

SEWPCC Upgrading/Expansion Conceptual Design Report

SECTION 22 - Asbestos Abatement

Table of Contents

22.0	ASBESTOS ABATEMENT	22.1
22.1	PURPOSE OF ASBESTOS REPORT	22.1
22.2	DEFINITIONS	22.2
22.3	BACKGROUND	22.2
	22.3.1 Existing Asbestos Report Summary	22.2
22.4	REGULATORY COMMITMENTS	22.3
	22.4.1 General Duties of Employers	22.3
	22.4.2 General Duties of Workers	22.4
	22.4.3 Exposure Limits: Occupational Exposure Limit	22.4
22.5	CONCEPTUAL DESIGN UPGRADING / EXPANSION	22.4
22.6	MODIFICATION AREAS AND ASSOCIATED WORK	22.4
22.7	ABATEMENT PROCEDURES	22.42
	22.7.1 City of Winnipeg - Code of Practice	22.42
	22.7.2 Removal of Potential ACM's	22.42
22.8	ABATEMENT RECOMMENDATIONS	22.44
22.9	OPINION OF PROBABLE COSTS	22.44
22.10	TIMING OF ABATEMENT	22.45
22.11	LIMITATIONS	22.45

22.0 Asbestos Abatement

Asbestos Containing Materials (ACM's) are present in site specific areas and facility systems of the South End Water Pollution Control Centre (SEWPCC). A detailed Hazardous Material Information System (HMIS) was completed by Pinchin Environmental in 2006, which locates ACM's in site specific locations throughout the facility. The current expansion of the facility and concomitant modifications of numerous systems requires an assessment as to whether these areas have ACM's and whether they will be compromised due to the proposed expansion or modification. A room by room assessment of potential ACM disruption was conducted to identify potential hazards.

Provincial health and safety regulations and guidelines for working with asbestos require that specific procedures must be adhered to by persons performing maintenance and renovation programs, to prevent ACM from becoming an airborne hazard in their friable state.

22.1 PURPOSE OF ASBESTOS REPORT

The Manitoba *Workplace Safety and Health Act* and the *Workplace Hazardous Materials Information System Regulation (Manitoba Regulation 217/206 Part 35, 36 and 37)* define specific policies and procedures which must be completed when a potential health hazard is present in the workplace. Provincial guidelines explain the procedures when ACM's are present, including the following actions:

- Develop a written plan.
- Create an inventory.
- Notify workplace occupants of ACM's.
- Label existing ACM's.
- Train workers on procedures when working around ACM's.
- Conduct periodic inspections of the ACM's.
- Working with ACM's.
- Actions to combat fiber release.

The summary previously completed by Pinchin Environmental identifies areas where ACM's may be encountered at the SEWPCC. This section addresses how to deal with these ACM's in

the areas impacted by the Upgrade/Expansion Project. ACM's are present in 18 of the 26 rooms identified with the SEWPCC Project.

22.2 DEFINITIONS

Asbestos: the fibrous form of crocidolite, amosite, chrysotile, anthophyllite, actinolite, tremolite or a mixture containing any of those minerals.

Asbestos containing material (ACM): a friable material containing 0.1 per cent or greater asbestos; or a non-friable material containing 1.0 per cent or greater asbestos.

Asbestos dust: particles of asbestos or settled particles of asbestos which may become airborne in the workplace.

Asbestos fiber: a particle form of asbestos greater than five micrometres in length, with a minimum length to diameter ratio of three to one.

Friable material: a material that when dry can be crumbled, crushed or powdered by hand pressure.

Non-friable material: a material that when dry cannot be crumbled, crushed or powdered (i.e. vinyl asbestos floor tiles or sheets, ceiling tiles, and gaskets).

22.3 BACKGROUND

22.3.1 Existing Asbestos Report Summary

In 2006 Pinchin Environmental completed a HMIS Report at the SEWPCC for the City of Winnipeg Water & Waste Department. This report identified the location and extent of both suspected and confirmed ACM building materials throughout the facility.

The report identified various building material components that were assumed or suspected to contain ACM's, however; samples were not collected and submitted for analysis during production of the 2006 HMIS Report. The systems within the facility that were assumed or suspected to have non-friable asbestos containing materials present include but may not be limited to the following:

Table 22.1 - Assumed or Suspected Non-friable Asbestos Containing Materials

System	Material
Ceiling	Drywall
Walls	Drywall
Walls	Wall covering
Ceiling	Plaster

Although a sample was not collected and tested, one building component within the facility that was suspected to have friable asbestos containing materials present included, but may not be limited to the following:

Table 22.2 - Suspected Friable Asbestos Containing Materials

System	Component	Material	Observation Number
Piping	Glycol Return	CPOSITE	328

The 2006 HMIS Report identified numerous building material components within the facility that were confirmed to contain friable asbestos containing materials present. These systems include, but may not be limited, to the following:

Table 22.3 - Confirmed Friable Asbestos Containing Materials

System	Component	Material
Duct	Return Air	Fiberglass with parging
Duct	Supply Air	Fiberglass with parging
Duct	Supply Air	Texture coat
Duct	Supply Air	Parging over fiberglass
Duct	Fresh Air Intake	Fiberglass with parging
Duct	Exhaust	Fiberglass with parging
Mechanical Equipment	Breeching	Parging over fiberglass
Mechanical Equipment	Exchanger	Fiberglass with parging
Mechanical Equipment	Fume hood	Transite
Piping	Heating Water Supply	Parging over fiberglass
Piping	Heating Water Return	Parging over fiberglass
Piping	Low Pressure Steam	Parging over fiberglass
Piping	High Pressure Steam	Parging over fiberglass
Structure	Beam, Deck	Texture coat

22.4 REGULATORY COMMITMENTS

22.4.1 General Duties of Employers

- All employers have legal responsibilities under the *Workplace Safety and Health Act* and Workplace Safety and Health Regulation.
- Employers must inform prime contractors and, subcontractors of safety and health hazards at the workplace and ensure, to the degree practical, that workers at the workplace, who are not under the employer's direct control, perform their work according to requirements of the Act and regulation.

