

Ex. 95

BURLINGTON LANDFILL SITE CONTINUED USE

Witness Statement of

JOHN D. HALL

Manager, Resource Planning Division

Halton Region Conservation Authority

May 30, 1984

The Halton Region Conservation Authority has reviewed the documentation prepared by Dillon Consulting Engineers and Planners, and submitted to Mr. E. MacIntyre, Ministry of the Environment, March 30, 1984, under the signature of Peter D. Pomeroy, Chairman of the Regional Municipality of Halton.

The attached report entitled "Report to: The Resource Planning - Fill and Flood Plain Advisory Board, Regarding: Burlington Landfill Site Application for Continued Use", dated April 12, 1984, prepared by John Hall, Manager, Resource Planning, was considered at the Authority meeting of Thursday, April 26, 1984 and the following motion was approved:

THAT the Authority adopt the recommendations in the Staff Report, dated April 12, 1984, with respect to the Burlington Landfill Site Application for Continued Use, as follows:

1. An ongoing maintenance program be carried out to maintain and improve upon the erosion and siltation control of the site and drainage ditches.
 2. The Falcon Creek drainage siltation control pond's effectiveness be analysed.
 3. A new approach to revegetation of the Falcon Creek Valley is required.
 4. A leachate management contingency plan be developed for the Indian Creek.
 5. Soil sampling at the mouth of the Indian Creek be carried out by the Region of Halton.
 6. The northeast treeline/hedgerow should not be removed and Phase B redefined, unless the Region can demonstrate that this treeline/hedgerow can, in fact, be replaced after landfilling.
 7. That the Region of Halton either abandon proposed Phase D expansion or alternatively develop an alternate plan containing leachate within the perimeter of the landfill site set back from the 10 metre buffer strip.
 8. The Region revise its proposed 10 metre buffer to provide for a 10 metre setback for the perimeter fence and all site facilities from the Falcon Creek Valley/Sassafras Woods E.S.A. and all other woodlots and hedgerows recommended to be buffered.
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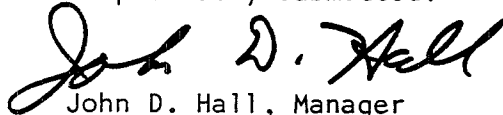
Engineers and Planners in their letter dated May 24, 1984, under the signature of Mr. W.F. Wells, and that the Authority request the Council of the Region of Halton to endorse the recommendations in the Dillon letter;

AND FURTHER, THAT staff convey the position of the Authority to the Hearing Officers at the hearing convened under the Environmental Protection Act into the continued use of the Burlington Landfill Site.

In summary, I wish to advise that the concerns raised by the Halton Region Conservation Authority with respect to the continued use of the Burlington Landfill Site appear to be satisfactorily resolved.

I trust this information is of assistance to the Hearing Board and would be pleased to answer any of your questions.

Respectfully submitted:



John D. Hall, Manager
Resource Planning Division
Halton Region Conservation Authority

Attachments:

Authority Minutes of April 26, 1984
Resource Planning - Fill and Flood Plain Advisory Board
Minutes of May 24, 1984, and Staff Report on Burlington
Landfill Site dated April 12, 1984
Letter from Mr. G. Woodburn dated May 24, 1984
Letter from Mr. W.F. Wells dated May 24, 1984

(All certified true copies)

THE HALTON REGION CONSERVATION AUTHORITY

Authority Meeting #2A-84

A meeting of the Halton Region Conservation Authority was held on Thursday, April 26, 1984, at 7:30 p.m., in the Milton Council Chambers.

Attendance:

Brock Harris
Russell Miller
Gordon A. Krantz
Paul J. Farley
Gerry Smith
Mrs. Joan Little
Keith Bird
Gordon Logan
Brian Penman
Donald Gordon
George Whyte
Susan Serena
Peter Novar
Alan W. Bennett
Murray E. Stephen
Robert Edmondson
Norman McIntyre
John Hall
Phillip Antoniow
Pearl McKeen
Ray Tufgar
Gloria Brown

- Chairman
- Vice Chairman
- General Manager
- Assistant General Manager
- Finance Administrator
- Manager, Resource Planning Division
- Watershed Technologist
- Planner
- Manager, Water Resources Division
- Recording Secretary

**Absent with
Regrets:**

Dr. Thomas Burgess
George Fellowes

Absent:

J. Ross Knechtel
Wm. Westoby

1. Approval of Inaugural Minutes dated February 16, 1984

#2A-1:

Moved by:
Seconded by:

Donald Gordon
Gordon Logan

THAT the Authority approve the Inaugural Minutes, dated February 16, 1984, as distributed.

Carried.

2. Endorsation of the Actions of the Executive Committee, #1E-84, dated April 12, 1984

#2A-2:

Moved by:
Seconded by:

Gordon Logan
Mrs. Joan Little

THAT the Authority endorse the actions of the Executive Committee in the Minutes #1E-84, dated April 12, 1984, as distributed.

Carried.

3. Advisory Board Reports:

a) Resource Planning and Fill & Flood Plain Advisory Board - RP-FAFPABl-84, February 23, 1984

1. **Proposal by Mr. Charles Mitchell to sever a lot in Lot 5, Conc. IV, Town of Milton (Nass.), adjacent to the Sixteen Mile Creek**

#2A-3:

Moved by:
Seconded by:

Gordon Logan
Alan Bennett

THAT the Halton Region Conservation Authority object to the severance application submitted to the Halton Land Division Committee by Mr. Charles Mitchell, Part of Lot 5, Conc. IV, Town of Milton, File B2/84/M;

AND FURTHER, THAT the Halton Land Division Committee be advised that the Authority is awaiting detailed flood plain mapping being prepared by Proctor & Redfern which will determine the exact limit of the flood plain through the Mitchell property.

Carried.

THE HALTON REGION CONSERVATION AUTHORITY

Resource Planning - Fill and Flood Plain Advisory Board

RP-FAFPAB3-84

A meeting of the Resource Planning - Fill and Flood Plain Advisory Board was held on Thursday, May 24, 1984 beginning with site inspections at 3:00 p.m. and a business meeting following at the Authority Office at 5:00 p.m.

