



FINAL **Hazardous Building** **Materials** **Assessment**

Water Treatment Plant
1030 Avenue H South,
Saskatoon, SK

Prepared for:

Associated Engineering
1-22225 Northridge Drive
Saskatoon, SK S7L 6X6

Attention: Eric Gaudet, M.Sc., P. Eng.
Project Manager

September 26, 2016

PWL File: 7587F

Issued to: Associated Engineering
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Project Manager
Issued on: September 26, 2016
PWL File: 7587F
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SK S7L 6H8
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EXECUTIVE SUMMARY

Associated Engineering (Client) retained Pinchin West Ltd. (PWL) to conduct a hazardous building materials assessment of Water Treatment Plant located at 1030 Avenue H South, Saskatoon, SK. PWL performed the assessment on September 8, 2016.

The objective of the assessment was to identify specified hazardous building materials in preparation for building renovation. The results of this assessment are intended for use with a properly developed scope of work and performance specification.

The assessed area was limited to the part of the building, which consisted of the 1928 Plant Pipe Gallery, 1928 Filter Plant, 1957 Filter Plant – Filter #12, and 1964 Filter Plant – Filter #23. The area of the building shown on the drawings in Appendix I.

SUMMARY OF FINDINGS

Asbestos: Asbestos-containing materials (ACM) were not identified in the renovation areas.

Lead: Lead was confirmed present in on all piping systems in the 1928 Pipe Gallery (loc. 1), paints on the walls of the concrete settling tanks in the 1928 Plant Settling Tank Area (loc. 2).

Silica: Crystalline silica is present in concrete, mortar, brick, masonry, ceramics, stone, asphalt, etc.

Mercury: Mercury vapour is present in fluorescent lamps and liquid mercury is present in thermostat ampules.

Polychlorinated Biphenyls (PCBs): PCBs are present in light ballasts.

Ozone Depleting Substances: Ozone depleting substances (ODS) were not identified in the renovation area.

Mould: Mould-impacted materials were not identified in the renovation area.

SUMMARY OF RECOMMENDATIONS

The following is a summary of significant recommendations; refer to the body of the report for detailed recommendations.

1. Remove and properly dispose of PCB ballasts and mercury-containing items prior to demolition or if disturbed by the planned renovation work.
2. Follow appropriate safe work procedures when handling or disturbing lead, and silica.



Please refer to Section 4.0 of this report for detailed recommendations regarding administrative, renovation or demolition activities.

This Executive Summary is subject to the same standard limitations as contained in the report and must be read in conjunction with the entire report.

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1.0 INTRODUCTION AND SCOPE

Associated Engineering (Client) retained Pinchin West Ltd. (PWL) to conduct a hazardous building materials assessment of Water Treatment Plant , located at 1030 Avenue H South, Saskatoon, SK.

Trent Pernitsky, Technologist, performed the assessment on September 8, 2016. The surveyor was accompanied by Lorne Gifford, of Associated Engineering, during the assessment. The building was occupied at the time of the assessment.

The objective of the assessment was to identify specified hazardous building materials in preparation for building renovation. This assessment is intended to be used for pre-construction purposes only, and may not provide sufficient detail for long term management of hazardous materials as required by Health and Safety regulations. The results of this assessment are intended for use with a properly developed scope of work and performance specification.

1.1 Scope of Assessment

The assessment was performed to establish the location and type of specified hazardous building materials incorporated in the structure(s) and its finishes. The assessed area was limited to the parts of the building within the area to be renovated which includes the 1928 Plant Pipe Gallery, 1928 Filter Plant, 1957 Filter Plant – Filter #12, and 1964 Filter Plant – Filter #23. The extent of the assessed area was defined by the Client and is shown on the appended drawings.

For the purpose of the assessment and this report, hazardous building materials are defined as follows:

- Asbestos
- Lead
- Silica
- Mercury
- Polychlorinated Biphenyls (PCBs)
- Ozone Depleting Substances
- Mould

2.0 BACKGROUND INFORMATION

2.1 Building Description

Item	Details
Building Use	Municipal water treatment plant
Number of Floors/Levels	Two stories plus a basement below grade
Total Area of Building (Square Feet)	Unknown
Year of Construction/Significant Additions/Renovations (area assessed)	1928, 1957, 1964
Structure	Structural steel, concrete, wood framed
Exterior Cladding	Pre-cast concrete, masonry
HVAC	Boiler and hot water heating to radiators
Roof	No Access
Flooring	Exposed concrete, terrazzo
Interior Walls	Poured concrete, plaster
Ceilings	Plaster

2.2 Existing Reports

No existing reports were provided for reference.

3.0 FINDINGS

3.1 Asbestos

The following section summarizes the findings of the assessment and provides a general description of the asbestos materials identified and their locations. Appendix II-A presents the asbestos bulk sample analytical results. For details on quantities, assessment and locations of asbestos materials; refer to the Hazardous Material Summary Report and All Data Report in Appendix V and VI.

3.1.1 Suspect Materials Not Found

The following types of building materials may historically contain asbestos but were not observed in the building and are not discussed in the report findings:

- Spray-applied fireproofing or thermal insulation
- Texture finishes (acoustic/decorative)
- Pipe insulation
- Duct insulation
- Mechanical equipment insulation
- Vermiculite
- Acoustic ceiling tiles
- Drywall joint compound
- Asbestos cement products
- Vinyl sheet flooring
- Vinyl floor tiles and mastic
- Levelling compound
- Fireproofing
- Sealants caulking and putty

3.1.2 Plaster

Plaster is present on the west masonry wall in the 1928 Plant Pipe Gallery (loc. 1). Three samples were collected (S0001A-C) the plaster does not contain asbestos.

Plaster is present as a wall and ceiling finish in the 1928 Plant Settling Tank Area (loc. 2). Five samples of the plaster were collected (S0004A-E) the plaster does not contain asbestos.

3.1.3 Other Building Materials

Brick mortar is present in the west masonry wall in the 1928 Pipe Gallery (loc. 1). One sample of the mortar was collected (S0002) and does not contain asbestos.

Gaskets are present between flange pipe joints of the 12" yellow pipe system in the 1928 Pipe Gallery (loc. 1). One sample (S0003) of the gasket was collected and does not contain asbestos.

3.1.4 Presumed Asbestos Materials

A number of materials which might contain asbestos were not sampled during our assessment due to limitations in scope and methodology. Where present, these materials must be presumed to be an asbestos material and are best sampled during project planning and preparation of contract documents for their removal. Materials presumed to contain asbestos are listed in the Methodology.

3.2 Lead

3.2.1 Paints and Surface Coatings

A total of 23 paint samples were collected from interior painted finishes.

All paint samples collected on the pipes in the 1928 Pipe Gallery (loc. 1) are lead containing. The paint on the concrete walls in the settling tanks in the 1928 Plant Settling Tank Area (loc. 2) is also lead containing.

For details on the types, location, results of paints sampled, refer to Appendix VI.



Photo 1 – View of lead based paints in the pipe gallery.



Photo 2 – view of various lead based paint in the pipe gallery

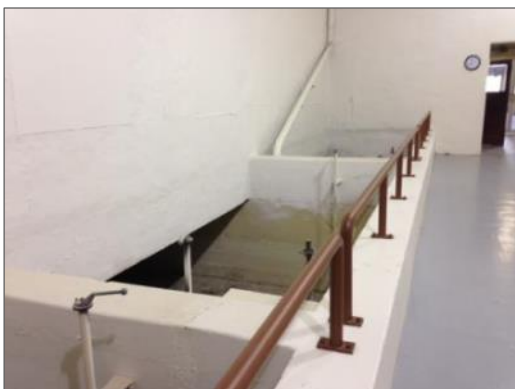


Photo 3– View of lead based paints in the 1928 plant settling tank area.



Photo 4– View of white and green lead based paint in a filter tank.

Appendix II-B presents the lead testing results.

3.2.2 *Lead Products and Applications*

Lead products were not found during the assessment.

Brick mortar is present in the 1928 Pipe Gallery (loc. 1). One sample (BL0001) was collected and tested for lead content. The mortar is not considered lead based.

3.2.3 *Presumed Lead Materials*

Lead may be present in a number of materials which were not assessed and/or sampled. The following materials, where found, should be considered to contain lead.

- electrical components, including wiring connectors
- grounding conductors, and solder

3.3 Silica

Crystalline silica is a presumed component of the following materials where present in the building:

- poured or pre-cast concrete
- masonry and mortar
- ceramic tiles, grout
- plaster

3.4 Mercury

3.4.1 *Lamps*

Mercury vapour is present in fluorescent light tubes where present in the assessed area.

3.4.2 *Mercury-Containing Devices*

Mercury-containing devices were not found during the assessment.

3.5 Polychlorinated Biphenyls

3.5.1 *Caulking*

Suspect caulking was not present in the renovation area.

3.5.2 Lighting Ballasts

The building has not been comprehensively re-lamped with new energy efficient light ballasts and lamps, and as such, a percentage of light ballasts are pre-1980 and contain PCBs.

3.5.3 Transformers

Transformers are not present.

3.5.4 Presumed PCB Materials

- oil impregnated cables and potheads
- voltage regulators
- hydraulic fluids
- paints

3.6 Ozone Depleting Substances in Building Equipment

Equipment containing ozone depleting substances is not present.

3.7 Mould

Visible mould growth is not present.

4.0 RECOMMENDATIONS

4.1 General

1. Provide this report and the detailed plans and specifications to the contractor prior to bidding or commencing work.

4.2 Remedial Work

Remedial work is not required at this time.

4.3 Building Demolition or Renovation Work

The following recommendations are made regarding demolition or renovation involving the hazardous materials identified.

4.3.1 Asbestos

Asbestos-containing materials were not identified in the renovation area.

4.3.2 *Lead*

Construction disturbance of lead in paint and coatings (or other materials) may result in over-exposure to lead dust or fumes. The need for work procedures, engineering controls and personal protective equipment will need to be assessed on a project-by-project basis and must comply with provincial standards or guidelines. Performing an exposure assessment during work that disturbs lead in paints and coatings may be able to alleviate the use of some of the precautions specified by these standards or guidelines.

Dispose of painted non-metallic materials exceeding the criteria for leachable lead as hazardous waste. Well adhered paints containing elevated levels of lead on metal substrates do not require leachable lead analysis as the materials can be recycled with the paint intact.

4.3.3 *Silica*

Construction disturbance of silica-containing products may result in excessive exposures to airborne silica, especially if performed indoors and dry. Cutting, grinding, drilling or demolition of materials containing silica should be completed only with proper respiratory protection and other worker safety precautions that comply with provincial standards or guidelines.

