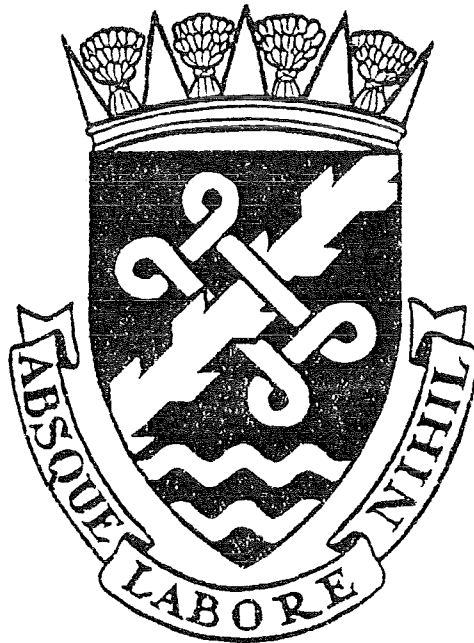


THE REGIONAL MUNICIPALITY OF HALTON



Solid Waste Management Committee

Agenda

FEBRUARY 6, 1984

THE REGIONAL MUNICIPALITY OF HALTON

MEETING NO. 2-84

NAME OF SUB-COMMITTEE: SOLID WASTE MANAGEMENT

DATE OF MEETING: Monday, February 6, 1984
8:30 a.m. (ALL DAY)

PLACE OF MEETING: Committee Room No. 1
Regional Administration Bldg.
Oakville, Ontario

A G E N D A

<u>ITEM NO.</u>		<u>PAGE NOS.</u>
	<u>DISCLOSURES OF CONFLICT OF INTEREST</u>	
1.	C.A.O. Report No. 65/84 re: Energy From Waste Submissions and Final Marketing Phase Report	(Under separate cover)
2.	C.A.O. Report No. 64/84 re: Energy From Waste Preliminary Feasibility Study - Call For Proposals	1 - 7
3.	C.A.O. Report No. 52/84 re: Preliminary Feasibility Study for Energy From Waste in Halton - In-House Study Option	8 - 25
4.	FIN. Report No. 24/84 re: Financial Analysis Portion of Preliminary Feasibility Study for Energy from Waste Project	26 - 30
5.	P.W. Report No. 19/84 re: Regional Landfill Site, Burlington, Capacity Update, File SWM Gen. 04	31 - 36
6.	P.W. Report No. 10/84 re: Permanent After-Use Plans for the Closure of the Burlington Landfill Site	37 - 39
7.	P.W. Report No. 18/84 re: Interim Waste Disposal Plan 1983, Regional Landfill Site in Burlington, "Continuation Option" Applications to the Ministry of the Environment and the City of Burlington, File: PR-788-6	40 - 55

SOLID WASTE MANAGEMENT SUB-COMMITTEE MEETING NO. 2-84
MONDAY, FEBRUARY 6, 1984

- 2 -

<u>ITEM NO.</u>		<u>PAGE NOS.</u>
8.	D.P.D. Report No. 34/84 re: Landfill Environmental Assessment - Public Participation Program by Myra Schiff and Additional Responses for the Submissions, Evaluation Factors Report, January 1984	56 - 61
9.	D.P.D. Report No. 33/84 re: Addendum to D.P.D. Report No. 24/84: Comparison between the Landfill Component Environmental Assessment Phase 2 Stage 2B Draft Evaluation Factors Report, November 1983 and the Phase 2, Stage 2B Final Evaluation Factors Report, January 1984	62 - 95
10.	<u>CONFIDENTIAL</u>	
10.	C.A.O. Report No. 63/84 re: Interim Waste Disposal Plan, 1983 - Continuation Program at Burlington Landfill Site - The Export Option Alternative - Proposition of Putting Same Forward to Environmental Assessment Board (CONFIDENTIAL)	96 - 99
11.	<u>Other Business</u>	
	<u>Adjournment</u>	

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THE REGIONAL MUNICIPALITY OF HALTON

Report to Chairman and Members of the SWM Committee
From D. Y. Perlin, Chief Administrative Officer
Date 1984 02 06
Report No CAO 64/84

Re: Energy From Waste Preliminary Feasibility Study
- Call For Proposals

RECOMMENDATION:

1. THAT CAO Report 64/84 re Energy from Waste Preliminary Feasibility Study - Call for Proposals be received for information.
2. THAT be chosen to carry out the Energy from Waste Preliminary Feasibility Study.
3. THAT the Regional cost of the Preliminary Feasibility Study, being those costs not funded by Ministry of Energy, be financed from the Resource Utilization Facility Reserve Fund.
4. THAT the Ministry of Energy, Regional Clerk and Chairman be authorized to enter into the necessary agreements with to undertake the Energy from Waste Preliminary Feasibility Study with an upset cost to the Region of . The necessary agreements will be to the satisfaction of the Regional Solicitor, the Director of Public Works, Director of Planning and Development and the Director of Finance.

REPORT:

On January 23, 1984 the Solid Waste Management Committee received the Terms of Reference for the Energy

from Waste Preliminary Feasibility Study (CAO 33/84). The following Wednesday (January 25), thirteen proposals were submitted to the Regional Clerk which were then forwarded to the Energy from Waste Task Force. At a meeting held on January 26, 1984 the Task Force agreed on a short list of six firms who would be asked to present their proposals. These firms included:

Gore and Storrie
Kilborn Limited
MacLaren Engineers/MacLaren Plansearch
H. A. Simons
SNC
Derek L. Wilson Ltd.

Upon completion of the interviews, the Task Force narrowed the list of proposals to three firms, each of which will be interviewed by the Solid Waste Management Committee. Each of these firms were considered by the Task Force to have a well-balanced project team, a good understanding of the terms of reference, and strong specific experience in undertaking studies of a similar nature. The schedule of interviews by the SWM Committee will be as follows:

10:00 a.m.	Gore and Storrie Limited in association with CR Velzy Associates Inc., Griffels Associates and Senes Consultants Ltd.
11:15 a.m.	MacLaren Engineers/Maclaren Plansearch in association with Petro Sun and GKN Berwelko
1:00 p.m.	SNC in association with IEC Beak Consultants Ltd.

Copies of the proposals submitted by these firms have been supplied to Committee members.

Appendix 'A' is a summary of ten firms that submitted proposals, along with the justification for not including them on the list of potential candidates to be interviewed by the SWM Committee. If Committee or Council members wish to review these proposals, copies can be made available by contacting either the Project Officer or the Regional Clerk.

Appendix 'B' is a summary of the items that each firm interviewed by the Task Force was asked to address. Committee members may wish to use it in their interviewing of the three short-listed firms. In addition, Appendix 'C' may be useful to Committee members to coordinate their evaluation of the three firms.

On December 21, 1983, Council approved a resolution

requesting funding from the Ministry of Energy costs incurred in undertaking the Preliminary Feasibility Study . Specifically, the resolution stated:

THAT the Ministry of Energy be requested to fund on a 50/50 basis with the Region the preliminary feasibility phase including the cost of the Project Officer, the technical and environmental assessments, and disbursements related to same.

Existing Ministry policy allows for the funding of up to 50% of the external consulting cost of studies related to energy from waste. It is recommended that the costs not eligible for Ministry funding be financed from the Resource Utilization Facility Reserve Fund. The balance in this fund at December 31, 1983 was \$452,316.

Respectfully submitted

A handwritten signature in dark ink, appearing to read "Dennis J. Perlin". The signature is fluid and cursive, with the first name "Dennis" and last name "Perlin" clearly distinguishable.

D. Y. Perlin
Chief Administrative Officer

DB/VG/pd

APPENDIX 'A'

ENERGY FROM WASTE PRELIMINARY FEASIBILITY STUDY

<u>FIRM</u>	<u>STUDY COST</u>	<u>STAFF APPRAISAL</u>
1. Acres Consulting Services Limited	\$ 69,500	- public participation program and social impact assessment weak - lack of planning expertise
2. GKN Birwelko Ltd.	\$185,515	- stronger project management through MacLaren's proposal - technical expertise can be taken advantage of through the MacLaren proposal
3. D. Greenfield and Associates Limited	\$ 29,050	- failed to comply with requirements of Terms of Reference
4. Kilborn Limited* with C.G.E. Limited and Environmental Applications Group	\$ 74,350	- lack of planning expertise - inappropriate approach to air emission evaluation
5. Robert H. Ling Engineering Co.	\$141,560	- lack of local knowledge - lack of experience in E.F.W.
6. Monenco Ontario Ltd.	\$ 45,968	- insufficient public participation program - scope of work program insufficient for Environmental Assessment - weak in planning area
7. Norman Pearson Planning Associates Limited	\$ 15,000 20,000	- failed to comply with Terms of Reference
8. H. A. Simons* (International) Ltd. with Barker Terp Gibson Ltd. Envirocon Gartner Lee Associates	\$ 91,000	- lack of direct experience in Municipal Solid Waste

- | | | | |
|-----|---|-----------|---|
| 9. | Tricil Limited
with M.M. Dillon
Limited | \$174,418 | - excessive concentra-
tion on technical
design (not required
under Terms of Refer-
ence) |
| 10. | Derek L. Wilson
Limited* with
Concord Scientific
Cogeneration Associates
Gambsy and Mannerow Ltd.
TCH Consultants Ltd. | \$ 89,700 | - weak in land use
compatibility |

* Interviewed by Task Force on Thursday, January 26, 1984

APPENDIX 'B'
PROCEDURE

1. Firms will be interviewed in alphabetical order.
2. Presentations will be no longer than 40 minutes.
A 10 minute question period will follow each presentation.
3. The Task Force has identified a number of areas of major interest. Firms are to concentrate their presentations on the areas rather than verbalize their written proposals.
The major areas of interest are:

3.1 Technical-Financial

- 3.1.1. Extent of experience in waste management and particularly Energy from Waste
- 3.1.2. Approach to calculation of capital, operating and internal modification costs
- 3.1.3. Approach to reviewing steam and/or electrical requirements of preferred customers
- 3.1.4. Types of technology to be reviewed

3.2 Environmental

- 3.2.1. Environmental Assessment - scope of analysis
- 3.2.2. Emphasis on air emissions - dioxins

3.3 Public Participation

- 3.3.1. Scope and timing of program

3.4 Miscellaneous

- 3.4.1. Commitment to upset limit
 - 3.4.2. Commitment to timing
 - 3.4.3. Experience working together
4. The Study Team is strongly encouraged to have in attendance representatives that can address and answer questions related to each of the major areas of interest.

CONSULTANT SELECTION EVALUATION FORM

Rate H = High
 M = Medium
 L = Low

Firm

Criteria	Gore & Storrie C.R. Velzy, Giffels, Senes	MacLaren Engineers E.C.E. Group (Petro Sun & GKN Birwelko)	SNC I.E.C. Beak
1. Understanding of Project			
2. Completeness of Proposal			
3. Study Timing			
4. Project Cost			
5. Local Knowledge/ Background			
6. Study Approach			
7. No. of Similar Projects			
8. Quality/Diversity of Study Team			

THE REGIONAL MUNICIPALITY OF HALTON

Report to The Chairman and Members of the Solid Waste
Management Committee
From D.Y. Perlin, Chief Administrative Officer
Date: 1984 02 03
Report No. CAO 52/84
Re: Preliminary Feasibility Study for Energy from
Waste in Halton: "In-House" Study Option

RECOMMENDATION:

THAT Report CAO 52/84 regarding a proposal to conduct an "in-house" preliminary feasibility study - technical and environmental - for energy from waste in Halton, be received for information.

REPORT:

On December 21, 1983, Regional Council approved that terms of reference be drawn up and proposals called from interested firms to prepare a preliminary feasibility study on the technical and environmental feasibility of energy from waste facility(ies) in Halton.

In addition, Council approved the following resolution:

"THAT staff prepare an In-house Analysis of the viability of staff doing the complete preliminary feasibility phase including the technical and environmental assessments in-house, with outside assistance and contract staff as required and present same to the Committee at the same time as the short list of outside firms to do same."

This report is in response to the above resolution. For the purposes of consistency in comparing this proposal to those submitted by external consultants, only the technical and environmental components of the feasibility study are addressed in this report. The terms of reference for the study stated that under both the in-house and outside options, the financial analysis will be undertaken by Regional staff. The commitment required to complete the financial analysis is contained in Report FIN 24/84.

COMPONENTS OF THE STUDY

Staff have prepared a detailed task-by-task analysis of work required to complete the preliminary feasibility study. This analysis, which is presented as Appendix 1 to this report, distinguishes between work which could be undertaken in-house, and work which must be undertaken by the contracting of outside consultants. It must be noted that the assignment of tasks to Regional staff assumes that other duties within departmental work programs are displaced. A subsequent section of this report addresses this issue.

Technical Analysis:

The technical feasibility component of the study will provide the necessary information with respect to the most appropriate type of energy from waste facility for Halton based on the three energy market alternatives of:

(1) a dedicated customer; (2) a dedicated customer with electric generation; and (3) the sale of electricity only to the hydro grid.

The technical feasibility will establish the parameters on which an energy from waste plant can be designed for each of the market alternatives and provide preliminary estimates of the cost related to the energy production of the plant(s).

The specialized nature of assessing the size and design of the plant(s) is critical to the study since it will form the basis of any future tender and, as such, a consultant with demonstrated expertise in all aspects of energy from waste would be used by Regional staff on a contract basis to formulate the majority of the technical evaluation in accordance with the terms of reference.

Environment Analysis:

The Environmental Analysis involves three components: the Social Impact Assessment; Environmental Impact Assessment; and a Land Use Analysis. The Social Impact Assessment will include the gathering of data for a social profile of each site including the identification of major participants and affected groups and individuals. A questionnaire will be sent and public meetings held to determine the concerns and issues of identified participants. The assistance of a professional consultant will be needed to develop the overall methods and criteria for the assessment. A draft report of the Social Impact Analysis will be prepared to include accommodation for mitigation measures.

For the Physical Environment Analysis, data will be gathered from existing maps, reports and by interviewing government agency personnel on water, wildlife and vegetation matters. The consultant will site inspect and inventory each site for one day in the late winter months. Potential mitigation measures will be identified and a draft report prepared. A special consultant will be involved in assessing the air shed around each site and advising on adverse effects for incorporation in the draft report.

For the Land Use Analysis, data will be gathered from maps, air photos, official plans, zoning By-laws, government regulations and guidelines for each site. The planner will site inspect each property to determine alternative building sites, buffer zones, compatibility of surrounding land uses and on-site and adjacent land use activities. For the haul routes, the planner, in co-operation with the Finance Department staff, will identify adjacent land use zoning and any compatibility difficulties. Potential mitigation measures will be identified and incorporated into a draft report including maps of land use and alternative building site locations.

COSTING AND TIME COMMITMENT FOR THE IN-HOUSE STUDY OPTION

Tables 1-A and 1-B outline the estimated study cost by participant (consultant and staff) and by tasks (technical and environmental). Under the proposal, the cost would be:

Consultant Costs		\$66,500
Staff Costs	-	<u>26,600</u>
Total Cost:		<u><u>\$93,100</u></u>

It is essential to note that the existing Ministry of Energy policy provides 50% funding for studies on EFW projects undertaken by external consultants. Therefore, proposals submitted by external consultants would be eligible for 50% funding. However, only 71% of the in-house proposal (i.e. the part done by external consultants) would be eligible for 50% funding. While the Ministry has been asked to consider funding the staff component of the in-house option, no commitment has been made to date.

For comparison purposes, Table 1-C analyzes the net Regional costs under the in-house option (\$59,850) and compares it to the costs which would be incurred by choosing one of the three short-listed firms submitting proposals to undertake this work.

TABLE 1

A - ANALYSIS OF COSTS BY PARTICIPANT - (EXCLUDING FINANCIAL COMPONENT)

	<u>Per Diem*</u>	<u>Man-Day Requirement</u>	<u>Cost</u>
<u>Consultant</u>	\$500	133	\$66,500
<u>Regional Staff:</u>			
Public Works			
Senior	240	21	5,040
Planning			
Senior	200	88	17,600
Intermediate	180	22	3,960
Regional Staff Total:		<u>131</u>	<u>\$26,600</u>
<u>Grand Total:</u>		<u>264</u>	<u>\$93,100</u>

*Staff per diem rates based on budgeted 1984 salaries, plus fringe benefits and 7% overhead, distributed over 231 working days per year.

B - ANALYSIS OF COSTS BY TASKS (EXCLUDING FINANCIAL COMPONENT)

	<u>Technical Analysis</u>	<u>Environmental Analysis</u>	<u>Total</u>
<u>Consultants</u>	\$47,500	\$19,000	\$66,500
<u>Regional Staff</u>	<u>4,560</u>	<u>22,040</u>	<u>26,600</u>
<u>Total:</u>	<u>\$52,060</u>	<u>\$41,040</u>	<u>\$93,100</u>

C. ANALYSIS OF NET REGIONAL COSTS
(EXCLUDING FINANCIAL COMPONENT)

	<u>In-House Option</u>	<u>Gore & Storrie</u>	<u>McLaren</u>	<u>SNC</u>
Consultant Cost	\$ 66,500	\$48,200	\$185,515	\$ 89,710
Less: Ministry funding @ 50%	<u>(33,250)</u>	<u>(24,100)</u>	<u>(92,758)</u>	<u>(44,855)</u>
Net Consultant Cost	\$33,250	\$24,100	\$92,757	\$44,855
Staff Cost	26,600	-	-	-
Total Regional Cost	<u>\$59,850</u>	<u>\$24,100</u>	<u>\$92,757</u>	<u>\$44,855</u>

Table 2 outlines the required commitment by staff (on a week-by-week basis) over the nineteen week preparation period. As you will note from Table 2, an extremely heavy planning commitment will be required to complete the study in-house.

