



Report to: General Committee

Date Report Authored: Sept 26, 2011

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**SUBJECT:** Former Sabiston Landfill Site – Public Information Meeting and Indoor Air Quality  
**PREPARED BY:** Robert Penner, ext. 4550  
Prathapan Kumar, ext. 2989

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**RECOMMENDATION:**

- 1) THAT the report entitled “Former Sabiston Landfill Site – Public Information Meeting and Indoor Air Quality” be received;
- 2) AND THAT Staff be authorized to host a public information meeting in consultation with the Ward Councillor to seek consensus from the public for the implementation of a small aerobic test site (100m x 150m) within the landfill site partnered with Ontario Centre for Excellence (OCE), Seneca College and SPL Beatty;
- 3) AND if based on the public meeting the Aerobic Testing option proceeds, that the cost of \$553,420 be funded from ‘Settlers Park Landfill Site Management’ account 750-101-5399-7028, with the budget shortfall being requested during the 2014 capital budget process;
- 4) AND THAT the CAO be authorized to enter into necessary agreements with six (6) homeowners bordering the north and west boundaries of the landfill site to conduct indoor air quality monitoring within the residential buildings for one year, to the satisfaction of the CAO and Town Solicitor; at a cost of \$40,000 to be funded from ‘Settlers Park Landfill Site Management’ account 750-101-5399-7028;
- 5) AND THAT the Staff report back to the Council with the results of the public information meeting and the indoor air quality monitoring program;
- 6) AND THAT Staff be authorized and directed to do all things necessary to give effect to this resolution.

**EXECUTIVE SUMMARY:**

N/A

**PURPOSE:**

The purpose of this report is to request Council authorization to hold a Public Information meeting and to seek consensus from the public for implementing a small aerobic test site within the Sabiston landfill site and to enter into necessary agreements with six (6) homeowners bordering the north and west boundaries of the landfill site to conduct indoor air quality monitoring for one year within the residential buildings.

**BACKGROUND:**

Site Location and History

Settlers Park is approximately 26 hectares of passive parkland located south of John St., west of Don Mills Road and north of the Leslie Street extension at Steeles Avenue (Figure 1).

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**GC Report dated March 29, 2009:**

Staff gave a presentation to the General Committee on March 23, 2009 on the Former Sabiston Landfill Site status and was authorized to host a public information meeting and to report back to the General Committee with the results of a public information meeting and recommendations on the remedial options. The public information meeting was put on hold as staff worked with the Ministry of the Environment (MOE) to obtain an update to the Certification of Authorization (CofA - Air) and in the preparation of an Operations Procedures and Maintenance Manual for the site.

**GC Report dated May 30, 2011:**

The report to General Committee dated May 30, 2011 provides background related to landfill site and current status of the monitoring programs. Staff was authorized to enter into necessary agreements with the adjacent land owners, National Spiritual Assembly of Baha'i and the Bayview Golf and Country Club, for the purpose of carrying out investigative work on their properties, in order to delineate the extent of the landfill and to determine the most appropriate method to eliminate the high methane gas concentrations at the southern boundary. The agreements were signed and completed by the respective parties and the exploratory work and analysis is currently underway. Staff will report back to Council on the findings and proposed mitigation measures.

**OPTIONS/ DISCUSSION:**

Two remedial options exist for the intermediate / long term management of the Sabiston Landfill site:

1. Continuation of the current procedures and technology
2. Implementation of aerobic technology (initially for a small test area)

**Option 1 - Continuation of the current procedures and technology (anaerobic)**

The organic waste in landfills typically takes over 100 years to fully decompose. Decomposition of the waste material will proceed slowly under anaerobic (no oxygen) conditions. The land will be left in its existing natural state without disturbance to the wildlife habitat. From 2008 to 2010, management and operation costs have averaged approximately \$112,000 per year funded from Capital Projects 8282 and 8529. The Town's Lifecycle Reserve update in 2011, estimated future costs for consulting / monitoring to be \$70,000 every year and for rehabilitation / maintenance to be \$100,000 every other year.

**Option 2 - Implementation of aerobic technology (initially for a small test area)**

The Ontario Centre for Excellence (OCE) partnered with Seneca College and SPL Beatty have expressed an interest in participating in the design and implementation of a small aerobic test area at the Sabiston Landfill site. On June 24, 2011 staff held a work-shop with the Mayor, Council members and senior staff on the aerobic technology for accelerated waste decomposition.

