

ANNEXE 1

Devis de substances désignées par les ingénieurs-conseils DST
Différents rapports de substances désignées

Partie 1 Généralités

1.1 SOMMAIRE

- .1 Une inspection pour déceler la présence de substances désignées dans les bâtiments sélectionnés énumérés au paragraphe 1.2.2, a été effectuée en vertu des prescriptions de l'article 30 de la Loi sur la santé et la sécurité au travail de l'Ontario et du chapitre 0.1 des Lois refondues de l'Ontario, 1990. Selon les prescriptions de l'article 124 de la partie II du Code canadien du travail, l'employeur doit protéger la santé et la sécurité de chacun de ses employés. Grâce à la production de ce rapport, le Représentant de la CCN sera en mesure d'informer les employés de la CCN, les experts-conseils et les entrepreneurs de la présence de substances désignées qui risquent d'être perturbées au cours de la réalisation du projet.
- .2 Voici les substances désignées identifiées dans la Loi sur la santé et la sécurité au travail et les règlements correspondants :
 - .1 Acrylonitrile : Règl. de l'Ont. 490/09, ainsi modifié
 - .2 Arsenic : Règl. de l'Ont. 490/09, ainsi modifié
 - .3 Amiante
 - .1 Règl. de l'Ont. 490/09, ainsi modifié
 - .2 Règl. de l'Ont. 278/05, ainsi modifié
 - .4 Benzène : Règl. de l'Ont. 490/09 ainsi modifié
 - .5 Fumées de four à coke : Règl. de l'Ont. 490/09 ainsi modifié
 - .6 Oxyde d'éthylène : Règl. de l'Ont. 490/09 ainsi modifié
 - .7 Isocyanates : Règl. de l'Ont. 490/09 ainsi modifié
 - .8 Plomb : Règl. de l'Ont. 490/09 ainsi modifié, ainsi que le Règlement sur les matériaux à enduit de surface (S.O.R./2005-109)
 - .9 Mercure : Règl. de l'Ont. 490/09 ainsi modifié
 - .10 Silice : Règl. de l'Ont. 490/09 ainsi modifié
 - .11 Chlorure de vinyle : Règl. de l'Ont. 490/09 ainsi modifié
- .3 Tous les entrepreneurs qui demandent des soumissions à des sous-traitants doivent leur remettre ce rapport.

1.2 DATE DE VADILITÉ

- .1 Les renseignements pour la préparation du présent rapport ont été recueillis d'un examen des rapports précédents par d'autres consultants ainsi que par différents employés de DST Consulting Engineers Inc. qui ont participé à une série d'études des lieux et à des projets qui se sont déroulés entre août 2009 et mars 2015.
- .2 L'étendue des travaux décrits dans le présent rapport comprenait l'inspection visuelle des matériaux de construction pour déceler la présence de substances désignées dans les bâtiments suivants :
 - .1 Le dépôt
 - .2 L'atelier
 - .3 Les garages
 - .4 Les bureaux
- .3 Les études étaient limitées à ces secteurs, sauf les murs périmétriques, qui étaient accessibles par des moyens non destructifs. L'inspection visuelle et l'échantillonnage

étaient limités aux secteurs facilement accessibles. Le type de construction du bâtiment limite quelque peu l'exhaustivité de la recherche de substances désignées. Ainsi, on n'a pas démolé de planchers, de plafonds ou de murs en enduit, ni enlevé les revêtements de sol (autres que les murs périmétriques au l'atelier) ou d'autres secteurs pour inspecter les éléments dissimulés. Aux fins de réalisation de ce rapport, aucun espace clos n'a été ouvert.

- .3 Il se peut que les substances désignées susmentionnées soient présentes dans des endroits non accessibles et dans des espaces dissimulés (c.-à-d. dans les cavités des murs et des plafonds). Aucun endroit à l'extérieur des limites définies des travaux n'a été inspecté.
- .4 Avant le début des travaux, s'assurer auprès du Représentant de la CCN qu'aucune autre substance désignée n'a été apportée dans le secteur visé.
- .5 Il se peut que certaines substances n'aient pu être raisonnablement identifiées dans le cadre de la présente évaluation ou n'aient pas été apparentes lors de visites précédentes. Si l'on découvre des substances désignées au cours des travaux de démolition, il faut cesser les travaux, prendre les mesures de protection nécessaires et aviser le Représentant de la CCN sans délai. Ne pas poursuivre les travaux avant d'avoir reçu des instructions écrites à cet égard.

Partie 2 Substances désignées

2.1 RÉSULTATS DE L'ÉTUDE

- .1 ACRYLONITRILE : non décelé
- .2 ARSENIC : non décelé
- .3 AMIANTE : présent
 - .1 L'amiante est un matériau qu'on trouve dans la nature; autrefois, il entraînait dans la composition de plusieurs matériaux employés dans l'industrie de la construction, afin d'accroître les propriétés de résistances thermiques ou chimiques. On l'utilise fréquemment dans l'isolation thermique de tuyaux et de chaudières, dans l'ignifugation des charpentes métalliques et dans la fabrication de carreaux pour planchers et d'enduits pour murs et plafonds. Les matériaux qui contiennent de l'amiante se divisent en deux catégories : les friables et les non friables. Les matériaux friables qui contiennent de l'amiante sont fragiles et peuvent facilement s'émietter par simple pression de la main. Les matériaux non friables qui contiennent de l'amiante sont durables et renferment un liant comme le ciment, la résine vinylique et le bitume.
 - .2 Des échantillons représentatifs en vrac ont été recueillis à l'intérieur de la zone du projet et analysés par la suite, afin de déterminer leur concentration en amiante. Les résultats de l'analyse sont présentés sous forme sommaire dans les tableaux ci-après.

Tableau 1 - Résultats des analyses Amiante – Le dépôt

Échantillon	Emplacement	Matériaux	Teneur en amiante (%)
335848-01A	Sous-sol	Papier Tectum	60% Chrysotile
335848-01B			Non analysé
335848-01C			Non analysé
335848-02A	Sous-sol	Composé de joint à gypse	Non analysé
335848-02B			Non analysé
335848-02C			Non analysé
335848-02D			<0.5% Chrysotile
335848-02E			<0.5% Chrysotile
335848-02F			non décelé
335848-02G			non décelé
335848-02H			non décelé
335848-03A	Mezzanine	Papier Goudron	non décelé
335848-03B			non décelé
335848-03C			non décelé

Calfeutrage des fenêtres est soupçonné matériau contenant de l'amiante non friable.

Tableau 2 - Résultats des analyses Amiante – L'atelier

Échantillon	Emplacement	Matériaux	Teneur en amiante (%)
94189-01A	Enquête Lieu # 3	Carrelage de plancher en vinyle, blanc, 12"x12"	non décelé
94189-01B			non décelé
94189-01C			non décelé
94189-02A	Enquête Lieu # 1	Composé de joint à gypse	non décelé
94189-02B			non décelé
94189-02C			non décelé
94189-02D	Enquête Lieu # 3		non décelé
94189-02E	Enquête Lieu # 6		non décelé
94189-03A	Enquête Lieu # 5 (sale de bain)	Carrelage de plancher en vinyle, bleu, 12"x12"	non décelé
94189-03B			non décelé
94189-03C			non décelé
94189-04A	Enquête Lieu # 7	Plancher en vinyle	non décelé
94189-04B			non décelé
94189-04C			non décelé

Calfeutrage des fenêtres est soupçonné matériau contenant de l'amiante non friable.

Tableau 3 - Résultats des analyses Amiante – Les garages

Échantillon	Emplacement	Matériaux	Teneur en amiante (%)
335846-01A	ouverture redondante (mur ouest)	Ciment de crépissage	non décelé
335846-01B			non décelé
335846-01C			non décelé
01A	Garage (mur interior)	Papier Goudron	<MDL
01B			<MDL
01C			<MDL

MDL: Limite de détection Méthode de 0,5% (0,5% est la concentration d'amiante minimum réglementé, selon le Règl. 278/05, tel que modifié).

Calfeutrage des fenêtres est soupçonné matériau contenant de l'amiante non friable.

Tableau 4 - Résultats des analyses Amiante – Les bureaux

Échantillon	Emplacement	Matériaux	Teneur en amiante (%)
243867-01A	Salle de bain (garage)	matériau de surface (mur)	non décelé
243867-01B			non décelé
243867-01C			non décelé
243867-02A	Garage	Composé de joint à gypse	non décelé
243867-02B			non décelé
243867-02C			non décelé
243867-03A	Sous-sol	matériau crépi de surface (Stonework)	non décelé
243867-03B			non décelé
243867-03C			non décelé
243867-03D			non décelé
243867-03E			non décelé
243867-04A	Sous-sol (local des installations mécaniques/entreposage)	Ciment de crépissage sur le coude de la tuyauterie	90% Chrysotile
243867-05A	Sous-sol (local des installations mécaniques/entreposage)	Isolant de tuyau droit	20% Chrysotile
243867-06A	Salle de douche, rez de chaussée	Plancher en vinyle brun pâle	non décelé
243867-06B			non décelé
243867-06C			non décelé
243867-07A	Salle de douche, rez de chaussée	Composé de joint à gypse	non décelé
243867-07B			non décelé
243867-07C	Salle commune arrière, rez de chaussée		non décelé
243867-07D	Salle commune en avant, rez de chaussée		non décelé
243867-07E	Entrée principale, rez de chaussée		non décelé
243867-08A	Bureau arrière, rez de chaussée	Plancher en vinyle jaune	non décelé
243867-08B			non décelé
243867-08C			non décelé
243867-09A	Salle commune arrière, rez de chaussée	Carrelage de plancher en vinyle, crème, 12"x12"	non décelé
243867-09B			non décelé
243867-09C			non décelé

Échantillon	Emplacement	Matériaux	Teneur en amiante (%)
243867-10A	Bureau, entrée principale, rez de chaussée	Dalle de plafond 12" x 12"	non décelé
243867-10B			non décelé
243867-10C			non décelé
243867-11A	Salle commune en avant, rez de chaussée	Plancher en vinyle bleu/gris	non décelé
243867-11B	Salle de bain en avant, rez de chaussée		non décelé
243867-11C	Corridor, rez de chaussée		non décelé
243867-12A	Grenier	Les débris de bardeaux de toiture	non décelé
243867-12B			non décelé
243867-12C			non décelé
243867-13A	Grenier	Les débris de papier goudron	1% Chrysotile
243867-14A	Cheminée grenier	Mortier de brique	non décelé
243867-14B			non décelé
243867-14C			non décelé
243867-15A	Fenêtres extérieur, rez de chaussée	Calfeutrage des fenêtres	non décelé
243867-15B			non décelé
243867-15C			non décelé

On a aussi remarqué que des écrans pare-chaleur d'éclairage soupçonnés de contenir de l'amiante friable sont fixés aux appareils d'éclairage.

Contenu des résultats des échantillons, les débris de papier goudronné dans le grenier des bureaux sont soupçonnés contenir de l'amiante.

Les garnitures des joints de tuyaux de drainage en fonte sont soupçonnées contenir de l'amiante.

- .4 BENZÈNE : non décelé
- .5 FUMÉES DE FOUR À COKE : non décelées
- .6 OXYDE D'ÉTHYLÈNE : non décelé
- .7 ISOCYANATES : non décelés
- .8 PLOMB : présent
 - .1 Le plomb est un métal qu'on trouve dans la nature. Avant 1980, on l'utilisait surtout dans la peinture pour accélérer le séchage. La peinture contenant du plomb peut constituer un danger lorsqu'elle vieillit ou est endommagée, parce qu'elle produit de la poussière ou des éclats qui renferment du plomb. On trouve également du plomb dans les joints brasés de la tuyauterie jusqu'au milieu des années 1990 et dans les anciens emboîtements et les tulipes en fonte.
 - .2 D'après le projet de *Lignes directrices concernant le plomb dans la peinture et la poussière, révision avril 2005*, de l'Agence d'hygiène et de sécurité au travail de Santé Canada, une peinture est dite à base de plomb si sa teneur en plomb (poids du plomb par rapport au poids de la peinture) est égale ou supérieure à 0,009 % en poids, ce qui équivaut à 90 ppm.
 - .3 On suppose retrouver du plomb dans les matériaux suivants :
 - .1 Soudure sur les joints des tuyaux en cuivre.
 - .2 Calfeutrage dans les joints des tuyaux d'évacuation en fonte.
 - .3 Travaux de vitrage en carreaux de céramique.
 - .4 Accumulateurs au plomb dans les appareils d'éclairage de secours.

- .4 Des échantillons de peinture représentatifs ont été prélevés de la zone du projet et analysés pour déterminer leur concentration en plomb. Les résultats de l'analyse sont présentés sous forme sommaire dans les tableaux ci-après.

Tableau 5 - Résultats des analyses Plomb – Le dépôt

Échantillon	Emplacement	Description de Peinture	Teneur en plomb (ppm)
335848-LP-01	L'extérieur du bâtiment	Garniture et recouvrement à clin en bois, Blanc	85,000

Tableau - Résultats des analyses Plomb – L'atelier

Échantillon	Emplacement	Description de Peinture	Teneur en plomb (ppm)
94189-LP-01	Enquête Lieu # 1	Cloison sèche, plafond, Blanc	<50
94189-LP-02	Enquête Lieu # 4	Cloison sèche, mur, Grège	<50
94189-LP-03	Extérieur	Plinthe en bois, Noire	2,140

Tableau 7 - Résultats des analyses Plomb – Les garages

Échantillon	Emplacement	Description de Peinture	Teneur en plomb (ppm)
335846-LP-01	Extérieur	Parement en bois, Blanc	13,700
335846-LP-02	Intérieur	Travaux de finition, Grège	4,170

Tableau 8 - Résultats des analyses Plomb – Les bureaux

Échantillon	Emplacement	Description de Peinture	Teneur en plomb (ppm)
243867-LP-01	Salle commune en avant, rez de chaussée	Radiateur, Blanc	19,800
243867-LP-02	Entrée principale, rez de chaussée, extérieur	Plate-forme de sortie, Blanc	200,000
243867-LP-03	Boiserie des fenêtres, extérieur	Garniture, Noire	322,000

- .9 MERCURE : présent
- .1 Chaque tube fluorescent renferme une seule gouttelette de mercure. Cette gouttelette s'évapore lorsque l'appareil d'éclairage est mis sous tension.
- .2 Les ampoules en verre remplis de mercure liquide sont présents dans les thermostats montés au mur.
- .10 SILICE : présente
- .1 On retrouve de la silice cristalline libre dans les éléments suivants :
- .1 Béton.

- .2 Travaux de vitrage en carreaux de céramique.
- .11 MONOMÈRE DE CHLORURE DE VINYLE : non décelé
- .12 AUTRES MATIÈRES DANGEREUSES : présentes
 - .1 Bien que les biphényles polychlorés (BPC) et les substances qui appauvrissent la couche d'ozone (SACO) ne soient pas considérés comme des substances désignées, ils sont régies par des règlements provinciaux et fédéraux.
 - .1 On suppose que les appareils d'éclairage fluorescent renferment des ballasts ayant des condensateurs contenant des BPC.
 - .2 L'équipement de réfrigération (par exemple, les réfrigérateurs, unités de climatisation, etc.) est présumées contenir des SACO.
 - .2 Les déchets produits chimiques tels que les produits de nettoyage, les huiles, les peintures, peuvent être présents. Manipulation et l'élimination de ces articles sont soumis à des règlements provinciaux / fédéraux.

2.2 RECOMMANDATIONS

- .1 AMIENTE
 - .1 Matériaux amiantés non-friables. Se reporter à la section 02 82 00.01 – Désamiantage - Précautions minimales.
 - .2 Matériaux amiantés friables. Se reporter à la section 02 82 00.02 – Désamiantage - Précautions moyennes.
- .2 PLOMB
 - .1 La Direction de la santé et de la sécurité au travail du Ministère du Travail de l'Ontario a publié les *Directives concernant l'exposition au plomb sur les chantiers de construction*. Ce document classe le déplacement des matériaux contenant du plomb en trois catégories, soit de type 1, de type 2a, de type 2b ou de type 3, et prescrit différents niveaux de protection respiratoire et différentes méthodes de travail pour chacune de ces catégories. S'il n'existait pas de loi particulière concernant le plomb sur les chantiers de construction, ces directives pourraient servir de norme raisonnable, révisée par des pairs, pour l'adoption de méthodes de travail.
 - .2 Au besoin, les éléments de construction comme la tuyauterie en cuivre et en fonte ainsi que les gouttières peuvent être découpés des joints pour éviter de déplacer les soudures au plomb ou le calfeutrage au plomb et pour empêcher l'exposition possible des travailleurs au plomb.
 - .3 Se reporter à la section 02 86 00, Plomb – Mesures de Précautions.
 - .4 L'échantillonnage représentatif des matériaux enduits de peinture contenant du plomb a confirmé que les matériaux suivants ne sont pas dangereux aux fins d'élimination.
 - .1 La véranda et les éléments de garnitures en bois peint en noir de l'atelier et le bardage en bois extérieur des garages peuvent être classés comme déchets solides non dangereux en ce qui a trait à la présence de plomb.
 - .5 Les matériaux suivants sont classés et jugés comme déchets dangereux en ce qui a trait à la présence de plomb.
 - .1 Bardage en bois extérieur peint en blanc de le dépôt. Tous les éléments architecturaux de rebut peints de le dépôt doivent être jugés dangereux à ce qui a trait à la présence de plomb.

- .2 Cadres de fenêtres extérieures en bois peints en blanc de les bureaux. Tous les éléments architecturaux peints de les bureaux sont aussi jugés comme déchets contenant du plomb.
 - .3 Bardage en bois peint extérieur qui se trouve sous le parement extérieur en vinyle de l'atelier. La couche de peinture sur ce bardage est soupçonnée de contenir du plomb
- .3 MERCURE
 - .1 Se reporter à la section 02 41 99.02 Démolition d'ouvrages mineurs – Matières dangereuses.
- .4 SILICE
 - .1 La Direction de la santé et de la sécurité au travail du Ministère du Travail a publié le document ci-après, qui s'intitule comme suit : « Guideline: Silica on Construction Projects » (Lignes directrices se rapportant à la découverte de silice dans des projets de construction). Ce document classifie la modification ou le déplacement de matériaux renfermant de la silice, qui peut se retrouver dans des travaux de type 1, de type 2 ou de type 3, avec une assignation de différents niveaux de prodécures de travail et de protection respiratoire par rapport à chaque classification. L'on se devra de suivre ces procédures de travail lors de la réalisation de travaux impliquant la modification ou le déplacement de matériaux à concentration de silice.
 - .2 La poussière de silice peut être produite lors de travaux tels que dynamitage, broyage, concassage et décapage au jet de sable de matériaux contenant de la silice. On a retrouvé de la silice dans le béton, la maçonnerie, le placoplâtre et le plâtre dans le secteur des travaux. Il faut alors prévoir une protection respiratoire et une ventilation appropriées pendant la démolition ou la modification de ces structures.
- .5 AUTRES MATIÈRES DANGEREUSES

Se reporter à la section 02 41 99.02 Démolition d'ouvrages mineurs – Matières dangereuses.
- .6 RESPONSABILITÉS DE L'ENTREPRENEUR
 - .1 L'Entrepreneur doit examiner le rapport de substances désignées et prendre les précautions qui s'imposent pour veiller à la santé et à la sécurité des travailleurs et pour protéger l'environnement. Selon l'article 27 (2) (a, b, c) de la *Loi sur la santé et la sécurité de l'Ontario*, sur le chantier, le superviseur retenu par l'entrepreneur doit prendre toutes les mesures nécessaires pour protéger les travailleurs.

FIN DE LA SECTION



DESIGNATED SUBSTANCE SURVEY

Site Offices

Ottawa, Ontario



September 23, 2015

DST File No.: BE-OT-010540

DST Consulting Engineers Inc.

2150 Thurston Drive, Suite 203, Ottawa, Ontario K1G 5T9
Tel.: (613) 748-1415 Fax: (613) 748-1356 E-mail: ottawa@dstgroup.com

DST File No.: BE-OT-010540

Executive Summary

DST Consulting Engineers Inc. (DST) was retained by the to perform a Designated Substance Survey (DSS) of the Site Offices located in Ottawa, Ontario.

The objectives of the DSS are to:

1. Identify building materials (interior and exterior) and fixed equipment (e.g. heating/cooling systems) that contain designated substance/hazardous materials;
2. Determine the potential risks to human health and the environment associated with the identified materials;
3. Determine the potential impact the identified materials may have on future construction/renovation projects
4. Create an inventory of the designated substances present in the building(s); and,
5. Provide baseline reports for future construction/renovation projects.

The survey program implemented by DST was designed for consistency with the record of materials containing the 11 designated substances listed in Section 30 of the Occupational Health and Safety Act, R.S.O. 1990, Chapter O.1. The Designated Substances Regulations as per the Ontario Act are followed as an environmentally responsible protocol consistent results for its buildings located in both Ontario and Quebec.

DST performed the site visit for the Site Offices on August 27, 2009.

The following Designated Substances and Hazardous Materials were neither observed, nor suspected of being present in forms or quantities that would either impact future work or pose risks to human health or the environment:

- Acrylonitrile;
- Arsenic;
- Coke Oven Emissions;
- Ethylene Oxide;
- Isocyanates;
- Vinyl Chloride;
- Fecal Waste (e.g. animal feces, bird and bat guano, etc.);
- Urea Formaldehyde Foam Insulation (UFFI);
- Other hazardous materials, as viewed pertinent by the consultant.

In preparing this report DST project personnel reviewed the following document:

- Hazardous Material and Designated Substance Survey, Site Office, Ottawa, Ontario; Jacques Whitford Environmental Limited (JWEL), Project No. ONO62535, December 20, 2002.

The following table summarizes the remaining findings of the Site Offices survey. The table includes the results of the JWEL report referenced above, where appropriate.

DST File No.: BE-OT-010540

Designated/ Hazardous Substance	Findings	Recommendations
Asbestos	<p>Friable, poor condition, asbestos-containing, grey cement compound was identified on pipe fittings in the basement storage/mechanical room.</p> <p>Friable, good condition asbestos-containing layered cardboard wrap insulation was noted on pipe runs in the basement storage/mechanical room. Some friable, poor condition debris is associated with this insulation.</p> <p>Non-friable, poor condition tar paper debris is present in the attic.</p> <p>Suspected ACMs were identified within the building:</p> <ul style="list-style-type: none">• Light heat shields associated with fixtures stored in the attic (friable); and,• Packings within the joints of cast iron drain pipes (non-friable). <p>All asbestos bulk sample results including materials sampled by JWEL can be found in Section 3.3 of this report.</p>	<p>Poor condition grey cement compound and layered cardboard wrap debris should be completely removed following work procedures outlined in O.Reg. 278/05. Estimated remediation cost - \$1,500.</p> <p>Poor condition tar paper debris should be completely removed following work procedures outlined in O.Reg. 278/05. Estimated remediation cost - \$500.</p> <p>Although remedial action is not currently required for layered cardboard wrap insulation on pipe runs and light heat shields stored in the attic cost benefits could be incurred if this material was removed at the same time as the above noted materials. Estimated remediation cost - \$500 per item in addition to above costs.</p> <p>Although the materials sampled by JWEL and noted in Section 3.3 of this report did not contain regulated concentrations of asbestos the sampling requirements of O.Reg. 278/05 were not satisfied. This regulation requires that a minimum of three (3) bulk samples of these material types be sampled and all found not contain regulated concentrations of asbestos before the materials be deemed non asbestos-containing. Additional sampling of these materials will be required.</p>

DST File No.: BE-OT-010540

Designated/ Hazardous Substance	Findings	Recommendations
Lead	<p>All paints sampled by DST as well as some of the paints sampled by JWEL were identified as having amounts of lead greater than 600 ppm:</p> <ul style="list-style-type: none"> • White paint on radiators; • White paint on exterior wood siding and porch; • Black paint on exterior window trims; • Light yellow paint on interior window trims (JWEL); • Grey Stain on exterior of old section (JWEL); • Brown garage door paint (JWEL); and, • Grey Floor paint (JWEL). <p>All bulk paint chip sample results including those sampled by JEWL can be found in Section 3.8 of this report.</p> <p>Lead is suspected to be present in the following materials:</p> <ul style="list-style-type: none"> • Solder on the joints of copper piping; • Glazing on ceramic tiles in the washroom(s), kitchen, entrance vestibule; • Caulking in the joints of cast iron drainage pipes; and, • Lead sheeting on a support column in the Basement Storage Area (uncertain if remaining) 	<p>DST recommends removal of only the loose, delaminating, flaking areas of paint (leaving the remaining areas of paint intact and undisturbed). Estimated remediation cost - \$2,000 assuming materials are non-hazardous for disposal purposes.</p> <p>The Occupational Health and Safety Branch of the Ontario Ministry of Labour publication <i>Guideline: Lead on Construction Projects</i> should be followed during the disturbance of materials containing lead.</p>
Mercury	<p>Fluorescent light tubes and thermostats throughout the building are suspected to contain mercury.</p>	<p>No remedial action is required at this time.</p> <p>The Occupational Health and Safety Division of the Ontario Ministry of Labour publication <i>The Safe Handling of Mercury: A Guide for the Construction Industry</i>, should be followed during the disturbance of materials containing mercury.</p>

DST File No.: BE-OT-010540

Designated/ Hazardous Substance	Findings	Recommendations
Silica	Silica is present within concrete and masonry building materials, and wall surfacing material.	No remedial action is required at this time. Dust control measures should be adopted during the disturbance of silica, including those outlined within the Occupational Health and Safety Branch of the Ontario Ministry of Labour <i>Guideline: Silica on Construction Projects</i> .
Benzene	Benzene may be a constituent of fuels, oils, paints, thinners, and cleaning solvents stored in the Garage.	No remedial action is required at the present time. The transport and disposal of chemical waste is governed by O.Reg 347/90 - General – Waste Management, as amended to O.Reg. 217/08. Handling of this waste should be undertaken by those with proper training (e.g. Workplace Hazardous Materials Information System, TDGA, etc.).
Polychlorinated Biphenyls (PCBs)	PCBs may be present in unidentified fluorescent light ballasts (suspected) observed within the building. At the time of the JWEL survey the following ballasts were observed and confirmed to be non-PCB-containing ¹ : <ul style="list-style-type: none"> • Phillips, RQM-2S40 TPC, R-140 TPC; • Alliance, 17A 128E; • Magnatek, 446-L-SLH-TL-P; • Advance, R-140-1-TP (Mark III); • Sola Select, 570-30 2SX; • Sylvania, RS-110-TP; • Valmount, 8G1063 WE; and, • CGE, 8G3912 E1, 17A 128E, 17A 829E, 17A 148E, 17A 240E . 	No remedial action is required at the present time. DST recommends that unidentified fluorescent light ballasts be examined (after the electrical feeds are tagged and locked out by an electrician) to determine the PCB content of the ballasts.

¹ Determination made according to the Environment Canada publication *Identification of Lamp Ballasts containing PCBs*, August, 1991.

DST File No.: BE-OT-010540

Designated/ Hazardous Substance	Findings	Recommendations
Ozone-Depleting Substances (ODSs)	ODSs are suspected present within refrigerators, A/C units, and a water cooler found within the building. These are not considered integral parts of the building or structure.	No remedial action is required at the present time. When these units are taken out of service, the ODS refrigerants must be captured and reclaimed by a licensed technician.
Mould	The following mould impacted building materials were observed during the site visit: <ul style="list-style-type: none">Approximately 10 square metres on the underside of wooden floor boards in the basement storage area.	Given the location of the observed mould impacted building materials, remediation of the mould and renovations to limit the risk of the mould returning may be considered impractical. Consider restricting access to this area for those who are sensitive to mould exposure. Also, restricting storage of materials within this area may be warranted. If remedial activities are desired, DST recommends that: <ul style="list-style-type: none">Mould impacted materials be remediated following procedures outlined in the Canadian Construction Association mould guidelines (CCA 82-2004).The source of the water/moisture infiltration be investigated and corrected prior to reinstatement of building materials that are removed to accommodate mould remediation. Estimated remediation cost - \$2,000.

DST File No.: BE-OT-010540

Designated/ Hazardous Substance	Findings	Recommendations
Other Hazardous Materials	Paints, aerosols, oils, etc. were observed in the Garage and basement storage area chemical locker. These products are assumed to be used for maintenance activities.	<p>No remedial action is required at this time.</p> <p>When these materials are no longer in use, or are spent they should be disposed of appropriately. The transport and disposal of chemical waste is governed by O.Reg 347/90 - General – Waste Management, as amended to O.Reg. 217/08. Handling of this waste should be undertaken by those with proper training (e.g. Workplace Hazardous Materials Information System, TDGA, etc.).</p>

This Executive Summary should be read in conjunction with, and is subject to the same Limitations as, the entire report.

DST File No.: BE-OT-010540

DESIGNATED SUBSTANCE SURVEY Site Offices

Ottawa, Ontario

TABLE OF CONTENTS

1.0	INTRODUCTION.....	1
2.0	SCOPE OF WORK AND METHODOLOGY.....	2
3.0	FINDINGS.....	3
3.1	Acrylonitrile	4
3.2	Arsenic	4
3.3	Asbestos	4
3.3.1	Friable Asbestos Materials.....	5
3.3.2	Non-Friable Asbestos Materials.....	6
3.3.3	Non-Asbestos Materials.....	6
3.4	Benzene	7
3.5	Coke Oven Emissions.....	7
3.6	Ethylene Oxide	7
3.7	Isocyanates	7
3.8	Lead	7
3.9	Mercury	9
3.10	Silica.....	9
3.11	Vinyl Chloride	9
3.12	Polychlorinated Biphenyls (PCBs)	9
3.13	Ozone-Depleting Substances (ODSs)	10
3.14	Fecal Waste	10
3.15	Mould	10
3.16	Urea Formaldehyde Foam Insulation (UFFI).....	11
3.17	Radioactive Smoke Detectors	11
3.18	Other Hazardous Materials.....	11
4.0	CONCLUSIONS AND RECOMMENDATIONS	11
4.1	Asbestos	11
4.2	Benzene	12
4.3	Lead	12
4.4	Mercury	14
4.5	Silica.....	14
4.6	Polychlorinated Biphenyls (PCBs)	14
4.7	Ozone-Depleting Substances (ODSs)	15
4.8	Mould	15

DST File No.: BE-OT-010540

4.9	Other Hazardous Materials	16
5.0	LIMITATIONS OF REPORT	16
6.0	CLOSURE	18

Appendix A	Floor Plans
Appendix B	Laboratory Certificates of Analysis – Bulk Asbestos Samples
Appendix C	Laboratory Certificates of Analysis – Paint Chip Samples
Appendix D	Laboratory Certificates of Analysis – Mould Samples
Appendix E	Selected Photographs

DST File No.: BE-OT-010540

1.0 INTRODUCTION

DST Consulting Engineers Inc. (DST) was retained by the to perform a Designated Substance Survey (DSS) of the Site Offices located in Ottawa, Ontario. The Site Offices is a one-storey building, consisting of a ground floor and partial second floor, with an attic/storage level, and an unfinished basement. The building is exterior is wood siding on a stonework foundation. The roof is shingled. Heating is by radiator and utilities include hydro, domestic water, and municipal sewer service.

The objectives of the DSS are to:

1. Identify building materials (interior and exterior) and fixed equipment (e.g. heating/cooling systems) that contain designated substance/hazardous materials;
2. Determine the potential risks to human health and the environment associated with the identified materials;
3. Determine the potential impact the identified materials may have on future construction/renovation projects
4. Create an inventory of the designated substances present in the building(s); and,
5. Provide baseline reports for future construction/renovation projects.

The survey program implemented by DST was designed for consistency with the record of materials containing the 11 designated substances listed in Section 30 of the Occupational Health and Safety Act, R.S.O. 1990, Chapter O.1. The Designated Substances Regulations as per the Ontario Act are followed as an environmentally responsible protocol to provide consistent results for its buildings located in both Ontario and Quebec.

Designated Substances, as identified under the Ontario Occupational Health & Safety Act are:

1. Acrylonitrile;
2. Arsenic;
3. Asbestos (both friable and non-friable);
4. Benzene;
5. Coke Oven Emissions;
6. Ethylene Oxide;
7. Isocyanates;
8. Lead;
9. Mercury;
10. Silica; and,
11. Vinyl Chloride.

Other Hazardous Materials, which are not classified as Designated Substances, but which are still of concern due to other regulations, best practice guidelines and/or potential risks to human health and/or the environment, include:

12. Polychlorinated Biphenyls (PCBs);
13. Ozone Depleting Substances (ODS);
14. Fecal Waste (e.g. animal feces, bird and bat guano, etc.);
15. Mould;
16. Urea Formaldehyde Foam Insulation (UFFI);

DST File No.: BE-OT-010540

17. Radioactive Smoke Detectors; and,
18. Other hazardous materials, as viewed pertinent by the consultant.

2.0 SCOPE OF WORK AND METHODOLOGY

In preparing this report DST project personnel reviewed the following documents:

- 1-page building information summary from the Asset Inventory System; and,
- Hazardous Material and Designated Substance Survey, Site Office, Ottawa, Ontario; Jacques Whitford Environmental Limited (JWEL), Project No. ONO62535, December 20, 2002.