REGIONAL STAFF WORK PROGRAM IN MAN-DAYS
(EXCLUDING FINANCIAL COMPONENT)

TABLE 2

WEEK BEGINNING	6	13	Feb. 20	27	5	12	March 19	26	2	9	April 16	23	30	7	14	May 21	28	4	11	Jun	Total
WORK WEEK #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19		
PUBLIC WORKS Senior	1	5	4	.5	.5	2	2	2						.5	1			.5	2		21
PLANNING Senior		5	8	12	16	12	12	15	4					.5	1			.5	2		88
Inter.		5	7	8			1		1												22
TOTAL	1	15	19	20.5	16.5	14	15	17	5	0	0	0	0	1	0	2	0	1	4		131

Particular bottlenecks would occur in weeks two to eight (Feb. 13 to March 30) which would create severe rescheduling problems in the existing committed workload of the Planning and Development Department. To a lesser extent, the Solid Waste Division of the Public Works Department would also experience some rescheduling problems, although the bulk of the technical analysis (because of its specialized nature) will be done by external consultants.

REQUIRED WORK PROGRAM RESCHEDULING

(a) Public Works Department (Waste Disposal Section)

The proposal put forth for the technical analysis encompass some 21 projected man-days for Public Works staff involvement in conjunction with that of consultant(s). The provision of this time must be considered in conjunction with other ongoing waste management responsibilities. These include:

- The preparation of the interim waste disposal plan.
- Involvement in the environmental assessment for the new landfill site.
- Continuing work with the Ontario Waste Management Corporation (OWMC).
- The development of a long-range sludge management program.

In addition, the following should be noted:

- Both the OWMC process, and the Region's environmental assessment process will be identifying sites in Feb./March.
- The Region will be going to a Hearing early in May for the interim waste disposal plan.

These three tasks will result in major demands being placed on staff during the course of the Energy from Waste preliminary feasibility study. Continued staff involvement will be required whether the overall study is done in-house or by outside consultants. However, if consultants were to undertake the project, it would result in considerably less disruption to the ongoing staff responsibilities since less staff time would be required.

(b) Planning and Development Department

The Planning and Development Department has the staff expertise in-house to complete 110 man-days of planning work on the study. Unfortunately, the terms of reference call for 106 man-days in an 8-week period. This is allocated on Table 2 with a peak of 20.5 man-days in one week. Four planners in the department will have to drop virtually all their commitments to complete the required tasks on time. It is difficult to free more than four days a week from existing staff since a minimal response to urgent requests on existing programs will be required and time will be needed for transferring of responsibilities and administrative details.

The department's initial screening of available resources revealed a maximum of 6.5 man-days per week could possibly be made available, but only with substantial impact on major work programs, including the Landfill Environmental Assessment, Ontario Hydro Corridor Hearings, Amendment No. 8 (Verico), and Rural Development policies.

To meet the terms of reference by allocating an average of 16 man-days per week for 8 weeks will eliminate or seriously affect any further work being done on many priority and even essential programs, including:

1. Landfill Component E.A.
2. Amendment No. 8 (Verico)
3. Ontario Hydro Corridor Hearings
4. Rural Development Policy Review
5. Rural Industrial Land Needs Study
6. Waterfront Working Group
7. Regional Plan Referrals
8. Transportation Study for the Disabled
9. Rural Cluster Amendment No. 5
10. Office Space Needs Study
11. Burlington Official Plan Conformity
12. Mineral Revenue Policy Review - Amendment No. 6
13. Oakville Transportation Study
14. Administrative Development Committee Administration
15. Interim Landfill Plan Preparation

The entire department's work program for 1984 is attached for Committee information in Appendix 2.

Staff considered replacing existing personnel with professional contract people to carry on the existing work commitments, but this was determined to be unfeasible. The immediate start-up requirement and the quick pace to completion make it almost impossible to hire, adjust projects, train unfamiliar people and find work space to accomplish all commitments.

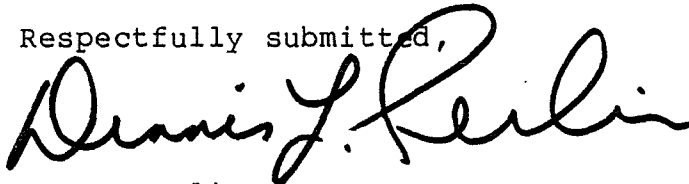
CONCLUSIONS:

The choice of the in-house option presents certain problems which make it difficult to implement. The two principal difficulties are:

1. Significant adjustments to the time allocated to other important Public Works and Planning projects would be essential to undertake the in-house work outlined in this option; and
2. Under existing Ministry of Energy policy, a 50% subsidy would not be applicable to the internal staff time allocated to the E.F.W. project.

In the assessment of the in-house option vis a vis the proposals being made by the short-listed external consultants, I trust the Committee will keep the above factors in mind and not direct the feasibility study (technical and environmental) to be done in-house. Thus, the recommendation is to receive this report for information only.

Respectfully submitted,



D. Y. Perlin
Chief Administrative Officer

DB/mm

Atts.

APPENDIX 1

This Appendix outlines the technical and environmental work required to complete the final report of the EFW preliminary feasibility study. The tasks and costs contained herein comply with the terms of reference issued to external consultants who have submitted proposals for the technical and environmental components of the study.

The financial analysis required to complete the preliminary feasibility study will be conducted internally, regardless of whether the technical and environmental components are prepared in-house or by external consultants. The tasks and costs of the financial component of the study are addressed in Report FIN 24/84.

TECHNICAL ANALYSIS

MANPOWER REQUIREMENT (MAN-DAYS)

TASK	CONSULTANT	INTERNAL STAFF			
		Public Works		Planning	
		Senior	Intermed.	Senior	Intermed
1.0 Recommend the most suitable technology, size and location for each market alternative and for each dedicated customer.					
1.1 Dedicated Customers (6 locations)					
1.1.1 Site investigation and meetings to obtain data related to detailed analysis of energy requirements for prior five years (basis for design and future tender call).	6	6			
1.1.2 Detailed analysis of energy requirements and sizing of plant to supply refuse.	12	1			
1.1.3 Determination of location and site restrictions, zoning set-back, availability (in consultation with environmental consultant).	6				
1.1.4 Review of current technology and application of dedicated customers.					
1.1.4.1 Meeting with Ministries of Energy and Environment.	1				
1.1.4.2 Technical review.	6	1			
1.1.5 Detailed review of air emission equipment and air dispersion analysis.	6				
1.2 Dedicated customers plus Electrical Grid (oversized plant) (6 locations)					
1.2.1 Review of cogeneration options	3				
1.2.2 Review of waste quantities to be disposed (20-year)		0.5			
1.2.3 Location of inter-connection, size of plant, plan preparations	3				
Accumulated Total - Technical Analysis	43	8.5	0	0	0

TECHNICAL ANALYSIS

TASK	CONSULTANT	MANPOWER REQUIREMENT (MAN-DAYS)					
		INTERNAL STAFF					
		Public Works		Planning			
		Senior	Intermed.	Senior	Intermed.		
1.2.4 Review of technology to cogenerate.	1						
1.2.5 Meeting with Ontario Hydro and H.E.C.'s.	1	1					
1.3 Electrical Grid Only. (4 locations)							
1.3.1 Determination of potential building location and necessary inter-connection to hydro grid.	4	2					
1.3.2 Review technology	2						
1.3.3 Determine size of plant	1						
2.0 Recommend the quantity of types of energy that should be available from each plant.							
2.1 Dedicated customers with/without cogeneration - detailed analysis of energy requirements related to steam and electricity (data from 1.1 and 1.2 above).	6						
2.2 Dedicated customer plus electrical grid.	2						
2.3 Electrical grid only - constant demand.	2						
3.0 Estimate capital and operating costs for each EFW plant.							
3.1 Review with equipment manufacturers various technologies and estimate manpower, maintenance, capital and other costs.	5						
Accumulated Total - Technical Analysis	67	11.5	0	0	0	0	0

TECHNICAL ANALYSIS

MANPOWER REQUIREMENT (MAN-DAYS)

<u>TASK</u>	<u>CONSULTANT</u>	<u>INTERNAL STAFF</u>			
		<u>Public Works</u>		<u>Planning</u>	
		<u>Senior</u>	<u>Intermed.</u>	<u>Senior</u>	<u>Intermed</u>
3.2 Review inflation assumptions with staff and Ministry of Energy.	1				
4.0 Assess impact of each EFW plant and landfill requirements in Halton					
4.1 Review and Analysis of current waste stream (municipal, commercial/industrial) and estimate processable component for given technology.	0.5				
4.2 Determination of waste restrictions related to given technology and calculation of waste stream and ash component to be disposed of.	2				
5.0 Assess the need for a backup system and peak stream/electricity requirements of each EFW plant.					
5.1 Review data from discussions with six dedicated customers (per item 1.0)	3				
5.2 Review of energy demands of technology for each plant.	2				
6.0 Estimate present/future cost of electricy and stream production for each alternative.					
6.1 Consult government agencies, customers and Regional staff to determine appropriate rates.	2				
Accumulated total - Technical Analysis	77	12	0	0	0

TECHNICAL ANALYSIS

<u>TASKS</u>	<u>CONSULTANT</u>	<u>MANPOWER REQUIREMENT (MAN-DAYS)</u>			
		<u>INTERNAL STAFF</u>			
		<u>Public Works</u>		<u>Planning</u>	
		<u>Senior</u>	<u>Intermed.</u>	<u>Senior</u>	<u>Intermed.</u>
7.0 Assess daily energy requirements of the dedicated customers for each EFW plant on a per hour basis over the year.					
7.1 Review historical data from item 1.0 and calculate load duration curves.	2				
8.0 Identify internal modifications necessary for each customer and estimate cost to implement.	5	1			
9.0 Estimate amount each dedicated customer should be prepared to pay for steam and/or electricity from EFW plant.					
9.1 Review energy costs for past five years.			1		
9.2 Analyze capability of existing equipment to meet 20-year demand.			2		
9.3 Audit current costs of energy and recommend costs.			1		
10.0 Assess the technical advantages of each energy market alternative for recommended sites.					
10.1 Review market alternatives and ability of available technology to meet required energy demands for dedicated customers with and without cogeneration, assessing the incremental costs of cogeneration and comparing all alternatives to electrical generation only.	3				
11.0 Preparation of technical report					
11.1 Draft report	4	1			
11.1.1 Staff/consultant review	1	1			
11.2 Attend Committee & Public Meeting	2	2			
11.3 Revise report	1	2			
Total Manpower Requirements - Technical Analysis	<u>95</u>	<u>19</u>	<u>0</u>	<u>0</u>	<u>0</u>

ENVIRONMENTAL ANALYSIS

<u>TASK</u>	<u>CONSULTANT</u>	<u>MANPOWER REQUIREMENT (MAN-DAYS)</u>			
		<u>INTERNAL STAFF</u>			
		<u>Public Works</u>		<u>Planning</u>	
		<u>Senior</u>	<u>Intermed.</u>	<u>Senior</u>	<u>Intermed.</u>
12.0 <u>SOCIAL IMPACT ASSESSMENT</u>					
12.1 Gather data for social profile each area.				6	6
12.2 Identify major participants and affected groups and individuals.					
12.2.1 Data collection					3
12.2.2 Analysis				3	
12.3 Determine concerns and issues by a questionnaire and public meetings or workshops.					
12.3.1 Data collection				4	4
12.3.2 Analysis				8	
12.4 Develop methods and criteria for social impact assessment.	5			1	
12.5 Prepare a draft social impact analysis including mitigation measures.	2			5	
12.6 General discussions with the consultant on the process.	2			2	
Manpower Requirement - Social Impact Component	9	0	0	29	13
13.0 <u>PHYSICAL ENVIRONMENT</u>					
13.1 Gather existing data from maps, reports, agency personnel on water, wildlife and vegetation.				6	6
13.2 Site inspect and undertake one day inventory on each site.	10				
13.3 Identify potential mitigation measures.				3	
13.4 Assess air shed and identify any adverse effects.	10				
13.5 Prepare draft of environment impact assessment.	2			5	
13.6 General liaison with consultants	1			1	
Manpower Requirement - Physical Environment Component	23	0	0	15	6

ENVIRONMENTAL ANALYSIS

	<u>CONSULTANT</u>	MANPOWER REQUIREMENT (MAN-DAYS)			
		<u>INTERNAL STAFF</u>			
		<u>Public Works</u>		<u>Planning</u>	
		<u>Senior</u>	<u>Intermed.</u>	<u>Senior</u>	<u>Intermec</u>
14.0 <u>LAND USE ANALYSIS</u>					
14.1 Gather data from maps, air photos, Official Plan, Zoning By-laws, Guidelines, Regulations, etc. for each site.				3	3
14.2 Site inspect for alternative building sites, buffer zones, compatibility of surrounding land uses, on site and adjacent land use activity (within 1/2 mile).				12	
14.3 Identify land use zoning adjacent to identified haul routes.				6	
14.4 Identify potential mitigation measures.				4	
14.5 Prepare draft report including maps of land use and alternative building sites.				12	
Manpower Requirement - Land Use Component		<u>0</u>	<u>0</u>	<u>37</u>	<u>3</u>
15.0 <u>PREPARATION OF ENVIRONMENTAL REPORT</u>					
15.1 Co-ordinate environmental analysis	2	1		2	
15.2 Staff/consultant review	1	1		1	
15.3 Attend Committee & Public Meetings	2			2	
15.4 Revise report	1			2	
Total Manpower Requirements - Environmental Analysis	<u>38</u>	<u>2</u>	<u>0</u>	<u>88</u>	<u>22</u>

APPENDIX 2

1984 Planning and Development Department
Work Program

Task/Project	Priority	Days Allocatd	Per cent Allocatd
DEVELOPMENT COORDINATION			
XS** Plan of subdivision applications	Essential	173	6.66
XC** Plan of condominium applications	Essential	38	1.46
XL** Land division applications	Essential	121	4.66
XA** Official plan amendment applications	Essential	104	4.00
XZ** Zoning by-law/vaience applications	Essential	107	4.12
XT** Site plan applications	Essential	15	0.58
XN** NEC permit applications	Essential	42	1.62
XP** Parkway Belt development applications	Essential	38	1.46
XV** Servicing applications	Essential	21	0.81
XG** General development enquiries	Essential	65	2.50
DV03 Development procedures review	High	67	2.58
YD05 Development application data system	High	85	3.27
DV01 Administrative Development Committee	Essential	40	1.54
Total		916	35.27
CORPORATE PROJECTS			
CR01 Lot levies review	Essential	7	0.27
CR02 Office space needs study	High	10	0.39
CR03 Property record management system	High	6	0.23
CR04 Office automation study	High	3	0.12
Total		26	1.00
PROVINCIAL PLANS			
PP02 Niagara Escarpment Commission final report	Essential	28	1.08
PP03 Proposed amendments to Parkway Belt West Plan	Essential	17	0.65
PP04 Parkway Belt West Plan review	Essential	19	0.73
Total		64	2.46
REGIONAL PLAN			
RP01 Regional Plan referrals and deferrals	Essential	54	2.08
RP02 Regional Plan amendment application--Hltn Hills	Essential	18	0.69
RP03 Regional Plan review and monitoring	Essential	35	1.35
Total		107	4.12
LOCAL PLANS			
LP01 Local plan conformity--Burlington	Essential	25	0.96
LP02 Local plan conformity--Milton	Essential	6	0.23
LP04 Local plan conformity--Halton Hills	Essential	5	0.19
LP05 OPA #7: Burlington Urban Area North of Hwy 5	Essential	4	0.15
LP06 Hamlet secondary plans	Essential	12	0.46
LP07 OPA #3: Acton Urban Area	Essential	39	1.50
LP08 OPA #4: Georgetown Urban Area	Essential	33	1.27
Total		124	4.77
SETTLEMENT			
ST01 OPA #5: Rural Clusters	Essential	10	0.39
ST02 Rural development policies review	High	62	2.39
Total		72	2.77
WATERFRONT			
WF01 OPA #8: Waterfront Policies Implementation	Essential	74	2.85
DEMOGRAPHICS			
DM02 Regional Information System Committee	Low	5	0.19
DM01 Population forecasts update	High	35	1.35
DM03 Housing study update	High	34	1.31
DM04 Burlington urban staging study	High	8	0.31
Total		82	3.16
ECONOMIC DEVELOPMENT			
EC01 Retail business holiday exemptions	Medium	3	0.12
EC03 Regional shopping centres impact guidelines	Low	12	0.46
EC02 Rural industrial land needs study	High	34	1.31
EC04 Tourism study	High	10	0.39
Total		59	2.27

Task/Project	Priority	Days Allocatd	Per cent Allocatd
TRANSPORTATION			
TR02 Regional/Provincial transportation liaison	Medium	8	0.31
TR03 Halton Hills transportation study	High	3	0.12
TR10 Oakville transportation study update	High	8	0.31
TR08 OPA #9: Transportation Policies Review	Essential	12	0.46
TR09 Guelph Line traffic analysis	Medium	5	0.19
TR04 GO-ALRT western section	High	5	0.19
TR05 GO-ALRT northern link	Medium	8	0.31
TR06 Public transport vehicle applications	Low	5	0.19
TR07 Transportation study for the disabled	High	58	2.23
Total		112	4.31
SEWER AND WATER SERVICES			
SW01 OPA #2: Sanitary Sewer & Water Supply Policies	Essential	5	0.19
SW02 Urban and rural servicing guidelines	High	18	0.69
SW03 Master servicing and financing scheme--Oakville	High	15	0.58
SW07 Master servicing and financing scheme--Burlgtn	High	14	0.54
SW08 Master servicing and financing scheme--Ht Hills	High	17	0.65
SW05 Master servicing building permit system	High	171	6.58
SW06 Master servicing net developable acreage study	High	12	0.46
Total		252	9.70
SOLID WASTE			
SD01 Landfill environmental assessment coordination	Essential	360	13.86
SD02 Energy from waste study	Essential	36	1.39
SD03 Interim landfill plan	Essential	22	0.85
Total		418	16.10
HEALTH AND SOCIAL SERVICES			
HS01 Elderly services study	Medium	4	0.15
HS02 Day care study update	Low	3	0.12
Total		7	0.27
AGRICULTURE			
AG01 Agricultural Advisory Committee	Essential	54	2.08
AG02 Agricultural policies review	High	25	0.96
Total		79	3.04
FORESTRY			
FR01 Forestry policies implementation	High	18	0.69
MINERAL RESOURCES			
MN01 OPA #6: Mineral Resources Policies Review	Essential	41	1.58
ENERGY			
EN01 Ontario Hydro southwestern route study	High	18	0.69
HAZARD LANDS			
HZ01 Hazard lands and watershed plans	Low	9	0.35
ENVIRONMENTALLY SENSITIVE AREAS			
ES01 Ecological and Environmental Advisory Committee	Essential	80	3.08
ES02 Environmental impact assessments	High	14	0.54
ES03 Environmental sensitive areas info programme	Medium	25	0.96
Total		119	4.58
SUMMARY			
35	Essential	1837	70.74
25	High	673	25.91
6	Medium	53	2.04
5	Low	34	1.31
71	Total	2597	100.00

THE REGIONAL MUNICIPALITY OF HALTON

TO: The Chairman and Members of the Solid Waste
Management Committee
FROM: J. L. Rinaldo, Regional Treasurer
DATE: 1984 02 02
REPORT NO. FIN 24/84
RE: Financial Analysis Portion of Preliminary
Feasibility Study for Energy from Waste Project

RECOMMENDATION:

1. THAT Report FIN 24/84 re Financial Analysis for the Preliminary Feasibility Study for the Energy from Waste project in Halton be approved.
2. THAT the Regional Treasurer be authorized to hire one contract person, at a cost not to exceed \$6,000, to allow for day-to-day financial analysis work to continue pending the completion of the financial analysis work required on the preliminary feasibility study for the energy from waste project.
3. THAT the Regional Treasurer be authorized to retain a financial consultant at an upset cost of \$4,000, to undertake analysis on the financial implications of private ownership of energy from waste facility(ies.)
4. THAT the contract position and any consulting costs be financed from the Resource Utilization Facility Reserve Fund.