Attendance: Gordon Logan Chairman
 Gordon Krantz Vice-Chairman
 George Fellowes
 Dr. Thomas Burgess
 Gerry Smith
 Joan Little
 Russell Miller
 Brock Harris

Absent with
Regrets: Alan Bennett
 Peter Novar

Also Present: John D. Hall Manager, Resource Planning
 Pearl McKeen Planner
 Phillip Antoniow Watershed Technologist
 Robert Edmondson Assistant General Manager
 Cathie Josie Recording Secretary

Resource Planning Presentation

For the information of the Members, Pearl McKeen reviewed the analysis normally carried out during the Authority's commenting on draft plans of subdivision. In addition, general environmental protection policies were discussed with the Committee.

The Chairman thanked Ms. McKeen for her presentation which was very informative and educational for the Committee Members.

ADMINISTRATION OF REGULATION 164, R.R.O. 1980

4. (a) Application by Mr. John Lynch to construct several ponds and to place fill in a flood plain and headwater swamp of the Grindstone Creek, Lot 13, Conc. V, Township of Flamborough (W.F.)
File No. A/84/F/2

The Committee inspected the site of the application during the afternoon. During 1983, Mr. Lynch cleared trees and partially constructed two ponds on his property. The present application before the Authority is for the construction of a fish preserve for trout and bass. Mr. Lynch described his project as an agricultural land use in which fish will be raised and sold as a business. In addition, it was noted that Mr. Lynch's application appears to provide for a commercial use, since it is intended that the public fish out of the larger pond. The entire facility consists of seven ponds, five of which will measure 50 feet by 100 feet, and two of which will measure 100 feet by 200 feet. The application also shows four wells to be located in order to augment any low flows in the ponds.

The location of the Lynch property is in the headwaters of the Grindstone Creek in the Haysland Swamp and is presently designated Environmentally Sensitive in the Regional Municipality of Hamilton-Wentworth's Official Plan.

7. Staff Reports cont'd.

(b) L. Wickham Property

Mrs. Wickham owns a 10 acre property in Lot 10, Conc. V (Nass.), Town of Milton, abutting the Mason property recently acquired by the Halton Region Conservation Authority.

Staff advised Mrs. Wickham that the Authority would likely consider pursuing acquisition on the same basis as the previous acquisition of the Mason property. Mrs. Wickham has not pursued this matter further with the Authority to date.

It was then:

RP-FAFPAB3-14 MOVED BY: Tom Burgess
 SECONDED BY: George Fellowes

THAT the Resource Planning - Fill and Flood Plain Advisory Board recommends the Authority accept the staff report, respecting the L. Wickham property.

CARRIED.

(c) Burlington Landfill Continued Use

Staff distributed a letter from Mr. George Woodburn, Region of Halton dated May 24, 1984 along with an attached letter from Mr. W.F. Wells, Dillon Consulting Engineers and Planners dated May 24, 1984. The Region's letter and Dillon's letter were prepared in response to the Conservation Authority's staff report approved by the Authority at their meeting of April 26, 1984.

The staff of the Authority have reviewed the recommendations of Dillon and the commitments set out in the Dillon response and advised the members of the Advisory Board that the Dillon response adequately addresses the matters of concern raised previously by the Halton Region Conservation Authority.

Staff further pointed out that Mr. Woodburn's letter specifies that the Dillon letter will be presented to the Region of Halton for its Council's endorsement. After further discussion of the matter, the following resolution was passed:

RP-FAFPAB3-15 MOVED BY: Joan Little
 SECONDED BY: Brock Harris

THAT the Resource Planning - Fill and Flood Plain Advisory Board recommend to the Authority that the Authority accept the response from Dillon Consulting Engineers and Planners in their letter dated May 24, 1984, under the signature of Mr. W.F. Wells, and that the Authority request the Council of the Region of Halton to endorse the recommendations in the Dillon letter;

AND FURTHER, THAT staff convey the position of the Authority to the Hearing Officers at the hearing convened under the Environmental Protection Act into the continued use of the Burlington Landfill Site.

CARRIED.



THE REGIONAL MUNICIPALITY OF HALTON

PUBLIC WORKS
DEPARTMENT

P.O. BOX 7000
2316 SOUTH SERVICE ROAD WEST
OAKVILLE, ONTARIO L6J 6E1
416/827-2151

1984 05 24

The Halton Region Conservation Authority
310 Main Street
MILTON, Ontario
L9T 1P4

Attention: Mr. John D. Hall, Manager,
Resource Planning Division

Dear Sir:

Re: Burlington Landfill - Continued Use -
Comments of the Halton Region Conservation Authority

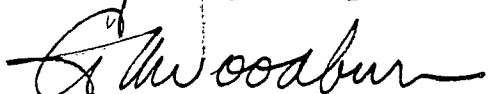
This will acknowledge receipt of the comments of the Halton Region Conservation Authority dated April 12, 1984 with respect to the Regional application for the continued use of the Burlington landfill site.

As indicated in the attached correspondence dated May 24, 1984 from W.F. Wells, P.Eng. of Dillon Consulting Engineers and Planners, a meeting was held on May 2, 1984 to discuss resolution of the recommendations.

The correspondence from Mr. Wells, acting on behalf of the Region, represents the Region's attempts to resolve the 13 recommendations of your Authority, and represents the position which Regional staff will be recommending to Regional Council for approval.

We trust this information satisfactorily resolves the concerns of the Authority, and should you require any further clarification in this regard, please feel free to contact me or any of the consultants involved in this project.

Yours very truly,


G.N. Woodburn, P.Eng.
Manager, Waste Disposal

cc - D. Hodgson
- D.Y. Perlin, C.A.O.
- R.W.J. Moore, P.Eng.

GNW:sw				
BURLINGTON	HALTON HILLS ACTON	HALTON HILLS GEORGETOWN	MILTON	OAKVILLE
639-4540	853-0501	878-8113	878-8113	827-2151

24 MAY 1984

HALTON REGION
PUBLIC WORKS

OUR FILE: 9319-02
YOUR FILE:

24 May 1984

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

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

Burlington Landfill - Continued Use
Comments of Halton Region
Conservation Authority

Dear Sirs:

The Halton Region Conservation Authority prepared a report respecting their comments on the application for a Certificate of Approval for the Continued Use of the Burlington Landfill Site. A meeting was held on 2 May 1984 to review the report and discuss resolution of the recommendations made by the Authority.

