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WITNESS STATEMENT OF

**A. D. LIGHTSTONE** Ph. D. , P. Eng.
**CONSULTING ENGINEER (ACOUSTICS)**
**VALCOUSTICS CANADA LTD.**

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**IN THE MATTER OF AN APPLICATION BY**
**THE REGIONAL MUNICIPALITY OF HALTON**
**FOR A**
**CERTIFICATE OF APPROVAL**
**FOR THE CONTINUED USE OF**
**THE BURLINGTON LANDFILL SITE**

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WITNESS STATEMENT

OF

A.D. LIGHTSTONE, PH.D., P.ENG.

PROFESSIONAL ENGINEER

VALCOUSTICS CANADA LTD.

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WILLOWDALE, ONTARIO.
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In the Matter of an Application by

THE REGIONAL MUNICIPALITY OF HALTON

FOR THE CONTINUED USE OF THE BURLINGTON LANDFILL SITE

## 1. TESTIMONY REQUESTED BY:

Valcoustics Canada Ltd. has been retained by M.M. Dillon to carry out an environmental noise impact assessment of the continued use of the Burlington Landfill.

## 2. EXPERTISE:

Valcoustics Canada Ltd. - consulting engineers specializing in acoustics - President.

Curriculum vitae - attached as appendix A.

Appearances before OMB or EAB specifically related to approval of landfill operations:

| | |
|---|---|
| Glanbrook Landfill | (OMB & EAB) |
| Halton Landfill | (OMB) |
| City of Owen Sound Landfill | (OMB) |
| Walker Bros. Quarries Ltd. Landfill | (EAB) |

Other:

Land Compensation Board re Glanbrook Landfill
Environmental noise baseline study: Maple Landfill

Numerous other appearances before OMB relating to matters of environment noise.

Numerous environmental noise studies or assessments including City of Toronto Noise Control Study; City of Toronto Railway Noise and Vibration Study; Neebing Planning Area Study, Thunder Bay; Highway 401 Widening; Highway 403; Highway 410; Highway 407; Mountain Corridor, Hamilton; Brimley Road Interchange; Regan-Graham Gravel Pit, Caledon.

## 3. TOPICS TO BE ADDRESSED:

The Operation and Potential Noise Sources.
Environmental Sound Criteria.
Noise Impact Analysis and Assessment.
Sound Level Measurements of Existing Landfill.
Conclusions.

## 4. SUMMARY OF EVIDENCE

### 4.1. The Operation and Potential Noise Sources

Refuse will be transported to the site for sanitary landfilling by municipal and private waste disposal (packer truck) vehicles, and by the general public.

Waste unloaded at the working face will be spread, compacted, and covered using refuse compactors and other diesel-powered equipment.

The working face will move across the designated site according to an operational plan.

The normal complement of site equipment will consist of:

2 refuse compactors;
1 dozer;
1 tractor loader;
1 self-powered scraper;

supplemented when needed with an additional dozer and 2 more scrapers.

## 5. ENVIRONMENTAL SOUND CRITERIA

The applicable criteria as set by the Ministry of the Environment apply to adjacent residential receptors and are:

| TIME PERIOD | MAX. ONE HOUR $L_{eq}$ (dBA) |
|---|---|
| 0700-1900 | 55 |
| 1900-0700 | 45 |

or the existing sound exposure, if produced by man-made activity and in excess of the criteria. $L_{eq}$ is the energy equivalent continuous sound level for the time period in question.

## 6. NOISE IMPACT ANALYSIS AND ASSESSMENT

It has been found that road traffic to the site will not alter the pre-existing sound exposures in any significant way.

The noise model for the activities at the working face, including for peak truck volumes, indicates worst case $L_{eq}$ values of 88-89 dBA at 30 m. This assumes the specified equipment is concentrated at one location and that most is operating for 100% of each time period.

The analysis has focused on the residential neighbours listed below at the indicated distance from the closest operational boundary.

| | |
|---|---|
| Elstone | 410 m |
| Johnson | 620 m |
| Aitkin/Walker | 700 m |

The sound exposures at the above residences due to the landfill will vary with the position of the working face as well as with activity at the working face. In the worst case it is predicted that the one hour $L_{eq}$ values could be as listed below, with the maximum combination of noisiest equipment, shortest distance to the working face, and least advantageous position of the working face.

