Province of British Columbia

Ministry of Environment and Parks

ENVIRONMENTAL APPEAL BOARD
Victoria
British Columbia
V8V 1X5

APPEAL NO. 87/18 WASTE

JUDGEMENT:

In the appeals made under the Waste Management Act, and the Environment Management Act, against the decision of the Director of Waste Management, dated March 18th, 1987, authoring the issuance of Waste Management Permit PR-7653, to Continental Environmental Systems Ltd., for the discharge of typical municipal refuse, including light industrial waste, from the Greater Vancouver Regional District and adjacent municipalities, and from the community of 70 Mile House and surrounding areas, to land located approximately 4 kilometers south of 70 Mile House, British Columbia.

APPELLANTS:

1)	Bill and Iris Baker		Clinton, B. C.
2)	Mrs. Vera Brundage	-	Clinton, B.C.
3)	Dr. Frank M. Campbell	-	Clinton, B. C.
4)	Cariboo Clean Water & Air Committee		70 Mile House, B. C.
5)	Double R Bar Ranch	-	Clinton, B. C.
6)	Mrs. Beverly French	-	Clinton, B. C.
7)	Interior Waste Management Committee	-	Lillooet.B. C.
8)	Joan and Murray Kane	-	Ashcroft, B. C.
9)	Mrs. Lynda Krupp	-	70 Mile House, B. C.
10)	Mr. & Mrs. Clint Langton	-	Clinton, B. C.
11)	J.D. & M.E. McMurphy	-	Clinton, B. C.
12)	D.T. & Millie Mulholland		Clinton, B. C.
13)	Green Lake Leaseholders Assoc.	-	70 Mile House, B. C.
14)	Mrs. Bonnie L'Heureux	-	70 Mile House, B. C.
15)	B.A. Whiffin	-	70 Mile House, B. C.
16)	70 Mile Women's Institute	-	70 Mile House, B. C.
17)	Watch Lake & District Women's Institute	-	70 Mile House, B. C.
18)	Watch Lake-Green Lake Community Association	-	70 Mile House, B. C.
19)	J. S. Grimshire	-	Clinton, B. C.
20)	The 70-Mile Volunteer Fire Department	-	70 Mile House, B. C.
21)	The Rea Family	-	70 Mile House, B. C.
22)	Judy & Joe Hampton	-	Clinton, B. C.

HEARING DETAILS:

The appeals were heard on July 7 and 8th, September 9th, 10th and 11th, and October 5th, 1987, at the Village Hall, in Clinton, B. C.

The three-man Panel of the Board were:

Mr. H.D.C. Hunter,	-	Panel Chairman
Mr. Duncan Heddle,	-	Member
Mr. G.E. Simmons,	-	Member

Miss Shirley Mitchell, Executive Secretary to the Board, acted as recorder for the proceedings.

THE REGISTERED APPELLANTS:

The registered appellants who gave evidence were as follows:

Double R. Bar Ranch - Mrs. Renee Tapping, Manager
Mrs. Beverly French
Interior Waste Management Committee - represented by John McCandless
Mrs. Joan Kane
Mr. & Mrs. J.D. Murphy

Cariboo Clean Water & Air Committee, represented by Mr. R. D. Schachter, Counsel, who represented also the following individual appellants:

Mr. & Mrs. Bill Baker
Mr. B.A. Whiffin
Mr. & Mrs. C. Langton
Mrs. B. L'Heureux
Mr. J.S. Grimshire
Green Lake Leaseholders' Association
Watch Lake-Green Lake Community Association
70 Mile Women's Institute

Watch Lake & District Women's Institute and
Mrs. Lynda Krupp were represented by Mr. R. Friesen

Mr. & Mrs. D. T. Mulholland
Mrs. Vera Brundage
Dr. F. M. Campbell

The appeals of The Rea Family, the 70 Mile Volunteer Fire Department and Joe and Judy Hampton are abandoned.

RESPONDENT

CONTINENTAL ENVIRONMENTAL SERVICES LTD. - represented by Tex Enemark, Chairman and Chief Executive Officer

Witnesses: Dr. Myles Parsons, P. Eng.
Dr. Robert Cameron, P. Eng.

WASTE MANAGEMENT BRANCH - represented by N. Logan Stewart, Counsel.

Witnesses: Mr. R.H. Ferguson, P. Eng.,
Director of Waste Management
Mr. N.A. Eckstein, P. Eng.,
Head, Municipal Section, Kamloops Office
Miss Louise Ouellet, P. Eng.,
Process Engineer, Municipal Section, Kamloops

The Greater Vancouver Regional District was invited by the Board to send a representative to the hearing to outline the interest of the Regional District in Permit PR-7653. Mr. Douglas L. MacKay, P. Eng., Consulting Engineer and former General Manager of the Greater Vancouver Regional was present in this capacity.