DST performed the site visit for the Site Offices on August 27, 2009. The survey included a walkthrough assessment of all accessible areas of the building. While on site DST personnel:

- Conducted surveying, sampling and/or monitoring as required to address any data gaps and to reassess areas investigated during previous assessments (all sampling locations appear on the drawings in Appendix A);
- Define the extent and approximate quantities of Designated Substances and Hazardous Materials;
- Determine the source and extent of mould proliferation, if applicable; and,
- Collected sufficient information to subsequently enable DST to recommend appropriate mitigation measures to bring the building into compliance with applicable legislation and/or to mitigate risks to human health and/or the environment.

Materials suspected of containing designated substances and other hazardous materials were visually identified, based on the surveyor's knowledge of the historic composition of building products. Equipment that may contain ODSs (e.g. air conditioning and refrigeration equipment) or PCBs (e.g. electrical transformers and fluorescent light ballasts) can often be identified by examining manufacturer's labels. For safety reasons, DST personnel do not remove the ballast shields from fluorescent light fixtures to examine the ballast codes unless the electrical circuit for the lighting has been tagged and locked out by a qualified electrician. Visual identification of materials suspected to contain asbestos or lead (in paint) was supported by the collection and analysis of a limited number of representative samples. Materials suspected of containing designated substances other than asbestos or lead (in paint) were identified by appearance, age, and knowledge of historic applications.

In Ontario, a material is defined as an Asbestos-Containing Material (ACM) if the material has a minimum asbestos content of 0.5% by dry weight. ACMs can be divided into two categories: friable and non-friable material. A friable asbestos-containing material (ACM) is a material that can be crumbled, powdered, or pulverized by hand pressure and can readily release fibres when disturbed. Common applications of friable ACMs are sprayed or trowelled surfacing materials (e.g. sprayed fireproofing and textured coatings) as well as mechanical and thermal insulation. Non-friable materials are materials that will generally release fibres only when cut or shaped. Common non-friable ACMs include vinyl floor products, drywall joint compound, plaster, asbestos textile products and asbestos cement products (transite). Some of these products may become friable with time or when disturbed (e.g. drywall joint compound).

DST File No.: BE-OT-010540

Forty-nine (49) bulk samples of suspected ACMs were collected by DST during the site investigation. Samples were analyzed for their asbestos content at LEX Scientific (LEX). LEX is certified under the National Institute of Science and Technology's National Voluntary Laboratory Accreditation Program (NVLAP) to perform asbestos bulk sample analysis (NVLAP No.: 101949). The bulk samples were analyzed using a combination of dispersion staining and polarised light microscopy (PLM). This analytical method complies with the United States Environmental Protection Agency (U.S. EPA) Method 600/R-93/116 dated July, 1993, which is the regulatory approved protocol for bulk asbestos analysis in Ontario. The analytical results for asbestos in bulk materials are included in Appendix B.

This report includes bulk asbestos sample results from the referenced JWEL survey report.

Although the Ministry of Labour (MoL) has published a guideline for control of lead exposures on construction projects in Ontario, it does not include criteria for the classification of lead-paint. Instead, it uses presumed airborne lead concentrations for specific tasks as criteria for classifying work. However, in regulations set by the U.S. Department of Housing and Urban Development, Lead-Based Paint is classified as any paint application containing at least 1.0 milligrams of lead per square centimetre of surface area (1.0 mg/cm^2), or at least 0.5% lead content by weight (5,000 ppm). This criteria was widely, although not universally, used in Canada. In Canada, the Federal Hazardous Product Act has recently lowered the allowable concentration of lead in paints for new consumer products to 0.06% lead content by weight (600 ppm). For the purposes of this survey and report, paints having a lead content greater than 0.06% are considered to be lead-based. Disturbance of paints having lead content below 600 ppm are less likely to release significant concentrations of airborne lead during disturbance and therefore are not likely considered harmful.

Three (3) painted finishes, representative of the painted finishes in the building, were sampled and submitted to Paracel Laboratories for lead content analysis. The samples were analyzed using Inductively Coupled Plasma – Mass Spectrometry (ICP-MS) in accordance with U.S. EPA Method 6020. The analytical results for lead in the paint chip samples are included in Appendix C.

This report includes bulk paint chip sample results from the referenced JWEL survey report.

One (1) tape-lift sample of suspected mould-impacted material was collected by physically adhering a piece of clear tape to the affected material and then peeling the tape off the substrate. The tape was then placed in a clean plastic bag and labelled. The microbial sample was analyzed by Paracel Laboratories Ltd. (Paracel) located in Ottawa, Ontario. Paracel is accredited by the Standards Council of Canada (ISO/IEC 17025) and the Canadian Association for Laboratory Accreditation (CALA). The analytical results for mould samples are included in Appendix D.

Selected photographs are included in Appendix E.

3.0 FINDINGS

The following sections outline the complete findings of all designated substances and hazardous materials assessed within the Site Offices located in Ottawa, Ontario.

DST File No.: BE-OT-010540

3.1 Acrylonitrile

Acrylonitrile was neither observed in the building, nor suspected of being present, in forms or quantities that would either impact future work or pose risks to human health or the environment.

3.2 Arsenic

Arsenic was neither observed in the building, nor suspected of being present, in forms or quantities that would either impact future work or pose risks to human health or the environment.

3.3 Asbestos

Forty-nine (49) bulk samples of suspected ACMs were collected by DST during the site investigation. Sample descriptions and analytical results are summarized in the following tables.

Table 1: Summary of Bulk Samples Analyzed for Asbestos			
Sample I.D.	Sample Location	Material Description	Asbestos (%)
243867-01A	Garage washroom	Wall surfacing material	None Detected
243867-01B			None Detected
243867-01C			None Detected
243867-02A	Garage	Drywall joint compound	None Detected
243867-02B			None Detected
243867-02C			None Detected
243867-03A	Basement	Stonework surface parging material	None Detected
243867-03B			None Detected
243867-03C			None Detected
243867-03D			None Detected
243867-03E			None Detected
243867-04A	Basement (Mechanical Room/Storage Area)	Grey cement compound on pipe fittings	90% Chrysotile
243867-05A	Basement (Mechanical Room/Storage Area)	Layered cardboard wrap and tar paper insulation	20% Chrysotile
243867-06A	Ground floor shower room	Light brown vinyl sheet flooring	None Detected
243867-06B			None Detected
243867-06C			None Detected
243867-07A	Ground floor shower room	Drywall joint compound	None Detected
243867-07B			None Detected
243867-07C	Ground floor rear common room		None Detected
243867-07D	Ground floor front common room		None Detected
243867-07E	Ground floor front entrance		None Detected
243867-08A	Ground floor rear office	yellow vinyl sheet flooring	None Detected
243867-08B			None Detected

DST File No.: BE-OT-010540

Table 1: Summary of Bulk Samples Analyzed for Asbestos			
Sample I.D.	Sample Location	Material Description	Asbestos (%)
243867-08C			None Detected
243867-09A	Ground floor rear common area	12" x 12" Cream colour vinyl floor tile	None Detected
243867-09B			None Detected
243867-09C			None Detected
243867-10A	Ground floor office at entrance	12" x 12" Lay-in ceiling tile	None Detected
243867-10B			None Detected
243867-10C			None Detected
243867-11A	Ground floor front common room	Blue/grey vinyl sheet flooring	None Detected
243867-11B	Ground floor front washroom		None Detected
243867-11C	Ground floor front corridor		None Detected
243867-12A	Attic	Roofing shingle debris	None Detected
243867-12B			None Detected
243867-12C			None Detected
243867-13A	Attic	Tar paper debris	1% Chrysotile
243867-14A	Attic chimney	Brick mortar	None Detected
243867-14B			None Detected
243867-14C			None Detected
243867-15A	Exterior windows at ground level	Window caulking	None Detected
243867-15B			None Detected
243867-15C			None Detected

Note: In Ontario regulated concentration of asbestos is $\geq 0.5\%$.

3.3.1 Friable Asbestos Materials

Friable asbestos-containing grey cement compound (DST Sample 243867-04A, JWEL Sample SA-04) was noted on pipe fittings in the basement storage/mechanical room. The material is exposed and considered to be in POOR condition. There are approximately 4 fittings. This material is accessible to maintenance staff.

Friable asbestos-containing layered cardboard wrap insulation (Sample 243867-05A, JWEL Sample SA-05) was noted on pipes in the basement storage/mechanical room. Some debris associated with this material was also noted on the ground in this area. There is approximately 3 linear metres of layered cardboard wrap insulation on pipe runs which is in GOOD condition. The exposed debris is considered to be in POOR condition. There is less than one square metre of insulation debris.

Friable suspect asbestos-containing light heat shields associated with light fixtures being stored in the attic were noted during the survey. This material was in good condition at the time of the survey and was thus not sampled in order to avoid damaging the material prior to potential future use. This material is accessible to maintenance staff.

DST File No.: BE-OT-010540

3.3.2 Non-Friable Asbestos Materials

Non-friable asbestos-containing tar paper debris (Sample 243867-13A) was noted on the ground in the Attic. The material is exposed and considered to be in POOR condition. There is less than one square metre of debris. It is unsure if this material is remnants from roofing retrofit or if it remains concealed as part of the roof structure.

Non-friable suspect ACM was noted as follows.

- Packings within the joints of cast iron drain pipe.

The following materials sampled by JWEL were determined not to contain regulated amounts of asbestos:

- Blown thermal insulation between the ceiling of the main floor and the attic (JWEL Sample SA-15);
- Wire insulation in the Basement Storage Area (JWEL Sample SA-12);
- Tar paper on the roof of the newer section of the building (JWEL Sample SA-09);
- A shingle on the older part of the building (JWEL Sample SA-10); and,
- Tar paper on the older part of the building (JWEL Sample SA-11).

No wire insulation was observed in the Basement Storage Area during the DST site investigation. The sampling of this material by JWEL did not meet the sampling requirements of the current O.Reg. 278/05. As such, should any of this wire insulation be observed as part of future work, it should be considered asbestos-containing unless additional sampling proves otherwise.

Given that tar paper debris sampled by DST (Sample 243867-13A) was determined to contain asbestos and tar paper sampled during the JWEL survey do not meet the sampling requirements of O.Reg. 278/05 all tar paper at the subject site should be considered asbestos-containing unless additional sampling proves otherwise.

Assuming that the shingle sampled by JWEL and those sampled by DST (243867-12A-C) are homogenous materials these shingles are not considered asbestos-containing.

3.3.3 Non-Asbestos Materials

Bulk sampling and subsequent laboratory analysis has demonstrated that the following building materials do not contain regulated concentrations of asbestos:

- Wall surfacing material (DST Samples 243867-01A-C) ;
- Drywall joint compound (DST Samples 243867-02A-C, 243867-07A-E, JWEL Samples SA-12 to SA-14);
- Stonework surface parging material (DST Samples 243867-03A-E;
- Vinyl sheet flooring (JWEL Samples SA-02, SA-03, SA-06 to SA-08);
- 12" x 12" Vinyl floor tiles (DST Samples 243867-09A-C, JWEL Sample SA-01);
- 12" x 12" Lay-in ceiling tile (DST Samples 243867-10A-C);
- Roofing shingle debris (DST Samples 243867-12A-C);
- Chimney brick mortar (DST Samples 243867-14A-C); and,

DST File No.: BE-OT-010540

- Window caulking (DST Samples 243867-15A-C).

Based upon visual observations, the surveyors were also able to visually identify the following building materials as non-asbestos:

- Blown thermal insulation between the ceiling of the main floor and the attic;
- 1' x 1' cellulose ceiling tile; and,
- Fibreglass pipe insulation.

3.4 Benzene

Benzene may be a constituent of fuels, oils, paints, thinners, and cleaning solvents stored in the Garage.

3.5 Coke Oven Emissions

Coke Oven Emissions were neither observed in the building, nor suspected of being present, in forms or quantities that would either impact future work or pose risks to human health or the environment.

3.6 Ethylene Oxide

Ethylene Oxide was neither observed in the building, nor suspected of being present, in forms or quantities that would either impact future work or pose risks to human health or the environment.

3.7 Isocyanates

Isocyanates were neither observed in the building, nor suspected of being present, in forms or quantities that would either impact future work or pose risks to human health or the environment.

3.8 Lead

Three (3) representative paint finishes in total were sampled from within the buildings and submitted for lead content analysis. The sample descriptions and analytical results are summarized in the following table.

Table 2: Summary of Paint Chip Samples Analyzed for Lead			
Sample I.D.	Sample Location	Paint Description	Lead (ppm)
243867-LP-01	Ground floor front common room	White radiator paint	19,800
243867-LP-02	Front entrance exterior	White porch paint	200,000
243867-LP-03	Exterior window trim	Black trim paint	322,000

All of the paint chip samples collected and analyzed contained a lead concentration in excess of the 600 ppm limit recently established by the Federal Hazardous Products Act. The following list describes each paint sample with a lead concentration in excess of the 600 ppm:

DST File No.: BE-OT-010540

- White radiator paint was noted on radiators throughout the building. Approximately 1ft² of damage was noted in the front common room;
- Exterior white paint was observed on the wood siding and the porch of the front entrance of the building. Approximately 100 ft² of damage was noted in various locations around the building; and,
- Exterior black wood trim paint was noted on the windows on the exterior of the building. Approximately 100 ft² of damage was noted in various locations.

Sample descriptions and analytical results for samples collected by JWEL from the referenced report are summarized in the following table.

Table 3: Summary of Paint Chip Samples Analyzed for Lead (JWEL)			
Sample I.D.	Sample Location	Paint Description	Lead (ppm)
Lead-001	Janitor's Closet	Off White Wall Paint	<50
Lead-002	Main Floor Kitchen	Yellow Wall Paint	<50
Lead-003	Main Floor Kitchen	Light Yellow Interior Window Trim Paint	81,000
Lead-004	Main Office Area	Grey Floor Paint	3,100
Lead-005	Garage	Off White Wall Paint	<50
Lead-006	Garage	Gold Joist Paint	300
Lead-007	Garage Doors	Brown Paint	1,500
Lead-008	Exterior	White	200
Lead-009	Workshop	Cream Wall Paint	<50
Lead-010	Attic	Black Over White Exterior Window Trim Paint	170,000
Lead-011	2 nd Floor Kitchen	Yellow Wall Paint	<50
Lead-012	2 nd Floor Office	Yellow Wall Paint	<50
Lead-013	2 nd Floor Office	Green Wall Paint	<50
Lead-014	2 nd Floor Office	Off White Wall Paint	300
Lead-016	Attic, exterior of Old Section	Grey Stain	310,000
Lead-017	Exterior Under Siding, Old Section	White Paint	6,100
Lead-018	Exterior Under Siding, New Section	White Paint	49,000

The referenced JWEL report references regulations set by the U.S. Department of Housing and Urban Development where Lead-Based Paint is classified as any paint application containing at least 1.0 milligrams of lead per square centimetre of surface area (1.0 mg/cm²), or at least 0.5% lead content by weight (5,000 ppm). This criteria was widely, although not universally, used in Canada.

In addition to paints sampled by JWEL containing lead concentrations greater than 5,000 ppm the following paints also contain lead in excess of 600 ppm:

- Grey floor paint in the Main Office; and,

DST File No.: BE-OT-010540

- Brown Garage Doors.

As part of DST's site visit, no additional paints that contained elevated concentrations of lead were identified other than those listed above and sampled by DST.

The referenced JWEL survey report also noted that lead sheeting containing 17,000 ppm lead was present on a support column in the Basement Storage Area. DST did not note this during the survey of the Basement Storage Area, and it is uncertain if this material remains in this location

Based upon the historic composition of building materials, lead is also expected to be present in:

- Solder on the joints of copper piping;
- Glazing on ceramic tiles in the washrooms; and,
- Caulking in the joints of cast iron drainage pipes.

3.9 Mercury

Fluorescent light tubes contain a single droplet of mercury which vaporizes when the tube is energized.

A glass ampoule filled with liquid mercury is present inside each wall mounted thermostat.

3.10 Silica

Based on the historic composition of building materials, silica is expected to be present in:

- Concrete and masonry elements of the building; and,
- Ceramic tiles.

3.11 Vinyl Chloride

Vinyl Chloride was neither observed in the building, nor suspected of being present, in forms or quantities that would either impact future work or pose risks to human health or the environment.

3.12 Polychlorinated Biphenyls (PCBs)

Polychlorinated Biphenyls (PCBs), also known as Chlorobiphenyls, are hazardous chemicals which were used in the manufacturing of a variety of equipment, such as electrical equipment, heat exchangers, hydraulic systems, and for several other specialized applications. PCBs are commonly found within electrical ballasts manufactured prior to 1981, found within fluorescent light fixtures and high intensity discharge lamps.

Light fixtures with T12 lamps are more likely to contain ballasts that were manufactured prior to 1981. T8 lamps are associated with light fixtures that were manufactured after the phase-out of PCB-containing ballasts. The letter "T" denotes the shape of the light fixture (e.g. tubular) and the number which follows indicates the diameter in eighths of an inch.

DST File No.: BE-OT-010540

The JWEL survey determined that the following ballasts observed throughout the building and in storage in the Attic are non-PCB-containing²:

- Phillips, RQM-2S40 TPC, R-140 TPC;
- Alliance, 17A 128E;
- Magnatek, 446-L-SLH-TL-P;
- Advance, R-140-1-TP (Mark III);
- Sola Select, 570-30 2SX;
- Sylvania, RS-110-TP;
- Valmount, 8G1063 WE; and,
- CGE, 8G3912 E1, 17A 128E, 17A 829E, 17A 148E, 17A 240E .

Unidentified fluorescent light ballasts associated with the light fixtures observed throughout the building are suspected to contain PCBs until proven otherwise.

3.13 Ozone-Depleting Substances (ODSs)

Ozone depleting substances (ODSs) include a variety of chlorofluorocarbon (CFC) and bromine (halon) gases which have been shown to contribute to the destruction of the earth's stratospheric ozone layer, and contribute to global warming. Direct exposure to some ODSs such as halon is a health hazard as well. ODSs are commonly used as refrigerants in a variety of equipment and in fire suppression systems.

Suspect ODS were observed in the following equipment:

- Window A/C units no access to info plate;
- Refrigerators/freezers, no access to info plate; and,
- Water cooler, no access to info plate.

No other ODS-containing equipment was identified within the building.

3.14 Fecal Waste

Fecal waste was neither observed in the building, nor suspected of being present, in forms or quantities that would either impact future work or pose risks to human health or the environment.

3.15 Mould

One (1) tape-lift sample (Sample 243867-TL-01) from the white-stained, wooden surface of the underside of the ground floor was collected in the Basement. Laboratory results showed low levels of hyaline mycelia fragments. The presence of these fragments indicates that mould is impacting this building material. There is approximately 10 square metre of obvious mould impacted wooden floorboard.

No other mould-impacted materials were noted in any of the other buildings surveyed.

² Determination made according to the Environment Canada publication *Identification of Lamp Ballasts containing PCBs*, August, 1991.

DST File No.: BE-OT-010540

3.16 Urea Formaldehyde Foam Insulation (UFFI)

UFFI was neither observed in the building, nor suspected of being present, in forms or quantities that would either impact future work or pose risks to human health or the environment.

3.17 Radioactive Smoke Detectors

Smoke detectors were not observed in the building.

3.18 Other Hazardous Materials

Paints, aerosols, oils, etc. were observed in the Garage and basement storage area chemical locker. These products are assumed to be used for maintenance activities.

4.0 CONCLUSIONS AND RECOMMENDATIONS

DST Consulting Engineers Inc. (DST) was retained to perform a Designated Substance Survey (DSS) of the Site Offices located in Ottawa, Ontario.

The site visit was performed by DST on August 27, 2009. The following Designated Substances and Hazardous Materials were neither observed, nor suspected of being present in forms or quantities that would either impact future work or pose risks to human health or the environment:

- Acrylonitrile;
- Arsenic;
- Coke Oven Emissions;
- Ethylene Oxide;
- Isocyanates;
- Vinyl Chloride;
- Fecal Waste (e.g. animal feces, bird and bat guano, etc.);
- Urea Formaldehyde Foam Insulation (UFFI); and,
- Radioactive Smoke Detectors.

4.1 Asbestos

The disturbance of asbestos-containing materials on construction and demolition projects in the province of Ontario is governed by *O.Reg. 278/05, Asbestos on Construction Projects and in Buildings and Repair Operations* enabled under the *Occupational Health and Safety Act (R.S.O. 1990, Chapter 0.1)*. This regulation classifies all asbestos disturbance as either Low Risk, Moderate Risk, or High Risk, each of which has defined precautionary measures. All asbestos materials are subject to specific handling and disposal precautions, and must be removed prior to demolition. The Ontario Ministry of Labour (MoL) must be notified of any project involving removal of more than a minor amount of friable asbestos material.

Friable grey cement compound insulation (DST Sample 243867-04A, JWEL Sample SA-04) contains 90% Chrysotile asbestos and was identified on pipe fittings in the basement storage/mechanical room. The material is exposed and considered to be in POOR condition. There are approximately 4 fittings. This material is accessible to maintenance staff.

DST File No.: BE-OT-010540

Friable asbestos-containing layered cardboard wrap insulation (Sample 243867-05A, JWEL Sample SA-05) was noted on pipes the basement storage/mechanical room. Some debris associated with this material was also noted on the ground in this area. There is approximately 3 linear metres of layered cardboard wrap insulation on pipe runs which is in GOOD condition. The exposed debris is considered to be in POOR condition and remediation is recommended for this material. There is less than one square metre of insulation debris.

Remedial action is recommended for POOR condition pipe fittings and layered cardboard wrap insulation debris to minimize the human health risk associated with exposure to airborne asbestos fibres. This material can be completely removed using Type 2 asbestos work procedures (estimated abatement cost of \$1,500). Although remedial action is not currently required for the GOOD condition pipe run insulation cost benefits could be incurred if this material was removed at the same time as the noted grey cement compound and layered cardboard wrap insulation debris. This material can be completely removed using Type 2/Glovebag asbestos work procedures (additional estimated abatement cost of \$500).

Friable suspect asbestos-containing light heat shields associated with light fixtures being stored in the attic were in Good condition at the time of the survey. This material is accessible to maintenance staff. Although no remediation is currently necessary for this material proactive removal can be performed using Type 2 procedures (estimated cost \$500).

Non-friable asbestos-containing tar paper debris (Sample 243867-13A) was noted on the floor in the Attic. The material is exposed and considered to be in POOR condition. There is less than one square metre of debris. This material should be cleaned using type 1 procedures (estimated cost \$500).

With consideration of the results of the sampling programs by both DST and JWEL, all tar paper associated with the subject building should be considered asbestos-containing unless additional sampling proves otherwise.

Wire insulation in the Basement Storage Area, previously sampled by JWEL, was not observed by DST. If this materials is encountered as part of future renovation work, it should be assumed to contain asbestos unless additional sampling confirms otherwise.

4.2 Benzene

No current action for items in the garage for which benzene may be a constituent is required. The transport and disposal of chemical waste is governed by O.Reg 347/90 - General – Waste Management, as amended to O.Reg. 217/08. Handling of this waste should be undertaken by those with proper training (e.g. Workplace Hazardous Materials Information System, TDGA, etc.).

4.3 Lead

The Occupational Health and Safety Branch of the Ontario Ministry of Labour has published *Guideline: Lead on Construction Projects*. This document classifies all lead disturbance as either Type 1, Type 2a, Type 2b or Type 3 work, and assigns different levels of respiratory protection and work procedures for each classification. In the absence of specific legislation for

DST File No.: BE-OT-010540

lead on construction projects, this guideline would serve as a reasonable, peer reviewed standard for work procedures.

The following paints have been confirmed to contain concentrations of lead greater than 600 ppm:

- White paint on interior radiators (DST Sample 243867-LP-01);
- White paint on exterior wood siding and porch (DST Sample 243867-LP-02, JWEL Samples Lead-017, Lead-018);
- Black paint on exterior window trims (DST Sample 2438674-LP-03, JWEL Sample Lead-010);
- Light yellow paint on interior window trim (JWEL Sample Lead-003);
- Grey stain on the exterior of the old section (JWEL Sample Lead-016);
- Grey floor paint (JWEL Sample Lead-004); and,
- Brown garage door paint (JWEL Sample SA-04).

These results suggest that radiator, exterior siding and window trim paints (e.g., paints on baseboards, door casings and window frames) have the greatest potential to contain the highest concentrations of lead. Over the years older layers of interior paints have likely been covered with lower lead content paints. If not already sampled, DST recommends that these older paints in particular be sampled prior to future maintenance, renovation, demolition disturbance.

Lead paint samples with elevated concentrations of lead can pose a health risk to humans if ingested. Such lead paints are also a risk to the environment with the potential to contaminate soil and groundwater. Paints with elevated lead content can also pose a health risk to workers while completing renovations within the building.

DST recommends removal, following the above noted guideline, of only the loose, delaminating, flaking areas of paint (leaving the remaining areas of paint intact and undisturbed). The estimated remediation cost is \$2,000 assuming materials are non-hazardous for disposal purposes.

No remedial action is required for the remaining lead-based materials at the present time since all are in good condition. If required at some future date to accommodate renovation, demolition or maintenance work, the following procedures are appropriate:

- copper piping can be cut a small distance (e.g. 50 mm) from the joints to avoid direct disturbance of the lead solder;
- cast iron drain pipes can be cut away from the joints to avoid direct disturbance of the lead caulking (and possibly asbestos packings) in the joints; and,
- ceramic tiles can be removed using Type 2a work procedures and respiratory protection provided that only non-powered hand tools are used.

If lead sheeting is present on a support column in the Basement Storage Area as noted by JWEL appropriate procedures as recommended by the above noted guideline should be employed when this material is disturbed/removed.

DST File No.: BE-OT-010540

4.4 Mercury

There are no regulations that specifically govern the disturbance of mercury on construction projects. However, the Occupational Health and Safety Division of the Ontario Ministry of Labour has published *The Safe Handling of Mercury: A Guide for the Construction Industry*. This document provides advice on how to reduce the risk of mercury exposure, and outlines clean-up methods for spills. In the absence of specific legislation for mercury on construction projects, this guideline would serve as a reasonable, peer reviewed standard for work procedures.

When removal of the fluorescent light tubes is required, the tubes should be removed intact from the fixtures. This prevents worker exposure to mercury vapour, particularly if the tubes were energized shortly before removal. Sources of liquid mercury should be removed in a similar fashion (intact) to prevent worker exposure.

It is now common practise to recycle fluorescent light tubes and liquid mercury sources, recovering the component materials, and avoiding the generation of hazardous waste.

4.5 Silica

The Occupational Health and Safety Branch of the Ontario Ministry of Labour has published *Guideline: Silica on Construction Projects*. This document classifies all silica disturbance as either Type 1, Type 2 or Type 3 work, and assigns different levels of respiratory protection and work procedures for each classification. In the absence of specific legislation for silica on construction projects, this guideline would serve as a reasonable, peer reviewed standard for work procedures.

Silica is present in concrete and masonry elements, and hard plaster finishes throughout the building. No remedial work is required at the present time.

Dust control procedures, which are typical of any well executed demolition project, are usually sufficient to control airborne silica levels. As a general rule, it is preferable to use more stringent dust suppression techniques and engineering controls as opposed to relying on respiratory protection to control worker exposure. Respiratory protection should only be relied on as a last resort when dust suppression techniques and engineering controls fail to control worker exposure to silica.

4.6 Polychlorinated Biphenyls (PCBs)

Unidentified fluorescent light ballasts associated with the light fixtures observed throughout the building should be suspected to contain PCBs until proven otherwise.

In Canada revised federal PCB Regulations came into force in September 2008. The Regulations impose deadlines on the elimination of all PCBs and PCB-containing material currently in storage, and requires all other PCBs to be phased out. In general, the end-of-use deadlines imposed by this new regulation are as follows:

- December 31, 2009, all equipment containing PCBs in a concentration of 500 parts per million (ppm) or more (excluding pole-mounted equipment and light ballasts).

DST File No.: BE-OT-010540

- December 31, 2009, all equipment containing PCBs in a concentration of 50 ppm or more at any sensitive location, including within 100 metres of drinking water treatment plants, food and feed processing plants, child care facilities, preschool, primary and secondary schools, hospitals, and senior citizen care facilities (excluding pole-mounted equipment and light ballasts).
- December 31, 2025, all equipment containing PCBs in a concentration of 50 ppm or more (including pole-mounted equipment and light ballasts).

In general terms, the steps for compliance are as follows:

- Survey of PCB-containing equipment, waste, etc. if none is available.
- Testing of equipment for which PCB content cannot be readily, visually identified.
- PCB Management Plan to ensure implementation of the federal PCB Regulation.

No other materials suspected of containing PCBs were identified within the building.

4.7 Ozone-Depleting Substances (ODSs)

The handling, transport and disposal of ODSs are governed by the following regulations under the Canadian Environmental Protection Act (CEPA), 1999:

- Ozone-depleting Substances Regulations, 1998; and
- Federal Halocarbon Regulations, 2003.

Suspect ODS were observed in the following equipment:

- Refrigerators, no access to info plate;
- Window A/C units, no access to info plate and,
- Water cooler, no access to info plate.

When these units are taken out of service, the ODS refrigerants must be captured and reclaimed by a licensed technician.

No other ODS-containing equipment was identified within the building.

4.8 Mould

The term “mould” applies to a large group of micro-organisms, which together, with mushrooms and yeast, form the Fungi Kingdom of living matter. Mould organisms grow by degrading nutrients from organic substrates such as wood and wood products, fabrics, foodstuff, plant and soil. The growth of mould necessitates three essential conditions; a suitable temperature, an appropriate substrate and adequate moisture.

Public health and regulatory agencies acknowledge mould growth to be a risk factor for adverse health effects in occupants. Occupants may experience allergic responses such as asthma, headache, respiratory tract irritation, eye irritation, skin irritation, and sinus congestion. More severe health effects are rare and typically limited to individuals with suppressed immune systems, children, elderly people and persons with high occupational exposure.

DST File No.: BE-OT-010540

Currently, there are no regulations pertaining to mould on construction projects. Most jurisdictions have issued alerts or bulletins concerning the hazard of mould in indoor environments. The Canadian Construction Association (CCA) published the following document as a response to concerns in the construction industry: CCA 82-2004, "Mould Guidelines for the Canadian Construction Industry", 2004. The Guideline recommends Level I, II and III mould abatement procedures for small (<1 m²), medium (1 m² to 10 m²) and large scale (>10 m²) mould abatement operations that are to be determined by professionals based on the extent and density of mould on site.

One (1) tape-lift sample (Sample 243867-TL-01) from the white-stained, wooden surface of the underside of the ground floor was collected in the Basement. Laboratory results showed low levels of hyaline mycelia fragments. The presence of these fragments indicates that mould is impacting this building material. There is approximately 10 square metre of obvious mould impacted wooden floorboard.

The cause of the mould in this case appears to be the fact that the storage area is essentially a crawl space, with the ground consisting of earth, exposed to the elements. The conditions of this area are conducive to mould growth. Given these conditions, it would likely require significant renovations to achieve an environment less conducive to mould growth here. As such, it may be more practical to restrict access to the area rather than perform remediation.

If remediation is desired the mould growth identified within the basement storage room can be remediated following medium (Level II) abatement operations outlined in the CCA 82-2004 guidelines.

4.9 Other Hazardous Materials

Paints, aerosols, oils, etc. observed in the Garage and the basement storage area chemical locker are assumed to be used for maintenance activities. Handling and use of these materials should be undertaken by those with proper training (e.g. Workplace Hazardous Materials Information System, etc.).

No remedial action is required at this time. When these materials are no longer in use, or are spent they should be disposed of appropriately. The transport and disposal of chemical waste is governed by O.Reg 347/90 - General – Waste Management, as amended to O.Reg. 217/08. Handling of this waste should be undertaken by those with proper training (e.g. Workplace Hazardous Materials Information System, TDGA, etc.).

5.0 LIMITATIONS OF REPORT

This report is intended for client use only. Any use of this document by a third party, or any reliance on or decisions made based on the findings described in this report, are the sole responsibility of such third parties, and DST Consulting Engineers Inc. accepts no responsibility for damages, suffered by any third party as a result of decisions made or actions conducted based on this report. No other warranties are implied or expressed.

The data, conclusions and recommendations which are presented in this report, and the quality thereof, are based on a scope of work authorized by the client. The sampling program included asbestos bulk sampling, paint chip sampling, and microbial sampling in select representative

DST File No.: BE-OT-010540

areas for laboratory analysis. Note, however, that no scope of work, no matter how exhaustive, can guarantee to identify all contaminants. This report therefore cannot warranty that all building conditions are represented by those identified at specific locations.

