

**Municipality of Southwest
Middlesex
Trillium Drive Landfill
Closure and Post-Closure Care
Liability Estimates**

December 23, 2008



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08-1328

Submitted by

**Dillon Consulting
Limited**



December 23, 2008

Municipality of Southwest Middlesex
153 McKellar Street, Box 218
Glencoe, Ontario
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Attention: Mr. Jaime Francisco
Public Works Manager

**Solid Waste Landfill Closure and Post-Closure Liability
Trillium Drive Landfill (former Ekfrid Township)**

Dear Mr. Francisco:

We are pleased to provide our report estimating the costs associated with liabilities for closure and post-closure care of the operating Trillium Drive Landfill (former Mosa Township). If there are any questions, please call the undersigned at 519-438-1288 ext. 1232.

Yours sincerely,

DILLON CONSULTING LIMITED

A handwritten signature in blue ink, appearing to read "Rob Kell".

Rob Kell, P.Eng., P.Geo.
Project Manager

RFK:cmf
Encl.

Our File: 08-1328

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Figure 1 – Site Plan

Spreadsheets:

- Closure and Post-Closure Care Cost Estimates- Trillium Drive
- Closure and Post-Closure Care Cost Estimates - Trillium Drive with Monitoring Wells

1.0 INTRODUCTION

The Municipality of Southwest Middlesex engaged Dillon Consulting Limited to undertake the estimation of costs associated with liabilities for closure and post-closure care associated with the solid waste landfill Site located at 3945 Trillium Drive, Municipality of Southwest Middlesex, Ontario, Canada (The Site – see Figure 1). The landfill is currently active. The landfill consists of two parts. East Side part (Phase I) is currently active and is expected to be filled by the year 2024. West side part (Phase II) is expected to be used after Phase I is completed (in the year 2024) and is expected to be filled by the year 2049.

The liabilities must be determined annually, in accordance with new accounting standards set out by the Public Sector Accounting Board (PSAB).

The reporting period is up to December 31, 2008. The base year is 2009 (i.e., time zero for present value calculations is January 1, 2009). Although the current Certificate of Approval for the site does not require water quality monitoring, we have provided two spreadsheets: one without monitoring and one with water quality monitoring.

The major tasks undertaken were:

- Task 1 Collect and Review Relevant Information
- Task 2 Estimate Closure and Post-Closure Expenditures
- Task 3 Change in the Liability and Annual Expenditure
- Task 4 Additional Information Required.

The following report has been structured according to these tasks.

2.0 COLLECTION AND REVIEW OF RELEVANT INFORMATION

Information was provided by the Municipality of Southwest Middlesex, reviewed, and used for estimating closure and post-closure care liability. The information is listed on the appended spreadsheets.

3.0 ESTIMATES OF CLOSURE AND POST-CLOSURE EXPENDITURES

Activities for closure and post-closure care were defined, consistent with the Public Sector Accounting Recommendations PS 3270 (February 1998). Relevant cost items under these activities were identified for each landfill, based on a review of the provided information, and future expenditures were estimated.

The estimates of closure and post-closure care expenditures are presented on the appended spreadsheets. To facilitate future updates, the quantity and unit cost assumptions for each expenditure are provided, along with explanatory comments. All costs are presented in current dollars (2008).

The present values of the closure and post-closure care costs were calculated based on the expected year(s) of the expenditures and using a discount rate of 3.72%. This is based on the Province of Ontario's average long-term borrowing rate of 5.97% (supplied by the Ministry of Municipal Affairs and Housing) minus an inflation rate of 2.25% (10-year average of the Consumer Price Index from 1999 to 2008). Inflation has been accounted for in the discount rate because all costs, present and future, are expressed in current dollars (2008). Present value factors used in the calculations are shown for transparency. The sum of the discounted future closure and post-closure care costs is presented on the spreadsheets as the "Estimated Total Expenditure".

4.0 CHANGE IN THE LIABILITY AND ANNUAL EXPENDITURES

The change in liability associated with the "Estimated Total Expenditure" was determined by applying a capacity factor for the estimated fraction of the total landfill capacity used to date. Assumptions used to estimate the capacity factors are noted on the spreadsheets.

The formula, as presented on the spreadsheets, is as follows:

$$G = (A \times E) - F$$

Where: G is the Change in Liability

A is the Estimated Total Expenditure

E is the Capacity Factor (cumulative capacity used/ total estimated site capacity)

F is the Expenditures Previously Recognized

As the calculation of closure and post-closure care liability has been completed for the first time, there are no expenditures previously recognized (i.e., F equals zero). Therefore, the change in liability is the entire liability.