EXHIBITS:

No. 1	Permit No. 7653
No. 2	Resume of Assessment by N.A. Eckstein, P. Eng.
No. 3	Technical Assessment by L. Ouellet, P. Eng.
No. 4	Forestry Map of the Fly Creek Unit.
No. 5	Map sheet 92 P/SW marked by Forestry
No. 6	Table of Toxic Levels of Landfill Leachate
No. 7	Two Tables from Ministry of Agriculture and Waste Management Branch
No. 8	Article on Alternative Methods of Waste Disposal
No. 9	Calendar sheets of June 1939 and August-October 1941
No. 10	Letter from Mr. R.O. Schachter dated 28 August 1987
No. 11	Report by Mr. N. Skermer, P. Eng.
No. 12	Report by Mr. W. Brown, P. Eng.
No. 13	List of water wells
No. 14	Sheet of aerial photographs
No. 15	Letter from Thompson-Nicola Regional District dated 27 August 1987
No. 16	Letter from Village of 100 Mile House dated 28 August 1987.
No. 17	Letter from City of Quesnel dated 3 August 1987
No. 18	Letter from Village of 100 Mile House dated 15 May 1987
No. 19	Letter from Village of Clinton dated 12 March 1987
No. 20	Resolution of the Cariboo Social Credit Constituency Association dated 14 June 1987

No. 21 Resolution of 70 Mile Women's Institute dated 4 June 1987

No. 22 Newspaper extracts. Notice of Application dated 18 November 1986 and article dated 19 November 1986

No. 23 Two photographs taken 3 April 1987

No. 24 Folder of presentation by Watch Lake Women's Institute and Mrs. Lynda Krupp

No. 25 Reference materials incorporated into Ex. 24

No. 26 Packet of letters

No. 27 List of the legal descriptions of properties owned by members of Cariboo Clean Water & Air Committee

No. 28 Report by Klohn Leonoff dated 18 November 1986

No. 29 Letter-report by Klohn Leonoff dated 2 December 1986

No. 30 Letter from Continental Environmental Systems Ltd to Waste Management Branch dated 9 February 1987 and letter from Cariboo Clean Water & Air Association dated 20 January 1987

No. 31 Letter from Klohn Leonoff to Permit Holder September 18 1987

No. 32 Qualifications of Dr. Cameron

No. 33 Summary of Dr. Cameron's evidence

No. 34 Provisional Certificate of Approval of Province of Ontario

The hearings opened with Mr. Tex Enemark, representing the Permit Holder, providing an outline of the project for which the permit had been issued.

Mr. Douglas L. MacKay, representing the Greater Vancouver Regional District, spoke of the District's interest in matters relating to the landfill project permitted by Permit PR-7653. and submitted - "Brief to Environmental Appeal Board Permit PR-7653 Koster Siding", which was marked Exhibit "A" for identification.

Neither of the two above-noted gentlemen were deemed to be giving evidence and their presentations were unsworn. No questions were permitted.

SUMMARIES OF APPELLANTS' PRESENTATIONS

Double R Bar Ranch - Mrs. Renee Tapping

Mrs. Tapping gave evidence. The area of the proposed dump is in range land leased to her ranch for many years.

The water in the area is used by livestock, for residential use, and for irrigation.

She was concerned that leachate or runoff would contaminate the water in ponds or watering-holes used by stock, and could contaminate the groundwater on which her ranch and others depended.

She produced maps (Exhibits 4 and 5) showing grazing areas, contours, and swamp or pond areas. She owns deeded property in the area and her ranch is at the bottom of the Chasm. The Chasm stream is fed by springs.

She produced a chart (Exhibit 6) which she had prepared from various sources, showing various toxic substances, and the levels at which they were dangerous to stock and humans.

She was concerned that a dump would increase the number of rodents and predators which would also impact on the stock.

The proposed dumpsite of about one square-mile was at the high point in the range. It was crucial to the whole range as the stock crossed this area constantly in moving from one part of the range to another. Stock would not change their habits and if this were fenced, the stock would remain in one area.

She considered the number of drill holes to be inadequate and she doubted the accuracy of the climatic conditions in the permit holder's reports. The weather had been unusually dry for several years, and the dump site, being at the highest point, received more precipitation than where records were maintained.

She also expressed concern that increased truck traffic could cause injury and death to stock for which she would not be compensated, and she was concerned about compensation for loss of key range land. Finally, but not least, she was concerned at the loss in value of the ranch if the water supplies became unusable.

Cross-examination by Mr. Enemark was directed mostly to the point of negotiations or information regarding the project. This revealed that Mrs. Tapping was concerned at the difficulty of converting early assurances into later compensation.

Mr. Enemark was granted permission to delay cross-examination on the toxicity chart until later to permit a proper study of the same.