The banging of tailgates, or shaking of containers on some trucks are expected to create impulsive sound levels as indicated below.

| | Worst - Case Sound Exposure ($L_{eq}$) (dBA) | Impulse Sound Level dBAI |
|---|---|---|
| Elstone | 60 | 76 |
| Johnson | 53 | 69 |
| Walker | 50 | 66 |
| Aitkin | 62 | 66 |

## 7. SOUND LEVEL MEASUREMENTS OF EXISTING LANDFILL

Sound measurements of the existing operations were made at the Aitkin, Johnson, and Elstone properties, continuously over a nominal two hour period in each case. The sound exposures measured (one hour $L_{eq}$) were all below 55 dBA, ranging from 48 to 52 dBA. When normalized to the closest potential distance, the corresponding values ranged from 53 to 60 dBA and are consistent with the predictions. The measurement locations are shown on the attached plan.

## 8. CONCLUSIONS

In general, the continued operation of the landfill as proposed will comply with the Ministry of Environment noise criteria. However, at certain times, there is the potential to create one hour sound exposures up to 7 dBA in excess of the criterion of 55 dBA at the Aitkin residence. This would occur with a maximum combination of the noisiest equipment at a working face position as close as possible to the receptor. Under similar circumstances for the Elstone residence, hourly sound exposure up to 60 dBA is possible. At other residential neighbours compliance with the criteria is expected.

## 9. REPORT

A detailed report dealing with the above in detail has been prepared and is dated March 23, 1984. A letter supplementary to the report was prepared on April 26, 1984.

## 10. SIGNATURE

I have read the above and affirm that the matters referred to are true to the best of my knowledge and belief.


A.D. LIGHTSTONE, PH.D., P.ENG.,
VALCOUSTICS CANADA LTD.
MAY 2, 1984.

AU4WS/021/M-W-010

# APPENDIX A

# CURRICULUM VITAE

A.D. LIGHTSTONE

## PERSONAL INFORMATION

| | |
|---|---|
| Date of Birth: | December 4th, 1945 |
| Place of Birth: | Toronto, Ontario |
| Marital Status: | Married, 3 children |

## EDUCATION

| | |
|---|---|
| B.A. Sc. | 1967 University of Toronto Department of Electrical Engineering |
| M.A. Sc. | 1969 University of Toronto Institute of Biomedical Electronics and Engineering |
| Ph. D. | 1973 University of Toronto Institute of Biomedical Electronics and Engineering |

## EMPLOYMENT

Valcoustics Canada Limited--President

## AFFILIATIONS, PROFESSIONAL AND OTHER

Association of Professional Engineers of Ontario
Institute of Electrical and Electronics Engineers
Acoustical Society of America
Examiner in Acoustics; Royal Architectural Institute of Canada
Member, Canadian Scholarship Trust Advisory Board
Member, Advisory Committee--Acoustics Technology Course, George Brown College
Member, CSA Technical Committee on Acoustics and Noise Control

## EXPERIENCE

| | |
|---|---|
| 1967-1969 | University of Toronto, Development of a real-time computer system for on-line analysis of blood chemistry |
| 1967-1972 | University of Toronto, Teaching Assistant in Acoustics and other laboratories of Department of Electrical Engineering |
| 1969-1973 | University of Toronto, basic research into physiology of eye movements |
| 1971-1976 | Urban Noise Consultants Inc., Vice-President and Director. Design and implementation of instrumentation for City of Toronto Noise Study. |

Analysis of urban noise data. Development of noise abatement regulations and legislation.

1969 to date — Valcoustics Canada Ltd. Consultant in architectural acoustics and noise control. Acoustical design of broadcasting studios, auditoria, educational, business, and residential facilities, etc. Field investigations and design related to solving community, industrial and business noise control problems. Environmental impact studies for residential, commercial, and industrial development, and public works projects such as highways, airports, etc.

## TECHNICAL PAPERS

Modifying the PDP-8 Digital Computer for Indexed Addressing to Aid Programming, Atomic Energy of Canada Ltd., Publication AECL 2621, 1967 (co-author).

Noise Monitoring and Sociological Survey in the City of Toronto, APCA Journal, 23, 2, 105, February, 1973, (co-author).

Corrective Saccades and Visual Inflow During the Prior Saccades, Journal of Optical Society of America, 63, 1311, 1973, (co-author).

Saccadic Eye Movements Towards Stimuli Triggered by Prior Saccades, Vision Research, 16, pp 99-106, 1976, (co-author).

Saccadic Eye Movements to Flashed Targets, Vision Research, 16, pp 107-114, 1976, (co-author).

