Public version

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CT-91/2

THE COMPETITION TRIBUNAL

IN THE MATTER OF an Application by the Director of Investigation and Research under s. 79 of the Competition Act R.S.C. 1985 c. C-34 as amended.

AND IN THE MATTER of certain practices by Laidlaw Waste Systems Ltd. in the communities of Cowichan Valley Regional District, Nanaimo Regional District and the District of Campbell River, British Columbia.

BETWEEN:

The Director of Investigation and Research

Applicant

AND:

Laidlaw Waste Systems Ltd.

Respondent

A F F I D A V I T

I, MICHAEL ROSS, of Commerce Court West (King & Bay Street), in the City of Toronto, Province of Ontario, MAKE OATH AND SAY AS FOLLOWS:

1. THAT I am a Partner and the Senior Economist with Peat Marwick Stevenson & Kellogg.

2. THAT I have been asked by Laidlaw Waste Systems Ltd. to provide my report and opinion relating to market considerations relevant to the present proceeding before the Competition Tribunal.

3. THAT Paul Levelton, David Van Seters, and Larry Smith have assisted me in the preparation of my report and opinion.

4. THAT Paul Levelton, David Van Seters, and Larry Smith are Managers with Peat Marwick Stevenson & Kellogg.

5. THAT attached hereto as Exhibit "A" is my resume. Attached hereto as Exhibits "B", "C", and "D" are the resumes of Paul Levelton, David Van Seters, and Larry Smith, respectively. Attached hereto as Exhibit "E" is a true copy of my report and opinion in the present proceeding before the Competition Tribunal.

SWORN BEFORE ME at the City of Vancouver, in the Province of British Columbia, this 13th day of September, 1991.

A Commissioner for taking Affidavits for British Columbia.

Michael Ross

MICHAEL ROSS

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affidavit of MICHAEL ROSS
sworn before me at Vancouver, B.C.
This 13th day of JANUARY 1991
A Commissioner for taking Affidavits
for: British Columbia

Michael Ross, B.Sc., M.A.

Michael Ross is the Partner in Charge of the Planning and Economics Group in the Toronto Office of Peat Marwick Stevenson & Kellogg, specializing in economics, finance, and policy development.

He graduated from the University of Toronto with a B.Sc. in Mathematics (1968), and an M.A. in Economics (1971). He is a member of the Institute of Management Consultants of Ontario, Canadian Economics Association, American Economics Association, Toronto Association of Business Economists, and The Planning Forum. He has 16 years' consulting experience with Peat Marwick Stevenson & Kellogg.

Mr. Ross is the senior economist in the firm. He is experienced in the use of economic methods and evaluation techniques in many applications. He has directed or carried out studies dealing with:

- development of economic and financial evidence for courts and administrative boards
- economic impact, cost-benefit, and social cost analysis
- economic forecasting including econometric modelling and leading indicators
- comparative productivity analysis
- urban and regional economic planning and economic base analysis
- industry surveys

Mr. Ross' consulting experience includes the following:

- **Ontario Forest Industries Association—Environmental Assessment.** Mr. Ross undertook two major studies on behalf of this industry association, assessing various economic dimensions of the forest industries in Ontario. The work was used in support of his expert testimony before an Enviromental Assessment of the Ontario Government's Forestry Management Policies.

- **Ontario Hydro—Air Pollution and Property Values.** Mr. Ross managed a study designed to assess the social costs of air pollution, measured through their impact on property values. The study formed a basis for the utility's submission for an export license. Mr. Ross presented expert testimony on the study before the National Energy Board. The study was subsequently updated, and Mr. Ross again offered it as evidence before the NEB. The study involved both empirical work and a state-of-the-art literature review.

- **Wimpey—Municipal Financial Impact Assessment.** On behalf of this real estate developer, Mr. Ross managed a project to determine the financial impact of a proposed residential development on the existing taxpayers of a southern

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Ontario city. Mr. Ross presented the results of the work as evidence before the Ontario Municipal Board.

- **Newfoundland Public Utilities Board—Expert Witness-Rate of Return .** On behalf of the Newfoundland Public Utilities Board, Mr. Ross appeared as an expert witness regarding the rate of return aspects of a proposed rate application by a provincial utility.

- **Tariff Board—Sugar Policy.** Mr. Ross has provided expert testimony before the Tariff Board of Canada with respect to the likely impact on consumers of possible changes in Canada's sugar policy, under a range of possible scenarios.

- **National Farm Products Marketing Council—Expert Witness.** Mr. Ross has acted as an expert witness before the National Farm Products Marketing Council, in regard to various aspects of cost of production of growing tobacco in Canada, and of the economic impact of the tobacco industry on Canada and the various provinces.

- **Ontario Hydro—Air Pollution and Property Values.** PMS&K has recently been retained to update our 1980 study on the social cost of air pollution, as measured by their impact on property values. This study will again form the basis for the utility's submission for an export licence to the National Energy Board. The scope of the study has been expanded to include both impacts on urban properties, and impacts on recreational properties due to acid rain. The study involves both empirical work and a state-of-the-art literature review.

- **Private Client—Expert Testimony.** On behalf of a private sector client in an expropriation case, Mr. Ross provided expert testimony before a federal court. He provided evidence on the appropriateness of a specific statistical methodology employed to determine historical trends in land prices.

- **EEMAC—Data for Anti-Dumping Hearings.** On behalf of an industry association in the electrical equipment sector, Mr. Ross was responsible for the collection and presentation of industry data on sales, production, and profitability for small electric motors. The results were used as the basis of industry activity before the Anti-Dumping Tribunal.

- **Canadian Softwood Lumber Committee—Use of Government Incentive Schemes.** The Canadian lumber industry was threatened with countervailing duties in the United States, based on the view that the industry received subsidies of various forms from governments in Canada. Mr. Ross was responsible for a major engagement to quickly develop a survey instrument and data capture methodology to collect detailed information from a wide variety of Canadian lumber producers on the use of various grant and tax based incentive schemes.

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- **City of North York—City Centre Development.** Mr. Ross undertook a study for the City of North York, to determine the fiscal impact of various development schemes associated with a new City Centre Development beside the existing City Hall. The study was developed to be used as evidence before the Ontario Municipal Board. In addition, Mr. Ross was responsible for a number of other small engagements to review and assess various development proposals and tenders associated with the project.

- **Consumers Gas—Capital Expenditure Criteria.** Mr. Ross was responsible for this study, on behalf of a major Ontario utility, reviewing the criteria which were employed to undertake capacity expansion projects. Work involved a detailed review of existing practices, detailed analysis of these factors from a conceptual financial perspective, and a preparation of a study which was used as the basis of expert testimony.

- **Electrical and Electronic Manufacturers' Association of Canada—Anti-Dumping Review.** Mr. Ross was responsible for a large-scale engagement, assisting the Power Transformer Subsection of the Electrical and Electronic Manufacturers' Association of Canada to present their case before the Dumping Tribunal in Ottawa, in connection with a review of an Anti-Dumping Finding which was in place against foreign manufacturers. Our work included the collection, verification, and analysis of company-specific data, as well as the integration of this data into an industry position and the preparation of a good deal of the evidence which was presented.

- **Canadian Egg Marketing Agency—Cost of Production Study.** Mr. Ross shared responsibility for the major COP study, intended to determine the cost of producing eggs in each province in Canada. Mr. Ross' responsibilities focused on costing methodologies and associated financial analysis.

- **Canadian Chicken Marketing Agency—Cost of Production Study.** Mr. Ross shared responsibility for the major COP study, intended to determine the cost of producing chickens in each province in Canada. Mr. Ross' responsibilities focused on costing methodologies and associated financial analysis.

- **Canadian Egg Marketing Agency—Adequacy of Returns.** Mr. Ross was responsibile for this study on behalf of the National Egg Marketing Agency to assess the adequacy of returns earned by egg producers in Canada. Using the database developed from our 1986 Cost of Production study, models were developed with typical producers, and their returns on investment were explored under a range of scenarios.

- **Analysis of Serviced Land Prices.** PMS&K assisted the large Canadian real estate development companies to prepare a submission to the Greenspan Task Force on serviced land prices. Mr. Ross conducted a number of interviews, supervised the statistical analysis of data for a large number of real estate

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projects, and played a major role in the presentation and explanation of the project results. Our work was incorporated directly into the technical appendices of the Task Force report.

- **Department of Regional Economic Expansion—Assessment of Coal Development**. Mr. Ross spent several months seconded to DREE as part of a project team assessing the commercial viability of a proposed large-scale coal development in northeast British Columbia. Mr. Ross' work focused on conducting a wide ranging set of interviews with senior executives in the coal mining industry and related areas.

- **Canadian Tobacco Manufacturers' Council—Economic Impact Study.** The firm undertook a large economic impact study on behalf of the Canadian Tobacco Manufacturers' Council. This involved the detailed analysis of the employment, income, and taxes generated by the production and sale of the products of the tobacco industry. Mr. Ross was responsible for the data collection, evaluation, and analysis of the activities of the Ontario-based companies and growers concerned.

- **Ontario Ministry of Health—Econometric Model of Physician Behaviour.** Mr. Ross managed this very large-scale, multi-year project to develop and implement a system for monitoring physician billing patterns under the Ontario Health Insurance Plan. He directed a team composed of PMCG staff, academic associates, and contract programmers, in order to develop a large-scale econometric model of physician behaviour, and to install a computerized monitoring system based on this model. The four phases of the engagement, each of which was a separate consulting contract, were:

  - concept development
  - data generation
  - statistical estimation
  - implementation

- **Hamilton—Hospital Benefit/Cost Study.** Mr. Ross was responsible for the analytical aspects of an assignment to assess the costs and benefits of various alternative uses for a major hospital in a large Ontario city. The results of the study were used as part of the planning process for a number of hospitals within the geographic area served by the District Health Council.

