

WITNESS STATEMENT

OF

R. S. DORNEY, PhD., M.C.I.P.

and

C. M. KITCHEN, PhD., M.C.I.P.

in the matter of

BURLINGTON LANDFILL SITE CONTINUED USE

May, 1984

Witness Statement of
Drs. R. S. Dorney, M.C.I.P. and C. M. Kitchen, M.C.I.P.
Consulting Ecologists and Environmental Planners

Ecoplans Ltd.
544 Conestogo Road
WATERLOO, Ontario N2L 4E2

Burlington Landfill Site Continued Use

1. Terms of Reference: Drs. Dorney and Kitchen of Ecoplans Ltd. (c.v.'s attached), in conjunction with Mr. Tony Crutcher of Conestoga-Rovers & Associates Limited (CRA) were retained in January, 1984 by the City of Burlington to advise the Solid Waste Management Committee, the Council and staff on matters related to biophysical information and hydrogeological matters respectively. CRA will be testifying separately and will submit a separate witness statement.
2. Site Visits: April 29 (Dorney and Kitchen, April 30 (Dorney, Kitchen, Douglas Hoffman), May 2 (Dorney). In addition on May 9, Dorney briefly visited the old Waterdown Road area to the west of the site. Dr. Douglas Hoffman is Ecoplans soil scientist (c.v.'s attached as Appendix A).
3. Relevant Experience:

Ecoplans is an interdisciplinary environmental science, design and planning firm which began operations in 1970.

4. Projects of a Similar Nature to this Landfill Include:

RSD = Dorney, CK = Kitchen)

- Sanitary Landfill Site Selection Studies for Regional Municipality of Halton and M.M. Dillon Ltd. (Jan. 1976, Jan.-Feb. 1979, Feb. 1980) (RSD)
- Glanbrook Sanitary Landfill Site: Critique for Town of Glanbrook and Planistics, Ltd. (RSD)
- Sludge Disposal Site Analysis for Regional Municipality of Niagara and Gore and Storrie Ltd. (Environmental Hearing Board) (RSD)
- Tifft Farm, Buffalo, N.Y. site analysis for placing of rotted garbage from Squaw Island for City of Buffalo. (RSD)
- Biophysical inventory sanitary landfill site for Township of Sydenham and Henderson Paddon Assoc. (CK)

5. Projects of a Related Nature Include:

- Aquatic Park and Mimico Creek landfills in Lake Ontario for Metropolitan Toronto and Region Conservation Authority and Johnson, Sustronk and Weinstein. (RSD)
- Hamilton Harbour landfill for Lax Brothers and John Bousfield and Associates. (RSD)
- Slope rehabilitation design and implementation, Bronte and Oakville Creeks for Trans-Northern Pipe Lines. (CK - RSD)
- Slope rehabilitation design and implementation on Thames River valley for Union Gas. (CK - RSD)

- Slope rehabilitation design and site supervision, Manulife Building (Bloor St., Toronto) on adjacent ravine. (RSD)

6. Appearances before Boards:

Both R. S. Dorney and C. M. Kitchen have appeared before the Ontario Municipal Board, National Energy Board, Niagara Escarpment Hearing Board, Ontario Energy Board, Environmental Hearing Board and Land Compensation Board on numerous occasions.

7. Summary of Evidence:

After reviewing the Dillon Report, we have made the following comments regarding the biophysical aspects of site design to City Council, to Regional Staff, and to their consultants (May 2, 1984):

- A. The baseline biophysical inventory is not presented in sufficient detail to insure that a proper comparison can be made some years in the future during completion of the site or after the site is closed. Should the forested slopes of Falcon Creek in the ESA, and the forested headwaters of Indian Creek begin to decline, this suggested quantitative forest inventory (1:5,000 scale, minimum 1 ha mappable unit area) becomes crucial in assessing forest management work. The vigor of the white pine sectors should be documented as they are particularly important as monitors of ecosystem health.