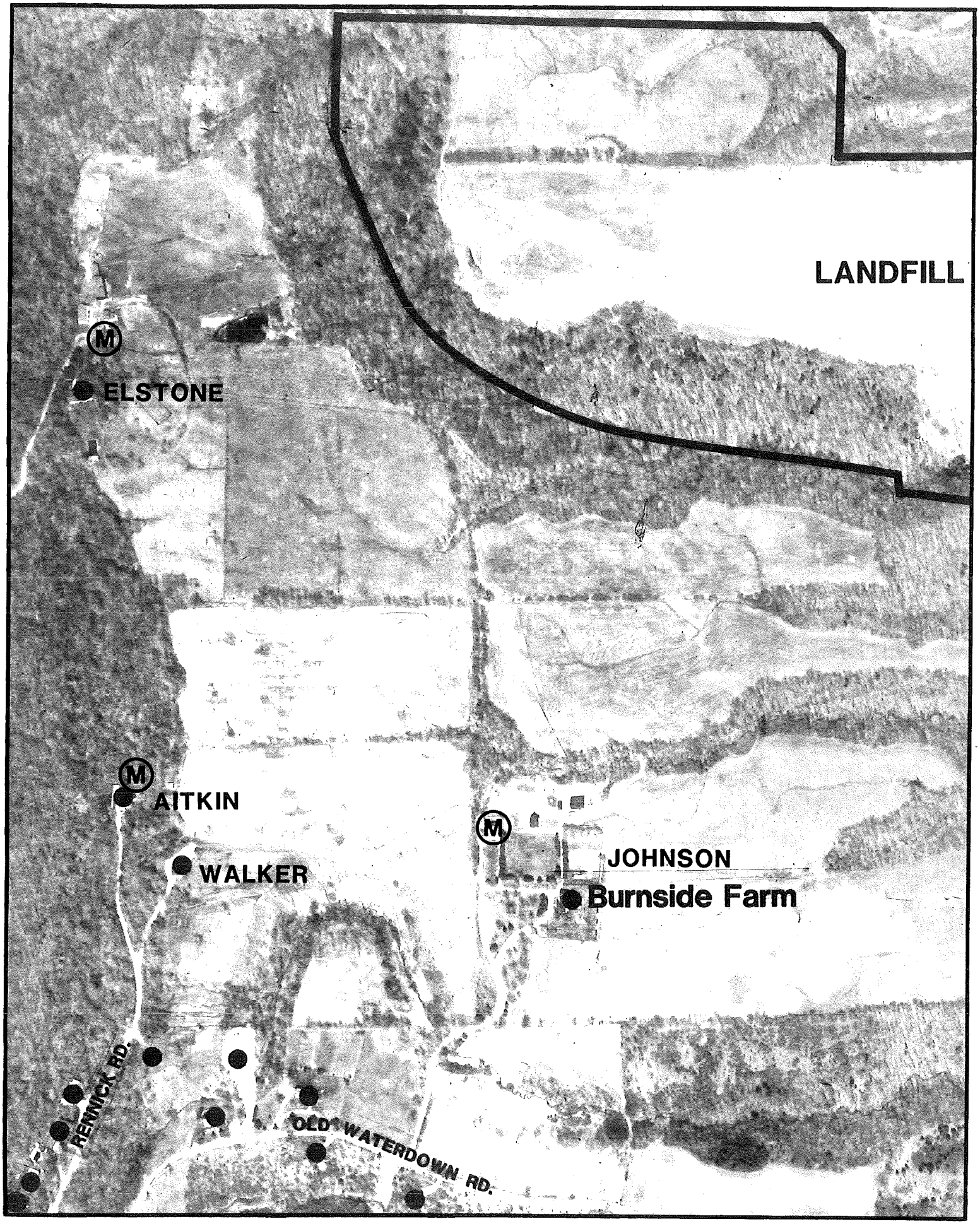
Trends in Environmental Noise Legislation and Industrial-Residential Compatibility, Invited paper presented to the Pollution, Energy, and Process Engineering Conference, Toronto, June 20th, 1979.

Sound Masking in the Office, The Canadian Architect, Vol. 24, No. 11, November, 1979.

Acoustic Design Considerations for Imax Theatres, paper presented to the October, 1982 symposium of the Canadian Acoustical Association, in Toronto.

Sound Masking, Canada's Contract Magazine, 3, pp 26-29, March/April, 1984.

Mechanical Vibration and Sound Levels Experienced in Neonatal Transport, American Journal of Diseases of Children, accepted for publication, (co-author).




NOISE MEASUREMENT LOCATION (M)