Aerobic process achieves much more rapid stabilization of the waste than anaerobic process and will shorten the waste decomposition process by decades. The total amount of methane produced over the length of the landfill decomposition period will be significantly reduced with

the aerobic option. Methane is twenty-one (21) times more potent than carbon dioxide as a greenhouse gas.

Aerobic landfill technology injects oxygen and moisture into the landfill, transforming the biodegradation process from anaerobic to aerobic. The result is a gradual decrease in methane production and the production of thermal energy. Aerobic technology is currently in operation at the Don Land landfill site in the City of Toronto and implemented at the Ministry of Environment landfill in Innisfil.

Implementation of aerobic landfill requires the installation of a network of air injection wells. Atmospheric air is injected and distributed to the injection wells through a system of flexible header pipes that are buried just below the ground surface. Moisture can be added to the system through a leachate capture and recirculation system. Temperature and gas monitoring probes are required throughout the landfill to monitor system performance and to control the heat which will be generated up to 70° C. Automated monitoring using remote temperature loggers is required to ensure optimum conditions are maintained for aerobic decomposition.

The high temperature will be contained within the landfill and the temperature of the landfill surface will be controlled mainly by the ambient air temperature. There will be no significant transfer of heat from the decomposing waste through the landfill cap material.

With a full scale aerobic implementation, settlement would continue at an increased rate with possible effects to the fences and back yards of adjacent properties. Methane production will be decreased, leachate will be captured and re-circulated and a potential for carbon credits may be achieved.

Staff recommends holding a public information meeting in consultation with the Ward Councillor to seek consensus from the public for the implementation of a small aerobic test site (100m x 150m) located at the furthest point from the residents as shown on Figure 1. Staff will report back to Council with the results of the public information meeting. With public support, a future report to Council, will request authorization to implement a small aerobic test site at the former Sabiston Landfill and will request authority to enter into an agreement to partner with the OCE, Seneca College and SPL Beatty.

#### MOE Compliance Requirement

MOE conducted a site inspection of the landfill site in Dec 2010 and forwarded a Closed Waste Disposal Site Inspection Report to the Town on March 8, 2011. MOE is concerned that since there is no buffer separation between the limits of the landfill and the abutting residential properties and in some cases the landfill extends into the residential property backyards, there is possibility of methane gas migrating onto the residential homes via sub-surface deposits and has directed the Town to submit a more stringent and expanded plan to monitor methane gas concentrations within the residential properties bordering the north and west boundaries of the landfill site.

In response to MOE's request, Staff is proposing to monitor indoor air quality within the selected six (6) homes for one year on a continuous basis (bi-monthly monitoring) using a wall mounted controller equipped with an alarm system that will provide an audible alert that will

notify the resident if elevated methane concentrations are detected above a pre-set concentration. During the installation of the monitoring equipment, an initial inspection will be completed at each residence. The initial inspection will consist of measuring the concentrations of methane, carbon dioxide and oxygen. If landfill gas is detected in any of the residences at concentrations exceeding the applicable trigger criteria (i.e., 0.05 vol% methane), recommendations will be provided to undertake additional monitoring as necessary to further investigate the potential issue. Such investigation may include increasing the frequency of monitoring, inclusion of additional residential monitoring, and the completion of additional subsurface investigation (i.e., additional landfill gas probes and/or shallow soil gas survey) on the residential properties.

The indoor monitoring plan has been approved by MOE.

The Legal Department has prepared an access agreement (Attachment "A") to conduct indoor air quality monitoring within the residential properties. This agreement has been sent to six (6) selected homeowners who are currently reviewing the agreement. As of Sept 30, 2011, three of the residents have indicated their acceptance to install the monitoring equipment.

#### **FINANCIAL CONSIDERATIONS AND TEMPLATE: (external link)**

An input based public meeting should decide whether to proceed with an Aerobic Landfill test site at Settler' Park. The budget previously approved in 'Settler's Park Landfill Management' account 750-101-5399-7028 will be utilized to fund the test site program subject to the necessary approval. If the aerobic test site proceeds, the budget shortfall will be requested in year 3 of program.