Mr. J.D. McMurphy

Mr. McMurphy, with property across the Chasm from the site, was concerned at possible pollution to his well.

Site Inspection

Following the presentation of evidence by these two appellants, the Board were taken on a tour, under the leadership of Mrs. Tapping, of the area of the dumpsite and of the swamps and ponds which could be affected by runoff or leachate.

Interior Waste Management Committee - represented by Mr. John McCandless.

The Board ruled that his grounds of appeal 1, 2 and 4 (other than the heading) and 7, were outside the Board's jurisdiction and they would not listen to evidence on these matters.

Mr. McCandless considered that a comparative study of landfills in other dry areas was required to study leachate movement.

He referred to a recommendation in the Waste Management staff report that a bond be provided, and considered that this should have been contained in the permit. However, he considered the recommended amount as inadequate.

He regretted that hazardous wastes and international waste had not been specifically excluded in the permit, as recommended by Waste Management staff. He pointed out that about 60,000 tons of waste would come from Dewdney-Alouette Regional District or Central Fraser Valley Regional District, which did not use any form of sorting. The permit should require that any hazardous waste delivered to the site should be returned to the GVRD.

He referred to model rules or guidelines in a GVRD report.

Cross-examination by the Permit Holder and Waste Management Branch did not clarify the objections raised.

Mrs. Beverly French

She lives 5 miles north of Clinton, across Chasm from the site. She has a well which is into bedrock and it has never gone dry.

She alleged that the climatic conditions had been underestimated. Old-timers referred to heavy snowfalls followed by chinook winds which had caused very heavy runoff.

Mrs. Joan Kane

Mrs. Joan Kane has lived in the general area for 40 years. Her specific evidence was that the present period is peculiarly dry, and the area can be much wetter. She called as witnesses:

Mrs. Shirley Miller has lived at 57 Mile House for 35 years and her husband's family for 100 years. The Koster area has been dry for a few years, but there used to be ponds there where her husband had watered his horses.

Mr. William Reaugh came to the area in 1936. The weather was dryish until 1939 when it began to rain. Through until the early 1960's, the weather was wet, and in 1956, Green Lake had risen by 14 feet. He had had to swim cattle to an island which is now only a peninsula. All the lakes were full and all the potholes were full. It was possible to row a boat from Watch Lake to 70 Mile House. Since about 1960, the weather had been drier and the ponds had become smaller or dry.

Mrs. Molly Cunningham produced copies of calendars for June 1939, August, September, October 1941 (Exhibit 9) on which she and her husband had recorded the weather. They showed very extensive rain.

Mrs. Kane then expressed concern that if the weather turned wetter again, more leachate would be produced, more runoff would reach the surface water ponds.

She expressed concern, from experience, that the dump would be inoperable during cold weather as the soil cover could not be spread or compacted, and machinery could not operate.

She also considered that as the soil is now dry in spite of 3 days of rain, it must be permeable.

The hearings were then adjourned until 9:00 a.m., on September 9th, 1987.

The hearings resumed at Clinton on September 9th, 1987.

Mr. Tex Enemark stated that he would not seek to cross-examine Mrs. Tapping on Exhibit 6.

Mrs. Millie Mulholland

She disagreed with the reference in the application that there were only a small number of animals in the area. In particular, she was concerned with birds being attracted to the area as it was well known that birds carried diseases.

The odours, even if minimal, would attract predators, and if fencing prevented the predators from entering the area, they would turn to other food sources, particularly the cattle and domestic animals.

She also doubted if reclamation would be feasible because deep-rooted plants would not flourish as the refuse would inhibit root growth, and seeds for the local natural grasses are not available.

Above all, she was concerned with damage to wells and water sources. Once contaminated, they could not be cleaned up.

She alleged that the Waste Management Branch could increase the permitted quantity or alter the permitted quality without reference to the local inhabitants.

She also disagreed with the references to water on the site and she considered the weather records unreliable.

Under cross-examination, she admitted that she was not familiar with reclamation work on mining sites. She did not consider the Clinton dump as an example, as the proposed site would always have more garbage visible.

EVIDENCE OF APPELLANTS REPRESENTED BY MR. SCHACHTER

Before presentation of evidence, Mr. Schachter demanded that the Greater Vancouver Regional District and the Waste Management Branch be required to give evidence. No ruling was made at this time.

Cariboo Clean Water & Air Committee

Mr. Don L'Heureux said that the Cariboo Clean Water & Air Committee was formed in 1982 to oppose a special waste dump proposed for the area. It has continued its opposition to the proposed municipal garbage dump.

The Committee was particularly concerned with effects on water. He considered that there was a large amount of water in the bedrock.