Since the stability and erosion of the valley slopes are a key concern on the site, the soils units (type, slope class, seepage zones, drainage class) should also be mapped at the same time and at the same scale. Appropriate photographic documentation of eroded areas and existing seepage zones should be done. If leachate seepage occurs along the valley walls, they will not be confused with the existing seepage areas.

- B. Erosion on the west side of the site (Area H, Exhibit 13/G-1) is severe (see photos, Appendix B). Remedial work to date is insufficient to insure erosion control and slope integrity in the short term (5 years). Check dams at 3-6 m spacings with rocks above and below the check dams should be installed immediately on all ravines; nodal plantings at each dam (poplar cuttings, virginia creeper, gray dogwood) would then control these points, and these plants would then spread outward from the nodes.
- C. A 20 m (minimum) setback from top of bank (Falcon Creek) should be established along the northern perimeter. A similar setback should be established adjacent to incised channels of Indian Creek in Phase B. All vehicles and land fill activities should be kept outside of the 20 m setback. The appropriate 20 m setback can be agreed upon by all parties in the field.

The setback should be established and permanently marked in the field. Specifically, the present chain link fence along the west and north side can be used to reference the setback. The new perimeter fence for Phase B and D should be established at the top of bank and the 20 metre setback established and marked permanently.

This wider setback will protect the valley walls from disturbance and erosion and trees from possible methane gas migration. The setback also provides room for a leachate interception system should the need arise. Thereby it indirectly reduces the possibility of constructing a leachate interception system in the Falcon Creek valley. This contingency would cause significant impact in the Environmentally Sensitive Area.

The stockpile of excavated fill material shown for Phase A and B (EXHIBIT 7-3, Maps S-7, S-8) should be within the perimeter drain (not outside as shown in S-7, S-8) and appropriate erosion control measures installed to prevent erosion to Falcon Creek.

- if there is ~~leachate~~ seepage along the valley walls, then very likely will need a leachate contingency system in Falcon Creek valley
 - could have a significant impact on valley ecosystem

NB

D. The .6 m (say 2 feet) of final soil cover proposed in EXHIBIT 7-3, (pages S-5, S-6) is in our opinion insufficient to grow the shrubs and trees proposed. A minimum of 30 cm (1 foot) of topsoil over 60-70 cm (2 feet) of clay subsoil would be preferred. This topsoil will help seal the clay reducing infiltration and provide the growth medium for the vegetative cover.

E. The proposed plantings can be improved by using a N-S orientation of the vegetation zones to block the wind, and of sufficient width (5 m or more) to develop interior wind control, and a grey dogwood edge facing west. The dogwoods can be salvaged from the existing hedgerow to be removed (Site G, EXHIBIT 13/G-1), saving thousands of dollars in nursery stock. A balsam poplar or hybrid poplar nurse crop should shorten rehabilitation time from 50

years to 5 or 10. Views from the apartment houses south of 403 and the North Service Road should be assessed to provide maximum "softening" of visual impact, and the view from the top of the fill assessed to maximize public enjoyment of the nature reserve/open space feature. Some mowing of grass lanes between forest plantings would guide park users and would act as a fire break.

8. General Conclusions:

The modifications suggested above highlight our concerns with EXHIBIT 7-1, 7-2, 7-3 (the Dillon Report). If these modifications are accepted, we think the interim expansion can be done without significant damage to the biophysical environment on site or off-site, and that when the site is closed a useable open space asset can be developed on the site.

*hardence of Mr. Wright of
landplan was that if
visual impact vis-a-vis
neighboring residents was
dealt with, then the visual
impact vis-a-vis road for
off viewers would also be
taken care of.
- is this a proper method
or are there different
visual impacts for off viewers
as opposed to neighboring residents?
- what are
visual impacts of?
for off viewers?*

9. Full Report:

An unabridged 15 page copy of the comments outlined above was presented to the Solid Waste Management Committee of the City of Burlington on April 24, 1984. It is available from City staff if required.

10. Signature:

We have read the above material and affirm to its accuracy.

R. S. Dorney, PhD., M.C.I.P.

C. M. Kitchen, PhD., M.C.I.P.

Dated 11 May, 1984

APPENDIX A
Curriculum Vitae

R. S. Dorney
C. M. Kitchen
D. W. Hoffman

CURRICULUM VITAE

PERSONAL

Name: DORNEY, Robert S.