##### Estimated Cost:

##### **Aerobic Landfill Test Pilot**

Year 1-Capital Costs for Aerobic Landfill	\$223,420
Year 1 to 3-Operating Costs for Aerobic Landfill (including consulting, utilities, equipment maintenance, etc.) approx. \$110k per year	\$330,000
Total Costs for Aerobic Landfill	\$553,420

##### **Indoor Residential Air Monitoring**

Year 1-Capital Costs for indoor air monitoring devices	\$40,000
Total Cost of the Aerobic Landfill Test Pilot and Indoor Air Monitoring	\$593,420

Note: the operating costs for the indoor residential air monitoring of \$24,918 has been incorporated as part of a current consultant contract.

OCE will support Seneca College's applied research on the aerobic technology and offer funding for student stipends, lab testing, supplies and minor equipment purchases with no financial impact to the Town.

Account Name	Account #	Budget Amount	Spent to date	Committed	Budget Available	Budget Required (over 3 yrs)	Short-fall*
Settler's Park Landfill Management	750-101-5399-7028	\$616,360	\$88,021	\$28,789	\$499,550	\$593,420	\$93,870

\*Shortfall to be requested as part the 2014 capital budget.

#### **HUMAN RESOURCES CONSIDERATIONS:**

Not Applicable

#### **ALIGNMENT WITH STRATEGIC PRIORITIES:**

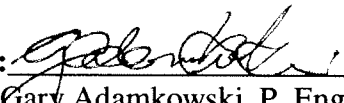
There is interest at all government levels in promoting landfill methane emissions reduction as a viable way to meeting greenhouse gas reduction targets. The use of aerobic landfill technology may assist the Town in its commitment to meet the objectives of the Kyoto Protocol. It will also allow enhanced use of land in a passive or active manner by the public at a much shorter time frame.

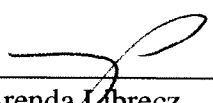
With the implementation of the Aerobic Landfill Technology, the quantification of CO<sub>2</sub> and methane reduction is still under investigation and further assessment will be required to confirm if the reductions can be quantified and if the Town will be eligible for future greenhouse gas credits which may potentially generate revenue.

#### **BUSINESS UNITS CONSULTED AND AFFECTED:**

The Finance and Legal Departments have been consulted and provided input to the report.

#### **RECOMMENDED**

BY:   
 Gary Adamkowski, P. Eng.  
 Director, Asset Management

BY:   
 for: Brenda Librecz  
 Commissioner, Community & Fire Services

#### **ATTACHMENTS:**

Figure 1 – Site Location

Attachment “A” – Agreement for Permission to Enter Residential Homes

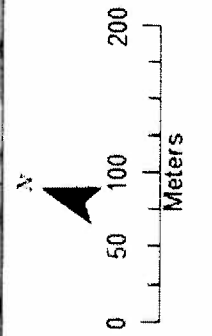


**Former Sabiston Landfill**

Site Location

**Site**

- TEST SITE
- LANDFILL
- SETTLERS PARK
- Creek



**Figure 1**

**ATTACHMENT "A"**

**PERMISSION TO ENTER**  
(the "Agreement")

**BETWEEN:**

**THE CORPORATION OF THE TOWN OF MARKHAM**  
(the "Town")

**OF THE FIRST PART**

- and -

**[Insert name of registered owner—provide municipal  
address to Legal Department to ascertain who registered  
owner is]**  
(the "Owner")

**OF THE SECOND PART**

**WHEREAS:**

- 1) The Owner is the owner of those lands and premises legally described as \_\_\_\_, municipally known as \_\_\_\_ (the "Owner's Lands").
- 2) The Town wishes to obtain a right to use and access the Owner's Lands to conduct environmental investigation as described in this Agreement.

**IN CONSIDERATION OF** the mutual covenants in this Agreement and the sum of ONE DOLLAR (\$1.00) now paid by the Town to the Owner, the receipt and sufficiency of which are acknowledged, the parties agree as follows:

1. The Owner hereby authorizes and permits the Town, together with its agents, servants, employees, consultants, contractors, contractor's workmen, subcontractors, subcontractors' workmen (collectively, "its Agents"), the right, license, liberty and privilege of access to the Owner's Lands with supplies, vehicles, equipment and machinery to conduct the following environmental investigation:
  - o Conducting an initial inspection inside the house located within the Owner's Lands to identify an appropriate location for the installation of a wall mounted continuous gas monitoring unit (the "Monitor"), such inspection to include air monitoring and testing;
  - o Installing the Monitor which will be connected to a 120V electrical wall outlet inside the house located on the Owner's Lands in a location to be determined by the Town's Agents, based on the results of the initial inspection; and
  - o Entering the house located on the Owner's Lands once every two months during the Term to collect data from the Monitor;(collectively, the "Work")