REPORT:

Report CAO 6/84, the recommendations of which were approved by Regional Council on December 21, 1983, sets out the provisions for undertaking the preliminary feasibility assessment for energy from waste in Halton.

In that report, it is suggested that the required technical and environmental components of the study be undertaken by an external consultant, but that the financial analysis be undertaken in-house by staff of the Finance Department. The contents of the report presented herein outline the details of the Finance Department's commitment required to complete the financial component of the study.

In addition to the commitment for finance staff to undertake the financial analysis, a further resolution was approved which specifically states:

THAT staff prepare an In-house Analysis of the viability of staff doing the complete preliminary feasibility phase including the technical and environmental assessments in-house, with outside assistance and contract staff as required and present same to the Committee at the same time as the short list of outside firms to do same.

The technical and environmental components of this in-house option are presented in a separate document, Report CAO 52/84.

The Financial Analysis will be concerned with appraising the viability of each E.F.W. alternative found to be technically and environmentally acceptable. The ultimate consideration will be to assess the total cost of waste disposed, incorporating the costs involved in both the E.F.W. and landfill components of the waste disposal system. In addition to the municipally-owned E.F.W. option, investigations will be undertaken to assess the impact of other financing possibilities.

Costing and Time Commitment for the Financial Component

The appendix to this report outlines the tasks which must be undertaken to complete the financial analysis for the preliminary feasibility study. Costing for this work and the scheduling over the study period are presented on Tables 1 and 2 which follow. In summary, costs will be:

Consultant Costs	\$ 4,000
Staff Costs	<u>15,040</u>
Total Costs	<u><u>\$19,040</u></u>

TABLE 1

ANALYSIS OF COSTS FOR FINANCIAL COMPONENT

	<u>Per Diem*</u>	<u>Man-Day Requirements</u>	<u>Cost</u>
Consultant	\$500	8	\$4,000
Staff:			
Senior	220	39	8,580
Intermed.	190	34	<u>6,460</u>
			\$15,040
Grand Total:			<u><u>\$19,040</u></u>

*Staff per diem rates based on budgeted 1984 salaries, plus fringe benefits and 7% overhead, distributed over 231 working days per year.

TABLE 2

FINANCE STAFF WORK PROGRAM

(Man-Days)

	Feb. 6 13 20 27	March 5 12 19 26	April 2 9 16 23 30	May 7 14 21 28	Jun 4 11	Total
WORK WEEK #	1 2 3 4	5 6 7 8	9 10 11 12 13	14 15 16 17	18 19	
SENIOR		4 5 4	5 4 5 5 3	.5 1	.5 2	39
INTERMED.		5 5 4	5 4 5 5 1			34
TOTAL:	0 0 0 0	0 9 10 8	10 8 10 10 4	.5 0 1 0	.5 2	73

Under the present funding policy of the Ministry of Energy, the \$4,000 in consulting fees would be eligible for a 50% grant, but the \$15,040 in staff costs would not be eligible. Therefore, net Regional cost is anticipated to be \$17,040.

Required Work Program Adjustments

As Table 2 indicates, completion of the financial component will necessitate a full-time commitment by one senior staff member (Senior Policy Analyst), and one intermediate staff member (Capital Budget and Debt Analyst) throughout weeks six to twelve (March 5 to April 27). In addition, the commitment during weeks seven to eleven (April 30 to June 15) may be in excess of that presented, should extensive revision be required to the draft report.

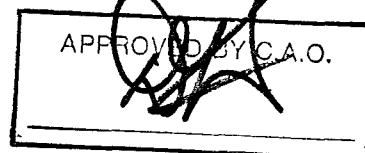
To complete the financial component of the preliminary feasibility study, all or part of the following tasks will be displaced:

- Application for M.O.E. grants.
- Restructuring of debenture issue files
- Maintenance of computerized debenture listings and issuance of cheques to debenture holders.
- Preparation of a new debenture registry.
- Processing of tile drainage debentures.
- Maintenance and upgrading of capital work-in-progress accounts.
- Initiation of tasks required to implement the Oakville Master Servicing and Financing Scheme.
- Preparation of capital contributions study.
- Continued work on landfill E.A. process.
- Required work which may be needed if a Regional debenture issue is undertaken.
- Policy paper on capital budget procedures.

Certain of the tasks listed above cannot be deferred, while others may be deferrable. To ensure that the required tasks are completed, it has been determined that one additional contract position would be necessary for a period of approximately three months. This would be an intermediate level financial analyst position at a total cost not to exceed \$6,000. It is recommended that funding for this position be made from the Resource Utilization Reserve Fund.

Respectfully submitted,


J. L. Rinaldo
Regional Treasurer and
Director of Finance



DB/mm

Atts.

FINANCIAL ANALYSISAPPENDIX

<u>TASKS</u>	<u>CONSULTANT</u>	<u>MANPOWER REQUIREMENT (MAN-DAYS)</u> <u>INTERNAL FINANCE STAFF</u>	
		<u>Senior</u>	<u>Intermed.</u>
1.0 Initial tipping fee calculations.			
1.1 Calculation of EFW tipping fee (excluding consideration of haul costs and landfill costs.	2	3	3
1.2 Sensitivity analysis based on the sale of steam and on various levels of external funding (Province)		3	3
2.0 Calculation of haul costs.			
2.1 Development of haul routes.		3	3
2.2 Establishment of net waste generation.		3	2
2.3 Preparation of haul cost matrix.		5	5
3.0 Integration of total EFW costs (including haul and land costs) with landfill costs to produce "all in" tipping fee.		5	5
4.0 Investigation of alternative financing, including leasing option and turnkey.	5	7	7
5.0 Preparation of Financial Report:		2	2
5.1 Draft Report		5	5
5.2 Staff/consultant review	1	1	
5.3 Attend Committee & Public Meetings		2	
5.4 Revise report		2	1
TOTAL MANPOWER REQUIREMENTS - FINANCIAL ANALYSIS	8	39	34

REGIONAL MUNICIPALITY OF HALTON

Report to The Chairman and Members of the
Solid Waste Management Committee

From The Director of Public Works

Date 1984 02 03

Report No. PW.19/84

Re Regional Landfill Site, Burlington,
Capacity Update, File SWM Gen.04

RECOMMENDATION

1. THAT Public Works Report PW.19/84 re Regional Landfill Site, Burlington, Capacity Update, be received for information.
2. THAT Public Works staff continue to monitor the remaining capacity at the Burlington Landfill Site and report back to Committee as and when necessary.

REPORT

Our landfill capacity has been monitored for a number of years now by means of a computer program based on information from our records and aerial photography. The latest estimated site closure date is August, 1984. M.M. Dillon has been retained throughout to analyze the program results and prepared capacity updates which predict the waste capacity remaining to approved contours and estimate site closure. Reports have been submitted twice yearly, at six month intervals, since 1980. A copy of Dillon's current report dated December 19, 1983 based on April 29 and October 28, 1983 photography is attached hereto.

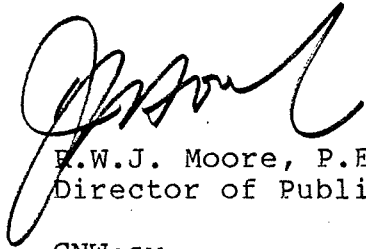
The estimated closure time is, to all intents and purposes, the same as the closure date predicted in the Dillon "Burlington Landfill Site Report on Possible Continued Use - Revised" dated October 20, 1983, and is consistent with the "Region of Halton, Waste Quantities Forecast, October 1983 Update" that was done as part of the work by Walker Wright and Young for the Environmental Assessment of our new landfill component.

Although there was an overall decrease in waste quantities in 1983 compared to 1982, due in large part to the depressed economy, the decreasing trend seems about to stop, based on waste quantities entering the Burlington site during November and December of 1983. With the recent upturn in the economy, the indications are that the waste quantity forecast of an increase in 1984 over 1983 made in October, 1983 for the Environmental Assessment and the Report on Possible Continued Use is accurate.

The current Capacity Update shows that there was a fill surplus of 22,740 m³ on October 28, 1983. At the rate good clean, free of charge fill has been coming into the site from various construction activities in the vicinity, the chances are very good that there will be sufficient fill onsite to operate Phase A, should it be approved, and there should be no need to pay for imported material. In fact, given the present rate of availability of free of charge fill, there may be no need to pay for importing material for any of the first three phases, A, B or C, should they be approved.

Future update reports on capacity will be dependent upon the extent to which approvals are obtained for the 4-phase continued use plan for the site.

Respectfully submitted,



E.W.J. Moore, P.Eng.
Director of Public Works

GNW:sw
Attach.





Consulting Engineers & Planners

OUR FILE: 9100-51-5

YOUR FILE:

19 December 1983

The Regional Municipality
of Halton
P.O. Box 7000
1151 Bronte Road
Oakville, Ontario
L6J 6E1

Attention: Mr. G.N. Woodburn, P.Eng.
Manager, Waste Disposal

Burlington Landfill Capacity
Update

Dear Sirs:

We are pleased to provide the latest site capacity update and volume calculations for the Burlington Landfill. Study data, based on 29 April and 28 October 1983 photography, was produced by Northway-Gestalt and analyzed by Dillon. Study results obtained are summarized as follows:

Refuse Density Achieved	-	760 kg/m ³
Refuse to Cover Ratio	-	3.8:1
Estimated Site Closure	-	August (Beginning of) 1984
Cover Material Surplus	-	22,740 m ³

Outlines of the calculations undertaken are attached.

The refuse density and refuse to cover ratio calculated appear quite realistic. These results are due to the accurate records of incoming cover material now kept at the landfill site. As noted, there is now a projected cover material surplus at the landfill.

The estimated site closure date was based on the waste quantity projections established in the "Report on Possible Continued Use - Revised" (20 October 1983, M.M. Dillon Limited).

.....continued

- 33 -

DILLON

The Regional Municipality
of Halton

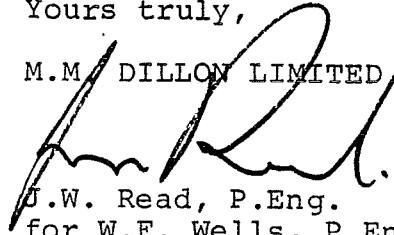
- 2 -

19 December 1983

We trust the above is satisfactory. Should you have any questions, please contact the undersigned.

Yours truly,

M.M. DILLON LIMITED

A handwritten signature in dark ink, appearing to be 'J.W. Read', written over the company name.

J.W. Read, P.Eng.
for W.F. Wells, P.Eng.
Project Manager

JWR:llly
Encls:

14 December 1983

BURLINGTON LANDFILL
SITE CAPACITY

1. VOLUME UTILIZATION

Total volume used between photos		169,440 m ³
Net Fill used:		
i) Fill excavated at site (includes 15% for bulking)	33,690 m ³	
ii) Fill from previous stockpiles	7,280 m ³	
iii) Fill trucked into site (64,043 tonnes)	33,180 m ³	
iv) Less fill left in stockpiles (includes buffer area + top soil stockpiles)	(17,460 m ³)	
TOTAL GROSS FILL USED	56,690 m ³	
LESS: 15% for losses (infilling of refuse voids, etc)	8,500 m ³	
TOTAL NET FILL USED	48,190 m ³	(48,190 m ³)
REFUSE VOLUME.....		<u><u><u><u><u>121,250 m³</u></u></u></u></u>

Waste received at site = 92,215 tonnes

∴ DENSITY ACHIEVED = 760 kg/m³

2. REFUSE:COVER RATIO

From 1; Net Fill Used	-	48,190 m ³
Less Final Cover where Placed	-	(15,000 m ³)
Less Fill Used in Access Road Work	-	(1,440 m ³)
FILL USED FOR INTERMEDIATE & DAILY COVER	-	<u><u><u><u><u>31,750 m³</u></u></u></u></u>

∴ 121,250 m³ Refuse: 31,750 m³ Fill

OR 3.8:1 REFUSE TO COVER

3. REMAINING CAPACITY

Volume Remaining to Final Contours (includes future excavation)	- 255,730 m ³
Less 0.6 m Final Cover	- (34,200 m ³)
Refuse, intermediate + daily cover	- 221,530 m ³
Less cover at 4:1 Refuse to Cover Ratio	- (44,310 m ³)
REFUSE VOLUME AVAILABLE.....	177,220 m ³
Refuse Tonnage Capacity (assuming 750 kg/m ³ density)	132,920 tonnes

Using:

October/83 : 1,200 tonnes (Filled after photo)
November/83: 15,102 tonnes (Region's records)
December/83: 14,000 tonnes (Estimate)
1984 : 14,600 tonnes/month

.. ESTIMATED SITE CLOSURE - August (Beginning of) 1984

4. FUTURE FILL REQUIRED

Final Cover at 0.6 m	- 34,200 m ³
Intermediate and Daily Cover (4:1 Refuse to Cover Ratio)	- 44,310 m ³
Less Fill Available in Current Stockpiles (Topsoil stockpile not included)	- (15,220 m ³)
Less Fill Remaining to be Excavated (includes 15% for bulking)	- (86,030 m ³)
TOTAL FILL DEFICIT (SURPLUS).....	<u>(22,740 m³)</u>

.. A FILL SURPLUS PRESENTLY EXISTS

REGIONAL MUNICIPALITY OF HALTON

Report to The Chairman and Members of the
Solid Waste Management Committee

From The Director of Public Works

Date 1984 02 03

Report No. PW.10/84

Re Permanent After-Use Plans For the Closure of
the Burlington Landfill Site

RECOMMENDATION

1. THAT the City of Burlington be canvassed as to its interest in the use of the existing Regional Landfill Site in Burlington upon its final closure and, if interested, be requested to commit itself to the development of an after-use plan for the permanent existing Regional Landfill Site in conjunction with the Region of Halton.
2. THAT, should the City of Burlington not be interested in the use of the lands concerned and/or the development of a permanent after-use plan for the Site, then Regional Staff and consultants be authorized to develop such a permanent after-use plan for the closure of the Site for presentation to Regional Council for adoption.

REPORT

Report CAO.377/83 dated 1983 12 02 which was approved by Regional Council on 1983 12 07, set out the continued use of the Burlington landfill site as a part of the Interim Waste Disposal Plan 1983 for the Region. As such, work is proceeding in order to complete an application necessary to the Ministry of the Environment in order to obtain approval for the four-phase continuation of the Burlington site, as set out in the revised report prepared by M.M. Dillon Engineering dated October 20, 1983.

In order to complete the Region's responsibility with respect to the closure of the Burlington site at some future date, it is necessary that a permanent after-use plan be prepared for the site when landfilling operations cease. At the moment, a preliminary after-use plan is being prepared. On 1984 01 10 staff met with Mr. P. Rice of the Royal Botanical Gardens in order to research the type and location of vegetation which might best grow on top of the landfill site. Staff of the Halton Region Conservation Authority, City of Burlington, and Dillon Consulting Engineers were also in attendance. As a result of this meeting, a site visit was arranged for 1984 01 17 to view the site location. It was Dr. Rice's opinion that the Royal Botanical Gardens would be prepared to participate with the Region in a tree planting program, and that this could best be accomplished through a carefully prepared plan, with input from all concerned with the site.

It is the view of Regional staff that any tree planting program should be co-ordinated through the City of Burlington as part of an overall after-use plan for the Burlington Landfill Site. To date, no formal interest in the use of the lands or any formal commitment to develop a permanent after-use plan has been received from the City, however it has generally been accepted that it will most likely revert to passive recreational uses under the direction of the City.