- **Ontario Ministry of Natural Resources—Aggregate Transportation.** Mr. Ross participated in a large distribution study for mineral aggregates in Ontario. The study developed strategies to ensure that the supply and demand of mineral aggregates in various markets in Ontario would be in balance in the future. Mr. Ross' work focused on the collection and analysis of data used to assess truck transportation costs.

- **Harbourfront—Economic Impact Study.** Mr. Ross undertook a small economic impact study for the Harbourfront Corporation. An assessment was made of the economic impact of the proposed capital and operating budgets, in order to support requests for funding and for changes to the local Official Plan.

- **Alberta Department of Advanced Education and Manpower—Leading Indicators.** Mr. Ross managed this project to update a set of leading indicators of Provincial labour market activity. The engagement involved the selection of appropriate indicators, the necessary statistical analysis to develop combined indicators, and the specification of a reporting system so that the indicators could be used regularly.

- **Ontario Hydro and Private Sector Client—Energy Project Analysis.** As an update of an earlier study, Mr. Ross managed our participation in a large joint Ontario Hydro-private sector study of a proposed coal mine and power plant. The study involved the cost-benefit analysis of a number of generational alternatives, as well as the production of economic impact data on the proposed coal mine and power plant.

- **Ontario Ministry of Culture and Recreation—Economic Impact of Fitness Programs.** Mr. Ross managed a study to assess the economic impact of in-house employee fitness programs. In order to develop a useful marketing tool for the client, the study developed estimates of the costs and benefits which individual firms might expect to achieve as the result of the impacts of physical fitness programs on absenteeism, turnover, and other factors. He subsequently was retained first to present the results at a seminar, and later to update the study and develop a users' manual.

- **Potash Corporation of Saskatchewan—Economic Impact Study.** This was a large-scale study to assess the economic impact of the ten-year capital expansion plan and ongoing operations of the client. In addition, the economic development implications of purchasing alternatives were reviewed for the client. The study required the development of impact multipliers using both Statistics Canada input/output techniques, and an existing Saskatchewan Econometric Model.

- **Schedule B Bank—Economic Monitoring System.** Mr. Ross managed this engagement assisting a Schedule B Bank to develop a system of regional and national economic indicators of relevance to various aspects of their business. The system was designed so that it could be updated by the client on a regular basis.

- **Major Life Insurer—Economics of Storefront Financial Services.** Mr. Ross undertook this study, assisting a life insurance client to develop an understanding of the key success factors and economics of "storefront"

providers of financial services, such as banks, trust companies, and credit unions.

- **Ontario Ministry of Environment—Financial Effects of Abatement Costs.** Mr. Ross managed a study to develop financial models, based on publicly available information to assess the financial impact of various abatement programs. Programs were designed to reduce sulphur dioxide and other emissions at the Sudbury plants of Inco and Falconbridge, and separate financial models were developed for each firm. Models were implemented using market forecasts and information on abatement costs developed by other consultants working for the Ministry.

- **Canadian Broadcasting Corporation—Economic Impact Study.** Mr. Ross has undertaken and several times updated a study of the economic impact of the proposed Broadcast Centre Development Project in Toronto. In each case, we have developed data on the magnitude and input structure of the project, at a level of quality commensurate with the state of planning of the project at that time. We then submitted it to Statistics Canada for input-output analysis, and developed the appropriate reports.

- **Society of Actuaries—Economics for Actuaries.** Mr. Ross was retained by the Society of Actuaries to play a major role in a two day course outlining relevant economic concepts for actuaries. The course was repeated in Toronto, Chicago, and New York.

- **Ontario Ministry of Environment—Economic Incentive Policies.** Mr. Ross managed a study to identify and evaluate existing and new policy instruments to induce industrial polluters in Ontario to comply with pollution control programs in a timely manner. We examined four alternative economic incentive policy instruments, developed a set of criteria for evaluating them, conducted qualitative analyses, estimated abatement costs for sulphur oxides, and highlighted practical design considerations.

- **Canadian Tobacco Manufacturers Council—Economic Impact Study.** The firm undertook a major revision and expansion of an economic impact study previously undertaken on behalf of the Canadian Tobacco Manufacturers Council. This involved the detailed analysis of the employment, income, and taxes generated by the production and sale of tobacco products in Canada. Separate analyses and reports were provided for both the federal and ten provincial governments. Mr. Ross had both the overall responsibility for and a detailed involvement in this engagement. The results of this study have subsequently been updated several times.

- **Canadian Tobacco Manufacturers Council—Price Elasticity Study.** The firm undertook a study of the price elasticity of demand for cigarettes, on behalf of the Canadian Tobacco Manufacturers Council. The study involved extensive data collection and the development of econometric models of tobacco

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consumption, focusing on an estimate of the responsiveness of consumption of the product to changes in its relative price.

- **Canadian Tobacco Manufacturers Council—Tax Impact Analysis**. Mr. Ross was responsible for related series of engagements, on behalf of the Canadian Tobacco Manufacturers Council, designed to illuminate and assess the impact of the Federal Government's scheme for the indexation of excise taxes. In addition, to the development of quantitative analyses, Mr. Ross spent considerable time working with the Department of Finance Task Force which was charged with developing a solution.

- **Private Sector Client—Economic Impact.** Mr. Ross undertook a study of the economic impact of one segment of the tobacco products business in Quebec. In addition, the study explored the implications of alternative tax regimes on the output and employment associated with this segment of the industry.

- **Consumer and Corporate Affairs Canada—Energuide Benefit-Cost Analysis.** Mr. Ross was in charge of two linked studies, which both planned for and conducted a formal benefit cost analysis of the Energuide energy labelling program for appliances. The study included in-depth case studies of a range of appliance manufacturers, in order to assess the impact of the regulatory environment on their behaviour and the associated energy efficiency of their appliances. The focus of the study was on determining whether the social value of energy savings achieved more than offset the social cost associated with retooling, increased imports, and reduced consumer surplus.

- **British Columbia Ministry of Health—Statistical Evidence.** We were engaged by the client to assist them in the preparation of evidence for a judicial review. The client was seeking to recover money paid by the Medical Services Plan to a physician due to presumed overbilling. We were asked to review and critique the statistical analyses which has been performed by the client to support their contentions.

- **Canadian Broadcasting Corporation—Industrial Impact Study.** Mr. Ross was responsible for a study on behalf of this client, with the objective of assessing the impact on the Canadian broadcast equipment manufacturing industry of the proposed Broadcast Centre Development in Ontario. This development would represent a major purchase of state-of-the-art broadcast equipment. Impacts were assessed through the development of an industry view involving both in-depth interviews and detailed financial modelling. Impacts were assessed both with and without a possible R&D funding support program for the industry.

- **Department of Supply and Services—Economic Impact of Procurement.** Mr. Ross was responsible for a study undertaken on behalf of DSS, to review and critically assess the methodology employed by DSS to estimate the economic impact of its procurement policies on Canada. Work included both a

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conceptual review, and an assessment of the actual data gathering and analysis which had been employed by DSS. In conducting this work, Mr. Ross drew on experience which he has developed in conducting a wide range of economic impact studies, generally making extensive use of Statistics Canada input/output methodologies, for a range of sectors in geographic regions of the country.

- **Consumer and Corporate Affairs Canada—Benefit Cost Analysis of Children's Sleepwear.** Mr. Ross was responsible for this study, undertaken on behalf of Consumer and Corporate Affairs Canada, assessing the benefits and costs of various regulatory approaches to reducing the flammability of children's sleepwear. The study had to address a number of valuation issues, particularly because the prime benefit of reduced flammability is reduced injuries and disfigurement to children.

- **Confectionary Manufacturers' Association of Canada—Sales Tax Impact.** On behalf of the Confectionery Manufacturers' Association of Canada, Mr. Ross was retained to conduct a study to assess the impact on the industry of recent changes in the federal sales tax treatment of confectionery products. The study involved the collection and analysis of a good deal of industry data on performance, both before and after the enactment of the tax change, in order to isolate specific impacts of the tax increase. The results were used in support of discussions with the Ministry of Finance in Ottawa.

- **Energy, Mines and Resources—Economic Impacts of Energy Management Investments.** Mr. Ross was responsible for this study on the economic impacts generated in Canada by investments designed to conserve energy. Specific types of investments were selected, representing the major economic sectors, for detailed economic impact assessment. The work involved an extensive series of interviews with manufacturers and installers of energy management products to estimate the size of the market and the inputs required to supply the products. Statistics Canada's input-output model was used to estimate indirect impacts and the results were included in a user-friendly computerized model to be used for future policy analysis.

- **Pharmaceutical Manufacturers' Association of Canada—Price Increases.** Mr. Ross was responsible for this engagement, to estimate the distribution of price increases in the price data submitted by pharmaceutical manufacturers to the Ontario Ministry of Health. Submissions to the Ministry were also provided to PMS&K who aggregated the results and prepared a report on average price increases, and the distribution of increases by price size was used by the client in the policy debate with respect to price trends in pharmaceutical products.

- **Pharmaceutical Manufacturers' Association of Canada—Various Industry Surveys.** Mr. Ross is responsible for a number of annual surveys, undertaken of PMAC members on behalf of the Association. These include:

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- expected new drug submissions to the Health Protection Branch, Federal Department of Health
- status of existing applications for regulatory approval
- expected levels of research and development expenditures

These are annual surveys.

- **Ontario Ministry of Environment—Cleaning Up Hamilton Harbour.** Mr. Ross was responsible for PMS&K's role in a study to assess the socio-economic implications of various remedial action plans for improving water quality in Hamilton Harbour. Drawing on results developed by a consulting/engineering firm, which linked various abatement strategies with their water quality implications, PMS&K developed estimates of both economic costs and benefits, from a social perspective of use and non-use values of improved water quality. The work drew heavily on an extensive literature survey, as well as a number of studies of the Hamilton area.