Recommendations, when included, are made in good faith and are based on several successful experiences. DST is not in a position to evaluate the health risks associated with exposure to the mould and/or mites referenced in this report. Since human reactions to mould exposure vary widely amongst individuals, and specific segments of the population are generally recognized to be more susceptible than others, an evaluation of health risks can only be made on an individual basis and even then, only by a licensed medical practitioner equipped with knowledge of the individual's medical history.

Any use of this report by the client and any other party is contingent upon their understanding and acceptance of the following condition:

"Mould is a naturally occurring substance and regardless of the results of an assessment or how completely it is removed, it could reoccur."

Regardless of the effectiveness of any remedial actions, mould growth may occur/reoccur anywhere within a building at any time, should conditions be favourable. It is therefore essential to maintain buildings, surfaces, appliances and furnishings under conditions which are not favourable to mould incubation and growth (warm, dry, and clean). The scope of services provided by DST for this assignment did not include a detailed evaluation of the thermal and moisture management characteristics of the exterior wall assembly, or a detailed building envelope investigation to ascertain every potential root cause of the water infiltration that created an environment favourable to mould proliferation. Similarly, DST has not been engaged to provide detailed designs for the reinstatement of building finishes or for improvements to the building envelope.

Note also that standards, guidelines and practices related to mould investigations may change with time. Those which were applied at the time of this investigation may be obsolete or unacceptable at a later date.

Any comments given in this report on potential remediation problems and possible methods are intended only for the guidance of the designer. The scope of work may not be sufficient to determine all of the factors that may affect construction, clean-up methods and/or costs. Contractors bidding on this project or undertaking clean-ups should, therefore, make their own interpretation of the factual information presented and draw their own conclusions as to how the conditions may affect their work.

Any results from an analytical laboratory or other subcontractor reported herein have been carried out by others, and DST Consulting Engineers Inc. cannot warranty their accuracy. Similarly, DST cannot warranty the accuracy of information supplied by the client.

DST File No.: BE-OT-010540

6.0 CLOSURE

We trust that the information contained herein meets your needs. Should you have any questions or comments, please do not hesitate to contact us.

DST CONSULTING ENGINEERS INC.

Matt DesRoches, M.Sc., CIH
Project Manager
mdesroches@dstgroup.com

Brendan Harrigan, P.Eng.
Principal
bharrigan@dstgroup.com

DST File No.: BE-OT-010540

**Appendix A
Floor Plans**



2150 THURSTON DRIVE, SUITE 203
OTTAWA, ONTARIO, K1G 5T9
TEL (613) 748-1415 FAX (613) 748-1356
www.dstgroup.com

NOTES:

- 1. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE ASSOCIATED TECHNICAL REPORT.
- 2. DO NOT SCALE DRAWING.
- 3. ALL SAMPLE IDENTIFIERS ARE PREFIXED WITH THE BUILDING ASSET NUMBER WHICH WAS LEFT OUT FOR DRAWING CLARITY.
- 4. BASE DRAWING PROVIDED BY NCC.

LEGEND:

- A** APPROXIMATE ASBESTOS SAMPLE LOCATION, AS APPLICABLE
- X** APPROXIMATE TAPE LIFT LOCATION, MICROBIAL TESTING
- 1** SURVEY LOCATION REFERENCE
- SA-05** APPROXIMATE ASBESTOS SAMPLE LOCATION, 2002, JACQUES WHITFORD

REV	DATE	ORIGINAL	M.D.
0	28/06/10	ISSUE	APPROVAL

PROJECT TITLE

DESIGNATED SUBSTANCE
SURVEY

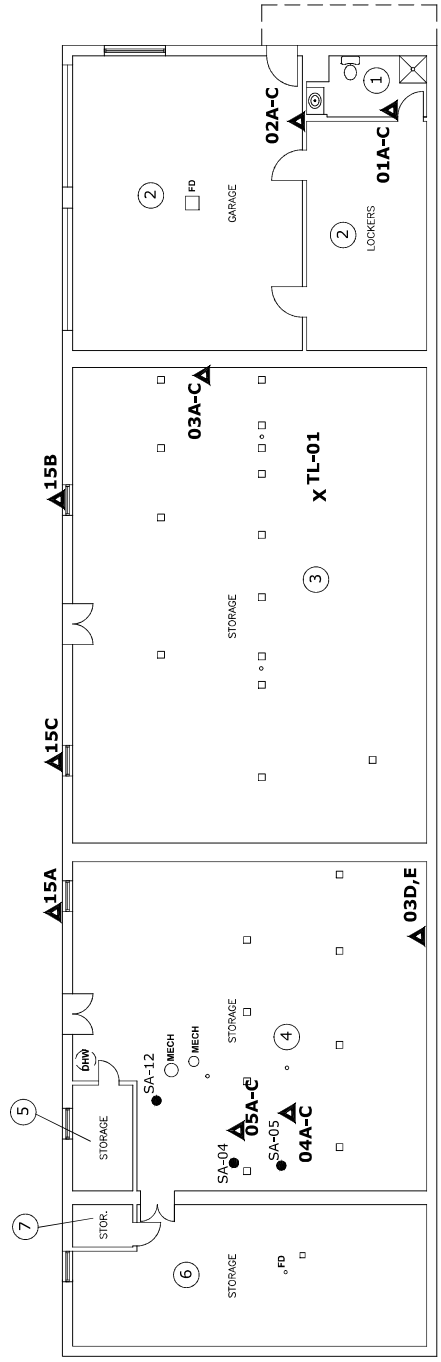
DRAWING TITLE

SAMPLE LOCATION PLAN
SITE OFFICE

BASEMENT LEVEL

DESIGNED BY	SCALE
M.A.	NTS
DRAWN BY	DATE
V.C.	June 2010
APPROVED BY	PROJECT NO.:
M.D.	BE-OT-010540

FIGURE 1



FLOOR PLAN – BASEMENT



2150 THURSTON DRIVE, SUITE 203
OTTAWA, ONTARIO, K1G 5T9
TEL (613) 748-1415 FAX (613) 748-1356
www.dstgroup.com

NOTES:

1. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE ASSOCIATED TECHNICAL REPORT.
2. DO NOT SCALE DRAWING.
3. ALL SAMPLE IDENTIFIERS ARE PREFIXED WITH THE BUILDING ASSET NUMBER WHICH WAS LEFT OUT FOR DRAWING CLARITY.
4. BASE DRAWING PROVIDED BY NCC.

LEGEND:

- ▲ APPROXIMATE ASBESTOS SAMPLE LOCATION, AS APPLICABLE
▼ APPROXIMATE PAINT SAMPLE LOCATION, LEAD TESTING (LP-#), AS APPLICABLE
① SURVEY LOCATION REFERENCE
● SA-08 APPROXIMATE ASBESTOS SAMPLE LOCATION, 2002, JACQUES WHITFORD
▲ LEAD-001 APPROXIMATE LEAD PAINT SAMPLE LOCATION, 2002, JACQUES WHITFORD

REV	DATE	ISSUE	APPROVAL
0	28/06/10	ORIGINAL	M.D.

PROJECT TITLE
DESIGNATED SUBSTANCE
SURVEY

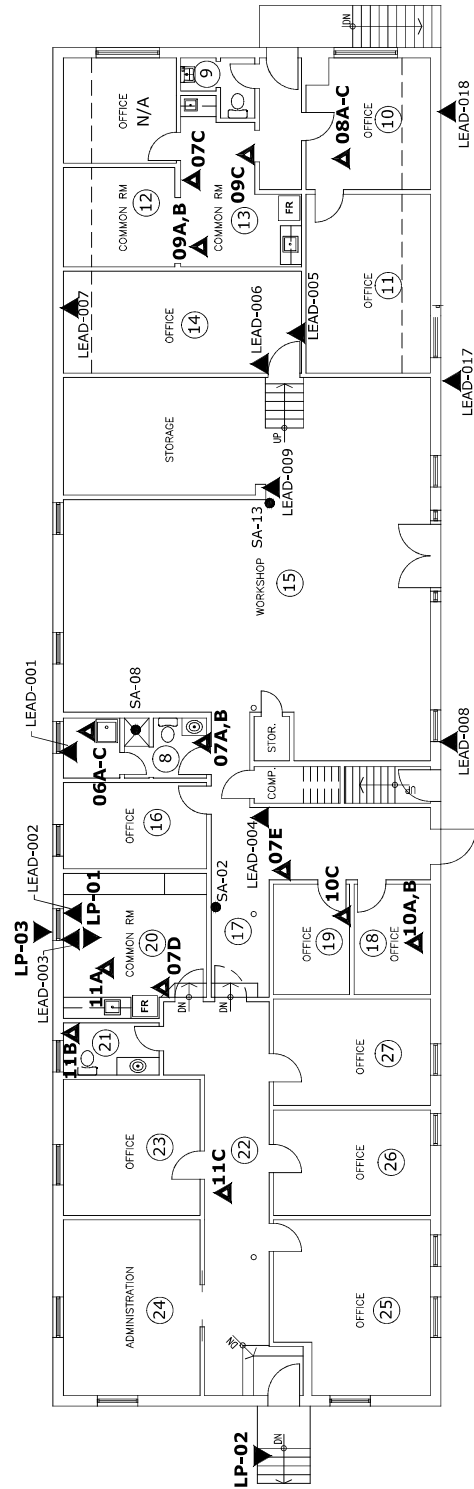
DRAWING TITLE

SAMPLE LOCATION PLAN
SITE OFFICE

GROUND LEVEL

DESIGNED BY	SCALE	NTS
M.A.		
DRAWN BY	DATE	
V.C.	June 2010	
APPROVED BY	PROJECT NO.:	
M.D.	BE-OT-010540	

FIGURE 2



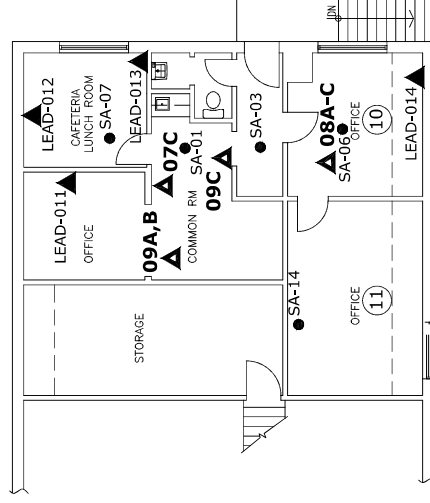
FLOOR PLAN - LEVEL 1

NOTES:

1. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE ASSOCIATED TECHNICAL REPORT.
2. DO NOT SCALE DRAWING.
3. ALL SAMPLE IDENTIFIERS ARE PREFIXED WITH THE BUILDING ASSET NUMBER WHICH WAS LEFT OUT FOR DRAWING CLARITY.
4. BASE DRAWING PROVIDED BY NCC.

LEGEND:

- | <div> <div>▲</div> <div>01A-C</div> </div> | <div> <div>①</div> </div> | <div> <div>●</div> <div>SA-08</div> </div> | <div> <div>▲</div> <div>LEAD-001</div> </div> |
|---|---------------------------|--|--|
| APPROXIMATE ASBESTOS SAMPLE LOCATION, AS APPLICABLE | SURVEY LOCATION REFERENCE | APPROXIMATE ASBESTOS SAMPLE LOCATION, 2002, JACQUES WHITFORD | APPROXIMATE LEAD PAINT SAMPLE LOCATION, 2002, JACQUES WHITFORD |



FLOOR PLAN - LEVEL 2

0	REV	DATE	ORIGINAL	M.D.
			ISSUE	APPROVAL

DESIGNATED SUBSTANCE SURVEY

DRAWING TITLE

SAMPLE LOCATION PLAN
SITE OFFICE

SECOND LEVEL

DESIGNED BY	M.A.	SCALE	NTS
DRAWN BY		DATE	June 2010
APPROVED BY	V.C.	PROJECT NO.:	BE-QT-010540
	M.D.		

FIGURE 3



NOTES:

1. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE ASSOCIATED TECHNICAL REPORT.
2. DO NOT SCALE DRAWING.
3. ALL SAMPLE IDENTIFIERS ARE PREFIXED WITH THE BUILDING ASSET NUMBER WHICH WAS LEFT OUT FOR DRAWING CLARITY.
4. BASE DRAWING PROVIDED BY NCC.

LEGEND:

- ▲ APPROXIMATE ASBESTOS SAMPLE LOCATION, AS APPLICABLE
① SURVEY LOCATION REFERENCE
● APPROXIMATE ASBESTOS SAMPLE LOCATION, 2002, JACQUES WHITFORD SA-05
▲ APPROXIMATE LEAD PAINT SAMPLE LOCATION, 2002, JACQUES WHITFORD LEAD-001

0	28/06/10	ORIGINAL	M.D.
REV	DATE	ISSUE	APPROVAL

DESIGNATED SUBSTANCE
SURVEY

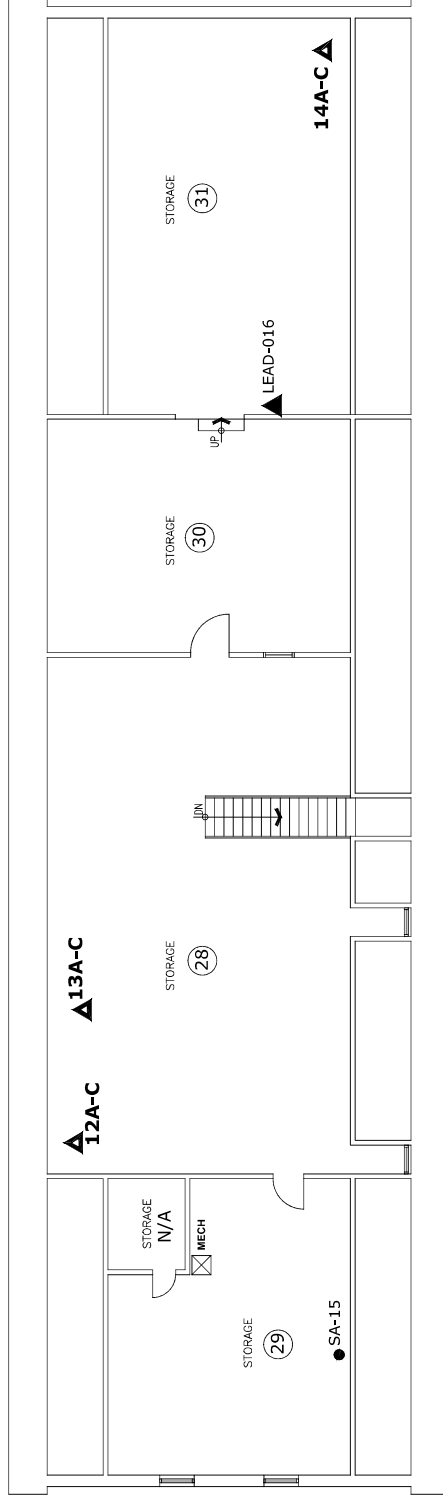
DRAWING TITLE

SAMPLE LOCATION PLAN SITE OFFICE

ATTIC LEVEL

DESIGNED BY	M.A.	SCALE	NTS
DRAWN BY	V.C.	DATE	June 2010
APPROVED BY	M.D.	PROJECT NO.:	BE-OT-010540

FIGURE 4



FLOOR PLAN - ATTIC LEVEL

FIGURE 5

DST File No.: BE-OT-010540

Appendix B
Laboratory Certificates of Analysis – Bulk Asbestos



SOLUTIONS
FOR A WORKING WORLD

CERTIFICATE OF ANALYSIS

Company:	DST Consulting Engineers Inc.	Report Date:	03-Sep-09
Contact:	Mr. Marc Acouri	Analysis Date:	02-Sep-09
Client Address:	2150 Thurston Drive, Suite 203, OTTAWA, ON	Received Date:	01-Sep-09
Client Reference:	BEOT010540 Location 243867	LEX Project Number:	08092771
Sampling Date:	27-Aug-09	Number of Analyses:	48

Analysis Requested Bulk Asbestos by PLM

Page 1 of 11

Analysis was performed in accordance with the method EPA/600/R-93/116, Method for the Determination of Asbestos in Bulk Building Materials adopted in Designated Substance - Asbestos on Construction Projects and in Buildings and Repair Operations - made under the Occupational Health and Safety Act Ontario Regulation 278/05. LEX Scientific Inc. is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP 101949) by the National Institute of Standards and Technology for analysis of bulk materials for asbestos.

German Leal, B.Sc.
Laboratory Manager

Analysis Notes: Not mastic found for sample 243867-09B

Fibrous Asbestos Content %		Other Materials Content %
Client Sample: 243867-01A	Asbestos Detected?	No
LEX Sample: 01	Chrysotile:	None Detected
Layers Analyzed: Sample Homogenized	Amosite:	None Detected
Colour: Grey	Crocidolite:	None Detected
Description: Wall surfacing material	Other Amphiboles:	None Detected
	Comments:	
		Cellulose: None Detected
		MMVF: None Detected
		Other Fibers: None Detected
		Non Fibers: 100

Other Amphiboles: ac=actinolite, a=anthophyllite, t=tremolite, u=unidentified
MMVF: Man Made Vitreous Fibers: Fiberglass, Min. Wool, Rockwool, Glasswool
PLM - method detection limit is 0.1%

Analyst

This test report relates only to the items tested and must not be used to claim product endorsement by NVLAP or any agency of the United States government. This test report must not be reproduced except in full without the written consent of the laboratory.

2 Quebec Street, Suite 204 Guelph, Ontario N1H 2T3
Phone: 519.824.7082 Fax: 519.824.5784 Toll Free: 1.800.824.7082
e-mail: admin@lexscientific.com Website: www.lexscientific.com

		Fibrous Asbestos Content %	Other Materials Content %
Client Sample: 243867-01B	Asbestos Detected?	No	
LEX Sample: 02	Chrysotile:	None Detected	Cellulose: None Detected
Layers Analyzed: Sample Homogenized	Amosite:	None Detected	MMVF: None Detected
Colour: Grey	Crocidolite:	None Detected	Other Fibers: None Detected
Description: Wall surfacing material	Other Amphiboles:	None Detected	Non Fibers: 100
Comments:			
Client Sample: 243867-01C	Asbestos Detected?	No	
LEX Sample: 03	Chrysotile:	None Detected	Cellulose: None Detected
Layers Analyzed: Sample Homogenized	Amosite:	None Detected	MMVF: None Detected
Colour: Grey	Crocidolite:	None Detected	Other Fibers: None Detected
Description: Wall surfacing material	Other Amphiboles:	None Detected	Non Fibers: 100
Comments:			
Client Sample: 243867-02A	Asbestos Detected?	No	
LEX Sample: 04	Chrysotile:	None Detected	Cellulose: None Detected
Layers Analyzed: Sample Homogenized	Amosite:	None Detected	MMVF: None Detected
Colour: White/Cream	Crocidolite:	None Detected	Other Fibers: None Detected
Description: Drywall joint compound	Other Amphiboles:	None Detected	Non Fibers: 100
Comments:			
Client Sample: 243867-02B	Asbestos Detected?	No	
LEX Sample: 05	Chrysotile:	None Detected	Cellulose: None Detected
Layers Analyzed: Sample Homogenized	Amosite:	None Detected	MMVF: None Detected
Colour: White/Cream	Crocidolite:	None Detected	Other Fibers: None Detected
Description: Drywall joint compound	Other Amphiboles:	None Detected	Non Fibers: 100
Comments:			
Client Sample: 243867-02C	Asbestos Detected?	No	
LEX Sample: 06	Chrysotile:	None Detected	Cellulose: None Detected
Layers Analyzed: Sample Homogenized	Amosite:	None Detected	MMVF: None Detected
Colour: White/Cream	Crocidolite:	None Detected	Other Fibers: None Detected
Description: Drywall joint compound	Other Amphiboles:	None Detected	Non Fibers: 100
Comments:			

Other Amphiboles: ac=actinolite, a=anthophyllite, t=tremolite, u=unidentified
MMVF: Man Made Vitreous Fibers: Fiberglass, Min. Wool, Rockwool, Glasswool
PLM - method detection limit is 0.1%

Z. Samseva
Analyst _____

This test report relates only to the items tested and must not be used to claim product endorsement by NVLAP or any agency of the United States government. This test report must not be reproduced except in full without the written consent of the laboratory.



		Fibrous Asbestos Content %	Other Materials Content %
Client Sample: 243867-03A	Asbestos Detected?	No	
LEX Sample: 07	Chrysotile:	None Detected	Cellulose: None Detected
Layers Analyzed: Sample Homogenized	Amosite:	None Detected	MMVF: None Detected
Colour: Grey	Crocidolite:	None Detected	Other Fibers: None Detected
Description: Stone parging	Other Amphiboles:	None Detected	Non Fibers: 100
Comments:			
Client Sample: 243867-03B	Asbestos Detected?	No	
LEX Sample: 08	Chrysotile:	None Detected	Cellulose: None Detected
Layers Analyzed: Sample Homogenized	Amosite:	None Detected	MMVF: None Detected
Colour: Grey	Crocidolite:	None Detected	Other Fibers: None Detected
Description: Stone parging	Other Amphiboles:	None Detected	Non Fibers: 100
Comments:			
Client Sample: 243867-03C	Asbestos Detected?	No	
LEX Sample: 09	Chrysotile:	None Detected	Cellulose: None Detected
Layers Analyzed: Sample Homogenized	Amosite:	None Detected	MMVF: None Detected
Colour: Grey	Crocidolite:	None Detected	Other Fibers: None Detected
Description: Stone parging	Other Amphiboles:	None Detected	Non Fibers: 100
Comments:			
Client Sample: 243867-04A	Asbestos Detected?	Yes	
LEX Sample: 10	Chrysotile:	90	Cellulose: None Detected
Layers Analyzed: Sample Homogenized	Amosite:	None Detected	MMVF: None Detected
Colour: Grey	Crocidolite:	None Detected	Other Fibers: None Detected
Description: Grey cement compound	Other Amphiboles:	None Detected	Non Fibers: 10
Comments:			
Client Sample: 243867-05A	Asbestos Detected?	Yes	
LEX Sample: 13	Chrysotile:	20	Cellulose: 70
Layers Analyzed: Sample Homogenized	Amosite:	None Detected	MMVF: None Detected
Colour: Brown/Black	Crocidolite:	None Detected	Other Fibers: None Detected
Description: Layered cardboard wrap	Other Amphiboles:	None Detected	Non Fibers: 10
Comments:			

Other Amphiboles: ac=actinolite, a=anthophyllite, t=tremolite, u=unidentified
 MMVF: Man Made Vitreous Fibers: Fiberglass, Min. Wool, Rockwool, Glasswool
 PLM - method detection limit is 0.1%

Analyst

Z. Samseva

This test report relates only to the items tested and must not be used to claim product endorsement by NVLAP or any agency of the United States government. This test report must not be reproduced except in full without the written consent of the laboratory.



		Fibrous Asbestos Content %	Other Materials Content %
Client Sample: 243867-06A	Asbestos Detected?	No	
LEX Sample: 16	Chrysotile:	None Detected	Cellulose: None Detected
Layers Analyzed: Sample Homogenized	Amosite:	None Detected	MMVF: None Detected
Colour: Brown/Beige	Crocidolite:	None Detected	Other Fibers: None Detected
Description: Vinyl sheet flooring	Other Amphiboles:	None Detected	Non Fibers: 100
	Comments:	Unable to layer	
Client Sample: 243867-06B	Asbestos Detected?	No	
LEX Sample: 17	Chrysotile:	None Detected	Cellulose: None Detected
Layers Analyzed: Sample Homogenized	Amosite:	None Detected	MMVF: None Detected
Colour: Brown/Beige	Crocidolite:	None Detected	Other Fibers: None Detected
Description: Vinyl sheet flooring	Other Amphiboles:	None Detected	Non Fibers: 100
	Comments:	Unable to layer	
Client Sample: 243867-06C	Asbestos Detected?	No	
LEX Sample: 18	Chrysotile:	None Detected	Cellulose: None Detected
Layers Analyzed: Sample Homogenized	Amosite:	None Detected	MMVF: None Detected
Colour: Brown/Beige	Crocidolite:	None Detected	Other Fibers: None Detected
Description: Vinyl sheet flooring	Other Amphiboles:	None Detected	Non Fibers: 100
	Comments:	Unable to layer	
Client Sample: 243867-07A	Asbestos Detected?	No	
LEX Sample: 19	Chrysotile:	None Detected	Cellulose: None Detected
Layers Analyzed: Sample Homogenized	Amosite:	None Detected	MMVF: None Detected
Colour: White	Crocidolite:	None Detected	Other Fibers: None Detected
Description: Drywall joint compound	Other Amphiboles:	None Detected	Non Fibers: 100
	Comments:		
Client Sample: 243867-07B	Asbestos Detected?	No	
LEX Sample: 20	Chrysotile:	None Detected	Cellulose: None Detected
Layers Analyzed: Sample Homogenized	Amosite:	None Detected	MMVF: None Detected
Colour: White	Crocidolite:	None Detected	Other Fibers: None Detected
Description: Drywall joint compound	Other Amphiboles:	None Detected	Non Fibers: 100
	Comments:		

Other Amphiboles: ac=actinolite, a=anthophyllite, t=tremolite, u=unidentified
 MMVF: Man Made Vitreous Fibers: Fiberglass, Min. Wool, Rockwool, Glasswool
 PLM - method detection limit is 0.1%

Analyst

Z. Samseva

This test report relates only to the items tested and must not be used to claim product endorsement by NVLAP or any agency of the United States government. This test report must not be reproduced except in full without the written consent of the laboratory.



		Fibrous Asbestos Content %	Other Materials Content %
Client Sample: 243867-07C	Asbestos Detected?	No	
LEX Sample: 21	Chrysotile:	None Detected	Cellulose: None Detected
Layers Analyzed: Sample Homogenized	Amosite:	None Detected	MMVF: None Detected
Colour: White/Brown	Crocidolite:	None Detected	Other Fibers: None Detected
Description: Drywall joint compound	Other Amphiboles:	None Detected	Non Fibers: 100
Comments:			
Client Sample: 243867-07D	Asbestos Detected?	No	
LEX Sample: 22	Chrysotile:	None Detected	Cellulose: None Detected
Layers Analyzed: Sample Homogenized	Amosite:	None Detected	MMVF: None Detected
Colour: White/Brown	Crocidolite:	None Detected	Other Fibers: None Detected
Description: Drywall joint compound	Other Amphiboles:	None Detected	Non Fibers: 100
Comments:			
Client Sample: 243867-07E	Asbestos Detected?	No	
LEX Sample: 23	Chrysotile:	None Detected	Cellulose: None Detected
Layers Analyzed: Sample Homogenized	Amosite:	None Detected	MMVF: None Detected
Colour: White/Brown	Crocidolite:	None Detected	Other Fibers: None Detected
Description: Drywall joint compound	Other Amphiboles:	None Detected	Non Fibers: 100
Comments:			
Client Sample: 243867-08A	Asbestos Detected?	No	
LEX Sample: 24.1	Chrysotile:	None Detected	Cellulose: None Detected
Layers Analyzed: Tile	Amosite:	None Detected	MMVF: None Detected
Colour: Brown	Crocidolite:	None Detected	Other Fibers: None Detected
Description: Vinyl sheet flooring (Yellow)	Other Amphiboles:	None Detected	Non Fibers: 100
Comments:			
Client Sample: 243867-08A	Asbestos Detected?	No	
LEX Sample: 24.2	Chrysotile:	None Detected	Cellulose: 20
Layers Analyzed: Backing	Amosite:	None Detected	MMVF: None Detected
Colour: Grey	Crocidolite:	None Detected	Other Fibers: None Detected
Description: Vinyl sheet flooring (Yellow)	Other Amphiboles:	None Detected	Non Fibers: 80
Comments:			

Other Amphiboles: ac=actinolite, a=anthophyllite, t=tremolite, u=unidentified
 MMVF: Man Made Vitreous Fibers: Fiberglass, Min. Wool, Rockwool, Glasswool
 PLM - method detection limit is 0.1%

Analyst

Z. Samseva

This test report relates only to the items tested and must not be used to claim product endorsement by NVLAP or any agency of the United States government. This test report must not be reproduced except in full without the written consent of the laboratory.



		Fibrous Asbestos Content %	Other Materials Content %
Client Sample: 243867-08B	Asbestos Detected?	No	
LEX Sample: 25.1	Chrysotile:	None Detected	Cellulose: None Detected
Layers Analyzed: Tile	Amosite:	None Detected	MMVF: None Detected
Colour: Brown	Crocidolite:	None Detected	Other Fibers: None Detected
Description: Vinyl sheet flooring (Yellow)	Other Amphiboles:	None Detected	Non Fibers: 100
	Comments:		
Client Sample: 243867-08B	Asbestos Detected?	No	
LEX Sample: 25.2	Chrysotile:	None Detected	Cellulose: 20
Layers Analyzed: Backing	Amosite:	None Detected	MMVF: None Detected
Colour: Grey	Crocidolite:	None Detected	Other Fibers: None Detected
Description: Vinyl sheet flooring (Yellow)	Other Amphiboles:	None Detected	Non Fibers: 80
	Comments:		
Client Sample: 243867-08C	Asbestos Detected?	No	
LEX Sample: 26.1	Chrysotile:	None Detected	Cellulose: None Detected
Layers Analyzed: Tile	Amosite:	None Detected	MMVF: None Detected
Colour: Brown	Crocidolite:	None Detected	Other Fibers: None Detected
Description: Vinyl sheet flooring (Yellow)	Other Amphiboles:	None Detected	Non Fibers: 100
	Comments:		
Client Sample: 243867-08C	Asbestos Detected?	No	
LEX Sample: 26.2	Chrysotile:	None Detected	Cellulose: 20
Layers Analyzed: Backing	Amosite:	None Detected	MMVF: None Detected
Colour: Grey	Crocidolite:	None Detected	Other Fibers: None Detected
Description: Vinyl sheet flooring (Yellow)	Other Amphiboles:	None Detected	Non Fibers: 80
	Comments:		
Client Sample: 243867-09A	Asbestos Detected?	No	
LEX Sample: 27.1	Chrysotile:	None Detected	Cellulose: None Detected
Layers Analyzed: Tile	Amosite:	None Detected	MMVF: None Detected
Colour: Cream	Crocidolite:	None Detected	Other Fibers: None Detected
Description: 12" x 12" Vinyl floor tiles	Other Amphiboles:	None Detected	Non Fibers: 100
	Comments:		

Other Amphiboles: ac=actinolite, a=anthophyllite, t=tremolite, u=unidentified
 MMVF: Man Made Vitreous Fibers: Fiberglass, Min. Wool, Rockwool, Glasswool
 PLM - method detection limit is 0.1%

Analyst Z. Samseva

This test report relates only to the items tested and must not be used to claim product endorsement by NVLAP or any agency of the United States government. This test report must not be reproduced except in full without the written consent of the laboratory.



		Fibrous Asbestos Content %	Other Materials Content %
Client Sample: 243867-09A	Asbestos Detected?	No	
LEX Sample: 27.2	Chrysotile:	None Detected	Cellulose: None Detected
Layers Analyzed: Mastic	Amosite:	None Detected	MMVF: None Detected
Colour: Black	Crocidolite:	None Detected	Other Fibers: None Detected
Description: 12" x 12" Vinyl floor tiles	Other Amphiboles:	None Detected	Non Fibers: 100
	Comments:		
Client Sample: 243867-09B	Asbestos Detected?	No	
LEX Sample: 28.1	Chrysotile:	None Detected	Cellulose: None Detected
Layers Analyzed: Tile	Amosite:	None Detected	MMVF: None Detected
Colour: Cream	Crocidolite:	None Detected	Other Fibers: None Detected
Description: 12" x 12" Vinyl floor tiles	Other Amphiboles:	None Detected	Non Fibers: 100
	Comments:		
Client Sample: 243867-09C	Asbestos Detected?	No	
LEX Sample: 29.1	Chrysotile:	None Detected	Cellulose: None Detected
Layers Analyzed: Tile	Amosite:	None Detected	MMVF: None Detected
Colour: Cream	Crocidolite:	None Detected	Other Fibers: None Detected
Description: 12" x 12" Vinyl floor tiles	Other Amphiboles:	None Detected	Non Fibers: 100
	Comments:		
Client Sample: 243867-09C	Asbestos Detected?	No	
LEX Sample: 29.2	Chrysotile:	None Detected	Cellulose: 1
Layers Analyzed: Mastic	Amosite:	None Detected	MMVF: None Detected
Colour: Black	Crocidolite:	None Detected	Other Fibers: None Detected
Description: 12" x 12" Vinyl floor tiles	Other Amphiboles:	None Detected	Non Fibers: 99
	Comments:		
Client Sample: 243867-10A	Asbestos Detected?	No	
LEX Sample: 30	Chrysotile:	None Detected	Cellulose: 60
Layers Analyzed: Sample Homogenized	Amosite:	None Detected	MMVF: 20
Colour: Beige/White	Crocidolite:	None Detected	Other Fibers: None Detected
Description: 2' x 4' Lay-in ceiling tiles	Other Amphiboles:	None Detected	Non Fibers: 20
	Comments:		

Other Amphiboles: ac=actinolite, a=anthophyllite, t=tremolite, u=unidentified
 MMVF: Man Made Vitreous Fibers: Fiberglass, Min. Wool, Rockwool, Glasswool
 PLM - method detection limit is 0.1%

Analyst

Z. Samseva

This test report relates only to the items tested and must not be used to claim product endorsement by NVLAP or any agency of the United States government. This test report must not be reproduced except in full without the written consent of the laboratory.