In attendance at the meeting were:

J. Hall	HRCA
R. Tufgar	HRCA
G. Woodburn	Region of Halton
J. Corbett	Region of Halton
L. Parsons	MOE
D. Jagger	Gartner Lee Associates
D. Stevens	M.M. Dillon
A. Mitchell	M.M. Dillon
W. Wells	M.M. Dillon

The Authority made 13 recommendations. The purpose of this letter is to:

- discuss the content of the recommendation and provide further information where required;

...continued

- resolve the issue raised by the recommendation;
- give an undertaking to provide additional information or data requested where it cannot be immediately supplied;
- make certain commitments, where appropriate, toward implementation of recommendation.

We will provide our discussion within the above criteria generally in the order of the points raised by the Authority.

(i), (ii) and (ix)

All points deal with site drainage and erosion control and siltation.

Mr. Mitchell, Senior Water Resources Engineer with Dillon, initially carried out field check and analysis of the drainage system and works associated with the existing site. The analysis was then carried out to provide for drainage design and siltation control, where necessary, on the extended landfill site. Mr. Mitchell prepared a report which is part of the application. Additional data and analysis is included in the attached supplementary report which has been filed by Mr. Mitchell at the Environmental Assessment Board Hearing. A copy is attached.

The design and operation planning for the site gave considerable attention to the site drainage design, construction, operation and maintenance procedures. A maintenance program already exists and will be continued by the Region to repair eroded areas, clean the sediment basin, clear culverts and maintain and repair drainage ditches.

The emphasis in the program is to complete areas of the landfill to final grade and establish a vegetative cover reducing the area exposed and available for erosion.

Works for erosion control, besides control at source through operations, included rip-rap and gabion drop structures in drainage channels to limit water velocity and scour; silt traps with access for regular cleaning; continued use of the sediment pond on the western drainage system, but with improved maintenance procedures; and use of straw bales as a temporary measure for silt control adjacent to highly disturbed areas prior to completion of drainage works as designed.

....continued

The sediment pond at the south end of the landfill operates at an efficiency range of 20% to 25%. Mr. Mitchell has determined that the redesign or reconstruction of the pond would not particularly improve silt removal. The purpose of the pond is to remove sediment that would otherwise build up in downstream channels. Field observations prove this works.

The Region, as part of the maintenance schedule, will clean the pond twice per year while the landfill is active with an additional spring clean-out.

The calculations made by Mr. Mitchell respecting the efficiency of the sediment basin will be filed with Mr. Tufgar of the Authority (under separate cover). We are also pleased to undertake to provide additional information respecting sediment removal as may be required by Mr. Tufgar.

The Region will request the Board to include as a condition of approval that a final design, staging and implementation plan and program for drainage works, and erosion and siltation control be prepared in consultation with Authority and the approval of the Ministry.

(iii)

The main concern of the Authority was the use of hydroseeding and mulching which may not work near or on the eroded valley slopes. The Authority would prefer to see new vegetation established and ensure the program is compatible with the environmentally sensitive area, while being cost-effective.

The planting program for 1984 was outlined by Mr. Stevens as well as the experimental program to be undertaken with the Royal Botanical Gardens. On the basis of the discussion and the resolution of Regional Council to involve the Conservation Authority with others, on a Review Committee, we believe the concern expressed by the Authority is satisfied. The Review Committee will consider the detailed planting and revegetation schemes prior to their implementation.

...continued

(iv)

The Authority requests a leachate contingency plan for Indian Creek because part of Phase B is in this watershed as will be part of Phase A. The steps we propose are:

- For Phase A connect the existing toe drain system of the prior expansion with the perimeter drain on the old part of the fill. This new perimeter drain will complete the system down the east side of the fill and prevent leachate migration easterly to the Indian Creek watershed.
- Phase B has both a perimeter drain surrounding the east and south portion of the site and an underdrain. This portion of the site is also found on the tills other than the fractured shales. Falcon Creek is a ground water discharge area with a direct connection between the ground water system on the landfill site and the Creek. This is not the case with Indian Creek. The ground water system does not contribute to base flow of the Creek near the site. It is usually dry during the summer. (We undertake to provide a detailed discussion of the hydrogeology basis from Mr. Leech or Mr. Jagger of Gartner Lee Associates.) Should any leachate outbreak occur, the Region is committed to solving the problem. The specific means would depend on the nature and location of the spring. Actions that can be taken include:
 - . excavation of the leachate spring and backfill;
 - . excavation at the leachate collection system and additional connection trenches be placed using granular material;
 - . repair be made to the leachate system;
 - . a purge well be installed and pump back into the system;
 - . a new deep system be installed in the buffer zone;
 - . a cut-off/deflection wall be installed in the buffer zone.

It should be noted that an agreement was reached with the Authority on a 20 m setback instead of 10 m shown on the drawings.

...continued

(v)

The Conservation Authority want soil sampling at the mouth of Indian Creek. After much discussion, while it was acknowledged tht there may be a problem at the outlet of Indian Creek, the results of the sampling could not be co-related to the landfill. The region of Halton, therefore, should not undertake this sampling as part of the landfill project. The Region will, however, include a surface water sampling station at the outlet from the NSP property. The Region will seek agreement of the Authority as to the location of the station.

(vi)

The Conservation Authority were concerned about the northeast tree line/hedgerow. This matter was discussed with Mr. Stevens. We believe, with the re-establishment of the hedgerow on the eastern property line and the role in plan review that the Authority will play as outlined in iii) meets this concern.

The Region will commit to:

- re-establishment of the hedgerow in native soils within the buffer strip;
- the litter fence will be located between the hedgerow and landfill site;
- the hedgerow will be reinstated in 1985;
- measures required to control any methane gas impacts on this hedgerow will be undertaken, if necessary.

(vii) and (viii)

Concern is expressed respecting setbacks. It was noted that the City of Burlington has requested a 20 m setback to be set in relation to the fence line. The Conservation Authority was invited to participate in this exercise. An on-site meeting was held on Tuesday, 15 May to agree to the setback location. The detailed map with setbacks as agreed will be provided to the Authority and the City and will become a condition of approval.

...continued

The procedure for establishment of the fence location for Phase B beyond the existing fence was agreed to at the field meeting on Tuesday, 15 May. The Region will invite the Authority to participate in the field location of the fence and the 20 m setback from top-of-bank.