Present Position: Chairman of the Board, Ecoplans Limited
Professor, School of Urban and Regional Planning
University of Waterloo

EDUCATION

1949 B.S., University of Wisconsin, Biological Aspects of Conservation.

1952 M.S., University of Wisconsin, Department of Wildlife Management.

1959 Ph.D., University of Wisconsin, Department of Veterinary Science and Wildlife Management.

PROFESSIONAL AFFILIATIONS

1949 - present Member, The Wildlife Society

1967 - present Member, Ecological Society of America

1974 - present Member, Canadian Institute of Planners

1976 - present Member and Past President, Ontario Society for Environmental Management

1979 - present Member, International Fraternity of Lambda Alpha, Simcoe Chapter

CAREER HISTORY

1949 - 1957 Conservation Biologist, Wisconsin Conservation Department, Madison, Horicon and Ladysmith, Wisconsin.

1958 - 1959 Instructor, Department of Veterinary Science, University of Wisconsin

1959 - 1962 Assistant and Associate Professor, Department of Botany and Zoology, University of Wisconsin Centre, Green Bay.

1964 - 1967 Program Specialist, (Biological Sciences) Department of Scientific Affairs, Pan American Union (Organization of American States), Washington, D.C.

1970 - 1979 President, Ecoplans Ltd., Waterloo, Ontario

1967 - present Professor, School of Urban and Regional Planning, University of Waterloo.

1972 - 1973 Director, School of Urban and Regional Planning, University of Waterloo.

1979 - present Chairman of the Board, Ecoplans Ltd., Waterloo, Ontario.

DORNEY, R.S.

REPRESENTATIVE PROFESSIONAL EXPERIENCE

Project Director - Major Projects

1970	Ecological Appraisal of the Metropolitan Toronto Zoo Project Site, for Metro Toronto Parks Department.
1973	Vegetation Report on Tifft Farm, Buffalo, New York, for the City of Buffalo.
1974 - 75	North Pickering Project, for the Ministry of Housing. As a member of the planning consortium Plantown Ltd., Ecoplans Ltd. carried out assorted projects in environmental analysis and assessment.
1975	Environmental Review of Mimico Creek Landfill Site, with Johnson, Sustronk, Weinstein, for Metropolitan Toronto and Region Conservation Authority.
1975 - 76	Investigation of Environmental Issues for Aquatic Park, with Johnson, Sustronk, Weinstein, for Metropolitan Toronto and Region Conservation Authority/Toronto Harbour Commission/Metro Parks.
1977 - 78	Environmentally Sensitive Area Study, Cambridge, Ontario with Knox, Martin, Kretch Ltd., for Freure Homes Ltd. and Rosedale Galt Farms.
1979 - 82	Environmental Assessment and Feasibility Study of Extractive Industries on the Halton Region, with MacNaughton Planning Consultants Ltd., for Standard Industries Limited.
1979	Environmental Assessment and Feasibility Study of a New Harbour in Port Maitland, with Plansitics Group, for Misener Properties.

DORNEY, R.S.

Project Director - Highway Projects

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|-----------|--|
| 1972 | Highway 406 Environmental Impact Analysis, St. Catharines, for Ministry of Transportation and Communications. |
| 1972 | QEW Highway Environmental Impact Analysis, Hamilton Area, for Ministry of Transportation and Communications. |
| 1973 | Highway 7 Environmental Impact Analysis, Stratford to St. Mary's, for Ministry of Transportation and Communications. |
| 1973 - 74 | Highway 402 London By-Pass Environmental Impact Analysis, for the Ministry of Transportation and Communications. |