- **Department of Finance—Evaluation of Cape Breton Investment Tax Credit.** Mr. Ross was responsible for a study evaluating the effectiveness of the Cape Breton Investment Tax Credit, a tax-based incentive to encourage investment in one part of Nova Scotia. The core element of the work was a number of in-depth case studies of actual tax credit recipients. As a result of the case studies, we developed a thorough understanding of actual financial decision-making criteria used, as well as an understanding of the economics of individual projects from the sponsor's perspectives. These were used to develop financial models of the individual decisions, which led to an assessment of overall incrementality.

- **Ontario Ministry of the Environment—Economic Effects of Improving Water Quality at RAP Sites.** Mr. Ross shared responsibility for this study which involved assessing the economic impact and economic benefits of improving water quality at 17 sites along the Great Lakes system in Ontario. Economic benefits were estimated for each site and for the province as a whole, as a result of achieving four water quality goals. Benefits were assumed to derive both from the increased and enhanced recreational usage which achievement of the water quality goals permitted, and from "non-use" factors. Economic impacts of achieving the water goals were estimated in terms of the employment and income arising as a result of implementation of remedial measures, and increased recreational expenditures.

- **Ontario Ministry of the Environment—Defining "Economic Achievability".** Mr. Ross was the partner in charge of this recent study. The purpose of the study was to develop working definitions of the "economic achievability" concept as it pertains to environmental standards. In developing these definitions, reference was made to how the term is defined in the U.S. in the environmental context, as well as to definitions which have been developed in other fields, such as occupational health and safety, and so on. The study

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provided worked examples of operational empirical criteria, which can be used to judge what level of environmental protection is "economically achievable."

- **Saskatchewan Economic Development—Railcar Manufacturing Economic Impact.** Mr. Ross served as the technical advisor to this study, assessing the economic impact of various alternative approaches to the sourcing of a large number of rail hopper cars.

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affidavit of MICHAEL ROSS

sworn before me at Vancouver, B.C.

This 13th day of [illegible] 1991

A Commissioner for taking Affidavits
for British Columbia

W. Paul Levelton, B.Comm.

Mr. Levelton is a Manager in our Vancouver General Management Services Practice. He holds a B.Comm. in Transportation/Utility Economics and Finance. Paul has over six years of consulting experience as well as four years' experience in the forest industry and three years in public policy analysis and research. His chief areas of practice include:

Logistics and transportation
Energy economics
Tourism
Environmental management
Feasibility and planning

Paul is also a member of the Canadian Transportation Research Forum and the Chartered Institute of Transport (pending).

Logistics and Transportation

- Review of the transportation and distribution options available to a major integrated forest products company in western Canada. The study involved an assessment of warehouse/reload yard locations and the potential for developing a private trucking operation.

- Review of operations for a major food processing firm. The study involved an assessment of production planning, inventory control, load assembly and distribution for a company serving B.C., Alberta and Saskatchwan.

- Review of options for modifications to British Columbia railway legislation that would benefit the British Columbia forest industry. This study involved a review of forest product markets, transportations costs, routing options, and federal and provincial transportation legislation.

- Evaluation of the options for and the impacts of the movement of woodchips by road, rail and barge to a pulp mill in British Columbia. Capital and operating costs, service parameters and regional impacts were reviewed as part of a submission to the Province of British Columbia's Major Project Review Process.

- Assessment of operating efficiency of Fairview Terminal in Prince Rupert. The study included development of a simulation model of terminal operations and a review of the capability of the terminal to handle future demand, particularly from the forest industry.

- Assessment of the availability of rail intermodal and motor transport equipment, on a backhaul basis, for the movement of forest products both

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within and out of Alberta. Design, administration and analysis of a survey of railroad, motor carrier, forest products, oil, gas and coal companies.

- Evaluation of the effects of transportation deregulation in Canada on the Canadian forest industry.

- Evaluation of opportunities for third party logistics for a B.C. mining company.

- Analysis of the transportation competitiveness of British Columbia forest products in North American markets.

- Evaluation of the options for moving woodchips to a pulp mill on Vancouver Island.

- Analysis of options for movement of dangerous commodities to coastal forest industry mills.

- Assessment of the economic impact on the trucking industry of Alberta Intermodal Services Ltd. decision to handle domestic freight between B.C. and Alberta. Analysis involved identification of affected individuals, development and administration of a questionnaire, and economic analysis of the impacts.

- Development of a computerized truck costing model to be used in evaluating major resource developments as well as general highway carriage of freight.

- Benefit-cost evaluation of a resource road to link Mackenzie with Ft. St. James. The study involved reviews of economic activity, potential cost savings and road construction costs.

- Evaluation of employment opportunities in the B.C. motor carrier industry. The study involved an assessment of traffic volumes, equipment types and employment levels.

- Determination of extent to which service objectives of Alberta Intermodal Services Ltd. have been met and assessment of the economic impact of this company on Alberta industry. Administration and analysis of a survey of shippers and steamship lines/agencies.

- Determination of the shipping industry's position with respect to pilotage service through a cross-Canada survey of shipowners and masters.

- Assessment of the benefits to shipping of dredging the Fraser River. Development of traffic forecasts for commodities moving via terminals on the river and review of types and sizes of vessels likely to be transiting the river in the future. Analysis involved development of a computer model.

- Collection and tabulation of data describing physical parameters, location of navigational aids and commercial and industrial usage of shipping channels at Courtenay River and Tuktoyaktuk.

- Benefit/cost evaluation of improving navigation for tugs and barges on the Mackenzie River through an intensive program of dredging. The study involved a review of economic development, transportation infrastructure and marine transportation systems in northern Canada.

- Preparation of submissions for the British Columbia Railway to the Royal Commission Investigation of the railway.

- Organization and administration of the Exporters' Coalition on Canadian Maritime Policy, including preparation of government submissions and public relations material.

Feasibility and planning studies

- Analysis of physicians' overhead expenses and expense to revenue ratios for services billed to a government health care plan. The project involved extensive consultation with representatives of a medical association and survey of over 2,000 physicians.

- Evaluation of the employment potential, sources of funding, management and financial analysis and market conditions for the re-activation of a shipyard and ancillary services on the North Arm of the Fraser River in Vancouver.

- Assessment of retail concession opportunities at the Vancouver International Airport. The study involved a review of current retail concession, identification of the potential for expanding retail space, creating innovative concepts for concession configuration, a financial analysis and a review of concession management options.

- Development of a land-use plan for the North Reserve of the Vancouver International Airport in conjunction with potential airport expansion.

- Evaluation of health of the British Columbia cement industry, including development of recommendations for strategic changes to improve industry viability.

- Financial evaluation of changes to processing facilities in a major fish packing plant.

- Economic evaluation of the construction of a jet fuel barge unloading facility at Vancouver International Airport. The evaluation involved the assessment of alternatives and quantification of economic and financial impacts.

- Development of a strategic plan for the Okanagan North Community Futures Corporation.

Energy economics

- Financial evaluation of options for redeveloping the Bluefish hydroelectric facility in Yellowknife, NWT.
- Financial evaluation and study of economic benefits for a private power company wishing to develop hydroelectric facilities in British Columbia.
- Review of contractual, economic and technical matters pertaining to the development of a geothermal power plant in southern California.
- Review of contractual, financial and technical matters for a small private hydroelectric system in the Northwest Territories.
- Evaluation of realistic energy options for communities in the Northwest Territories.
- Evaluation of the financial and economic parameters of construction of a powerhouse at the Dickson Dam site near Red Deer, Alberta by the Special Areas Board. A financial model was constructed, economic effects were assessed and expert testimony provided to hearing before the Alberta Energy Resource Conservation Board.
- Development of a financial model for the generation of a geothermal power development at Meagher Creek. The work involved identification of cost elements, construction of a computer model and determination of a pricing mechanism. The work formed part of a submission to POWEREX, the export arm of B.C. Hydro.

Environmental management

- Evaluation of airport expansion plans with the context of existing and proposed development of the Middle and North Arms of the Fraser River. The study identified concerns of major groups, agencies and industry and resulted in the development of an integrated approach to mitigation, compensation and management of impacts from development.
- Inventory of wildlife on Transport Canada-owned lands at Vancouver International Airport which could be affected by development of a parallel runway. This one-year survey concluded with the development of a computer database on the characteristics of wildlife present in the area.
- Development of an environmental impact statement for a proposal to construct a jet fuel barge unloading facility at Vancouver International Airport. The

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project included identification of impacts, mitigative measures, requirements for compensation and the economic justification of the project. The project culminated in the provision of expert testimony to a public hearing sponsored by the Federal Environmental Assessment Review Office (FEARO).

- Preparation of supporting documentation and studies for inclusion in the application for permits required to develop a number of small hydroelectric sites on Vancouver Island.

Waste management

- Review of the operation of waste exchanges in Canada, including analyses of operational, administrative, regulatory, financial and marketing parameters. Developed recommendations for future development of the waste exchange system.

- National inventory of existing facilities for the collection and disposal of garbage and sanitary wastes, as well as oily and chemical wastes, from both domestic and international shipping.

- Review of feasibility and state-of-the-art technology for the production of both thermal and electrical energy from waste products including municipal solid waste and wood waste.

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Affidavit of MICHAEL ROSS
sworn before me at Vancouver, B.C.
This 13th day of September 19 91
A Commissioner for taking Affidavits for British Columbia

David Van Seters, B.Sc., M.B.A.

Mr. Van Seters is a Manager and functional leader of Peat Marwick Stevenson & Kellogg's National Environmental Consulting practice. His education includes a B.Sc. degree in Environmental Biology from McGill University in Montreal and an MBA degree from the University of Alberta in Edmonton.

Prior to joining Peat Marwick Stevenson & Kellogg, Mr. Van Seters provided general management services to small business through his self-established consulting firm. He also managed the Edmonton office of a national environmental consulting firm. His experience includes business plan preparation, marketing and promotional studies, organization development, Asia/Canada trade and investment, environmental management and impact assessment. In 1988, Mr. Van Seters worked in the Commission for Canada in Hong Kong promoting Canadian environment business opportunities.