		Fibrous Asbestos Content %	Other Materials Content %
Client Sample: 243867-10B	Asbestos Detected?	No	
LEX Sample: 31	Chrysotile:	None Detected	Cellulose: 60
Layers Analyzed: Sample Homogenized	Amosite:	None Detected	MMVF: 20
Colour: Beige/White	Crocidolite:	None Detected	Other Fibers: None Detected
Description: 2' x 4' Lay-in ceiling tiles	Other Amphiboles:	None Detected	Non Fibers: 20
	Comments:		
Client Sample: 243867-10C	Asbestos Detected?	No	
LEX Sample: 32	Chrysotile:	None Detected	Cellulose: 70
Layers Analyzed: Sample Homogenized	Amosite:	None Detected	MMVF: 10
Colour: Grey/White	Crocidolite:	None Detected	Other Fibers: None Detected
Description: 2' x 4' Lay-in ceiling tiles	Other Amphiboles:	None Detected	Non Fibers: 20
	Comments:		
Client Sample: 243867-11A	Asbestos Detected?	No	
LEX Sample: 33	Chrysotile:	None Detected	Cellulose: None Detected
Layers Analyzed: Sample Homogenized	Amosite:	None Detected	MMVF: 1
Colour: Blue/Grey	Crocidolite:	None Detected	Other Fibers: None Detected
Description: Vinyl sheet flooring (Blue)	Other Amphiboles:	None Detected	Non Fibers: 99
	Comments:	Unable to layer	
Client Sample: 243867-11B	Asbestos Detected?	No	
LEX Sample: 34	Chrysotile:	None Detected	Cellulose: None Detected
Layers Analyzed: Sample Homogenized	Amosite:	None Detected	MMVF: 1
Colour: Blue/Grey	Crocidolite:	None Detected	Other Fibers: None Detected
Description: Vinyl sheet flooring (Blue)	Other Amphiboles:	None Detected	Non Fibers: 99
	Comments:	Unable to layer	
Client Sample: 243867-11C	Asbestos Detected?	No	
LEX Sample: 35	Chrysotile:	None Detected	Cellulose: None Detected
Layers Analyzed: Sample Homogenized	Amosite:	None Detected	MMVF: 1
Colour: Blue/Grey	Crocidolite:	None Detected	Other Fibers: None Detected
Description: Vinyl sheet flooring (Blue)	Other Amphiboles:	None Detected	Non Fibers: 99
	Comments:	Unable to layer	

Other Amphiboles: ac=actinolite, a=anthophyllite, t=tremolite, u=unidentified
 MMVF: Man Made Vitreous Fibers: Fiberglass, Min. Wool, Rockwool, Glasswool
 PLM - method detection limit is 0.1%

Analyst

Z. Samseva

This test report relates only to the items tested and must not be used to claim product endorsement by NVLAP or any agency of the United States government. This test report must not be reproduced except in full without the written consent of the laboratory.



		Fibrous Asbestos Content %	Other Materials Content %
Client Sample: 243867-12A	Asbestos Detected?	No	
LEX Sample: 36	Chrysotile:	None Detected	Cellulose: 60
Layers Analyzed: Sample Homogenized	Amosite:	None Detected	MMVF: None Detected
Colour: Black	Crocidolite:	None Detected	Other Fibers: 2
Description: Roofing materials	Other Amphiboles:	None Detected	Non Fibers: 38
Comments:			
Client Sample: 243867-12B	Asbestos Detected?	No	
LEX Sample: 37	Chrysotile:	None Detected	Cellulose: 60
Layers Analyzed: Sample Homogenized	Amosite:	None Detected	MMVF: None Detected
Colour: Black	Crocidolite:	None Detected	Other Fibers: 2
Description: Roofing materials	Other Amphiboles:	None Detected	Non Fibers: 38
Comments:			
Client Sample: 243867-12C	Asbestos Detected?	No	
LEX Sample: 38	Chrysotile:	None Detected	Cellulose: 50
Layers Analyzed: Sample Homogenized	Amosite:	None Detected	MMVF: None Detected
Colour: Black	Crocidolite:	None Detected	Other Fibers: 2
Description: Roofing materials	Other Amphiboles:	None Detected	Non Fibers: 48
Comments:			
Client Sample: 243867-13A	Asbestos Detected?	Yes	
LEX Sample: 39	Chrysotile:	1	Cellulose: 96
Layers Analyzed: Sample Homogenized	Amosite:	None Detected	MMVF: None Detected
Colour: Black	Crocidolite:	None Detected	Other Fibers: 3
Description: Tar paper	Other Amphiboles:	None Detected	Non Fibers: None Detected
Comments:			
Client Sample: 243867-14A	Asbestos Detected?	No	
LEX Sample: 42	Chrysotile:	None Detected	Cellulose: None Detected
Layers Analyzed: Sample Homogenized	Amosite:	None Detected	MMVF: None Detected
Colour: Grey	Crocidolite:	None Detected	Other Fibers: None Detected
Description: Brick mortar	Other Amphiboles:	None Detected	Non Fibers: 100
Comments:			

Other Amphiboles: ac=actinolite, a=anthophyllite, t=tremolite, u=unidentified
 MMVF: Man Made Vitreous Fibers: Fiberglass, Min. Wool, Rockwool, Glasswool
 PLM - method detection limit is 0.1%

Analyst

Z. Samseva

This test report relates only to the items tested and must not be used to claim product endorsement by NVLAP or any agency of the United States government. This test report must not be reproduced except in full without the written consent of the laboratory.



		Fibrous Asbestos Content %	Other Materials Content %
Client Sample: 243867-14B	Asbestos Detected?	No	
LEX Sample: 43	Chrysotile:	None Detected	Cellulose: None Detected
Layers Analyzed: Sample Homogenized	Amosite:	None Detected	MMVF: None Detected
Colour: Grey	Crocidolite:	None Detected	Other Fibers: None Detected
Description: Brick mortar	Other Amphiboles:	None Detected	Non Fibers: 100
Comments:			
Client Sample: 243867-14C	Asbestos Detected?	No	
LEX Sample: 44	Chrysotile:	None Detected	Cellulose: 1
Layers Analyzed: Sample Homogenized	Amosite:	None Detected	MMVF: None Detected
Colour: Grey	Crocidolite:	None Detected	Other Fibers: None Detected
Description: Brick mortar	Other Amphiboles:	None Detected	Non Fibers: 99
Comments:			
Client Sample: 243867-15A	Asbestos Detected?	No	
LEX Sample: 45	Chrysotile:	None Detected	Cellulose: None Detected
Layers Analyzed: Sample Homogenized	Amosite:	None Detected	MMVF: None Detected
Colour: Grey	Crocidolite:	None Detected	Other Fibers: None Detected
Description: Window caulking	Other Amphiboles:	None Detected	Non Fibers: 100
Comments:			
Client Sample: 243867-15B	Asbestos Detected?	No	
LEX Sample: 46	Chrysotile:	None Detected	Cellulose: None Detected
Layers Analyzed: Sample Homogenized	Amosite:	None Detected	MMVF: None Detected
Colour: Grey/Black	Crocidolite:	None Detected	Other Fibers: None Detected
Description: Window caulking	Other Amphiboles:	None Detected	Non Fibers: 100
Comments:			
Client Sample: 243867-15C	Asbestos Detected?	No	
LEX Sample: 47	Chrysotile:	None Detected	Cellulose: None Detected
Layers Analyzed: Sample Homogenized	Amosite:	None Detected	MMVF: None Detected
Colour: Grey/Black	Crocidolite:	None Detected	Other Fibers: None Detected
Description: Window caulking	Other Amphiboles:	None Detected	Non Fibers: 100
Comments:			

Other Amphiboles: ac=actinolite, a=anthophyllite, t=tremolite, u=unidentified
 MMVF: Man Made Vitreous Fibers: Fiberglass, Min. Wool, Rockwool, Glasswool
 PLM - method detection limit is 0.1%

Analyst

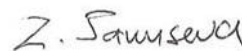
Z. Samseva

This test report relates only to the items tested and must not be used to claim product endorsement by NVLAP or any agency of the United States government. This test report must not be reproduced except in full without the written consent of the laboratory.



Fibrous Asbestos Content %		Other Materials Content %	
Client Sample: <u>243867-03D</u>	Asbestos Detected?	No	
LEX Sample: 48	Chrysotile:	None Detected	Cellulose: None Detected
Layers Analyzed: Sample Homogenized	Amosite:	None Detected	MMVF: None Detected
Colour: Grey	Crocidolite:	None Detected	Other Fibers: None Detected
Description: Stone parging	Other Amphiboles:	None Detected	Non Fibers: 100
Comments:			
Client Sample: <u>243867-03E</u>	Asbestos Detected?	No	
LEX Sample: 49	Chrysotile:	None Detected	Cellulose: None Detected
Layers Analyzed: Sample Homogenized	Amosite:	None Detected	MMVF: None Detected
Colour: Grey	Crocidolite:	None Detected	Other Fibers: None Detected
Description: Stone parging	Other Amphiboles:	None Detected	Non Fibers: 100
Comments:			

Other Amphiboles: ac=actinolite, a=anthophyllite, t=tremolite, u=unidentified
MMVF: Man Made Vitreous Fibers: Fiberglass, Min. Wool, Rockwool, Glasswool
PLM - method detection limit is 0.1%



Analyst

This test report relates only to the items tested and must not be used to claim product endorsement by NVLAP or any agency of the United States government. This test report must not be reproduced except in full without the written consent of the laboratory.

DST File No.: BE-OT-010540

Appendix C
Laboratory Certificates of Analysis – Paint Chips

Certificate of Analysis

DST Consulting Engineers Inc. (Ottawa)

203-2150 Thurston Dr.

Ottawa, ON K1G 5T9

Attn: Maurice Graveline

Phone: (613) 748-1415

Fax: (613) 748-1356

Client PO:

Report Date: 2-Sep-2009

Project: BE 0T 010540

Order Date: 31-Aug-2009

Custody: 61870

Order #: 0936041

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

Paracel ID	Client ID
0936041-01	243867-LP-01
0936041-02	243867-LP-02
0936041-03	243867-LP-03

Approved



Mark Foto, M.Sc. For Dale Robertson, BSc
Laboratory Director

Any use of these results implies your agreement that our total liability in connection with this work, however arising shall be limited to the amount paid by you for this work, and that our employees or agents shall not under circumstances be liable to you in connection with this work

Certificate of Analysis

Report Date: 02-Sep-2009

Order Date: 31-Aug-2009

Client: **DST Consulting Engineers Inc. (Ottawa)**

Client PO:

Project Description: BE 0T 010540

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Metals	EPA 6020 - Digestion, ICP-MS	1-Sep-09	1-Sep-09

Sample Data Revisions

None

Work Order Revisions/Comments:

None

Other Report Notes:

n/a: not applicable

MDL: Method Detection Limit

Source Result: Data used as source for matrix and duplicate samples

%REC: Percent recovery.

RPD: Relative percent difference.

Certificate of Analysis

Report Date: 02-Sep-2009

Order Date: 31-Aug-2009

Client: **DST Consulting Engineers Inc. (Ottawa)**

Client PO:

Project Description: BE 0T 010540

Sample Results

Lead				Matrix: Paint
				Sample Date: 27-Aug-09
Paracel ID	Client ID	Units	MDL	Result
0936041-01	243867-LP-01	ug/g	50	19800
0936041-02	243867-LP-02	ug/g	50	200000
0936041-03	243867-LP-03	ug/g	50	322000

Laboratory Internal QA/QC

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Matrix Blank									
Lead	ND	50	ug/g						
Matrix Duplicate									
Lead	172000	50	ug/g	205000			17.8	44	
Matrix Spike									
Lead	52.3		ug/L	ND	105	80-120			



LABORATORIES LTD.

TRUSTED.
RESPONSIVE.
RELIABLE.

OTTAWA • NIAGARA FALLS • MISSISSAUGA • SARNIA

300-2319 St. Laurent Blvd.
Ottawa, Ontario K1G 4J8

p: 1-800-749-1947

e: paracel@paracellabs.com

www.paracellabs.com

Chain of Custody Record

Nº 61870

Pg. ___ of ___

Company Name: <u>DST Consulting Engineers</u>	Project Ref: <u>BE01010540</u>	Date Required: _____
Contact Name: <u>Maurice Graveline</u>	PO# _____	Turn Around Time: <input type="checkbox"/> 1-day <input type="checkbox"/> 2-day <input checked="" type="checkbox"/> Regular
Address: <u>2150 Thurston Drive</u>	Quote # _____ <input type="checkbox"/> Not Quoted	Regulatory/Guideline Requirements
Tel: <u>613-748-1415</u> Cell: _____	Preservative to be added by Paracel? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Email: <u>mgraveline@dsgroup.com</u>		

Matrix Types: S-Soil/Sed GW-Ground Water SW-Surface Water SS-Storm/Sanitary Sewer A-Air O-Other RDW-Regulated Drinking Water

Sample Information					Analysis Required													
Parcel Order #		Matrix	Air Volume	# Containers	Date Sampled dd/mm/yy	Direct Microscopic Examination												Hazardous? (Y/N)
0936041																		
Sample Identification																		
1	243867-LP-01				27/08/09	X												
2	243867-LP-02				"	X												
3	243867-LP-03				"	X												
4	243867-TL-01				"		X											
5																		
6																		
7																		
8																		
9																		
10																		

Comments: _____

Relinquished By: <u>Marc Acouci</u>	Received at Depot:	Received at Lab: <u>Uéac</u>	Verified By: <u>Uéac</u>
Date: <u>Aug 31/09</u> Time: <u>4:10pm</u>	Date: _____ Time: _____	Date: <u>8/31/09</u> Time: <u>16:12</u>	Date: <u>8/31/09</u> Time: <u>16:45</u>

Please refer to the Laboratory Test Methods and Sample Preservation, Containers and Hold Time Requirements

WHITE Lab Copy, PINK Client Copy

DST File No.: BE-OT-010540

Appendix D
Laboratory Certificates of Analysis – Mould

DST Consulting Engineers Inc. (Ottawa)
203-2150 Thurston Dr.
Ottawa, ON
K1G 5T9

04-Sep-09

Attn: Maurice Graveline
Tel: (613) 748-1415
Fax: (613) 748-1356

Re: BE OT 010540

Paracel Report No.: 0936054

Please find attached the final assessment of sample(s) received on 31-Aug-09 and analyzed in our Ottawa West Lab location. Information on common indoor/outdoor fungi may be found on our website at the link below; however, interpretation of the results is the responsibility of the

[Paracel Species Ecology List](#)

If you have any questions or comments regarding the enclosed information, please feel free to contact us anytime.

Sincerely,



Don Belisle, MSc For Heather S.H. McGregor, BSc
Laboratory Director - Microbiology

Any use of these test results implies your agreement that our total liability in connection with this work, however arising, shall be limited to the amount paid by you for this work, and that our employees or agents shall not under any circumstances be liable to you in connection with this work. This report may not be reproduced, except in full, without the written approval of the laboratory. This report is valid only with an authorized signature. All samples and related slides/extracts are stored for three months from the time the final analytical report was issued, unless otherwise requested in writing by the client.

Client: DST Consulting Engineers Inc. (Ottawa)
203-2150 Thurston Dr.
Ottawa, ON K1G 5T9

Attn: Maurice Graveline
Tel: (613) 748-1415
Fax: (613) 748-1356

Project: BE OT 010540
Paracel Report No.: 0936054

Received Date: 31-Aug-09
Report Date: 04-Sep-09

Microscopic Fungal - Tape Lifts

Sample I.D.	Sample Date	Background Debris**	Propagule Summary	Relative Amount*
0936054-01	27-Aug-09	High	Client Sample Name:243867-TL-01 hyaline mycelial fragments	Low

***Relative Amount:**

Trace = 2 propagules or less noted per mm² of tape surface

Low = 2-10 propagules noted per mm²

Moderate = 11-100 propagules noted per mm²

High = > than 101 propagules noted per mm²

****Background Debris - Definitions:**

Low = occupying < 10% of microscopic field

Moderate = 11-30% of microscopic field

High = > 31% of microscopic field

ND - No fungal propagules detected.

NA - Not applicable; calculations cannot be performed on non-numerical data.

Company Name: <u>DST Consulting Engineers</u>	Project Ref: <u>BE01010540</u>	Date Required: _____
Contact Name: <u>Maurice Graveline</u>	PO# _____	Turn Around Time: <input type="checkbox"/> 1-day <input type="checkbox"/> 2-day <input checked="" type="checkbox"/> Regular
Address: <u>2150 Thorston Drive</u>	Quote # _____ <input type="checkbox"/> Not Quoted	Regulatory/Guideline Requirements
Tel: <u>613-748-1415</u> Cell: _____	Preservative to be added by Paracel? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Email: <u>mgraveline@dstgroup.com</u>		

Matrix Types: S-Soil/Sed GW-Ground Water SW-Surface Water SS-Storm/Sanitary Sewer A-Air O-Other RDW-Regulated Drinking Water

Sample Information					Analysis Required													
Parcel Order #	Matrix	Air Volume	# Containers	Date Sampled dd/mm/yy	Direct Microscopic Examination													Hazardous? (Y/N)
0936054																		
Sample Identification																		
1				27/08/09	X													
2				"	X													
3				"	X													
4				"	X													
5																		
6																		
7																		
8																		
9																		
10																		

Comments: _____

Relinquished By: <u>Marc Acou</u> Date: <u>Aug 31/09</u> Time: <u>4:10pm</u>	Received at Depot: <u>Uvac</u> Date: <u>8/31/09</u> Time: <u>16:12</u>	Received at Lab: <u>Karen Wiggins</u> Date: <u>09/01/09</u> Time: <u>10:13</u>	Verified By: <u>Karen Wiggins</u> Date: <u>09/01/09</u> Time: <u>10:51</u>
---	---	---	---

Please refer to the back page for Locations and Sample Preservation, Container and Hold Time Requirements.

WHITE - Lab Copy, PINK - Client Copy

DST File No.: BE-OT-010540

Appendix E
Selected Photographs

DST File No.: BE-OT-010540



Photo 1: Exterior view of the Site Offices.



Photo 2: Drywall joint compound (Samples 243867-02A-C) sampled in the Garage does not contain asbestos.

DST File No.: BE-OT-010540



Photo 3: Wall surfacing material (Samples 243867-01A-E) sampled in the Garage washroom does not contain asbestos.



Photo 4: Paints, aerosols, oils, etc. stored in the basement storage area chemical locker.

DST File No.: BE-OT-010540



Photo 5: Stonework surface parging material (Samples 243867-03A-E) sampled does not contain asbestos.



Photo 6: Mould impacted underside of wooden floorboards (Sample 243867-TL-01) was observed in the basement storage room. Affected area is approximately 10 square metres total.

DST File No.: BE-OT-010540



Photo 7: Grey cement compound on pipe fittings in the basement mechanical/storage room contains 90% chrysotile asbestos (Sample 243867-04-A). There are 4 fittings exposed and in POOR condition.



Photo 8: Layered cardboard wrap insulation (Sample 243867-05A) noted on pipes the basement storage/mechanical room contains 20% Chrysotile asbestos in the tar paper layer. Some debris (POOR condition) associated with this material was also noted on the ground in this area.

DST File No.: BE-OT-010540



Photo 9: Light brown coloured vinyl sheet flooring (Samples 243867 06A-C) sampled does not contain asbestos (ground floor shower room pictured here).

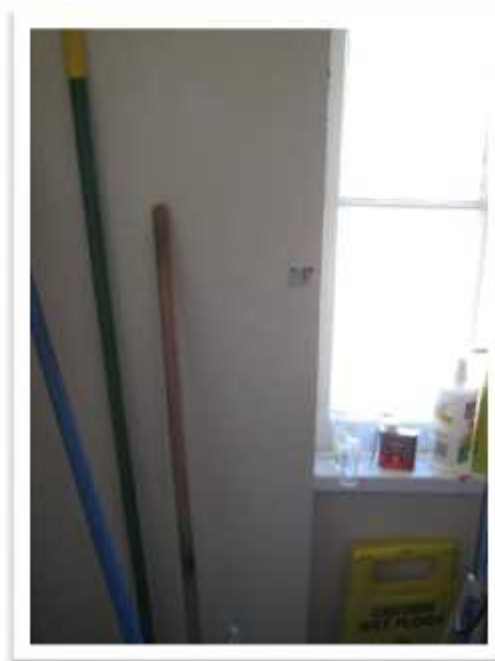


Photo 10: Drywall joint compound (Samples 243867-07A-E) sampled throughout the ground floor does not contain asbestos (ground floor shower room pictured here).

DST File No.: BE-OT-010540



Photo 11: Brown vinyl sheet flooring sampled in the ground floor rear office does not contain asbestos (Samples 243867-08A-C).



Photo 12: Brown 12" x 12" vinyl tile flooring sampled in the ground floor rear common area does not contain asbestos (Samples 243867-09A-C).

DST File No.: BE-OT-010540



Photo 13: White radiator paint (Sample 243867-LP-01) contains 19,800 ppm lead.



Photo 14: 2' x 4' lay-in ceiling tile sampled in the ground floor front offices does not contain asbestos (Samples 243867-10A-C).

DST File No.: BE-OT-010540



Photo 15: Grey/blue vinyl sheet flooring sampled throughout the ground floor does not contain asbestos (Samples 243867-11A-C).



Photo 16: Roof shingle debris sampled in the attic does not contain asbestos (Samples 243867-12A-C).

DST File No.: BE-OT-010540



Photo 17: Tar paper debris in the attic (Sample 243867-13A) contains 1% chrysotile asbestos.



Photo 18: Light heat shields on light fixtures stored in the attic are suspected to contain asbestos.

DST File No.: BE-OT-010540



Photo 19: Chimney brick mortar sampled does not contain asbestos (Samples 243867-14A-C).



Photo 20: Exterior white porch paint at front entrance contains 200,000 ppm lead (Sample 243867-LP-02).



DESIGNATED SUBSTANCE SURVEY

Storage Shed

Ottawa, Ontario



Prepared for:

Environmental Services

September 23, 2015

DST File No.: BE-OT-010540

DST Consulting Engineers Inc.

2150 Thurston Drive, Suite 203, Ottawa, Ontario K1G 5T9
Tel.: (613) 748-1415 Fax: (613) 748-1356 E-mail: ottawa@dstgroup.com

Executive Summary

DST Consulting Engineers Inc. (DST) was retained by the to perform a Designated Substance Survey (DSS) of the Storage Shed located in Ottawa, Ontario.

The objectives of the DSS are to:

1. Identify building materials (interior and exterior) and fixed equipment (e.g. heating/cooling systems) that contain designated substance/hazardous materials;
2. Determine the potential risks to human health and the environment associated with the identified materials;
3. Determine the potential impact the identified materials may have on future construction/renovation projects;
4. Create an inventory of the designated substances present in the building(s); and,
5. Provide baseline reports for future construction/renovation projects.

The survey program implemented by DST was designed for consistency with the record of materials containing the 11 designated substances listed in Section 30 of the Occupational Health and Safety Act, R.S.O. 1990, Chapter O.1. The Designated Substances Regulations as per the Ontario Act are generally followed as an environmentally responsible protocol to provide consistent results for its buildings located in both Ontario and Quebec.

DST performed site visits for the Storage Shed on August 20, 2009, and on January 20, 2010.

The following Designated Substances and Hazardous Materials were neither observed, nor suspected of being present in forms or quantities that would either impact future work or pose risks to human health or the environment:

- Acrylonitrile;
- Arsenic;
- Benzene;
- Coke Oven Emissions;
- Ethylene Oxide;
- Isocyanates;
- Vinyl Chloride;
- Ozone Depleting Substances (ODS);
- Fecal Waste (e.g. animal feces, bird and bat guano, etc.);
- Mould;
- Urea Formaldehyde Foam Insulation (UFFI);
- Radioactive Smoke Detectors; and,
- Other hazardous materials, as viewed pertinent by the consultant.

The following table summarizes the remaining findings of the Storage Shed survey.

DST File No.: BE-OT-010540

Designated/ Hazardous Substance	Findings	Recommendations
Asbestos	<p>The only confirmed friable ACMs in the building are the tectum paper remnants observed in the basement. The total amount of material is minor (e.g. less than 1 m²) but consists of several pieces in POOR condition. Type 2 removal is recommended.</p> <p>The asphalt roof shingles are a non-friable suspected asbestos-containing material.</p> <p>No other suspected ACMs were identified within the building.</p> <p>Bulk sampling and laboratory analysis has demonstrated that specific building materials do not contain regulated concentrations of asbestos. These materials are described in Section 3.3.3 of the report.</p>	<p>DST recommends Type 2 removal of the POOR condition tectum paper in the basement. Opinion of Probable Cost: \$1,000.</p> <p>Prior to construction disturbance the asphalt roof materials should be sampled for asbestos content.</p>
Lead	<p>Exterior paint located on trim and wood clapboards, has lead concentrations in excess of the 600 ppm limit recently established by the Federal Hazardous Products Act. Most of this paint is in GOOD condition but some signs of localized delamination were observed.</p> <p>Lead is also suspected of being present in solder on the joints of copper piping.</p> <p>No other building materials suspected of containing lead were observed during the site visit.</p>	<p>DST recommends removal of the loose, delaminating, flaking white exterior paint (leaving the areas with good bond to the wood substrate intact and undisturbed). The remaining lead-based exterior paint can then be encapsulated with a layer of non-lead paint. Opinion of Probable Cost: \$2,000.00.</p> <p>The Occupational Health and Safety Branch of the Ontario Ministry of Labour publication <i>Guideline: Lead on Construction Projects</i> should be followed during the disturbance of materials containing lead.</p>
Mercury	<p>Fluorescent light tubes contain a single droplet of mercury which vaporizes when the tube is energized.</p>	<p>No remedial action required.</p> <p>The Occupational Health and Safety Division of the Ontario Ministry of Labour publication <i>The Safe Handling of Mercury: A Guide for the Construction Industry</i>, should be followed during the disturbance of materials containing mercury.</p>

DST File No.: BE-OT-010540

Designated/ Hazardous Substance	Findings	Recommendations
Silica	Silica is present within concrete and masonry elements of the building.	No remedial action required. Dust control measures should be adopted during the disturbance of silica, including those outlined within the Occupational Health and Safety Branch of the Ontario Ministry of Labour <i>Guideline: Silica on Construction Projects</i> .
Polychlorinated Biphenyls (PCBs)	Fluorescent light fixtures observed in the building had T12 lamps and are therefore suspected to contain PCB ballasts.	No remedial action required. DST recommends to undertake the following actions with respect to PCBs: <ul style="list-style-type: none">• Survey of PCB-containing equipment, waste, etc. if none is available.• Testing of equipment for which PCB content cannot be readily, visually identified.• PCB Management Plan to ensure implementation of the federal PCB Regulation.

This Executive Summary should be read in conjunction with, and is subject to the same Limitations as, the entire report.

DST File No.: BE-OT-010540

DESIGNATED SUBSTANCE SURVEY

Storage Shed

Ottawa, Ontario

TABLE OF CONTENTS

1.0	INTRODUCTION.....	1
2.0	SCOPE OF WORK AND METHODOLOGY.....	2
3.0	FINDINGS.....	3
3.1	Acrylonitrile	3
3.2	Arsenic	3
3.3	Asbestos	3
3.3.1	Friable Asbestos Materials	4
3.3.2	Non-Friable Asbestos Materials	4
3.3.3	Non-Asbestos Materials	4
3.4	Benzene	4
3.5	Coke Oven Emissions.....	5
3.6	Ethylene Oxide	5
3.7	Isocyanates	5
3.8	Lead	5
3.9	Mercury	5
3.10	Silica.....	6
3.11	Vinyl Chloride	6
3.12	Polychlorinated Biphenyls (PCBs)	6
3.13	Ozone-Depleting Substances (ODSs)	6
3.14	Fecal Waste	6
3.15	Mould	7
3.16	Urea Formaldehyde Foam Insulation (UFFI).....	7
3.17	Radioactive Smoke Detectors	7
3.18	Other Hazardous Materials.....	7
4.0	CONCLUSIONS AND RECOMMENDATIONS	7
4.1	Asbestos	7
4.2	Lead	8
4.3	Mercury	9
4.4	Silica.....	9
4.5	Polychlorinated Biphenyls (PCBs)	9
5.0	LIMITATIONS OF REPORT	10
6.0	CLOSURE.....	11

DST File No.: BE-OT-010540

Appendix A	Floor Plans
Appendix B	Laboratory Certificates of Analysis – Bulk Asbestos Samples
Appendix C	Laboratory Certificates of Analysis – Paint Chip Samples
Appendix D	Selected Photographs

DST File No.: BE-OT-010540

1.0 INTRODUCTION

DST Consulting Engineers Inc. (DST) was retained by the to perform a Designated Substance Survey (DSS) of the Storage Shed located in Ottawa, Ontario. The Storage Shed is a single storey, wood framed structure with an asphalt shingle roof. There is a partial basement under the west part of the building. The building does not appear to be heated.

The objectives of the DSS are to:

1. Identify building materials (interior and exterior) and fixed equipment (e.g. heating/cooling systems) that contain designated substance/hazardous materials;
2. Determine the potential risks to human health and the environment associated with the identified materials;
3. Determine the potential impact the identified materials may have on future construction/renovation projects;
4. Create an inventory of the designated substances present in the building(s); and,
5. Provide baseline reports for future construction/renovation projects.

The survey program implemented by DST was designed for consistency with the record of materials containing the 11 designated substances listed in Section 30 of the Occupational Health and Safety Act, R.S.O. 1990, Chapter O.1. The Designated Substances Regulations as per the Ontario Act are generally followed as an environmentally responsible protocol to provide consistent results for its buildings located in both Ontario and Quebec.

Designated Substances, as identified under the Ontario Occupational Health & Safety Act are:

1. Acrylonitrile;
2. Arsenic;
3. Asbestos (both friable and non-friable);
4. Benzene;
5. Coke Oven Emissions;
6. Ethylene Oxide;
7. Isocyanates;
8. Lead;
9. Mercury;
10. Silica; and,
11. Vinyl Chloride.

Other Hazardous Materials, which are not classified as Designated Substances, but which are still of concern due to other regulations, best practices guidelines and/or potential risks to human health and/or the environment, include:

12. Polychlorinated Biphenyls (PCBs);
13. Ozone Depleting Substances (ODS);
14. Fecal Waste (e.g. animal feces, bird and bat guano, etc.);
15. Mould;
16. Urea Formaldehyde Foam Insulation (UFFI);
17. Radioactive Smoke Detectors; and,
18. Other hazardous materials, as viewed pertinent by the consultant.

DST File No.: BE-OT-010540

2.0 SCOPE OF WORK AND METHODOLOGY

Prior to the commencement of field work, DST project personnel reviewed the following documents provided:

- 1-page building information summary from the Asset Inventory System.

DST performed the site visits for the Storage Shed on August 20, 2009, and on January 20, 2010. The survey included a walkthrough assessment of all accessible areas of the building. While on site DST personnel:

- Compiled and summarized existing characterization data for the building;
- Conducted surveying, sampling and/or monitoring as required to address any data gaps and to reassess areas investigated during previous assessments (all sampling locations appear on the drawings in Appendix A);
- Defined the extent and approximate quantities of Designated Substances and Hazardous Materials;
- Determined the source and extent of mould proliferation, if applicable; and,
- Collected sufficient information to subsequently enable DST to recommend appropriate mitigation measures to bring the building into compliance with applicable legislation and/or to mitigate risks to human health and/or the environment.

Materials suspected of containing designated substances and other hazardous materials were visually identified, based on the surveyor's knowledge of the historic composition of building products. Equipment that may contain ODSs (e.g. air conditioning and refrigeration equipment) or PCBs (e.g. electrical transformers and fluorescent light ballasts) can often be identified by examining manufacturer's labels. For safety reasons, DST personnel do not remove the ballast shields from fluorescent light fixtures to examine the ballast codes unless the electrical circuit for the lighting has been tagged and locked out by a qualified electrician. Visual identification of materials suspected to contain asbestos or lead (in paint) was supported by the collection and analysis of a limited number of representative samples. Materials suspected of containing designated substances other than asbestos or lead (in paint) were identified by appearance, age, and knowledge of historic applications.