The Region also extends the request to the Authority to participate in the field location of the fence and buffer zone measurement on the south side of Phase B in the Indian Creek watershed.

The alternative works that would be undertaken on the tableland to prevent leachate migration, other than the installed leachate collection system are listed in (iv).

The Conservation Authority through point (vii (a)) has reminded the Region of the jurisdiction of the Authority respecting Regulation 164 R.R.O. 1980. The Region will abide by any application and approval procedure.

(ix)

This point was resolved as part of i) and ii).

(x)

Mr. Jagger explained the water budget to the satisfaction of Mr. Tufgar in order to resolve the point. ~~The Region commits to have Mr. Jagger provide the Authority with a written explanation of his answer within two weeks.~~ In summary, Mr. Jagger concluded that the water balance profile would not be significantly changed as a result of the continued use of the landfill site.

(xi)

The Region has instructed Mr. Wright to answer this point in writing (within two weeks), to provide information to the Authority of his investigations, and evidence to the Board respecting views from the Escarpment.

...continued

(xii)

The end use will be determined through the Committee recommended and discussed in (iii). The Authority is part of the Committee.

(xiii)

An environmental inspector will be appointed with authority to direct environmental construction matters. An environmental inspector is already within the employ of the Region and will be assigned as needed to the site.

In summary, we believe all the concerns raised by the Authority have been successfully dealt with.

Yours truly,

M.M. DILLON LIMITED

W. F. Wells

WFW:rp

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

REPORT TO: RESOURCE PLANNING & FILL AND FLOOD
PLAIN ADVISORY BOARD

REGARDING: Burlington Landfill Site Application
for Continued Use

DATE: April 12, 1984

PREPARED BY: John Hall, Manager
Resource Planning Division

Summary and Recommendations

The Region of Halton proposes to expand the Burlington landfill site through four phases for use until 1987.

The Region appears to have, through the design and operation of the existing landfill site, operated a effective landfill site that has attempted to prevent or mitigate any environmental impacts. This most recent report contains, for the most part, design and operation proposals which would continue to attempt to prevent and mitigate environmental impacts. The Authority has, however, examined the Region's proposal for continued use of the Burlington landfill site and identified certain concerns which are set out as the following recommendations and elaborated on in the text of this report.

It is recommended that:

i) An on-going maintenance program be carried out to maintain and improve upon the erosion and siltation control of the site and drainage ditches.

ii) The Falcon Creek drainage siltation control pond's effectiveness be analysed.

iii) A new approach to revegetation of the Falcon Creek Valley is required.

iv) A leachate management contingency plan be developed for the Indian Creek.

v) Soil sampling at the mouth of the Indian Creek be carried out by the Region of Halton.

vi) The north east treeline/hedgerow should not be removed and Phase B re-defined, unless the Region can demonstrate that this treeline/hedgerow can, in fact, be replaced after landfilling.

vii) a. The Region be advised, that should an application for a leachate collector drain within the upper reaches of the Falcon Creek Valley, as required to accommodate Phase D be applied for under Regulation 164, R.R.O. 1980 that it would likely be denied due to the impacts on the valley wall.

A. INTRODUCTION

An application has been filed by the Region of Halton under the Environmental Protection Act, to continue the use of the Burlington landfill site through to 1987. The continued use plan provides for the expansion of the operating area of the landfill site in four phases. This application has been necessitated because the Region has no alternative approved landfill site available for use after the capacity of the Burlington site is reached in August 1984. The Halton Region is, however, at the same time, selecting a new landfill site under the terms of the Environmental Assessment Act.

The site has been operated by Halton Region since 1974 and in 1980 after a property acquisition of 23.3 ha, an additional 7 ha was licenced for landfilling bringing the total area landfilled to 29.3 ha.

B. SITE LOCATION AND DESCRIPTION (attached Map 1)

The existing Burlington landfill site is located north of Highway 403, midway between Kerns Road and Waterdown Road. To the immediate north and west, it abuts the Falcon Creek Valley and Sassafras Woods E.S.A. with the Niagara Escarpment further to the north. The easterly property limit abuts in the north east, privately owned open fields and to the immediate east lands of National Sewer Pipe presently licenced as a shale quarry on which a private proposal to operate a sanitary landfill site has previously been made.

On the attached map the existing landfill areas are identified along with the proposed area for expansion.

The expansion area consists of open pasture land, with the exception of a well defined treeline/hedgerow which extends from the Falcon Creek Valley/Sassafras Woods E.S.A. to the sites easterly property limit abutting the N.S.P. lands.

There are no homes or active businesses immediately adjacent to the site and therefore, it is relatively isolated.

The landfill site appears to have established a grass cover on the finished slopes but in several areas, it is thin and measures to improve the vigor of the grass appear to be required. The effectiveness of the ponds silt removal for drainage outletting to the Falcon Creek has not to Authority staff knowledge been examined nor are staff aware of any clean out or maintenance program for the pond. (This is not to suggest the pond is inadequate or not maintained). It would appear, however, given the size of the catchment area and ratio of runoff to this pond that the ponds effectiveness should be analysed.

Finally, it would appear that while the catchment area draining into the Indian Creek from the site is less than that to the Falcon Creek some form of permanent siltation pond may also be warranted for the Indian Creek drainage.

Rehabilitation of Falcon Creek Valley: The Authority in 1980 requested a badly eroded section of the Falcon Creek Valley abutting the former landfill site be rehabilitated. This request was made because it was felt that previous site drainage and road construction had aggravated this erosion site.

The Region, in March 1982, prepared a rehabilitation scheme for the valley wall which involved the planting of trees, hydroseeding and mulching and the diverting of surface drainage away from the valley wall. The drainage improvements are expected to slow erosional processes but to date, attempts to revegetate the valley wall have been unsuccessful. It appears that attempts to hydroseed the valley wall may be futile and a new approach to revegetation of the valley is necessary.

Buffering of the Landfill: The Authority set out specific recommendations with respect to providing a buffer from the site for the Falcon Creek/Sassafras Woods E.S.A. and a treeline/hedgerow along the easterly limit of the landfill area. A 15 meter set back from the E.S.A. to the perimeter fence and 7 meter set back to the treeline was recommended by the Authority. The Region agreed to a set back of 10 meters for both areas which the Authority accepted. The Authority's original intention for the buffer area, was to provide a non-disturbed buffer of 10 meters in order to provide a strip of land where no regrading or changes to vegetation would occur.