4.3.4 *Mercury*

Do not break lamps or separate liquid mercury from components. Recycle and reclaim mercury from fluorescent lamps and thermostats when taken out of service. Liquid mercury is classified as a hazardous waste and must be disposed of in accordance with local regulations.

4.3.5 *PCBs*

When light fixtures are removed, examine light ballasts for PCB content. If ballasts are not clearly labelled as "non-PCB", or are suspected to contain PCBs; package and ship ballasts for destruction at a federally permitted facility.

4.3.6 *Ozone Depleting Substances*

Equipment containing ozone depleting substances were not present in the renovation area.

4.3.7 *Mould*

No mould was observed. If mould is uncovered inside wall cavities during hand demolition, use appropriate precautions and protect workers using methods that comply with provincial guidelines.

5.0 LIMITATIONS

Specific limitations related to the legal and financial and limitations to the scope of the current work are outlined in our proposal, the attached Methodology and the Authorization to Proceed which accompanied the proposal.

The work performed by PWL was conducted in accordance with generally accepted engineering or scientific practices current in this geographical area at the time the work was performed. No warranty is either expressed or implied by furnishing written reports or findings. The Client acknowledges that subsurface and concealed conditions may vary from those encountered or inspected. PWL can only comment on the environmental conditions observed on the date(s) the survey is performed. The work is limited to those materials or areas of concern identified by the Client or outlined in our proposal. Other areas of concern may exist but were not investigated within the scope of this assignment.

PWL makes no other representations whatsoever, including those concerning the legal significance of its findings or as to other legal matters touched on in this report, including, but not limited to, ownership of any property, or the application of any law to the facts set forth herein. With respect to regulatory compliance issue, regulatory statutes are subject to interpretation and these interpretations may change over time. PWL accepts no responsibility for consequential financial effects on transactions or property values, or requirements for follow-up actions and costs.

The liability of PWL or our officers, directors, shareholders or staff will be limited to the lesser of the fees paid or actual damages incurred by the Client. PWL will not be responsible for any consequential or indirect damages. PWL will only be liable for damages resulting from the negligence of PWL. PWL will not be liable for any losses or damage if the Client has failed, within a period of two years following the date upon which the claim is discovered (Claim Period), to commence legal proceedings against PWL to recover such losses or damage unless the laws of the jurisdiction which governs the Claim Period which is applicable to such claim provides that the applicable Claim Period is greater than two years and cannot be abridged by the contract between the Client and PWL, in which case the Claim Period shall be deemed to be extended by the shortest additional period which results in this provision being legally enforceable.

Information provided by PWL is intended for Client use only. PWL will not provide results or information to any party unless disclosure by PWL is required by law. Any use by a third party of reports or documents authored by PWL or any reliance by a third party on or decisions made by a third party based on the findings described in said documents, is the sole responsibility of such third parties. PWL accepts no responsibility for damages suffered by any third party as a result of decisions made or actions conducted. No other warranties are implied or expressed.

6.0 REFERENCES

The following legislation and documents were referenced in completing the assessment and this report:

1. Occupational Health and Safety Regulations, Saskatchewan Labour, (O-1.1 Reg 1).
2. The Hazardous Substances and Waste Dangerous Goods Regulations, Environmental Management and Protection Act, Saskatchewan Environment, 1989.
3. Halocarbon Control Regulations, Saskatchewan Environment, 2005.
4. PCB Regulations, SOR/2008-273, Canadian Environmental Protection Act.
5. Surface Coating Materials Regulations, SOR/2005-109, Hazardous Products Act.
6. Transportation of Dangerous Goods Regulations SOR/2008-34, Transportation of Dangerous Goods Act.
7. Mould Guidelines for the Canadian Construction Industry, Standard Construction Document CCA 82 – 2004, Canadian Construction Association.

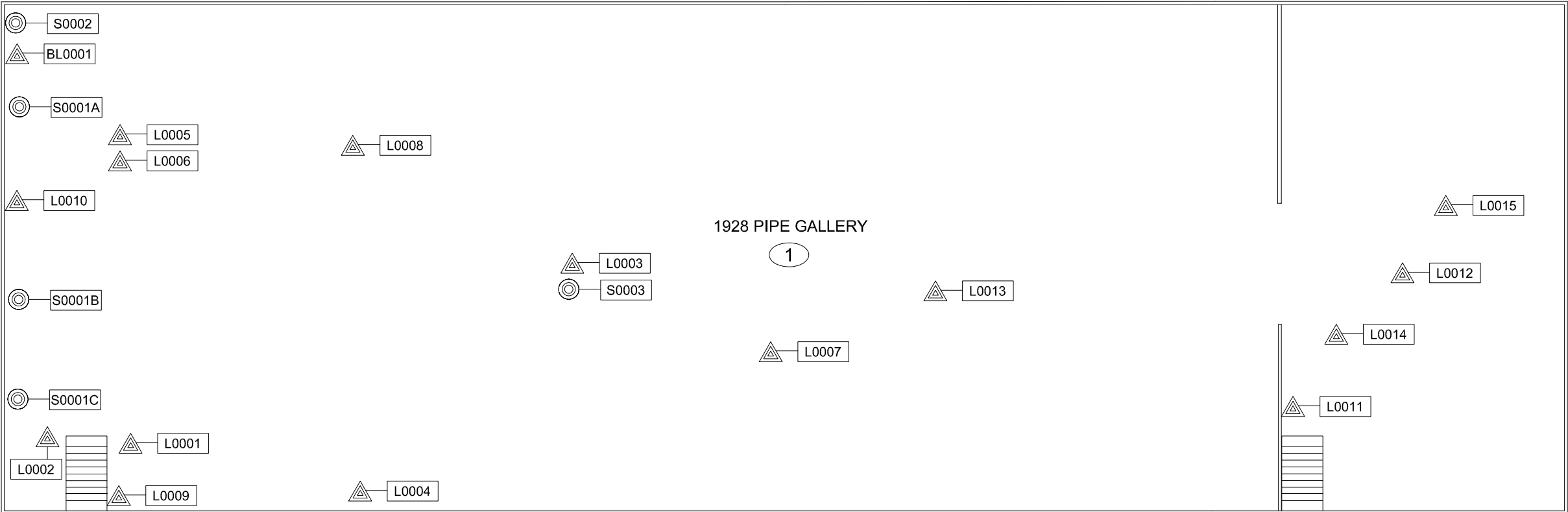
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Template: Master Report for Hazardous Materials Assessment Report (Tablet Pre-Construction), HAZ, February 1, 2016

APPENDIX I
Drawings



- LEGEND:
- (X) LOCATION NUMBER
 - ◎ ASBESTOS BULK SAMPLE LOCATION
 - ▲ LEAD SAMPLE LOCATION



- NOTES:
1. ALL DRAWINGS TO BE REFERENCED WITH THE HAZARDOUS MATERIALS ASSESSMENT REPORT. NOT ALL KNOWN OR SUSPECT HAZARDOUS MATERIALS ARE DEPICTED ON THIS DRAWING. REFER TO THE HAZARDOUS MATERIALS ASSESSMENT REPORT FOR A COMPLETE LIST OF IDENTIFIED HAZARDOUS MATERIALS.
 2. 3. BASEPLAN PROVIDED BY THE CLIENT.
 4. LEGEND IS COLOUR DEPENDENT, PHOTOCOPIES MAY ALTER INTERPRETATION OF FIGURE.

CLIENT:
ASSOCIATED ENGINEERING

LOCATION:
1030 AVENUE H SOUTH
SASKATOON, SASKATCHEWAN

TITLE:
HAZARDOUS MATERIALS
PRE-RENOVATION SURVEY
WATER TREATMENT PLANT
SASAKTOON, SASKATCHEWAN
BASEMENT

DATE: SEPTEMBER 2016	PROJECT # : 7587F
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DRAWN BY: KP	1 OF 4
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CHECKED BY: JC

SCALE: NTS



- LEGEND:
- (X) LOCATION NUMBER
 - ◎ ASBESTOS BULK SAMPLE LOCATION
 - △ LEAD SAMPLE LOCATION

CLIENT:
ASSOCIATED ENGINEERING

LOCATION:
1030 AVENUE H SOUTH
SASKATOON, SASKATCHEWAN

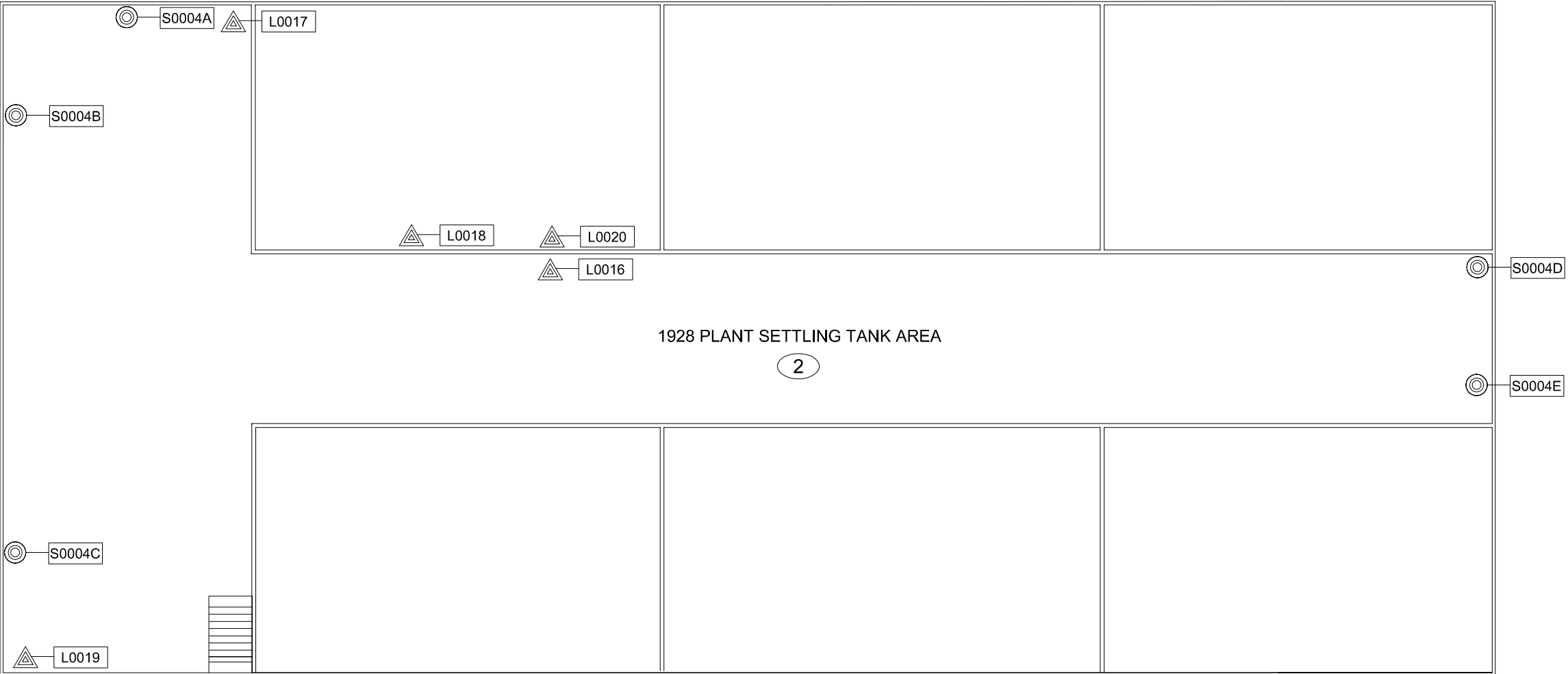
TITLE:
HAZARDOUS MATERIALS
PRE-RENOVATION SURVEY
WATER TREATMENT PLANT
SASAKTOON, SASKATCHEWAN
MAIN FLOOR