Participant - Conferences, Symposia, and other Professional Activities

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|-----------------|---|
| 1965 May-Oct. | Technical co-ordinator for the Pan-American Union sponsored ministerial conference on renewable natural resources, held in Mar del Plata, Argentina, October 1965. Examined Comparative Mapping systems for agriculture, parks, wildlife, forestry for 20 countries in Latin America. |
| 1965 - 1966 May | Guest lecturer on ecosystem management, University of Michigan, International Short Course for National Park Administration. |
| 1965 - 1968 | Member, Editorial Board, The Wildlife Society. |
| 1966 April | Chairman (second day) Conservation Section, Symposium on the Biota of the Amazon, Co-sponsored by the Museu Goeldi and the Association for Tropical Biology, Belem, Brazil. |
| 1967 - 1970 | Member, Governing Council, The Wildlife Disease Association. |
| 1969 Feb. | Invited participant Royal Architectural Institute of Canada Conference to appraise the Federal Task Force Report on Housing, Toronto. |

DORNEY, R.S.

- 1970 Dec. American Association Advancement of Science (A.A.A.S.) Meeting with the Ecological Society of America and Wildlife Society. Invited paper presented entitled "Role of Ecologists as Consultants in Urban Design".
- 1971 Chairman of Symposium on Consulting Ecologists sponsored by the American Institute of Biological Sciences, Miami, Florida, October 25.
- 1972 Seminar Leader, Urban Land Fringe Seminar, Department of Municipal Affairs and Department of the Environment, Regina.
- 1972 Sept. 21 Keynote speaker on Land Use Planning, Seminar sponsored by Canadian Council of Resource and Environmental Ministers, Fredericton, N.B.
- 1973 Guest Lecturer Land-use Planning Course, (2 week duration), University of Calgary (EVDS635).
- 1973 Member organizing Committee and Task Force Leader, Case Studies, Urban Ecosystem Conference, The Institute of Ecology.
- 1973 - present Member, Environmental Advisory Committee, Regional Municipality of Waterloo.
- 1974 Jan. 1 - July 31 Sabbatical Leave, University Istanbul, Faculty of Forestry, and Virginia Polytechnic Institute, Blacksburg, Va.
- 1974 - present Member, Canadian Institute of Planners.
- 1975 December UNDP/FAO Mission Teheran, on Education in the Environmental Sciences (2 weeks)
- 1976 Feb.-Dec. 79 President of Ontario Society for Environmental Management.
- 1976 Feb. Three-week Guest Lecturer, Environmental Design Studio, University of Calgary.
- 1976 April Invited Speaker, The Institute of Ecology, Monterrey, Mexico, on land data systems for regional planning.
- 1976 May Invited Speaker, "Design Seminar", CMHC, Ottawa
- 1976 June One-day Seminar, Environmental Assessment with Des Connor, (Edmonton).

DORNEY, R.S.

- 1976 July Invited Speaker, Int. Cong. Physical Activities Sciences, Quebec. (Ecological Aspects of Recreation and Land-use Planning).
- 1976 Sept. Invited Speaker, Can. Assoc. of Consulting Engineers of Canada, Montreal, Quebec.
- 1976 Oct. Guest Organizer of two week workshop on urban core planning in Washington, D.C. organized by Virginia Polytechnic Institute, Reston, Va.
- 1976 Nov. Invited Speaker, Canada Committee on Ecological (Bio-Physical) Land Classification, Env. Canada (Toronto Meeting).
- 1975 Nov. Two day guest speaker to Landscape Architecture students, University of Manitoba.
- 1977 June Presented Major Theme Paper on Environmental Planning, Canadian Institute of Planners Annual Meeting, Toronto.
- 1978 Feb. Panelist, Canadian Arctic Resources Committee Meeting, Edmonton.
- 1978 Oct. Panelist, Second National Park Conference, Banff, Alberta.
- 1979 May Participant, Institute of Ecology workshop on Global Carbon Dioxide Problem, Indianapolis, Indiana.
- 1979 June Participant, Mini-Course on Urban Water Quality. Canadian Water Resources Association Annual Meeting, Ottawa.
- 1982 October Guest lecturer, Harvard University, School of Design.