It should also be noted that the woodlot recommended by the Halton Region Conservation Authority to be retained in commenting on the N.S.P. landfill site along the east boundary of the Region's site has been severely littered by blowing garbage. The aforementioned woodlot forms a connection with the Sassafrass Woods E.S.A. via the aforementioned easterly treeline/hedgerow. This littering has occurred where the litter control fence around the site has been discontinued. Where the litter control fence has been used, good litter control appears to be maintained.

One final matter with respect to the existing operation should also be noted, that being the containment of any leachate that may migrate from the site to adjacent surface water streams. Licence Condition No 7 requires a contingency plan to be prepared for the east side of the Falcon Creek Valley to intercept leachate. Such a contingency plan was not requested by the Halton Region Conservation Authority but felt to be necessary by the Ministry of Environment.

The plan requires installation of a collector drain in the creek valley between the stream and the valley wall should any leachate migrate to the Falcon Creek. The installation of this leachate collector could cause considerable damage to the valley should it be necessary to install and a permit under Regulation 164, R.R.O. 1980 from the Halton Region Conservation Authority would be required for its construction.

In the most recent report of Gartner Lee Associates Limited, the possibility of leachate migrating from the existing Burlington site to the N.S.P. lands and Indian Creek is suggested. It would therefore, appear likely that a similar contingency plan to contain leachate should be required for this area. In the case of any contaminants migrating to the Indian Creek these could settle out at the creek mouth at the outlet of the Hager/Rambo Diversion Channel. Since the Indian Creek mouth could require dredging in the future, any contamination of the creek could reflect directly in costs to the Halton Region Conservation Authority for disposal of dredgeate. It therefore may be appropriate for the Region of Halton to carry out some soil sampling in the Indian Creek mouth at the present time in order to provide background contamination levels against which any future contamination could be evaluated.

Phase D: Phase D entails extending the landfill northerly, over the groundwater divide to the Falcon Creek, filling existing buffer lands. The limit of the landfill is proposed to come within 10 meters of the Creek Valley. Phase D would have an underdrain and toe drain installed to collect leachate.

The Region of Halton has produced a lengthy document setting out their proposal to expand and continue the use of the Burlington landfill site. The following review is set out according to the following topics which the Conservation Authority has an interest in; planning, natural environment, surface drainage and siltation control, groundwater, visual and rehabilitation.

Planning: The site is within the Parkway Belt West and the Region of Halton, though M.M. Dillon, has taken the position that neither an exemption under the Parkway Belt Regulation nor an amendment to the Parkway Belt Plan are required.

The Region's planning submission presented under section "L" of the document subsection 3.3. Implementation states the following.

"The implementation procedures set out in the Plan deal clearly with municipal actions within the Parkway Belt Planning Area. Subsection 5.1.3 states:

"The Minister may, upon request from municipalities, declare by by-law, improvements, or undertakings to confirm with the intent and purpose of the Plan".

The Plan provides for no other means of determining whether a public undertaking in the Parkway Belt Plan conforms with the intent of the Plan."

The Region's consultants do not recognize this treeline/hedgerow as an important wildlife connection but rather dismiss its importance as per the following.

"The hedgerow may serve as a wildlife corridor linking the forested lands of the National Sewer Pipe property east of the landfill to the Sassafras Woods E.S.A. and the Niagara Escarpment to the north. However, cover in the hedgerow is not continuous: taller trees with a sparse understory in the south part are replaced by a lower shrub type in the north section. Gaps in the hedgerow are already present, for example, as a result of present landfilling activities. Depending on after use, new wildlife habitat will be created after closure of the landfill."

The Region suggests that in rehabilitating the landfill site that new wildlife habitat could be created.

The Region recommends as part of rehabilitating the site that they re-establish linkage habitat provided by existing hedgerows. At the same time as making this commitment and using this commitment in large part as a rationale to remove this treeline/hedgerow they have engaged Dr. Rice of the Royal Botanical Gardens to initiate a project to determine what planting material can successfully be utilized in rehabilitating the site.

The matter of re-establishing woody plants on landfill sites is not a simple matter because of the impacts of methane gas. No literature appears to have been sighted by the Region which suggests their proposal to replace this treeline/hedgerow would be successful. The Authority's questions the Region's approach to re-establishing hedgerows and suggest it is an add on approach rather than a design feature. If in fact the subject treeline/hedgerow is to be re-established, the soil and any methane gas control requirements may have to be designed into the landfill site at this stage in order to anticipate success in the planting program.

of the site at the drip line of the trees along the Falcon Creek Valley and around the wooded ravines at the south of Phase B. The access road, swales and leachate collection system will then be located in the buffer strip to the toe of the landfill thereby providing a 10 meter buffer. This buffer is simply inadequate and should be revised to provide for a 10 meter untouched area between the fence perimeter and the area to be protected. This is in keeping with the Halton Region Conservation Authority original recommendation for the landfill site.

Finally, it should be noted that M.M. Dillon prepared their environmental assessment during the winter of 1983 and 1984 and further on site spring (May 1984) site visits are intended to be undertaken to update and upgrade information on vegetation and wildlife.

Surface Drainage and Siltation Control

The expansion of Phases B and D will require the construction of new perimeter ditches around these new portions of the landfill site. The two ditches will outlet into the Falcon and Indian Creeks. The proposed site changes will slightly increase the total volume of runoff to the Falcon Creek and decrease the total volume of runoff to the Indian Creek. The changes in land contours, however, will infact increase peak runoff in the Indian Creek by between 25% and 50% according to M.M. Dillon.

The impacts on receiving streams are considered to be insignificant by the Region for the Falcon Creek but the Region does suggest that increased erosion of the outletting ravines and N.S.P. lands could occur on the Indian Creek. The Region report suggests some rip-rapping of the outletting ravine could be carried out in the future if erosion does occur on the Indian Creek.

Methods to control erosion and siltation similar to those utilized for the existing landfill site are recommended to be implemented for any approved expansion areas. In addition, the Region is recommended to evaluate the effectiveness of the existing siltation control pond on the Falcon Creek and provide similar siltation control ponds on the ditches outletting to the Indian Creek. On the Indian Creek, the siltation control ponds could also be designed to provide runoff alternatives of peak flows in order to prevent erosion of the outletting ravines.