2. The Town and its Agents shall have the right to enter upon and use the Owner's Lands to conduct the Work commencing on the date of this Permission to Enter (the "Commencement Date") and ending on the date that is the one year anniversary of the Commencement Date (the "Term") subject to providing the Owner with at least five (5) days prior notice of each visit. For the purpose of providing notice under this section, the Town shall contact the Owner via telephone, email or regular mail pursuant to the notice section set out in this agreement. The Town or its Agents shall contact the Owner to arrange for each visit to the Owner's Lands. The Owner covenants to make the necessary arrangements to provide access to the Town or its Agents into the house on the Owner's Lands at the time proposed by the Town or its Agents to conduct the Work.
3. Notwithstanding that the Monitor is to be installed on the Owner's Lands, the parties agree that the Monitor shall be and shall remain the property of the Town. In the event that the Monitor becomes lost or stolen, the Owner shall compensate the Town for the cost of the Monitor.
4. The Owner covenants not to touch or interfere with the Monitor during the Term in any way after it is installed by the Town's consultants.
5. After the Work is completed, the Town shall repair damage to the Owner's Lands caused by the Work being conducted.
6. The Town covenants and agrees that the Work shall be completed at the sole risk and expense of the Town, in a good and workmanlike manner.
7. If the Owner intends to sell the Owner's Lands or any part thereof to a third party, the Owner shall notify the Town at least one (1) month prior to the closing of the purchase or sale transaction so that the Town can recover the Monitor from the Owner's Lands prior to the closing. In the event that the Owner provides the requisite notice to the Town as described and the Town is able to recover the Monitor prior to the Closing, this Owner will be released from its obligations contained in this Agreement. In the event that the Owner does not provide the requisite notice to the Town as described and the Town is not able to recover the Monitor prior to the closing, the Owner shall be responsible to the Town for the cost of replacing the Monitor. This clause will survive the termination of the Agreement.
- 8.
9. Any notice, demand, approval, consent, information, agreement, offer, request or other communication (hereinafter referred to as a "**Notice**") to be given under or in connection with this Agreement shall be given by either personal delivery, telephone, facsimile or email sent as set out below or to such other address or electronic number as may from time to time be the subject of a Notice:

(a) Owner: [Insert mailing address]  
  
Attention: {}  
Facsimile: 416 864 1737  
  
E-Mail:  
  
Tel:  
  
Purchaser: 101 Town Centre Blvd.  
Markham, Ontario  
L3R 9W3  
  
Attention:  
Facsimile:  
  
E-Mail:  
  
Tel:

Any Notice, written notice, if personally delivered, shall be deemed to have been validly and effectively given and received on the date of such delivery and if sent by telecopier, facsimile transmission or other electronic communication with confirmation of transmission, prior to 5:00 p.m., shall be deemed to have been validly and effectively given and received on the Business Day it was sent unless the confirmation of transmission was after 5:00 p.m. in which case it shall be deemed to have been received on the next Business Day.

10. Nothing in this Agreement derogates from, interferes with, or fetters the exercise by the Town of all of its rights and obligations as a municipality (whether discretionary or mandatory), or imposes any obligations on the Town in its role as a municipality, and the Town shall not be prevented from or prejudiced in carrying out its statutory rights and responsibilities. Nothing in this Agreement derogates from, interferes with, or fetters the exercise by the Town's officers, employees, agents, representatives or elected and appointed officials of all of their rights, or imposes any obligations on the Town's officers, employees, agents, representatives or elected and appointed officials, other than as expressly set out in this Agreement.
11. This Agreement shall be governed by and construed in accordance with the laws of the Province of Ontario.
12. This Agreement shall be binding upon and shall inure to the benefit of the parties hereto and their respective successors and approved assigns.

**IN WITNESS WHEREOF**, the parties hereto have executed this indenture by the hands of their proper signing officers duly authorized in that regard.

**[insert owner's name]**

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Name:

Title:

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Name:

Title:

I/We have authority to bind the Corporation

**THE CORPORATION OF THE TOWN OF  
MARKHAM**

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W. Andy Taylor

Chief Administrative Officer

I have the authority to bind the corporation pursuant to By-law 2007-144.