22.4.2 General Duties of Workers

- All employees have legal responsibilities under the *Workplace Safety and Health Act* and regulation.
- When working with asbestos, employees should inform management of any changes in work processes that may result in exposure to asbestos dust.

22.4.3 Exposure Limits: Occupational Exposure Limit

- Asbestos is identified as a designated material under Part 36, section 36.5(1) (b) of the Workplace Safety and Health Regulation 217/2006.
- The occupational exposure limit of a designated material must be as close to zero as is reasonably practicable but shall not exceed the Threshold Limit Value (TLV) established by the American Conference of Governmental Industrial Hygienists (ACGIH).
- The Workplace Safety and Health Division recognize the level as close to zero as is reasonably practicable for all forms of asbestos as 0.1 fibers per cubic centimetre of air.
- ACM content, specifically Chrysotile, in pipe wrap or duct covering can be as high as 90%. Some forms of Chrysotile have been known to be associated with such human health effects as cancer and lung disease when the fiber is disturbed during such projects as renovations or demolition.

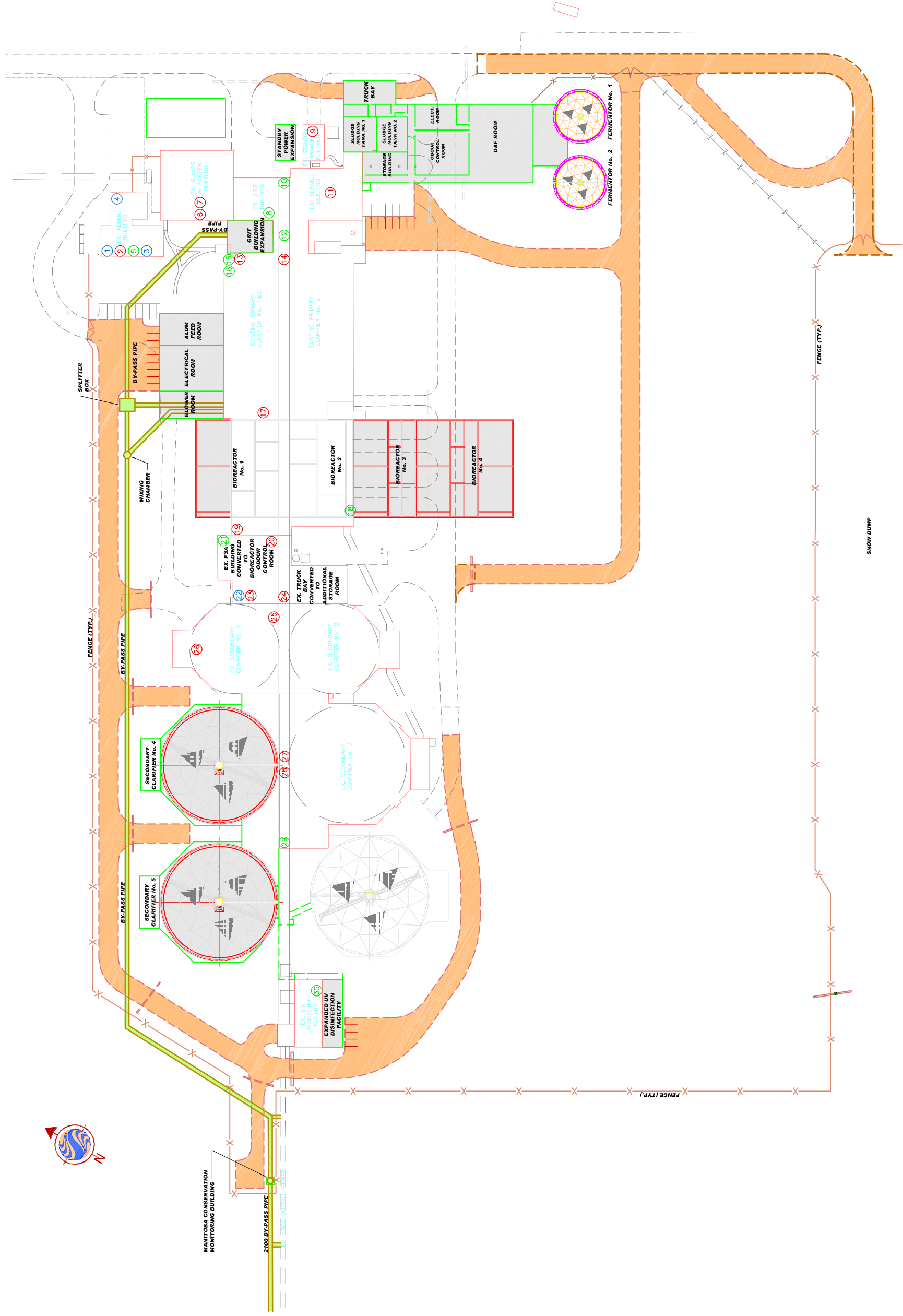
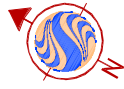
22.5 CONCEPTUAL DESIGN UPGRADING / EXPANSION

The SEWPCC Upgrading/Expansion Conceptual Design work to date has identified several areas that will include modifications near or on ACM encapsulated systems.

A list of the areas of modification and associated ACM's are listed below and can be identified via location in Figure 22.1.

22.6 MODIFICATION AREAS AND ASSOCIATED WORK

The SEWPCC Upgrading/Expansion Conceptual Design work to date has identified several areas that will include modifications near or on ACM encapsulated systems. These areas have been matched to specific areas for ACM's in the HMIS Report. The following section compares the HMIS Report findings with the Area Modifications proposed for the SEWPCC Project. Only areas noted in the HMIS Report are addressed in the following Area Modification sections. Not all areas listed in Table 22.4 have associated photographs as there was minor concern or the modifications were not in the vicinity of ACM's.