General management

- Participated in the development of environmentally sound economic opportunities for the Greater Vancouver Regional District (GVRD).
- Developed a business plan to boost sales of an electronic device (called a Facsimile Mobile Interface Device) which permits fax transmission from a remote or mobile location. Included a comprehensive analysis of the facsimile and cellular telephone industry in North America.
- Identified sources of government funding related to manufacturing, research, and marketing in a furniture manufacturing firm.
- Developed a comprehensive MIS (Management Information System) plan for a national youth services organization. Included recommendations on the purchase of computer hardware and software, filing and data retrieval systems, and reporting hierarchy.
- Conducted a review of the Canadian airline industry which addressed growth trends, implications of corporate concentration, government deregulation and company-specific business strategies.

Environmental management

- Prepared an environmental handbook for business for the Canadian Chamber of Commerce. The handbook was designed as a practical guide for responsible corporate behavior for small and medium-sized firms in their dealings with the environment. It described the rising environmental concern among Canadians, discussed how six Canadian businesses have responded to

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the new trend, and outlined a number of strategies that all Canadian companies can implement to improve their environmental performance.

- Co-managed a comprehensive study to develop a monitoring framework to reduce packaging waste 50% across Canada by the year 2000. The study involved categorizing packaging types and industry groupings and developing a sampling methodology to track the quantity of packaging produced, used, reused, recycled, and disposed in each grouping. A computer database was developed to maintain the aforementioned data categories and to provide a variety of reports.

- Developed the content for various elements of a province-wide environmental education and exhibit program. These elements included a children's video, a green quiz about making environmental choices, an interactive poll for people to express their environmental concerns to government, and an environmental fact file.

- Prepared report describing business opportunities arising from changing public attitudes towards the environment for the Vancouver Office of Industry Science and Technology Canada. The study included an assessment of changing public attitudes and behaviour toward the environment, a review of how business responded to these changes, and a recommended action plan on how British Columbia firms could develop their own environmental strategy. Presented the report at a workshop on Environmental Enterprise sponsored by the Science Council of British Columbia.

- Prepared a comprehensive plan on how to develop markets for recyclable materials in British Columbia for the British Columbia Ministry of Environment. The Ministry has initiated a plan to reduce municipal solid waste volumes by 50% by the year 2000 through recycling and conservation efforts. Study included an assessment of existing recyclable materials markets, future potential to expand markets, review of waste generation and recovery rates, and recommendations to encourage the development of the recycling industry.

- Coordinated the development and implementation of a province-wide consumer-oriented recycling hotline and supporting database for the British Columbia Ministry of Environment. Database contained contact information on how to recycle various household and office wastes as well as who to contact for further information in each regional district or municipality.

- Prepared an Environmental Action Handbook for the Vancouver office of Industry Science and Technology Canada (ISTC). This operational guide included step-by-step procedures for implementing a corporate greening strategy. It also included checklists, examples, diagrams and other tools to ensure maximum readability and usefulness. The document was distributed to private sector companies throughout British Columbia.

[redacted]

- Prepared a "success stories" document for the Vancouver office of Industry Science and Technology Canada (ISTC) describing how British Columbia companies have put sustainable development into action in their respective firms. The booklet provided case studies on 12 British Columbia companies. It was distributed to over 1,000 companies and individuals throughout the province.

- Participated in an operational review of the Department of Renewable Resources in the Northwest Territories. Involvement included an impact assessment of various environmental issues and a legislative review of environment-related Acts and regulations.

- Participated in a feasibility study for a research and development-oriented environment business park in the Hamilton-Westworth Regional District in Ontario. Reviewed existing firms in the region against environmental trends to identify those firms most appropriate to be involved in such a facility.

- Identified the major business opportunities for environmental firms in North America. Study included literature search and site visits to Ottawa and Washington, D.C. Final information was presented in four environment industry reports, covering solid waste management, air management, hazardous waste management and water resources management.

- Conducted several components of an environmental overview of four potential reservoir sites in southern Alberta. Included a land use assessment, wildlife resource inventory, summary environmental evaluation, and final report preparation. Interviewed land owners at the reservoir sites to determine their concerns about the potential flooding of their land.

- Prepared an Oil Spill Contingency manual for an Oil Spill Cooperative in western Alberta. Study involved the documentation of all aspects of the response strategy and reference information as well as a reconnaissance of the region to determine suitable control points where manpower and equipment could be deployed in the event of an oil spill.

- Conducted a training course in the Northwest Territories for Interprovincial Pipe Line (N.W.) Ltd. regarding oil spill response strategies. Course involved classroom sessions on such topics as reporting procedures, oil spill scenarios, safety, and deployment of equipment.

- Delivered a number of speeches to business-oriented audiences across Canada covering the following topics: business opportunities in the environmental field; emerging environmental trends and their implications for business; and the development of corporate greening strategies.

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Mr. Van Seters is a member of the Vancouver Board of Trade, the World Trade Centre Vancouver, and the Canadian Environment Industry Association. He also sits on the Environment Task Force for the Canadian Chamber of Commerce.

[redacted]

affidavit of MICHAEL ROSS
sworn before me at Vancouver, B.C.
This 13th day of September 19 91
A Commissioner for taking Affidavits for British Columbia

Larry R. Smith, B.Sc.

Mr. Smith is a Manager in the Information Technology practice of Peat Marwick Stevenson & Kellogg.

Mr. Smith attended the University of Victoria where he graduated with a degree in (Health) Information Science (Co-operative program). Mr. Smith has completed the requirements for his M.B.A. on a part-time basis. He will graduate from the University of British Columbia in November 1991. He is a member of the Institute of Certified Management Consultants of B.C.

Mr. Smith specializes in consulting to Health Care organizations. He has consulted to major teaching hospitals, community health care organizations and government health departments. For these organizations he has planned, designed and selected systems and evaluated benefits.

Consulting assignments which Mr. Smith has undertaken include:

- **Strategic Planning for a Major Teaching Hospital** — Developed a strategic information systems plan for a multi-site teaching hospital. Was the prime consultant responsible for analyzing the current situation and recommending future architecture.

- **Benefits Assessment for a Major Teaching Hospital** — Assessed the benefits of major hospital information system upgrades for a large British Columbia teaching hospital. Reported tangible and intangible benefits resulting from improved systems.

- **Planning and Selecting Systems for Community Health Organization** — Assisted a community health district to plan and select computer systems.

- **Designed Executive Support System for Large Provincial Ministry** — Assessed key operational and funding actions of a large ministry. Developed a computerized model of inter and intra ministry impacts of operational and funding changes.

- **Designed Executive Information System for Health District** — Assessed the information needs of a hospital planning district. Designed the necessary database collection procedures and information systems to support management.

- **Strategic Planning for a Hospital** — Developed a strategic Hospital Information Systems (HIS) plan for a major lower mainland hospital. Responsible for assessing effectiveness of current Hospital Information

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Systems, and the appropriateness of HIS expenditures vis-a-vis other hospitals. A realistic long-term plan was developed for this hospital.

- **Strategic Planning for a Hospital** — Developed a long-term information systems plan for a community hospital. Assisted this hospital to tender for a complete Hospital Information System. Documented a complete Request for Proposal for this hospital. Designed the tendering, evaluation and selection process.

- **Systems Selection for a Major Hospital** — Assisted a major hospital to evaluate and select a comprehensive Hospital Information System. Conducted extensive interviews that resulted in a comprehensive Request for Proposal that was issued to vendors. Organized and was active in the evaluation process including proposal evaluation, vendor demonstrations, site visits and reference checking.

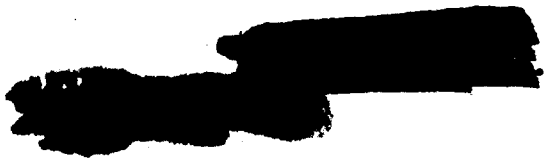
- **Planning for a Hospital** — Assisted a major lower mainland hospital to plan for the selection of a Hospital Information System and develop a Request for Proposal. Was responsible for developing requirement documents for approximately 30 different hospital applications.

- **Planning for Hospital Systems** — Developed an information systems plan for a complex rehabilitation hospital. This involved interviewing significant numbers of physicians and staff. Requirements and plans were developed and analyzed from a department, clinical program and hospital wide perspective.

- **System Design for a Teaching Hospital** — Designed a nurse staffing and scheduling system for a major teaching hospital. Worked with the client to develop a high level design document. This system was designed to include computerized scheduling and facilitate all aspects of the staffing process.

- **Reviewed Government Funding Proposal** — Undertook an independent third party review of a hospital's funding proposal as submitted to the Provincial Government. Reviewed the appropriateness of: the long-range information system plan, the hardware and software architectures, and the conversion plans. Reviewed and reported on current and future operating expenditures. Projected capital costs for the duration of the five-year plan.

- **Reviewed and Planned Systems for a Municipality** — Reviewed systems for a local government organization. Presented results to management. Developed a plan that addressed hardware, software and communication needs for all municipal departments. Specifically assessed the geographic information system, accounting, maintenance management and local area network requirements.



- **Reviewed and Selected New Systems for a Municipality** — Reviewed the systems of a small municipality. Assessed requirements and developed a Request for Proposal.

- **Reviewed Systems for a Municipality** — Reviewed hardware and software used by a municipality. Reported the results to management and council and recommended a future direction.

- **Reviewed and Selected New Systems for a Municipality** — Assisted a municipality to evaluate and select a municipal information system. Assisted to negotiate an appropriate contract with the vendor.

- **Reviewed and Selected New Systems for a Municipality** — Assisted a municipality to plan for and select information systems. Developed a plan that outlined major requirements, priorities and anticipated costs. Selected information systems that would meet the municipality's current and future needs. Negotiated a contract with the vendor and managed the implementation of the systems.