As previously described under impacts on the natural environment, the continuation of any leachate collector within the Falcon Creek Valley to contain leachate from Phase D is unacceptable to the Halton Region Conservation Authority. It is therefore recommended that the Region of Halton either abandon their proposed Phase D expansion or alternatively develop a contingency plan for containing leachate within the perimeter of the landfill site back from the previously recommended 10 meter buffer area.

As a general concern, it is suggested that not much information is provided in the report with respect to the water balance for the existing development of the site or the proposed future expansion. It would be useful to know what the impact of the overall site is on the water balance in the area. From the information provided, it appears as though the landfill site greatly reduces the amount of infiltration to the groundwater system due to improved runoff and the presence of the leachate drains. No concrete figures were provided, however, on the leachate as a percentage of rainfall since problems were experienced with the data collection equipment. It appears as though the extraction of groundwater flows from the area likely has an effect on the base flows in Falcon Creek and perhaps Indian Creek. The extraction of groundwater supply may also have an effect on groundwater in the areas to the south and the dilution of any contaminants. The effect of the proposed expansion itself is likely small in relation to the overall project, however, these effects should be quantified.

Visual

The visual analysis of the site appears to be incomplete. While views from the 403, surrounding roads and homes are evaluated no mention appears to be made of any significant views (if they exist) from the Niagara Escarpment of the site. Many of the surrounding escarpment lands are presently owned by the Provincial Government and the Halton Region Conservation Authority has recommended the Authority manage these escarpment lands in the future.

In addition, it should be noted that the treeline/hedgerow in the north east of the site presently buffers the view of the existing site, this would be eliminated should Phase B expansion be approved.

APPENDIX "A"

March 24, 1980

Mr. Dennis Y. Perlin,
Regional Solicitor,
Regional Municipality of Halton,
1151 Bronte Road, Box 7000,
Oakville, Ontario.
L6J 6E1

Dear Sir:

Re: Review of M.M. Dillon Limited, January 1980, Burlington
Landfill Site Design and Operations Report

Our staff have noted the following with respect to existing site conditions and proposed design concept:

The proposed site is south of the Niagara Escarpment and immediately north of the existing Burlington Landfill Site. It is bounded by the Falcon Creek with a deeply insized ravine across the north and west limits. A hedgerow forms the easterly limit of the proposed expansion area with the wooded ravine on the north identified as an environmentally sensitive area in the Region's Official Plan. The site itself is open cleared land with some undulations in the topography.

Surface drainage through the site will be routed around the working area in three swales to prevent erosion and interception of surface leachate. The migration of leachate into local groundwater will be controlled through a leachate collection and disposal system. The leachate collection system is designed to underdrain the landfill site and to drain the perimeter. Any leachate collected will be conducted to the Region's Skyway Pollution Control Plant for processing.

Site buildings will be located to the westerly limit of the landfill site next to the top of bank of the Falcon Creek ravine, with the maintenance area and top of bank fenced to protect the valley.

The control of sedimentation from the site is not specifically detailed under a separate heading but indications are given in the report that filter berms and grassed waterways will be provided to control sedimentation. As well, it has been outlined that daily surface runoff will be ditched inside the working area around potential

Cont'd...2/

Our staff suggest that sediment should be controlled to the greatest extent possible on site prior to the outletting of drainage into the surface swales around the site. It is also recommended that acceptable levels of sediment loading be set and a monitoring program be established to make certain siltation does not result in sediment loading above the levels permitted.

Site Development

The environmental section of the report details the need to buffer through a setback and fence the Falcon Creek ravine which is a Regional Environmentally Sensitive Area. With respect to this buffer, our staff recommend:

- a) top of bank and limit of environmentally sensitive area be staked and surveyed in the field,
- b) a minimum setback of 50' be established for the perimeter fence and maintenance area from the top of bank,
- c) a 25' setback from the easterly hedgerow be established for the fence around the working area,
- d) perimeter drainage swales should be located inside the perimeter fence.

These recommendations are made in order to provide a 50' strip of land where no regrading or changes to vegetation will occur. The fencing of the site should be carried out prior to any other works.

It was also noted in the environmental report that a large section of the Falcon Creek valley has suffered extensive erosion and loss of vegetation due to the operation of the existing landfill site. Any approval for a site expansion should be conditional on rehabilitating this valley section of the Falcon Creek and plans for such should be submitted to the Halton Region Conservation Authority for approval. The existing erosion of Falcon Creek will most probably require mechanical stabilization measures as well as regrading, top soil and planting in order to adequately rehabilitate the slope.

Finally, we support the report's recommendation to secure the valley land area from the intrusion of motorcycles and all terrain vehicles. The final site decision should incorporate these measures where practical.

Site Rehabilitation

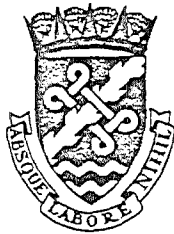
The rehabilitation of this property is proposed to basically provide a landscaped area which would fit in with the surrounding lands. The afteruse recreational development of the property is being discussed with the City of Burlington and the Region of Halton. Our staff strongly suggest that any plan for recreational afteruse should not limit itself to this pit area but include the lands of National Sewer Pipe and the Bayview Landfill Site. It may also be worthwhile including the existing pit of National Sewer Pipe immediately east of King Road. With the expansion of Burlington's population, these lands would appear to have excellent potential for active recreational use which should not be overlooked by the Municipality. The provision of recreational uses on these lands could act to relieve some pressures for this

Cont'd...4/

THE
REGIONAL MUNICIPALITY
OF
HALTON

Legal Department

1980 04 21



P.O. BOX 7000
1151 BRONTE ROAD
OAKVILLE, ONTARIO L6J 6E1
TELEPHONE: AREA CODE 416

BURLINGTON)
OAKVILLE) 827-2151
MILTON)
TORONTO)

Halton Region Conservation Authority
310 Main Street
Milton, Ontario L9T 1P4

Attention: Mr. John Hall, Planner

Dear Sir:

Re: Interim Waste Disposal Program - Region of Halton -
Modifications and Small Expansion to Burlington
Landfill Site

On behalf of the Region the writer acknowledges receipt of your letter under date of March 24, 1980 on March 26th, 1980.