Mr. D. McConnell was then called to give evidence on ground water. He lives at 70 Mile House and has had wells for several years. In 1975, he drilled a test hole and found water at about 8 or 9 feet down. In March/April of 1987, he had drilled wells to 58, 120, 43 and 23 feet: all had water. One well pumped at 180 g.p.m. for several hours, and then recovered in one hour.

Under cross-examination, he stated that all wells went to bedrock at about 16 feet. The deeper wells have met fractured rock for about 35 feet and well into 30 feet of bedrock.

Mr. J.S. Grimshire and Mr. R. Willis gave evidence jointly. They have farmed and grazed cattle for several years, and gave evidence on groundwater supplies and wells.

Of particular interest is that in this year of drought, they have dug water holes for cattle in or near the site. One went down 10 feet and had five feet of water in it. One filled so rapidly that the backhoe had trouble getting out.

They were concerned that any odour would be trapped in the valleys, as inversions are very common and last for days.

Mr. N. Skermer, P. Eng., was called and qualified as an expert in soil and rock mechanics.

Mr. W. Brown, P. Eng., was called and qualified as a hydrogeologist.

Mr. Skermer had read the report of Klohn Leonoff. In his opinion, not enough work had been done to show the geology of the site, in particular, the elevation of the bedrock.

Mr. Skermer said that the overburden was very variable in elevation and quality. The bedrock was basalt and this is very difficult to estimate as to permeability. Basalt is volcanic and can contain layers of other materials as well as fractures.

The report did not indicate the method of testing the material. There was no analysis of the fines and, in his opinion, there was no clay. Clay was important for its cleansing properties.

The drill holes had been made by a Bekker Hammer. This did not recover cores and so stratification was not shown, and this tended to produce a higher percentage of fines than the site actually contained.

Site testing is a step-by-step process and the plans should be based on worst conditions.

The design and construction of a liner was a skilled operation and the construction must be supervised carefully.

Mr. Brown's report (Exhibit 12) was written after studying the Klohn Leonoff reports.

Pumping tests may show fractured rock to have permeability as high as 10^{-3}, and a fracture zone can be as permeable as sand and gravel, and may have to be cased.

There is no data on the elevation of the test holes so there is no information as to the actual elevations of the water table. In his opinion, from a study of aerial photos, there could be groundwater flow to the north or northwest, as well as to the Bonaparte River to the south.

From the earlier evidence, he considered that there was a perched water table which may or may not be connected to the main groundwater.

With regard to the water balance tables, he considered daily records were needed as storm events could easily overwhelm the evapotranspiration system. There is water in the ground; therefore, there must be some infiltration.

Under cross-examination, Mr. Skermer agreed that a fracture could be filled with tight material and then be nearly impervious.

Mr. Brown maintained that the evidence of the water-holes showed that there is some infiltration and the water balance table in wrong.

The Cariboo Clean Water & Air Committee presented a panel of Mr. Don L'Heureux, Mrs. Bonnie L'Heureux and Mr. E. Geisler.

Evidence was produced, in the form of letters, that local municipalities were opposed to the project. The guidelines for a sanitary landfill were for a local dump - not a megadump like the one proposed.

At public meetings, the permit holder maintained that there was no water on site to be concerned about. In the spring time, all the low spots hold water which disappears into the ground. A photo taken on April 3, 1987, was produced to illustrate the point.

Mrs. Vera Brundage gave evidence that the site was chosen largely because of the railway and R.R. 1 zoning. She read from a policy statement issued by the Association of Professional Engineers of B.C. In her opinion, no one knows what will happen on the site, and she was concerned about the responsibility for clean-up costs.

Dr. Frank Campbell gave evidence. He is a medical doctor practising in Clinton.

There is a reservoir of water or aquifer in the bedrock. This was shown by some of the fractures containing carbonates which are water-borne. Being basalt, there may be caves in the rock.

Near Chasm and in the Meadow Lake Road area, there are holes with no soil. Such holes would be a rapid conduit for leachate. It was known that underground watercourses can and do change course due to erosion.

Gas escapes from landfills. Some gases are heavier than air and will flow downhill. Some are dangerous; some merely unpleasant. Gas detection equipment will have to be maintained for years after closure. Animals, particularly those which feed at ground level, may be much more susceptible to damage from gases than humans. This could get into the food chains.

The permit conditions are inadequate to ensure protection to people and animals in the area.

Under cross-examination, Dr. Campbell agreed that dilution can be a factor in toxicity, but many toxins are retained in the body and thus accumulate. No one knows what the safe levels are for accumulation.

The Watch Lake Women's Institute and Mrs. Krupp, under the direction of Mr. R. Friesen, gave evidence. (Mrs. L. Krupp, Mrs. I. Fulton, Mrs. R. Karman and Mr. R. Friesen).

Their evidence is filed as Exhibits 24 and 25.