- **Planned Systems for a Municipality** — Assisted two cities to develop information system plans. For each city evaluated alternative systems and developed a reasonable budget to support the plan.

- **Systems Selection for a Major Manufacturer/Distributor** — Determined the information system requirements of a large, multi-site manufacturing and distribution company. Prepared and issued a request for proposal, evaluated the proposals and assisted the client in selecting the appropriate system. Major applications included accounting, product inventory/distribution and order processing.

- **Assisted Retailer to Evaluate New Technology** — Prepared an assessment of emerging software for retailers. Evaluated this technology on behalf of retailer.

- **Systems Selection for a Retail/Property Management Organization** — Assisted a retail/property management organization to select appropriate information systems. This included developing the organization's requirements, issuing a request for proposal and evaluating vendors against major criteria.

- **Market Research for a Computer Manufacturer** — Evaluated the market potential for a new computer. Determined the size of the target market and the likely market penetration given the computer specifications and the proposed marketing plans.

- **Post-implementation Review** — Performed a post-implementation review of several systems developed and implemented by a large government ministry.

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Assessed the current completeness, correctness and effectiveness of these systems, and reviewed the development and implementation process.

- **Reviewed Voice Communications for High-Tech Firm** — Reviewed the voice communications of a large international organization with multiple physical sites. Made technical and organizational recommendations to improve voice communications.

Prior to joining Peat Marwick Stevenson & Kellogg Mr. Smith was employed by information system vendors, industry organizations and government.

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Project Report

AN ASSESSMENT OF

LAIDLAW'S OPERATIONS AND

THE WASTE HAULAGE INDUSTRY

ON VANCOUVER ISLAND

[redacted]

KPMG Peat Marwick Stevenson & Kellogg

[redacted]ultants

[redacted]

This is Exhibit " E " referred to in the affidavit of MICHAEL ROSS sworn before me at Vancouver, B.C. This 13th day of SEPTEMBER 19 91

A Commissioner for taking Affidavits for British Columbia

Project Report

AN ASSESSMENT OF LAIDLAW'S OPERATIONS AND THE WASTE HAULAGE INDUSTRY ON VANCOUVER ISLAND

Vancouver
September 13, 1991
4777/MR/WPL/LS/DVS/81/sm/st/kc/tl/kdt

[redacted] [redacted]

Contents

[redacted] [redacted]

Contents (con'td)

[redacted] [redacted]

Contents (con'td)

[redacted] [redacted]

I Introduction

A. Background

On 22 March, 1991, the Director of Investigation and Research (the "Director"), appointed under The Competition Act, filed a Notice of Application against Laidlaw Waste Systems Ltd. ("Laidlaw") pursuant to Section 79 of the Competition Act. In the Application, the Director alleges that Laidlaw has a dominant position in the provision of containerized solid waste haulage and disposal services to commercial customers in the geographic markets of Cowichan Valley Regional District, the Nanaimo Regional District, and the District of Campbell River on Vancouver Island. He further alleges that Laidlaw has used and is using its market power and the practice of anti-competitive acts to maintain such dominance. The Director further requests that the Competition Tribunal order Laidlaw to discontinue those practices that it deems anti-competitive in those communities.

In June, 1991, Peat Marwick Stevenson & Kellogg ("PMS&K") was retained to assist in defining the product and geographic markets in which Laidlaw provides service, and to provide other advice on the economics and market characteristics of the waste haulage industry on Vancouver Island. This report summarizes our findings in this regard.

B. Purpose and objectives

The general purpose of our work program was to "identify the appropriate definitions of products and geographic markets for waste disposal services, with particular reference to the areas of Nanaimo, Campbell River and the Cowichan Valley." The specific objectives of the project were to:

- Establish the appropriate product definition and segmentation of waste services.
- Establish the appropriate definition of the geographic scope of waste services.
- Determine the economics and business operating parameters of the waste disposal industry.

More specifically, we were asked to prepare the following evidence:

- Definition of the geographic market including consideration of maximum profitable radius for waste haulage (in light of weight of waste, fuel economy of trucks and experience in other markets).

[redacted] [redacted]

- Definition of the appropriate product market including consideration of any evidence of cross-elasticity in demand between the various segments of the waste haulage industry (roll-off, commercial, residential containerized, residential hand-load service) as well as consideration of the degree of overlap amongst the various types of customers.

- Calculation of the total number of customers in the market, and Laidlaw's market share.

- Calculation of the minimum number of customers required to sustain a single truck.

- Analysis of the height of entry barriers, including a discussion of the potential success of a new entrant to the market using a single, used truck and operating out of their own home.

- Collection of any evidence of actual entry into the market and success by the new entrant.

- Collection and analysis of any evidence relating to special characteristics of the industry which support the notion that exclusivity is a natural or efficient response to the market.

C. Study methods

To obtain the necessary information, we used a variety of data collection methods. These methods included:

- A desk review of certain of Laidlaw's records from their offices in Nanaimo, Vancouver and Edmonton.

- Personal and telephone interviews with Laidlaw personnel.

- A survey of Laidlaw's existing customers, ex-customers, and potential customers in the geographic areas identified on the Director's Application.

- A survey of Laidlaw's competitors and other waste haulage companies on Vancouver Island.

- A telephone survey of all regional districts and many municipalities on Vancouver Island.

- A review of waste disposal facilities, regulations, and practices on Vancouver Island, through discussions with provincial and regional district offices.

[redacted] [redacted]

- A review of literature on appropriate market definitions.
- A review of literature on the cost structure and operating parameters of the waste disposal industry.
- A review of selected transcripts of the Examination for Discovery in this proceeding.
- A field survey of lift-on-board bins located in selected areas on Vancouver Island.

More detailed descriptions of our study methods are provided in the appropriate chapters of this report.

D. Analytical framework

In competition policy both in Canada and the United States, the most explicit guidelines with respect to market definition have been developed in the form of merger enforcement guidelines (e.g., Merger Enforcement Guidelines, prepared by the Director of Investigation and Research, undated).

We have reviewed in some detail Part 3 of these guidelines, which refer to "Market Definition." The framework for defining the relevant market in these guidelines is similar to the framework that has evolved in recent years in the United States. Although this matter does not deal with merger per se, the framework in the merger enforcement guidelines appears to be appropriate for dealing with the issue of market definition in this case, and we have generally employed it in our analysis. Further references to the Merger Enforcement Guidelines are provided in appropriate places in this report.

[redacted] [redacted]

II

Summary Of Findings

A. Definition of the market

We have drawn on the Director's Merger Enforcement Guidelines as the basis for determining market definition. We have assumed that the markets must encompass both the geographic areas identified in the Director's Application, and also the product identified in his submission.

1. The product dimension

In our opinion, the most reasonable definition of the product dimension of the market is lift-on-board (LOB) service. This is the provision to customers of the service of solid waste pick-up, haulage, and disposal, using bins of a size of between 2 and 8-cubic yards, lifted and dumped into front, side, or rear-load compactor trucks.

2. The geographic dimension

In our opinion, the most reasonable geographic markets for the product, which encompass the three geographic areas advanced by the Director, are as follows:

- A single geographic market encompassing the entire Nanaimo Regional District (NRD), and the Cowichan Valley Regional District (CVRD), excluding the Municipalities of Duncan and Lake Cowichan.
- The eastern portion of the Comox-Strathcona Regional District, including:
  - the Municipalities of Courtenay, Comox, Cumberland, and the surrounding unincorporated areas of Subdivision C,
  - the Village of Sayward, the District of Campbell River, and the surrounding unincorporated areas of Subdivision B, and
  - Quadra Island.

[redacted] [redacted]

B. Laidlaw's market share

Within these markets, we have developed estimates of Laidlaw's market share, based on volumes of waste handled, as follows:

- NRD/CVRD market—78%.
- CSRD market—46%.

C. Other findings

The remaining major findings are as follows:

- A number of sources suggest that one LOB truck is made viable when it has about 300 pick-ups per week. This generally equates to approximately 300 containers on the ground.
- The existence of economies of scale and contiguity support the notion that exclusivity is a natural or efficient response to the market. This is particularly true in smaller markets, which will only support two or three trucks.
- The principal barriers to entry in the industry pertain to the economics of the markets, namely economies of scale and economies of contiguity. In small markets, it is difficult for a small operator to overcome the barriers created by economies of contiguity.
- Considerable evidence exists of new entry in the markets defined above. It is too soon to determine whether these entrants will ultimately be successful.

III

Waste Disposal On Vancouver Island

A. Introduction

In this chapter we will provide a summary of solid waste disposal on Vancouver Island. Topics covered include:

- An overview of responsibilities and facilities for receiving solid waste.
- A more detailed discussion of disposal sites.

Essentially all the information in this chapter has been obtained from the following sources:

- The British Columbia Ministry of Environment.
- Discussions with staff from the six regional districts on Vancouver Island.
- Relevant reports and studies.

B. Overview of responsibilities and facilities

Solid waste disposal, primarily by landfill and/or incineration, is the responsibility of regional districts in British Columbia. The local municipal governments are primarily responsible for solid waste collection and haulage to disposal sites. The local municipalities generally have three options. These are:

1. To provide pick-up and haulage services themselves.
2. To contract out pick-up and haulage services to a private contractor.
3. To have private haulers deal directly with waste generators to collect, haul, and dispose of waste at the municipal landfills.

Typically, what municipalities refer to as "residential" service is provided by Option 1 or 2. This is the pick-up of customer-supplied bags or cans of solid household waste from single

[redacted] [redacted]

family residences. "Commercial" service, which covers most other solid waste collection and haulage, may be provided by any of the three options.

Vancouver Island is divided into six regional districts:

- The Cowichan Valley Regional District (CVRD).
- The Nanaimo Regional District (NRD).
- The Comox-Strathcona Regional District (CSRD).
- The Capital Regional District (CRD).
- The Alberni-Clayoquot Regional District (ACRD).
- The Mount Waddington Regional District (MWRD).