In Ontario, a material is defined as an Asbestos-Containing Material (ACM) if the material has a minimum asbestos content of 0.5% by dry weight. ACMs can be divided into two categories: friable and non-friable material. A friable asbestos-containing material (ACM) is a material that can be crumbled, powdered, or pulverized by hand pressure and can readily release fibres when disturbed. Common applications of friable ACMs are sprayed or trowelled surfacing materials (e.g. sprayed fireproofing and textured coatings) as well as mechanical and thermal insulation. Non-friable materials are materials that will generally release fibres only when broken, cut, drilled, abraded, ground, sanded or vibrated. Common non-friable ACMs include vinyl floor products, drywall joint compound, plaster, asbestos textile products and asbestos cement products (transite). Some of these products may become friable with time or when disturbed (e.g. drywall joint compound).

Fourteen (14) bulk samples of suspected ACMs were collected by DST during the site investigation. Samples were analyzed for their asbestos content at LEX Scientific (LEX). LEX is certified under the National Institute of Science and Technology's National Voluntary

DST File No.: BE-OT-010540

Laboratory Accreditation Program (NVLAP) to perform asbestos bulk sample analysis (NVLAP No.: 101949). The bulk samples were analyzed using a combination of dispersion staining and polarised light microscopy (PLM). This analytical method complies with the United States Environmental Protection Agency (U.S. EPA) Method 600/R-93/116 dated July, 1993, which is the regulatory approved protocol for bulk asbestos analysis in Ontario. The analytical results for asbestos in bulk materials are included in Appendix B.

Although the Ministry of Labour (MoL) has published a guideline for control of lead exposures on construction projects in Ontario, it does not include criteria for the classification of lead-paint. Instead, it uses presumed airborne lead concentrations for specific tasks as criteria for classifying work. However, in regulations set by the U.S. Department of Housing and Urban Development, Lead-Based Paint is classified as any paint application containing at least 1.0 milligrams of lead per square centimetre of surface area (1.0 mg/cm^2), or at least 0.5% lead content by weight (5,000 ppm). This criteria was widely, although not universally, used in Canada. In Canada, the Federal Hazardous Product Act has recently lowered the allowable concentration of lead in paints for new consumer products to 0.06% lead content by weight (600 ppm). For the purposes of this survey and report, paints having a lead content greater than 0.06% are considered to be lead-based. Disturbance of paints having lead content below 600 ppm are less likely to release significant concentrations of airborne lead during disturbance and therefore are not likely considered harmful.

A single painted finish, representative of the painted finishes on the building exterior, was sampled and submitted to Paracel Laboratories for lead content analysis. The sample was analyzed at using Inductively Coupled Plasma – Mass Spectrometry (ICP-MS) in accordance with U.S. EPA Method 6020. The analytical result for lead in the paint chip sample is included in Appendix C.

Selected photographs are included in Appendix D.

3.0 FINDINGS

The following sections outline the complete findings of all designated substances and hazardous materials assessed within the Storage Shed located in Ottawa, Ontario.

3.1 Acrylonitrile

Acrylonitrile was neither observed in the building, nor suspected of being present, in forms or quantities that would either impact future work or pose risks to human health or the environment.

3.2 Arsenic

Arsenic was neither observed in the building, nor suspected of being present, in forms or quantities that would either impact future work or pose risks to human health or the environment.

3.3 Asbestos

Fourteen (14) bulk samples of suspected ACMs were collected by DST during the site investigation. Sample descriptions and analytical results are summarized in the following table.

DST File No.: BE-OT-010540

Table 1: Summary of Bulk Samples Analyzed for Asbestos			
Sample I.D.	Sample Location	Material Description	Asbestos (%)
335848-01A	Basement	Tectum Paper	60% Chrysotile
335848-01B			Not Analyzed
335848-01C			Not Analyzed
335848-02A	Basement	Drywall Joint compound	Not Analyzed (Note 1)
335848-02B			Not Analyzed (Note 1)
335848-02C			Not Analyzed (Note 1)
335848-02D			<0.5% Chrysotile
335848-02E			<0.5% Chrysotile
335848-02F			None Detected
335848-02G			None Detected
335848-02H			None Detected
335848-03A	Mezzanine	Tar Paper	None Detected
335848-03B			None Detected
335848-03C			None Detected

Note: 1) Insufficient sample material for analysis.

3.3.1 Friable Asbestos Materials

Tectum paper remnants, in POOR condition, were observed in the Basement.

3.3.2 Non-Friable Asbestos Materials

Asphaltic roofing materials (e.g. shingles and tar/felt paper) are suspected non-friable ACMs.

3.3.3 Non-Asbestos Materials

Bulk sampling and subsequent laboratory analysis has demonstrated that the following building materials do not contain regulated concentrations of asbestos:

- Drywall Joint Compound; and,
- Tar paper on wall insulation batts.

3.4 Benzene

Benzene was neither observed in the building, nor suspected of being present, in forms or quantities that would either impact future work or pose risks to human health or the environment.

A diesel aboveground storage tank (AST) and three (3) Petroleum, Oil & Lubricants (POL) storage cabinets were observed adjacent to the exterior of the building. These are not considered an inherent part of the building structure or its finishes, and are therefore outside the scope of this survey program. The stored contents may contain benzene.

DST File No.: BE-OT-010540

3.5 Coke Oven Emissions

Coke Oven Emissions were neither observed in the building, nor suspected of being present, in forms or quantities that would either impact future work or pose risks to human health or the environment.

3.6 Ethylene Oxide

Ethylene Oxide was neither observed in the building, nor suspected of being present, in forms or quantities that would either impact future work or pose risks to human health or the environment.

3.7 Isocyanates

Isocyanates were neither observed in the building, nor suspected of being present, in forms or quantities that would either impact future work or pose risks to human health or the environment.

3.8 Lead

A single representative paint finish was sampled from the building and submitted for lead content analysis. The sample description and analytical result is summarized in the following table.

Table 2: Summary of Paint Chip Samples Analyzed for Lead			
Sample I.D.	Sample Location	Paint Description	Lead (ppm)
335848-LP-01	Building Exterior	White on trim and wood clapboards	85,000

The single paint chip sample collected and analyzed contained a lead concentration in excess of the 600 ppm limit recently established by the Federal Hazardous Products Act.

Additional paint chip samples were not required as the interior of the building was unpainted.

Based upon the historic composition of building materials, lead is also expected to be present in:

- Solder on the joints of copper piping.

Lead is also suspected in ceramic tiles and lead-acid batteries stored in the building. Because these are stored materials, they are not integral elements of the building structure or its finishes. They are therefore outside the scope of this survey.

3.9 Mercury

Fluorescent light tubes contain a single droplet of mercury which vaporizes when the tube is energized.

Fluorescent light fixtures were observed in the building in energized fixtures. Additional fluorescent light fixtures were observed stored in the building.

DST File No.: BE-OT-010540

3.10 Silica

Based on the historic composition of building materials, silica is expected to be present in:

- Concrete and masonry elements of the building.

3.11 Vinyl Chloride

Vinyl Chloride was neither observed in the building, nor suspected of being present, in forms or quantities that would either impact future work or pose risks to human health or the environment.

3.12 Polychlorinated Biphenyls (PCBs)

Polychlorinated Biphenyls (PCBs), also known as Chlorobiphenyls, are hazardous chemicals which were used in the manufacturing of a variety of equipment, such as electrical equipment, heat exchangers, hydraulic systems, and for several other specialized applications. PCBs are commonly found within electrical ballasts manufactured prior to 1981, found within fluorescent light fixtures and high intensity discharge lamps.

Light fixtures with T12 lamps are more likely to contain ballasts that were manufactured prior to 1981. T8 lamps are associated with light fixtures that were manufactured after the phase-out of PCB-containing ballasts. The letter "T" denotes the shape of the light fixture (e.g. tubular) and the number which follows indicates the diameter in eighths of an inch.

Fluorescent light fixtures observed in the building had T12 lamps and are therefore suspected to contain PCB ballasts.

Several light ballasts were also observed stored in the building. Each of these could be identified by label information as a non-PCB ballast.

No other materials suspected of containing PCBs were identified within the building.

3.13 Ozone-Depleting Substances (ODSs)

ODSs were neither observed in the building, nor suspected of being present, in forms or quantities that would either impact future work or pose risks to human health or the environment.

Several stored refrigerators were observed in the building. These may have ODS refrigerants. Since these are stored items, they are not an integral part of the building structure or its finishes, and are therefore outside the scope of this survey.

3.14 Fecal Waste

Fecal waste was neither observed in the building, nor suspected of being present, in forms or quantities that would either impact future work or pose risks to human health or the environment.

DST File No.: BE-OT-010540

3.15 Mould

Mould was neither observed in the building, nor suspected of being present, in forms or quantities that would either impact future work or pose risks to human health or the environment.

3.16 Urea Formaldehyde Foam Insulation (UFFI)

UFFI was neither observed in the building, nor suspected of being present, in forms or quantities that would either impact future work or pose risks to human health or the environment.

3.17 Radioactive Smoke Detectors

Smoke detectors were not observed in the building.

3.18 Other Hazardous Materials

No other Hazardous Materials were either observed in the building, or suspected of being present in forms or quantities that would either impact future work or pose risks to human health or the environment.

4.0 CONCLUSIONS AND RECOMMENDATIONS

DST Consulting Engineers Inc. (DST) was retained to perform a Designated Substance Survey (DSS) of the Storage Shed located in Ottawa, Ontario.

The site visits were performed by DST on August 20, 2009, and on January 20, 2010. The following Designated Substances and Hazardous Materials were neither observed, nor suspected of being present in forms or quantities that would either impact future work or pose risks to human health or the environment:

- Acrylonitrile;
- Arsenic;
- Benzene;
- Coke Oven Emissions;
- Ethylene Oxide;
- Isocyanates;
- Vinyl Chloride;
- Ozone Depleting Substances (ODS);
- Fecal Waste (e.g. animal feces, bird and bat guano, etc.);
- Mould;
- Urea Formaldehyde Foam Insulation (UFFI);
- Radioactive Smoke Detectors; and,
- Other hazardous materials, as viewed pertinent by the consultant.

4.1 Asbestos

The disturbance of asbestos-containing materials on construction and demolition projects in the province of Ontario is governed by *O.Reg. 278/05, Asbestos on Construction Projects and in*

DST File No.: BE-OT-010540

Buildings and Repair Operations enabled under the *Occupational Health and Safety Act (R.S.O. 1990, Chapter O.1)*. This regulation classifies all asbestos disturbance as either Type 1, Type 2, or Type 3, each of which has defined precautionary measures. All asbestos materials are subject to specific handling and disposal precautions, and must be removed prior to demolition. The Ontario Ministry of Labour (MOL) must be notified of any project involving removal of more than a minor amount (e.g. typically 1 m²) of friable asbestos material.

The only confirmed friable ACMs in the building are the tectum paper remnants observed in the basement. The total amount of material is minor (e.g. less than 1 m²) but consists of several pieces in POOR condition. Type 2 removal is recommended for regulatory compliance.

The only suspect non-friable ACM at the Storage Shed are the non-friable asphalt components of the roof assembly (e.g. shingles and tar/felt paper). These materials were not sampled since this requires a full depth core sample which often compromises the integrity of the building envelope.

These suspected non-friable materials, even if they do contain regulated concentrations of asbestos, represent only a *de minimis* risk to human health or the environment in their present state since they are the types of materials that do not readily release significant concentrations of asbestos fibres even when subjected to construction disturbances.

No remedial action is required for the above-noted suspected non-friable ACMs as they were observed to be in GOOD condition. However, DST recommends that they be sampled for asbestos content prior to any major construction disturbance. If the analysis demonstrates that these materials contain asbestos, then they can be removed as a Type 1 asbestos operation in accordance with the work procedures outlined in O.Reg 278/05.

4.2 Lead

The Occupational Health and Safety Branch of the Ontario Ministry of Labour has published *Guideline: Lead on Construction Projects*. This document classifies all lead disturbance as either Type 1, Type 2a, Type 2b or Type 3 work, and assigns different levels of respiratory protection and work procedures for each classification. In the absence of specific legislation for lead on construction projects, this guideline would serve as a reasonable, peer reviewed standard for work procedures.

The exterior white paint on wood trim and clapboards has a lead concentration in excess of the 600 ppm limit recently established by the Federal Hazardous Products Act.

Approximately 200 ft² of this white paint is in POOR condition with signs of delamination from the wood substrate. Paint chips with elevated concentrations of lead can pose a health risk to humans if ingested. Paint chips are also a risk to the environment with the potential to contaminate soil and groundwater. Paints with elevated lead content can also pose a health risk to workers while completing renovations within the building. DST recommends removal of the loose, delaminating, flaking areas of white exterior paint (leaving any areas still exhibiting a good bond intact and undisturbed). The remaining lead paint can then be encapsulated with a layer of non-lead paint.

DST File No.: BE-OT-010540

Lead is also suspected in solder on the joints of copper piping. If required at some future date to accommodate renovation, demolition or maintenance work, the copper piping can be cut a small distance (e.g. 50 mm) from the joints to avoid direct disturbance of the lead solder.

No other building materials suspected of containing lead were observed during the site visit.

4.3 Mercury

There are no regulations that specifically govern the disturbance of mercury on construction projects. However, the Occupational Health and Safety Division of the Ontario Ministry of Labour has published *The Safe Handling of Mercury: A Guide for the Construction Industry*. This document provides advice on how to reduce the risk of mercury exposure, and outlines clean-up methods for spills. In the absence of specific legislation for mercury on construction projects, this guideline would serve as a reasonable, peer reviewed standard for work procedures.

Fluorescent light tubes contain a single droplet of mercury which vaporizes when the tube is energized. When removal of the fluorescent light tubes is required, the tubes should be removed intact from the fixtures. This prevents worker exposure to mercury vapour, particularly if the tubes were energized shortly before removal.

It is now common practise to recycle fluorescent light tubes, recovering the component materials, and avoiding the generation of hazardous waste.

4.4 Silica

The Occupational Health and Safety Branch of the Ontario Ministry of Labour has published *Guideline: Silica on Construction Projects*. This document classifies all silica disturbance as either Type 1, Type 2 or Type 3 work, and assigns different levels of respiratory protection and work procedures for each classification. In the absence of specific legislation for silica on construction projects, this guideline would serve as a reasonable, peer reviewed standard for work procedures.

Silica is present in concrete and masonry elements of the building. No remedial work is required at the present time.

Dust control procedures, which are typical of any well executed demolition project, are usually sufficient to control airborne silica levels. As a general rule, it is preferable to use more stringent dust suppression techniques and engineering controls as opposed to relying on respiratory protection to control worker exposure. Respiratory protection should only be relied on as a last resort when dust suppression techniques and engineering controls fail to control worker exposure to silica.

4.5 Polychlorinated Biphenyls (PCBs)

Fluorescent light ballasts associated with the light fixtures observed in the building are suspected to contain PCBs.

In Canada revised federal PCB Regulations came into force in September 2008. The Regulations impose deadlines on the elimination of all PCBs and PCB-containing material

DST File No.: BE-OT-010540

currently in storage, and requires all other PCBs to be phased out. In general, the end-of-use deadlines imposed by this new regulation are as follows:

- December 31, 2009, all equipment containing PCBs in a concentration of 500 parts per million (ppm) or more (excluding pole-mounted equipment and light ballasts).
- December 31, 2009, all equipment containing PCBs in a concentration of 50 ppm or more at any sensitive location, including within 100 metres of drinking water treatment plants, food and feed processing plants, child care facilities, preschool, primary and secondary schools, hospitals, and senior citizen care facilities (excluding pole-mounted equipment and light ballasts).
- December 31, 2025, all equipment containing PCBs in a concentration of 50 ppm or more (including pole-mounted equipment and light ballasts).

In general terms, the steps for compliance are as follows:

- Survey of PCB-containing equipment, waste, etc. if none is available.
- Testing of equipment for which PCB content cannot be readily, visually identified.
- PCB Management Plan to ensure implementation of the federal PCB Regulation.

No other materials suspected of containing PCBs were identified within the building.

5.0 LIMITATIONS OF REPORT

This report is intended for client use only. Any use of this document by a third party, or any reliance on or decisions made based on the findings described in this report, are the sole responsibility of such third parties, and DST Consulting Engineers Inc. accepts no responsibility for damages, suffered by any third party as a result of decisions made or actions conducted based on this report. No other warranties are implied or expressed.

The data, conclusions and recommendations which are presented in this report, and the quality thereof, are based on a scope of work authorized by the client. The sampling program included asbestos bulk sampling, paint chip sampling, and microbial sampling in select representative areas for laboratory analysis. Note, however, that no scope of work, no matter how exhaustive, can guarantee to identify all contaminants. This report therefore cannot warranty that all building conditions are represented by those identified at specific locations.

Recommendations, when included, are made in good faith and are based on several successful experiences. DST is not in a position to evaluate the health risks associated with exposure to the mould and/or mites referenced in this report. Since human reactions to mould exposure vary widely amongst individuals, and specific segments of the population are generally recognized to be more susceptible than others, an evaluation of health risks can only be made on an individual basis and even then, only by a licensed medical practitioner equipped with knowledge of the individual's medical history.

Any use of this report by the client and any other party is contingent upon their understanding and acceptance of the following condition:

"Mould is a naturally occurring substance and regardless of the results of an

DST File No.: BE-OT-010540

assessment or how completely it is removed, it could reoccur.”

Regardless of the effectiveness of any remedial actions, mould growth may occur/reoccur anywhere within a building at any time, should conditions be favourable. It is therefore essential to maintain buildings, surfaces, appliances and furnishings under conditions which are not favourable to mould incubation and growth (warm, dry, and clean). The scope of services provided by DST for this assignment did not include a detailed evaluation of the thermal and moisture management characteristics of the exterior wall assembly, or a detailed building envelope investigation to ascertain every potential root cause of the water infiltration that created an environment favourable to mould proliferation. Similarly, DST has not been engaged to provide detailed designs for the reinstatement of building finishes or for improvements to the building envelope.

Note also that standards, guidelines and practices related to mould investigations may change with time. Those which were applied at the time of this investigation may be obsolete or unacceptable at a later date.

Any comments given in this report on potential remediation problems and possible methods are intended only for the guidance of the designer. The scope of work may not be sufficient to determine all of the factors that may affect construction, clean-up methods and/or costs. Contractors bidding on this project or undertaking clean-ups should, therefore, make their own interpretation of the factual information presented and draw their own conclusions as to how the conditions may affect their work.

Any results from an analytical laboratory or other subcontractor reported herein have been carried out by others, and DST Consulting Engineers Inc. cannot warranty their accuracy. Similarly, DST cannot warranty the accuracy of information supplied by the client.

6.0 CLOSURE

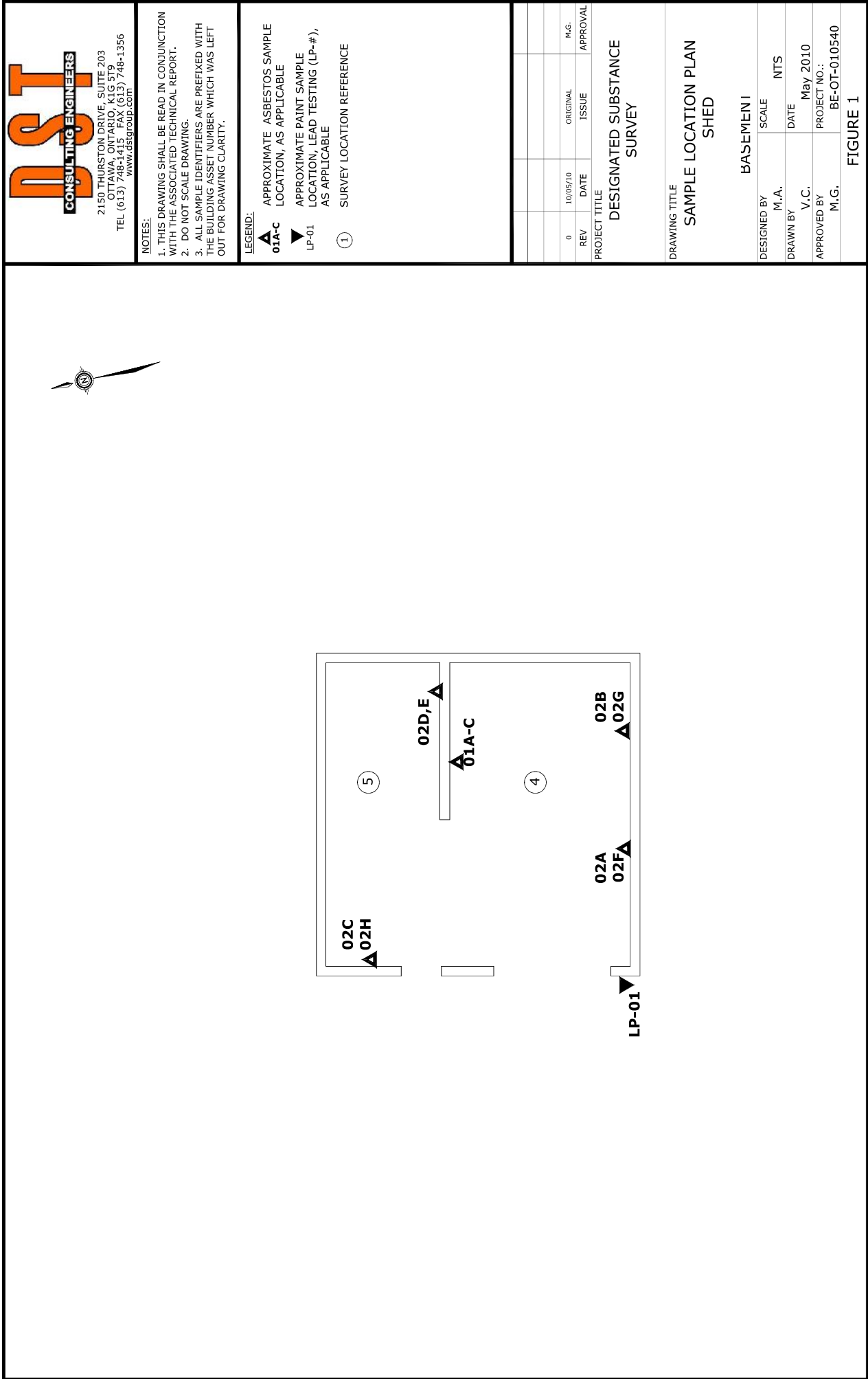
We trust that the information contained herein meets your needs. Should you have any questions or comments, please do not hesitate to contact us.

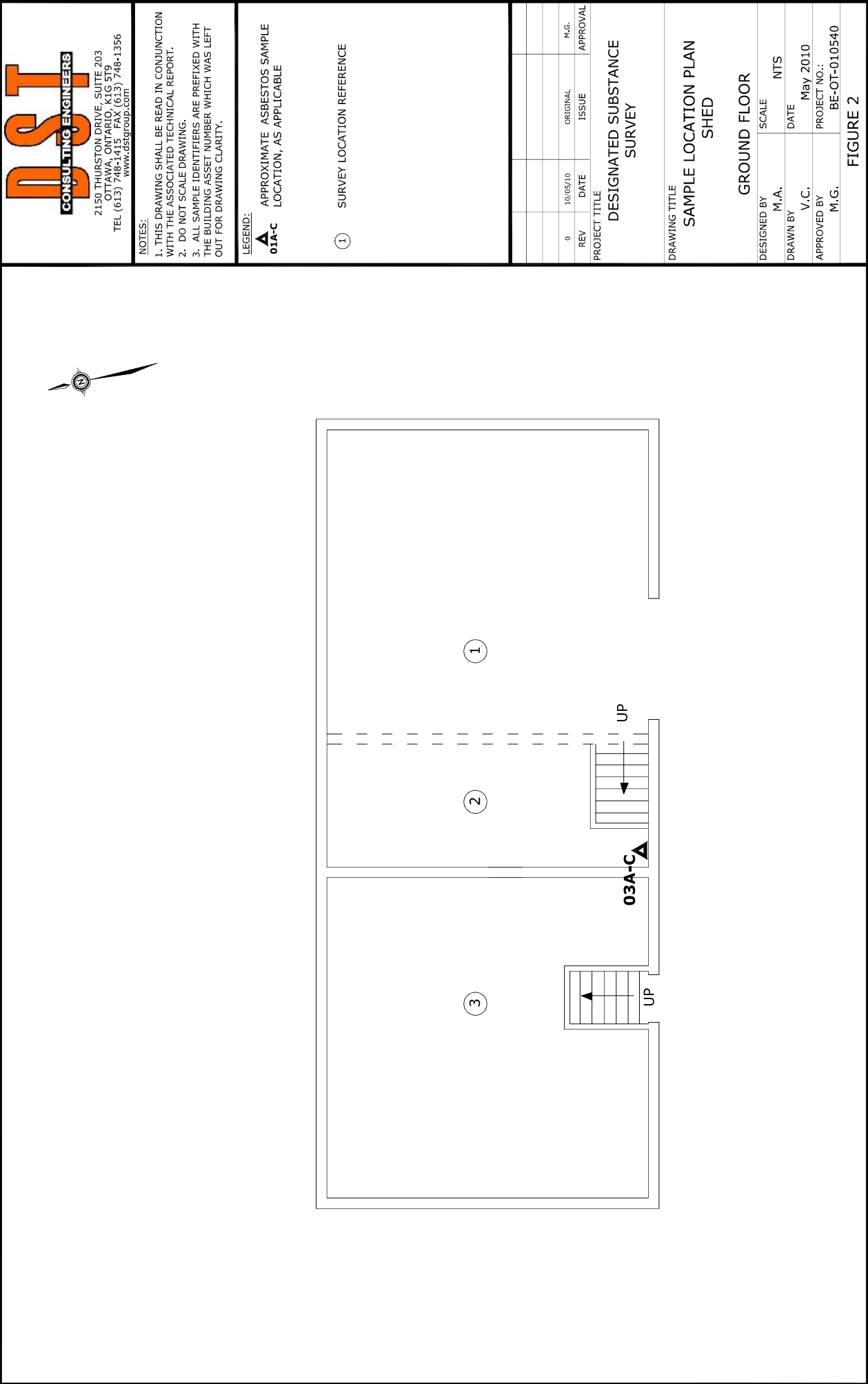
DST CONSULTING ENGINEERS INC.

Maurice Graveline, P.Eng.
Principal
mgraveline@dstgroup.com

DST File No.: BE-OT-010540

**Appendix A
Floor Plans**







2150 THURSTON DRIVE, SUITE 203
OTTAWA, ONTARIO, K1G 5T9
TEL (613) 748-1415 FAX (613) 748-1356
www.dstgroup.com

NOTES:

1. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE ASSOCIATED TECHNICAL REPORT.

2. DO NOT SCALE DRAWING.

3. ALL SAMPLE IDENTIFIERS ARE PREFIXED WITH THE BUILDING ASSET NUMBER WHICH WAS LEFT OUT FOR DRAWING CLARITY.

LEGEND:

A APPROXIMATE ASBESTOS SAMPLE LOCATION, AS APPLICABLE

01A-C

1 SURVEY LOCATION REFERENCE

0	10/05/10	ORIGINAL	M.G.
REV	DATE	ISSUE	APPROVAL

PROJECT TITLE

DESIGNATED SUBSTANCE SURVEY

DRAWING TITLE

SAMPLE LOCATION PLAN SHED

DESIGNED BY	SCALE	NTS
M.A.	DATE	
DRAWN BY		May 2010
V.C.		PROJECT NO.:
APPROVED BY		BE-OT-010540
M.G.		

FIGURE 2

DST File No.: BE-OT-010540

Appendix B
Laboratory Certificates of Analysis – Bulk Asbestos



SOLUTIONS
FOR A WORKING WORLD

CERTIFICATE OF ANALYSIS

Company:	DST Consulting Engineers Inc.	Report Date:	26-Aug-09
Contact:	Mr. Marc Acouri	Analysis Date:	26-Aug-09
Client Address:	2150 Thurston Drive, Suite 203, OTTAWA, ON	Received Date:	24-Aug-09
Client Reference:	BEOT010540	LEX Project Number:	08092704
Sampling Date:	20-Aug-09	Number of Analyses:	6

Analysis Requested **Bulk Asbestos by PLM**

Page 1 of 2

Analysis was performed in accordance with the method EPA/600/R-93/116, Method for the Determination of Asbestos in Bulk Building Materials adopted in Designated Substance - Asbestos on Construction Projects and in Buildings and Repair Operations - made under the Occupational Health and Safety Act Ontario Regulation 278/05. LEX Scientific Inc. is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP 101949) by the National Institute of Standards and Technology for analysis of bulk materials for asbestos.

German Leal, B.Sc.
Laboratory Manager

Analysis Notes: Not enough material submitted for samples 02A, 02B & 02C

		Fibrous Asbestos Content %	Other Materials Content %
Client Sample: 335848-01A	Asbestos Detected?	Yes	
LEX Sample: 01	Chrysotile:	60	Cellulose: None Detected
Layers Analyzed: Sample Homogenized	Amosite:	None Detected	MMVF: None Detected
Colour: Grey	Crocidolite:	None Detected	Other Fibers: None Detected
Description: Tectum Paper	Other Amphiboles:	None Detected	Non Fibers: 40
		Comments:	

Other Amphiboles: ac=actinolite, a=anthophyllite, t=tremolite, u=unidentified
MMVF: Man Made Vitreous Fibers: Fiberglass, Min. Wool, Rockwool, Glasswool
PLM - method detection limit is 0.1%

Analyst _____

This test report relates only to the items tested and must not be used to claim product endorsement by NVLAP or any agency of the United States government. This test report must not be reproduced except in full without the written consent of the laboratory.

2 Quebec Street, Suite 204 Guelph, Ontario N1H 2T3
Phone: 519.824.7082 Fax: 519.824.5784 Toll Free: 1.800.824.7082
e-mail: admin@lexscientific.com Website: www.lexscientific.com

		Fibrous Asbestos Content %	Other Materials Content %
Client Sample: 335848-02D	Asbestos Detected?	Yes	
LEX Sample: 07	Chrysotile:	<0.5	Cellulose: 3
Layers Analyzed: Joint Compound	Amosite:	None Detected	MMVF: None Detected
Colour: Cream/Yellow	Crocidolite:	None Detected	Other Fibers: None Detected
Description: Joint Compound on tape	Other Amphiboles:	None Detected	Non Fibers: 97
Comments:			
Client Sample: 335848-02E	Asbestos Detected?	Yes	
LEX Sample: 08	Chrysotile:	<0.5	Cellulose: 2
Layers Analyzed: Joint Compound	Amosite:	None Detected	MMVF: None Detected
Colour: Cream/Yellow	Crocidolite:	None Detected	Other Fibers: None Detected
Description: Joint Compound on tape	Other Amphiboles:	None Detected	Non Fibers: 98
Comments:			
Client Sample: 335848-03A	Asbestos Detected?	No	
LEX Sample: 09	Chrysotile:	None Detected	Cellulose: 70
Layers Analyzed: Sample Homogenized	Amosite:	None Detected	MMVF: None Detected
Colour: Black	Crocidolite:	None Detected	Other Fibers: 2
Description: Tar Paper	Other Amphiboles:	None Detected	Non Fibers: 28
Comments:			
Client Sample: 335848-03B	Asbestos Detected?	No	
LEX Sample: 10	Chrysotile:	None Detected	Cellulose: 70
Layers Analyzed: Sample Homogenized	Amosite:	None Detected	MMVF: None Detected
Colour: Black	Crocidolite:	None Detected	Other Fibers: 2
Description: Tar Paper	Other Amphiboles:	None Detected	Non Fibers: 28
Comments:			
Client Sample: 335848-03C	Asbestos Detected?	No	
LEX Sample: 11	Chrysotile:	None Detected	Cellulose: 70
Layers Analyzed: Sample Homogenized	Amosite:	None Detected	MMVF: None Detected
Colour: Black	Crocidolite:	None Detected	Other Fibers: 2
Description: Tar Paper	Other Amphiboles:	None Detected	Non Fibers: 28
Comments:			

Other Amphiboles: ac=actinolite, a=anthophyllite, t=tremolite, u=unidentified
 MMVF: Man Made Vitreous Fibers: Fiberglass, Min. Wool, Rockwool, Glasswool
 PLM - method detection limit is 0.1%

Analyst

Z. Samseva

This test report relates only to the items tested and must not be used to claim product endorsement by NVLAP or any agency of the United States government. This test report must not be reproduced except in full without the written consent of the laboratory.