Hearings

- 1973 Environmental Hearing Board, Pickering Sewage Treatment Plant Site Environmental Analysis.
- 1974 - 75 Ontario Municipal Board, Environmental Assessment of Donald Lilly and Thomson Rogers/Caledon Mountain Subdivision, study on behalf of Mr. J. Gairdner.
- 1976 Land Compensation Board, Environmental Appraisal of Residential Development of Rattray Marsh for Rattray Estates.

DORNEY, R.S.

- 1976 - 77 National Energy Board, Environmental Assessment of Oil Pipeline from Nanticoke to Hamilton for Interprovincial Pipeline Co. and Trans-Northern Pipe Line Co.
- 1977 Ontario Municipal Board, Environmental Analysis of Nottawasaga River watersheds for Barrie Annexation Study, for South Simcoe Estates.
- 1979 National Energy Board for TransCanada PipeLines Ltd., in the matter of a looped facility from Maple to Lisgar, Ontario.
- 1982 Niagara Escarpment Commission Hearing on Halton Region Quarry (Speyside).

Participant

- 1969 - present Participated in most major projects undertaken by Ecoplans Ltd. including the ongoing project of Erin Mills New Town - Environmental Consultants on various projects including urban forestry, water quality monitoring, agricultural capability, environmental design for Don Mills Development Corp. and Cadillac Fairview Corporation Ltd. and rights-of-way work for various Provincial highway projects and pipeline projects.

CURRICULUM VITAE

PERSONAL

Name: HOFFMAN, Douglas W.

Present Position: Director, Ecoplans Ltd.
Director, School of Urban and Regional Planning,
University of Waterloo, Waterloo, Ontario

EDUCATION

1946 B.S.A., Ontario Agricultural College
1949 M.S.A., Ontario Agricultural College
1973 Ph.D., University of Waterloo

PROFESSIONAL AFFILIATIONS

Past President - Guelph Branch, Agricultural Institute of
Canada
Past President - Guelph Branch, Canadian Mental Health
Past President - Ontario Chapter Soil Conservation Society of
America
Canada Soil Survey Committee
Chairman - Subcommittee on Horizon Designations
Chairman - Subcommittee on Soil Phases
Chairman - Subcommittee on Classification of Brunisolic
Soils
Member - Committee on Nature Reserves
Member - Environmental Committee, Waterloo Area Planning
Board
President's Citation - Soil Conservation Society of America
Member - Peatlands Study Committee of National Forest Lands
Committee
Member - Grand River Conservation Authority 1970-1974
Chairman - Canada Land Inventory Agricultural Subcommittee
Member - Conservation Council of Ontario
Past Warden - St. George's Church, Guelph
Special Studies - "Farm Land Assessment", Assessment Branch
T.E.I.G.A.
- Carrying Capacity, Mono Ridges Provincial
Park
- Land Evaluation for urbanization, septic
tanks, etc., Southampton, Proctor & Redfern
Co., Toronto
Associate Editor - Geoscience Canada
Land Use Capability - Assessors - continuing program of
education

HOFFMAN, D.W.

Drainage Engineers - participation in annual conference
Public Health Inspectors - participation in annual conference
Agricultural Representatives - soil survey interpretation and
land use planning
Girl Guides of Canada - soil conservation workshops
High School Conferences on Environmental Quality
Script and Participation in "Down to Earth" - movie ETV0,
October, 1970
Ontario Federation of Agriculture - Speaker, Simcoe County
Land Use Conference,
Toronto
Soil and Crop Improvement Association - speaker, Simcoe County
Land Use Conference,
Toronto
Geography 102 - Class, University of Waterloo
Rural Sociology - Class, University of Waterloo
Grand River Conservation Authority - Speaker and Panel
Chairman, Land Use
Conference
John F. Ross C.V.I., Guelph - Soil Classification lectures
Soils and Crops Specialists O.M.A.F. - Conferences and
Continuing Education
International Soil Science Society - Meeting Co-Chairman
Motion Pictures - "A Question of Balance", O'Leary
Productions, 1978
Fellow - Canadian Soil Science Society (1978)
Member - Ontario Society for Environmental Management

CAREER HISTORY

1946-1948	Soils Specialist, Ontario Department of Agriculture and Food, Ontario Agricultural College, Guelph
1948-1962	Pedologist, Canada Department of Agriculture
1962-1974	Associate Professor, Soil Science Department, University of Guelph
1973-1974	Acting Director, Centre for Resources Development, University of Guelph
1974-1978	Professor, Land Resources Science Department, University of Guelph
1974-1978	Director, Centre for Resources Development, University of Guelph
1978-present	Director and Professor, School of Urban and Regional Planning, University of Waterloo
1976-present	Director and Principal of Ecoplans Ltd., Waterloo, Ontario

HOFFMAN, D.W.