5.0 ADDITIONAL INFORMATION

For the notes to the Municipality's financial statements, the following information is required:

1. *The nature and source of landfill closure and post-closure care requirements:*
 - Sources and assumptions are noted on the spreadsheets.

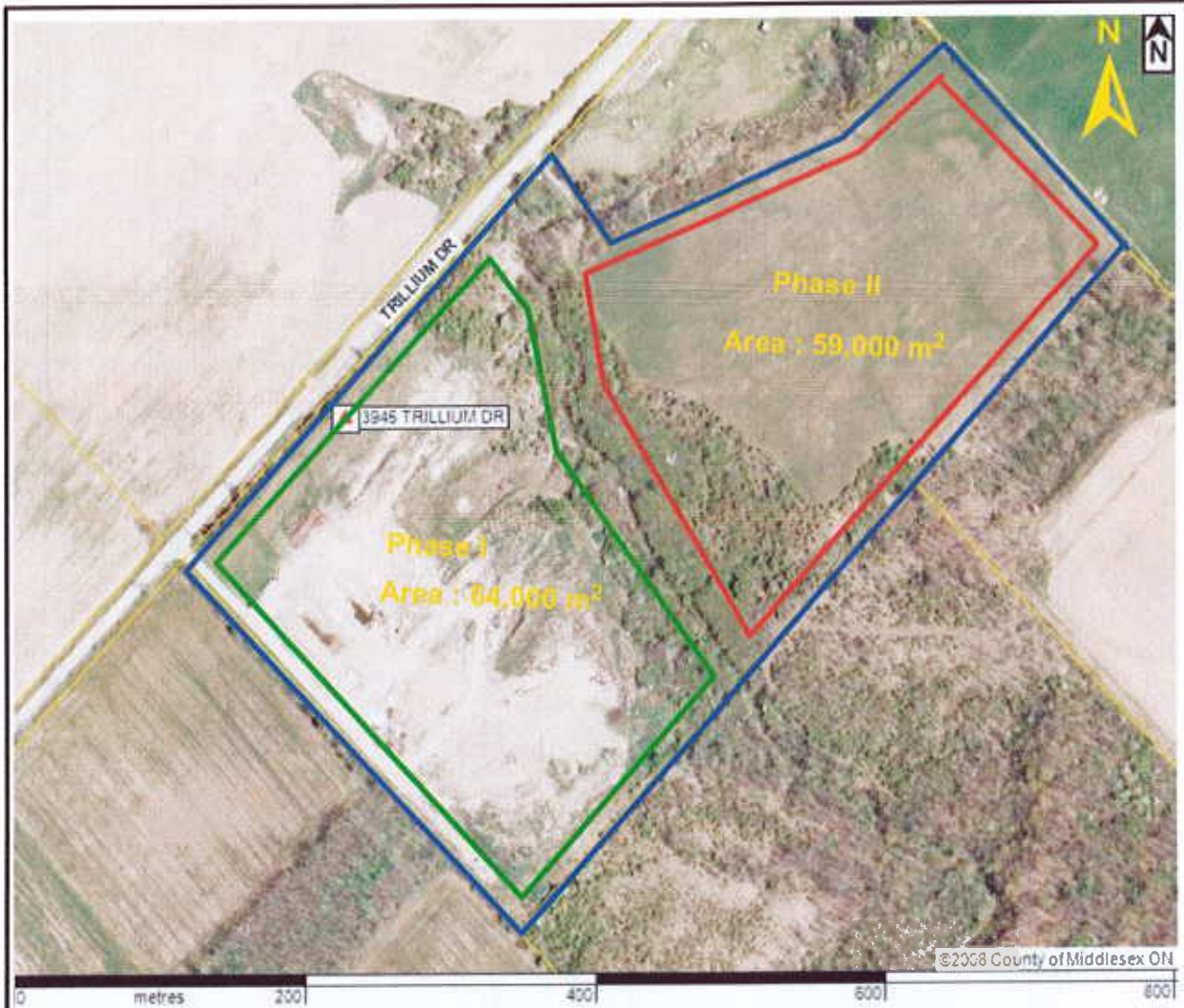
2. *The basis of recognition and measurement of the liability for closure and post-closure care:*
 - The method of determination of liability is presented on the spreadsheets.

3. *The remaining capacity of the landfill and the estimated remaining landfill life in years:*
 - The estimated remaining landfill life, including the basis for its determination, are noted on the spreadsheets at the bottom.