In preparing this Report, we are requesting the co-operation of the City of Burlington to work with Regional staff in the preparation of a permanent after-use plan for the Burlington landfill site and hopefully make a commitment to an after-use program which could be administered through the Burlington Parks and Recreation Department.

Such a permanent plan when developed could, if done expeditiously, take the place of the Preliminary After-use Plan now being prepared to support the application for approval under the Environmental Protection Act.

Should the City of Burlington not be interested in the use of the lands after closure and/or not wish to prepare an after-use plan for the Burlington site in conjunction with the Region, Regional staff would request authorization to prepare such a plan, utilizing our own staff resources plus the Halton Region Conservation Authority, the Ecological and Environmental Advisory Committee (EEAC), those neighbouring the site, and any other concerned agencies. Even if the Region itself was to pursue the preparation of the permanent after-use plan, hopefully this could encompass the requirements of the City of Burlington. Such a permanent after-

use plan would, in all likelihood, be restricted to passive type uses. Once prepared, the permanent after-use plan would be brought to the Solid Waste Management Committee and Regional Council for approval.

Respectfully submitted,



R.W.D. Moore, P.Eng.
Director of Public Works

GNW:sw



REGIONAL MUNICIPALITY OF HALTON

Report to The Chairman and Members of the
Solid Waste Management Committee

From The Director of Public Works

Date 1984 02 03

Report No. PW.18/84

Re Interim Waste Disposal Plan 1983, Regional
Landfill Site in Burlington, "Continuation Option"
Applications to the Ministry of the Environment
and the City of Burlington, File PR-788-6

RECOMMENDATION

1. THAT the Chairman and Clerk be authorized to execute on behalf of the Corporation of the Regional Municipality of Halton the application and any other required documentation to the Ministry of the Environment (MOE) for the issuance of the necessary certificate of approval under the Environmental Protection Act, for the continuation of landfilling at the Regional Sanitary Landfill Site on the Highway 403 North Service Road in the City of Burlington in four continuous phases (Phases A, then B, then C, and then D), as outlined in the M.M. Dillon Limited October 20, 1983 "Burlington Landfill Site Report on Possible Continued Use - Revised".
2. THAT the application be submitted by February 15, 1984 with as much supporting documentation as is possible with the remainder of the supporting documentation for the application to be submitted to the MOE before the end of March, 1984.
3. THAT copies of the application and supporting documentation be submitted at the same time as to the MOE, to the site neighbours (Elstone, Aitken, Walker, Johnson, National Sewer Pipe, Cumis and Tridon, etc.), the City of Burlington, the

West Burlington Ratepayers Group, EEAC, and the Conservation Authority, for their information.

4. THAT the Environmental Assessment Board be apprised of the urgency of the application and be requested to schedule the Environmental Protection Act Public Hearing for the earliest time possible in May 1984.
5. THAT the Chairman and Clerk be authorized to execute on behalf of the Regional Municipality of Halton the application and any other required documentation to the Lieutenant Governor in Council to exempt the 4 Phase Continuation Program at the Regional Sanitary Landfill Site in Burlington from the application of the Environmental Assessment Act and the Regulations thereunder in light of the present Environmental Assessment for the Long-Term Landfill Component now underway and the requirement in any case of a public hearing under the Environmental Protection Act.
6. THAT, should a certificate of approval be received for the continued use of the site, a "Burlington Landfill Advisory Committee" be established to oversee and report to the Planning and Public Works Committee on the establishment and day-to-day operation of the Continuation Program and to oversee and report to the Planning and Public Works Committee on the termination, closure, after-use, and post-closure care of the site. Such Advisory Committee shall consist of a Regional Councillor, a Regional staff person, the Regional contractor operating the site, a Local Councillor, a staff person from the City, a representative of EEAC, a representative of the Conservation Authority, a representative of the industrial neighbours, a representative of the residential neighbours, and a representative from the West Burlington Ratepayers Association.

7. THAT the City of Burlington be requested to reconsider its opposition to the proposed 4 Phase Landfill Continuation Program at the Regional Landfill Site in Burlington, and enter into a Site Plan Agreement with the Regional Municipality of Halton which would cover the usual Site Plan matters similar to the past agreement covering the original expansion to the site in 1980, but also confirming that only as many of the proposed 4 Phases as are necessary will be utilized until commencement of operation of the long-term landfill component for Halton.

REPORT

Application for Approval

Regional Council, on December 7, 1983, endorsed the "Continuation Option" of the Interim Waste Disposal Plan, 1983, and directed staff to approach M.M. Dillon Limited to act as consultants and make every possible effort to expedite approvals.

M.M. Dillon was approached and meetings have been held with Dillon and the Ministry of the Environment to expedite the application to the Ministry for approval under the Environmental Protection Act.

The Public Hearing required by the Minister cannot be held before May because of the time required for:

1. Completion by the Region of all of the proper supporting documentation.
2. Technical review by the MOE.
3. Review of the application and associated information by the Hearing Board.
4. The giving of notice by the Environmental Assessment Board of the date of the Hearing.

A hearing early in May is a reasonable target and would allow enough time for a complete Hearing and to gain approval and prepare the site for continued filling beyond the time when the present approved capacity runs out in August. At least four weeks lead time will be needed to raise the Bell cable which traverses Phase A, and do other work to prepare Phase A for the receipt of waste.

In order to facilitate the Ministry's technical review and help us to be ready for a May hearing, the Director of Environmental Approvals for the Ministry will accept an application with partial supporting documentation in February, with the understanding that the remainder of the documentation will be submitted before the end of March. The Ministry must file complete information with the Environmental Assessment Board before the hearing can be officially scheduled.

Our consultants advise that, although a large part of the documentation and some preliminary design work can be ready by mid-February, it will be mid or late March before all supporting documentation can be ready, mainly because environmental data collection and hydrogeologic sampling and analysis that is necessary to confirm the site setting and establish final design parameters can not be completed before March. The consultants have confirmed that the following information however, can be ready to submit by the middle of February with the application:

- The Interim Waste Disposal Plan
- Neighbouring Land Use Plan
- The Preliminary After-Use Plan Report
- The Base Line Environmental Analysis
- The Parkway Belt West Plan Report
- The Planning and Land Use Report
- The Need and Waste Quantities Report
- The Traffic and Site Access Report
- The Surface Drainage Report
- The Leachate Treatment Report
- The visual Analysis Report
- Some Preliminary Design Work

Various outside consultants are being brought in to supplement Dillon's own areas of expertise. They include Gartner Lee Associates for hydrogeology, Dr. Lush of I.E.C. Beak Associates for surface water contamination, Valcoustics Limited for noise analysis, and Land Plan Collaborative Ltd. for visual analysis. M.M. Dillon's estimated budget for the preparation of the applications and all supporting information is attached to this report as Appendix 1.

Regional Council's earlier direction, given in November, 1983 to approach the City and the Royal Botanical Gardens regarding an experimental program of tree planting on the site is well along. Two meetings with staff of the City, the RBG, and the Halton Region Conservation Authority have been convened by our Planning & Development Department, and indications are that both RBG and the City are prepared to participate in the experimental program, and the Conservation Authority is prepared to lend any assistance that it can based on their experience. M.M. Dillon is now at work on a preliminary conceptual after-use plan for the site which is a prime requisite to a tree planting plan.

Recommendations 1 through 4 have been prepared, permitting execution and submission to the MOE of the application for the necessary Certificate of Approval under the Environmental Protection Act for the 4 Phased Continuation Program. Direction is given that the application be submitted by February 15th, with as much supporting documentation as is complete, with the remainder of the supporting documentation to be submitted to the MOE before the end of March, 1984. The third recommendation provides that copies of the application and supporting documentation be submitted to the site neighbours, the City of Burlington, West Burlington Ratepayers Group, to EEAC and the Conservation Authority at the same time as they are submitted to the MOE. Thus the application and that documentation that is submitted on February 15th to the MOE should also be submitted to the neighbours, etc. and then, as further documentation is submitted to the MOE through to the end of March and indeed, onward to the Hearing, that documentation should also be circulated to those involved.

The recommendation with respect to circulation has been prepared based on those who have indicated an interest to date as far as site neighbours are concerned. Of course, the City, the West Burlington Ratepayers, EEAC, and the Conservation Authority have also been involved when one considers the organizations that have made representation.

The fourth recommendation is put forward as far as contacting the Board is concerned to try and make sure that a Hearing date in early May is reserved and that a sufficient period of time, such as three or four weeks, is provided.

The formal request for a hearing by the Ministry of the Environment would not come forward until the end of March, and while it would be possible to schedule a hearing 30 days later, the Board may be planning a number of hearings for the Spring and we should indicate the necessity of the hearing that will take place right now, to try and have the Board at least "pencil in" a hearing in Halton for that time period.

In addition, the purpose of the fourth recommendation is to let all of the parties who have been interested to date, such as site neighbours, the City, the West Burlington Ratepayers, that we are looking at a May date for the hearing so that people can prepare for that time period, and make arrangements to try and take time off if they have to and/or have their witnesses lined up for the four weeks in May and not be taken by surprise in late March or early April with the announcement of a hearing date in May.

Exemption From the Environmental Assessment Act

A waste disposal site application falls, for approval purposes, under two Acts, the Environmental Assessment Act and the Environmental Protection Act. Procedures are available to obtain exemption, as far as Environmental Approval is concerned, from one act or the other.

In previous reports Regional staff have indicated that an exemption should be sought from the Environmental Assessment Act because essentially, when it comes to considering alternatives, that very process is now being followed with respect to the long term landfill component and is a process that is therefore not applicable to this interim waste situation. Further, the process itself is a much broader process with much broader terms of reference and would take an extensive period of time with much duplication related to the process we are now already in the midst of with respect to the landfill component. Further, the process under the Environmental Protection Act will require a public hearing, and that has been made clear by the Minister of the Environment.

Thus recommendation #5 is put forward to authorize the formal application to the Lieutenant Governor in Council to exempt the 4 Phase Continuation Program at the Regional Sanitary Landfill Site in Burlington from the application of the Environmental Assessment Act and the regulations thereunder in light of the present environmental assessment for the long-term landfill component now underway and the requirement in any case of a public hearing under the Environmental Protection Act.

Burlington Landfill Advisory Committee

The Region is committed to the design, construction, operation, termination, closing out, and after-use of the Burlington Landfill Site as part of the Landfill Continuation Program in a sensitive, effective, and environmentally sound way. To assist in this regard, we are suggesting the establishment of a "Burlington Landfill Advisory Committee" to oversee the Continuation Program from start to finish should a certificate of approval be received. The Advisory Committee would watch over and advise on the establishment of the Continuation Program, the day-to-day operation, the termination, the closure, the after-use, and the post-closure care. The Advisory Committee would also receive the complaints and make recommendations and suggestions for improvements that could remedy or overcome the complaints.

The recommended make up of the Advisory Committee would involve representation from those involved in the operation of the site, together with representatives of those who have expressed concerns and lodged objections to the Continuation Program.

The site can and will be operated well, but in spite of best efforts, certain irritants arise from time to time such as blowing litter on windy days, noise from certain types of vehicles, use of the site outside normal working hours by trail bikes and all-terrain vehicles, etc. The Advisory Committee would be able to assist with and ensure as much as possible that the irritants are dealt with in proper and timely fashion.

In General, the establishment of an Advisory Committee should held satisfy some of the concerns that our neighbours, members of the West Burlington Ratepayers Group, and the City have about the way the landfill is established, operated, monitored, closed out, and perpetually cared for. Thus Recommendation No. 6.

Agreement With City of Burlington

We are recommending that the City be requested to reconsider their opposition to the continuation option.

The City has given a number of reasons for opposing any expansion of the existing site. The following points are extracted from the City C.A.O.'s report 55/83 (Revised) dated August 11, 1983:

- "1. Social costs outweigh the financial benefit. The West Burlington Ratepayers Association members' anxiety represents a significant social cost of the proposed expansion.
2. The long-term effectiveness of the leachate control system at the Burlington site is intrinsically unknowable. Any harmful long-term environmental effects that may flow from any expansion can only increase the social costs.
3. The proposed expansion has the potential to distract the Region from its task of securing permanent landfill capacity. We would prefer to construct a situation in which the logical solution is to secure permanent disposal capacity.

4. The export option represents a significant test of the off-landfill approach to waste disposal and provides an opportunity for Burlington citizens to weigh the financial and social cost of waste disposal as individuals, as well as providing an incentive for the expansion of separation at source and other waste diversion initiatives."

By way of answer to the concerns that the City has voiced, we would point out that the continuation plan is to landfill additional waste in an environmentally safe manner, utilizing the latest state of the art technology. The anxiety about the site and anxiety about the long-term effectiveness of the leachate control system will likely be in people's minds, whether or not the continuation plan is gone ahead with. However, we are prepared to strive for any mutually agreeable solution that will lessen the anxiety and the associated social cost.

There has been an urgency for some time now to come up with new disposal capacity and find and put into operation the new long-term landfill component. We can assure the City that any interim capacity provided through continued landfilling at the existing Burlington Landfill will not lessen the pressure to find the new long-term landfill component. The Continuation Program will not have any effect on the environmental assessment work program; it is proceeding on schedule now and hopefully will stay on schedule from this point forward.

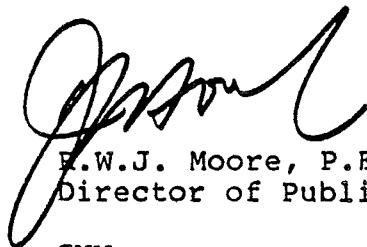
We will continue at all times to strive for increased source separation. The export of waste would have had marginal, if any, effect on the number of fractions being separated or the quantities. Markets for separated materials will continue to have the largest single influence on the extent of removal of materials from the wastestream for recycling and/or re-use, although recognizing the importance of Halton's Recycled Resources in the collection of these separated materials.

Other concerns that have been voiced by the West Burlington Ratepayers Group and the neighbours of the site include the fact that the present expansion was to have been the last one in 1980, and yet here we are back applying for further continuation in 1984. People are asking what assurance there is that the Region won't try to carry on landfilling at the existing site after the present continuation plan has run out.

Many of the City's concerns and the other concerns could perhaps be alleviated through a new Site Plan Agreement with the City which would be similar to the previous one entered into with the City, but would also formally commit the Region to resolution of any problems associated with the present operation, and would confirm that the Continuation Program will be designed, constructed, operated, monitored, terminated, closed out, and then monitored and cared for after closure in accordance with the conditions and the reports, plans, and other documents attached to any environmental certificate of approval and/or as otherwise agreed to with the City. The agreement could also formalize the commitment that there would be no further landfilling at the existing site beyond Phases A, B, C and D (if all four phases received approval) and that the existing site would cease operations in any case when, and as soon as, the new long-term landfill component went into operation. Thus Recommendation No. 7.

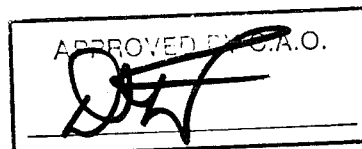
We therefore submit this report to Committee on the basis of the previous recommendations of Council that the Region's Interim Waste Disposal Plan 1983 include the continued use of the existing Regional Landfill Site in Burlington and that application be made to the Province for the necessary exemption and approvals.

Respectfully submitted,



E.W.J. Moore, P.Eng.
Director of Public Works

GNW:sw
Attach.



BURLINGTON LANDFILL SITE
PROPOSED CONTINUED USE

DESIGN AND OPERATIONS REPORT
TABLE OF CONTENTS

1. INTRODUCTION
 - 1.1 Purpose and Scope
 - 1.2 Background
 - 1.3 Site Description
2. WASTE QUANTITIES AND CHARACTERISTICS
 - 2.1 Rates of Refuse Generation
 - 2.2 Waste Characteristics
3. SITE DEVELOPMENT CONSIDERATIONS
 - 3.1 General
 - 3.2 Property Ownership
 - 3.3 Zoning and the Parkway Belt Plan
 - 3.4 Site Traffic
4. SITE DESIGN
 - 4.1 Design Approach
 - 4.2 After-use Plan
 - 4.3 Final Contour Design
 - 4.3.1 Visual Impact
 - 4.4 Base Contour Design
 - 4.5 Waste Capacities
 - 4.6 Surface Drainage
 - 4.7 Leachate Collection
 - 4.8 Leachate Disposal and Treatment
 - 4.9 Site Access

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(continued)

- 5. SITE OPERATION AND DEVELOPMENT OF PHASES
 - 5.1 Staging of Operations
 - 5.2 Daily Operations
 - 5.3 Surface Drainage Control
 - 5.4 Operational Development
 - 5.4.1 Phase A
 - 5.4.2 Phase B
 - 5.4.3 Phase C
 - 5.4.4 Phase D
 - 5.5 Site Maintenance
 - 5.6 Access Control
 - 5.7 Litter Control
 - 5.8 Dust Control
 - 5.9 Site Equipment
 - 5.10 Operating Hours
- 6. SITE RECORDS AND OPERATIONS MONITORING
 - 6.1 Waste Quantities and Site Updates
 - 6.2 Water Quality Monitoring
 - 6.3 Gas Monitoring
- 7. SITE REHABILITATION

APPENDIX 1

RECEIVED
JAN 17 1984
MAYOR'S OFFICE

9319-02

16 January 1984

RECEIVED

17 JAN 1984

PAUL W. MOORE
PUBLIC WORKS

The Regional Municipality
of Halton
P.O. Box 7000
1151 Bronte Road
OAKVILLE, Ontario
L6J 6E1

Attention: Mr. R.W.J. Moore, P.Eng.
Director of Public Works

Burlington Landfill Site -
Hearing Preparation: Estimated Budget

Dear Sirs:

During the last week, we have held several review meetings with different team members to consider the work required for the preparation of an Application to the Ministry of the Environment and defend the Region's position at the Environmental Hearing.