They are concerned that there is a former meltwater channel on the northwest corner of the site and there may be others. More knowledge of leachate is required. More evidence of the moisture content of the garbage is required; the wetter the garbage, the less moisture it can absorb, and this garbage is to come from the Lower Mainland - a wet area. Decomposition produces its own moisture.

They are concerned also that the Waste Management Branch can vary the acceptability criteria for garbage. And special wastes are not excluded in the permit.

The precipitation data in the Klohn Leonoff report are wrong.

The group are concerned with what is not known; the type of pesticide to be expected, the moisture content of the garbage, the permeability of the overburden and the basalt, the slope of the groundwater gradient.

Post-permit testing may discover or may uncover things, but there is little faith in the Waste Management Branch.

The Chairman then ruled that the Waste Management Branch will not be called on to disclose why the permit was issued, as this is irrelevant, but will be required to explain how operational and other plans will be considered and approved, and how a permit will be policed.

After some argument, this ruling was maintained. Mr. Schachter, and others, formally objected to the ruling.

CONTINENTAL ENVIRONMENTAL SYSTEMS LTD (CES), the permit holder, then began to present its evidence.

Dr. Myles Parsons, P. Eng. was called. He is regional manager for Klohn Leonoff and was qualified as an expert in hydrogeology.

His firm was retained in 1980 to look for sites in the four western provinces for a chemical and special waste dump. The Koster site was selected as the most favourable looking site in British Columbia, and some preliminary testing was done in 1981 and 1982. This was seismic work and also test drilling and permeability testing. The project was suddenly cancelled and no further work was then done.

In 1986, CES, the permit holder, approached the firm and the consent of the former client was obtained to use the earlier data and to work for CES. Some additional data were obtained and the formal application for a permit was made.

The seismic testing included some 40 soundings to obtain a profile of the bedrock surface. In 1982, seven holes were drilled to test the validity of the soundings and to test the overburden and bedrock. These test holes were sampled at one-meter intervals and at every change in material.

They installed about 50 piezometers in the 7 holes. Between 1982 and 1986, the ground had been scarified following logging and the test holes could not immediately be found.

There were some 23 soil samples analysed and 3 samples were subjected to petrographic analysis.

Snowpack levels were measured and water quality analyses made of water from potholes. Streamflow data, snowpack data, ice thickness and weather data, and all available climatic data, were obtained.

In 1986, well records were obtained, aerial photographs were studied, and weather data were updated.

In his opinion, the water balance tables show that the soil moisture never reaches its water holding capacity, and there is no recharge of groundwater in the site area.

There is a local groundwater collection system, as indicated by a perched water table, but this does not contribute to the main groundwater recharge.

The water samples show a very high quantity of alkalinity, which is consistent with water bodies which evaporate.

He stated that it was hard to conceive of a groundwater movement north from the area, even more so as far as Green Lake.

The resources map of D. Farley in the Watch Lake material (Tab 3, Exhibit 25) was the result of an office study, and was purely a planning tool. It had no value for a site evaluation.

He expanded on the test hole logs and on the material test report.

He had made a rough calculation on the timing of leachate flow, if any. Assuming a constant permeability of 10^{-4} (conservative, as this was about the most permeable material on site), it would take leachate about 800 years to reach a site at the top end of the Chasm.

In his opinion, the information was adequate for permitting purposes, but much more work would be required before an operational plan could be prepared.

Under cross-examination by Mr. Schachter, Dr. Parsons agreed that the test hole elevations had not been surveyed. Work was stopped in 1982 before this was done. In November, 1986, they only had, or thought they had, one water level reading, although another was subsequently found.

The reference in the test hole report to a leaky seal was a matter of the discretion of the engineer in the field. He supported his engineer. This vitiated any subsequent testing in that hole.

It was not unexpected to find water subsequently in two of the test holes.

Mr. Enemark was not ready to present his next witness as some preparatory work had to be done in view of the brief from the Watch Lake Women's Institute. As a result, the hearing was adjourned to Monday, October 5th, 1987, at 9:00 a.m.

The hearings resumed at Clinton on October 5th, 1987.

Dr. Robert D. Cameron, Ph.D., P. Eng., was called by the permit holder and was qualified as an expert in solid refuse disposal.

His evidence is summarized in Exhibit 33.

He was retained as a subconsultant to Klohn Leonoff sometime in 1986. He had reviewed the Klohn Leonoff report.

In his opinion, one of the prime considerations was the climate. In a dry climate, the invasion by surface water is reduced, and this is further assisted by the site being on a topographic high.

The cover material is also important with respect to possible leachate generation.

In any event, there must be a backup system to check for and, if present, to collect leachate.

A buffer zone, preferably with trees, disperses any odour and controls winds and litter.