METRIC
 WHOLE NUMBERS INDICATE MILLIMETRES
 DECIMALIZED NUMBERS INDICATE METRES



LEGEND

- 6 NO ACMS PRESENT
- 17 SUSPECTED ACMS PRESENT
- 4 CONFIRMED ACMS PRESENT

LOCATION APPROVED UNDERGROUND STRUCTURES

SUPV. U/G STRUCTURES DATE COMMITTEE

NOTE:
 SCHEDULE OF UNDERGROUND STRUCTURES IS SHOWN AND BASED ON THE BEST INFORMATION AVAILABLE BUT NO GUARANTEE IS GIVEN THAT THE SHOWN LOCATIONS ARE EXACT OR THAT THE SHOWN LOCATIONS ARE EXACT CONFIRMATION OF EXISTENCE AND EXACT LOCATION OF UNDERGROUND UTILITIES OBTAINED FROM THE INDIVIDUAL UTILITIES BEFORE PROCEEDING WITH CONSTRUCTION.

NO.	REVISIONS	DATE	BY

Stantec Consulting Ltd.
 905 Waverley Street, Winnipeg, Manitoba
 Tel. 204-489-5900 Fax. 204-453-9012

DESIGNED BY	CHECKED BY
DRAWN BY	APPROVED BY
HOR. SCALE: VERTICAL:	RELEASED FOR CONSTRUCTION: DATE
DATE: 08.08.21	TENDER NO.



Figure 22.2: Hallway west of Screen Room facing south. Area ID #6.

Area Modification to be Completed

Grit and screenings will be piped through this area.

2006 Hazardous Material Information System Report Findings

No ACM's were noted in the HMIS Report to be located in the vicinity of this area.

ACM Concerns

None.

Asbestos Abatement

Not applicable for this modification process.

Asbestos Abatement Costs

Not Applicable.

Area Modification to be Completed

Grit and screenings will be piped through this area.

2006 Hazardous Material Information System Report Findings

No ACM's were noted in the HMIS Report to be located in the vicinity of this area.

ACM Concerns

None.

Asbestos Abatement

Not applicable for this modification process.

Asbestos Abatement Costs

Not Applicable.



Figure 22.3: Screen Room southwest corner. Area ID #7.

Area Modification to be Completed

Grit and screenings will be piped into this area.

2006 Hazardous Material Information System Report Findings

One ACM was noted in the HMIS Report to be located in the vicinity of this area.

ACM Concerns

The **exhaust ducting** is covered fiberglass with parging and confirmed to contain friable asbestos.

Asbestos Abatement Procedures

Not applicable for this modification process as the ACM on the system is not in the vicinity of the work to be completed.

Asbestos Abatement Costs

Not Applicable.



Figure 22.4: Hallway west of Grit Room facing south. Area ID #8.

Area Modification to be Completed

Grit and screenings will be piped through this area and doors will be cut through the east side of the hallway.

2006 Hazardous Material Information System Report Findings

Three ACM's were noted in the HMIS Report to be located in the vicinity of this area.

ACM Concerns

The **beam/deck structure** has a texture coat present which is confirmed to contain friable asbestos.

The **heating water supply piping** is covered with parging over fiberglass and confirmed to contain friable asbestos.

The **heating water return piping** is covered with parging over fiberglass and confirmed to contain friable asbestos.

Asbestos Abatement

Not applicable for this modification process as the ACM on the systems are not in the vicinity of the work to be completed.

Asbestos Abatement Costs

Not Applicable.



Figure 22.5: Standby power building generator. Area ID #9.

Area Modification to be Completed

Electrical modifications between existing and new generator buildings.

2006 Hazardous Material Information System Report Findings

Two ACM's were noted in the HMIS Report to be located in the vicinity of this area.

ACM Concerns

The **heating water return piping** is covered with parging over fiberglass, and confirmed to contain friable asbestos.

The **heating water supply piping** is covered with parging over fiberglass, and confirmed to contain friable asbestos.

Asbestos Abatement

Asbestos abatement will be completed as a Type 2 Glove bag procedure at all fittings.

Asbestos Abatement Costs

It is estimated that asbestos abatement and inspection costs will be approximately \$1,500, excluding re-insulating the system.



Figure 22.6: Grit Room southeast corner. Area ID #10.

Area Modification to be Completed

Hole will be cored in the floor.

2006 Hazardous Material Information System Report Findings

No ACM's were noted in the HMIS Report to be located in the vicinity of this area.

ACM Concerns

None.

Asbestos Abatement

Not applicable for this modification process.

Asbestos Abatement Costs

Not Applicable.



Figure 22.7: Gallery No. 3 at pipe chase to Boiler Room facing northeast. Area ID #11.

Area Modification to be Completed

Sludge piping, elutriation water, Scum Piping, WAS piping and Fermenter Supernatant Piping will be passing through this pipe chase into the Boiler Room.

2006 Hazardous Material Information System Report Findings

Two ACM's were noted in the HMIS Report to be located in the vicinity of this area.

ACM Concerns

The **low pressure steam piping** is covered with parging over fiberglass, and confirmed to contain friable asbestos.

The **high pressure steam piping** is covered with parging over fiberglass, and confirmed to contain friable asbestos.

Asbestos Abatement

Asbestos abatement will be completed as a Type 2 Glove bag procedure at all fittings.

Asbestos Abatement Costs

It is estimated that asbestos abatement and inspection costs will be approximately \$1,500. Re-insulation of the high and low pressure steam piping is not required as the piping is no longer required.



Figure 22.8: Boiler Room facing north. Area ID #11.

Area Modification to be Completed

Sludge piping, elutriation water, Scum Piping, WAS piping and Fermenter Supernatant Piping will be passing through this location.

2006 Hazardous Material Information System Report Findings

Eight ACM's were noted in the HMIS Report to be located in the vicinity of this area.

ACM Concerns

The **heating water return piping** is covered with parging over fiberglass, and confirmed to contain friable asbestos.

