
<td>Hot Water Tank</td>
<td>Gray Fibrous</td>
<td>5% Cellulose</td>
<td>30% Non-fibrous (other)</td>
</tr>
<tr>
<td></td>
<td>Insulation</td>
<td>Heterogeneous</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>020705116-0016</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Analyst(s)

Scott Combs (30)  
Stephen Bennett, Laboratory Manager or other approved signatory
Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

<table>
<thead>
<tr>
<th>Sample</th>
<th>Location</th>
<th>Appearance</th>
<th>% Fibrous</th>
<th>% Non-Fibrous</th>
<th>Asbestos</th>
<th>Asbestos Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>346-BS-06B</td>
<td>Hot Water Tank Insulation</td>
<td></td>
<td></td>
<td></td>
<td>Stop Positive (Not Analyzed)</td>
<td></td>
</tr>
<tr>
<td>346-BS-06C</td>
<td>Hot Water Tank Insulation</td>
<td></td>
<td></td>
<td></td>
<td>Stop Positive (Not Analyzed)</td>
<td></td>
</tr>
<tr>
<td>346-BS-07A</td>
<td>Fitting Insulation</td>
<td>Gray/Yellow</td>
<td>1% Cellulose</td>
<td>24% Non-fibrous (other)</td>
<td>65% Chrysotile</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fibrous Heterogeneous</td>
<td>10% Glass</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>346-BS-07B</td>
<td>Fitting Insulation</td>
<td></td>
<td></td>
<td></td>
<td>Stop Positive (Not Analyzed)</td>
<td></td>
</tr>
<tr>
<td>346-BS-07C</td>
<td>Fitting Insulation</td>
<td></td>
<td></td>
<td></td>
<td>Stop Positive (Not Analyzed)</td>
<td></td>
</tr>
<tr>
<td>346-BS-08A</td>
<td>12x12 Vinyl Floor Tile</td>
<td>White/Gray/Blue/</td>
<td>&lt;1% Cellulose</td>
<td>100% Non-fibrous (other)</td>
<td>None Detected</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Yellow</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Non-Fibrous Layers: 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>346-BS-08B</td>
<td>12x12 Vinyl Floor Tile</td>
<td>Gray/White/Tan/Blue</td>
<td>&lt;1% Cellulose</td>
<td>100% Non-fibrous (other)</td>
<td>None Detected</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Non-Fibrous Layers: 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Analyst(s)

Scott Combs (30)

Stephen Bennett, Laboratory Manager
or other approved signatory

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### Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

<table>
<thead>
<tr>
<th>Sample</th>
<th>Location</th>
<th>Appearance</th>
<th>Non-Asbestos</th>
<th>Asbestos</th>
<th>Asbestos % Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>346-BS-08C</td>
<td>12x12 Vinyl Floor Tile</td>
<td>White/Gray/Blue/Brown</td>
<td>&lt;1% Cellulose</td>
<td>100% Non-fibrous (other)</td>
<td>None Detected</td>
</tr>
<tr>
<td>346-BS-09A</td>
<td>Vinyl Linoleum Flooring</td>
<td>Gray/Tan/Yellow Fibrous Layers: 2</td>
<td>30% Cellulose</td>
<td>70% Non-fibrous (other)</td>
<td>None Detected</td>
</tr>
<tr>
<td>346-BS-09B</td>
<td>Vinyl Linoleum Flooring</td>
<td>Gray/Tan/Yellow Fibrous Layers: 2</td>
<td>30% Cellulose</td>
<td>70% Non-fibrous (other)</td>
<td>None Detected</td>
</tr>
<tr>
<td>346-BS-09C</td>
<td>Vinyl Linoleum Flooring</td>
<td>Gray/Tan/Yellow Non-Fibrous Layers: 2</td>
<td>30% Cellulose</td>
<td>70% Non-fibrous (other)</td>
<td>None Detected</td>
</tr>
<tr>
<td>346-BS-10A</td>
<td>12x12 Vinyl Floor Tile-Pink</td>
<td>Gray/Tan/Black Non-Fibrous Layers: 2</td>
<td>&lt;1% Cellulose</td>
<td>100% Non-fibrous (other)</td>
<td>None Detected</td>
</tr>
<tr>
<td>346-BS-10B</td>
<td>12x12 Vinyl Floor Tile-Pink</td>
<td>Gray/Tan/Black Non-Fibrous Layers: 2</td>
<td>&lt;1% Cellulose</td>
<td>100% Non-fibrous (other)</td>
<td>None Detected</td>
</tr>
<tr>
<td>346-BS-10C</td>
<td>12x12 Vinyl Floor Tile-Pink</td>
<td>Gray/Tan/Black Non-Fibrous Layers: 2</td>
<td>&lt;1% Cellulose</td>
<td>100% Non-fibrous (other)</td>
<td>None Detected</td>
</tr>
</tbody>
</table>