The Koster site meets all these criteria. There is a difference between a dump and a landfill. A dump is usually a trench which has soil piled on top periodically, between every 3 days or every month.

A sanitary landfill has soil cover applied every day and on completion is covered by about a meter of soil. A sanitary landfill is a managed operation.

There are certain engineering features in a landfill.

Compaction is required. This includes mixing the refuse to make a more homogeneous mass. It minimizes differential settlement and avoids ponding, and this reduces leachate.

A leachate collection system can be made. This will depend on the soil. If the soil has low permeability, placing perforated pipes on the ground and sloping the fill will be adequate.

If the soil is of high permeability, a liner may be required as well as pipes.

The cover is important. Flies cannot emerge through six inches of soil, and rats will not dig to obtain food. The cover controls litter and the cell type of construction helps control a fire, which is in fact highly unlikely. The type of cover affects runoff and absorption. The bacteria in the soil minimizes the escape of gas and odours. Reclamation is planned as part of the operational design.

The terms of the permit and the application are directed to a model landfill. The lower Mainland model was directed to an area of high precipitation. It is in fact a set of concepts.

Dr. Cameron had inspected all of the 28 dumps in the Thompson-Nicola Regional District and could see no traces of leachate in any of them. Leachate frequently can be seen as springs on the side of the dump, when it is present. In his opinion, the lack of moisture is the main reason for no leachate.

He has found no evidence to connect landfills and ill health in users or nearby inhabitants. There have been unsubstantiated claims. There will be no contact with hospital wastes. The public will have no contact, and local inhabitants will deposit their refuse in special containers: not directly onto the site.

He also maintained that it is impossible to remove small, hazardous waste material from the refuse, and these pose absolutely no danger. There is no evidence of large quantities of pesticides being deposited in the Langley dump, which serves a very large part of the Central Fraser Valley. In any event, unless there is rain, there will be no leachate.

The absorption capacity of garbage is largely in the paper and cardboard contents. In a test at U.B.C., in which the equivalent of 90 inches of rain over a year was applied, no moisture went through the garbage.

Aerobic decomposition produces moisture. Anaerobic decomposition is the long-term process.

Odours are rapidly attenuated by wind, and he could foresee no problem at 2 kilometers. Inversions were caused by high pressure and this reduces gas production, while calm air prevents migration.

Turning to leachate production, Dr. Cameron had calculated absorption and penetration for 100-year storms at this site; the details appear in Exhibit 33, Pages 9 - 14. In his opinion, no leachate will be produced. He referred to conversations with officials in Edmonton and Calgary, whose refuse sites had produced no leachate over many years of use.

With respect to heavy metals, the uptake by plants was small and as there would be a one-meter cover, only very deep-rooted plants could be affected at all. As for groundwater, unless there was leachate movement, there would be no migration.

Distance attenuates leachate. In Langley, the bottom six feet of the dump is in an aquifer and the maximum migration was 1200 meters.

After closure of a landfill, care is required to avoid any ponding caused by differential settlement.

In conclusion, he believed the site is safe.

Under cross-examination, he agreed that the closure procedures should be part of the permit, and that a leachate monitoring system will be needed.

He could not estimate drainage costs as this was all hypothetical.

Removing paper from the refuse will reduce its absorptive capacity, but he could not estimate the percentage.

Garbage does not of itself produce leachate; there must be added moisture.

There is no possibility of contamination of nearby cattle ponds. Leachate goes downwards, not horizontally. The perched water table is not deep enough to be dangerous.

WASTE MANAGEMENT BRANCH

Mr. R.H. Ferguson, Mr. N.A. Eckstein, and Miss Louise Ouellet sat as a panel and gave evidence.

They explained the information which would be required before an operational plan would be approved. It included a bedrock profile, the directions of flow of any groundwater found, the depth of subsoil, the quality of materials for cover.

The plan would have to cover policies with respect to testing for and control of leachate, the use of liners, if necessary, and the methods for ensuring that cover material would be available even in freezing weather.

The plans would be reviewed by regional and headquarters staff with outside assistance, if necessary.

It was emphasized that approval must be obtained before any disposal was started.

There were various levels of enforcement depending on the nature and seriousness of non-compliance. At the top end was suspension or cancellation of the permit. If a pollution emergency developed in spite of compliance, the permit could be suspended.

The Branch would do its own monitoring in addition to that required by the Permittee. They would establish background standards before any disposal started.

Under cross-examination, it was agreed that hazardous wastes are excluded by the permit because they are not included.

The design report is critical to the whole operation.

There is no particular procedure or requirement for the public to be informed or involved.

There is no policy regarding public input nor regarding insurance. A contingency fund could be used for cleanup.

The parties then summed up their positions and submissions.

The hearings were closed at 9:00 p.m. on October 5th, 1987.