DATE: SEPTEMBER 2016	PROJECT # : 7587F
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DRAWN BY: KP	DRAWING: 2 OF 4
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CHECKED BY: JC

SCALE: NTS



- NOTES:
- ALL DRAWINGS TO BE REFERENCED WITH THE HAZARDOUS MATERIALS ASSESSMENT REPORT. NOT ALL KNOWN OR SUSPECT HAZARDOUS MATERIALS ARE DEPICTED ON THIS DRAWING. REFER TO THE HAZARDOUS MATERIALS ASSESSMENT REPORT FOR A COMPLETE LIST OF IDENTIFIED HAZARDOUS MATERIALS.
 3. BASEPLAN PROVIDED BY THE CLIENT.
 - LEGEND IS COLOUR DEPENDENT, PHOTOCOPIES MAY ALTER INTERPRETATION OF FIGURE.



 LOCATION NUMBER
 ASBESTOS BULK SAMPLE LOCATION
 LEAD SAMPLE LOCATION

ASSOCIATED ENGINEERING

1030 AVENUE H SOUTH
SASKATOON, SASKATCHEWAN

HAZARDOUS MATERIALS
PRE-RENOVATION SURVEY
WATER TREATMENT PLANT
SASKATOON, SASKATCHEWAN
MAIN FLOOR

PROJECT #:	7587F
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DRAWING:


JC

NTS

PA2016030088

3




 L0022

 L0021

NOTES:

1. ALL DRAWINGS TO BE REFERENCED WITH THE HAZARDOUS MATERIALS ASSESSMENT REPORT. NOT ALL KNOWN OR SUSPECT HAZARDOUS MATERIALS ARE DEPICTED ON THIS DRAWING. REFER TO THE HAZARDOUS MATERIALS ASSESSMENT REPORT FOR A COMPLETE LIST OF IDENTIFIED HAZARDOUS MATERIALS.
2. 3. BASEPLAN PROVIDED BY THE CLIENT.
4. LEGEND IS COLOUR DEPENDENT, PHOTOCOPIES MAY ALTER INTERPRETATION OF FIGURE.



- LEGEND:
-  LOCATION NUMBER
 -  ASBESTOS BULK SAMPLE LOCATION
 -  LEAD SAMPLE LOCATION

CLIENT:
ASSOCIATED ENGINEERING

LOCATION:
1030 AVENUE H SOUTH
SASKATOON, SASKATCHEWAN

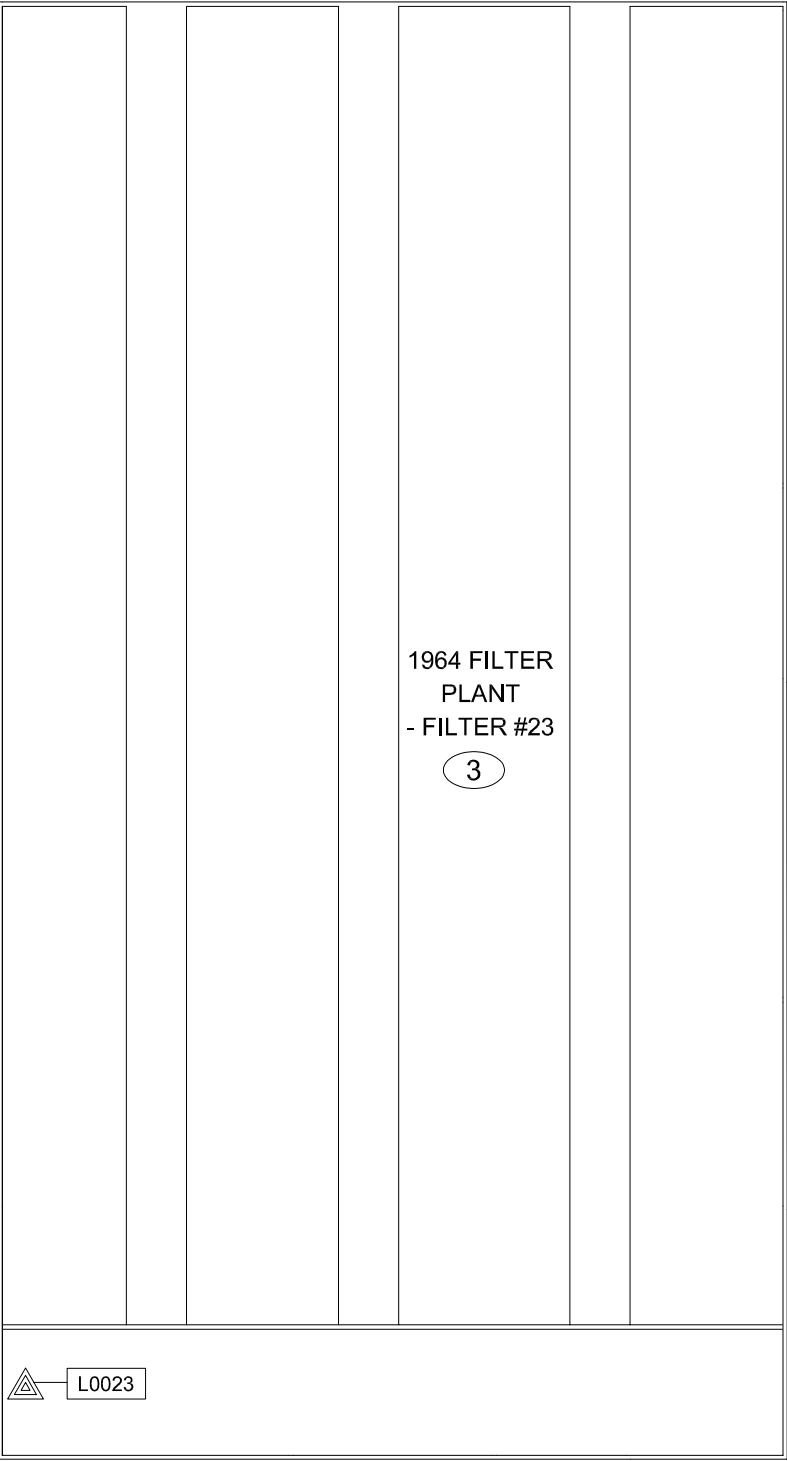
TITLE:
HAZARDOUS MATERIALS
PRE-RENOVATION SURVEY
WATER TREATMENT PLANT
SASAKTOON, SASKATCHEWAN
MAIN FLOOR

DATE: SEPTEMBER 2016	PROJECT # : 7587F
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DRAWN BY: KP	DRAWING: 4 OF 4
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CHECKED BY: JC

SCALE: NTS



- NOTES:
- ALL DRAWINGS TO BE REFERENCED WITH THE HAZARDOUS MATERIALS ASSESSMENT REPORT. NOT ALL KNOWN OR SUSPECT HAZARDOUS MATERIALS ARE DEPICTED ON THIS DRAWING. REFER TO THE HAZARDOUS MATERIALS ASSESSMENT REPORT FOR A COMPLETE LIST OF IDENTIFIED HAZARDOUS MATERIALS.
 3. BASEPLAN PROVIDED BY THE CLIENT.
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APPENDIX II-A
Asbestos Analytical Certificates



Bulk Asbestos Analysis

By Polarized Light Microscopy
EPA Method: 600/R-93/116 and 600/M4-82-020



NVLAP Lab Code: 200664-0

Customer: Pinchin West Ltd.
210 Cardinal Crescent
Saskatoon, SK S7L 6H8

Attn: Keli Propp
Trent Pernitsky

Lab Order ID: 1618036
Analysis ID: 1618036_PLM
Date Received: 9/13/2016
Date Reported: 9/19/2016

Project: 7587F Associated Engineering - Water Treatment Plant

Sample ID	Description	Asbestos	Fibrous Components	Non-Fibrous Components	Attributes
Lab Sample ID	Lab Notes				Treatment
S0001A	Plaster wall, Pipe Gallery (loc. 1)	None Detected		100% Other	Gray Non Fibrous Heterogeneous
1618036PLM_1					Crushed
S0001B	Plaster wall, Pipe Gallery (loc. 1)	None Detected		100% Other	Gray Non Fibrous Heterogeneous
1618036PLM_2					Crushed
S0001C	Plaster wall, Pipe Gallery (loc. 1)	None Detected		100% Other	Gray Non Fibrous Heterogeneous
1618036PLM_3					Crushed
S0002	Grey brick mortar, Pipe Gallery (loc. 1)	None Detected		100% Other	Gray Non Fibrous Heterogeneous
1618036PLM_4					Crushed
S0003	Black gasket, 12" yellow pipe elbow, Pipe Gallery (loc. 1)	None Detected	10% Cellulose	90% Other	Black Fibrous Heterogeneous
1618036PLM_5					Ashed
S0004A	Plaster wall, northwest, 1928 Plant Settling Tank Area (loc. 2)	None Detected		100% Other	Gray Non Fibrous Heterogeneous
1618036PLM_6					Crushed
S0004B	Plaster wall, west, 1928 Plant Settling Tank Area (loc. 2)	None Detected		100% Other	Gray Non Fibrous Heterogeneous
1618036PLM_7					Crushed
S0004C	Plaster wall, southwest, 1928 Plant Settling Tank Area (loc. 2)	None Detected		100% Other	Gray Non Fibrous Heterogeneous
1618036PLM_8					Crushed

Disclaimer: Due to the nature of the EPA 600 method, asbestos may not be detected in samples containing low levels of asbestos. We strongly recommend that analysis of floor tiles, vermiculite, and/or heterogeneous soil samples be conducted by TEM for confirmation of "None Detected" by PLM. This report relates only to the samples tested and may not be reproduced, except in full, without the written approval of SAI. This report may not be used by the client to claim product endorsement by NVLAP or any other agency of the U.S. government. Analytical uncertainty available upon request. Scientific Analytical Institute participates in the NVLAP Proficiency Testing program. Unless otherwise noted blank sample correction was not performed. Estimated MDL is 0.1%.