The **heating water supply piping** is covered with parging over fiberglass, and confirmed to contain friable asbestos.

The **low pressure steam piping** is covered with parging over fiberglass, and confirmed to contain friable asbestos.

The **high pressure steam piping** is covered with parging over fiberglass, and confirmed to contain friable asbestos.

The **supply air ducting** is covered fiberglass with parging and confirmed to contain friable asbestos.

The **exhaust ducting** is covered fiberglass with parging and confirmed to contain friable asbestos.

The **mechanical equipment breeching** is covered parging over fiberglass and confirmed to contain friable asbestos.

The **mechanical equipment exchanger** is covered with parging and confirmed to contain friable asbestos.

Asbestos Abatement

Asbestos abatement will be completed as a Type 3 procedure to encapsulate all fittings and bulk volumes of ACM's.

Asbestos Abatement Costs

It is estimated that asbestos abatement and inspection costs for the removal of the boiler system will be approximately \$20,000. Asbestos abatement and inspection costs will be approximately \$15,000 extra if the abatement is to include associate heat pump areas, excluding re-insulating the system. As noted previously, the high and low pressure steam piping does not need to be re-insulated.



Figure 22.9: Boiler Room facing south. Area ID #11.

Area Modification to be Completed

Sludge piping, elutriation water, Scum Piping, WAS piping and Fermenter Supernatant Piping will be passing through this location.

2006 Hazardous Material Information System Report Findings

Eight ACM's were noted in the HMIS Report to be located in the vicinity of this area.

ACM Concerns

The **heating water return piping** is covered with parging over fiberglass, and confirmed to contain friable asbestos.

The **heating water supply piping** is covered with parging over fiberglass, and confirmed to contain friable asbestos.

The **low pressure steam piping** is covered with parging over fiberglass, and confirmed to contain friable asbestos.

The **high pressure steam piping** is covered with parging over fiberglass, and confirmed to contain friable asbestos.

The **supply air ducting** is covered fiberglass with parging and confirmed to contain friable asbestos.

The **exhaust ducting** is covered fiberglass with parging and confirmed to contain friable asbestos.

The **mechanical equipment breeching** is covered parging over fiberglass, and confirmed to contain friable asbestos.

The **mechanical equipment exchanger** is covered fiberglass with parging and confirmed to contain friable asbestos.

Asbestos Abatement

Asbestos abatement will be completed as a Type 3 procedure to encapsulate all fittings and bulk volumes of ACM's.

Asbestos Abatement Costs

It is estimated that asbestos abatement and inspection costs for the removal of the boiler system will be approximately \$20,000. Asbestos abatement and inspection costs will be approximately \$15,000 extra if the abatement is to include the associated heat pump areas, excluding re-insulating the system. As noted previously, the high and low pressure steam piping does not need to be re-insulated.



Figure 22.10: Boiler Room southeast corner. Area ID #11.

Area Modification to be Completed

Sludge piping, elutriation water, Scum Piping, WAS piping and Fermenter Supernatant Piping will be passing through this location and potentially the heat exchanger (no longer used) and associated piping systems will be removed from this room.

2006 Hazardous Material Information System Report Findings

Eight ACM's were noted in the HMIS Report to be located in the vicinity of this area.

ACM Concerns

The **heating water return piping** is covered with parging over fiberglass, and confirmed to contain friable asbestos.

The **heating water supply piping** is covered with parging over fiberglass, and confirmed to contain friable asbestos.

The **low pressure steam piping** is covered with parging over fiberglass, and confirmed to contain friable asbestos.

The **high pressure steam piping** is covered with parging over fiberglass, and confirmed to contain friable asbestos.

The **supply air ducting** is covered fiberglass with parging, and confirmed to contain friable asbestos.

The **exhaust ducting** is covered fiberglass with parging, and confirmed to contain friable asbestos.

The **mechanical equipment breeching** is covered parging over fiberglass, and confirmed to contain friable asbestos.

The **mechanical equipment exchanger** is covered fiberglass with parging, and confirmed to contain friable asbestos.

Asbestos Abatement

Asbestos abatement will be completed as a Type 3 procedure to encapsulate all fittings and bulk volumes of ACM's.

Asbestos Abatement Costs

It is estimated that asbestos abatement and inspection costs for the removal of the boiler system will be approximately \$20,000. Asbestos abatement and inspection costs will be approximately \$15,000 extra if the abatement is to include the associated heat pump areas, excluding re-insulating the system. As noted previously, the high and low pressure steam piping does not need to be re-insulated.



**Figure 22.11: Hallway from Grit Room to PST facing west.
Area ID #12.**

Area Modification to be Completed

Door will be cut into the north wall and chemical lines will run through the hallway.

2006 Hazardous Material Information System Report Findings

One ACM was noted in the HMIS Report to be located in the vicinity of this area.

ACM Concerns

The mechanical equipment exchanger is covered fiberglass with parging and confirmed to contain friable asbestos.

Asbestos Abatement

Not applicable for this modification process as the ACM on the system is not in the vicinity of the work to be completed.

Asbestos Abatement Costs

Not Applicable.



Figure 22.12: Influent end of PST No. 2 & 3 facing north. Area ID #13.

Area Modification to be Completed

Chemical lines will be run along the north wall. The proposed new Grit Room (constructed to the east) may block the existing intake louver of the air supply duct.

2006 Hazardous Material Information System Report Findings

Not confirmed to contain any ACM's in the HMIS Report. However, an air supply duct was identified and labeled as an ACM, and was located along the east wall.

ACM Concerns

An **air supply duct** located along the east wall was identified and labeled as an ACM. The **air supply duct** is covered fiberglass with parging, and *suspected* to contain friable asbestos. A confirmatory sample should be collected during Detailed Design to *confirm* the presence of asbestos. Associated piping is also in the vicinity and will need to be confirmed.

Asbestos Abatement

The air supply duct will potentially be impacted, as the proposed new Grit Room may be blocking the existing intake louver.