These regional districts include the Gulf Islands in the Strait of Georgia, islands in Johnston Strait and some remote parts of the British Columbia mainland contiguous with Johnston Strait.

According to British Columbia Ministry of Environment, twenty-two "permitted" municipal solid waste facilities are located on Vancouver Island (see Exhibit III-1, overleaf). The Ministry of Environment's list of permitted facilities excludes:

- Private solid waste facilities operated by a private landowner or Indian band.
- Temporary solid waste facilities that may be used during periods of construction or at a temporary logging camp.

Regional districts indicate that other facilities may be operated, particularly unincorporated areas in the MWRD, but they are not known to take significant quantities of commercial wastes and do not represent a significant percentage of the solid waste stream. If a landfill site is privately owned, it generally can only accept waste from its owner. The only exception to this of which we are aware is private landfills that receive demolition or construction waste for burning.

Most, but not all, regional districts on Vancouver Island have a policy of not accepting waste from other regional districts. This prohibition is generally enforced with respect to commercial haulers, but frequently not with respect to individuals or others disposing of waste in small volumes. Although a mechanism for strict enforcement does not always exist, it appears likely that significant abuses of this policy would be identified, and various informal and formal steps taken to limit its occurrence. Discussions with regional staff suggest that only insignificant amounts of waste cross regional district boundaries.

An estimate of waste disposed per person by regional district on Vancouver Island in 1990 is provided in Exhibit III-2.

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Exhibit III-1
Vancouver Island "permitted" solid waste facilities

Region/Solid Waste Facility	Permittee	Capacity		Facility	Current Tipping Fee/Tonne
CVRD					
Lake Cowichan*	CVRD	12	tonnes/d	Incinerator	—
Duncan*	CVRD	40 and 33	tonnes/d m^3/d	Incinerator Landfill	$32 32
Ladysmith*	CVRD	14	tonnes/d	Incinerator	32
NRD					
Cedar Road Nanaimo*	NRD	800	yd^3/d	Landfill	50
Qualicum Beach* (closed August 1991)	Qualicum Beach	45	m^3/d	Landfill	—
CSRD					
Cortes Island	CSRD	1	tonne/d	Landfill/ incinerator	—
Pigeon Lake Cumberland*	CSRD	50	tonnes/d	Landfill	50
Campbell River*	Campbell River	10	tonnes/d	Landfill	—
Gold River	Gold River	8	tonnes/d	Landfill	—
Sayward	CSRD	50	tonnes/d	Landfill	—
Tahsis	Tahsis	7	tonnes/d	Landfill	—
Zeballos	Zeballos	1	tonne/d	Landfill	—
CRD					
Hartland Road Victoria*	CRD	400	tonnes/d	Landfill	55
Blackburn Road Saltspring Island	Mr. Twa/CRD	3	tonnes/d	Landfill	—
Galiano Island	Galiano Club	1	tonne/d	Landfill	—
Saturna Island	Saturna Island Community Club	1	tonne/d	Landfill	—
ACRD					
Port Alberni	ACRD	180	m^3/d	Landfill	—
West Coast Landfill	ACRD	36	m^3/d	Landfill	22
MWRD					
Alert Bay	Alert Bay	2	tonnes/d	Landfill	—
Port McNeill	Port McNeill	3	tonnes/d	Landfill	—
Port Hardy	Port Hardy	5	tonnes/d	Landfill	—
Seven-Mile Pit	MWRD	50	tonnes/d	Landfill	—

Source: British Columbia Ministry of Environment Municipal Solid Waste Facilities (91/06/21).
Telephone interviews with regional district staff and regional district reports.

**Denotes those facilities used by Laidlaw Waste Systems.*

Note: Capacity may not accurately reflect actual volumes received.

[redacted] [redacted]

Exhibit III-2
Estimates of waste volumes disposed on Vancouver Island (1990)

Regional District	Population Estimate ('000)	Estimated Waste (000 tonnes/yr)	Estimated Per Capita Waste (kgs/person/yr)	No. of Waste Disposal Sites	Comments
Cowichan Valley	57,277	27	470	3	
Nanaimo	91,879	56	610	2	Excludes car/truck haulage
Comox-Strathcona	79,017	40	510	7	Weighing has begun at one site, but too recently to provide accurate estimates
Capital	290,447	180	620	4	Excludes "specialized wastes"
Alberni-Clayoquot	30,257	13	430	2	Not weighed
Mt. Waddington	14,086	14	990	7	Not weighed Includes some non-permitted sites
Vancouver Island	562,963	330	590	25	

Sources: Population Data: B.C. Stats 1990 Projections.
Waste volume: Based on discussions with regional district staff and relevant reports.

In interpreting these estimates it should be recognized that a number of considerations lead to the probable understatement of the actual weight of waste disposed of. These include the following, which are based on discussions with regional district staff.

- Tipping fees create incentives to avoid charges, and some waste may be diverted to non-municipal sites.
- Some landfills are unattended or unfenced, so that no direct recording of waste volumes occurs.

- Certain sites do not weigh car loads/pick-up truck loads, which may therefore be excluded from these estimates.

- Where more detailed audits have been undertaken, they have tended to support the view that these estimates understate actual volumes generated.

Additional evidence of underestimated waste mass by regional districts is presented in a 1990 Ministry of Environment report[1]. The authors of this document report that various jurisdictions in Western Canada and the Pacific Northwest produce between 776 and 900 kilograms of waste per capita per year. This waste generation rate is higher than the estimates in Exhibit III-2.

C. Discussion of disposal sites

In the following section, we review the major landfills and incinerators within the Nanaimo Regional District, the Cowichan Valley Regional District and the Comox-Strathcona Regional District, which are the four regional districts in which Laidlaw currently operates. We more briefly describe the disposal sites in the Capital, Alberni-Clayoquot, and Mt. Waddington Regional Districts.

1. Cowichan Valley Regional District

Three solid waste disposal sites are located within the Cowichan Valley Regional District. These sites are generally referred to as thermal reduction plants (TRP) and are situated in the following locations:

- TRP#1—Lake Cowichan.

- TRP#2—Duncan (including a landfill also situated at the same site).

- TRP#3—Ladysmith.

Waste received at TRP #1 is not weighed, and therefore accurate data are not available for this site. The CVRD indicates that this is the smallest TRP within the district (with 1989 estimated volume of 2,524 tonnes), and accounts for less than 10% of the total quantity of waste within the Regional District. TRP #2 has weighing facilities and thus the total volume is reasonably well known. The CVRD reports that slightly more than 20,000 tonnes were received at TRP #2 in 1990, and that slightly more than 10,000 tonnes were received in the first six months of 1991. The waste received at TRP #3 is also weighed. In 1990, about 4,500 tonnes were received at TRP #3, and in the first six months of 1991 about 2,500 tonnes were received. Based upon

[1] *Peat Marwick Stevenson & Kellogg, March 1990. **Market Development Plan For Recyclable Materials In British Columbia.***

these estimates, about 27,000 tonnes of solid waste were received at the three TRPs in 1990. No restrictions exist on which of these sites is to be used for waste generated within the CVRD.

No tipping fee is applied at TRP #1. The current tipping fee at TRP #2 and #3 is $29 per ton (about $32/tonne) for CVRD waste. The Regional District allows waste not originating within the Regional District to be received at these waste sites, but a substantially higher tipping fee is charged ($193/tonne). Regional District staff report that little waste is received from outside the CVRD.

2. Nanaimo Regional District

Two landfills are located within the Nanaimo Regional District. The major facility is the Cedar Road site at the southern end of Nanaimo. A second site is located is Qualicum Beach, but this site was closed at the end of August. The Cedar Road landfill has weighing capabilities, whereas the Qualicum Beach landfill does not. The NRD reports that 37,500 tonnes were received at the Cedar Road landfill in 1990 and estimates that 18,315 tonnes were received at the Qualicum Beach landfill. The estimate of landfilled waste at the Qualicum Beach landfill is based on the population that lives in that area, with a small allowance for a higher use because it does not have tipping fees.

The Cedar Road landfill charges $50 per tonne for commercial waste. The NRD has a policy of not accepting waste from other regional districts. NRD staff believe that waste is received from other regional districts only infrequently.

3. Comox-Strathcona Regional District

The Comox-Strathcona Regional District has seven solid waste disposal sites. A small landfill and incineration site is located on Cortes Island. In addition, landfills are located at Cumberland, Campbell River, Gold River, Sayward, Tahsis, and Zeballos.

Within the CSRD, two major landfills are located within the more populous coastal areas of Campbell River and Cumberland, about 65 kilometres apart. The dividing line is generally considered to be Oyster River. Waste entering the Campbell River facility is not weighed or estimated. The District of Campbell River (the operator) reports that, to its knowledge, no detailed estimate of the weight of this waste has ever been performed.

Weighing facilities were installed at the Cumberland (Pigeon Lake) facility in early June, 1991. The CSRD previously estimated that 70 tonnes per day were received at the Cumberland facility. However, the monthly report for July indicates that, on average, 80 tonnes per day were received. The CSRD indicates that this is the expected long-term rate at which waste will be received.

[redacted] [redacted]

The only site with a tipping fee is the Cumberland facility, which charges $50 per tonne for commercial waste. Sites discourage dumping of non-CSRD waste. However, many of the CSRD's landfills are unfenced and unattended.

Within the Comox-Strathcona Regional District the Sayward, Gold River, Tahsis, Zeballos, and Cortes Island sites are all located some distance from the main Campbell River and Cumberland sites. These facilities account for a small percentage of the waste stream in the CSRD.