The budget given contemplates the needs of the Ministry of the Environment in order to appear as a party to the hearing, and the expected opposition from the City of Burlington and the West Burlington Ratepayers Association.

The expected budget is outlined below. Work is already underway on many tasks so that we can comply with the meeting date of 30 January and an initial filing date of 15 February.

HYDROGEOLOGY (Gartner Lee Associates Limited)

Installation of Boreholes	\$ 7,000	
Monitoring and Slug Tests	3,300	
Field Mapping	600	
Backhoe Test Pits	1,400	
Data Collating	5,500	
Lab Testing of Soils	1,200	
Data Analysis	17,200	
Report Preparation	13,000	
Disbursements	800	
	<u>\$50,000</u>	
Allowance for Project Team		
Meetings and Review Meetings	<u>10,000</u>	\$60,000

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The Regional Municipality
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16 January 1984

PLANNING AND ENVIRONMENTAL ANALYSIS (M.M. Dillon Limited)

A. Parkway Belt Conformity Review

- Review and assessment of goals of Parkway West Plan, analysis of background documents.
- Environmental analysis regarding objectives of Parkway Belt Plan.
- Review, report preparation and meetings. \$ 6,500

B. Planning Report

- Evaluation of planning policies as they affect the landfill.
- Assessment of land use of the site and around the site.
- Impact analysis on land use and after-use plan. \$ 4,900

C. Natural Environment Report

- Field inventory of natural environment, on and around the site.
- Preparation of baseline study.
- Evaluation of 9 concerns issued by E.A.A.C.
- Committee review, meetings, and report preparation. \$ 6,000

D. Landfill Design Input

- Determination of end use with City of Burlington, Region and R.B.G.
- Preparation of alternate afteruse and revegetation plans.
- Assessment and selection of preferred afteruse plan.
- Preparation of section for landfill design report. \$ 6,000

E. Coordination

- Project management and budget for review meetings with team, Region, Solicitors and M.O.E. \$ 3,000 \$26,400

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16 January 1984

HYDROLOGY (M.M. Dillon Limited)

- Review of site drainage, analysis and design of drainage works for the Regional Storm. \$ 2,200
- Preparation of report section, design review and meetings. 800 \$ 3,000

TRAFFIC ENGINEERING (M.M. Dillon Limited)

- Collating of traffic data and site records, development of traffic patterns at the site. \$ 600
- Review and assess traffic impacts including road design and speed limits. 1,800
- Report preparation, meetings and review function. 600 \$ 3,000

WATER QUALITY AND CHEMISTRY

(Partly included in GLAL. Remainder is Dillon and Beak (D. Lush).)

- Review, collating and analysis of surface and ground water chemical data. \$ 4,000
- Assessment of all sampling programs, interpretation of meaning of chemical results regarding water quality and effects on human health. 4,200
- Report preparation and attendance at meetings. 900 \$ 9,100
- Expert assistance and critical review by Dr. D. Lush (I.E.C.-Beak Ltd.) \$ 3,000 \$ 3,000

LANDFILL APPLICATION AND REPORT (M.M. Dillon Limited)

- Coordination of all of the above activities and input to total design. \$ 2,500
- Development of a detailed design and operations scheme for the site to include all analyses of the other components listed above. 9,500

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- Preparation of a report including integration of all analyses from different expert groups, preparation of Applications under EPA and for exemption from Environmental Assessment Act, and all supporting documentation for each. \$ 8,600
- Attendance at all meetings, liaison with Region, Legal Counsel, M.O.E. etc. 3,500
- Survey of monitors and travel disbursements. 2,000 \$ 26,100

NOISE ANALYSIS (Valcoustics)

- Analysis and preparation of a report on the noise, noise impacts and mitigating measures regarding the site. \$ 5,000 \$ 5,000

LEACHATE TREATMENT

- Analysis of additional sample results of leachate. Review of sewage works loading from leachate. \$ 2,200
- Process review based on chemistry results and analysis of treatment of leachate and impact on effluent and sludges. \$ 2,800
- Calculation of treatment costs, report preparation and meetings. \$ 1,100 \$ 6,100

REPORTS, GRAPHICS ETC.

(It is expected that a large number of reports will be required).

- Graphics, mapping, cover preparation, drafting. \$ 6,000
- Report printing and delivery. 5,000 \$ 11,000

TOTAL BUDGET ESTIMATE.....\$152,700

Two other items are considered optional but may be required and should be budgetted.

1. Sampling - additional field sampling for surface and ground water may be needed depending on lab results not yet received. Allowance should be made for lab and field costs of sampling. Allow \$15,000

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16 January 1984

2. Visual Analysis - formal work may be required, not included in the foregoing, including exhibit preparation. Allow	\$ 3,000	\$ 18,600
TOTAL BUDGET.....		<u>\$171,300</u>

Some of the above has already been billed. Approximately \$7,400.00 of Gartner Lee's work for meeting attendance and monitor installation has been completed. At least \$6,200.00 worth of invoices is currently with the Region for payment.

We have attached a Draft Table of Contents for the Design and Operations Report. Appendix material will include:

- Planning Report
- Environmental Analysis
- Chemical Data
- Traffic Analysis
- Noise Report

The Hydrogeological Report will be submitted as a separate document. At the suggestion of Mr. Perlin, a loose-leaf format similar to the Site 'F' Application is being considered.

The above budget covers the work program for the completion and filing of all technical information with an Application for a Certificate of Approval. We have not provided an estimate for hearing preparation or for attendance at the hearing. This can be done at a later date when the parties are more clearly defined and time allocation can be identified.

All billing will be done on a time basis with invoices submitted on a monthly basis. All subconsultant invoices and disbursements will be passed on at cost.

Yours truly,

M.M. DILLON LIMITED

W. F. Wells

W.F. Wells, P.Eng.
Project Manager

WFW:lly

cc: G. Woodburn, P.Eng.
Manager, Waste Disposal

THIS COPY FOR <

REGIONAL MUNICIPALITY OF HALTON

Report to Chairman and Members of the Solid Waste Management
Committee

From R. Mohammed, Director of Planning and Development

Date 84 02 02

Report No DPD 34/84

Re: Landfill Environmental Assessment - Public
Participation Program by Myra Schiff and
Additional Responses for the Submissions,
Evaluation Factors Report, January 1984

RECOMMENDATION

That DPD 34/84 on Landfill
Environmental Assessment - Public
Participation Program and
Additional Responses for the
Submissions, Evaluation Factors
Report January 1984 be received for
information.

REPORT

1. Public Participation Program

Mr. Peter Walker is scheduled to appear at SWMC at 3:00 p.m. on February 6, 1984, to introduce Myra Schiff, the new public participation expert, on the Landfill EA Study team. Myra will outline her proposal to upgrade the Public Participation Program involving the receipt and circulation of the Stage 2B Report on Candidate Sites. Mr. Walker has indicated that the Public Participation Program will not involve any additional costs beyond those stated in the Stage 2B Work Program. The consultant would appreciate some discussion from the Committee as to their thoughts on the public participation program.

Staff believe that the public interest will be more intense once the candidate sites are identified in the Stage 2B Draft Report. Therefore, our Public Participation Program will need to be more extensive.

The consultants will be presenting their ideas on arrangements for a press conference, possible speaking engagements, media coverage and proposed dates for a series of open houses in March. The Stage 2B Report identifying candidate sites is scheduled for SWMC's review on March 5, 1984.

2. Additional Responses for the Submission, Evaluation Factors Report January 1984

- (a) Comments from the Tremaine Britannia Citizens Group on the Draft Evaluation Factors were received at the last minute and the Consultant was unable to do the required research and prepare a response for inclusion in the Submissions, Evaluation Factors Report before the printing deadline. The comments of the Citizens Group and the consultant's response are attached as Schedule A for Committee's consideration. This response will be circulated to the Citizens Group for their information.
- (b) One small section of the response to the Ministry of the Environment's comments was received from the consultant too late for printing into the Submission's Report. The response is to the second part of Question No. 8 in the letter from the Ministry of the Environment dated December 21, 1983. The Ministry's question was an explanation of the term "potential for hydraulic containment of leachate" should be provided. The response from the consultant is:

the "potential for hydraulic containment of leachate" is a factor that would be investigated to ensure that groundwater flow is and can be maintained toward a potential quarry site for landfilling.

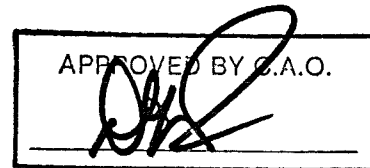
This will be circulated to the Ministry of the Environment for their information.

Respectfully Submitted,



R. Mohammed,
Director of Planning & Development

PA:ml



COMMENTS ON THE REGION OF HALTON LANDFILL ENVIRONMENTAL ASSESSMENT DRAFT
EVALUATION FACTORS, PHASE 2, STAGE 2B, SELECTION OF CANDIDATE SITES,
SUBMITTED BY THE TREMAINE-BRITANNIA CITIZENS GROUP

1. As this document is aimed at selection of candidate sites, and we have previously commented that inappropriate factors have been used to determine the candidate areas in which the sites would be selected, it is inappropriate for us to critique this document in any detail. We do not believe it is appropriate to critique a document which is part of a process that has gone off on the wrong track at the last and most important stage. There is little, if any, point in looking for candidate sites when the Region has determined it will not look at many other areas or other technologies in a timely manner. Please refer to our previous comments where we have urged consideration of other areas and not proceeding with the determination of appropriate areas for sites for landfill except in conjunction with the energy from waste programme.

2. We again repeat that it seems inappropriate in the case of the Region of Halton, where sewage treatment plants with seemingly adequate capacity are available for the treatment of leachate, to continue to insist that landfill sites must be located as far as possible from such plants by siting them in rural areas. The "engineer ability" factors discussed in this document ought to have been applied or, if applied, given much more priority in previous documents in order not to conclude that the only site for a landfill site is in a rural area, as was concluded and apparently accepted in the last document (except for consideration to be given to quarries).

3. The one comment we would make about this particular document is that certain of the items referred to on page 4, being the "essential elements in the determination of candidate sites at this Stage 2B", ought to have been applied at the earlier time when candidate areas were selected. We refer specifically to "economic impacts of various waste disposal options" and "compatibility with existing and planned land use". "Community impacts" might also be put into this category. If all of these factors were seriously considered at the previous stage, it is highly unlikely that candidate areas would not have been selected within built-up areas of the Region as opposed to insisting that they be thrust into the agricultural heartland of the Region.

**
** DPD 34/84 **
** SCHEDULE A **
**

4. With regard to Item 4.0 on page 19, we wonder how one can eliminate certain areas less than 100 acres when it has not yet been determined how many sites or whether a multi-site approach will be taken. This question obviously is appropriate also with regard to costing. How can intelligent decisions about haul costs and transfer stations, etc. be evaluated when no decision has been made as to whether multi-sites or one site is to be adopted?

RESPONSE TO D. ESTRIN
SUBMISSION FROM THE
TREMAINE BRITANNIA CITIZENS GROUP

STAGE 2B DRAFT EVALUATION FACTORS

The order of comments in the submission letter will be maintained in the response, as follows:

1. The feasibility of implementing an Energy from Waste option for solid waste disposal in Halton is being investigated by a Regional Task Force. We believe the results of the Task Force findings are to be publicly released at each stage in the work, and will be discussed at public open houses sponsored by the Region of Halton.

The Environmental Assessment study team is carrying out its site selection process for the landfill component of the solid waste management system as intended and as stated. Other respondents, such as the Ministry of the Environment, have concurred with the timing of both the Environmental Assessment and the Regional Task Force on Energy from Waste. In addition, a Regional Council resolution has been passed which is intended to ensure that the landfill component capacity may be reviewed by the Region at the completion of each subsequent stage in the Environmental Assessment and, finally prior to the commencement of Phase III involving preparation of the Environmental Assessment document. This resolution was put in place primarily to allow the E.A. study team to respond to possible changes in the landfill component as a result of the Region's investigations of EFW.

Consideration will be given at a broad level to the current results of the Region's Task Force on possible alternative markets for the Energy from Waste Option, until a specific location or locations for an Energy from Waste facility is determined.

2. As the comments in the second statement refer to a previous comment by the respondents, we would reiterate the response given by the study team in the Submission Report for Phase 2, Stage 2A, as follows:

"It is true that an inferior or, for that matter, a poor hydro-geologic site can be engineered to allow for the collection and treatment of leachate. However, if this process of site selection was to be used, then all areas of the Region would become equally suitable. We also premised the site selection process on the principle of protection of the natural environment as a first priority item. Consequently, sites which can provide natural protection to groundwater sources were considered a significant factor in achieving the first objective."*

*Submission Report, Phase 2, Stage 2A, General Overview Analysis, October, 1983. Page 25.

In addition, we would point out the engineerability of landfill sites involves a cost component since the feasibility of the principle depends on costs of implementation. The objective of Stage 2A: General Overview Analysis was to de-emphasize economic costs and to base the selection of candidate areas on environmental protection in hydrologically suitable locations. We are intending to review the engineerability factor in Stage 2B on a comparison basis of candidate sites.

3. The factors to be applied in Stage 2B rely more heavily on local information, which could not have been satisfactorily obtained for the screening of the entire Region in Stage 2A. However, we disagree with the respondent's contention that certain Stage 2B factors ought to have been applied when the candidate areas were selected.

The economic impacts and implications of waste disposal options were considered in the Stage 2A report, by various zones within the Region. As the economic factors were considered a fourth priority item in Stage 2A, the economic impacts had the least effect in the selection of candidate areas. However, the aspect of compatibility with existing and planned land use was incorporated at an appropriate level of detail in the selection of candidate areas as described in the General Overview Analysis Report.

More detailed consideration will be given to the economic, land use and community impact issues in the selection of candidate sites.

4. An explanation of the rationale for eliminating areas (excluding quarries) is provided in item 4.0.

The limitation on 100 acres is compatible with consideration of a multi-site system since the possibility of multi-sites is not precluded within the areas to be identified. Decisions with respect to "haul costs and transfer stations" will be made by looking at each candidate site as a potential part of both a multi-site and single site system.

REGIONAL MUNICIPALITY OF HALTON

Report to Chairman and Members of the Solid Waste
Management Committee

From R. Mohammed, Director of Planning and Development

Date 84 02 02

Report No DPD 33/84

Re: Addendum to DPD 24/84; Comparison between the
Landfill Component Environmental Assessment Phase
2 Stage 2B Draft Evaluation Factors Report,
November 1983 and the Phase 2, Stage 2B Final
Evaluation Factors Report, January 1984

RECOMMENDATION

That Addendum to DPD 24/84;
Comparison between the Landfill
Component Environmental Assessment
Phase 2 Stage 2B Draft Evaluation
Factors Report and the Phase 2
Stage 2B Final Evaluation Factors
Report be received for information.

REPORT

At their January 23, 1984 meeting, the Solid Waste Management Committee, in considering DPD 24/84, requested that I prepare a summary document which compares the Draft Evaluation Factors Report with the Final Evaluation Factors Report in order to identify changes which were made by the consultants.

Staff have prepared the above-noted summary document which has been attached as Schedule "B". The left hand column of each page is a reproduction of a page from the Draft Evaluation Factors, Phase 2, Stage 2B, Selection of Candidate Sites report released in November 1983.

The right hand column of each page outlines all changes made to the Draft Report by including the appropriate excerpts from the Final Report and indicating whether the changes were a revision or a deletion. Minor changes have been underlined for reference.

I have also attached as Schedule "A", a document prepared by the Environmental Assessment consultants, which outlines the reasons major changes to the Draft document were made, these changes being based on submissions received by the consultants.

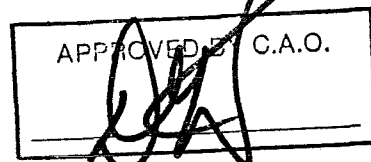
In order to clearly outline all revisions which will be made to future draft landfill reports, the Region's consultants have been directed to prepare summary documents, similar to Schedules "A" and "B", to accompany all future Landfill Environmental Assessment Final Reports.

Respectfully Submitted.



R. Mohammed,
Director Planning and Development

SP/pjb



HALTON ENVIRONMENTAL ASSESSMENT
 STAGE 2B: SELECTION OF CANDIDATE SITES
 REVIEW OF REVISED EVALUATION FACTORS

1. INTRODUCTION

The purpose of this review is to describe the revisions to the Draft Evaluation Factors Report for Stage 2B. The draft evaluation factors were circulated to the Study Mailing List on November 17, 1983. Comments from the public agencies, the public and interest groups were received by the Environmental Assessment study team, and changes to the draft evaluation factors were made accordingly. A Submissions Report for Stage 2B was prepared, dated January, 1984. The Final Evaluation Factors Report was adopted by the Solid Waste Management Committee on January 23, 1984. This report has been prepared at the request of the Solid Waste Management Committee to clarify specific changes from the draft to the final version of the Stage 2B evaluation factors.

The changes made to the draft evaluation factors are explained below in the context of responses from specific groups or individuals. The order of changes follows the original draft report, marked by page number references.

It should be noted that minor revisions were made in the final report to clarify the meaning or intent of certain sections. However, these revisions do not alter the original scope or purpose of the factors and are not specifically noted below.

2. OVERVIEW GENERAL FRAMEWORK

Page 1, General Framework

The discussion with respect to interim and long term waste quantities has been changed to reflect Council's decision of December 7, 1983 to adopt Option 1 -- continued use of the existing Burlington landfill site -- as the interim waste disposal option, and to describe the implications of this decision with respect to the Environmental Assessment. These changes were incorporated in response to the Region of Halton.