Asbestos abatement will be completed as a Type 3 procedure.

Asbestos Abatement Costs

It is estimated that asbestos abatement and inspection costs will be approximately \$35,000 excluding re-insulating the system after relocation.

Positive air pressure may pose a problem during this abatement procedure.



Figure 22.13: Gallery No.3 at entrance to Gallery No. 4 facing east. Area ID #14.

Area Modification to be Completed

Sludge piping tie-in location is above asbestos piping and will be re-routed east through Gallery No. 3.

2006 Hazardous Material Information System Report Findings

Two ACM's were noted in the HMIS Report to be located in the vicinity of this area.

ACM Concerns

The **low pressure steam piping** is covered with parging over fiberglass, and confirmed to contain friable asbestos.

The **high pressure steam piping** is covered with parging over fiberglass, and confirmed to contain friable asbestos.

Asbestos Abatement

Asbestos abatement will be completed as a Type 2 Glove bag procedure at all fittings.

Asbestos Abatement Costs

It is estimated that asbestos abatement and inspection costs will be approximately \$3,000. As noted previously, the high and low pressure steam piping does not need to be re-insulated.



Figure 22.14: Gallery No. 3 east of entrance to Gallery No. 4 facing west. Area ID #14.

Area Modification to be Completed

Sludge piping will be passing through the location of the asbestos piping.

2006 Hazardous Material Information System Report Findings

Two ACM's were noted in the HMIS Report to be located in the vicinity of this area.

ACM Concerns

The **low pressure steam piping** is covered with parging over fiberglass, and confirmed to contain friable asbestos.

The **high pressure steam piping** is covered with parging over fiberglass, and confirmed to contain friable asbestos.

Asbestos Abatement

Asbestos abatement will be completed as a Type 3 procedure.

Asbestos Abatement Costs

It is estimated that asbestos abatement and inspection costs will be approximately \$2,000. As noted previously, the high and low pressure steam piping does not need to be re-insulated.



Figure 22.15: Gallery No. 3 at the Scum Pumping System for PST No. 1 & 2. Area ID #14.

Area Modification to be Completed

Potentially the Scum Pumping system will be modified or relocated.

2006 Hazardous Material Information System Report Findings

Two ACM's were noted in the HMIS Report to be located in the vicinity of this area.

ACM Concerns

The **low pressure steam piping** is covered with parging over fiberglass, and confirmed to contain friable asbestos.

The **high pressure steam piping** is covered with parging over fiberglass, and confirmed to contain friable asbestos.

Asbestos Abatement

Asbestos abatement will be completed as a Type 2 Glove bag procedure at all fittings.

Asbestos Abatement Costs

It is estimated that asbestos abatement and inspection costs will be approximately \$1,500, excluding re-insulating the system. As noted previously, the high and low pressure steam piping does not need to be re-insulated.



Figure 22.16: Gallery No. 4 (influent end of PST No. 1 & 2) facing north. Area ID #15.

Area Modification to be Completed

Potentially the scum collection and piping system will be relocated here.

2006 Hazardous Material Information System Report Findings

No ACM's were noted in the HMIS Report to be located in the vicinity of this area.

ACM Concerns

None.

Asbestos Abatement

Not applicable for this modification process as no ACM's are in the vicinity of the work to be completed.

Asbestos Abatement Costs

Not Applicable.



**Figure 22.17: Influent end of PST No. 2 & 3 facing north wall.
Area ID #16.**

Area Modification to be Completed

Door may be cut into north wall for access to new Alum Feed Room, Electrical Room & Blower Room.

2006 Hazardous Material Information System Report Findings

Not confirmed to contain any ACM's in the HMIS Report. However, an air supply duct was identified and labeled as an ACM and was located along the east wall.

ACM Concerns

An air supply duct located along the east wall was identified and labeled as an ACM. The **air supply duct** is covered fiberglass with parging, and *suspected* to contain friable asbestos. A confirmatory sample should be collected during Detailed Design to *confirm* the presence of asbestos.

Asbestos Abatement

The air supply duct will potentially be impacted, as the proposed new Grit Room may be blocking the existing intake louver.

Asbestos abatement will be completed as a Type 3 procedure.

Asbestos Abatement Costs

It is estimated that asbestos abatement and inspection costs will be approximately \$35,000, excluding re-insulating the system after relocation. Positive air pressure may pose a problem during this abatement procedure.



Figure 22.18: Gallery No. 5 (PST No. 1 & 2 effluent end) facing south. Area ID #17.

Area Modification to be Completed

Multiple modifications in this area (multiple new influent lines to the bioreactor).

2006 Hazardous Material Information System Report Findings

One ACM was noted in the HMIS Report to be located in the vicinity of this area.

ACM Concerns

The **high pressure steam piping** is covered with parging over fiberglass, and confirmed to contain friable asbestos.

Asbestos Abatement

Asbestos abatement will be completed as a Type 2 Glove bag procedure at all fittings.

Asbestos Abatement Costs

It is estimated that asbestos abatement and inspection costs will be approximately \$1,500, excluding re-insulating the system.



Figure 22.19: Gallery No. 5 facing north. Area ID #17.

Area Modification to be Completed

New bypass piping in and out of this location.

2006 Hazardous Material Information System Report Findings

One ACM was noted in the HMIS Report to be located in the vicinity of this area.

ACM Concerns

The **high pressure steam piping** is covered with parging over fiberglass, and confirmed to contain friable asbestos.

Asbestos Abatement

Asbestos abatement will be completed as a Type 2 Glove bag procedure at all fittings.

Asbestos Abatement Costs

It is estimated that asbestos abatement and inspection costs will be approximately \$1,500. As noted previously, the high and low pressure steam piping does not need to be re-insulated.



Figure 22.20: Gallery No. 5 (PST No. 3 effluent end) facing south. Area ID #17.

Area Modification to be Completed

Multiple modifications to this area.

2006 Hazardous Material Information System Report Findings

One ACM was noted in the HMIS Report to be located in the vicinity of this area.