Charmel Dozier (10)

Analyst

Approved Signatory



Bulk Asbestos Analysis

By Polarized Light Microscopy
EPA Method: 600/R-93/116 and 600/M4-82-020



NVLAP Lab Code: 200664-0

Customer: Pinchin West Ltd.
210 Cardinal Crescent
Saskatoon, SK S7L 6H8

Attn: Keli Propp
Trent Pernitsky

Lab Order ID: 1618036
Analysis ID: 1618036_PLM
Date Received: 9/13/2016
Date Reported: 9/19/2016

Project: 7587F Associated Engineering - Water Treatment Plant

Sample ID	Description	Asbestos	Fibrous Components	Non-Fibrous Components	Attributes
Lab Sample ID	Lab Notes				Treatment
S0004D	Plaster wall, northeast, 1928 Plant Settling Tank Area (loc. 2)	None Detected		100% Other	Gray Non Fibrous Heterogeneous
1618036PLM_9					Crushed
S0004E	Plaster wall, east, 1928 Plant Settling Tank Area (loc. 2)	None Detected		100% Other	Gray Non Fibrous Heterogeneous
1618036PLM_10					Crushed

Disclaimer: Due to the nature of the EPA 600 method, asbestos may not be detected in samples containing low levels of asbestos. We strongly recommend that analysis of floor tiles, vermiculite, and/or heterogeneous soil samples be conducted by TEM for confirmation of "None Detected" by PLM. This report relates only to the samples tested and may not be reproduced, except in full, without the written approval of SAI. This report may not be used by the client to claim product endorsement by NVLAP or any other agency of the U.S. government. Analytical uncertainty available upon request. Scientific Analytical Institute participates in the NVLAP Proficiency Testing program. Unless otherwise noted blank sample correction was not performed. Estimated MDL is 0.1%.

Charmel Dozier (10)

Analyst

Approved Signatory

APPENDIX II-B
Lead Analytical Certificates



Analysis for Lead Concentration in Paint Chips

by Flame Atomic Absorption Spectroscopy
EPA SW-846 3050B/6010C/7420



Customer: Pinchin West Ltd.
210 Cardinal Crescent
Saskatoon, SK S7L 6H8

Attn: Keli Propp
Trent Pernitsky

Lab Order ID: 1618035
Analysis ID: 1618035_PBP
Date Received: 9/13/2016
Date Reported: 9/20/2016

Project: 7587F Associated Engineering - Water Treatment Plant

Sample ID	Description	Mass	Concentration	Concentration
Lab Sample ID	Lab Notes	(g)	(ppm)	(% by weight)
L0001	Light green paint, concrete wall, Pipe Gallery (loc. 1)	0.0748	1700	0.17%
1618035PBP_1				
L0002	Light green paint, metal 6" pipe, Pipe Gallery (loc. 1)	0.0746	1700	0.17%
1618035PBP_2				
L0003	Yellow paint, metal 24" pipe, Pipe Gallery (loc. 1)	0.0636	150000	15%
1618035PBP_3				
L0004	Light blue paint, metal 12" pipe, Pipe Galley (loc. 1)	0.0615	160000	16%
1618035PBP_4				
L0005	Blue/green paint, metal 1" pipe, Pipe Gallery (loc. 1)	0.0622	3300	0.33%
1618035PBP_5				
L0006	Dark blue paint, metal 2" pipe, Pipe Gallery (loc. 1)	0.0673	3000	0.30%
1618035PBP_6				
L0007	Bright yellow paint, metal 6" pipe, Pipe Gallery (loc. 1)	0.0655	11000	1.1%
1618035PBP_7				
L0008	Dark red paint, metal stairs/railing, Pipe Gallery (loc. 1)	0.0543	1900	0.19%
1618035PBP_8				
L0009	Bright red paint, pvc 2" pipe, Pipe Gallery (loc. 1)	0.0679	140000	14%
1618035PBP_9				
L0010	Brown primer, metal 3" pipe, Pipe Gallery (loc. 1)	0.0830	740	0.073%
1618035PBP_10				

Unless otherwise noted blank sample correction was not performed on analytical results. Scientific Analytical Institute participates in the AIHA ELPAT program. ELPAT Laboratory ID: 173190. This report relates only to the samples tested and may not be reproduced, except in full, without the written approval of SAI. Analytical uncertainty available upon request. The quality control samples run with the samples in this report have passed all EPA required specifications unless otherwise noted. RL: (Report Limit for an undiluted 50ml sample is 4µg Total Pb).

Taylor Davis (23)

Analyst

Scientific Analytical Institute, Inc. 4604 Dundas Dr. Greensboro, NC 27407 (336) 292-3888

Laboratory Director



Analysis for Lead Concentration in Paint Chips

by Flame Atomic Absorption Spectroscopy
EPA SW-846 3050B/6010C/7420



Customer: Pinchin West Ltd.
210 Cardinal Crescent
Saskatoon, SK S7L 6H8

Attn: Keli Propp
Trent Pernitsky

Lab Order ID: 1618035
Analysis ID: 1618035_PBP
Date Received: 9/13/2016
Date Reported: 9/20/2016

Project: 7587F Associated Engineering - Water Treatment Plant

Sample ID	Description	Mass	Concentration	Concentration
Lab Sample ID	Lab Notes	(g)	(ppm)	(% by weight)
L0011	Yellow paint, concrete wall, Pipe Gallery (loc. 1)	0.0531	< 75	< 0.008%
1618035PBP_11				
L0012	Pink paint, metal 24" pipe, Pipe Gallery (loc. 1)	0.0717	27000	2.7%
1618035PBP_12				
L0013	Silver paint, metal telepost, Pipe Gallery (loc. 1)	0.0580	2300	0.23%
1618035PBP_13				
L0014	Deep blue paint, metal 12" pipe, Pipe Gallery (loc. 1)	0.0876	18000	1.8%
1618035PBP_14				
L0015	Dark red/brown, metal 24" pipe, Pipe Gallery (loc. 1)	0.0516	9900	0.99%
1618035PBP_15				
L0016	Brown paint, metal handrails, 1928 Plant Settling Tank Area (loc. 2)	0.0903	< 44	< 0.004%
1618035PBP_16				
L0017	White paint, pvc 6" pipe, 1928 Plant Settling Tank Area (loc. 2)	0.0898	< 45	< 0.004%
1618035PBP_17				
L0018	White paint, concrete walls, 1928 Plant Settling Tank Area (loc. 2)	0.0955	1500	0.15%
1618035PBP_18				
L0019	White paint, metal 3" pipe, 1928 Plant Settling Area (loc. 2)	0.0521	1700	0.17%
1618035PBP_19				
L0020	Light green paint, concrete walls, Plant Settling Area (loc. 2)	0.0901	5700	0.57%
1618035PBP_20				

Unless otherwise noted blank sample correction was not performed on analytical results. Scientific Analytical Institute participates in the AIHA ELPAT program. ELPAT Laboratory ID: 173190. This report relates only to the samples tested and may not be reproduced, except in full, without the written approval of SAI. Analytical uncertainty available upon request. The quality control samples run with the samples in this report have passed all EPA required specifications unless otherwise noted. RL: (Report Limit for an undiluted 50ml sample is 4µg Total Pb).

Taylor Davis (23)

Analyst

Scientific Analytical Institute, Inc. 4604 Dundas Dr. Greensboro, NC 27407 (336) 292-3888

Laboratory Director



Analysis for Lead Concentration in Paint Chips

by Flame Atomic Absorption Spectroscopy
EPA SW-846 3050B/6010C/7420



Customer: Pinchin West Ltd.
210 Cardinal Crescent
Saskatoon, SK S7L 6H8

Attn: Keli Propp
Trent Pernitsky

Lab Order ID: 1618035
Analysis ID: 1618035_PBP
Date Received: 9/13/2016
Date Reported: 9/20/2016

Project: 7587F Associated Engineering - Water Treatment Plant

Sample ID	Description	Mass	Concentration	Concentration
Lab Sample ID	Lab Notes	(g)	(ppm)	(% by weight)
L0021	White paint, metal trough, 1957 Plant Filter #12 (loc. 3)	0.0835	49	0.005%
1618035PBP_21				
L0022	White paint, concrete wall, 1957 Plant Filter #12 (loc. 3)	0.0806	< 50.	< 0.005%
1618035PBP_22				
L0023	White paint, concrete wall, 1964 Plant Filter #23 (loc. 4)	0.1028	< 39	< 0.004%
1618035PBP_23				

Unless otherwise noted blank sample correction was not performed on analytical results. Scientific Analytical Institute participates in the AIHA ELPAT program. ELPAT Laboratory ID: 173190. This report relates only to the samples tested and may not be reproduced, except in full, without the written approval of SAI. Analytical uncertainty available upon request. The quality control samples run with the samples in this report have passed all EPA required specifications unless otherwise noted. RL: (Report Limit for an undiluted 50ml sample is 4µg Total Pb).

Taylor Davis (23)

Analyst

Scientific Analytical Institute, Inc. 4604 Dundas Dr. Greensboro, NC 27407 (336) 292-3888

Laboratory Director



Analysis for Lead Concentration in Bulk Solids

by Flame Atomic Absorption Spectroscopy
EPA SW-846 3050B/6010C/7420

Customer: Pinchin West Ltd.
210 Cardinal Crescent
Saskatoon, SK S7L 6H8

Attn: Keli Propp
Trent Pernitsky

Lab Order ID: 1618082
Analysis ID: 1618082_PBB
Date Received: 9/13/2016
Date Reported: 9/19/2016

Project: 7587F Associated Engineering - Water Treatment Plant

Sample ID	Description	Mass (g)	Concentration (ppm)	Concentration (% by weight)
Lab Sample ID	Lab Notes			
BL0001	Grey brick mortar, pipe gallery (loc. 1)	0.1161	< 34	< 0.003%
1618082PBB_1				

The quality control samples run with the samples in this report have passed all EPA required specifications unless otherwise noted. RL: (Report Limit for an undiluted 50ml sample is 4µg Total Pb).