Page 2, Proposed Methodology for Selection of Candidate Sites

The text has been modified to clarify the difference in level of detail from Stage 2A to Stage 2B. An additional explanation is provided with respect to the "buffer areas" in response to submissions from the Ministry of the Environment, The Region of Halton and the City of Burlington.

Page 6, Evaluation Factors

- Under Category B, Natural Environment, the Earth and Life Science Resources has been changed to Renewable and Mineral Resources in response to the Ministry of Natural Resources.
- The factor "airborne contaminants" has been removed from Public Health and Safety and now appears only in the Social Environment category, in response to the submission from the Regional Municipality of Halton.
- Category F, Engineering, has been changed to Engineering and Operations.
- The term "Engineerability" within Category F has been deleted at the request of Halton's Ecological and Environmental Advisory Committee. These changes were made because engineering factors are covered in Category A, Public Health and Safety.

3. DESCRIPTION OF EVALUATION FACTORS BY CATEGORY

In general, the sub-factors for evaluation (formerly evaluation measures) have been expanded to include an explanation of the "Severe", "High", "Moderate", "Low" ratings. This has been done in response to submissions from the Ministry of Natural Resources, the Ministry of the Environment and the Regional Municipality of Halton.

Page 7, Public Health and Safety

The following changes have been made at the request of the Regional Municipality of Halton, together with HAAC and EEAC:

- The words "off-site" have been added to Objective A1, to convey the intention to look at the potential impact from the movement of contaminants from the landfill.
- Objective A2 and Factor A2 (" . . . off-site migration of potential contaminants . . .") have been deleted. The Potential Water-borne Sediments sub-factor is incorporated under impacts on B1, Surface Water. Airborne Contaminants will be considered in the context of Category C, Social Environment.
- A new sub-factor was added under Factor A.2, Traffic Safety, for School Bus Routes and Farm Traffic, in response to general concerns raised by the public and the Regional Municipality of Halton.

Page 9, Natural Environment

- The factors and impact ratings for Objectives B1, B2 and B3 have been revised and clarified in response to submissions from the Ministry of Natural Resources, the Halton Regional Conservation Authority and Halton's Ecological and Environmental Advisory Committee. Additional explanatory notes have also been provided. A new sub-factor Streams Currently Used for Agricultural Practices was added at the request of the Halton Agricultural Advisory Committee, to reflect local concerns.
- Significant refinements of the sub-factors on Agricultural Resources were included following consultation between the agricultural specialists for the study team and the Halton Agricultural Advisory Committee. A new sub-factor, Surrounding Land Use Patterns, has been introduced to reflect the importance of land tenure considerations. Levels of impact have been specified with respect to this and other sub-factors. The Farm Characteristics sub-factor is now stated in terms of agricultural potential as well

as historical farm significance. The General Rehabilitation Site Requirements sub-factor is now excluded, in response to the Region of Halton's concern that rehabilitation should be considered as a mitigation measure rather than a direct evaluation factor.

Page 12, Social Environment

- Under Factor C.1, the Land Use Type and Future Land Use have been changed to Existing Land Use Compatibility and Future Land Use Compatibility respectively, to reflect the Region of Halton's concern that compatibility be made explicit in the evaluation factors. Levels of impact within each sub-factor have been further clarified.

Page 18, Costs

- Perpetual Care and Insurance costs have been specified within the Site Operating Costs factor at the suggestion of the Regional Municipality of Halton, to ensure that such costs are included in the analysis.
- Objective E2 has been modified to take account of impacts on all property values; the word "private" in the draft report has been deleted. This change was prompted by a comment from the Ministry of the Environment.
- Under Objective E3, the Municipalities Outside Halton sub-factor has been deleted in the absence of any commitment by Regional Council to accommodate waste from outside the Region, or to export waste.

Page 19, Identification of Candidate Sites

- The elements to be considered in the first step of elimination have been expanded to include "areas required as rights-of-way for utility corridors, such as gas, or oil, and hydro". This change was made in response to the Region of Halton.

- The last sentence of the paragraph beginning "The second step . . ." page 20 (22) has been deleted to eliminate uncertainty with respect to the adjustment of study area boundaries, which was referred to in the submission from the Ministry of the Environment.

6.0 Mitigation Measures

This new section has been introduced following discussionn with the Ministry of the Environment, to ensure that possible mitigation measures are taken into account in the site selection process.

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DRAFT EVALUATION FACTORS
PHASE 2, STAGE 2B,
SELECTION OF CANDIDATE SITES

WALKER WRIGHT YOUNG ASSOC.
NOVEMBER 1983

D R A F T

Revised
Nov.10/83

HALTON ENVIRONMENTAL ASSESSMENT
STAGE 2B: SELECTION OF CANDIDATE SITES
DRAFT EVALUATION FACTORS

1.0 General Framework

This document includes the proposed methodology for the site selection procedures in Phase 2, Stage 2B and, specifically, provides the draft evaluation factors that would be used in Stage 2B.

The following elements would be stressed in this stage of the site selection process:

- the relative significance of various physical, social and economic features identified in the candidate areas;
- the comparative differences in potential impacts of landfilling among candidate areas;
- the size of site(s) required to fulfill the landfill component in the solid waste management system;
- the positive advantages for a landfilling operation from a physical, social and economic standpoint.

The purpose of Phase 2, Stage 2B is to identify a manageable number of candidate sites that would fulfill, either independently or as part of a multi-site system, the requirements of the landfill component of the solid waste management system.

The present landfill capacity required is 7.2 million cubic yards. However, this figure is subject to Council's review at each stage from the perspective of the results of the concurrent assessment of the feasibility of an Energy from Waste facility in Halton. In addition, the required capacity of solid waste to be accommodated by landfilling would depend on the outcome of Council's decision on the Proposed Interim Waste Plan and the following recommendations in the report C.A.O. #319/83:

DRAFT EVALUATION FACTORS
PHASE 2, STAGE 2,
SELECTION OF CANDIDATE SITES

WALKER WRIGHT YOUNG ASSOC.
JANUARY 1984
(REVISED EXCERPTS)

HALTON ENVIRONMENTAL ASSESSMENT
STAGE 2B: SELECTION OF CANDIDATE SITES
FINAL EVALUATION FACTORS

1.0 General Framework

The landfill capacity being sought from Phase 2, Stage 2A: General Overview Analysis is 7.2 million cubic yards. However, this figure is subject to Council's review at each stage from the perspective of the results of the concurrent assessment of the feasibility of an Energy from Waste facility in Halton. The required capacity of solid waste to be accommodated by landfilling will also be affected by the Council decision of December 7, 1983 on the Interim Waste Plan.

REVISED

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- 1.1 THAT, provided no tribunal hearing(s) are necessary in order to obtain the necessary approvals to put the "Continuation" portion of the plan in place, Option One, i.e. the "Continuation Option" as set out in C.A.O. Report #319/83, be approved as the Interim Waste Disposal Plan.
- 1.2 THAT the Regional Chairman be requested to write to the Minister of the Environment, Andy Brandt, requesting that since tribunal hearing(s) are likely for the long-term landfill component of the Region of Halton, that tribunal hearing(s) for the proposed Interim Landfill Component, i.e. the continuation of landfilling at the existing Burlington landfill site be waived by the granting of the appropriate exemption under The Environmental Assessment Act and on the basis of urgency under The Environmental Protection Act, at least until the tribunal hearing(s) for the long-term landfill component commences.
- 1.3 THAT should the Minister of the Environment give a negative response to Regional Council's request under 1.2 above, or should no response be received by December 9th, 1983, then Option Two below, i.e. the "Export Option" shall be implemented."

The potential effects from the Interim Waste Plan on the landfill capacity for the Environmental Assessment will vary, depending on the outcome of the above-noted decision, and will be reflected in the following form:

Additional landfill capacity required under <u>Option One, "Continuation Option"</u>	1,507,000 cubic yards
Additional landfill capacity required under <u>Option Two, "Export Option"</u>	606,505 cubic yards

The difference in the above figures for Option One and Option Two reflects landfilling in the permanent landfill(s) from April 1985 - June 1988 (Option One) versus landfilling at the permanent landfill(s) from March 1987 - June 1988 for Option Two. Both options assume that an Energy From Waste facility or facilities in Halton would not be in place until 1988, and therefore the long term planning period for the resource recovery system would commence in 1988.

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The option for solid waste disposal in the Interim Period which was approved by Council involves continued use of the existing Burlington landfill site. The Interim Period assumes that an Energy From Waste Facility or facilities would not be in place until 1988, and therefore the long-term planning period for the resource recovery system would commence in 1988.

The continued use of the existing Burlington landfill site could occur in four successive phases, thus extending the possible interim use of that site to February 1987. An attempt will be made on behalf of the Region to avoid the full use of the continuation option (i.e. all four phases), by calculating additional capacity for the permanent landfill site(s) from April 1985 to June 1988. The allocation of this period to the long term landfill solution means that only Phase A and Phase B of the Burlington site continuation would be necessary. The resulting additional capacity for the landfill component is 1.5 million cubic yards, or a total capacity of 8.7 million cubic yards ($7.2m^3 + 1.5m^3$). If all four phases of the Interim Waste Plan were implemented, then the additional capacity required for the permanent landfill component would be reduced accordingly.

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Once the Interim Waste Plan is finalized, it is anticipated that the landfill capacity as part of the Environmental Assessment would be either 8.7 million cubic yards in Option One or 7.8 million cubic yards in Option Two, instead of the 7.2 million cubic yards which currently is being sought.

2.0 Proposed Methodology for Selection of Candidate Sites

It is important at this stage to obtain more localized information on which to base the proposal of candidate sites within the candidate areas. This will entail the level of detailed analysis outlined in the work program for Stage 2B; this is not the very detailed level that will be undertaken in the subsequent Stage 2C on the candidate landfill sites, but is anticipated to allow refinement of the candidate areas to allow determination of the candidate sites.

12-1
The first action of this Stage 2B will be to define what will be known as study areas. These study areas will include the candidate areas and an additional "buffer" area which represents an area considered desirable and necessary within which to consider air dispersion effects of a potential landfilling operation, and also within which to consider compatibility of the potential operation with other existing and/or planned land uses. The "buffer" area will be included initially around the candidate areas to recognize that a potential candidate site may be found at or near the edge of a candidate area and therefore require a buffer that extended beyond the limit of the candidate area. The assessment of such a buffer area is therefore required.

It is intended to assess a buffer area that extends 1/2 mile from the candidate area. The half mile limit is considered reasonable to take into account property ownership boundaries, for the candidate sites, and off-site environmental effects which must be assessed in conjunction with the candidate sites. The establishment of this buffer area would also permit flexibility in locating a candidate site in the most desirable part of a candidate area or fringe area. The actual width of this buffer area may be flexible, however, depending on the nature of specific features found or determined at the outer limit of the area.

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2.0 Proposed Methodology for Selection of Candidate Sites

An important departure at this stage compared to Stage 2A: General Overview Analysis will be to obtain more localized information on which to base the proposal of candidate sites within the candidate areas. This general information will be gathered from actual field surveys for land use, agricultural capability, and natural environmental features in the candidate areas. This still is not the very detailed level that will be undertaken in the subsequent Stage 2C on the candidate landfill sites, but it is intended to allow for refinement of the candidate areas to allow determination of the candidate sites.

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The first action of this Stage 2B will be to define what will be known as study areas. These study areas will include the candidate areas and a "buffer area" which represents a local impact area considered desirable and necessary within which to consider air dispersion effects of a potential landfilling operation, and also within which to consider compatibility of a potential landfilling operation with other existing and/or planned land uses. The "buffer" area will be included initially around the candidate areas also to recognize that a potential candidate site may be found at or near the edge of a candidate area and therefore require an assessment of an area that extended beyond the limit of the candidate area. The assessment of such a buffer area is therefore required, although it is not intended that the candidate areas themselves will be extended beyond the existing limits.

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It is intended to assess a buffer area that extends approximately 1/2 mile from the candidate area. The actual extent of this buffer area may be flexible, depending on the nature of specific features found or determined at the outer limit of the area. The 1/2 mile limit is considered reasonable, however, to take into account property ownership boundaries for candidate sites which may encompass contiguous properties, and off-site environmental effects which must be assessed for the candidate sites in Stage 2C.

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The analysis of potential impacts from landfilling would be undertaken in the study areas discussed above from the representative range of factors identified in the Stage 2B Work Program (page 4). It is possible that the boundaries of the study areas would be modified once the data collection has taken place.

One of the most critical aspects of the Stage 2B analysis is to provide some order of importance for the various factors. The analysis will effectively determine the significance of various evaluation factors and will provide the basis for rejecting candidate areas in whole or in part.

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The candidate areas of Stage 2A were derived with an emphasis on hydrogeological suitability. That is essentially an assessment from the standpoint of a general level of public health and safety. There are of course other inherent elements, but this is the general context or framework within which the candidate areas have been determined. The essential elements in the determination of candidate sites at this Stage 2B are proposed as follows, within that earlier context:

- Community Impacts,
- Economic Impacts of various waste disposal options,
- Compatibility with Existing and Planned Land Use,
- Effects on Agricultural Productivity,
- Protection of the Natural Environment.

To some extent, all of the above elements were considered in the Stage 2A General Overview Analysis. However, the broad approach to the evaluation factors and the emphasis of hydrogeological factors tended to de-emphasize factors such as the social and economic one. The approach to Stage 2B is properly intended to place greater emphasis on the community (social) and economic impacts of landfilling.

In addition, agricultural element was identified as a concern in all candidate areas, with the exception of the pits or quarries candidate areas, and this element will now be reviewed in greater detail, with greater emphasis based on a more refined information base permitting the determination of the best areas for agriculture, and based also on the principle of rehabilitation.

2.0 Proposed Methodology for Selection of Candidate Sites

- 3 -

To some extent, all of the above elements were considered in the Stage 2A General Overview Analysis, although the broad approach to the evaluation factors and the emphasis of hydrogeological factors tended to de-emphasize other factors. The approach to Stage 2B is properly intended to place greater emphasis on the potential effects of landfilling on agricultural productivity, the community and economic conditions. In particular, the agricultural element was identified as a concern in all candidate areas, with the exception of the pits or quarries candidate areas, and this element will now be reviewed in greater detail, with greater emphasis based on a more refined information base permitting the determination of the best areas for agriculture, and based also on the principle of rehabilitation.

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2.1 Goals

The overall framework for the selection of candidate sites at this stage will be based on the following general goals:

- To avoid site-specific locations that would be susceptible to groundwater and surface water pollution, and therefore could pose a potential risk to public health;
- To locate the landfill(s) to have the least overall impact on the existing population and established communities;
- To avoid severance of existing farms with high capital investment, with involvement in specialty crop production, and/or with high levels of resident farm owners;
- To minimize the loss of natural resources of high economic and/or ecological value;
- To minimize the potential disruption to private property owners and the resulting loss of individual properties required for landfilling;
- To locate the landfill(s) in areas with the least impact on the residents' use and access to community facilities and services.

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The satisfaction of the above goals will be approached through the process of screening the candidate areas. More detailed information will be assessed to determine site-specific characteristics of the candidate areas and, particularly, to document the range of advantages and disadvantages of the areas.

Through the site selection process, each candidate area will be rated on its suitability according to the evaluation factors described herein. It is anticipated that some common characteristics may appear in all candidate areas, in which case, that factor(s) would no longer be considered in identifying the candidate sites. Consequently, only those factors that would have the greatest effects of change in an area, such as the loss of a viable farm unit, the potential for contamination of groundwater or surface water supplies, or the permanent displacement of natural or man-made features, would be applied in identifying candidate sites.

2.1 Goals

"No Revisions"

DRAFT

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3.0 Draft Evaluation Factors

The following categories are proposed for the assessment of the candidate areas to determine candidate sites. With the exception of Category A - Public Health and Safety, which is of fundamental importance, the following categories will be considered with equal importance at the level of detail anticipated for the Stage 2B assessment:

Natural Environment/Social Environment

The third category in the order of importance will be the Cultural Environment.

The final categories, Costs and Engineering are closely integrated and, therefore, would also be considered to have equal weight and importance, one with the other.

However, the overall order of importance follows from Category A, then Categories B & C, then D, and finally Categories E and F.

<u>Category</u>	<u>Generalized Factors</u>
A Public Health & Safety	- Groundwater - hydrology - hydrogeology - Access/noise - Air-Borne Contaminants
B & Natural Environment C and Social Environment	- Vegetation Communities - Wildlife - Earth and Life Science Resources - Rare and Endangered Species - Agricultural Resources - Compatibility with existing and planned land use - Community Services and Facilities - Population Impact - Access/Noise - Airborne contaminants

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3.0 Evaluation Factors

The following categories are proposed for the assessment of the candidate areas to determine candidate sites. With the exception of (A) Public Health and Safety, which is of fundamental importance, the categories of (B) Natural Environment and (C) Social Environment will be considered with equal importance at the level of detail anticipated for the Stage 2B assessment.

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The third category in the order of importance will be (D) Cultural Environment.

The final categories, (E) Costs and (F) Engineering and Operations are closely integrated and, therefore, would also be considered to have equal weight and importance, one with the other.

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The overall order of importance follows from Category A, then Categories B & C, then D, and finally Categories E and F.

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<u>Category</u>	<u>Generalized Factors</u>
A. Public Health & Safety	- Groundwater and Surface Water Impact - Traffic Safety Impact
B. Natural Environment	- Agricultural Resources - Vegetation Communities - Wildlife - Renewable and Mineral Resources - Rare and Endangered Species
C. Social Environment	- Compatibility with existing and future land use - Community Services and Facilities - Population Impact - Noise - Airborne contaminants

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D	Cultural Environment	- Significant Heritage Features - Significant Archaeological Sites - Visual Impact	
E	Costs	- Capital and Operating - Property Values - Regional Administration Costs - Haulage Costs	
F	Engineering	- Site Size/Life-Time - Traffic/Accessibility - Engineerability	DELETED

To expand on the elements of the right-hand column, the specific evaluation factors are the following:

A. PUBLIC HEALTH AND SAFETY

A.1 Objectives

- . To minimize the potential for groundwater and surface water pollution.