ACM Concerns

The **high pressure steam piping** is covered with parging over fiberglass, and confirmed to contain friable asbestos.

Asbestos Abatement

Asbestos abatement will be completed as a Type 2 Glove bag procedure at all fittings.

Asbestos Abatement Costs

It is estimated that asbestos abatement and inspection costs will be approximately \$1,500. As noted previously, the high and low pressure steam piping does not need to be re-insulated.



Figure 22.21: Gallery No. 3 at entrance to Gallery No. 5. Area ID #17.

Area Modification to be Completed

Fermenter supernatant piping will run through this area.

2006 Hazardous Material Information System Report Findings

Two ACM's were noted in the HMIS Report to be located in the vicinity of this area.

ACM Concerns

The **low pressure steam piping** is covered with parging over fiberglass, and confirmed to contain friable asbestos.

The **high pressure steam piping** is covered with parging over fiberglass, and confirmed to contain friable asbestos.

Asbestos Abatement

Asbestos abatement will be completed as a Type 2 Glove bag procedure at all fittings.

Asbestos Abatement Costs

It is estimated that asbestos abatement and inspection costs will be approximately \$1,500. As noted previously, the high and low pressure steam piping does not need to be re-insulated.



Figure 22.22: Gallery No. 3 at entrance to Gallery No. 5. Area ID #17.

Area Modification to be Completed

Fermenter supernatant piping will run through this area.

2006 Hazardous Material Information System Report Findings

Two ACM's were noted in the HMIS Report to be located in the vicinity of this area.

ACM Concerns

The **low pressure steam piping** is covered with parging over fiberglass, and confirmed to contain friable asbestos.

The **high pressure steam piping** is covered with parging over fiberglass, and confirmed to contain friable asbestos.

Asbestos Abatement

Asbestos abatement will be completed as a Type 2 Glove bag procedure at all fittings.

Note: *This run of piping appears to be in poor/damaged condition and should be included in any abatement program being completed.*

Asbestos Abatement Costs

It is estimated that asbestos abatement and inspection costs will be approximately \$1,500. As noted previously, the high and low pressure steam piping does not need to be re-insulated.



Figure 22.23: Water Service / Compressor Room facing east. Area ID #19.

Area Modification to be Completed

Potentially running a pipe along the east wall and expansion of the room north.

2006 Hazardous Material Information System Report Findings

One ACM was noted in the HMIS Report to be located in the vicinity of this area.

ACM Concerns

The **supply air ducting** is covered fiberglass with parging, and confirmed to contain friable asbestos.

Asbestos Abatement Procedures

Asbestos abatement will be completed as a Type 2 procedure at the vertical chase. The horizontal ducting is not included in the abatement costs as this system is not in the vicinity of works to be completed.

Asbestos Abatement Costs

It is estimated that asbestos abatement and inspection costs will be approximately \$2,000, excluding re-insulating the system.



Figure 22.24: Water Service / Compressor Room facing east. Area ID #19.

Area Modification to be Completed

Potentially running a pipe along the east wall and expanding the room north.

2006 Hazardous Material Information System Report Findings

One ACM was noted in the HMIS Report to be located in the vicinity of this area.

ACM Concerns

The supply air ducting is covered fiberglass with parging, and confirmed to contain friable asbestos.

Asbestos Abatement Procedures

Asbestos abatement will be completed as a Type 2 procedure at the vertical chase. The horizontal ducting is not included in the abatement costs as this system is not in the vicinity of works to be completed.

Asbestos Abatement Costs

It is estimated that asbestos abatement and inspection costs will be approximately \$2,000, excluding re-insulating the system.



Figure 22.25: PSA / UNOX Equipment Room facing east. Area ID #20.

Area Modification to be Completed

Removing all equipment and associated piping systems from this room.

2006 Hazardous Material Information System Report Findings

One ACM was noted in the HMIS Report to be located in the vicinity of this work.

ACM Concerns

The **supply air ducting** is covered fiberglass with parging, and confirmed to contain friable asbestos.

Asbestos Abatement Procedures

The air supply duct will potentially be impacted, as all equipment and associated piping systems are to be removed from this room. Asbestos abatement will be completed as a Type 3 procedure.

Asbestos Abatement Costs

If confirmed as an ACM, it is estimated that asbestos abatement and inspection costs will be approximately \$50,000, excluding re-insulating the system after abatement. Although this room is having all equipment removed, abatement may not be applicable for this modification process if extreme care is taken during demolition. However encapsulation of the ACM may have to be completed prior to the modifications. This can often be as costly as abatement with the ACM concerns remaining.



Figure 22.26: PSA Compressor Room facing east. Area ID #21.

Area Modification to be Completed

Removing all equipment and associated piping systems from this room.

2006 Hazardous Material Information System Report Findings

No ACM's were identified in the HMIS Report to be located in the vicinity of this work.

ACM Concerns

None.

Asbestos Abatement

Not applicable base on works to be completed in this room.

Asbestos Abatement Costs

Not Applicable.



**Figure 22.27: Electrical room east of Secondary Clarifier No. 1 facing north.
Area ID #23.**

Area Modification to be Completed

Multiple conduit runs and electrical panel modifications in this room.

2006 Hazardous Material Information System Report Findings

One ACM was noted in the HMIS Report to be located in the vicinity of this work.

ACM Concerns

The supply air ducting is covered fiberglass with parging, and confirmed to contain friable **asbestos**.

Asbestos Abatement Procedures

The air supply duct will potentially be impacted. Asbestos abatement will be completed as a Type 3 procedure.

Asbestos Abatement Costs

It is estimated that asbestos abatement and inspection costs will be approximately \$25,000, excluding re-insulating the system after abatement.



Figure 22.28: Gallery No. 3 facing east at end of Secondary Clarifier No. 1 & 2. Area ID #24/25.

Area Modification to be Completed

Addition of pipes running through gallery.