REPRESENTATIVE PROFESSIONAL EXPERIENCE

Administration

Board of Studies Landscape Architecture, University of Guelph
Senate Committee for the Centre for Resources Development,
University of Guelph
Program Co-ordinator - O.M.A.F. Research Program #33
Agricultural Resource Planning
Co-ordinator - Annual Seminar on Environmental Assessment and
Management
Co-ordinator - Land Evaluation Project
Co-ordinator - Ecologically Sensitive Areas Studies -S.
Wellington, N. Wellington and South Grey Counties

Research

1972 A.R.D.A. project #85057, Project Co-ordinator for Planning for
Agriculture in Southern Ontario, Environmental Impact of
Surface Mining, Onakawana, Ontario (Ontario Ministry of the
Environment)
1973 Orthophoto mapping, R.A.B., Land Use Change Studies - Economics
and Statistics Branch, Ontario Ministry of Agriculture and
Food. Eagle Lake Recreation Study
1973-1974 Project Co-ordinator for Planning and Location Criteria and
Methods for Minimizing Environmental Impact of Hydro Lines
-Ontario Hydro.
1975 Identification and Definition of Landforms of Organic Terrain.
Soil Survey Reports for parts of N. Ontario - studies of Soil
Characteristics and their interpretation for various uses.
Calculation of amounts of classes 1, 2, 3, 4, 5, 6 and 7 land
for agriculture in N. Ontario.
1976 Project Co-ordinator for a Study of the Ecologically Sensitive
Areas of S. Wellington.
1977 Ecologically Sensitive Areas N. Wellington County Farmland
Project: Value of Agricultural Lands, Mississauga, Ontario.
1978 Land Evaluation Project - Agriculture Canada. Ecologically
Sensitive Areas - South Grey County.
1979 Ecologically Sensitive Areas - Lambton County.

HOFFMAN, D.W.

Consulting

1979	The Economic Impact of Electric Transmission Corridors on Rural Property Values. Ecoplans Limited.
1979	Environmental Review of Fonthill Properties. Town of Pelham. Ecoplans Limited.
1978	Soil Survey, Ontario Hydro Bruce to Limehouse Transmission Line. Ecoplans Limited.
1978	Mobile Home Site, New Hamburg. Ecoplans Limited.
1977 & 1979	Trans-Northern PipeLines Environmental Impact of Nanticoke to Hamilton Pipeline. Ecoplans Limited.
1976	Sundance Project. Soil Survey. Ecoplans Limited.
1976	Welcome Project. Soil Survey. Ecoplans Limited.

CURRICULUM VITAE

PERSONAL

Name: KITCHEN, Cameron M.

Present Position: President, Ecoplans Limited

EDUCATION

- 1967 B.A. Geography/Biology
(Hons) Queen's University, Kingston, Ontario
- 1969 M.A. Regional Planning and Resources Development, University
of Waterloo, Waterloo, Ontario
- 1982 Ph.D. University of Glasgow, Glasgow, Scotland, Faculty of
Science (Geography)

PROFESSIONAL AFFILIATIONS

- Member Canadian Institute of Planners
- Member Ontario Society for Environmental Management
- Member Canadian Association of Geographers
- Member Canadian Land Reclamation Association