4. *How many requirements for closure and post-closure care financial assurance are being met, e.g., performance bonds:*
 - The Municipality should provide this information.

5. *The amount of any assets designated for settling closure and post-closure care liabilities:*
 - The Municipality should provide this information.

6. *The estimated length of time needed for post-closure care:*
 - For the sake of estimating post-closure care liability, a period of post-closure care of 25 years from the time of final cover application has been assumed. This is the minimum period for post-closure monitoring required by the Ministry of the Environment.



Source: County of Middlesex Website

-  Property Line
-  Phase I
-  Phase II



SITE PLAN

SOUTHWEST MIDDLESEX - TRILLIUM DRIVE LANDFILL

Figure 1

Cost Item	Unit	Quantity	Unit Cost	Cost	Year	PV Factor Single Pmt	PV Cost	Comments (Source)
Trillium Landfill - Active - With Water Quality Monitoring								
2008								
Phase I - East Side								
Closure Activities								
Final Cover and Vegetation	m ²	64,000	\$4.76	\$304,960	2007	0.5574	\$167,870	150 mm thick seed to support vegetation, hydraulic seeding
Vegetative Layer	m ²	64,000	\$13.60	\$870,400	2005	0.5574	\$174,814	150 mm thick seed to support vegetation, hydraulic seeding
Watchline work								100% of 100000 US fence engineering
SUB-TOTAL				\$1,175,360			\$342,684	
TOTAL CLOSURE COSTS FOR PHASE I								
				\$1,175,360			\$342,684	Closure of Phase I to an operating and not a closure cost
Phase II - West Side								
Closure Activities								
Final Cover and Vegetation	m ²	205	\$2.70	\$553.50	2048	0.2320	\$141	Call area of 225 m ² James Francklin communication
Sealing of Waste Cell	m ²	205	\$9.91	\$2,031.55	2048	0.2320	\$485	100 mm thick gravel cover soil
Gravel Cover Soil Layer	m ²	50,000	\$4.70	\$2,350,000	2048	0.2320	\$543,335	150 mm thick soil to support vegetation, hydraulic seeding
Watchline work	m ²	10,000	\$4.90	\$49,000	2048	0.2320	\$11,365	100% of 100000 US fence engineering
Watchline work	m ²	10,000	\$4.90	\$49,000	2048	0.2320	\$11,365	100% of 100000 US fence engineering
SUB-TOTAL				\$4,982,000			\$1,192,512	Closure of Phase II to an operating cost not a closure cost
TOTAL CLOSURE COSTS FOR PHASE II								
				\$4,982,000			\$1,192,512	
Post-Closure Care Activities								
Cost Item	Unit	Quantity	Cost (Annual)	Starting Year	Ending Year	PV Factor Single Pmt	PV Factor Equal Pmts	Comments (Source)
Final Cover & Vegetation Inspection/Maintenance	Hours	1000	\$5,000	2048	2074	0.2320	16,0948	understanding of 1% of capped area per year (100000)
Roads Inspection/Maintenance	Hours	1000	\$1,000	2048	2074	0.2320	16,0948	for roads with regular asphalt maintenance
Water Quality Monitoring	Hours	1000	\$20,000	2048	2074	0.2320	28,0000	for monitoring of 3% of West Side (1000 x \$40 m ² per year)
Fencing Gate Inspection/Maintenance	Hours	1000	\$1,000	2048	2074	0.2320	16,0948	for monitoring of 3% of West Side (1000 x \$40 m ² per year)
SUB-TOTAL			\$8,000				\$44,288	
TOTAL POST-CLOSURE COSTS FOR PHASE II								
							\$44,288	
LANDFILL POST-CLOSURE COST								
							\$162,512	
							\$148,224	
ESTIMATED TOTAL EXPENDITURE and the year date of CLOSURE COSTS								
EXPENDITURES PREVIOUSLY REALIZED								
CHANGE IN LIABILITY								
Rate	3.75%	(5.97% long-term borrowing rate supplied by Ministry of Municipal Affairs and Housing minus 2.25% inflation rate from 10 yr. average Consumer Price Index (1989 - 2008))						
Base Year	2008	James Francklin communication						
Expected Closure Year for Phase I	1972	James Francklin communication						
Expected Closure Year for Phase II	2004	James Francklin communication						
Expected Closure Year for Phase II	2004	James Francklin communication						
Penetrating Landfill Life in years	40	James Francklin communication						
Period of Post-Closure Care in years	25	James Francklin communication						
Expected Closure Year	2034	James Francklin communication						
All costs exclude GST								