A.1 Factors

Evaluation Measures

Hydrologic Constraints	- Identifiable hydrologic impediments to landfilling from site inspection (e.g. soil interpretation from broad geological mapping, surface water, anticipated groundwater flows)	
Leachate Generation (Quarries)	- Compatibility of potential landfilling and leachate control with quarries plan of operation - Dewatering volumes in quarries	DELETED
Potential for Hydraulic Containment of Leachate	- Degree of potential groundwater interference as evidence of potential hydraulic entrapment	
Ability to Control Leachate	- Availability and capacity of existing and proposed sewage treatment facilities to receive and treat leachate	

A. PUBLIC HEALTH AND SAFETY

A.1 Objectives

- . To minimize the potential for groundwater and surface water pollution off-site. REVISED

A.1 Factors

Sub-Factors for Evaluation

Hydrologic Constraints	- Identifiable hydrologic impediments to landfilling from site inspection (e.g. soil interpretation from broad geological mapping, surface water, anticipated groundwater flows)	
Leachate Generation : Pits and Quarries	- Compatibility of potential landfilling and leachate control with quarries plan of operation	
Potential for Hydraulic Containment of Leachate : Pits and Quarries	- Degree of potential groundwater interference as evidence of potential hydraulic entrapment	
Ability to Control Leachate	- Availability and capacity of existing and proposed sewage treatment facilities to receive and treat leachate	

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A.2 Objectives

- . To minimize off-site migration of potential contaminants associated with a landfilling operation.

A.2 Factors

Evaluation Measures

Potential for Off-site Migration of Contaminants

- Potential Water-borne Sediments
e.g. soil texture, slumping and erosion)
- Potential Air-borne Contaminants
(e.g. dust, gases, noise, odours)

- . this factor is intended to distinguish between areas that would have a higher potential for the migration of contaminants, and therefore, the potential risk to public health

A.3 Objectives

- . To maximize traffic safety.

A.3 Factors

Evaluation Measures

Traffic Safety

- Number of Existing Entrances on Potential Haulage Routes
(e.g. residential, commercial/industrial, farms)

- . this factor is intended to measure the potential for vehicular conflicts along haulage routes. The frequency of entrances by type will be used to assess access to candidate areas

- Number and Type of Intersections on Potential Haulage Routes
(e.g. signalization, at-grade railway crossings)

- . this factor is intended to measure the traffic safety of vehicular crossings along haulage routes. Signalled intersections would be considered to have greater safety as opposed to an unsignalled crossing/at-grade railway crossings

A.3 Factors

Evaluation Measures

Traffic Safety

- Number and Type of Intersections on Potential Haulage Routes
(e.g. signalization, at-grade railway crossings)

- . this factor is intended to measure the traffic safety of vehicular crossings

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along haulage routes. Signalled intersections would be considered to have greater safety as opposed to an unsignalled crossing/at-grade railway crossings

- School Bus Routes and Farm Traffic

- . this factor is intended to determine the potential conflicts along potential haulage routes between waste disposal vehicles and school buses and farm traffic. The frequency of travel and destination points in relation to candidate areas will be

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B. NATURAL ENVIRONMENT

B.1 Objectives

- . To maintain significant ecosystems and ecosystem functions.

B.1 Factors

Evaluation Measures

Vegetation Communities

- Type of Vegetation Community

- . wetlands, mature natural woodlands affected would be considered a severe impact
- . regenerating woodlands would be considered a moderate impact
- . old field/meadow would be considered to have the lowest impact

- Extent of Potential for Removal of Vegetation

- . areas of vegetation that must be completely removed would be considered a severe impact
- . areas of extensive vegetation that would be reduced by less than 10% would be considered to have least impact

- Hardiness of Adjacent Vegetation Communities in Study Area

- . this factor relates to the ability of the vegetation community to adapt readily to physical changes from landfilling, i.e. the hardiness of the community
- . the lowest impact would be in a community which is indifferent to changes as opposed to the communities which would be readily stressed

- Potential Effects of Introduction of Exotics

- . sensitive deciduous woods and wetlands would be considered a severe impact
- . closed canopy coniferous areas and old fields would be least affected

B. NATURAL ENVIRONMENT

In Stage 2A, data on the natural environment were obtained from existing documents. In this Stage 2B, new information will be acquired, as follows:

- further review of existing documents for information not used in Stage 2A (i.e., data that were too detailed for the Overview Analysis);
- airphoto interpretation of the candidate areas using 1978, 1:10,000 black and white aerial photographs, with an update using 1983, 1:30,000 black and white airphotos enlarged to 1:10,000;
- field inspection;
- discussions with Conservation Authorities and Ministry of Natural Resources personnel.

The candidate areas to be evaluated in this stage are not known to have the characteristics of an Environmentally Sensitive Area which would have been considered an unacceptable impact in Stage 2A: General Overview Analysis. However, if the characteristics of an environmentally sensitive area are identified as a result of the more detailed investigation of candidate areas in Stage 2B, such areas will be rated according to the criteria used in Stage 2A for environmentally sensitive areas.

B.1 Objectives

- . To maintain significant ecosystems and ecosystem functions.

B.1 Factors

Sub-Factors for Evaluation

Vegetation Communities

- Type of Vegetation Community

- . a wetland or a well-developed natural forest (mature trees, closed canopy conditions, undisturbed) that is eliminated or reduced substantially in size would result in a high impact rating

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- . a wetland or a well developed natural forest that is reduced by less than 10% would result in a moderate impact rating
- . regenerating woodlands that are eliminated or reduced substantially in size would result in a moderate impact rating
- . regenerating woodlands that are reduced by less than 10% would result in a low impact rating
- . an old field meadow that would be disturbed would result in a low impact rating

- Hardiness of Adjacent Vegetation Communities

- . this factor relates to the ability of adjacent vegetation communities to adapt to physical environmental changes, such as changes in soil moisture, increased exposure to wind and incident light, and/or increased sediment in overland flow

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B.1 Factors
cont'd

- major changes or losses may occur in mature forests or wetlands and would result in a high impact rating] ADDITION
- changes to communities that are able to adjust in a short period of time (two years±) such as an old field meadow, would result in a low impact rating] REVISED
- Potential Effects of Introduction of Exotics
- sensitive deciduous woods (i.e., mature, closed canopy stands that may support significant or rare plants) and wetlands would receive a high impact rating] REVISED

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Wildlife

- Population Type and Members Inhabiting Candidate Areas

- this factor is intended to measure the adaptability of animals to human presence
- feral animals and/or animals that readily adapt to human presence would have the least impact
- small animal population, and animals sensitive to human presence would have the most severe impact

- Potential Effect of Landfilling on Habitat Capability of Surrounding Area (aquatic and terrestrial)

- this factor is intended to measure the potential for disruption of aquatic and terrestrial habitats and the disruption and/or establishment of movement corridors, which would have the most significant impacts

Surface Water

- Surface Water Quality and Importance

- warm water streams/depositional basal material would be considered to have the least impact
- cold water streams/erosional basal material would be considered to have moderate effects

- Potential Effect of Landfilling on Existing Drainage Pattern

- permanent water channels within 250 metres of a candidate area would be considered to have the greatest impact (250-500 metres would be a moderate impact)
- intermittent water channels between 250 metres and 500 metres from a candidate area would have the least impact

DELETE

Wildlife

- areas that support animals that are sensitive to human presence (i.e., cannot adapt) and/or small populations that would be completely displaced would receive a high impact rating

REVISED

- modification of habitat by changes in necessary physical conditions (e.g., soil moisture conditions) would result in a moderate to high impact rating, depending upon the probable extent of change

ADDITION

Surface Water

- Quality and Drainage Pattern

TITLE CHANGE

- permanent cold water streams (i.e., those that support cold water fisheries) or those with an erosional base within 500 m of a potential candidate site(s) would result in a high impact rating (i.e., their presence would be a large constraint to the location of a landfill in the vicinity)

REVISED

- streams currently used for agricultural practices (e.g. livestock watering or irrigation) within 500 metres of a potential candidate site(s) would result in a high impact rating

ADDITION

- warm water streams that support fisheries within 500 m of a potential candidate site(s) would result in a moderate impact rating

REVISED

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- streams not supporting significant fisheries but within 250 m of a potential candidate site(s) would result in a moderate impact rating

ADDITION

- streams not supporting significant fisheries and more than 250 m away from a potential candidate site(s), or intermittent streams would result in a low impact rating

ADDITION

- loss of a reforestation area for flood control would result in a high impact rating

ADDITION

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R.2 Objectives

- . To protect sensitive and unique flora and fauna.

R.2 Factors

Evaluation Measures

- | | |
|-----------------------------|---|
| Rare and Endangered Species | <ul style="list-style-type: none"> - National or Provincial Rare or Endangered Flora/Fauna - <u>Regional Rare or Endangered Flora/Fauna</u> <ul style="list-style-type: none"> . loss of <u>national</u> significance as noted above would be considered a severe impact . loss of <u>regional</u> significance as noted above would be considered a moderate impact |
| Significant Areas | <ul style="list-style-type: none"> - <u>Regionally Significant Habitats</u> (e.g. spawning beds, staging areas, wintering yards) <ul style="list-style-type: none"> . loss of regionally significant habitats would be considered a severe impact - <u>Regionally Unique Landforms</u> <ul style="list-style-type: none"> . this factor is intended to measure the loss or disruption of a regionally unique landform. The former would be considered a high impact, whereas the latter would be considered to have the least impact. |

Significant Areas

- | | |
|--|------------|
| <ul style="list-style-type: none"> . potential disturbance to habitats adjacent to significant ones would result in a moderate impact |] ADDITION |
| <ul style="list-style-type: none"> - <u>Unique Landforms</u> <ul style="list-style-type: none"> . loss of small-size unique landforms would result in a high impact rating . disruption/modification to a nationally or provincially unique landform would result in a moderate impact rating . disruption/modification to a regionally unique landform would result in a low impact rating | |

REVISED

B.3 Objectives

- . To avoid areas with high potential for natural resources.

B.3 Factors

Evaluation Measures

- | | |
|------------------------|---|
| Life Science Resources | <ul style="list-style-type: none"> - <u>Managed and Agreement Forest stands</u> <ul style="list-style-type: none"> . loss of reforestation areas for erosion and flood control would have the most severe impacts . loss of a seed forest or timber-producing woodlot would have the least impact |
|------------------------|---|

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B.3 Objectives

- . To avoid areas with high potential for natural resources.

B.3 Factors

Sub-Factors for Evaluation

- | | | |
|---------------------|--|---|
| Renewable Resources | <ul style="list-style-type: none"> - <u>Forestry Resources</u> <ul style="list-style-type: none"> . loss of seed forest or high productivity hardwood stands would result in a high impact rating . loss of potentially high productivity hardwood stands would result in a moderate impact rating . loss of low productivity cover types would result in a low impact rating |] TITLE CHANGE

] REVISED FROM DRAFT PG. 11
] ADDITION |
|---------------------|--|---|

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Earth Science Resources

- Extractable Resources

- the loss of areas with extensive granular materials deposits would have the highest impact

B.4 Objectives

- To minimize the direct loss of viable farm properties.
- To minimize interference with farm operations.

B.4 Factors

Evaluation Measures

Agricultural Resources

- Soil Capability for Agriculture

- this factor is intended to assess the soil capability for agriculture at a localized level to distinguish differences in the potential for agriculture

- Farm Characteristics

(e.g. ownership, farm size and type, patterns of farm operations in candidate areas)

- this factor is intended to distinguish between levels of farm operations and their historical significance in the agricultural community

- General Rehabilitation Site Requirements in Candidate Areas

- this factor is intended to assess the relative long-term potential following rehabilitation and the general requirements for rehabilitation

DELETED

C. SOCIAL ENVIRONMENT

C.1 Objectives

- To minimize potential impacts on existing land uses within candidate areas and along haulage routes.
- To avoid potential land use conflicts in areas designated for future development or preservation in Provincial, Regional and Local Plans.

FINAL

Mineral Resources

- Extractable Resources

- loss of areas with granular or bedrock construction material resources would result in a high to low impact rating, depending upon the extent to which the resources have already been depleted and/or the quality of the resource

Title Change

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B.4 Objectives

- To minimize the direct loss of viable farm properties.
- To minimize interference with farm operations.

B.4 Factors

Sub-Factors for Evaluation

Agricultural Resources

- Soil Capability for Agriculture

- this factor is intended to assess the soil capability for agriculture at a localized level to distinguish differences in the potential for agriculture. It involves analysis of Canada Land Inventory (C.L.I.) 1:50,000 scales manuscript mapping and 1:63,360 scale Halton [County] Soil Survey mapping for the location of specialty crop lands, comprised of areas of coarse textured (sandy) soils, and for general field crop capability. This also involves site checking with a soil probe at various locations in order to verify the contents of the soil mapping. Soil capability classes will be rated as follows:

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- specialty crop lands (coarse textured, sandy soils) Severe
- Classes 1 & 2 High
- Classes 3 & 4 and/or Class complexes (e.g. 1+3, 2+4, etc.) Moderate
- Class 5 - 7 Low

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Agricultural Resources

cont'd

- Surrounding Land Use Patterns
(e.g. ownership, farm size)

. this factor is intended to identify contiguous blocks of viable farm land for protection. It involves analysis of Ontario Ministry of Agriculture and Food (O.M.A.F.) Agricultural Land Use Systems mapping and Drainage Mapping at scale 1:50,000. Field Mapping of general non-farm and farm residences and buildings is part of this assessment, on 1:10,000 scale Ontario Basic Mapping.

. large contiguous blocks of identified Agricultural Land (based on 259 ha.-or 640 ac.- block areas) would be rated as follows:

. large contiguous blocks with a minimum of 80% of the land area in local ownership Severe

. large contiguous blocks with a minimum of 80% of land area unfragmented (only 20% of area comprised of parcels less than 20 ha. or 50 ac.) High

. contiguous blocks having less than 80% but greater than 50% of land area unfragmented Moderate

. predominantly fragmented block having greater than 50% of the land area severed into parcel sizes of less than 20 ha. or 50 ac. Low

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Agricultural Resources

cont'd

- Farm Characteristics

. this factor is intended to distinguish between levels of farm operations and historical and potential significance in the farm community (e.g. specialty crop businesses, greenhouses). It involves mapping of severence patterns, obtained through the assessment maps and rolls. Identification of farm type, such as dairy, livestock, specialty crop, etc., is obtained through field mapping and meetings with Halton Agricultural Advisory Committee (H.A.A.C.) and Ontario Ministry of Agriculture and Food (O.M.A.F.). The enumeration area data for 1982 for Statistics Canada assists in the evaluation of capital investment in the agricultural community, in general.

. special farm enterprises (high capital investment) would be rated as follows, in terms of impact:

- | | |
|--|----------|
| . market gardener (fruit, vegetable, greenhouse) | Severe |
| . registered dairy/beef breeder | Severe |
| . dairy/beef operation | High |
| . cash cropper with grain elevator/drier | High |
| . areas of systematic tile drainage | High |
| . cash cropper headquarters | Moderate |
| . general field crops | Low |

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C.1 Factors

Land Use Type

Evaluation Measures

- Number, Type and Location of Land Uses (permanent or seasonal, residential, commercial, industrial) within candidate areas and along potential haulage routes from land use analysis

- this factor is intended to measure the relative impact on land use. The loss or displacement of permanent residential uses would be considered to have the greatest impact. The loss or displacement of Commercial/Industrial uses would have a moderate impact.

- Potential Impact of Landfilling on these Existing Land Uses by Number and Type of Land Use

- candidate areas with the highest number of land uses affected would not be considered favourable as an area for landfilling

Concentration of Land Use

- Degree of Concentration and Distribution of Land Uses as above from Field Reconnaissance

- this factor is related to the one above, but places greater emphasis on areas of concentrated land uses such as estate residential areas; concentrations of strip development, and clusters of development. Generally, such areas would be avoided.

Future Land Use

- Permitted Uses and policies in approved Provincial, Regional and Local Plans, Approved Subdivisions

- this factor is intended to identify potential land use conflicts between a landfilling operation and future residential, industrial and/or commercial development. Areas identified in approved plans for alternative uses should be generally avoided

C.1 Factors

Existing Land Use Compatibility

Sub-Factors for Evaluation

- Number, Type and Location of Land Uses (permanent or seasonal, residential, commercial, industrial) within candidate areas and along potential haulage routes from land use analysis

- this factor is intended to measure the relative compatibility of land use with a landfilling operation.

Title Change

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- Potential Impact of Landfilling on Existing Land Uses

- potential candidate site(s) with the greatest variety of impacted land uses would generally be avoided

TITLE CHANGE

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Concentration of Land Use

- Degree of Concentration and Distribution of Land Uses as above from Field Reconnaissance

- this factor places an emphasis on areas of concentrated land uses such as estate residential areas, concentrations of strip development, and clusters of development these would be severely impacted.

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Future Land Use Compatibility

- Permitted Uses and policies in approved Provincial, Regional and Local Plans, Approved Subdivisions

- this factor is intended to identify potential land use conflicts between a potential landfilling operation and future residential, industrial and/or commercial development. The rating will depend upon the nature of the future land use and/or policies.

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C.2 Objectives

- To minimize the existing population that is potentially impacted by landfilling operations.
- To minimize the potential impacts of landfilling operations on the existing population.
- To minimize the number of "special" populations (i.e. people who are likely to be most sensitive to the operation of a landfill) potentially impacted by landfilling operations.