SOLUTIONS
FOR A WORKING WORLD

CERTIFICATE OF ANALYSIS

Company:	DST Consulting Engineers Inc.	Report Date:	26-Jan-10
Contact:	Mr. Maurice Graveline	Analysis Date:	25-Jan-10
Client Address:	2150 Thurston Drive, Suite 203, Ottawa, ON	Received Date:	21-Jan-10
Client Reference:	BEOT010540	LEX Project Number:	08100098
Sampling Date:		Number of Analyses:	3

Analysis Requested **Bulk Asbestos by PLM**

Page 1 of 2

Analysis was performed in accordance with the method EPA/600/R-93/116, Method for the Determination of Asbestos in Bulk Building Materials adopted in Designated Substance - Asbestos on Construction Projects and in Buildings and Repair Operations - made under the Occupational Health and Safety Act Ontario Regulation 278/05. LEX Scientific Inc. is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP 101949) by the National Institute of Standards and Technology for analysis of bulk materials for asbestos.

German Leal, B.Sc.
Laboratory Manager

Fibrous Asbestos Content %		Other Materials Content %
Client Sample: 335848 - 02F	Asbestos Detected? No	
LEX Sample: 01	Chrysotile: None Detected	Cellulose: 3
Layers Analyzed: Sample Homogenized	Amosite: None Detected	MMVF: None Detected
Colour: Grey/Cream	Crocidolite: None Detected	Other Fibers: None Detected
Description: DJC	Other Amphiboles: None Detected	Non Fibers: 97
	Comments:	

Other Amphiboles: ac=actinolite, a=anthophyllite, t=tremolite, u=unidentified
MMVF: Man Made Vitreous Fibers: Fiberglass, Min. Wool, Rockwool, Glasswool
PLM - method detection limit is 0.1%

Analyst _____

This test report relates only to the items tested and must not be used to claim product endorsement by NVLAP or any agency of the United States government. This test report must not be reproduced except in full without the written consent of the laboratory.

2 Quebec Street, Suite 204 Guelph, Ontario N1H 2T3
Phone: 519.824.7082 Fax: 519.824.5784 Toll Free: 1.800.824.7082
e-mail: admin@lexscientific.com Website: www.lexscientific.com

		Fibrous Asbestos Content %	Other Materials Content %
Client Sample: 335848 - 02G	Asbestos Detected?	No	
LEX Sample: 02	Chrysotile:	None Detected	Cellulose: 3
Layers Analyzed: Sample Homogenized	Amosite:	None Detected	MMVF: None Detected
Colour: Grey/Cream	Crocidolite:	None Detected	Other Fibers: None Detected
Description: DJC	Other Amphiboles:	None Detected	Non Fibers: 97
		Comments:	
Client Sample: 335848 - 02H	Asbestos Detected?	No	
LEX Sample: 03	Chrysotile:	None Detected	Cellulose: 2
Layers Analyzed: Sample Homogenized	Amosite:	None Detected	MMVF: None Detected
Colour: Grey/Cream	Crocidolite:	None Detected	Other Fibers: None Detected
Description: DJC	Other Amphiboles:	None Detected	Non Fibers: 98
		Comments:	

Other Amphiboles: ac=actinolite, a=anthophyllite, t-tremolite, u=unidentified
MMVF: Man Made Vitreous Fibers: Fiberglass, Min. Wool, Rockwool,
Glasswool
PLM - method detection limit is 0.1%

Analyst

Z. Samseva

This test report relates only to the items tested and must not be used to claim product endorsement by NVLAP or any agency of the United States government. This test report must not be reproduced except in full without the written consent of the laboratory.



DST File No.: BE-OT-010540

Appendix C
Laboratory Certificates of Analysis – Paint Chips

Certificate of Analysis

DST Consulting Engineers Inc. (Ottawa)

203-2150 Thurston Dr.

Ottawa, ON K1G 5T9

Attn: Marc Acouri

Phone: (613) 748-1415

Fax: (613) 748-1356

Client PO:

Project: BE OT 010540

Report Date: 26-Aug-2009

Order Date: 21-Aug-2009

Custody: 61853

Order #: 0934196

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

Paracel ID Client ID

0934196-01 335848-LP-01

Approved

Mark Foto, M.Sc. For Dale Robertson, BSc
Laboratory Director

Any use of these results implies your agreement that our total liability in connection with this work, however arising shall be limited to the amount paid by you for this work, and that our employees or agents shall not under circumstances be liable to you in connection with this work

Certificate of Analysis

Report Date: 26-Aug-2009

Order Date: 21-Aug-2009

Client: **DST Consulting Engineers Inc. (Ottawa)**

Client PO:

Project Description: BE OT 010540

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Metals	EPA 6020 - Digestion, ICP-MS	24-Aug-09	24-Aug-09

Sample Data Revisions

None

Work Order Revisions/Comments:

None

Other Report Notes:

n/a: not applicable

MDL: Method Detection Limit

Source Result: Data used as source for matrix and duplicate samples

%REC: Percent recovery.

RPD: Relative percent difference.

Certificate of Analysis

Report Date: 26-Aug-2009

Order Date: 21-Aug-2009

Client: **DST Consulting Engineers Inc. (Ottawa)**

Client PO:

Project Description: BE OT 010540

Sample Results

Lead				Matrix: Paint
				Sample Date: 20-Aug-09
Paracel ID	Client ID	Units	MDL	Result
0934196-01	335848-LP-01	ug/g	50	85000

Laboratory Internal QA/QC

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Matrix Blank									
Lead	ND	50	ug/g						
Matrix Duplicate									
Lead	ND	50	ug/g	ND				44	
Matrix Spike									
Lead	109		ug/L	68.4	81.1	80-120			

Company Name: <u>DST Consulting Engineers</u>	Project Ref: <u>BE-OT-010540</u>	Date Required: _____
Contact Name: <u>Marc Acouri</u>	PO# _____	Turn Around Time: <input type="checkbox"/> 1-day <input type="checkbox"/> 2-day <input checked="" type="checkbox"/> Regular
Address: <u>2150 Thurston Dr, Ottawa, ON</u>	Quote # _____ <input type="checkbox"/> Not Quoted	Regulatory/Guideline Requirements
Tel: <u>613-748-1415</u> Cell: _____	Preservative to be added by Paracel? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Email: <u>macouri@dstgroup.com</u>		

Matrix Types: S-Soil/Sed GW-Ground Water SW-Surface Water SS-Storm/Sanitary Sewer A-Air O-Other RDW-Regulated Drinking Water

Sample Information					Analysis Required											
Paracel Order #	Matrix	Air Volume	# Containers	Date Sampled dd/mm/yy												Hazardous? (Y/N)
<u>0934196</u>																
Sample Identification																
1				<u>20/09/09</u>	X											
2																
3																
4																
5																
6																
7																
8																
9																
10																

Comments: _____

Relinquished By: <u>Marc Acouri</u> Date: <u>Aug 21/09</u> Time: <u>10:31</u>	Received at Depot: <u>[Signature]</u> Date: <u>8/21/09</u> Time: _____	Received at Lab: <u>[Signature]</u> Date: <u>8/21/09</u> Time: <u>10:31</u>	Verified By: <u>[Signature]</u> Date: <u>8/21/09</u> Time: <u>10:51</u>
--	---	--	--

Please refer to the back page for Locations and Sample Preservation, Container and Hold Time Requirements.

WHITE - Lab Copy, PINK - Client Copy

DST File No.: BE-OT-010540

Appendix D
Selected Photographs

DST File No.: BE-OT-010540



Photo 1: Exterior view of the Storage Shed. The exterior white paint has been tested and confirmed to be lead-based. The asphaltic roofing materials are ACM-suspect.

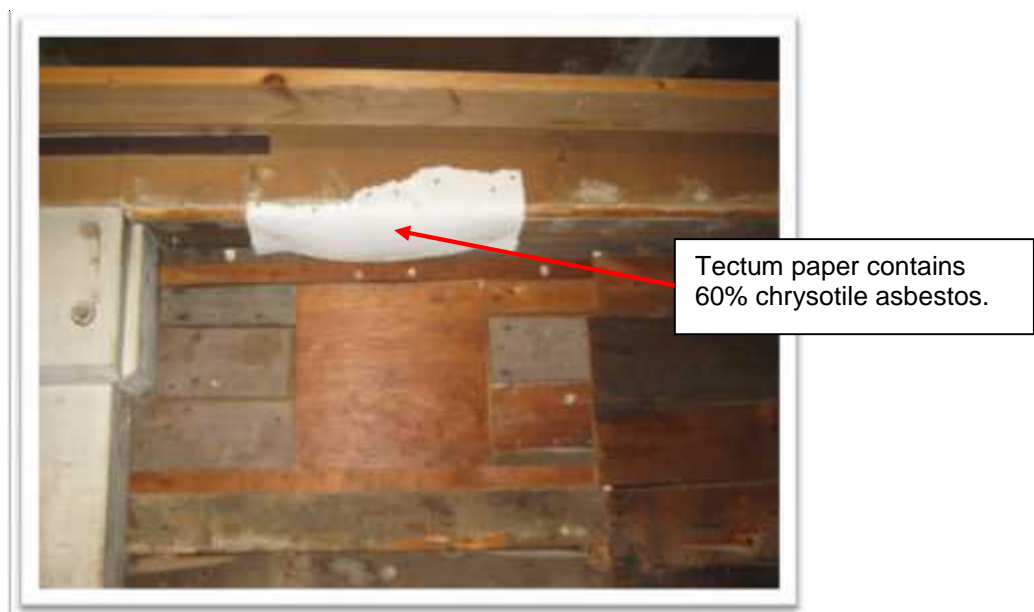


Photo 2: Tectum paper remnants have been tested and confirmed to contain 60% chrysotile asbestos. Type 2 removal is recommended for regulatory compliance.

DST File No.: BE-OT-010540



Photo 3: Drywall joint compound has been tested and does not contain regulated concentrations of asbestos.



Photo 4: Tar paper has been tested and does not contain asbestos.

DST File No.: BE-OT-010540



Photo 5: Typical fluorescent light fixture. Each light tube will contain a single droplet of mercury. The ballasts are also suspected to contain PCBs.



DESIGNATED SUBSTANCE SURVEY

**Storage Garage
Ottawa, Ontario**



Prepared for:

Environmental Services

September 23, 2015

DST File No.: BE-OT-010540

DST Consulting Engineers Inc.

2150 Thurston Drive, Suite 203, Ottawa, Ontario K1G 5T9
Tel.: (613) 748-1415 Fax: (613) 748-1356 E-mail: ottawa@dstgroup.com

Executive Summary

DST Consulting Engineers Inc. (DST) was retained by the to perform a Designated Substance Survey (DSS) of the Storage Garage located in Ottawa, Ontario.

The objectives of the DSS are to:

1. Identify building materials (interior and exterior) and fixed equipment (e.g. heating/cooling systems) that contain designated substance/hazardous materials;
2. Determine the potential risks to human health and the environment associated with the identified materials;
3. Determine the potential impact the identified materials may have on future construction/renovation projects;
4. Create an inventory of the designated substances present in the building(s); and,
5. Provide baseline reports for future construction/renovation projects.

The survey program implemented by DST was designed for consistency with the record of materials containing the 11 designated substances listed in Section 30 of the Occupational Health and Safety Act, R.S.O. 1990, Chapter O.1. The Designated Substances Regulations as per the Ontario Act are generally followed as an environmentally responsible protocol to provide consistent results for its buildings located in both Ontario and Quebec.

DST performed the site visit for the Storage Garage on August 17, 2009.

The following Designated Substances and Hazardous Materials were neither observed, nor suspected of being present in forms or quantities that would either impact future work or pose risks to human health or the environment:

- Acrylonitrile;
- Arsenic;
- Coke Oven Emissions;
- Ethylene Oxide;
- Isocyanates;
- Vinyl Chloride;
- Polychlorinated Biphenyls (PCBs);
- Ozone Depleting Substances (ODS);
- Fecal Waste (e.g. animal feces, bird and bat guano, etc.);
- Urea Formaldehyde Foam Insulation (UFFI);
- Radioactive Smoke Detectors; and,
- Other hazardous materials, as viewed pertinent by the consultant.

The following table summarizes the remaining findings of the Storage Garage survey.

DST File No.: BE-OT-010540

Designated/ Hazardous Substance	Findings	Recommendations
Asbestos	<p>No friable ACMs were observed.</p> <p>Non-friable asphalt roof materials are a suspected non-friable ACM.</p> <p>No other suspected ACMs were identified within the building.</p>	<p>No remedial action is required at the present time.</p> <p>Prior to construction disturbance the asphalt roof materials should be sampled for asbestos content.</p>
Benzene	<p>Benzene is a constituent of the fuels stored in the building, but not as an integral part of the building structure.</p> <p>There is visual evidence of several small spills on the concrete floor slab. These appear to have been cleaned up with adsorbent materials.</p>	<p>Historic minor fuel spills on the concrete floor slab, which appear to have been cleaned up with adsorbent materials, represent only a <i>de minimis</i> risk.</p> <p>No remedial action is required at the present time.</p>
Lead	<p>Interior and exterior paints both show lead concentrations in excess of the 600 ppm limit recently established by the Federal Hazardous Products Act.</p> <ul style="list-style-type: none"> Exterior white paint is in POOR condition with significant signs of delamination from the wood substrate. Interior beige paint still exhibits a good bond to its wood substrate and is rated in GOOD condition. <p>No other building materials suspected of containing lead were observed during the site visit.</p>	<p>DST recommends removal of the loose, delaminating, flaking white exterior paint (leaving the areas with good bond to the wood substrate intact and undisturbed). The remaining lead-based exterior paint can then be encapsulated with a layer of non-lead paint. Opinion of Probable Cost: \$6,000.00.</p> <p>The Occupational Health and Safety Branch of the Ontario Ministry of Labour publication <i>Guideline: Lead on Construction Projects</i> should be followed during the disturbance of materials containing lead.</p>
Mercury	<p>Fluorescent light tubes each contain a single droplet of mercury which vaporizes when the tube is energized.</p> <p>No other sources of mercury were observed during the site visit.</p>	<p>No remedial action is required at the present time.</p> <p>The Occupational Health and Safety Division of the Ontario Ministry of Labour publication <i>The Safe Handling of Mercury: A Guide for the Construction Industry</i>, should be followed during the disturbance of materials containing mercury.</p>

DST File No.: BE-OT-010540

Designated/ Hazardous Substance	Findings	Recommendations
Silica	Silica is present within the concrete floor slab.	No remedial action is required at the present time. Dust control measures should be adopted during the disturbance of silica, including those outlined within the Occupational Health and Safety Branch of the Ontario Ministry of Labour <i>Guideline: Silica on Construction Projects</i> .
Mould	Laboratory analysis confirmed that the area above the polyethylene sheeting suspended from the rafters is supporting mould growth. This is to be expected given the water trapped by the polyethylene. The area is relatively small (e.g. less than 10 m ²).	DST recommends that the area above the polyethylene sheeting suspended from the rafters be remediated using Level II CCA precautions are adequate for remediation. Opinion of Probable Cost: \$1,500.00.

This Executive Summary should be read in conjunction with, and is subject to the same Limitations as, the entire report.

DST File No.: BE-OT-010540

DESIGNATED SUBSTANCE SURVEY

Storage Garage

Ottawa, Ontario

TABLE OF CONTENTS

1.0	INTRODUCTION.....	1
2.0	SCOPE OF WORK AND METHODOLOGY.....	2
3.0	FINDINGS.....	3
3.1	Acrylonitrile	3
3.2	Arsenic	4
3.3	Asbestos	4
3.3.1	Friable Asbestos Materials.....	4
3.3.2	Non-Friable Asbestos Materials.....	4
3.4	Benzene	4
3.5	Coke Oven Emissions.....	4
3.6	Ethylene Oxide	4
3.7	Isocyanates	5
3.8	Lead	5
3.9	Mercury	5
3.10	Silica.....	5
3.11	Vinyl Chloride	5
3.12	Polychlorinated Biphenyls (PCBs)	5
3.13	Ozone-Depleting Substances (ODSs)	6
3.14	Fecal Waste	6
3.15	Mould	6
3.16	Urea Formaldehyde Foam Insulation (UFFI).....	7
3.17	Radioactive Smoke Detectors	7
3.18	Other Hazardous Materials.....	7
4.0	CONCLUSIONS AND RECOMMENDATIONS	7
4.1	Asbestos	7
4.2	Benzene	8
4.3	Lead	8
4.4	Mercury	9
4.5	Silica.....	9
4.6	Mould	9
5.0	LIMITATIONS OF REPORT.....	10
6.0	CLOSURE.....	11

DST File No.: BE-OT-010540

Appendix A	Floor Plans
Appendix B	Laboratory Certificates of Analysis – Bulk Asbestos Samples
Appendix C	Laboratory Certificates of Analysis – Paint Chip Samples
Appendix D	Laboratory Certificates of Analysis – Mould Samples
Appendix E	Selected Photographs

DST File No.: BE-OT-010540

1.0 INTRODUCTION

DST Consulting Engineers Inc. (DST) was retained by the to perform a Designated Substance Survey (DSS) of the Storage Garage located in Ottawa, Ontario. The Storage Garage is a single-storey, slab-on-grade wood framed structure with a flat asphalt roof.

The objectives of the DSS are to:

1. Identify building materials (interior and exterior) and fixed equipment (e.g. heating/cooling systems) that contain designated substance/hazardous materials;
2. Determine the potential risks to human health and the environment associated with the identified materials;
3. Determine the potential impact the identified materials may have on future construction/renovation projects
4. Create an inventory of the designated substances present in the building(s); and,
5. Provide baseline reports for future construction/renovation projects.

The survey program implemented by DST was designed for consistency with the record of materials containing the 11 designated substances listed in Section 30 of the Occupational Health and Safety Act, R.S.O. 1990, Chapter O.1. The Designated Substances Regulations as per the Ontario Act are generally followed as an environmentally responsible protocol to provide consistent results for its buildings located in both Ontario and Quebec.

Designated Substances, as identified under the Ontario Occupational Health & Safety Act are:

1. Acrylonitrile;
2. Arsenic;
3. Asbestos (both friable and non-friable);
4. Benzene;
5. Coke Oven Emissions;
6. Ethylene Oxide;
7. Isocyanates;
8. Lead;
9. Mercury;
10. Silica; and,
11. Vinyl Chloride.

Other Hazardous Materials, which are not classified as Designated Substances, but which are still of concern due to other regulations, best practice guidelines and/or potential risks to human health and/or the environment, include:

12. Polychlorinated Biphenyls (PCBs);
13. Ozone Depleting Substances (ODS);
14. Fecal Waste (e.g. animal feces, bird and bat guano, etc.);
15. Mould;
16. Urea Formaldehyde Foam Insulation (UFFI);
17. Radioactive Smoke Detectors; and,
18. Other hazardous materials, as viewed pertinent by the consultant.

DST File No.: BE-OT-010540

2.0 SCOPE OF WORK AND METHODOLOGY

Prior to the commencement of field work, DST project personnel reviewed the following document provided:

- 1-page building information summary from the Asset Inventory System.

DST performed the site visit for the Storage Garage on August 17, 2009. The survey included a walkthrough assessment of all accessible areas of the building. While on site DST personnel:

- Compiled and summarized existing characterization data for the building;
- Conducted surveying, sampling and/or monitoring as required to address any data gaps and to reassess areas investigated during previous assessments (all sampling locations appear on the drawings in Appendix A);
- Defined the extent and approximate quantities of Designated Substances and Hazardous Materials;
- Determined the source and extent of mould proliferation; and,
- Collected sufficient information to subsequently enable DST to recommend appropriate mitigation measures to bring the building into compliance with applicable legislation and/or to mitigate risks to human health and/or the environment.

Materials suspected of containing designated substances and other hazardous materials were visually identified, based on the surveyor's knowledge of the historic composition of building products. Equipment that may contain ODSs (e.g. air conditioning and refrigeration equipment) or PCBs (e.g. electrical transformers and fluorescent light ballasts) can often be identified by examining manufacturer's labels. For safety reasons, DST personnel do not remove the ballast shields from fluorescent light fixtures to examine the ballast codes unless the electrical circuit for the lighting has been tagged and locked out by a qualified electrician. Visual identification of materials suspected to contain asbestos or lead (in paint) was supported by the collection and analysis of a limited number of representative samples. Materials suspected of containing designated substances other than asbestos or lead (in paint) were identified by appearance, age, and knowledge of historic applications.

In Ontario, a material is defined as an Asbestos-Containing Material (ACM) if the material has a minimum asbestos content of 0.5% by dry weight. ACMs can be divided into two categories: friable and non-friable material. A friable asbestos-containing material (ACM) is a material that can be crumbled, powdered, or pulverized by hand pressure and can readily release fibres when disturbed. Common applications of friable ACMs are sprayed or trowelled surfacing materials (e.g. sprayed fireproofing and textured coatings) as well as mechanical and thermal insulation. Non-friable materials are materials that will generally release fibres only when broken, cut, drilled, abraded, ground, sanded or vibrated. Common non-friable ACMs include vinyl floor products, drywall joint compound, plaster, asbestos textile products and asbestos cement products (transite). Some of these products may become friable with time or when disturbed (e.g. drywall joint compound).

Three (3) bulk samples of suspected ACMs were collected by DST during the site investigation. Samples were analyzed for their asbestos content at LEX Scientific (LEX). LEX is certified under the National Institute of Science and Technology's National Voluntary Laboratory Accreditation Program (NVLAP) to perform asbestos bulk sample analysis (NVLAP No.:

DST File No.: BE-OT-010540

101949). The bulk samples were analyzed using a combination of dispersion staining and polarised light microscopy (PLM). This analytical method complies with the United States Environmental Protection Agency (U.S. EPA) Method 600/R-93/116 dated July, 1993, which is the regulatory approved protocol for bulk asbestos analysis in Ontario. The analytical results for asbestos in bulk materials are included in Appendix B.

Although the Ministry of Labour (MoL) has published a guideline for control of lead exposures on construction projects in Ontario, it does not include criteria for the classification of lead-paint. Instead, it uses presumed airborne lead concentrations for specific tasks as criteria for classifying work. However, in regulations set by the U.S. Department of Housing and Urban Development, Lead-Based Paint is classified as any paint application containing at least 1.0 milligrams of lead per square centimetre of surface area (1.0 mg/cm²), or at least 0.5% lead content by weight (5,000 ppm). This criteria was widely, although not universally, used in Canada. In Canada, the Federal Hazardous Product Act has recently lowered the allowable concentration of lead in paints for new consumer products to 0.06% lead content by weight (600 ppm). For the purposes of this survey and report, paints having a lead content greater than 0.06% are considered to be lead-based. Disturbance of paints having lead content below 600 ppm are less likely to release significant concentrations of airborne lead during disturbance and therefore are not likely considered harmful.

Two (2) painted finishes, representative of the painted finishes in the building, were sampled and submitted to Paracel Laboratories for lead content analysis. The samples were analyzed at using Inductively Coupled Plasma – Mass Spectrometry (ICP-MS) in accordance with U.S. EPA Method 6020. The analytical results for lead in the paint chip samples are included in Appendix C.

One (1) bulk sample and 1 tape-lift sample of suspected mould-impacted material were collected by either removing a piece of the material or by physically adhering a piece of clear tape to the affected material and then peeling the tape off the substrate. The bulk sample or tape was then placed in a clean plastic bag and labelled. Microbial samples were analyzed by Paracel Laboratories Ltd. (Paracel) located in Ottawa, Ontario. Paracel is accredited by the Standards Council of Canada (ISO/IEC 17025) and the Canadian Association for Laboratory Accreditation (CALA). The analytical results for mould samples are included in Appendix D.

Selected photographs are included in Appendix E.

3.0 FINDINGS

The following sections outline the complete findings of all designated substances and hazardous materials assessed within the Storage Garage located in Ottawa, Ontario.

3.1 Acrylonitrile

Acrylonitrile was neither observed in the building, nor suspected of being present, in forms or quantities that would either impact future work or pose risks to human health or the environment.

DST File No.: BE-OT-010540

3.2 Arsenic

Arsenic was neither observed in the building, nor suspected of being present, in forms or quantities that would either impact future work or pose risks to human health or the environment.

3.3 Asbestos

Three (3) bulk samples of suspected ACMs were collected by DST during the site investigation. Sample descriptions and analytical results are summarized in the following table.

Table 1: Summary of Bulk Samples Analyzed for Asbestos			
Sample I.D.	Sample Location	Material Description	Asbestos (%)
335846-01A	West Wall at Redundant Opening	Parging Cement	None Detected
335846-01B			None Detected
335846-01C			None Detected

3.3.1 Friable Asbestos Materials

The only suspected friable ACM observed in the building was the parging cement over a redundant opening (possibly for a former metal chimney) in the west wall. Laboratory analysis of the parging cement (Sample 335846-01) has confirmed that it does not contain asbestos.

3.3.2 Non-Friable Asbestos Materials

Asphalt roofing materials are a suspected non-friable ACM. These materials were not sampled since this requires a full depth core sample which compromises the integrity of the building envelope.

3.4 Benzene

Benzene is a constituent of the fuels stored in the building, but not as an integral part of the building structure.

There is visual evidence of several small spills on the concrete floor slab. These appear to have been cleaned up with adsorbent materials.

3.5 Coke Oven Emissions

Coke Oven Emissions were neither observed in the building, nor suspected of being present, in forms or quantities that would either impact future work or pose risks to human health or the environment.

3.6 Ethylene Oxide

Ethylene Oxide was neither observed in the building, nor suspected of being present, in forms or quantities that would either impact future work or pose risks to human health or the environment.

DST File No.: BE-OT-010540

3.7 Isocyanates

Isocyanates were neither observed in the building, nor suspected of being present, in forms or quantities that would either impact future work or pose risks to human health or the environment.

3.8 Lead

Two (2) representative paint finishes in total were sampled from building finishes and submitted for lead content analysis. The sample descriptions and analytical results are summarized in the following table.

Table 2: Summary of Paint Chip Samples Analyzed for Lead				
Sample I.D.	Sample Location	Paint Description	Paint Condition	Lead (ppm)
335846-LP-01	Exterior	White on wood siding	POOR	13,700
335846-LP-02	Interior	Beige on wood finishes	GOOD	4,170

Both of the paint chip samples collected and analyzed showed lead concentrations in excess of the 600 ppm limit recently established by the Federal Hazardous Products Act. The exterior white paint is in POOR condition with significant signs of delamination from the wood substrate. The interior beige paint still exhibits a good bond to its wood substrate and is rated in GOOD condition.

No other building materials suspected of containing lead were observed during the site visit.

3.9 Mercury

Fluorescent light fixtures were observed in the building. Fluorescent light tubes each contain a single droplet of mercury which vaporizes when the tube is energized.

No other sources of mercury were observed during the site visit.

3.10 Silica

Based on the historic composition of building materials, silica is expected to be present in the concrete floor slab.

No other sources of silica were observed during the site visit.

3.11 Vinyl Chloride

Vinyl Chloride was neither observed in the building, nor suspected of being present, in forms or quantities that would either impact future work or pose risks to human health or the environment.

3.12 Polychlorinated Biphenyls (PCBs)

Polychlorinated Biphenyls (PCBs), also known as Chlorobiphenyls, are hazardous chemicals which were used in the manufacturing of a variety of equipment, such as electrical equipment, heat exchangers, hydraulic systems, and for several other specialized applications. PCBs are

DST File No.: BE-OT-010540

commonly found within electrical ballasts manufactured prior to 1981, found within fluorescent light fixtures and high intensity discharge lamps.

Light fixtures with T12 lamps are more likely to contain ballasts that were manufactured prior to 1981. T8 lamps are associated with light fixtures that were manufactured after the phase-out of PCB-containing ballasts. The letter "T" denotes the shape of the light fixture (e.g. tubular) and the number which follows indicates the diameter in eighths of an inch.

All of the fluorescent light fixtures observed throughout the building contained T8 lamps and are not suspected to contain PCBs.

No other materials suspected of containing PCBs were identified within the building.

3.13 Ozone-Depleting Substances (ODSs)

ODS were neither observed in the building, nor suspected of being present, in forms or quantities that would either impact future work or pose risks to human health or the environment.

3.14 Fecal Waste

Fecal waste was neither observed in the building, nor suspected of being present, in forms or quantities that would either impact future work or pose risks to human health or the environment.

3.15 Mould

The following suspected mould impacted building materials were noted during the site visit:

- Less than 1 m² of suspected mould growth (minor black spotting) on the rear wall (Sample 335846-TL-01); and,
- Less than 10 m² of suspected mould growth above the polyethylene sheeting suspended from the rafters to catch roof leaks (Sample 335846-BLK-01).

Laboratory analysis showed that the minor black spotting on the rear wall did not contain any mould. This is not unusual. Carbon deposits from internal combustion engines operating indoors often appear very similar to certain types of light, spotty mould growth.

Laboratory analysis did, however, confirm that the area above the polyethylene sheeting suspended from the rafters was indeed supporting mould growth. This is to be expected given the water trapped by the polyethylene.

In addition to the confirmed mould growth, much of the interior wood exhibits signs of historic water damage. Water infiltration creates opportunities for mould growth. All water infiltration does not, however, result in mould growth. If the wetted substrate can dry within a reasonable time period, the potential for mould growth is significantly reduced. Given the nature of the Storage Garage construction (e.g. wide open garage doors for easy ventilation, no real concealed wall cavities) it is reasonable to expect that wetted interior surfaces will dry relatively quickly, thus reducing the potential for mould growth.

DST File No.: BE-OT-010540

3.16 Urea Formaldehyde Foam Insulation (UFFI)

UFFI was neither observed in the building, nor suspected of being present, in forms or quantities that would either impact future work or pose risks to human health or the environment.

3.17 Radioactive Smoke Detectors

Smoke detectors were not observed in the building.

3.18 Other Hazardous Materials

No other Hazardous Materials were either observed in the building, or suspected of being present in forms or quantities that would either impact future work or pose risks to human health or the environment.

4.0 CONCLUSIONS AND RECOMMENDATIONS

DST Consulting Engineers Inc. (DST) was retained by the to perform a Designated Substance Survey (DSS) of the Storage Garage located in Ottawa, Ontario.

The site visit was performed by DST on August 17, 2009. The following Designated Substances and Hazardous Materials were neither observed, nor suspected of being present in forms or quantities that would either impact future work or pose risks to human health or the environment:

- Acrylonitrile;
- Arsenic;
- Coke Oven Emissions;
- Ethylene Oxide;
- Isocyanates;
- Vinyl Chloride;
- Polychlorinated Biphenyls (PCBs);
- Ozone Depleting Substances (ODS);
- Fecal Waste (e.g. animal feces, bird and bat guano, etc.);
- Urea Formaldehyde Foam Insulation (UFFI);
- Radioactive Smoke Detectors; and,
- Other hazardous materials, as viewed pertinent by the consultant.

4.1 Asbestos

The disturbance of asbestos-containing materials on construction and demolition projects in the province of Ontario is governed by *O.Reg. 278/05, Asbestos on Construction Projects and in Buildings and Repair Operations* enabled under the *Occupational Health and Safety Act (R.S.O. 1990, Chapter 0.1)*. This regulation classifies all asbestos disturbance as either Type 1, Type 2, or Type 3, each of which has defined precautionary measures. All asbestos materials are subject to specific handling and disposal precautions, and must be removed prior to demolition. The Ministry of Labour must be notified of any project involving removal of more than a minor amount (e.g. typically 1 m²) of friable asbestos material.

DST File No.: BE-OT-010540

The only suspect ACM at the Storage Garage is the non-friable asphalt component(s) of the roof assembly. These materials were not sampled since this requires a full depth core sample which compromises the integrity of the building envelope.

These materials, even if they do contain regulated concentrations of asbestos, represent only a *de minimis* risk to human health or the environment in their present state since they are the types of materials that do not readily release significant concentrations of asbestos fibres even when subjected to construction disturbances.

No remedial action is required for the above-noted materials as they were observed to be in GOOD condition. However, DST recommends that they be sampled for asbestos content prior to any major construction disturbance. If the analysis demonstrates that these materials contain asbestos, then they can be removed as a Type 1 asbestos operation in accordance with the work procedures outlined in O.Reg 278/05.

4.2 Benzene

Benzene is a constituent of the fuels stored in the building, but not as an integral part of the building structure. There is visual evidence of several small spills on the concrete floor slab. These appear to have been cleaned up with adsorbent materials.

Historic minor fuel spills on the concrete floor slab, which appear to have been cleaned up with adsorbent materials, represent only a *de minimis* risk. No remedial action is required at the present time.

4.3 Lead

The Occupational Health and Safety Branch of the Ontario Ministry of Labour has published *Guideline: Lead on Construction Projects*. This document classifies all lead disturbance as either Type 1, Type 2a, Type 2b or Type 3 work, and assigns different levels of respiratory protection and work procedures for each classification. In the absence of specific legislation for lead on construction projects, this guideline would serve as a reasonable, peer reviewed standard for work procedures.

Both of the paint chip samples collected and analyzed contained a lead concentration in excess of the 600 ppm limit recently established by the Federal Hazardous Products Act.