4. Capital Regional District

The primary disposal site within the Capital Regional District (CRD) is the Hartland Road landfill, which is the largest waste disposal site on Vancouver Island. According to the CRD, it accounts for 99% of the solid waste within the CRD. Standard waste (which excludes construction material, hazardous waste and recyclable materials) received by the Hartland landfill weighed about 180,000 tonnes in 1990. The waste entering the Hartland Road facility is weighed and classified according to source and type.

Currently, the tipping fee at the Hartland facility is $55 per tonne. The fee for 1992 will be $95/tonne, and is expected to increase to $140/tonne by 1995. The CRD has a policy not to accept waste from other regional districts. On occasion, it is instructed by the Ministry of Environment to accept hazardous wastes from other regional districts because the Hartland facility is able to handle them.

In addition to the Hartland Road facility, small landfills are located on Saltspring Island, Galiano Island, and Saturna Island. They have no tipping fees, and are essentially for local use only.

5. Other regional districts

Two permitted landfill sites are located within the Alberni-Clayoquot Regional District. One landfill site is located at Port Alberni (42 kilometres from the NRD landfill site at Qualicum Beach). The West Coast landfill is located on the far west coast of Vancouver Island.

The Alert Bay, Port McNeil, Port Hardy, and Seven-Mile Pit landfills are located within the Mount Waddington Regional District, far from any of the other major landfills or heavily populated areas of the Island. NWRD staff indicates that there are additional landfills at Port Alice, Holberg and Winter Harbour. These do not appear on the Ministry of Environment record. None of the sites weigh solid waste. Generally speaking, they are unattended and uncontrolled.

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IV

Laidlaw's Operations On Vancouver Island

A. Introduction

In this chapter, we describe Laidlaw's operations on Vancouver Island. The topics covered include:

- An overview of the services provided by Laidlaw, including the terminology which we use in this report to describe them.
- A description of the geographic dimensions of Laidlaw's operations on Vancouver Island, including the distribution of vehicles and containers by operating division and a profile of Laidlaw's customers on Vancouver Island.
- A summary of the quantity of waste hauled by Laidlaw on Vancouver Island.
- Laidlaw's revenues on Vancouver Island.

All of the information provided in this chapter has come from internal Laidlaw records and discussions with Laidlaw personnel.

B. Overview of Laidlaw's services

Laidlaw uses various terminologies and categorizations to describe the waste services that it provides on Vancouver Island.

In its internal financial management reporting, Laidlaw uses the following categories:

- Residential (including "commercial hand-load").
- Front-load or lift-on-board (LOB).
- Roll-off.
- Compactor.
- Recycling.
- Portable Toilets.

[redacted] [redacted]

On Laidlaw's customer list, the primary categorization is according to frequency of billing. Categories include:

- Municipal (billed monthly).
- Residential (billed quarterly).
- Commercial (billed monthly). Such commercial activity is further subdivided into "commercial hand-load," "front load" and "roll-off."
- Recycling.
- Portable Toilets.

In discussions, Laidlaw staff sometimes use various terms to describe its containerized services. Sometimes, Laidlaw staff refer to a "front-load" service as "commercial." Similarly, Laidlaw staff will sometimes refer to a "roll-off" service as "industrial." Despite this terminology, when the terms "commercial" or "industrial" are used, they are not referring to a strict categorization of customer according to the sector of the economy in which the customer operates. The distinction is rather between types of service (collection methods) and billing frequencies. For example, a single-household dweller who uses a front-load bin is treated as a "commercial" customer. Similarly, multi-family dwelling residents receiving containerized garbage pick-up are classified as "commercial" customers. A renovating homeowner disposing of construction waste with a roll-off bin is described as an "industrial" customer.

Terminology used in this report

To clarify these issues, in this report we have used the following terminology and categorization to describe the waste services provided by Laidlaw on Vancouver Island:

- **Hand-Load**—Municipal solid waste (MSW) collected primarily from customer-supplied residential waste cans or bags using rear-load or side-load vehicles. Individual clients in this category are typically billed quarterly, although "commercial hand-load" customers are billed monthly. Municipalities that contract their "hand-load" residential waste collection to Laidlaw are billed monthly.
- **Lift on Board (LOB)**—MSW collected primarily from containers (2-8 cubic yard capacity) using front, side, or rear load trucks. The container is hydraulically lifted and dumped into the compactor truck at the customer site. Customers receiving this category of service are typically billed monthly.
- **Roll-off**—MSW collected primarily from roll-off containers (16-40 cubic yards) using a specialized roll-off truck that carries one container per load to the disposal site. Customers using this category of service are typically billed monthly.

[redacted] [redacted]

- **Recycling**—Recyclable materials collected from residential "Blue Boxes" using a specialized side-loading truck, under municipal contract. Recently, Laidlaw has begun a service in the CRD with industrial-sized bins (for cardboard) using front-load and roll-off vehicles.

- **Portable Toilets**—Human waste collected in portable toilet units. The toilet units are collected using either the vacuum trucks (pump-out trucks) or the same flatbed trucks used to distribute LOB containers.

In this report we sometimes describe LOB and roll-off services as "containerized" services.

The type of pick-up vehicle is important but not definitive in distinguishing between different types of service as, except for a roll-off truck, most of the vehicles can be used for more than one type of service. For example, on routes that primarily run through commercial districts, a front-load truck is sometimes used and waste from residential customers is dumped into an empty LOB bin that is carried with the vehicle.

In addition to the services mentioned above, Laidlaw provides two other speciality services on Vancouver Island:

- Laidlaw rents compactor bins to certain customers. These bins have a built-in compacting unit, which increases the density of the waste in the bin. The lifting of the bins and disposal of the waste is primarily through a roll-off service.

- Laidlaw provides an international waste disposal service. International waste from marine ships and air flights in Victoria is transported by Laidlaw and incinerated in the CVRD. This currently represents a very small portion of their business. The revenues for this service are combined with those of Laidlaw's roll-off service.

Because of the difference in waste composition and methods of disposal, the recycling and portable toilets services are generally excluded from our analysis of geographic and product markets, although we provide selected data on these services in some exhibits.

C. Geographic dimensions of Laidlaw's operations on Vancouver Island

Within British Columbia, Laidlaw has defined two districts: the Lower Mainland District and the Vancouver Island District. (Note that Laidlaw uses the term "District" to include a larger area than a Regional District municipality). Laidlaw's Vancouver Island District includes Vancouver Island, the Gulf Islands and the Mainland Regional Districts of Powell River and Sunshine Coast.

[redacted] [redacted]

On Vancouver Island itself, Laidlaw provides waste services within the Capital Regional District, the Cowichan Valley Regional District, the Nanaimo Regional District and the Comox-Strathcona Regional District. In its internal operating structure, Laidlaw divides its Vancouver Island District into three "Divisions".

- The Victoria Division (encompassing the CRD).
- The Nanaimo Division (encompassing the CVRD and NRD).
- The Campbell River Division (encompassing that part of the CSRD within which Laidlaw currently provides services).

In Victoria, Laidlaw has one sales supervisor, one sales representative, and one customer service representative (CSR). In Nanaimo, one sales representative services the Nanaimo and the Campbell River Divisions, while one CSR primarily undertakes telephones sales activities. Exhibits IV-1 and IV-2 summarize the number and type of vehicles and containers operated by Laidlaw on Vancouver Island.

Exhibit IV-1
Number and type of Laidlaw vehicles by location on Vancouver Island (June, 1991)

Vehicle Type	Victoria Division Victoria	Nanaimo Division Nanaimo	 Duncan	Campbell River Division Campbell River	Total
Front-load	6	4*	1**	2	13
Rear-load	—	—	1	—	1
Side-load	2	1	—	2	5
Roll-off	6	—	—	1	7
Service vehicle***	3	2	—	1	6
Recycling truck	5	—	—	—	5
Total	22	7	2	6	37

Source: Laidlaw records.

**One of these trucks is used to service some customers in the CVRD on a regular basis. These trucks also serve as back-ups to the truck operating from Duncan.*

***Based in Duncan but serviced in Nanaimo.*

****Used to deliver/retrieve LOB bins to/from customers, and to provide portable toilet service.*

[redacted] [redacted]

Exhibit IV-2
Number of Laidlaw containers by division and service on Vancouver Island (June, 1991)

Vehicle Type	Victoria Division	Nanaimo Division	Campbell River Division	Total
Front-loaders	1,385	1,799	694	3,878
Side/Rear-loaders	16	774	64	854
Roll-off	98	8*	25	131
Total	1,499	2,581	783	4,863

Source: Laidlaw records.

**Laidlaw does not generally provide roll-off services in the Nanaimo Division, but does provide compactor roll-off bins on a rental basis.*

Laidlaw provides commercial service, as defined by the municipality, in a number of the municipalities in the CRD.

In the CVRD, the following municipalities provide some form of commercial service, as defined by the municipality:

- City of Duncan (CVRD), where the municipal government by by-law is the only provider of both commercial and residential waste services (Laidlaw provides some larger LOB bins and roll-off service, which the municipality is unable to provide).
- North Cowichan (CVRD), where Laidlaw provides LOB services, but the municipality provides "hand-load" commercial collection in conjunction with its residential service.
- Lake Cowichan (CVRD), where the municipal government provides side-load service to some commercial customers using 90 gallon containers and to two customers using larger self-dumping containers.

In the CSRD, Laidlaw provides commercial services almost exclusively in the District of Campbell River, plus the Village of Sayward.

In the NRD, Laidlaw provides commercial service throughout the regional district, with the exception of some commercial outlets in Qualicum Beach. These commercial outlets are served by the municipality using 4-cubic yard containers and a side-load vehicle.

[redacted] [redacted]

On Vancouver Island, Laidlaw hauls municipal solid waste (MSW) only to regional district landfills or incinerators, with one exception. In Campbell River, Laidlaw hauls wood waste and construction waste to a government approved private landfill for mass burning.