C.2 FactorsEvaluation Measures

Population in the candidate areas and along haulage routes

- Degree of Concentration and Distribution of Residences
- Number and Location of Residences within Candidate Areas and along Potential Haulage Routes
- Potential Impact of Landfilling on the Existing Population (access, noise, dust)

- the above factors are intended to measure the number of people that would be either displaced or potentially affected by a landfilling operation.

- The lowest number of people affected in a candidate area would be considered most desirable

"Special" populations in the candidate areas and along haulage routes

- Number and Location of Institutionalized Residences with Members of "Special Populations"
- this factor is intended to identify people who are likely to be most sensitive to the operation of a landfill. Therefore, institutionalized residences should be generally avoided.

C.2 Objectives

- To minimize the number of "special" populations (i.e. groups or types of people who are likely to be most sensitive to the operation of a landfill) potentially impacted by landfilling operations.

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C.2 FactorsSub-Factors for Evaluation

Population in the candidate areas and along haulage routes

- Degree of Concentration and Distribution of Residences
- Number and Location of Residences within Candidate Areas and a general assessment along Potential Haulage Routes
- Potential Impact of Landfilling on the Existing Population (access, noise, dust)

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"Special" populations in the candidate areas and along haulage routes

- Number and Location of Institutionalized Residences with Members of "Special Populations"
- institutionalized residences serving special populations who are likely to be the most sensitive to the operation of a landfill should be generally avoided. The impact on such populations is rated as high.

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C.3 Objectives

C.3

- To minimize the impact on the local residents' use and enjoyment of community facilities and services.

C.3 Factors

Evaluation Measures

- Community-Serving Facilities, Services and Institutions
- Number and Location of Community-serving Facilities within the Candidate Areas and along Potential Haulage Routes, Including Facilities Serving "Special" Populations
 - Degree of Concentration and Distribution of Community-serving Facilities

"No Revisions"

- this factor is intended to measure the number and type of community-serving facilities that would be potentially impacted by the operations of a landfill. Therefore, an inventory of the number of facilities that would be affected in the vicinity of the candidate areas would be undertaken with the minimum number and lowest concentration being most desirable

DELETED

D. CULTURAL ENVIRONMENT

D. Cultural Environment

D.1 Objectives

- To minimize the loss and/or disruption of significant heritage features.

D.1 Factors

Evaluation Measures

- Features of Historical and Architectural Value
- Number and Location of Significant Heritage Features within or Surrounding Candidate Areas Identified from Existing Local Information
(e.g. LACAC, Halton Heritage Study)
 - an inventory of the number and type of significant historical features would be undertaken in the candidate areas
 - historical features identified as a high priority from existing sources such as the LACAC and the 1981 Halton Heritage Study would be generally avoided

"No Revisions"

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D.2 Objectives

- To avoid loss and/or disturbance of significant archaeological sites.

D.2 Factors

Evaluation Measures

Significant Archaeological Sites

- Sites with a Known Cultural Affiliation and Site Type
- Sites with a Known Cultural Affiliation but Unknown Site Type
- Archaeological Potential of Site Clusters
- the above-noted "classifications" represent the order of importance from highest to lowest for archaeological sites

D.3 Objectives

- To minimize the visual intrusion of landfilling in the surrounding landscape.

D.3 Factors

Evaluation Measures

Aesthetic Visual Features

- Number and type of Aesthetic Visual Features
e.g. significant vistas from a Regional perspective from a qualitative assessment through field reconnaissance
- this factor is intended to measure, in a highly qualitative framework at this stage, the potential for visual intrusion in the vicinity of candidate areas. The availability of visual screening in the vicinity of the candidate areas would be considered to have the least impact

E. COSTS

E.1 Objectives

- To minimize the present value of upper and lower tier municipal expenditures on waste haulage and landfill disposal in Halton over the 20 year planning period.

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E.1 Factors

Evaluation Measures

Site Capital Costs

- Land Cost
- Site Preparation Cost
- On-Site Facilities and Equipment Cost
- Approvals Cost
- Start-up Financing Costs

. neither the factors nor the measures will be looked at individually for alternative locations. All of the factors and measures for the economic component will be combined into a single dollar present value for each alternative

Site Operating Costs

- Staffing
- Monitoring and Leachate Collection Costs
- Other Operating Costs
- Cost of Site Closure

. Same as above.

Haul Costs

- Major Hauler Cost per Travel Minute
- Minor Hauler Costs
- Transfer Station Costs

. Same as above.

Other Costs

- Public Works Administration Costs
- Road Construction Costs
- Reduction in Property Taxes resulting from altered land use
- Tipping Fee Revenue resulting from inconvenient location
- Increase/Decrease in Grants

. Same as above.

E.2 Objectives

- . To minimize the negative impact (immediate loss or future reduction) on privately-owned property values in the vicinity of potential sites and haulage routes.

E.2 Factors

Evaluation Measures

Lands Bordering Potential Site

- Estimated Shift in Property Values (Land Appraiser)

Lands in the Potential Site Vicinity

- Estimated Shift in Property Value (Land Appraiser)

Lands Bordering Major Haulage Routes

- Estimated Shift in Property Values (Land Appraiser)

E.1 Factors

Sub-Factors for Evaluation

Site Capital Costs

- Land Cost
- Site Preparation Cost
- On-Site Facilities and Equipment Cost
- Approvals Cost
- Start-up Financing Costs

. capital costs will be differentiated between sites based on capacity, leachate removal costs, land cost, quarry vs till plain operation

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Site Operating Costs

- Staffing
- Monitoring and Leachate Collection Costs
- Other Operating Costs (e.g. perpetual care costs and insurance)
- Cost of Site Closure

. operating costs will be differentiated, based on site capacity and factors arising from the capital cost differentiation

ADDITION

Haul Costs

- Major Hauler Cost per Travel Minute
- Minor Hauler Costs
- Transfer Station Costs

. haul costs will be estimated using distances and travel times from the municipal waste centroids and a variety of assumptions concerning single vs. multiple sites, and EFW requirements

ADDITION

. capital, operating and haul cost rules-of-thumb will be verified through the experience of Metro area municipalities (Durham Region, Metropolitan Toronto and Peel Region)

E.2 Objectives

- . To minimize the impact on property values (immediate loss or future reduction) in the vicinity of potential candidate site(s) and haulage routes.

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The data gathered under "Social Environment" will be employed in producing an estimate of property value impact. The literature on property value impact will be consulted, together with an appraiser familiar with the area, in order to develop broad but reasonable assumptions.

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E.3 Objectives

- To produce the most favourable economic impact on the Ontario economy.

E.3 Factors**Evaluation Measures**

Private Businesses

- Private Hauler Operations
- Local Businesses in Site Area - Operations

Governmental

- Provincial Government - Grants and Taxes
- Federal Government - Grants and Taxes
- Municipalities Outside Halton - Waste Load

] DELETED

F. ENGINEERING AND OPERATIONS**F.1 Objectives**

- To maximize operating efficiency of the solid waste disposal system in Halton.
- To maintain an adequate level of service for solid waste disposal for major private haulers and the public.
- To ensure the provision of adequate landfill capacity over the 20-year planning period of the solid waste management system.

F.1 Factors**Evaluation Measures**

Site Size

- Waste capacity of site(s) assuming variable buffers and landfill heights

Servicing

- Availability and capacity of existing and proposed sewage treatment facilities
- Accessibility to sewage treatment facilities

- Role

] DELETED

Transfer Stations

- Size and location requirements

Level of Service

- Identifiable changes in level of service for solid waste disposal in Area Municipalities.

E.3 Objectives

- To produce the most favourable economic impact on the Halton economy.

To the extent that one alternative would have a clearly different impact than another on private haulers/landfills or on local businesses in the potential site(s) area, a rough estimate of the difference will be prepared. This will be based on interviews with several companies which could be affected and the use of broad ratios.

] ADDITION

The impact on Government grants and taxes will be based on the foregoing costs and our experience in this area.

E.3 Factors**Sub-Factors for Evaluation**

Private Businesses

- Effect on Private Hauler Operations
- Effect on Local Businesses in Site Area - Operations

Governmental

- Provincial Government - Eligibility for Grants and Effect on Taxes
- Federal Government - Eligibility for Grants and Effect on Taxes

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F.1 Factors**Sub-Factors for Evaluation**

Site Size

- Waste capacity of site(s) assuming buffer area; landfill height; and depth

Servicing

- Availability and capacity of existing and proposed sewage treatment facilities

- Accessibility to sewage treatment facilities

Transfer Stations

- Size and location requirements of transfer station(s)

(Assumptions will be made as to the existence and location of transfer stations where this could lower normal haul costs. Where a potential site is remote to a particular municipality and would negatively affect waste disposal service, beyond the cost differences calculated earlier, this will be mentioned.)

] ADDITION

Level of Service

- Identifiable changes in level of service for solid waste disposal in Area Municipalities.

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F.2 Objectives

- . To maximize traffic service along haulage routes.

F.2 Factors

Evaluation Measures

Haulage Routes

- Length
- Travel Times
- Turning Movements
- Number of Lanes
- Road Geometry
- Road Condition

4.0 Identification of Candidate Sites

A number of steps are proposed to progressively reduce the candidate areas and, at the end of Stage 2B, to identify a manageable number of candidate sites.

The first step would involve the elimination of the following areas:

- . areas (other than pits or quarries candidate areas) less than 100 acres;
- . areas where the road configuration would create small and ineffective areas for landfilling operations;
- . properties required for future Highway 403, and 407, including major interchanges, rights-of-way, and commuter parking facilities.

With respect to areas less than 100 acres, these areas would be considered under-sized to accommodate more than approximately one-third of the projected landfill requirement over the 20-year planning, site buildings, and an adequate buffer area to ensure that the site would be environmentally acceptable. Pits or quarries candidate areas are excluded from this first step since their capacity for landfilling will be determined more specifically when the quarries are examined. The multi-site analysis is intended to determine, in a more rigorous fashion, the sizing requirement for landfill. However, the opportunity for a multi-site system in Halton could still be accommodated from among the remaining candidate areas.

FINAL

F.2 Objectives

- . To maximize traffic service along haulage routes.

F.2 Factors

Sub-Factors for Evaluation

Haulage Routes

- Length
- Travel Times
- Turning Movements
- Number of Lanes
- Road Geometry
- Road Condition
- Competing uses for the roadways

ADDITION

4.0 Identification of Candidate Sites

The first step would involve the elimination of the following areas:

- . areas (other than pits or quarries candidate areas) less than 100 acres;
- . areas which are small and ineffective areas for landfilling operations, due to road configurations;
- . properties required for future Highway 403, and 407, including major interchanges, rights-of-way, and commuter parking facilities;
- . areas required as rights-of-way for utility corridors, such as gas or oil, and hydro.

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With respect to areas less than 100 acres, these areas are considered under-sized in terms of accommodating more than approximately one-third of the projected landfill requirement over the 20-year planning, plus site buildings, and an adequate buffer area to ensure that the site would be environmentally acceptable. Pits or quarries candidate areas are excluded at this point from such an elimination since their capacity for landfilling will be determined more specifically when the quarries are examined, and will depend additionally on depth of the quarry and staging of quarry operations.

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With respect to the road configuration, some of the candidate areas have portions which lie alongside a road and result in generally small, ineffective parcels for landfilling from an operational standpoint. Therefore, these areas, which are not expected to amount to a significant reduction in the candidate areas, would be eliminated for the practical reasons stated above.

The first step is considered as a straightforward approach to working with areas that were identified to have initial potential for sanitary landfilling, and would not have to be discounted due to their impracticality from an operational or availability standpoint.

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The second step would involve the identification of study area boundaries, as described previously in Section 3. This procedure is intended to delineate a buffer area surrounding the candidate areas which were identified in Stage 2A, General Overview Analysis. The reason for the buffer area is to consider, at this stage, the potential for off-site impacts from a landfilling operation, if the end result of the candidate area is the candidate site, or if the site is at the edge of the area. It would also allow some flexibility in the boundary limits when the candidate sites are being determined. It may be desirable to adjust the boundaries if, for example, a property boundary would create a defined site area, or if some physical obstruction could be avoided, such as a utility corridor.

"No Revisions"

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The analysis of all factors will be undertaken within the candidate areas and the surrounding "buffer" area to gain a clearer understanding of the potential impacts on-site and off-site. In addition, the haulage routes to the candidate areas will form part of a broader area to be studied, since these potential routes are an integral part of the landfill alternative.

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The third step would involve the required data collection by all disciplines, including field reconnaissance, air photo interpretation, discussions with public agencies, representatives of the agricultural "community", and area municipalities within Halton. The data that will be assessed is reflected in Section 6 of the Stage 2 Work Program, October, 1983, and more particularly in the draft evaluation factors outlined in Section 3 of this report.

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It is our intention to indicate both the advantages and disadvantages of the candidate areas. This would be achieved by placing the analysis of the draft evaluation factors in a chart form, the groups of categories, A; B, C; D; and E, F, and the evaluation factors within each category would be compared against each candidate area, shown across the top. A rating for each candidate area would be shown by applying the evaluation factors. The chart would describe the positive and negative effects for all categories, from the standpoint of all disciplines. For example, a candidate area could be rated highly from a physical and social standpoint, but might have negative features from the natural environment standpoint. The extent to which an individual factor would nullify other factors depends on the rating assigned. For example, if the vegetation that would have to be removed to operate a landfill site would eliminate an important vegetation community, the impact rating would be relatively high.

1-93- However, if the proportion of the vegetation community that would be removed was less than 10%, then the effect of the change might be considered relatively minimal, and therefore would have virtually much less influence in rejecting the candidate areas as a candidate site.

The process of weighting the evaluation factors within disciplines and comparing the levels of impact among the candidate areas is anticipated to result in some candidate areas being either reduced in size or eliminated due to the least desirable effects of change in an area. If, for example, a candidate area is rated least favourable from a public health and safety standpoint, then the area would no longer be considered as a potential area for landfilling since public health and safety is proposed as the first priority (page 6).

The process of reducing the number of candidate areas will follow the general order of priorities described previously. Potential sites would be eliminated successively following the order of priorities and by the relative importance of individual factors within the categories. Ultimately, the candidate sites selected should have eliminated the most severe impacts from the physical, social, economic and cultural standpoint.

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It is our intention to indicate both the advantages and disadvantages potentially created by landfilling in the candidate areas. This would be achieved by placing the analysis of evaluation factors in a chart form, using the individual groups of categories, A; B, C; D; and E, F. The evaluation factors within each category would be compared against each candidate area, shown across the top. A ranking for each candidate area would be shown by listing the factors with severe, high, moderate and low impacts. In this manner, the chart would illustrate the positive and negative aspects of landfilling in the candidate areas. For example, a candidate area could be rated positively from a physical and social standpoint, but might have negative features from the natural environment standpoint.

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The fourth step and final step will be to describe, in chart format, any residual impacts in the candidate sites and to identify where specific impacts must be addressed in the next stage.

It is important in the above-noted process that the intention of Stage 2B is to derive candidate sites from the candidate areas. It is not intended nor outlined above that these candidate sites will have been assessed in detail. The detailed comparison of sites, and any further refinement of the number of them; and incorporation of mitigation measures will be undertaken in Stage 2C.

5.0 Multi-Site Analysis

The multi-site analysis is proposed to determine, in more precise terms, the approximate size of the site(s) required, depending on a multi-site or single site approach. The analysis must be done in conjunction with Stage 2B since the candidate sites selected must have the potential for sufficient landfill capacity, particularly if a single site approach is recommended.

It should be emphasized that economic considerations and, particularly, the potential for cost savings to the Area Municipalities and the Region, will have a significant effect on the judgement of the multi-site vs. single site analysis. However, it is recognized that other factors such as convenience, extended lifetime of multiple sites in the solid waste management system, the potential to lessen the impact of a large scale site; and the potential savings in haul costs, could also have significant positive effects. Therefore, the following factors would be applied to the multi-site system analysis:

Factors

- Economies of scale to be achieved and the benefits/detractions with it
- Level of Haul Cost Expenditure
- Cost Impact of a consecutive vs. continual operating system

5.0 Multi-Site Analysis

Factors

- Economies of scale to be achieved and the benefits/detractions of a multi-site approach
- Level of Haul Cost Expenditure
- Cost Impact of a consecutive vs. continual operating system

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- . Environmental impacts
- . Potential for Extended Site-Life
- . After-use benefits to be derived

The evaluation measures for the multi-site analysis would be derived from the Costs, and Engineering and Operations Component (Factors E.1 and F.1).

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5.0 Multi-Site Analysis (cont'd)

- . Environmental impacts (i.e., social, cultural, natural environmental component)
- . Potential for Extended Site-Life
- . After-use benefits to be derived

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The evaluation measures for the multi-site analysis would be derived from the Costs, and Engineering and Operations Component (Factors E.1 and F.1).

6.0 Mitigation Measures

The site selection process in Stage 2B is intended to try to avoid the need for extensive mitigation measures by eliminating all or part of candidate

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areas that require such mitigation. This objective is inherent in the process for Stage 2B whereby these areas that show comprehensive severe and high impact will not be given further consideration for landfilling. Certain elements in the Stage 2B process can be generally considered to be addressing mitigation measures, as follows:

- . assessment of capital and/or operating costs of buffering/landscaping; assessment of costs of leachate collection system; monitoring costs; servicing costs;
- . assessment of road upgrading requirements and intersection improvement;
- . assessment of general rehabilitation requirements possible and uses;
- . assessment of the need for transfer stations;
- . assessment of perpetual care costs;
- . assessment of need for rehabilitation of damaged land re: quarries;
- . application of buffer areas to mitigate effects of landfilling on sensitive biophysical features.

It is intended that mitigation measures will be addressed at the site-specific level in Stage 2C.

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