The exterior white paint is in POOR condition with significant signs of delamination from the wood substrate. Paint chips with elevated concentrations of lead can pose a health risk to humans if ingested. Paint chips are also a risk to the environment with the potential to contaminate soil and groundwater. Paints with elevated lead content can also pose a health risk to workers while completing renovations within the building. DST recommends removal of the loose, delaminating, flaking areas of white exterior paint (leaving any areas still exhibiting a good bond intact and undisturbed). The remaining lead paint can then be encapsulated with a layer of non-lead paint.

The interior beige paint still exhibits a good bond to its wood substrate and is rated in GOOD condition. No remedial action is required for this paint at the present time.

DST File No.: BE-OT-010540

No other building materials suspected of containing lead were observed during the site visit.

4.4 Mercury

Fluorescent light tubes each contain a single droplet of mercury which vaporizes when the tube is energized. No other sources of mercury were observed during the site visit.

There are no regulations that specifically govern the disturbance of mercury on construction projects. However, the Occupational Health and Safety Division of the Ontario Ministry of Labour has published *The Safe Handling of Mercury: A Guide for the Construction Industry*. This document provides advice on how to reduce the risk of mercury exposure, and outlines clean-up methods for spills. In the absence of specific legislation for mercury on construction projects, this guideline would serve as a reasonable, peer reviewed standard for work procedures.

When removal of the fluorescent light tubes is required, the tubes should be removed intact from the fixtures. This prevents worker exposure to mercury vapour, particularly if the tubes were energized shortly before removal. It is now common practise to recycle fluorescent light tubes, recovering the component materials, and avoiding the generation of hazardous waste.

4.5 Silica

The Occupational Health and Safety Branch of the Ontario Ministry of Labour has published *Guideline: Silica on Construction Projects*. This document classifies all silica disturbance as either Type 1, Type 2 or Type 3 work, and assigns different levels of respiratory protection and work procedures for each classification. In the absence of specific legislation for silica on construction projects, this guideline would serve as a reasonable, peer reviewed standard for work procedures.

Silica is present in the concrete floor slab. No remedial work is required at the present time.

Dust control procedures, which are typical of any well executed demolition project, are usually sufficient to control airborne silica levels when disturbance of the material is necessary. As a general rule, it is preferable to use more stringent dust suppression techniques and engineering controls as opposed to relying on respiratory protection to control worker exposure. Respiratory protection should only be relied on as a last resort when dust suppression techniques and engineering controls fail to control worker exposure to silica.

4.6 Mould

The term "mould" applies to a large group of micro-organisms, which together, with mushrooms and yeast, form the Fungi Kingdom of living matter. Mould organisms grow by degrading nutrients from organic substrates such as wood and wood products, fabrics, foodstuff, plant and soil. The growth of mould necessitates three essential conditions; a suitable temperature, an appropriate substrate and adequate moisture.

Public health and regulatory agencies acknowledge mould growth to be a risk factor for adverse health effects in occupants. Occupants may experience allergic responses such as asthma, headache, respiratory tract irritation, eye irritation, skin irritation, and sinus congestion. More severe health effects are rare and typically limited to individuals with suppressed immune systems, children, elderly people and persons with high occupational exposure.

DST File No.: BE-OT-010540

Currently, there are no regulations pertaining to mould on construction projects. Most jurisdictions have issued alerts or bulletins concerning the hazard of mould in indoor environments. The Canadian Construction Association (CCA) published the following document as a response to concerns in the construction industry: CCA 82-2004, "Mould Guidelines for the Canadian Construction Industry", 2004. The Guideline recommends Level I, II and III mould abatement procedures for small ($<1\text{m}^2$), medium (1m^2 to 10m^2) and large scale ($>10\text{m}^2$) mould abatement operations that are to be determined by professionals based on the extent and density of mould on site.

Laboratory analysis confirmed that the area above the polyethylene sheeting suspended from the rafters is supporting mould growth. This is to be expected given the water trapped by the polyethylene. The area is relatively small (e.g. less than 10m^2) so Level II CCA precautions are adequate for remediation.

5.0 LIMITATIONS OF REPORT

This report is intended for client use only. Any use of this document by a third party, or any reliance on or decisions made based on the findings described in this report, are the sole responsibility of such third parties, and DST Consulting Engineers Inc. accepts no responsibility for damages, suffered by any third party as a result of decisions made or actions conducted based on this report. No other warranties are implied or expressed.

The data, conclusions and recommendations which are presented in this report, and the quality thereof, are based on a scope of work authorized by the client. The sampling program included asbestos bulk sampling, paint chip sampling, and microbial sampling in select representative areas for laboratory analysis. Note, however, that no scope of work, no matter how exhaustive, can guarantee to identify all contaminants. This report therefore cannot warranty that all building conditions are represented by those identified at specific locations.

Recommendations, when included, are made in good faith and are based on several successful experiences. DST is not in a position to evaluate the health risks associated with exposure to the mould and/or mites referenced in this report. Since human reactions to mould exposure vary widely amongst individuals, and specific segments of the population are generally recognized to be more susceptible than others, an evaluation of health risks can only be made on an individual basis and even then, only by a licensed medical practitioner equipped with knowledge of the individual's medical history.

Any use of this report by the client and any other party is contingent upon their understanding and acceptance of the following condition:

"Mould is a naturally occurring substance and regardless of the results of an assessment or how completely it is removed, it could reoccur."

Regardless of the effectiveness of any remedial actions, mould growth may occur/reoccur anywhere within a building at any time, should conditions be favourable. It is therefore essential to maintain buildings, surfaces, appliances and furnishings under conditions which are not favourable to mould incubation and growth (warm, dry, and clean). The scope of services provided by DST for this assignment did not include a detailed evaluation of the thermal and

DST File No.: BE-OT-010540

moisture management characteristics of the exterior wall assembly, or a detailed building envelope investigation to ascertain every potential root cause of the water infiltration that created an environment favourable to mould proliferation. Similarly, DST has not been engaged to provide detailed designs for the reinstatement of building finishes or for improvements to the building envelope.

Note also that standards, guidelines and practices related to mould investigations may change with time. Those which were applied at the time of this investigation may be obsolete or unacceptable at a later date.

Any comments given in this report on potential remediation problems and possible methods are intended only for the guidance of the designer. The scope of work may not be sufficient to determine all of the factors that may affect construction, clean-up methods and/or costs. Contractors bidding on this project or undertaking clean-ups should, therefore, make their own interpretation of the factual information presented and draw their own conclusions as to how the conditions may affect their work.

Any results from an analytical laboratory or other subcontractor reported herein have been carried out by others, and DST Consulting Engineers Inc. cannot warranty their accuracy. Similarly, DST cannot warranty the accuracy of information supplied by the client.

6.0 CLOSURE

We trust that the information contained herein meets your needs. Should you have any questions or comments, please do not hesitate to contact us.

DST CONSULTING ENGINEERS INC.

Signature appears on original copy

Maurice Graveline, P.Eng.
Principal
mgraveline@dstgroup.com

DST File No.: BE-OT-010540

**Appendix A
Floor Plans**

Appendix B
Laboratory Certificates of Analysis – Bulk Asbestos



SOLUTIONS
FOR A WORKING WORLD

CERTIFICATE OF ANALYSIS

Company:	DST Consulting Engineers Inc.	Report Date:	27-Aug-09
Contact:	Mr. Marc Acouri	Analysis Date:	27-Aug-09
Client Address:	2150 Thurston Drive, Suite 203, OTTAWA, ON	Received Date:	24-Aug-09
Client Reference:	BEOT010540	LEX Project Number:	08092705
Sampling Date:	17-Aug-09	Number of Analyses:	3

Analysis Requested **Bulk Asbestos by PLM**

Page 1 of 2

Analysis was performed in accordance with the method EPA/600/R-93/116, Method for the Determination of Asbestos in Bulk Building Materials adopted in Designated Substance - Asbestos on Construction Projects and in Buildings and Repair Operations - made under the Occupational Health and Safety Act Ontario Regulation 278/05. LEX Scientific Inc. is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP 101949) by the National Institute of Standards and Technology for analysis of bulk materials for asbestos.

German Leal, B.Sc.
Laboratory Manager

Fibrous Asbestos Content %		Other Materials Content %	
Client Sample: 335846-01A	Asbestos Detected?	No	
LEX Sample: 01	Chrysotile:	None Detected	Cellulose: None Detected
Layers Analyzed: Sample Homogenized	Amosite:	None Detected	MMVF: None Detected
Colour: Grey/White	Crocidolite:	None Detected	Other Fibers: None Detected
Description: Parging	Other Amphiboles:	None Detected	Non Fibers: 100
Comments:			

Other Amphiboles: ac=actinolite, a=anthophyllite, t-tremolite, u=unidentified
MMVF: Man Made Vitreous Fibers: Fiberglass, Min. Wool, Rockwool, Glasswool
PLM - method detection limit is 0.1%


Analyst

This test report relates only to the items tested and must not be used to claim product endorsement by NVLAP or any agency of the United States government. This test report must not be reproduced except in full without the written consent of the laboratory.

2 Quebec Street, Suite 204 Guelph, Ontario N1H 2T3
Phone: 519.824.7082 Fax: 519.824.5784 Toll Free: 1.800.824.7082
e-mail: admin@lexscientific.com Website: www.lexscientific.com

		Fibrous Asbestos Content %	Other Materials Content %
Client Sample: <u>335846-01B</u>	Asbestos Detected?	No	
LEX Sample: 02	Chrysotile:	None Detected	Cellulose: None Detected
Layers Analyzed: Sample Homogenized	Amosite:	None Detected	MMVF: None Detected
Colour: Grey/White	Crocidolite:	None Detected	Other Fibers: None Detected
Description: Parging	Other Amphiboles:	None Detected	Non Fibers: 100
Comments:			
Client Sample: <u>335846-01C</u>	Asbestos Detected?	No	
LEX Sample: 03	Chrysotile:	None Detected	Cellulose: None Detected
Layers Analyzed: Sample Homogenized	Amosite:	None Detected	MMVF: None Detected
Colour: Grey/White	Crocidolite:	None Detected	Other Fibers: None Detected
Description: Parging	Other Amphiboles:	None Detected	Non Fibers: 100
Comments:			

Other Amphiboles: ac=actinolite, a=anthophyllite, t-tremolite, u=unidentified
MMVF: Man Made Vitreous Fibers: Fiberglass, Min. Wool, Rockwool,
Glasswool
PLM - method detection limit is 0.1%


Analyst _____

This test report relates only to the items tested and must not be used to claim product endorsement by NVLAP or any agency of the United States government. This test report must not be reproduced except in full without the written consent of the laboratory.



Appendix C
Laboratory Certificates of Analysis – Paint Chips

Certificate of Analysis

DST Consulting Engineers Inc. (Ottawa)

203-2150 Thurston Dr.

Ottawa, ON K1G 5T9

Attn: Marc Acouri

Phone: (613) 748-1415

Fax: (613) 748-1356

Client PO:

Project: BE OT 010540

Report Date: 25-Aug-2009

Order Date: 21-Aug-2009

Custody: 61858

Order #: 0934202

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

Paracel ID Client ID

0934202-01 335846-LP-01 White

0934202-02 335846-LP-02 Beige

Approved

Mark Foto, M.Sc. For Dale Robertson, BSc
Laboratory Director

Any use of these results implies your agreement that our total liability in connection with this work, however arising shall be limited to the amount paid by you for this work, and that our employees or agents shall not under circumstances be liable to you in connection with this work

Certificate of Analysis

Report Date: 25-Aug-2009

Order Date: 21-Aug-2009

Client: **DST Consulting Engineers Inc. (Ottawa)**

Client PO:

Project Description: BE OT 010540

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Metals	EPA 6020 - Digestion, ICP-MS	24-Aug-09	24-Aug-09

Sample Data Revisions

None

Work Order Revisions/Comments:

None

Other Report Notes:

n/a: not applicable

MDL: Method Detection Limit

Source Result: Data used as source for matrix and duplicate samples

%REC: Percent recovery.

RPD: Relative percent difference.

Certificate of Analysis

Report Date: 25-Aug-2009

Order Date: 21-Aug-2009

Client: **DST Consulting Engineers Inc. (Ottawa)**

Client PO:

Project Description: BE OT 010540

Sample Results

Lead				Matrix: Paint
				Sample Date: 17-Aug-09
Paracel ID	Client ID	Units	MDL	Result
0934202-01	335846-LP-01 White	ug/g	50	13700
0934202-02	335846-LP-02 Beige	ug/g	50	4170

Laboratory Internal QA/QC

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Matrix Blank									
Lead	ND	50	ug/g						
Matrix Duplicate									
Lead	ND	50	ug/g	ND				44	
Matrix Spike									
Lead	109		ug/L	68.4	81.1	80-120			

Company Name: <u>DST Consulting Engineers</u>	Project Ref: <u>BE01010540</u>	Date Required: _____
Contact Name: <u>Marc Acouri</u>	PO# _____	Turn Around Time: 1-day 2-day <input checked="" type="checkbox"/> Regular
Address: <u>2150 Thurston Drive, Ottawa, ON</u>	Quote # _____ <input type="checkbox"/> Not Quoted	Regulatory/Guideline Requirements
Tel: <u>613-748-1415</u> Cell: _____	Preservative to be added by Paracel? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Email: <u>macouri@dstgroup.com</u>		

Matrix Types: S-Soil/Sed GW-Ground Water SW-Surface Water SS-Storm/Sanitary Sewer A-Air O-Other RDW-Regulated Drinking Water

Sample Information					Analysis Required														
Paracel Order #	Matrix	Air Volume	# Containers	Date Sampled dd/mm/yy	M	L													Hazardous? (Y/N)
<u>0934202</u>																			
Sample Identification																			
1				17/08/09	X														
2				"	X														
3				"		X													
4				"		X													
5																			
6																			
7																			
8																			
9																			
10																			

Comments: TL= Tape-Lift , BLK= Bulk Material

Relinquished By: <u>Marc Acouri</u>	Received at Depot: <u>Vinc</u>	Received at Lab: <u>Vinc</u>	Verified By: <u>[Signature]</u>
Date: <u>Aug 21/09</u> Time: <u>10:30</u>	Date: <u>8/21/09</u> Time: <u>10:30</u>	Date: <u>8/21/09</u> Time: <u>10:30</u>	Date: <u>Aug 21/09</u> Time: <u>11:00</u>

Appendix D
Laboratory Certificates of Analysis – Microbial Samples

DST Consulting Engineers Inc. (Ottawa)
203-2150 Thurston Dr.
Ottawa, ON
K1G 5T9

26-Aug-09

Attn: Marc Acouri
Tel: (613) 748-1415
Fax: (613) 748-1356

Re: BE OTO 10540

Paracel Report No.: 0934248

Please find attached the final assessment of sample(s) received on 21-Aug-09 and analyzed in our Ottawa West Lab location. Information on common indoor/outdoor fungi may be found on our website at the link below; however, interpretation of the results is the responsibility of the client. Please refer to 'Report Notes' for special conditions present on some of the samples submitted.

[Paracel Species Ecology List](#)

If you have any questions or comments regarding the enclosed information, please feel free to contact us anytime.

Sincerely,



Heather S.H. McGregor, BSc
Laboratory Director - Microbiology

Any use of these test results implies your agreement that our total liability in connection with this work, however arising, shall be limited to the amount paid by you for this work, and that our employees or agents shall not under any circumstances be liable to you in connection with this work. This report may not be reproduced, except in full, without the written approval of the laboratory. This report is valid only with an authorized signature. All samples and related slides/extracts are stored for three months from the time the final analytical report was issued, unless otherwise requested in writing by the client.

Client: DST Consulting Engineers Inc. (Ottawa)
203-2150 Thurston Dr.
Ottawa, ON K1G 5T9

Attn: Marc Acouri
Tel: (613) 748-1415
Fax: (613) 748-1356

Project: BE OT0 10540
Paracel Report No.: 0934248

Received Date: 21-Aug-09
Report Date: 26-Aug-09

Microscopic Fungal - Tape Lifts

Sample I.D.	Sample Date	Background Debris**	Propagule Summary	Relative Amount*
0934248-01	17-Aug-09	High	Client Sample Name:335846-TL-01 ND	

*Relative Amount:

Trace = 2 propagules or less noted per mm² of tape surface

Low = 2-10 propagules noted per mm²

Moderate = 11-100 propagules noted per mm²

High = > than 101 propagules noted per mm²

**Background Debris - Definitions:

Low = occupying < 10% of microscopic field

Moderate = 11-30% of microscopic field

High = > 31% of microscopic field

ND - No fungal propagules detected.

NA - Not applicable; calculations cannot be performed on non-numerical data.

Microscopic Fungal - Bulk

Sample I.D.	Sample Date	Background Debris**	Propagule Summary	Relative Amount*
0934248-02	17-Aug-09	High	Client Sample Name:335846-BLK-01 [M-SM] bacteria hyaline mycelial fragments unidentified spore Aspergillus/Penicillium-like spores ascospores	High High High Moderate

*Relative Amount:

Trace = 2 propagules or less on entire slide

Low = < than 10 propagules noted per mm² of slide surface

Moderate = 11-100 propagules noted per mm² of slide surface

High = > than 101 propagules noted per mm² of slide surface

**Background Debris - Definitions:

Low = occupying < 10% of microscopic field

Moderate = 11-30% of microscopic field

High = > 31% of microscopic field

ND - No fungal propagules detected.

NA - Not applicable; calculations cannot be performed on non-numerical data.

Report Notes

0934248-02: M-AL

Algae was reported for this sample.

0934248-02: M-SM bacteria

The propagule was present in a smear. The high density prevented individual propagules from being discerned and counted.

LABORATORIES LTD.

OTTAWA • NIAGARA FALLS • MISSISSAUGA • SARNIA

TRUSTED.
RESPONSIVE.
RELIABLE.

300-2319 St. Laurent Blvd.
Ottawa, Ontario K1G 4J8

p: 1-800-749-1947
e: paracei@paracellabs.com

www.paracellabs.com

Chain of Custody Record

№ 61858

Pg. ____ of ____

Company Name: <u>DST Consulting Engineers</u>	Project Ref: <u>BE07010540</u>	Date Required: _____
Contact Name: <u>Marc Acouri</u>	PO# _____	Turn Around Time: <input type="checkbox"/> 1-day <input type="checkbox"/> 2-day <input checked="" type="checkbox"/> Regular
Address: <u>2150 Thurston Drive, Ottawa, ON</u>	Quote # _____ <input type="checkbox"/> Not Quoted	
Tel: <u>613-748-1415</u> Cell: _____	Preservative to be added by Parcel? <input type="checkbox"/> Yes <input type="checkbox"/> No	Regulatory/Guideline Requirements
Email: <u>macouri@dstgroup.com</u>		

Matrix Types: S-Soil/Sed GW-Ground Water SW-Surface Water SS-Storm/Sanitary Sewer A-Air O-Other RDW-Regulated Drinking Water

[illegible]

Comments:

TL = Tape-Lift, BLK = Bulk Material

Relinquished By: Marc Acari Date: Aug 21/09 Time: 10:30	Received at Depot: UROC Date: 8/21/09 8/21/09 Time: 10:30	Received at Lab: Karen Wiggins Date: 08/21/09 Time: 221	Verified By: Karen Wiggins Date: 08/21/09 Time: 410
--	---	--	--

Please refer to the back page for Locations and Sample Preservation, Container and Hold Time Requirements.

WHITE - Lab Copy, PINK - Client Copy

Appendix E
Selected Photographs

DST File No.: BE-OT-010540



Photo 1: Exterior view the Storage Garage.



Photo 2: Parging cement over redundant opening in the west wall. Laboratory analysis has confirmed that the material (Sample 335846-01) does not contain asbestos.



Photo 3: Roof of the Storage Garage. The asphalt materials are a suspected non-friable ACM.



Photo 4: Typical example of a minor fuel spill on the concrete floor slab (which contains silica). In general, these spills appear to have been cleaned with adsorbent materials.



Photo 5: Exterior white paint (Sample 335846-LP-01) contains 13,700 ppm lead. This paint is delaminating from its wood substrate and is in POOR condition. Remedial action is required.



Photo 6: Interior beige paint (Sample 335846-LP-02) contains 4,170 ppm lead. This paint retains its bond with the wood substrate and is on GOOD condition. No remedial action is required.



Photo 7: Typical fluorescent light fixture with T8 tubes is not expected to contain a PCB ballast. Each tube will, however, contain a droplet of mercury which vapourizes when the tube is energized.



Photo 8: Mould impacted materials above the polyethylene sheeting suspended from the rafters. DST recommends Level II CCA mould remediation.



DESIGNATED SUBSTANCE SURVEY

Shop

Ottawa, Ontario



Prepared for:
Environmental Services

September 23, 2015

DST File No.: BE-OT-010540

DST Consulting Engineers Inc.

2150 Thurston Drive, Suite 203, Ottawa, Ontario K1G 5T9
Tel.: (613) 748-1415 Fax: (613) 748-1356 E-mail: ottawa@dstgroup.com

Executive Summary

DST Consulting Engineers Inc. (DST) was retained by the to perform a Designated Substance Survey (DSS) of the Shop located in Ottawa, Ontario.

The objectives of the DSS are to:

1. Identify building materials (interior and exterior) and fixed equipment (e.g. heating/cooling systems) that contain designated substance/hazardous materials;
2. Determine the potential risks to human health and the environment associated with the identified materials;
3. Determine the potential impact the identified materials may have on future construction/renovation projects;
4. Create an inventory of the designated substances present in the building(s); and,
5. Provide baseline reports for future construction/renovation projects.

The survey program implemented by DST was designed for consistency with the record of materials containing the 11 designated substances listed in Section 30 of the Occupational Health and Safety Act, R.S.O. 1990, Chapter O.1. The Designated Substances Regulations as per the Ontario Act are generally followed as an environmentally responsible protocol to provide consistent results for its buildings located in both Ontario and Quebec.

DST performed the site visit for the Shop on August 21, 2009.

The following Designated Substances and Hazardous Materials were neither observed, nor suspected of being present in forms or quantities that would either impact future work or pose risks to human health or the environment:

- Acrylonitrile;
- Arsenic;
- Benzene;
- Coke Oven Emissions;
- Ethylene Oxide;
- Isocyanates;
- Vinyl Chloride;
- Fecal Waste (e.g. animal feces, bird and bat guano, etc.);
- Mould;
- Urea Formaldehyde Foam Insulation (UFFI);
- Radioactive Smoke Detectors; and,
- Other hazardous materials, as viewed pertinent by the consultant.

The following table summarizes the remaining findings of the Shop survey.

DST File No.: BE-OT-010540

Designated/ Hazardous Substance	Findings	Recommendations
Asbestos	<p>Asphaltic roofing materials and window caulking are both non-friable suspected asbestos-containing materials.</p> <p>No other suspected ACMs were identified within the building.</p> <p>Specific building materials do not contain regulated concentrations of asbestos. These materials are described in Section 3.3.3 of the report.</p>	<p>No remedial action required.</p> <p>Prior to construction disturbance the asphaltic roofing materials and window caulking should be sampled for asbestos content. If the analysis demonstrates that these material contain asbestos, they can be removed as a Type 1 asbestos operation in accordance with the work procedures outlined in O.Reg 278/05.</p>
Lead	<p>The black paint on the wood skirt around the base of the building exterior had a lead concentration of 2,140 ppm, which classifies it as a lead-based paint. This black paint was noted to generally be in GOOD condition, although a small quantity (e.g. approximately 10 ft²) was rated in POOR condition as it was peeling and delaminating from its wood substrate.</p> <p>Based upon the historic composition of building materials, lead is also expected to be present in the solder on the joints of copper piping.</p> <p>Specific paints do not contain regulated concentrations of lead. These paints are described in Table 2 and Section 3.8 of the report.</p>	<p>DST recommends removal of the loose, delaminating, flaking black exterior paint (leaving the areas with good bond to the wood substrate intact and undisturbed). The remaining lead-based exterior paint can then be encapsulated with a layer of non-lead paint. Opinion of Probable Cost: \$500.00.</p> <p>The Occupational Health and Safety Branch of the Ontario Ministry of Labour publication <i>Guideline: Lead on Construction Projects</i> should be followed during the disturbance of materials containing lead.</p>
Mercury	<p>Fluorescent light tubes contain a single droplet of mercury which vaporizes when the tube is energized.</p> <p>No other suspected sources of mercury were observed during the site visit.</p>	<p>No remedial action required.</p> <p>The Occupational Health and Safety Division of the Ontario Ministry of Labour publication <i>The Safe Handling of Mercury: A Guide for the Construction Industry</i>, should be followed during the disturbance of materials containing mercury.</p>

DST File No.: BE-OT-010540

Designated/ Hazardous Substance	Findings	Recommendations
Silica	Silica is present in concrete building elements.	No remedial action required. Dust control measures should be adopted during the disturbance of silica, including those outlined within the Occupational Health and Safety Branch of the Ontario Ministry of Labour <i>Guideline: Silica on Construction Projects</i> .
Polychlorinated Biphenyls (PCBs)	Fluorescent light fixtures observed throughout the building had T12 lamps and are therefore suspected to contain PCB ballasts.	No remedial action required. DST recommends to undertake the following actions with respect to PCBs: <ul style="list-style-type: none">• Survey of PCB-containing equipment, waste, etc. if none is available.• Testing of equipment for which PCB content cannot be readily, visually identified.• PCB Management Plan to ensure implementation of the federal PCB Regulation.
Ozone-Depleting Substances (ODSs)	ODSs are suspected in the following equipment: <ul style="list-style-type: none">• Window mounted air conditioners;• Refrigerators; and,• Water coolers. None of this equipment is considered to be part of the building structure or its finishes. No other ODS-containing equipment was identified within the building.	No remedial action required. When these units are taken out of service, the ODS refrigerants must be captured and reclaimed by a licensed technician.

This Executive Summary should be read in conjunction with, and is subject to the same Limitations as, the entire report.

DST File No.: BE-OT-010540

DESIGNATED SUBSTANCE SURVEY Shop

Ottawa, Ontario

TABLE OF CONTENTS

1.0	INTRODUCTION.....	1
2.0	SCOPE OF WORK AND METHODOLOGY.....	2
3.0	FINDINGS.....	3
3.1	Acrylonitrile	3
3.2	Arsenic	3
3.3	Asbestos	4
3.3.1	Friable Asbestos Materials	4
3.3.2	Non-Friable Asbestos Materials	4
3.3.3	Non-Asbestos Materials	4
3.4	Benzene	5
3.5	Coke Oven Emissions.....	5
3.6	Ethylene Oxide	5
3.7	Isocyanates	5
3.8	Lead	5
3.9	Mercury	6
3.10	Silica.....	6
3.11	Vinyl Chloride	6
3.12	Polychlorinated Biphenyls (PCBs)	6
3.13	Ozone-Depleting Substances (ODSs)	6
3.14	Fecal Waste	7
3.15	Mould	7
3.16	Urea Formaldehyde Foam Insulation (UFFI).....	7
3.17	Radioactive Smoke Detectors	7
3.18	Other Hazardous Materials.....	7
4.0	CONCLUSIONS AND RECOMMENDATIONS	7
4.1	Asbestos	8
4.2	Lead	8
4.3	Mercury	9
4.4	Silica.....	9
4.5	Polychlorinated Biphenyls (PCBs)	9
4.6	Ozone-Depleting Substances (ODSs)	10
5.0	LIMITATIONS OF REPORT	10
6.0	CLOSURE.....	12

DST File No.: BE-OT-010540

Appendix A	Floor Plans
Appendix B	Laboratory Certificates of Analysis – Bulk Asbestos Samples
Appendix C	Laboratory Certificates of Analysis – Paint Chip Samples
Appendix D	Selected Photographs

1.0 INTRODUCTION

DST Consulting Engineers Inc. (DST) was retained by the to perform a Designated Substance Survey (DSS) of the Shop located in Ottawa, Ontario. The Shop is a single-storey, slab-on-grade wood structure with a sloped, asphalt roof. The building exterior is finished with vinyl siding.

The objectives of the DSS are to:

1. Identify building materials (interior and exterior) and fixed equipment (e.g. heating/cooling systems) that contain designated substance/hazardous materials;
2. Determine the potential risks to human health and the environment associated with the identified materials;
3. Determine the potential impact the identified materials may have on future construction/renovation projects;
4. Create an inventory of the designated substances present in the building(s); and,
5. Provide baseline reports for future construction/renovation projects.

The survey program implemented by DST was designed for consistency with the record of materials containing the 11 designated substances listed in Section 30 of the Occupational Health and Safety Act, R.S.O. 1990, Chapter O.1. The Designated Substances Regulations as per the Ontario Act are generally followed as an environmentally responsible protocol to provide consistent results for its buildings located in both Ontario and Quebec.

Designated Substances, as identified under the Ontario Occupational Health & Safety Act are:

1. Acrylonitrile;
2. Arsenic;
3. Asbestos (both friable and non-friable);
4. Benzene;
5. Coke Oven Emissions;
6. Ethylene Oxide;
7. Isocyanates;
8. Lead;
9. Mercury;
10. Silica; and,
11. Vinyl Chloride.

Other Hazardous Materials, which are not classified as Designated Substances, but which are still of concern due to other regulations, best practice guidelines and/or potential risks to human health and/or the environment, include:

12. Polychlorinated Biphenyls (PCBs);
13. Ozone Depleting Substances (ODS);
14. Fecal Waste (e.g. animal feces, bird and bat guano, etc.);
15. Mould;
16. Urea Formaldehyde Foam Insulation (UFFI);
17. Radioactive Smoke Detectors; and,
18. Other hazardous materials, as viewed pertinent by the consultant.

DST File No.: BE-OT-010540

2.0 SCOPE OF WORK AND METHODOLOGY

Prior to the commencement of field work, DST project personnel reviewed the following documents provided:

- 1-page building information summary from the Asset Inventory System.

DST performed the site visit for the Shop on August 21, 2009. The survey included a walkthrough assessment of all accessible areas of the building. While on site DST personnel:

- Compiled and summarized existing characterization data for the building;
- Conducted surveying, sampling and/or monitoring as required to address any data gaps and to reassess areas investigated during previous assessments (all sampling locations appear on the drawings in Appendix A);
- Defined the extent and approximate quantities of Designated Substances and Hazardous Materials;
- Determined the source and extent of mould proliferation, if applicable; and,
- Collected sufficient information to subsequently enable DST to recommend appropriate mitigation measures to bring the building into compliance with applicable legislation and/or to mitigate risks to human health and/or the environment.

Materials suspected of containing designated substances and other hazardous materials were visually identified, based on the surveyor's knowledge of the historic composition of building products. Equipment that may contain ODSs (e.g. air conditioning and refrigeration equipment) or PCBs (e.g. electrical transformers and fluorescent light ballasts) can often be identified by examining manufacturer's labels. For safety reasons, DST personnel do not remove the ballast shields from fluorescent light fixtures to examine the ballast codes unless the electrical circuit for the lighting has been tagged and locked out by a qualified electrician. Visual identification of materials suspected to contain asbestos or lead (in paint) was supported by the collection and analysis of a limited number of representative samples. Materials suspected of containing designated substances other than asbestos or lead (in paint) were identified by appearance, age, and knowledge of historic applications.

In Ontario, a material is defined as an Asbestos-Containing Material (ACM) if the material has a minimum asbestos content of 0.5% by dry weight. ACMs can be divided into two categories: friable and non-friable material. A friable asbestos-containing material (ACM) is a material that can be crumbled, powdered, or pulverized by hand pressure and can readily release fibres when disturbed. Common applications of friable ACMs are sprayed or trowelled surfacing materials (e.g. sprayed fireproofing and textured coatings) as well as mechanical and thermal insulation. Non-friable materials are materials that will generally release fibres only when broken, cut, drilled, abraded, ground, sanded or vibrated. Common non-friable ACMs include vinyl floor products, drywall joint compound, plaster, asbestos textile products and asbestos cement products (transite). Some of these products may become friable with time or when disturbed (e.g. drywall joint compound).

Fourteen (14) bulk samples of suspected ACMs were collected by DST during the site investigation. Samples were analyzed for their asbestos content at LEX Scientific (LEX). LEX is certified under the National Institute of Science and Technology's National Voluntary Laboratory Accreditation Program (NVLAP) to perform asbestos bulk sample analysis (NVLAP

DST File No.: BE-OT-010540

No.: 101949). The bulk samples were analyzed using a combination of dispersion staining and polarised light microscopy (PLM). This analytical method complies with the United States Environmental Protection Agency (U.S. EPA) Method 600/R-93/116 dated July, 1993, which is the regulatory approved protocol for bulk asbestos analysis in Ontario. The analytical results for asbestos in bulk materials are included in Appendix B.