DECISION:

It is clear to the Board that the concern of the appellants can be summarized by saying that there is not enough data available to show that the environment, as it affects them all in different facets of their lives, will not be adversely affected if refuse is deposited at the Koster site, as the permit appears to allow.

The Board agrees with this concern, but it must be realized that the permit as issued does not permit any refuse to be deposited at all. The Permittee must have other plans approved before permission to deposit is granted. This is already written into the permit. These other plans will require the gathering of much further and more precise data.

One of the experts put forward by appellants stated that the permitting process is a step-by-step process. Mr. Schachter introduced documents from Ontario which appear to indicate that in that province, no form of permit is issued until everything is ready to go. Such a requirement calls on the applicant to spend large sums of money without any assurance at all that he will receive any permission in the end. The Board was urged to follow the Ontario practice and to cancel the permit until all the plans were finalized.

Even if the evidence of the Ontario practice had been fully and completely proved, the Board could not accede to this request. It has been the legislative and government policy in British Columbia for many years that an applicant can obtain a general authority at a comparatively early stage and so have some comfort in spending further, perhaps large, sums in finalizing the process. This policy has been followed under the Water Act, to the knowledge of members of the panel, since before 1956. It has been followed in respect to environmental matters consistently since the first Pollution Control Act was passed in 1960. The Board cannot change this policy even if it wished to do so; such a change can only come from government.

The Board is satisfied that enough data is available to justify the issue of Permit PR-7653 as a preliminary step, and the Board accordingly dismisses the appeals to rescind the permit.

The decision not to rescind the permit does not end the matter. The approval of the operating plan and the closure plan is not only called for in the permit, but is an integral part of the permitting process. The public is entitled to the same rights of knowledge of the plans and to the same opportunity for input as they have in the permit. It is indeed clear that members of the public in this case, as in most cases, have a store of valuable local knowledge which should not be ignored by either the permit holder or the Waste Management Branch.

The present conditions of the permit which has been issued by the Director call for the plans to be aproved by the Regional Waste Manager. If such an approval is objected to, the appellants have to appeal to the Director, and the only appeal to this Board is from a decision of the Director. This would involve appellants, the permit holder and the Branch in perhaps two appeals, at great inconvenience and expense. The permit will, therefore, be amended to require that the operating plan, the closure plan and any other similar plan, must be approved by the Director, not the Regional Waste Manager.

As already mentioned, approval of the plans is part of the total permit system. The permit holder must, therefore, provide not only its proposed plans to the appellants but also the data on which they are based. Equally, the Waste Management Branch must give proper consideration to all evidence and comments received from appellants.

This present appeal is completed by this decision so "appellants" may be the wrong word to use. Furthermore, it will be several months at least before the permit holder can collect enough data and prepare proper plans for submission to the Director. By that time, some appellants may have moved and other persons have taken their place. This must be provided for.

There was little evidence given as to a trust fund for possible damage repair or cleanup. However, the permit holder has offered to provide such a fund. Accordingly, such a provision will be added to the permit.

There was legitimate concern expressed against the possibility of damage to wells or persons or cattle. Obviously, any alleged damage will have to be proved as arising from the operation of the landfill. Even if this can be done, there can be, by Statute, no claim against the Government or its employees: the claim must be against the permit holder. It is, therefore, reasonable to require the permit holder to maintain public liability insurance as a source of funds to meet such claims.

The Board is satisfied that as a matter of law, the Waste Management Branch is correct in holding that there is no need specifically to exclude hazardous wastes or special wastes. However, it may give comfort to the appellants to require some suitable words of exclusion.

IN CONCLUSION, THEREFORE:

1. The Board declines to order Permit PR-7653 to be cancelled.

2. The Board orders the Director to amend the appendices in Permit PR-7653 in the following manner:

a) Appendix 01 shall be amended by deleting paragraph (a) and substituting:

"The rate at which refuse may be discharged shall not exceed 50,000 tonnes per year for the first five years of operation, and thereafter, provided no significant amount of leachate is detected, shall not exceed 300,000 tonnes per year."

b) Appendix 01 shall be amended by adding at the end of paragraph (b):

"No hazardous wastes or special wastes as such may be defined from time to time in any federal or provincial legislation or regulation issued thereunder shall be discharged".

c) Appendix B-1 shall be amended by adding at the end of Section A:

"A copy of the Site Preparation Design and Operational Procedure Report shall be included in the information to be disseminated as required by Appendix D."

d) Appendix B-3 shall be amended by adding at the end of Section E-2, the following:

"The initial 10-year general operational plan and the re-evaluation at the end of the first 5 years of operations shall be disseminated as required by Appendix D. Subsequent re-evaluations shall be made available to members of the public for comment unless the Regional Waste Manager requires them to be disseminated as required by Appendix D."

d) Appendix B-3 shall be amended by adding at the end of Section E-3, the following:

"The first site closure plan and the review after 5 years of operations and the final closure plan, if submitted within the first 10 years of operations, shall be disseminated as required by Appendix D. Subsequent re-evaluations and a final site closure plan prepared after more than 10 years of operation shall be made available to members of the public for comment, unless the Regional Manager requires more extensive dissemination".

e) Appendix B-4 shall be amended by adding the following as paragraph F.1., and renumbering F.1. and F.2. as F.2. and F.3, respectively:

"The operational plan for the first 5 years shall require the installation each year of additional observation wells such that the area of operation shall always be within an encircling ring of adjacent wells, the location of which shall be to the satisfaction of the Regional Waste Manager.

f) Appendix C-1 shall be amended by adding the following as paragraph A(3) and by renumbering A(3) and A(4) as A(4) and A(5), respectively.

"The leachate collection system referred to in Appendix B-4, paragraph F.1., shall be inspected quarterly and if any leachate is found, it shall be collected and sampled as required by paragraph (2) of this Appendix."

(g) Appendix C-2 shall be amended as follows:

(i) In paragraph (b), by adding after "submit", the words "to the Regional Waste Manager";

(ii) by adding as paragraph (c) "the following reports hereby required shall be disseminated as required by Appendix D for the first 5 years. Subsequent reports shall be made available to members of the public unless the Regional Waste Manager requires them to be disseminated as required by Appendix D".

(h) The following shall be added as Appendix D:

"Appendix "D"

Special Provisions:

1.(a) Wherever the permit requires the approval or acceptance of, or a decision by the Regional Waste Manager, the words, "the Director of Waste Management" shall be substituted.

(b) The approval of plans and reports being an integral part of the permitting process instituted by the permittee, "approval" shall be conclusively deemed to be a "decision" as defined in section 25 of the Waste Management Act and the permittee shall be estopped from claiming otherwise.

2.(a) Wherever the permit refers to dissemination of information, the permittee shall disseminate such information to all persons or bodies who were accepted as appellants in appealing against the granting of the permit. If any such appellant ceases to occupy the lands in respect of which the appeal was launched, they shall cease to be deemed appellants; but, the person who thereafter occupies such lands shall be deemed to be appellants for the purpose of receiving informa- tion if they give notice in writing to the permittee and the Regional Waste Manager. Dissemination means sending by ordinary mail the information or report to the person at his or her last known address.

2.(b) In addition, the permittee shall deposit a copy of the information or report at some public place in the area and shall insert a notice in the local paper stating where such information or report may be seen.

(c) The use of the word "appellant" in this paragraph is descriptive and shall not be deemed to give such person an automatic right to appeal against a decision of the Director nor limit the right of appeal to such person.

(d) Any appellant or any person who considers his interest to be affected may submit his or her comments or data in writing to the Regional Waste Manager and to the permittee within 28 days or such further time as the Regional Waste Manager may allow.

(e) The Regional Waste Manager shall consider all such comments or data prior to approving any plan.

3. The permittee shall maintain for the life of this permit a public liability and property damage insurance policy in a normal form with a company licensed to conduct insurance business in British Columbia. The amount of such insurance shall be not less than $2,000,000.00 per claim. The policy shall contain an undertaking by the insurer to give the Regional Waste Manager not less than 60 days written notice of any reduction or cancellation of the policy.

4.(a) There shall be a trust fund established to provide funds to repair any damage or clean up any environmental problem not resolved by the permittee.

(b) The trust fund shall be built up by the payment by the permittee of the following sums:

(i) for the first 8 years of operation, $.75/ton of refuse deposited other than from the local area.

(ii) for the next 12 years of operation, $.60/ton of such refuse;

(iii) for the remainder of the life of the permit, $.35/ton of such refuse.

(c) Payment shall be made quarterly by the 15th of the first month of the succeeding quarter in respect of refuse deposited in the previous quarter, together with a record of the tonnage deposited.

(d) Payment shall be made to the Director of Waste Management, who shall deposit the payment with the Provincial Treasury in an interest-bearing account.

(e) During the life of the permit, no part of the fund shall be used except with the joint authority of the Director of Waste Management and the Deputy Minister of Environment & Parks and then only for the purpose of repairing any damage or cleaning up any environmental problem created by the operation of the landfill and which the permittee has not performed.

(f) Upon the expiry or abandonment of the permit and upon completion of the close-out plan, the fund or any amount remaining therein shall be transferred to any fund established by the Government expressly for the purpose of providing funds to clean up environmental damage, or if no such fund then exists, to the Consolidated Revenue Fund.

3) The permit itself shall be amended so as properly to describe and incorporate the appendices as amended by this decision.

H.D.C. Hunter
Panel Chairman
Environmental Appeal Board

Victoria, B.C.
December 10th, 1987