Upon receipt of same the writer referred your letter to the Regional consultant in this matter, M.M. Dillon Limited of Toronto.

The writer has received the attached letter in response which I believe answers many of the concerns which you expressed on behalf of the Authority in your March 24th letter.

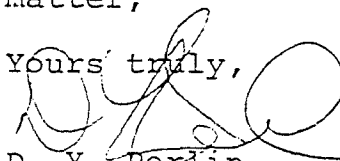
This letter will serve to confirm as well my telephone conversation with you this morning in which I indicated to you that with respect to Site Rehabilitation, set out on page 3 of your letter those comments would be taken into account by Regional staff when they discuss with City staff in the future the after-use proposed for the land.

With respect to the other items, I believe that M.M. Dillon Limited have commented on them and in light of our telephone conversation no further elaboration is required.

If you have any further concerns please feel free to contact us. In any case as indicated to you, if and when Environmental approval is received then final design and site specifications must be completed and further consultation will be made with you at that time to obtain your comment and input before the final design and site specifications are completed.

Once again, thanking the Authority for its cooperation in this matter,

Yours truly,


D. Y. Berlin

Regional Solicitor

c.c. J. Corbett, W. Wells, D. Morrier, D. Kemp

HALTON HILLS
878-8113

GUELPH
853-0501

HAMILTON
639-4540

M. M. DILLON LIMITED

consulting engineers and planners

BOX 219, STN. K, TORONTO, CANADA M4P 2G5 • (416) 482-5656 • CABLE: DILLENG • TELEX 064-7540

OUR FILE: 8376-01

YOUR FILE:

21 April 1980

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

Attention: Mr. D.Y. Perlin, L.L.B.
Regional Solicitor

Burlington Landfill Site
Halton Region
Conservation Authority

Dear Sirs:

We have reviewed the letter of 24 March 1980 signed by Mr. J.D. Hall of the Halton Region Conservation Authority respecting design of the Burlington Landfill phase 1 and expansion area.

Below, we have indicated our response to those points raised in the order addressed in the Authority's letter.

Surface Drainage

The detailed design of these facilities will be carried out after the site is approved through the Ministry of the Environment. While we do not think a 50-year design storm for sizing the facilities is necessary, in this case, because of relatively steep grades and channel design, the 50-year design storm could be handled without major changes. Drop structures may be required to reduce grades and water velocity, thereby controlling erosion.

Potential for Groundwater Contamination

The Authority requested an underdrain system under phase 1 as suggested for phase 2, but recognized the inability to place an underdrain system under existing filled areas.

/2....

50 HOLLY STREET, TORONTO, ONTARIO

TORONTO LONDON OTTAWA WINDSOR SUDBURY CAMBRIDGE THUNDER BAY WINNIPEG EDMONTON YELLOWKNIFE



21 April 1980

Site Rehabilitation

We support the concepts raised in your letter respecting recreational planning for this site and adjacent areas. The provision of recreational services is a responsibility of the City of Burlington. In meetings with the City, it was our intention to gain their approval of the landform at the landfill so that it would be constructed in a form compatible with longer term recreational planning. The City agreed that the landform proposed can be integrated into their plans.

We trust the above answers your concerns on the site design and operations. In summary, we believe the site can be developed and operated to the satisfaction of those points raised by the Authority.

Yours truly,

M.M. DILLON LIMITED

W.F. Wells

WFW:dcs

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

cc: Region of Halton
Attn: Mr. D.J. Corbett
Manager of Construction



APPENDIX "B"



File 9319-02

PROVISIONAL CERTIFICATE OF APPROVAL WASTE DISPOSAL SITE

Under The Environmental Protection Act, 1971 and the regulations and subject to the limitations thereof, this Provisional Certificate of Approval is issued to:

Regional Municipality of Halton
1151 Bronte Road
Oakville, Ontario
L6J 6E1

for the ~~expansion of~~ the existing 22.3 hectare landfilling site within a total area of 45.0 hectares to a 29.3 hectare (72 acre) landfilling site within a total site area of 68.3 hectares (169 acres) all in accordance with the following plans and specifications:

As listed in Schedule "A"

Located: Parts of Lots 3 & 4, Concession 1 & 2
all more particularly designated as Parts 1 to 9 inclusive
on Registered Plan of Survey 20R4648
City of Burlington
Regional Municipality of Halton

which includes the use of the site only for the Disposal of the following categories of waste (NOTE: Use of the site for additional categories of wastes requires a new application and amendments to the Provisional Certificate of Approval) Domestic, Commercial and solid non hazardous industrial wastes consisting of wastes from manufacturing and industrial processes and including demolition and construction wastes.

and subject to the following conditions:

1. An access to the site from the North is not to be constructed and only the existing access from the North Service Road in the South is to be utilized.
2. Liquid industrial and toxic waste including pathological waste, industrial and chemical sludges, hazardous waste, septic tank pumpings, radioactive waste and processed organic waste will not be accepted for disposal at the landfill site.
3. The Regional Municipality of Halton will carry out the predictive monitoring programs including the submissions to the Ministry of the Environment of an annual monitoring report all in accordance with the Monitoring Report, prepared by Gartner Lee Associates Limited, April 1980 and with any amendments as required from time to time by the Director of the Environmental Approvals Branch of the Ministry of the Environment.

Dated this 24th day of October, 1980.


Director, Section 39,
The Environmental Protection Act, 1971



PROVISIONAL CERTIFICATE OF APPROVAL WASTE DISPOSAL SITE

The following conditions are additional to the conditions shown on Provisional Certificate

of Approval Number A 210102 dated October 24, 1980

8. Prior to landfilling in the Phase II area of the site the Municipality shall certify that the site preparation work has been completed in accordance with the plans & specifications approved by the Director of the Environmental Approvals Branch of the Ministry of the Environment.
9. A progress report on landfilling operations including the following information:
 - (a) results of an interpretive analysis of all monitoring programs for gas and leachate;
 - (b) the site map of all the landfilled areas and any deviations from the operating plans;
 - (c) yearly summary of volumes and weights of waste handled at the site;
 - (d) environmental and operational problems encountered during the operation and mitigating actions;
 - (e) quality and quantity of leachate discharged into the sanitary sewer system;
 - (f) assessment of the operation and performance of all gas and leachate control facilities.

is to be submitted every twelve months to the Director of the Environmental Approvals Branch, Ministry of the Environment. The first report is to be submitted by February, 1981, with subsequent progress reports being submitted annually thereafter.