CAREER HISTORY

- 1966-1967 Queen's University, Research Assistant in Geomorphology.
- 1969 Co-ordination Group, Haldimand-Norfolk Environmental
Assessment
- 1969-1972 Lecturer, School of Urban and Regional Planning, University of
Waterloo
- 1969-1977 Environmental Planner (part-time consultant), Ecoplans
Limited
- 1972-1975 Assistant Professor, School of Urban and Regional Planning,
University of Waterloo
- 1975-1977 Canada Council Fellowship, University of Glasgow, Glasgow,
Scotland
- 1977-present Senior Environmental Planner, President and Vice-President,
Ecoplans Limited
- 1978-1979 Part-time, Land Resources Department, University of Guelph
- 1978-1981 Part-time, Department of Geography, Wilfrid Laurier
University
- 1983 Part-time Adjunct Associate Professor, School of Urban and
Regional Planning, University of Waterloo

KITCHEN, C. M.

REPRESENTATIVE PROFESSIONAL EXPERIENCE

Urban and Residential:	Country Hills, Kitchener, Ontario; Markham Special Study Area 4, Markham, Ontario; River Oaks, Oakville, Ontario; Lakeshore Village, Waterloo, Ontario.
Ontario Highways:	Highway 8 By-Pass Study, Cambridge, Ontario; Queen Elizabeth Highway Study; Burlington Bay Strip, Ontario; Highway 17, Sault Ste. Marie; Highway 11, Sundridge; Highway 406, St. Catharines, Ontario; Highway 16, Ottawa, Ontario; Highway 89, Madill Section; Highway 403, Woodstock.
Recreation Complex:	Port Aberdeen Recreational Community; Metropolitan Toronto Zoo Site.
Special Purpose:	Utica University Campus Study (S.U.N.Y.) Utica, New York.
Utility Corridors:	Nanticoke to Hamilton Oil Pipeline Study; York Durham Sewage line (Ajax Pumping Station).
Engineering and Industrial Projects:	Pickering Sewage Treatment Plant Site Analysis; Tapscott Industrial District, Scarborough, Ont.
Rehabilitation Projects:	Nordheimer/Cedarvale Ravine Study, Toronto, Ont. Nanticoke-Hamilton Pipeline Study.
Surface Mining:	Speyside Gravel Pit: Predevelopment Survey, Ont. Central Ontario Aggregate Study (Environmental Impact Section).
Others:	Seminars and professional education lectures for various professional and non professional groups. Published several articles dealing with environ- mental assessment.
Research Areas:	Application of Environmental Sciences to Planning and Design Decision Making; Derelict Land Management.

KITCHEN, C. M.

PUBLICATIONS

"An Ecological Approach to Improving Urban Design", unpublished M.A. Thesis, University of Waterloo, 1969.

"Ecological Concepts in Subdivision Design", in A. G. McLellan (ed.) The Waterloo County Area: Selected Geographical Essays, Department of Geography Publication No. 1, University of Waterloo, 1971, pp. 255-265.

"Ecology and Urban Development", in R.R. Krueger and R.C. Bryfogle, Urban Problems: A Canadian Reader, Holt, Rinehart and Winston, Toronto, 1971, pp. 282-186.

"The Role of Ecological Appraisal in Urban Development", in R.R. Krueger and R.C. Bryfogle, Urban Problems: A Canadian Reader (revised), Holt, Rinehart and Winston, Toronto, 1975, pp. 254-263

"Ecology and Urban Development: The Theory and Practice of Ecoplanning in Canada", in G.R. McBoyle and E. Sommerville (eds.), Canada's Natural Environment: Essays in Applied Geography, Methuen Press, Toronto, 1976, pp. 217-240.

"Environmental Planning and Urban Development", (pp. 29-42) and "Urban Development and Environmental Assessment", (pp. 79-112), in R.S. Dorney, S.G. Rich and C.M. Kitchen, Environmental Planning, Ecoplans Limited, Waterloo, Ontario, November, 1978.

REPORTS

As a senior project manager for Ecoplans Limited, I have been responsible for the preparation, writing and editing of numerous study reports. These range in length from a few pages to several hundred. A more detailed listing of professional reports will be made available upon request.

APPENDIX B

Photos of Eroded Slope West Side
Landfill Site (Sector H, EXHIBIT 13-G-1)
Taken April 30, 1984