Although the Ministry of Labour (MoL) has published a guideline for control of lead exposures on construction projects in Ontario, it does not include criteria for the classification of lead-paint. Instead, it uses presumed airborne lead concentrations for specific tasks as criteria for classifying work. However, in regulations set by the U.S. Department of Housing and Urban Development, Lead-Based Paint is classified as any paint application containing at least 1.0 milligrams of lead per square centimetre of surface area (1.0 mg/cm²), or at least 0.5% lead content by weight (5,000 ppm). This criteria was widely, although not universally, used in Canada. In Canada, the Federal Hazardous Product Act has recently lowered the allowable concentration of lead in paints for new consumer products to 0.06% lead content by weight (600 ppm). For the purposes of this survey and report, paints having a lead content greater than 0.06% are considered to be lead-based. Disturbance of paints having lead content below 600 ppm are less likely to release significant concentrations of airborne lead during disturbance and therefore are not likely considered harmful.

Three (3) painted finishes, representative of the painted finishes in the building, were sampled and submitted to Paracel Laboratories for lead content analysis. The samples were analyzed at using Inductively Coupled Plasma – Mass Spectrometry (ICP-MS) in accordance with U.S. EPA Method 6020. The analytical results for lead in the paint chip samples are included in Appendix C.

No airborne, bulk or tape-lift microbial samples were collected during the site visit.

Selected photographs are included in Appendix D.

3.0 FINDINGS

The following sections outline the complete findings of all designated substances and hazardous materials assessed within the Shop located in Ottawa, Ontario.

3.1 Acrylonitrile

Acrylonitrile was neither observed in the building, nor suspected of being present, in forms or quantities that would either impact future work or pose risks to human health or the environment.

3.2 Arsenic

Arsenic was neither observed in the building, nor suspected of being present, in forms or quantities that would either impact future work or pose risks to human health or the environment.

DST File No.: BE-OT-010540

3.3 Asbestos

Fourteen (14) bulk samples of suspected ACMs were collected by DST during the site investigation. Sample descriptions and analytical results are summarized in the following table.

Table 1: Summary of Bulk Samples Analyzed for Asbestos			
Sample I.D.	Sample Location	Material Description	Asbestos (%)
94189-01A	Survey Location #3	Vinyl Floor Tiles, White, 12"x12"	None Detected
94189-01B			None Detected
94189-01C			None Detected
94189-02A	Survey Location #1	Drywall Joint Compound	None Detected
94189-02B			None Detected
94189-02C			None Detected
94189-02D	Survey Location #3		None Detected
94189-02E	Survey Location #6		None Detected
94189-03A	Survey Location #5 (Bathroom)	Vinyl Floor Tiles, Blue, 12"x12"	None Detected
94189-03B			None Detected
94189-03C			None Detected
94189-04A	Survey Location #7	Vinyl Sheet Flooring	None Detected
94189-04B			None Detected
94189-04C			None Detected

3.3.1 Friable Asbestos Materials

Friable asbestos materials were neither observed in the building, nor suspected of being present, during the site visit.

3.3.2 Non-Friable Asbestos Materials

Asphaltic roofing materials and window caulking are both non-friable suspected asbestos-containing materials. These materials were not sampled to avoid the risk of leakage through the roof or around the window assemblies.

3.3.3 Non-Asbestos Materials

Bulk sampling and subsequent laboratory analysis has demonstrated that the following building materials do not contain regulated concentrations of asbestos:

- Vinyl Floor Tiles (all applications);
- Vinyl Sheet Flooring; and,
- Drywall Joint Compound.

Based upon visual observations, DST was also able to identify the following building materials as non-asbestos:

- Lay-in acoustic ceiling tiles (fiberglass); and,

DST File No.: BE-OT-010540

- Attic insulation (fiberglass batts).

3.4 Benzene

Benzene was neither observed in the building, nor suspected of being present, in forms or quantities that would either impact future work or pose risks to human health or the environment.

3.5 Coke Oven Emissions

Coke Oven Emissions were neither observed in the building, nor suspected of being present, in forms or quantities that would either impact future work or pose risks to human health or the environment.

3.6 Ethylene Oxide

Ethylene Oxide was neither observed in the building, nor suspected of being present, in forms or quantities that would either impact future work or pose risks to human health or the environment.

3.7 Isocyanates

Isocyanates were neither observed in the building, nor suspected of being present, in forms or quantities that would either impact future work or pose risks to human health or the environment.

3.8 Lead

Three (3) representative paint finishes in total were sampled from the building and submitted for lead content analysis. The sample descriptions and analytical results are summarized in the following table.

Table 2: Summary of Paint Chip Samples Analyzed for Lead			
Sample I.D.	Sample Location	Paint Description	Lead (ppm)
94189-LP-01	Survey Location #1	White, Drywall Ceiling	<50
94189-LP-02	Survey Location #4	Beige, Drywall Walls	<50
94189-LP-03	Exterior	Black, Wood Skirt	2,140

Both of the interior paint chip samples collected and analyzed contained lead concentrations below the 600 ppm maximum limit recently established by the Federal Hazardous Products Act. Based upon these results, the interior paints are not considered to be lead-based paints.

The paint chip sample collected from the black wood skirt around the base of the building exterior had a lead concentration in excess of the 600 ppm limit recently established by the Federal Hazardous Products Act. This is a lead-based paint. This black paint was noted to generally be in GOOD condition, although a small quantity (e.g. approximately 10 ft²) was rated in POOR condition as it was peeling and delaminating from its wood substrate.

Based upon the historic composition of building materials, lead is also expected to be present in the solder on the joints of copper piping.

DST File No.: BE-OT-010540

3.9 Mercury

Fluorescent light tubes contain a single droplet of mercury which vaporizes when the tube is energized.

No other suspected sources of mercury were observed during the site visit.

3.10 Silica

Silica is present in concrete building elements.

3.11 Vinyl Chloride

Vinyl Chloride was neither observed in the building, nor suspected of being present, in forms or quantities that would either impact future work or pose risks to human health or the environment.

3.12 Polychlorinated Biphenyls (PCBs)

Polychlorinated Biphenyls (PCBs), also known as Chlorobiphenyls, are hazardous chemicals which were used in the manufacturing of a variety of equipment, such as electrical equipment, heat exchangers, hydraulic systems, and for several other specialized applications. PCBs are commonly found within electrical ballasts manufactured prior to 1981, found within fluorescent light fixtures and high intensity discharge lamps.

Light fixtures with T12 lamps are more likely to contain ballasts that were manufactured prior to 1981. T8 lamps are associated with light fixtures that were manufactured after the phase-out of PCB-containing ballasts. The letter "T" denotes the shape of the light fixture (e.g. tubular) and the number which follows indicates the diameter in eighths of an inch.

Fluorescent light fixtures observed throughout the building had T12 lamps and are therefore suspected to contain PCB ballasts.

No other materials suspected of containing PCBs were identified within the building.

3.13 Ozone-Depleting Substances (ODSs)

Ozone depleting substances (ODSs) include a variety of chlorofluorocarbon (CFC) and bromine (halon) gases which have been shown to contribute to the destruction of the earth's stratospheric ozone layer, and contribute to global warming. Direct exposure to some ODSs such as halon is a health hazard as well. ODSs are commonly used as refrigerants in a variety of equipment and, and in fire suppression systems.

ODSs are suspected in the following equipment:

- Window mounted air conditioners;
- Refrigerators; and,
- Water coolers.

None of this equipment is considered to be part of the building structure or its finishes.

No other ODS-containing equipment was identified within the building.

DST File No.: BE-OT-010540

3.14 Fecal Waste

Fecal waste was neither observed in the building, nor suspected of being present, in forms or quantities that would either impact future work or pose risks to human health or the environment.

3.15 Mould

Mould was neither observed in the building, nor suspected of being present, in forms or quantities that would either impact future work or pose risks to human health or the environment.

3.16 Urea Formaldehyde Foam Insulation (UFFI)

UFFI was neither observed in the building, nor suspected of being present, in forms or quantities that would either impact future work or pose risks to human health or the environment.

3.17 Radioactive Smoke Detectors

Smoke detectors were not observed in the building.

3.18 Other Hazardous Materials

No other Hazardous Materials were either observed in the building, or suspected of being present in forms or quantities that would either impact future work or pose risks to human health or the environment.

4.0 CONCLUSIONS AND RECOMMENDATIONS

DST Consulting Engineers Inc. (DST) was retained by the to perform a Designated Substance Survey (DSS) of the Shop located in Ottawa, Ontario.

The site visit was performed by DST on August 21, 2009. The following Designated Substances and Hazardous Materials were neither observed, nor suspected of being present in forms or quantities that would either impact future work or pose risks to human health or the environment:

- Acrylonitrile;
- Arsenic;
- Benzene;
- Coke Oven Emissions;
- Ethylene Oxide;
- Isocyanates;
- Vinyl Chloride;
- Fecal Waste (e.g. animal feces, bird and bat guano, etc.);
- Mould;
- Urea Formaldehyde Foam Insulation (UFFI);
- Radioactive Smoke Detectors; and,
- Other hazardous materials, as viewed pertinent by the consultant.

DST File No.: BE-OT-010540

4.1 Asbestos

The disturbance of asbestos-containing materials on construction and demolition projects in the province of Ontario is governed by *O.Reg. 278/05, Asbestos on Construction Projects and in Buildings and Repair Operations* enabled under the *Occupational Health and Safety Act (R.S.O. 1990, Chapter 0.1)*. This regulation classifies all asbestos disturbance as either Type 1, Type 2, or Type 3, each of which has defined precautionary measures. All asbestos materials are subject to specific handling and disposal precautions, and must be removed prior to demolition. The Ontario Ministry of Labour (MOL) must be notified of any project involving removal of more than a minor amount (e.g. typically 1 m²) of friable asbestos material.

Asphaltic roofing materials and window caulking are both non-friable suspected asbestos-containing materials. These materials were not sampled to avoid the risk of leakage through the roof or around the window assemblies.

These materials, even if they do contain regulated concentrations of asbestos, represent only a *de minimis* risk to human health or the environment in their present state as both are the type of material that does not readily release significant concentrations of asbestos fibres even when subjected to construction disturbances.

No remedial action is required for the ACM-suspect asphaltic roofing materials and window caulking as both were observed to be in GOOD condition. However, DST recommends that both materials be sampled for asbestos content prior to any major construction disturbance. If the analysis demonstrates that these materials contain asbestos, they can be removed as a Type 1 asbestos operation in accordance with the work procedures outlined in O.Reg 278/05.

4.2 Lead

The Occupational Health and Safety Branch of the Ontario Ministry of Labour has published *Guideline: Lead on Construction Projects*. This document classifies all lead disturbance as either Type 1, Type 2a, Type 2b or Type 3 work, and assigns different levels of respiratory protection and work procedures for each classification. In the absence of specific legislation for lead on construction projects, this guideline would serve as a reasonable, peer reviewed standard for work procedures.

The black paint on the wood skirt around the base of the building exterior had a lead concentration of 2,140 ppm, which classifies it as a lead-based paint. This black paint was noted to generally be in GOOD condition, although a small quantity (e.g. approximately 10 ft²) was rated in POOR condition as it was peeling and delaminating from its wood substrate. Paint chips with elevated concentrations of lead can pose a health risk to humans if ingested. Paint chips are also a risk to the environment with the potential to contaminate soil and groundwater. Paints with elevated lead content can also pose a health risk to workers while completing renovations on the building. DST recommends removal of the loose, delaminating, flaking areas of black exterior paint (leaving any areas still exhibiting a good bond intact and undisturbed). The remaining lead paint can then be encapsulated with a layer of non-lead paint.

Based upon the historic composition of building materials, lead is also expected to be present in the solder on the joints of copper piping.

DST File No.: BE-OT-010540

If required at some future date to accommodate renovation, demolition or maintenance work, the copper piping can be cut a small distance (e.g. 50 mm) from the joints to avoid direct disturbance of the lead solder. Disposal of the solder is not problematic since there is a mature market for recycled metals.

4.3 Mercury

There are no regulations that specifically govern the disturbance of mercury on construction projects. However, the Occupational Health and Safety Division of the Ontario Ministry of Labour has published *The Safe Handling of Mercury: A Guide for the Construction Industry*. This document provides advice on how to reduce the risk of mercury exposure, and outlines clean-up methods for spills. In the absence of specific legislation for mercury on construction projects, this guideline would serve as a reasonable, peer reviewed standard for work procedures.

Fluorescent light tubes contain a single droplet of mercury which vapourizes when the tube is energized. No other suspected sources of mercury were observed during the site visit.

When removal of the fluorescent light tubes is required, the tubes should be removed intact from the fixtures. This prevents worker exposure to mercury vapour, particularly if the tubes were energized shortly before removal.

It is now common practise to recycle fluorescent light tubes, recovering the component materials, and avoiding the generation of hazardous waste.

4.4 Silica

The Occupational Health and Safety Branch of the Ontario Ministry of Labour has published *Guideline: Silica on Construction Projects*. This document classifies all silica disturbance as either Type 1, Type 2 or Type 3 work, and assigns different levels of respiratory protection and work procedures for each classification. In the absence of specific legislation for silica on construction projects, this guideline would serve as a reasonable, peer reviewed standard for work procedures.

Silica is present in concrete building elements. No remedial work is required at the present time.

Dust control procedures, which are typical of any well executed demolition project, are usually sufficient to control airborne silica levels. As a general rule, it is preferable to use more stringent dust suppression techniques and engineering controls as opposed to relying on respiratory protection to control worker exposure. Respiratory protection should only be relied on as a last resort when dust suppression techniques and engineering controls fail to control worker exposure to silica.

4.5 Polychlorinated Biphenyls (PCBs)

Fluorescent light fixtures observed throughout the building had T12 lamps and are therefore suspected to contain PCB ballasts.

In Canada revised federal PCB Regulations came into force in September 2008. The Regulations impose deadlines on the elimination of all PCBs and PCB-containing material

DST File No.: BE-OT-010540

currently in storage, and requires all other PCBs to be phased out. In general, the end-of-use deadlines imposed by this new regulation are as follows:

- December 31, 2009, all equipment containing PCBs in a concentration of 500 parts per million (ppm) or more (excluding pole-mounted equipment and light ballasts).
- December 31, 2009, all equipment containing PCBs in a concentration of 50 ppm or more at any sensitive location, including within 100 metres of drinking water treatment plants, food and feed processing plants, child care facilities, preschool, primary and secondary schools, hospitals, and senior citizen care facilities (excluding pole-mounted equipment and light ballasts).
- December 31, 2025, all equipment containing PCBs in a concentration of 50 ppm or more (including pole-mounted equipment and light ballasts).

In general terms, the steps for compliance are as follows:

- Survey of PCB-containing equipment, waste, etc. if none is available.
- Testing of equipment for which PCB content cannot be readily, visually identified.
- PCB Management Plan to ensure implementation of the federal PCB Regulation.

No other materials suspected of containing PCBs were identified within the building.

4.6 Ozone-Depleting Substances (ODSs)

The handling, transport and disposal of ODSs are governed by the following regulations under the Canadian Environmental Protection Act (CEPA), 1999:

- Ozone-depleting Substances Regulations, 1998; and
- Federal Halocarbon Regulations, 2003.

ODSs are suspected in the following equipment:

- Window mounted air conditioners;
- Refrigerators; and,
- Water coolers.

None of this equipment is considered to be part of the building structure or its finishes.

When these units are taken out of service, the ODS refrigerants must be captured and reclaimed by a licensed technician.

No other ODS-containing equipment was identified within the building.

5.0 LIMITATIONS OF REPORT

This report is intended for client use only. Any use of this document by a third party, or any reliance on or decisions made based on the findings described in this report, are the sole responsibility of such third parties, and DST Consulting Engineers Inc. accepts no responsibility

DST File No.: BE-OT-010540

for damages, suffered by any third party as a result of decisions made or actions conducted based on this report. No other warranties are implied or expressed.

The data, conclusions and recommendations which are presented in this report, and the quality thereof, are based on a scope of work authorized by the client. The sampling program included asbestos bulk sampling, paint chip sampling, and microbial sampling in select representative areas for laboratory analysis. Note, however, that no scope of work, no matter how exhaustive, can guarantee to identify all contaminants. This report therefore cannot warranty that all building conditions are represented by those identified at specific locations.

Recommendations, when included, are made in good faith and are based on several successful experiences. DST is not in a position to evaluate the health risks associated with exposure to the mould and/or mites referenced in this report. Since human reactions to mould exposure vary widely amongst individuals, and specific segments of the population are generally recognized to be more susceptible than others, an evaluation of health risks can only be made on an individual basis and even then, only by a licensed medical practitioner equipped with knowledge of the individual's medical history.

Any use of this report by the client and any other party is contingent upon their understanding and acceptance of the following condition:

"Mould is a naturally occurring substance and regardless of the results of an assessment or how completely it is removed, it could reoccur."

Regardless of the effectiveness of any remedial actions, mould growth may occur/reoccur anywhere within a building at any time, should conditions be favourable. It is therefore essential to maintain buildings, surfaces, appliances and furnishings under conditions which are not favourable to mould incubation and growth (warm, dry, and clean). The scope of services provided by DST for this assignment did not include a detailed evaluation of the thermal and moisture management characteristics of the exterior wall assembly, or a detailed building envelope investigation to ascertain every potential root cause of the water infiltration that created an environment favourable to mould proliferation. Similarly, DST has not been engaged to provide detailed designs for the reinstatement of building finishes or for improvements to the building envelope.

Note also that standards, guidelines and practices related to mould investigations may change with time. Those which were applied at the time of this investigation may be obsolete or unacceptable at a later date.

Any comments given in this report on potential remediation problems and possible methods are intended only for the guidance of the designer. The scope of work may not be sufficient to determine all of the factors that may affect construction, clean-up methods and/or costs. Contractors bidding on this project or undertaking clean-ups should, therefore, make their own interpretation of the factual information presented and draw their own conclusions as to how the conditions may affect their work.

Any results from an analytical laboratory or other subcontractor reported herein have been carried out by others, and DST Consulting Engineers Inc. cannot warranty their accuracy. Similarly, DST cannot warranty the accuracy of information supplied by the client.

DST File No.: BE-OT-010540

6.0 CLOSURE

We trust that the information contained herein meets your needs. Should you have any questions or comments, please do not hesitate to contact us.

DST CONSULTING ENGINEERS INC.

Maurice Graveline, P.Eng.
Principal
mgraveline@dstgroup.com

DST File No.: BE-OT-010540

**Appendix A
Floor Plans**

Appendix B
Laboratory Certificates of Analysis – Bulk Asbestos



SOLUTIONS
FOR A WORKING WORLD

CERTIFICATE OF ANALYSIS

Company:	DST Consulting Engineers Inc.	Report Date:	26-Aug-09
Contact:	Mr. Marc Acouri	Analysis Date:	26-Aug-09
Client Address:	2150 Thurston Drive, Suite 203, OTTAWA, ON	Received Date:	24-Aug-09
Client Reference:	BEOT010540	LEX Project Number:	08092699
Sampling Date:	21-Aug-09	Number of Analyses:	14

Analysis Requested **Bulk Asbestos by PLM**

Page 1 of 4

Analysis was performed in accordance with the method EPA/600/R-93/116, Method for the Determination of Asbestos in Bulk Building Materials adopted in Designated Substance - Asbestos on Construction Projects and in Buildings and Repair Operations - made under the Occupational Health and Safety Act Ontario Regulation 278/05. LEX Scientific Inc. is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP 101949) by the National Institute of Standards and Technology for analysis of bulk materials for asbestos.

German Leal, B.Sc.
Laboratory Manager

Fibrous Asbestos Content %		Other Materials Content %	
Client Sample: 94189-01A	Asbestos Detected? No		
LEX Sample: 01	Chrysotile: None Detected	Cellulose: None Detected	
Layers Analyzed: Sample Homogenized	Amosite: None Detected	MMVF: None Detected	
Colour: White/Yellow	Crocidolite: None Detected	Other Fibers: None Detected	
Description: 12"x12" Vinyl Floor tiles (White)	Other Amphiboles: None Detected	Non Fibers: 100	
	Comments:		

Other Amphiboles: ac=actinolite, a=anthophyllite, t-tremolite, u=unidentified
MMVF: Man Made Vitreous Fibers: Fiberglass, Min. Wool, Rockwool, Glasswool
PLM - method detection limit is 0.1%

Analyst

This test report relates only to the items tested and must not be used to claim product endorsement by NVLAP or any agency of the United States government. This test report must not be reproduced except in full without the written consent of the laboratory.

2 Quebec Street, Suite 204 Guelph, Ontario N1H 2T3
Phone: 519.824.7082 Fax: 519.824.5784 Toll Free: 1.800.824.7082
e-mail: admin@lexscientific.com Website: www.lexscientific.com

		Fibrous Asbestos Content %	Other Materials Content %
Client Sample: 94189-01B	Asbestos Detected?	No	
LEX Sample: 02	Chrysotile:	None Detected	Cellulose: None Detected
Layers Analyzed: Sample Homogenized	Amosite:	None Detected	MMVF: None Detected
Colour: White/Yellow	Crocidolite:	None Detected	Other Fibers: None Detected
Description: 12"x12" Vinyl Floor tiles (White)	Other Amphiboles:	None Detected	Non Fibers: 100
	Comments:		
Client Sample: 94189-01C	Asbestos Detected?	No	
LEX Sample: 03	Chrysotile:	None Detected	Cellulose: None Detected
Layers Analyzed: Sample Homogenized	Amosite:	None Detected	MMVF: None Detected
Colour: White/Yellow	Crocidolite:	None Detected	Other Fibers: None Detected
Description: 12"x12" Vinyl Floor tiles (White)	Other Amphiboles:	None Detected	Non Fibers: 100
	Comments:		
Client Sample: 94189-02A	Asbestos Detected?	No	
LEX Sample: 04	Chrysotile:	None Detected	Cellulose: None Detected
Layers Analyzed: Sample Homogenized	Amosite:	None Detected	MMVF: None Detected
Colour: White/Pink	Crocidolite:	None Detected	Other Fibers: None Detected
Description: Drywall joint compound	Other Amphiboles:	None Detected	Non Fibers: 100
	Comments:		
Client Sample: 94189-02B	Asbestos Detected?	No	
LEX Sample: 05	Chrysotile:	None Detected	Cellulose: None Detected
Layers Analyzed: Sample Homogenized	Amosite:	None Detected	MMVF: None Detected
Colour: White/Pink	Crocidolite:	None Detected	Other Fibers: None Detected
Description: Drywall joint compound	Other Amphiboles:	None Detected	Non Fibers: 100
	Comments:		
Client Sample: 94189-02C	Asbestos Detected?	No	
LEX Sample: 06	Chrysotile:	None Detected	Cellulose: None Detected
Layers Analyzed: Sample Homogenized	Amosite:	None Detected	MMVF: None Detected
Colour: White/Brown	Crocidolite:	None Detected	Other Fibers: None Detected
Description: Drywall joint compound	Other Amphiboles:	None Detected	Non Fibers: 100
	Comments:		

Other Amphiboles: ac=actinolite, a=anthophyllite, t-tremolite, u=unidentified
 MMVF: Man Made Vitreous Fibers: Fiberglass, Min. Wool, Rockwool, Glasswool
 PLM - method detection limit is 0.1%

Analyst Z. Samseva

This test report relates only to the items tested and must not be used to claim product endorsement by NVLAP or any agency of the United States government. This test report must not be reproduced except in full without the written consent of the laboratory.



		Fibrous Asbestos Content %	Other Materials Content %
Client Sample: 94189-02D	Asbestos Detected?	No	
LEX Sample: 07	Chrysotile:	None Detected	Cellulose: None Detected
Layers Analyzed: Sample Homogenized	Amosite:	None Detected	MMVF: None Detected
Colour: White/Brown	Crocidolite:	None Detected	Other Fibers: None Detected
Description: Drywall joint compound	Other Amphiboles:	None Detected	Non Fibers: 100
Comments:			
Client Sample: 94189-02E	Asbestos Detected?	No	
LEX Sample: 08	Chrysotile:	None Detected	Cellulose: None Detected
Layers Analyzed: Sample Homogenized	Amosite:	None Detected	MMVF: None Detected
Colour: White/Brown	Crocidolite:	None Detected	Other Fibers: None Detected
Description: Drywall joint compound	Other Amphiboles:	None Detected	Non Fibers: 100
Comments:			
Client Sample: 94189-03A	Asbestos Detected?	No	
LEX Sample: 09	Chrysotile:	None Detected	Cellulose: None Detected
Layers Analyzed: Sample Homogenized	Amosite:	None Detected	MMVF: None Detected
Colour: Blue/Brown	Crocidolite:	None Detected	Other Fibers: None Detected
Description: 12"x12" Vinyl floor tiles (Blue)	Other Amphiboles:	None Detected	Non Fibers: 100
Comments:			
Client Sample: 94189-03B	Asbestos Detected?	No	
LEX Sample: 10	Chrysotile:	None Detected	Cellulose: None Detected
Layers Analyzed: Sample Homogenized	Amosite:	None Detected	MMVF: None Detected
Colour: Blue/Brown	Crocidolite:	None Detected	Other Fibers: None Detected
Description: 12"x12" Vinyl floor tiles (Blue)	Other Amphiboles:	None Detected	Non Fibers: 100
Comments:			
Client Sample: 94189-03C	Asbestos Detected?	No	
LEX Sample: 11	Chrysotile:	None Detected	Cellulose: None Detected
Layers Analyzed: Sample Homogenized	Amosite:	None Detected	MMVF: None Detected
Colour: Blue/Brown	Crocidolite:	None Detected	Other Fibers: None Detected
Description: 12"x12" Vinyl floor tiles (Blue)	Other Amphiboles:	None Detected	Non Fibers: 100
Comments:			

Other Amphiboles: ac=actinolite, a=anthophyllite, t-tremolite, u=unidentified
 MMVF: Man Made Vitreous Fibers: Fiberglass, Min. Wool, Rockwool, Glasswool
 PLM - method detection limit is 0.1%

Analyst Z. Samseva

This test report relates only to the items tested and must not be used to claim product endorsement by NVLAP or any agency of the United States government. This test report must not be reproduced except in full without the written consent of the laboratory.



		Fibrous Asbestos Content %	Other Materials Content %
Client Sample: 94189-04A	Asbestos Detected?	No	
LEX Sample: 12	Chrysotile:	None Detected	Cellulose: None Detected
Layers Analyzed: Sample Homogenized	Amosite:	None Detected	MMVF: None Detected
Colour: Beige/Grey	Crocidolite:	None Detected	Other Fibers: None Detected
Description: Vinyl sheet flooring	Other Amphiboles:	None Detected	Non Fibers: 100
	Comments:		
Client Sample: 94189-04B	Asbestos Detected?	No	
LEX Sample: 13	Chrysotile:	None Detected	Cellulose: None Detected
Layers Analyzed: Sample Homogenized	Amosite:	None Detected	MMVF: None Detected
Colour: Beige/Grey	Crocidolite:	None Detected	Other Fibers: None Detected
Description: Vinyl sheet flooring	Other Amphiboles:	None Detected	Non Fibers: 100
	Comments:		
Client Sample: 94189-04C	Asbestos Detected?	No	
LEX Sample: 14	Chrysotile:	None Detected	Cellulose: None Detected
Layers Analyzed: Sample Homogenized	Amosite:	None Detected	MMVF: None Detected
Colour: Beige/Grey	Crocidolite:	None Detected	Other Fibers: None Detected
Description: Vinyl sheet flooring	Other Amphiboles:	None Detected	Non Fibers: 100
	Comments:		

Other Amphiboles: ac=actinolite, a=anthophyllite, t-tremolite, u=unidentified
 MMVF: Man Made Vitreous Fibers: Fiberglass, Min. Wool, Rockwool, Glasswool
 PLM - method detection limit is 0.1%

Z. Samseva
 Analyst

This test report relates only to the items tested and must not be used to claim product endorsement by NVLAP or any agency of the United States government. This test report must not be reproduced except in full without the written consent of the laboratory.



Appendix C
Laboratory Certificates of Analysis – Paint Chips

Certificate of Analysis

DST Consulting Engineers Inc. (Ottawa)

203-2150 Thurston Dr.

Ottawa, ON K1G 5T9

Attn: Marc Acouri

Phone: (613) 748-1415

Fax: (613) 748-1356

Client PO:

Project: BE OT 010540

Report Date: 25-Aug-2009

Order Date: 21-Aug-2009

Custody: 61869

Order #: 0934255

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

Paracel ID	Client ID
0934255-01	94189-LP-01
0934255-02	94189-LP-02
0934255-03	94189-LP-03

Approved

Mark Foto, M.Sc. For Dale Robertson, BSc
Laboratory Director

Any use of these results implies your agreement that our total liability in connection with this work, however arising shall be limited to the amount paid by you for this work, and that our employees or agents shall not under circumstances be liable to you in connection with this work

Certificate of Analysis

Report Date: 25-Aug-2009

Order Date: 21-Aug-2009

Client: **DST Consulting Engineers Inc. (Ottawa)**

Client PO:

Project Description: BE OT 010540

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Metals	EPA 6020 - Digestion, ICP-MS	24-Aug-09	24-Aug-09

Sample Data Revisions

None

Work Order Revisions/Comments:

None

Other Report Notes:

n/a: not applicable

MDL: Method Detection Limit

Source Result: Data used as source for matrix and duplicate samples

%REC: Percent recovery.

RPD: Relative percent difference.

Certificate of Analysis

Report Date: 25-Aug-2009

Order Date: 21-Aug-2009

Client: **DST Consulting Engineers Inc. (Ottawa)**

Client PO:

Project Description: BE OT 010540

Sample Results

Lead				Matrix: Paint
				Sample Date: 21-Aug-09
Paracel ID	Client ID	Units	MDL	Result
0934255-01	94189-LP-01	ug/g	50	<50
0934255-02	94189-LP-02	ug/g	50	<50
0934255-03	94189-LP-03	ug/g	50	2140

Laboratory Internal QA/QC

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Matrix Blank									
Lead	ND	50	ug/g						
Matrix Duplicate									
Lead	ND	50	ug/g	ND				44	
Matrix Spike									
Lead	109		ug/L	68.4	81.1	80-120			

Company Name: <u>DST Consulting Engineers</u>	Project Ref: <u>BE01010540</u>	Date Required: _____
Contact Name: <u>Marc Acour</u>	PO# _____	Turn Around Time: 1-day 2-day <input checked="" type="checkbox"/> Regular
Address: <u>2150 Thurston Drive, Ottawa, ON</u>	Quote # _____ <input type="checkbox"/> Not Quoted	Regulatory/Guideline Requirements
Tel: <u>613-748-1415</u> Cell: _____	Preservative to be added by Paracel? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Email: <u>macour@dstgroup.com</u>		

Matrix Types: S-Soil/Sed GW-Ground Water SW-Surface Water SS-Storm/Sanitary Sewer A-Air O-Other RDW-Regulated Drinking Water

Sample Information					Analysis Required												
Paracel Order #	Matrix	Air Volume	# Containers	Date Sampled dd/mm/yy	Received at Lab												Hazardous? (Y/N)
<u>0934255</u>																	
1				21/08/09	X												
2				21/08/09	X												
3				21/08/09	X												
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Comments: _____

Relinquished By: <u>Marc Acour</u> Date: <u>August 21, 09</u> Time: <u>3:09pm</u>	Received at Depot: Date: _____ Time: _____	Received at Lab: <u>Aug 24/09</u> Time: <u>3:10</u>	Verified By: <u>[Signature]</u> Date: <u>Aug 24/09</u> Time: <u>4:41</u>
--	---	---	---

Please refer to the back page for Locations and Sample Preservation, Container and Hold Time Requirements.

WHITE - Lab Copy, PINK - Client Copy

Appendix D
Selected Photographs

DST File No.: BE-OT-010540



Photo 1: Exterior view of the Shop. Asphaltic roofing materials and window caulking are both non-friable suspected ACMs.



Photo 2: Vinyl floor tiles in Survey Location #3 have been tested (Samples 94189-01A-C) and confirmed to contain no asbestos.



Photo 3: Vinyl floor tiles in Survey Location #5 (Bathroom) have been tested (Samples 94189-03A-C) and confirmed to contain no asbestos.



Photo 4: Vinyl sheet flooring in Survey Location #7 has been tested (Samples 94189-04A-C) and confirmed to contain no asbestos.



Photo 5: The exterior black paint (Sample 94189-LP-03) on the wood skirts at the base of the building's exterior contains 2,140 ppm lead. This is classified as a lead-based paint. The concrete corner slabs will contain silica.



Photo 6: Typical fluorescent light fixture. The T12 lamps will contain liquid mercury which vapourizes when the lamp is energized. The fixture may contain a PCB ballast. White ceiling paint and beige wall paint have both been tested and confirmed to contain <50 ppm lead.



Photo 7: Typical water cooler will contain an ODS-suspect refrigerant. Refrigerators and window mounted air conditioners will also contain ODS-suspect refrigerants. None of this equipment is an integral part of the building structure or its finishes.