Taylor Davis (1)

Analyst

Scientific Analytical Institute, Inc. 4604 Dundas Dr. Greensboro, NC 27407

Laboratory Director

APPENDIX III
Methodology

1.0 GENERAL

PWL conducts a room-by-room survey (rooms, corridors, service areas, exterior, etc.) to identify the hazardous building materials as defined by the scope of work. All work is conducted in accordance with our own internal Standard Operating Procedures.

Information regarding the location and condition of hazardous building materials encountered and visually estimated quantities are recorded. The locations of any samples collected are recorded on small-scale plans.

As-built drawings and previous reports are referenced where provided.

1.1 Scope Limitations

The assessment excludes the following:

- Articles belonging to the owner, tenant or occupant (e.g. stored items, furniture, appliances, etc.);
- Underground materials or equipment (e.g. vessels, drums, underground storage tanks, pipes, etc.);
- Building envelope, structural components, inaccessible or concealed materials or other items where sampling may cause consequential damage to the property.
- Energized systems (e.g. internal boiler components, elevators, mechanical or electrical components);
- Controlled products (e.g. stored chemicals, operational or process-related substances); and
- Materials not typically associated with construction (e.g. settled dust, spills, residual contamination from prior spills, etc.).

The assessment includes limited demolition of wall and ceiling finishes to view concealed conditions at representative areas as permitted by the current building use. Demolition of masonry walls (chases, shafts etc.), structural items or exterior building finishes is not conducted.

1.2 Asbestos

PWL conducts an inspection for the presence of friable and non-friable asbestos-containing materials (ACM). A friable material is a material that when dry can be crumbled, pulverized or powdered by hand pressure.

A separate set of samples is collected of each type of homogenous material suspected to contain asbestos. A homogenous material is defined by the US EPA as material that is uniform in texture and appearance, was installed at one time, and is unlikely to consist of more than one type or formulation of material. The homogeneous materials are determined by visual examination and available information on the phases of construction and prior renovations.

PWL collects samples at a rate that is in compliance with the requirements of local regulations and guidelines.

The sampling strategy is also based on known ban dates and phase out dates of the use of asbestos; sampling of certain building materials is not conducted after specific construction dates. In addition, to be conservative, several years past these dates are added to account for some uncertainty in the exact start/finish date of construction and associated usage of ACM.

In some cases, manufactured products such as asbestos cement pipe are visually identified without sample confirmation.

PWL conducts limited demolition of masonry block walls (core holes) to investigate for loose fill insulation. The core holes are temporarily patched with expanding foam.

If present, the following materials are presumed to be asbestos-containing and are best sampled immediately prior to commencing renovation/disturbance:

- electrical components or wiring within control centers, breakers, motors or lights, insulation on wiring
- refractory materials and insulations in boilers, incinerators and stacks
- insulation under metal clad boilers and vessels
- paper products under wood flooring or metal or slate roofing
- soffit and fascia boards at elevated heights
- mechanical packing, ropes and gaskets

PWL submits the bulk samples to a NVLAP accredited laboratory for analysis. The analysis is performed in accordance with Test Method EPA/600/R-93/116: Method for the Determination of Asbestos in Bulk Building Materials, July 1993.

In Saskatchewan an ACM is defined as materials containing >1% asbestos by weight for non-friable materials, or >0.5% for friable materials or any amount if vermiculite.

1.3 Lead

PWL collects samples of distinctive paint finishes and surface coatings present in more than a limited application, where removal of the paint is possible. PWL collects samples by scraping the painted finish to include base and covering applications. Drawings included show sample locations.

Analysis for lead in paints or surface coatings is performed at an accredited laboratory in accordance with EPA Method No. 3050B/Method No. 7420; flame atomic absorption.

For this report, all paints containing lead at a concentration of 0.009% or greater are discussed. Paint and surface coatings are evaluated for condition such as flaking, chipping or chalking.

Other lead building products (e.g. batteries, lead sheeting, flashing) are identified by visual observation only.

1.4 Silica

PWL identifies building materials suspected of containing crystalline silica (e.g. concrete, cement, tile, brick, masonry, mortar) by knowledge of current and historic applications and visual inspection only. PWL does not perform sampling of these materials for laboratory analysis of crystalline silica content.

1.5 Mercury

Building materials/products/equipment (e.g. thermostats, barometers, pressure gauges, light tubes), suspected to contain mercury are identified by visual inspection only. Dismantling of equipment suspected of containing mercury is not performed. Sampling of these materials for laboratory analysis of mercury content is not performed.

Mercury spills or damaged mercury-containing equipment are recorded where observed.

1.6 Polychlorinated Biphenyls

PWL determines the potential for light ballasts to contain PCBs based on the age of the building, a review of maintenance records and examination of labels or nameplates on equipment, where present and accessible. The information is compared to known ban dates of PCBs and Environment Canada publications. Other than light ballasts and pole mounted transformers, all other liquid uses of PCBs should have been discontinued.

PWL records spills or leakage of suspect PCB-containing fluids where observed or identified in historical documents.

Caulking installed after 1985 is presumed to be free of PCBs and hence not sampled. If sampled, analysis for PCBs is performed using an ASTM test method appropriate to the sample matrix at an accredited laboratory.



1.7 Visible Mould

PWL identifies the presence of mould if visibly present in a significant quantity on exposed building surfaces. If any mould growth is concealed within wall cavities it is not addressed in this assessment.

Master Template: Methodology Document for Hazardous Building Materials Pre-Construction, HAZ, February 1, 2016

APPENDIX IV
Location Summary Report



LOCATIONS LIST

Project #: 7587F

Site: Main Plant

Building Name: Water Treatment Plant

Surveyor: Trent Pernitsky

Survey Date: 2016-09-08

Location No.	Name or Description	ft ²	Floor No.	Notes
1	1928 Pipe Gallery	1500	B	
2	1928 Plant Settling Tank Area	2000	M	
3	1957 Filter Pant (Filter 12)	900	M	
4	1964 Filter Plant (Filter 23)	784	M	

APPENDIX V
Hazardous Material Summary Report



HAZARDOUS MATERIALS SUMMARY

Project #: 7587F	Site: Main Plant	Building Name: Water Treatment Plant			Surveyor: Trent Pernitsky	Survey Date: 2016-09-08		
HAZARDOUS MATERIALS SUMMARY - ASBESTOS CONTAINING MATERIALS (ACM)								
Sample No.	System	Material/Notes	Friable	Location(s)	Substance	Amount	Unit	Positive
S0001	WALL	PLASTER, GREY PLASTER	No	1	None Detected			No
S0002	OTHER	MASONRY, GREY MORTAR	No	1	None Detected			No
S0003	PIPE	GASKET, GASKET ON 12" ELBOWS	No	1	None Detected			No
S0004	WALL	PLASTER, PLASTER INTERIOR WALL	No	2	None Detected			No

Project #: 7587F	Site: Main Plant	Building Name: Water Treatment Plant			Surveyor: Trent Pernitsky		Survey Date: 2016-09-08
HAZARDOUS MATERIALS SUMMARY - LEAD BASED PAINT (LBP)							
Sample No.	System	Description	Location(s)	Substance	Amount	Unit	Positive
L0001	WALL	LT GREEN WALL	1	Lead	0.17	%	Yes
L0002	PIPE	LT GREEN 6"	1	Lead	0.17	%	Yes
L0003	PIPE	DULL YELLOW 24"	1	Lead	15	%	Yes
L0004	PIPE	LIGHT BLUE 12"	1	Lead	16	%	Yes
L0005	PIPE	BLUE GREEN 1"	1	Lead	0.33	%	Yes
L0006	PIPE	DARK BLUE 2"	1	Lead	0.30	%	Yes
L0007	PIPE	BRT YELLOW 6"	1	Lead	1.1	%	Yes
L0008	OTHER	DARK RED STAIRS	1	Lead	0.19	%	Yes
L0009	PIPE	BRT RED PVC PIP	1	Lead	14	%	Yes
L0010	PIPE	BROWN 3"	1	Lead	0.073	%	Yes
L0011	WALL	YELLOW WALL PAI	1	Lead	<0.008	%	No
L0012	PIPE	PINK 24"	1	Lead	2.7	%	Yes
L0013	STRUCTURE	SILVER TELE POS	1	Lead	0.23	%	Yes
L0014	PIPE	DARK BLUE 24"	1	Lead	1.8	%	Yes
L0015	PIPE	DARK RED 24"	1	Lead	0.99	%	Yes
L0016	OTHER	BROWN	2	Lead	<0.004	%	No
L0017	PIPE	WHITE	2	Lead	<0.004	%	No
L0018	WALL	WHITE	2	Lead	0.15	%	Yes
L0019	PIPE	WHITE 3"	2	Lead	0.17	%	Yes
L0020	WALL	LIGHT GREEN	2	Lead	0.57	%	Yes
L0021	SELECT	WHITE PAINT	3	Lead	0.005	%	No
L0022	WALL	WHITE PAINT	3	Lead	<0.005	%	No
L0023	WALL	WHITE PAINT	4	Lead	<0.004	%	No



HAZARDOUS MATERIALS SUMMARY

Project #: 7587F	Site: Main Plant	Building Name: Water Treatment Plant	Surveyor: Trent Pernitsky	Survey Date: 2016-09-08
HAZARDOUS MATERIALS SUMMARY - MERCURY (HG)				
Component	Total Quantity (Estimated)	Location(s)		
FLUORESCENT LIGHT TUBE	16	1		

Project #: 7587F	Site: Main Plant	Building Name: Water Treatment Plant	Surveyor: Trent Pernitsky	Survey Date: 2016-09-08	
HAZARDOUS MATERIALS SUMMARY - POLYCHLORINATED BIPHENYLS (PCB)					
Component	Total Quantity (Estimated)	Location(s)	Amount	Unit	Positive
LIGHT BALLASTS	8	1			Yes

APPENDIX VI
All Data Report



ALL DATA REPORT

Project #: 7587F **Site: Main Plant** **Building Name: Water Treatment Plant** **Surveyor: Trent Pernitsky** **Survey Date: 2016-09-08**
Location #: 1 **Location Name: 1928 Pipe Gallery** **Floor: B** **Room #:** **Square ft: 1500**