PROVISIONAL CERTIFICATE OF APPROVAL WASTE DISPOSAL SITE

The following conditions are additional to the conditions shown on Provisional Certificate

of Approval Number A 210102 dated October 24, 1980

11. Within six months following the termination of landfilling operations at the site, two copies of as constructed site plans, including details of the final development contours, fill line, buffer zones, site boundaries, location of works, easements, monitoring stations, and pollution control facilities are to be submitted to the Director of the Environmental Approvals Branch, Ministry of the Environment.
12. Within four months prior to the closure of the site the Municipality shall submit to the Director of the Environmental Approvals Branch a post closure program providing for the long-term care and maintenance of gas and leachate monitoring and control facilities.
13. No part of the landfilling site shall be conveyed prior to or after closing of the site to any person by the applicant or any transferee from the applicant except to a Federal or Provincial Government, or any agency thereof without the prior approval of the Director of the Environmental Approvals Branch, Ministry of the Environment.
14. No operation shall be carried out at the site after one hundred and twenty days from these conditions becoming enforceable unless this Certificate including the reasons for these conditions has been registered by the applicant as an instrument in the appropriate Land Registry Office against title of the site and the duplicate registered copy thereof has been returned by the applicant to the Director of the Environmental Approvals Branch, Ministry of the Environment.

unimpeded and unnecessary ingress or leachate into the groundwater regime and thus avoid the creation of nuisance conditions.

5. The reason for Condition 5 is:
 - (a) to reduce or prevent the impact of the landfill construction operation and in particular silting caused by erosion, on the natural drainage channel adjacent to the site; and,
 - (b) to reduce or prevent any surface runoff contamination by the waste from being pumped for discharge to surface drainage channels and streams.
6. The reason for imposing Condition 6 is to ensure that the facilities are designed to the satisfaction of the Ministry of the Environment and the issuance of the certificate without this condition would not be in the public interest.
7. The reason for Condition 7 is that the contingency plan is necessary in the event sufficient attenuation of leachate in soil does not occur as anticipated and the monitoring program determines that the leachate migration to Falcon Creek is excessive. This contingency plan will have to be activated in order to prevent the creation of a nuisance and eliminate a hazard to the health and safety of any person and to protect the natural environment.
8. The reason for imposing Condition 8 is to ensure that the site is prepared for landfilling according to the design in the development plan for the site.
9. An annual report as required by Condition 9 is necessary to ensure the operation and development and expansion of the site is consistent with the reports listed in Schedule "A" and thus avoid the creation of a nuisance.
10. The reason for imposing Condition 10 is to ensure that the site is closed off in a satisfactory manner and to provide for the orderly and planned phasing out of this site.
11. The reason for imposing Condition 11 is to provide a permanent record of the completed waste disposal operations carried out at the site.
12. The reason for Conditions 12 and 13 is that with all landfilling operations, certain works are necessary in order to properly close down the site and to provide for its long-term care. Consistent with the other responsibilities under Section 46 of The Environmental Protection Act, 1971, it is in the public interest to ensure all necessary steps have been taken in these regards so that the responsibility and authority to provide for the long-term care of these environmental controls will be guaranteed and the future use of these lands by any other party will not conflict with the necessary controls required to ensure long-term safety to the public and protection of the natural environment.

SCHEDULE "A"

- The Regional Municipality of Halton documents and specifications entitled "Leachate Collection Sewer System, North Service Road and Regional Landfill Site in the City of Burlington Contract S-489-79", including drawings on sheets 1 to 11 prepared by the Regional Municipality of Halton Public Works Department.
2. Letter of October 31, 1979 from R.W.J. Moore, Director of Public Works, Region of Halton to A.V. Ciffen, District Officer, Ministry of the Environment, outlining additional information and works to be implemented by the Region of Halton.
 3. Drawings entitled "Sanitary Landfill Site in the City of Burlington Final Contours-Operation Plan", as it pertains to only the final contours on the south half of the landfill site, and submitted to the Ministry of the Environment under covering letter of July 5, 1979 to A.V. Ciffen, District Officer, from D.R. Morrier, Manager, Operations and Maintenance, Region of Halton.
 4. Report entitled "Burlington Landfill Site Phase I Expansion" prepared by M.M. Dillon Limited Consulting Engineers and Planners and dated September 26, 1979.
 5. Report entitled "Burlington Landfill Site Hydrogeological Study" dated October 17, 1979 prepared by Gartner Lee Associates Limited for M.M. Dillon Limited.
 6. Report entitled "Burlington Landfill Site-Design and Operations Report" dated January 30, 1980, prepared by M.M. Dillon Limited Consulting Engineers and Planners.
 7. Letter written by Mr. H.J. Bourque, P.Eng., of M.M. Dillon Limited on behalf of Mr. W.F. Wells, P.Eng., Project Manager dated January 30, 1980, giving further particulars of the Phase I and II Expansion of the Burlington Landfill Site.
 8. Plan entitled "City of Burlington Regional Municipality of Halton Plan 20R4648" dated February 9th, 1979 prepared by Sidney W. Woods Inc. Engineers & Surveyors.
 9. Report entitled "Monitoring Program-Burlington Regional Landfill Site for the Regional Municipality of Halton", dated April, 1980, prepared by Gartner Lee Associates Limited.
-

KING ROAD

AZOVA
ESTMENTS LIMITED

MAP 1.

BURLINGTON LANDFILL SITE

CONTINUED USE

..... Existing Landfill

Phase B

Phase D

NATIONAL SEWER PIPE

CLOSED

ALLOWANCE

ROAD

REGION OF HALTON
(EXISTING LANDFILL PROPERTY)

ONTARIO HYDRO

WOSNICK

ONTARIO HYDRO
EASEMENT

DA
CAS
CIP

ROBERT ELSTONE

TENANTS

TRIDON

MAP 2.
BURLINGTON LANDFILL SITE
CONTINUED USE

CONTINUED USE

Phase A

Phase B

Phase C

Phase D

Existing Landfill

LANDFILL PROPERTIES