**Analyst(s)**

Scott Combs (30)

---

Due to magnification limitations inherent in PLM, asbestos fibers in dimensions below the resolution capability of PLM may not be detected. Samples reported as <1% or none detected may require additional testing by TEM to confirm asbestos quantities. The limit of detection as stated in the method is 1%. The above test report relates only to the items tested and may not be reproduced in any form without the express written approval of EMSL Analytical, Inc. EMSL's liability is limited to the cost of analysis. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. The test results contained within this report meet the requirements of NELAC unless otherwise noted. Samples received in good condition unless otherwise noted.

Analysis performed by EMSL Greensboro (NVLAP lab code #102104-0, Virginia ID# is 3333-00022B West Virginia ID# is LT000297, Texas – Lab ID# 300301)
APPENDIX 5

Evaluation Criteria for Assessing Asbestos Containing Materials
Criteria for Assessing Asbestos Containing Materials

A description of the criteria used in evaluating the condition, accessibility and exposure risk of asbestos-containing materials is provided below. The criteria is generally based on the Public Works and Government Services Canada (PWGSC) document entitled “Deputy Ministers Directive 057 – Asbestos Management” (Last Revised 1999/07/16) and industry standards of practice.

Assessment of Condition

Spray Applied Fireproofing, Insulation and Textured Finishes

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

Good

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

Poor

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

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

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

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

Other ACM

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

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

**Fair**

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

**Poor**

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

**Non-Friable and Potentially Friable Materials**

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

**Evaluation of Accessibility**

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

**Access (A)**

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

**Access (B)**

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

**Access (C) Exposed**

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

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

Access (D)

Areas of the building behind inaccessible solid ceiling systems, walls, or mechanical equipment, etc. where demolition of the ceiling, wall or equipment, etc., is required to reach the ACM. Evaluation of the condition and extent of ACM is limited or impossible, depending on the Assessor's ability to visually examine the materials in Access D.
APPENDIX 6
Terms and Definitions
**Terms and Definitions**

**Asbestos**
Any of the following asbestiform silicate minerals: actinolite asbestos, anthophyllite asbestos, chrysotile, crocidolite, cumming tonite-grunerite asbestos (amosite), tremolite asbestos with a dry weight concentration greater than 0.5%.

**Friable**
Capable of being crumbled, pulverized or reduced to powder by hand pressure.

**HEPA Filter**
A high efficiency particulate aerosol filter that is at least 99.97 per cent efficient in collecting a 0.3 micrometre aerosol.

**Homogeneous Material**
A material that is uniform in colour and texture

**Polarized Light Microscopy (PLM)**
Polarized Light Microscopy is a technique accepted by the US Environmental Protection Agency as a screening method for detecting asbestos fibres in bulk material samples.

**Presumed Asbestos Containing Materials (PACMs)**
Materials that are known to have been manufactured contain asbestos. Testing of the material is required to determine if the material contains asbestos fibres.

**Recommended Corrective Actions (RCAs)**
Areas identified to consist of asbestos-containing or presumed asbestos-containing materials that require attention to repair or remove damaged materials.

**Building**
Any structure, vault, chamber or tunnel including, without limitation, the electrical, plumbing, heating and air handling equipment (including rigid duct work) of the structure, vault, chamber or tunnel.