2006 Hazardous Material Information System Report Findings

One ACM was noted in the HMIS Report to be located in the vicinity of this area.

ACM Concerns

The high pressure steam piping is covered with parging over fiberglass, and confirmed to contain friable asbestos.

Asbestos Abatement

Asbestos abatement will be completed as a Type 2 Glove bag procedure at all fittings.

Asbestos Abatement Costs

It is estimated that asbestos abatement and inspection costs will be approximately \$1,000. As noted previously, the high pressure steam piping does not require re-insulating.



Figure 22.29: Secondary Clarifier No. 1 facing north. Area ID #26.

Area Modification to be Completed

Retrofitting internal mechanism of all three existing clarifiers.

2006 Hazardous Material Information System Report Findings

One ACM was noted in the HMIS Report to be located in the vicinity.

ACM Concerns

The supply air ducting is covered fiberglass with parging, and confirmed to contain friable asbestos.

Asbestos Abatement Procedures

Although this would be considered a Type 3 procedure, abatement is not applicable for this modification process as no ACM's are affected directly.

Asbestos Abatement Costs

Not Applicable.



Figure 22.30: Gallery No. 3 facing north at Secondary Clarifier No. 3. Area ID #27.

Area Modification to be Completed

Cutting doors for access to Secondary Clarifier No. 4 & 5.

2006 Hazardous Material Information System Report Findings

Two ACM's were noted in the HMIS Report to be located in the vicinity of this area.

ACM Concerns

The **low pressure steam piping** is covered with parging over fiberglass, and confirmed to contain friable asbestos.

The **high pressure steam piping** is covered with parging over fiberglass, and confirmed to contain friable asbestos.

Asbestos Abatement

Asbestos abatement will be completed as a Type 2 Glove bag procedure at all fittings.

Asbestos Abatement Costs

It is estimated that asbestos abatement and inspection costs will be approximately \$1,500. As noted previously, the high and low pressure steam piping does not need to be re-insulated.



Figure 22.31: Secondary Clarifier No. 3 main floor facing north. Area ID #28.

Area Modification to be Completed

Cutting doors for access to secondary clarifier No. 4.

2006 Hazardous Material Information System Report Findings

One ACM was noted in the HMIS Report to be located in the vicinity of this area.

ACM Concerns

The **supply air ducting** is covered fiberglass with parging, and confirmed to contain friable asbestos.

Asbestos Abatement Procedures

Although this would be considered a Type 3 procedure, abatement is not applicable for this modification process as the ACM's in the vicinity of the work are not directly affected.

Asbestos Abatement Costs

Not Applicable.



Figure 22.32: Gallery No. 3 facing west at end of Secondary Clarifier No. 3. Area ID #29.

Area Modification to be Completed

Potentially expansion of Gallery No. 3 to UV Building.

2006 Hazardous Material Information System Report Findings

No ACM's were identified in the HMIS Report to be located in the vicinity of this area.

ACM Concerns

None.

Asbestos Abatement

Not applicable for this modification process as no ACM's are in the vicinity of the work to be completed.

Asbestos Abatement Costs

Not Applicable.

22.7 ABATEMENT PROCEDURES

22.7.1 City of Winnipeg - Code of Practice

The City of Winnipeg uses the “*City of Winnipeg, Asbestos Operations and Maintenance, Code of Practice*” dated January 25, 2001 to provide clear guidance to civic employees, members of the public and contractors about how ACM’s will be handles in civic workplaces and facilities. The City’s approach is to safely maintain ACM where possible and abate where necessary. In many of the area modifications noted above, abatement will be necessary and the *Code of Practice* should be utilized in conjunction with Provincial Guidelines outlined below.

22.7.2 Removal of Potential ACM's

REMOVAL SHOULD BE CONSIDERED WHEN:

- it is breaking away from the surface to which it is applied.
- the material is likely to be damaged.
- the asbestos is friable.
- the concentration of airborne asbestos fibers is above the occupational exposure limit.
- prior to renovation or demolition.

GENERAL PROCEDURES FOR REMOVING ASBESTOS

- The presence, type and friability of asbestos should be confirmed before planning to remove or repair building materials thought to contain asbestos.
- All friable asbestos that may be disturbed in a building must be removed before demolition is performed in that building or location.
- The building owner, employer or contractor should review building codes or other applicable codes prior to asbestos removal to determine if the activity is regulated by those codes.
- The building owner or employer must notify all workers who may be exposed when friable asbestos is likely to be disturbed or when work is to be carried out on or near friable asbestos.

TYPE 1 (LOW RISK) REMOVAL

- Installation or removal of non-friable manufactured products that contain asbestos, such as vinyl asbestos floor tiles or sheets, ceiling tiles, gaskets, seals, packing, construction

- mastics, cementitious asbestos containing Transite panels, siding, shingles and wallboard, brake shoes, clutch plates or asbestos cement products.
- Cutting or shaping asbestos-containing materials mentioned in (a) above with hand tools only.
- Cutting, grinding, drilling, sanding or scraping of asbestos-containing materials mentioned in (a) above with a power tool equipped with a High Efficiency Particulate Air (HEPA) filter.

TYPE 2 (MEDIUM RISK) REMOVAL

- Removal of part or all of a false ceiling where there is friable asbestos material lying on the surface of the false ceiling.
- Enclosure of friable asbestos-containing material.
- Minor removal or disturbance of less than one square metre of friable asbestos-containing material during the repair, alteration, maintenance or demolition of a building, any machinery or equipment (other than air handling equipment in a building which has sprayed asbestos fireproofing) that can be completed within a three hour period.
- Any other abatement not mentioned as a Type 1 or Type 3 abatement that may result in a worker exposure to airborne asbestos fibers in excess of the occupational exposure limit of 0.1 fiber per cubic centimetre of air.