ASBESTOS														
System	Component	Material	Friable	Item	Covering	Access	Visible	Good	Fair	Poor	Unit	Sample	Asbestos Type	Amount/Asbestos
FLOOR	ALL	CONCRETE (POURED)	No			A	Y						~	No
CEILING	NOT FOUND		No										~	No
WALL	ALL	CONCRETE (POURED)	No			A	Y						~	No
WALL	ALL	MASONRY	No			A	Y						~	No
WALL	ALL	PLASTER, GREY PLASTER	No			A	Y	250				S0001A	NON-ASBESTOS	No
WALL	ALL	PLASTER, GREY PLASTER	No			A	Y	250				S0001B	NON-ASBESTOS	No
WALL	ALL	PLASTER, GREY PLASTER	No			A	Y	250				S0001C	NON-ASBESTOS	No
STRUCTURE	ALL	CONCRETE (POURED)	No			A	Y						~	No
DUCT	NOT FOUND		No										~	No
PIPE	ALL	FIBREGLASS	No			A	Y						~	No
PIPE	ALL	GASKET, GASKET ON 12" ELBOWS	No			A	Y	12			EA	S0003	NON-ASBESTOS	No
MECHANICAL	ALL	NOT INSULATED	No			A	Y						~	No
OTHER ¹	ALL	MASONRY, GREY MORTAR	No			A	Y	400			SF	S0002	NON-ASBESTOS	No

1 - Brick mortar

Project #: 7587F **Site: Main Plant** **Building Name: Water Treatment Plant** **Surveyor: Trent Pernitsky** **Survey Date: 2016-09-08**
Location #: 2 **Location Name: 1928 Plant Settling Tank Area** **Floor: M** **Room #:** **Square ft: 2000**

ASBESTOS														
System	Component	Material	Friable	Item	Covering	Access	Visible	Good	Fair	Poor	Unit	Sample	Asbestos Type	Amount/Asbestos
FLOOR	ALL	CONCRETE (POURED)	No			A	Y						~	No
CEILING	ALL	PLASTER	No			A	Y	2000				V0004	NON-ASBESTOS	No
WALL	ALL	PLASTER, PLASTER INTERIOR WALL	No			A	Y	2000			SF	S0004A	NON-ASBESTOS	No
WALL	ALL	PLASTER, PLASTER INTERIOR WALL	No			A	Y	2000			SF	S0004B	NON-ASBESTOS	No
WALL	ALL	PLASTER, PLASTER INTERIOR WALL	No			A	Y	2000			SF	S0004C	NON-ASBESTOS	No
WALL	ALL	PLASTER, PLASTER INTERIOR WALL	No			A	Y	2000			SF	S0004D	NON-ASBESTOS	No
WALL	ALL	PLASTER, PLASTER INTERIOR WALL	No			A	Y	2000			SF	S0004E	NON-ASBESTOS	No
STRUCTURE	ALL	CONCRETE (POURED)	No			A	Y						~	No
DUCT	NOT FOUND		No										~	No
PIPE	ALL	NOT INSULATED	No			A	Y						~	No
MECHANICAL	NOT FOUND		No										~	No



ALL DATA REPORT

Project #: 7587F **Site: Main Plant** **Building Name: Water Treatment Plant** **Surveyor: Trent Pernitsky** **Survey Date: 2016-09-08**
Location #: 3 **Location Name: 1957 Filter Plant (Filter 12)** **Floor: M** **Room #:** **Square ft: 900**

ASBESTOS															
System	Component	Material	Friable	Item	Covering	Access	Visible	Good	Fair	Poor	Unit	Sample	Asbestos Type	Amount	Asbestos
FLOOR	ALL	DIRT	No										~		No
CEILING	NOT FOUND		No										~		No
WALL	ALL	CONCRETE (POURED)	No			A	Y						~		No
STRUCTURE	ALL	CONCRETE (POURED)	No										~		No
DUCT	NOT FOUND		No										~		No
PIPE	ALL	NOT INSULATED	No										~		No
MECHANICAL	NOT FOUND		No										~		No

Project #: 7587F **Site: Main Plant** **Building Name: Water Treatment Plant** **Surveyor: Trent Pernitsky** **Survey Date: 2016-09-08**
Location #: 4 **Location Name: 1964 Filter Plant (Filter 23)** **Floor: M** **Room #:** **Square ft: 784**

ASBESTOS															
System	Component	Material	Friable	Item	Covering	Access	Visible	Good	Fair	Poor	Unit	Sample	Asbestos Type	Amount	Asbestos
FLOOR	ALL	DIRT	No										~		No
CEILING	NOT FOUND		No										~		No
WALL	ALL	CONCRETE (POURED)	No			A	Y						~		No
STRUCTURE	ALL	CONCRETE (POURED)	No										~		No
DUCT	NOT FOUND		No										~		No
PIPE	ALL	NOT INSULATED	No										~		No
MECHANICAL	NOT FOUND		No										~		No



ALL DATA REPORT

Project #: 7587F Site: Main Plant Building Name: Water Treatment Plant Surveyor: Trent Pernitsky Survey Date: 2016-09-08
Location #: 1 Location Name: 1928 Pipe Gallery Floor: B Room #: Square ft: 1500

LEAD PAINT									
System	Item	Good	Poor	Unit	Sample	Sample Description	Result Description	Amount	Lead
WALL	CONCRETE (POURED)	20		SF	L0001	Lt green wall		0.17%	Yes
WALL	CONCRETE (POURED)	250		SF	L0011	Yellow wall pai		<0.008%	No
STRUCTURE ¹	METAL	12		LF	L0013	Silver tele pos		0.23%	Yes
PIPE	METAL	10		LF	L0002	Lt green 6"		0.17%	Yes
PIPE	METAL	85		LF	L0003	Dull yellow 24"		15%	Yes
PIPE	METAL	200		LF	L0004	Light blue 12"		16%	Yes
PIPE	METAL	150		LF	L0005	Blue green 1"		0.33%	Yes
PIPE	METAL	150		LF	L0006	Dark blue 2"		0.30%	Yes
PIPE	METAL	200		LF	L0007	Brt yellow 6"		1.1%	Yes
PIPE ²		45		LF	L0009	Brt red pvc pip		14%	Yes
PIPE	METAL	140		LF	L0010	Brown 3"		0.073%	Yes
PIPE	METAL	24		SF	L0012	Pink 24"		2.7%	Yes
PIPE	METAL	160		SF	L0014	Dark blue 24"		1.8%	Yes
PIPE	METAL	32		SF	L0015	Dark red 24"		0.99%	Yes
OTHER	METAL	60		SF	L0008	Dark red stairs		0.19%	Yes

1 - Tele posts supporting pipe

2 - PVC pipe

Project #: 7587F Site: Main Plant Building Name: Water Treatment Plant Surveyor: Trent Pernitsky Survey Date: 2016-09-08
Location #: 2 Location Name: 1928 Plant Settling Tank Area Floor: M Room #: Square ft: 2000

LEAD PAINT									
System	Item	Good	Poor	Unit	Sample	Sample Description	Result Description	Amount	Lead
WALL	CONCRETE (POURED)	7200		SF	L0018	White		0.15%	Yes
WALL	CONCRETE (POURED)	7200		SF	L0020	Light green		0.57%	Yes
PIPE ¹		20		SF	L0017	White		<0.004%	No
PIPE	METAL	10		LF	L0019	White 3"		0.17%	Yes
OTHER ²	METAL	120		LF	L0016	Brown		<0.004%	No

1 - PVC pipe

2 - Handrails



ALL DATA REPORT

Project #: 7587F Site: Main Plant Building Name: Water Treatment Plant Surveyor: Trent Pernitsky Survey Date: 2016-09-08
Location #: 3 Location Name: 1957 Filter Plant (Filter 12) Floor: M Room #: Square ft: 900

LEAD PAINT									
System	Item	Good	Poor	Unit	Sample	Sample Description	Result Description	Amount	Lead
SELECT ¹	METAL	300		SF	L0021	White Paint		0.005%	No
WALL	CONCRETE (POURED)	630		SF	L0022	White paint		<0.005%	No

1 - Metal trough

Project #: 7587F Site: Main Plant Building Name: Water Treatment Plant Surveyor: Trent Pernitsky Survey Date: 2016-09-08
Location #: 4 Location Name: 1964 Filter Plant (Filter 23) Floor: M Room #: Square ft: 784

LEAD PAINT									
System	Item	Good	Poor	Unit	Sample	Sample Description	Result Description	Amount	Lead
WALL	CONCRETE (POURED)	588		SF	L0023	White paint		<0.004%	No



ALL DATA REPORT

1-877-322-4744
www.pinchinwest.com

Project #: 7587F	Site: Main Plant	Building Name: Water Treatment Plant	Surveyor: Trent Pernitsky	Survey Date: 2016-09-08
Location #: 1	Location Name: 1928 Pipe Gallery	Floor: B	Room #:	Square ft: 1500
MERCURY				
Component			Quantity	Unit
FLUORESCENT LIGHT TUBE			16	EA



ALL DATA REPORT

Project #: 7587F	Site: Main Plant	Building Name: Water Treatment Plant			Surveyor: Trent Pernitsky	Survey Date: 2016-09-08	
Location #: 1	Location Name: 1928 Pipe Gallery	Floor: B			Room #:	Square ft: 1500	
PCB							
Component		Quantity	Unit	Sample	Sample Description	Amount	PCB
LIGHT BALLASTS		8	EA				Yes

Legend:

Sample number		Units		Other	
S####	Sample collected.	SF	Square feet	SVM	Suspect Visible Mould
V####	Material is visually identified to be identical to S####	LF	Linear feet		
V0000	Known non asbestos material.	EA	Each		
V9000	Material is visually identified to contain asbestos.	%	Percentage		
V9500	Material is presumed to contain asbestos.				
Access		Condition			
A	Accessible to all building occupants	Good	No visible damage or deterioration		
B	Accessible to maintenance and operations staff without a ladder	Fair	Minor, repairable damage, cracking or deterioration.		
C	Accessible to maintenance and operations staff with a ladder. Also rarely entered, locked areas.	Poor	Irreparable damage or deterioration with exposed and missing material.		
D	Not normally accessible or without demolition				
Action					
(1)	Clean up of ACM Debris	(2)	Precautions for Access Which may Disturb ACM Debris	(3)	ACM removal
(4)	Precautions for Work Which may Disturb ACM in Poor Condition	(5)	Proactive ACM removal (Minimum repair required for fair condition)	(6)	ACM repair
(7)	Management program and surveillance				



“Cable Insulation Contains Asbestos Fibres.”

“Resistors and cabling in older electrical equipment are likely to contain asbestos.”



**Saskatoon Municipal Waterworks
1030 Avenue H South**



**Asbestos Survey Report
August 2015**

Prepared For: City of Saskatoon
Municipal Waterworks
1030 Avenue H South
Saskatoon, SK
S7M 1X5
Attn: Cheryl Southam

Prepared By: Bersch & Associates Ltd.
Project No. : B67SRH20

1.0 EXECUTIVE SUMMARY

The survey of the Saskatoon Municipal Waterworks located at 1030 Avenue H South in Saskatoon, Saskatchewan entailed the inspection of all accessible suspect Asbestos Containing Material (ACM) located throughout the facility. Materials inspected included Mechanical Insulation Material, Gasket Material, Ceiling Tile, Vinyl Floor Covering, Brick Mortar, Plaster (Top Coat / Brown Coat) Drywall Mud Compound, Wall Plaster and Boiler Refractory.

Bulk sample analysis results indicate the presence of “Chrysotile” asbestos within the Municipal Waterworks located in Saskatoon, SK. Refer to **Appendix I** for bulk sample analysis results.

The recommended action to be implemented in reference to the ACM identified is “Removal, Repair and Management”. Refer to **Section 5.0 Asbestos Abatement Discussion** for further details. It should be noted that the recommendation of “Management” as part of the asbestos action plan is based on the premise that renovations are not scheduled throughout the facility that would impact the asbestos containing material present. *Prior to any major renovation / demolition activity, a destructive investigation is recommended to identify any inaccessible ACM that is physically concealed or isolated in areas such as enclosed wall/ceiling/floor cavities and pipe chases.* Asbestos was detected in the following forms throughout the facility:

- **Vinyl Asbestos Sheet Flooring** is located in the Buildings/Grounds Foreman Office.
- **Pipe Fitting Mud Compound** is located in Old Chem “B” on the Upper West Wall above the catwalk and in the upper northeast corner adjacent the old auger system.
- **Lineal Pipe Insulation** is located in the abandoned gallery in Old Chem “B” accessed below the second set of stairs.
- **Drywall Mud Compound** is located in the High Lift Area. The bulk sample was obtained from the wall in the Northwest corner. The potential exists for asbestos containing drywall joint compound to be present throughout other locations of the facility.
- **The Block Walls** throughout the facility were inspected for Vermiculite content as some forms of Vermiculite do contain asbestos. No Vermiculite was observed during the asbestos inspection activity. A thorough destructive investigation is recommended prior to building renovation/demolition to ensure the absence of vermiculite asbestos material.

Employees and contractors must be informed of the presence of asbestos throughout the areas they are working. The various types of accessible ACM within the facility have been clearly identified to eliminate uncertainty of asbestos content. The identification of these materials is as follows:

- Vinyl Asbestos Sheet Flooring is located in the Buildings/Grounds Foreman Office.
- Drywall Mud Compound is located in the High Lift area. The potential exists for asbestos containing drywall joint compound to be present throughout other locations of the facility.
- Lineal Pipe Insulation in the abandoned gallery in Old Chem “B” is present throughout the debris on the floor. The area has been bannered off with “Asbestos Danger” banner guard.
- The Pipe Fittings located in Old Chem “B” on the upper west wall above the catwalk and in the upper northeast corner adjacent the old auger system have been identified with a red dot of spray paint. **All pipe fitting mud compound located within enclosed or inaccessible areas shall assume to be asbestos containing until laboratory analysis proves otherwise**

During the survey of the Municipal Waterworks, the Asbestos Containing Materials were assessed and given a Priority Rating of One, Two or Three, with Priority One being the items requiring the most immediate attention.

2.0 INTRODUCTION

Bersch & Associates Ltd. was retained by the City of Saskatoon to conduct an Asbestos Survey and Hazard Assessment of the Municipal Waterworks located at 1030 Avenue H South in Saskatoon, Saskatchewan. The survey entailed the inspection of all accessible areas of the facility; including ceiling spaces, crawlspaces, pipe chases, and attics. The purpose of the survey was to locate, identify and assess the condition of all Asbestos Containing Materials (ACM) located throughout the facility. This report gives a detailed account of the inspection results and our firm’s recommendations on control options to be implemented to bring the facility in compliance with the Province of Saskatchewan Occupational Health and Safety Act and Regulations. Bersch & Associates Ltd. conducted the survey in August of 2015. A review of this report shall be conducted with all personnel and/or trades that are entering the facility to perform maintenance or renovation activity. This will ensure they are familiar with the types and locations of asbestos-containing materials present and prevent an uncontrolled disturbance and/or possible exposure to asbestos.

3.0 METHODOLOGY

Bersch & Associates Ltd. conducted the survey of the Saskatoon Municipal Waterworks in Saskatoon, Saskatchewan in August of 2015. The primary documents for guidance and criteria in this survey were the Province of Saskatchewan “Occupational Health and Safety Act and Regulations, 1996”, Province of Saskatchewan “Managing Asbestos”, and the U.S. Environmental Protection Agency “Guidance for Controlling Asbestos Containing Materials in Buildings”. The USEPA document identifies factors associated with the “condition” and the “potential for disturbance or erosion” of asbestos containing materials (ACM). These factors help to determine potential for exposure to ACM and were used to make a qualitative evaluation of the material. It should be noted that the recommendation of “Management” Asbestos Abatement Action is based upon the premise that renovations are not scheduled in that area that will require disturbing or violating the asbestos containing material. In the event that renovations are scheduled that impact upon the areas of asbestos containing material, the removal of the asbestos containing materials will be necessary.

In total, thirty-five (35) bulk samples of suspect asbestos-containing materials were collected throughout the facility. Chrysotile asbestos was identified in four (4) of the samples collected. Refer to **Appendix I** for a copy of the **Bulk Sample Analysis Report**. All bulk samples collected were analyzed by Bersch & Associates Ltd. laboratory in accordance with the current USEPA 600/R-93/116 Method for the analysis of asbestos in building materials using polarized light microscopy and dispersion staining techniques. The detection limit of this method is listed as <1% by volume.

4.0 RECOMMENDATIONS:

Throughout the survey of the Municipal Waterworks, the Asbestos Containing Materials were assessed and given a Priority Rating of One, Two or Three, with Priority One being the items requiring the most immediate attention. As a result, Priority One items were identified in the form of Sheet Flooring in the Building's Foreman Office, Pipeline Fitting Compound in Old Chem "B" above the catwalk and in the upper northeast corner adjacent the old auger system and Lineal Pipe Insulation debris in the abandoned gallery in Old Chem "B" area (accessed below the second set of stairs). Future planning should begin to address these areas as per the recommendations provided below.

A. BUILDING FOREMAN'S OFFICE

1.) Vinyl Asbestos Sheet Flooring

The floor covering was identified in poor condition within the doorway to the office. The recommendation is given at minimum to repair the edge of the floor covering at the entrance to the office. A second option to remove the asbestos sheet flooring in its entirety. Removal of the sheet flooring will eliminate any future monitoring of the ACM.

PRIORITY:	ONE
CONDITION:	POOR
POTENTIAL FOR DISTURBANCE:	MODERATE
ACTION:	REPAIR / REMOVE

B. OLD CHEM B

1.) Pipeline Fitting Mud Compound

Asbestos containing Pipeline Fitting Mud Compound was identified in poor condition on the pipeline above the catwalk. Two fittings were also identified in the upper Northeast Corner adjacent to the area mentioned previously. The ACM fittings within the area have been identified with a red painted dot. It is our recommendation to remove all the fittings throughout the area utilizing the Glovebag Removal Method.

PRIORITY:	ONE
CONDITION:	POOR
POTENTIAL FOR DISTURBANCE:	LOW TO MODERATE
ACTION:	REMOVE

2.) Pipeline Fitting Mud Compound

Lineal Pipe Insulation debris is present along the floor in the abandoned gallery in Old Chem “B”. The area has been bannered off with “Asbestos Danger” banner guard. It is our recommendation to conduct a cleanup of the area to remove the ACM debris.

PRIORITY:	ONE
CONDITION:	POOR
POTENTIAL FOR DISTURBANCE:	MODERATE
ACTION:	REMOVE / CLEANUP

C. HIGH LIFT AREA

1.) Drywall Mud Compound

Drywall Mud Compound is located in the High Lift Area. The bulk sample was obtained from the wall in the Northwest corner of the space. The potential exists for asbestos containing drywall joint compound to be present throughout other locations of the facility. The recommendation is to manage the material.

PRIORITY:	THREE
CONDITION:	GOOD
POTENTIAL FOR DISTURBANCE:	LOW
ACTION:	MANAGE

5.0 ASBESTOS ABATEMENT DISCUSSION

Asbestos is a known carcinogen and is listed in the Province of Saskatchewan under the Occupational Health and Safety Regulations Appendix, Table 20 as a Designated Hazardous Chemical Substance and any release of asbestos fibres into the atmosphere creates a potential health hazard. Although the mechanism and epidemiology of asbestos carcinogenesis is not yet well defined, accumulating evidence suggests the significance of exposure at even very low fibre concentrations and hence human exposure should be kept to a minimum. It should be noted however that asbestos is a natural mineral and a measurable background concentration can be detected in any location sampled (inside buildings, outside buildings, urban, rural, etc.). The recommendations of the report are therefore intended to keep the potential exposure to an absolute minimum with the knowledge that a zero exposure is not possible.

Asbestos containing materials have been used in a wide variety of applications. Of particular concern, is the group of so called friable products. A friable product is one that can be crumbled or reduced to powder or smaller fragments by hand pressure. Publications from the U.S.E.P.A. as early as 1977 have indicated the potential hazard of asbestos exposure in buildings containing these friable products. The two main uses of friable asbestos products are as spray insulation

(thermal, acoustic or fireproofing) on deck and/or beams or as thermal insulation on piping or mechanical equipment. A large amount of non-friable asbestos-containing materials have also been used in building construction such as asbestos cement board and asbestos containing vinyl flooring.

The mere presence of a friable asbestos containing material does not imply that there is an actual presence of elevated airborne fibre. As numerous studies have indicated, elevated asbestos fibre levels are generally found when settled dust or the actual asbestos containing material itself is disturbed by maintenance, renovation, inadvertent contact or vibration. The factors considered in the Environmental Protection Agency (USEPA) exposure assessment (condition of material, water damage, activity, movement, exposed surface area, accessibility, friability and presence in an air stream) often give some indication of the likelihood of fibre release but are not in any way definitive in determining whether a hazard exists or not. That is, even if the most friable product exists in a building, elevated fibre levels will not likely occur unless there is some disturbance by physical contact, vibration or an air stream.