TYPE 3 (HIGH RISK) REMOVAL

- Removal of greater than one square metre of friable asbestos-containing material during the repair, alteration, maintenance or demolition of a building, machinery or equipment.
- Removal or disturbance of less than one square metre of friable asbestos-containing material during the repair, alteration, maintenance or demolition of a building, machinery or equipment that cannot be completed within a three hour period.
- Spray application of a sealant or encapsulant to greater than one square metre of friable asbestos-containing material.
- Cleaning or removal of air-handling equipment, including rigid ducting, in a building which has sprayed asbestos fireproofing.
- Repair, alteration or demolition of equipment made in part of refractory materials containing asbestos.

- Grinding, cutting, drilling, sanding or scraping any asbestos-containing material involved in Type 1 work abatement with a power tool not equipped with a HEPA filter.

22.8 ABATEMENT RECOMMENDATIONS

The human health risks associated with ACM’s in the building are considered significant as the asbestos identified in the samples collected can be considered carcinogenic. At this time no specific federal or provincial regulations exist on the evaluation and control of potentially hazardous asbestos containing materials in buildings. However, guidelines and documents do exist concerning this issue and medical and environmental experts can offer good advice on the control of asbestos impacts:

1. Manitoba Department of Labour & Immigration, Workplace Safety & Health Division, Workplace Safety & Health Branch, “Guidelines for Working with Asbestos”, March.
2. Workplace Safety & Health Branch, Manitoba Department of Labour & Immigration, “Guidelines for Asbestos Operations and Maintenance Program”, September 1998.
3. City of Winnipeg, Asbestos Operations and Maintenance, Code of Practice, January 25th 2001.

Stantec offered recommendations, based on the findings of previous sampling as noted in the 2006 HMIS Report and the discussions addressed in the above references. It would be necessary to have an asbestos abatement contractor remove any ACM’s from the buildings by approved methods prior to any renovations or demolition being initiated in areas of concern.

22.9 OPINION OF PROBABLE COSTS

This opinion of probable cost was prepared to assist in the evaluation / comparison of the abatement options to determine which options are the most appropriate to carry forward for in the Final Design. RCW Environmental Services provided assistance in the opinion of estimated cost breakdown for the abatement of asbestos containing materials. In this assessment, costs for abatement have been carried forward to reduce the associated risks for ACM to remain in these areas of the facility.

SEWPCC Asbestos Abatement	
OPTION	CAPITAL COSTS
Asbestos abatement of directly affected areas	\$103,000
Asbestos abatement of adjacent system areas	\$50,000
Confirmation Sampling	\$4,500
Suspected Material Removal (Drywall)	\$30,000

The above opinion of probable cost does not include engineering or monitoring fees, any contingencies or inflation. These costs do not include the HVAC upgrade work, unless directly

associated to system modifications where previously identified. Costs associated to the replacement of insulation on the remaining system components are not included above.

22.10 TIMING OF ABATEMENT

It is recommended that the asbestos abatement be completed in advance of the proposed modifications identified for the SEWPCC Project. In completing the removal of the ACM's prior to associated modification or expansion works being initiated, the City reduces the risks associated with abatement from general contractors. This often will simplify the bidding process and ultimately constitute better prices for the area modifications. The abatement can be completed well in advance by a certified asbestos abatement contractor.

22.11 LIMITATIONS

Note that this section reflects the information available at the time of submission and that the results and conclusions presented herein should be considered preliminary given:

- Further discussion with the City and Stantec is required to define areas to be included in the upgrade and expansion of the SEWPCC.

In conducting the review of the 2006 HMIS Report and rendering our conclusions based on areas of potential concern and construction, Stantec gives the benefit of its best judgment based on its experience and in accordance with generally accepted professional standards for this type of assessment. This report summary has been prepared for the exclusive use of the City of Winnipeg Water & Waste Department for the purpose of assessing the current potential environmental concerns that may be present at the location. No other representations, warranties or guarantees are made concerning the accuracy or completeness of the data or conclusions contained within this report, including no assurance that this assessment has uncovered all potential liabilities associated with the identified property.

In reviewing this bulk substrate sampling contained in the 2006 HMIS Report, Stantec confirms that it had access to the experience and capability necessary to perform and did perform in accordance with generally accepted professional standards at the time and location in which the services were provided. It should be noted that any indoor environmental assessment cannot entirely eliminate all uncertainty in terms of the potential for contaminant anomalies. Stantec can only comment on the environmental conditions observed on the date the review was performed. Stantec cannot provide a guarantee as to the presence or absence of asbestos contaminants or any other materials other than those that were addressed and at the locations that were investigated. Additional substrate may be located within several areas of the facility. Stantec concludes that this report does not identify all locations of the suspect ACM's but the photographs of the associated samples will assist in the further determination of quantity. Stantec is not able to represent that the site contains no hazardous substances or other latent conditions beyond that detected or observed by Stantec during this assessment.

Any use which a third party makes of this report, or any reliance on or decisions to be based on it, are the responsibility of such third parties. Stantec will accept no damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

This report provides an evaluation of environmental conditions associated with the identified property at the time the review was conducted and are based on information obtained by and/or provided to Stantec at that time. All information received from the client or third parties in the preparation of this report has been assumed by Stantec to be correct. Stantec assumes no responsibility for any deficiency or inaccuracy in information received from others.

The opinions in this report can only be relied upon as they relate to the condition of the identified property at the time the assessments and/or investigations were conducted. Activities at the property subsequent to Stantec's assessment may have significantly altered the property's condition. Conclusions made within this report are a professional opinion, not a certification of the property's environmental condition.

This report has been prepared for the exclusive use of the client identified herein. Stantec assumes no responsibility for losses, damages, liabilities or claims, howsoever arising, from third party use of this report.

This report is limited by the following:

1. The analytical program was limited to the determination of potential ACM's located in the subject property and all areas were addressed by the author of the 2006 HMIS Report.
2. Stantec can not comment on the condition of the sampling program at the time of completion and within the areas sampled, but only on the review of said information.
3. Stantec can only comment on the sampling program completed and presented on substrates selected within the areas sampled and which are included in the 2006 HMIS Report.