There are four possible approaches to control exposure to airborne asbestos once a friable material is identified in a building. These methods briefly are as follows:

- A) Removal** - Asbestos material is removed and disposed of by burial and replaced by non-asbestos materials.
- B) Encapsulation** - Asbestos material is coated with a bridging or penetrating sealant.
- C) Enclosure** - Asbestos containing materials are separated from the building environment by barriers such as suspended ceilings or cladding materials.
- D) Deferred Action or Management and Custodial Control** - The Province of Saskatchewan Human Resources, Labor and Employment Branch under the Occupational health and Safety Regulations publish a document outlining “The Management of Asbestos”. In the guide for compliance, an action plan is outlined for management of the asbestos materials identified and in summary is:
 - 1. Identification, which has been accomplished by this report.
 - 2. Development of Written Handling Procedures for maintenance personnel or often arrangements are made for a qualified contractor to conduct the necessary removal or spot maintenance prior to the regular staff conducting maintenance.
 - 3. Asbestos Abatement Awareness and Process Training if the regular maintenance personnel are required to conduct asbestos related activities.
 - 4. Inspection on regular basis is conducted to determine the ongoing condition of the material. Saskatchewan Occupational Health & Safety Regulations require an “annual” inspection of all “friable” asbestos materials by a competent person.

In reference to this survey, Removal, Repair and Management are the recommended controls. In the event renovations or maintenance is performed throughout areas containing asbestos materials, written procedures must be developed to conduct the activity or prior removal if the situation warrants.

6.0 REFERENCES

- .1 Province of Saskatchewan "The Occupational Health and Safety Act and The Occupational Health and Safety Regulations" Office Consolidation, March 1996.
- .2 Province of Saskatchewan Human Resources, Labor, and Employment "The Management of Asbestos" January, 1991.
- .3 USEPA, 1985. U.S. Environmental Protection Agency, "Guidance for Controlling Asbestos-Containing Materials in Buildings". Washington, DC: Office of Toxic Substances, USEPA.
- .4 Midwest Centre for Occupational Health & Safety St. Paul's, Minnesota – Asbestos Training For Inspectors & Management Planners
- .5 McCrone Research Institute Course Hayward California "Asbestos Identification"
- .6 Environment Management and Protection Act, Saskatchewan Environment, October 2002
- .7 Hazardous Substances and waste Dangerous Goods Regulations, Saskatchewan Environment, April 1989

APPENDIX I

BULK SAMPLE ANALYSIS REPORT

BERSCH & ASSOCIATES LTD.

August 24, 2015

City of Saskatoon
Municipal Waterworks
1030 Avenue H South
Saskatoon, SK.
S7M 1X5

ATTENTION: Cheryl Southam

SUBJECT: Bulk Sample Analysis Report

Please find attached the laboratory results for the bulk analysis of the samples collected throughout the Municipal Waterworks located at 1030 Avenue H South in Saskatoon, SK. The samples were analyzed in our laboratory for the identification of asbestos.

The results for the bulk samples were obtained by examination in accordance with the current USEPA 600/R-93/116 Method for the analysis of asbestos in building materials using polarized light microscopy and dispersion staining techniques. The detection limit of this method is listed as less than 1% by volume.

This test report relates only to the materials sent for examination and any use or extension of the information by the client of these results is the responsibility of the client. If any questions arise on the results of the attached information please contact me at 306 222 7477. Thank you for this opportunity of service!

Sincerely,

Brad Berschiminsky
Bersch & Associates Ltd.
File: B67BLH20

Bersch & Associates Ltd.

B67BAH20

Box 3568
Humboldt, Sask. S0K 2A0

BULK SAMPLE ANALYSIS REPORT

PROJECT NO: B67.15
CLIENT: City of Saskatoon
Municipal Waterworks
Contact: Cheryl Southam
Location: 1030 AVE H South, Saskatoon, SK.

NO.	DATE	SAMPLE INFORMATION	ASBESTOS	%	ANALYST
1	20-Aug-15	Building/Grounds Foreman Office - Irregular Square Pattern Sheet Flooring	Chrysotile	30	WB
2	20-Aug-15	Corridor Adjacent Carpentry Shop - Plaster Top Coat - Directly Across From Carpentry Doorway.	No Asbestos Detected		WB
3	20-Aug-15	Carpentry Shop - Small Pipe Fitting Compound On Trane Heater Upper South West Corner	No Asbestos Detected		WB
4	20-Aug-15	Power Room - Small Pipe Fitting Compound On Trane Heater Upper North East Corner	No Asbestos Detected		WB
5	20-Aug-15	Generator Room - Medium Pipe Fitting Compound Adjacent Generator "A"	No Asbestos Detected		WB
6	20-Aug-15	Generator Room - Large Pipe Fitting Compound Adjacent Generator "A"	No Asbestos Detected		WB

Bersch & Associates Ltd.

B67BAH20

Box 3568

Humboldt, Sask. S0K 2A0

BULK SAMPLE ANALYSIS REPORT**PROJECT NO: B67.15****CLIENT: City of Saskatoon
Municipal Waterworks****Contact: Cheryl Southam****Location: 1030 AVE H South, Saskatoon, SK.**

NO.	DATE	SAMPLE INFORMATION	ASBESTOS	%	ANALYST
7	20-Aug-15	Generator Room - Small Pipe Fitting Compound Adjacent Generator "A"	No Asbestos Detected		WB
8	20-Aug-15	Generator Room - Brick Mortar From West Wall	No Asbestos Detected		WB
9	20-Aug-15	1957 Upper Corridor - Adj. Maintenance Shop - Plaster - Brown Coat Upper South Wall Adj. Access Hatch	No Asbestos Detected		WB
10	20-Aug-15	1957 Upper Corridor - Adj. Maintenance Shop - Plaster - Skim Coat	No Asbestos Detected		WB
11	20-Aug-15	1957 Upper Corridor - Adj. Maintenance Shop - Plaster Above Access Panel North Wall Above Doors	No Asbestos Detected		WB
12	20-Aug-15	1957 Upper Corridor - Adj. Maintenance Shop - Concrete Material On Underside Of Roof Deck	No Asbestos Detected		WB

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CLIENT: City of Saskatoon
Municipal Waterworks
Contact: Cheryl Southam
Location: 1030 AVE H South, Saskatoon, SK.

NO.	DATE	SAMPLE INFORMATION	ASBESTOS	%	ANALYST
13	20-Aug-15	Upper 1957 Corridor - Plaster Above Mitsubishi Condenser Units	No Asbestos Detected		WB
14	20-Aug-15	Upper 1957 Corridor - Plaster Brown Coat Above Mitsubishi Condenser Units	No Asbestos Detected		WB
15	20-Aug-15	Upper 1957 Corridor - Plaster White Top Coat Above Mitsubishi Condenser Units	No Asbestos Detected		WB
16	20-Aug-15	Upper 1911 Area - Drywall Mud Compound East Wall Below Trane Heater FLTR-20-10	No Asbestos Detected		WB
17	20-Aug-15	Upper 1927 Area - Upper Storage - 18" x 24" Interlocking Ceiling Tile	No Asbestos Detected		WB
18	20-Aug-15	Upper 1927 Area Ceiling - Top Coat Ceiling Plaster South Wall Adj. Metal Stairs	No Asbestos Detected		WB

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Contact: Cheryl Southam
Location: 1030 AVE H South, Saskatoon, SK.

NO.	DATE	SAMPLE INFORMATION	ASBESTOS	%	ANALYST
19	20-Aug-15	Upper 1927 Area - Wall Plaster South East Corner	No Asbestos Detected		WB
20	20-Aug-15	1948 Pipe Gallery - Gasket Material 20' East of Far East Stair Well - Large 90 Degree Flange	No Asbestos Detected		WB
21	20-Aug-15	High Lift Area - Drywall Mud Compound On The Wall In The North West Corner	Chrysotile	2	WB
22	20-Aug-15	High Lift Area - Wall Plaster On North Wall At Vulcan Stand-by Charger	No Asbestos Detected		WB
23	20-Aug-15	Network Room Adj. Caretaker - 1' x 1' Ceiling Tile	No Asbestos Detected		WB
24	20-Aug-15	Crane HL-20-05 Area - Top Coat Plaster Above Entry Door	No Asbestos Detected		WB

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CLIENT: City of Saskatoon
Municipal Waterworks
Contact: Cheryl Southam
Location: 1030 AVE H South, Saskatoon, SK.

NO.	DATE	SAMPLE INFORMATION	ASBESTOS	%	ANALYST
25	20-Aug-15	Old Chem B - Medium Pipe Fitting Compound On Upper West Wall Above Catwalk	Chrysotile	60	WB
26	20-Aug-15	Old Chem B- Below Stairs - Tar Paper On 24" Diameter Pipe	No Asbestos Detected		WB
27	20-Aug-15	Old Chem B - Abandoned Gallery (30FT) - Lineal Pipe Insulation Debris On Floor	Chrysotile	70	WB
28	20-Aug-15	#8 High Life Gas Engine Room - Insulation From Exhaust Stack	No Asbestos Detected		WB
29	20-Aug-15	1957 Pipe Gallery - Small Pipe Fitting Compound On West Wall Corner	No Asbestos Detected		WB
30	20-Aug-15	1957 Pipe Gallery Boiler 1 & 2 Area - Boiler #1 Interior End Caps Refractory Material	No Asbestos Detected		WB

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BULK SAMPLE ANALYSIS REPORT

PROJECT NO: B67.15
CLIENT: City of Saskatoon
Municipal Waterworks
Contact: Cheryl Southam
Location: 1030 AVE H South, Saskatoon, SK.

NO.	DATE	SAMPLE INFORMATION	ASBESTOS	%	ANALYST
31	20-Aug-15	1957 Pipe Gallery Boiler 1 & 2 Area - Boiler #2 Interior End Caps Refractory Material	No Asbestos Detected		WB
32	20-Aug-15	1957 Pipe Gallery Boiler 1 & 2 Area - Small Pipe Fitting Compound Above Large Cable Tray	No Asbestos Detected		WB
33	20-Aug-15	1957 Pipe Gallery Boiler 1 & 2 Area - Medium Pipe Fitting Compound On East Wall Adj. Brick Chimney	No Asbestos Detected		WB
34	20-Aug-15	Low Lift Building - Plaster Top Coat From North Wall	No Asbestos Detected		WB
35	20-Aug-15	Low Lift Building - Plaster From North East Wall	No Asbestos Detected		WB