D. Profile of customers

Laidlaw uses the following customer categorization:

- Single household—owner/resident of a single family dwelling, which does not receive waste collection through a municipal service.
- Multi-family unit—owner/manager of a multi-family residence (apartment building or trailer park).
- Commercial organization—owner/manager of a private sector, government, or non-profit establishment.
- Municipality—a municipal government (or occasionally a regional district) that contracts out a residential collection service for owner/residents of single family dwellings and commercial organizations.

A breakdown of Laidlaw's customers by type of service and type of customer is provided in Exhibit IV-3. Laidlaw has about 3,900 customers in commercial-type organizations, of which over 90% receive a LOB service.

E. Quantity of wastes hauled by Laidlaw

Exhibit IV-4 summarizes the quantity (tonnes) of waste transported by Laidlaw each month. The estimates are based on Laidlaw's records. Estimates of the weight of unweighed wastes have been prepared by Peat Marwick Stevenson & Kellogg, based on the conversion of truckloads delivered to the disposal sites. Because of estimation methods and other factors, weighted waste volumes do not equal regional district estimates.

Laidlaw transports about 3,900 tonnes of waste each month in Victoria, 2,700 tonnes in Nanaimo, and about 1,500 tonnes in Campbell River. Partial breakdowns by type of service and disposal facility are also shown.

[redacted]

[redacted]

Exhibit IV-3
Number of Laidlaw's customers on Vancouver Island by type of service and type of customer (June 1991)

[redacted] [redacted]

Exhibit IV-4
Estimated weight of wastes hauled by each Laidlaw Division on Vancouver Island (tonnes/month)

Laidlaw Division/Disposal Sites	Hand-load	Lift-on-board	Roll-off	Recycling*	Total
Nanaimo Division					
Duncan, Ladysmith, Nanaimo (weighed waste)	144	2,135	—	—	2,279
Lake Cowichan (unweighed)	72	0	—	—	72
Qualicum Beach (unweighed)	—	360	—	—	360
Nanaimo Division Total	216	2,495	0	0	2,711
Campbell River Division					
Cumberland (weighed waste)	—	—	12	—	12
Campbell River (unweighed waste)	336	672	528	—	1,536
Campbell River Division Total	336	672	540	0	1,548
Victoria Division					
Hartland landfill (weighed)	115	1,839	1,579	367	3,901
Victoria Division Total	115	1,839	1,579	367	3,901
Total All Divisions	667	5,006	2,119	367	8,160

**Recycling weights are included in hand-load estimates, except for Victoria.*

Sources: PMS&K estimates based on Laidlaw records for January-June, 1991.

Totals may not add due to rounding.

V

Review Of Waste Haulers On Vancouver Island

A. Introduction

More than twenty private sector firms provide solid waste haulage services in the six Regional Districts on Vancouver Island. A list of those firms that we have identified and the regional districts within which they operate is provided in Exhibit V-1. About eighteen local governments provide services to their own constituents, primarily residential services. A review of the waste haulers in those regional districts in which Laidlaw operates is provided in the following sections, as well as an assessment of Laidlaw's market position in those regional districts.

In preparing this chapter, we have combined three main information sources:

- Laidlaw's competitive intelligence.
- Discussions with the staff of a number of regional districts and local municipalities on Vancouver Island.
- Telephone interviews with a number of other private sector waste haulers on Vancouver Island.

Specific sources of quantitative information are provided at the appropriate points in the chapter.

B. Overview of competing firms

1. Cowichan Valley Regional District

We identified two private waste haulage firms providing containerized services in the Cowichan Valley Regional District:

- Pan Disposal has been in business for more than ten years and provides both hand-load and LOB services in the area. They have one front-end loader and one residential waste truck.

[redacted] [redacted]

Exhibit V-1
Breakdown of private sector solid waste haulers by regional district in Vancouver Island

Company	Regional District					
	Cowichan Valley	Nanaimo	Comox-Strathcona	Capital*	Alberni-Clayoquot	Mount Waddington
4B Enterprises						√
Advance Operations	RO	RO		LOB, RO	√	
Alpine Disposal and Recycling		RC		H, LOB		
Browning Ferris Industries	LOB	LOB, RO		LOB, RO		
Camvest Disposal			H, LOB			
Canadian Oxy Chemicals		LOB**				
City Waste Systems		H				
Deryck Trucking						√
Econo Waste Systems				H, LOB		
Fox Disposal						H, LOB, RO
Jones Disposal	RO	RO				
Lacey's Disposal			H, LOB, RO			
Laidlaw	H, LOB	H, LOB	H, LOB, RO	H, LOB, RO, RC		
J.B. Disposal/Lantzville Improvement District		H				
MacNutt Trucking				RO		
Pan Disposal	H, LOB					
QC Disposal			H, LOB			
Rainor and Brac					√	
Ron's Disposal				H, LOB		
Valley Disposal			H, LOB			
West Coast Waste Systems	LOB	H, LOB, RC				
Total No. Of Firms	6	9	5	7	2	3

Source: Interviews with regional and local government officials and Laidlaw staff.

H = Hand-load, LOB = Lift-on-board, RO = Roll-off, RC = Recycling, √ = Type of service unknown.

**Major containerized haulers only.*

***Canadian Oxy Chemicals hauls waste; it is not known if they provide this service to third parties.*

[redacted] [redacted]

- Advance Operations also has a roll-off business located in this regional district. It began operations in the Cowichan Valley about eight years ago.

In addition, three providers based in the NRD provide some containerized services in the CVRD:

- Browning Ferris Industries (LOB service).
- West Coast Waste Systems (LOB service).
- Jones Disposal (roll-off service).

2. Nanaimo Regional District

We identified nine private waste haulage firms operating in the Nanaimo Regional District. At least six of these provide a containerized service.

Laidlaw views its primary competitors in the Nanaimo area as Browning Ferris Industries and West Coast Waste Systems. Both West Coast and Browning Ferris entered the Nanaimo market in early 1990.

Jones Disposal and Advance Operations provide a roll-off service, whereas Laidlaw only provides an LOB service, under the terms of agreements entered into at the time Laidlaw acquired parts of their businesses.

3. Comox-Strathcona Regional District and the District of Campbell River

Laidlaw's only competitor in the District of Campbell River is Camvest Disposal, which began operations in the Spring of 1989. This company has one LOB front-end truck.

Apart from servicing the Village of Sayward and Campbell River, Laidlaw essentially does not operate in other parts of the CSRD. The second biggest volume of waste in the CSRD is in the Courtenay/Comox area, primarily served by Lacey's Disposal. A third hauler in this area is Valley Disposal, which services Cumberland. QC Disposal serves Quadra Island, and dumps at the Campbell River landfill.

4. Capital Regional District

In addition to Laidlaw, we identified six major waste haulers providing containerized waste haulage in the CRD, including the following.

- Advance Operations, which has about four trucks that provide roll-off and LOB (front-load) service.
- Alpine Disposal and Recycling, which has about six trucks that provide commercial and residential pick-up using rear load vehicles.

[redacted] [redacted]

- Browning Ferris Industries, which has twelve trucks that provide roll-off and LOB front-load service.
- Econo Waste Systems, which has about six trucks and provides hand-load and LOB service with front-load and rear-load vehicles.
- MacNutt Trucking, which has three roll-off trucks.
- Ron's Disposal, which provides hand-load and LOB waste services using rear load and residential pick-up vehicles—about four trucks.

A few smaller private sector haulers, with one or two trucks, also operate in the CRD. These have not been identified on Exhibit V-1.

5. Other regional districts

The remaining two regional districts represent smaller volumes of waste and thus have fewer haulers. Alberni-Clayoquot has two haulers and Mount Waddington has three. Laidlaw is not represented in either of these regional districts.

C. Municipal government haulers

Many municipalities provide residential waste disposal services to residents within their own jurisdictions. This service is typically funded through municipal taxes. Smaller communities and rural areas often do not have this service. Some municipalities provide commercial waste disposal services in addition to residential services, although this is less common.

When municipalities provide waste disposal services, they may choose either to deliver them directly, using municipally-owned equipment and municipal employees, or may contract the services out to a private waste haulage firm.

A summary of municipal government provision of waste disposal services is provided in Exhibit V-2 and discussed below.

1. Cowichan Valley Regional District

All four municipalities within the CVRD directly provide their own residential waste disposal service. Lake Cowichan includes a commercial pick-up with its residential pick-up. Duncan provides a residential and commercial service that is not contracted out.

[redacted] [redacted]

Exhibit V-2
Municipally-provided waste collection and transport in CRD, CVRD, NRD and CSRD

Local Government	Waste Service	Residential Provider	Commercial Provider	No. of Residential Customers	No. of Commercial Customers	Tonnes of Waste Transported (annually)
CVRD						
Ladysmith	R	Laidlaw	—	1,762	NP	1,302
Lake Cowichan	R, C	Lake Cowichan	Lake Cowichan	809	71	1,665
North Cowichan	R	North Cowichan	—	6,150	NP	3,805
Duncan	R, C	Duncan	Duncan	2,620	188	3,533
NRD						
Nanaimo	R	Nanaimo & City Waste System	—	16,750	NP	9,849
Parksville	R	West Coast Waste	—	15,500	NP	N/A
Qualicum Beach	R, C	Qualicum Beach & West Coast Waste	Qualicum Beach	2,200	20	2,000 (includes C)
CSRD						
Campbell River	R	Laidlaw	—	5,187	NP	N/A
Courtenay	R, C	Lacey's	Lacey's	N/A	N/A	N/A
Comox	R	Lacey's	—	N/A	NP	N/A
Gold River	R, C	Gold River	Gold River	600	50	N/A
Tahsis	R, C	Tahsis	Tahsis	400	22	N/A
Zeballos	R, C	Zeballos	Zeballos	120	4	N/A
Sayward	N/A	N/A	NP	N/A	NP	N/A
Quadra Island	N/A	N/A	NP	N/A	NP	N/A
CRD						
Central Saanich	None	—	—	NP	NP	NP
Colwood	None	—	—	NP	NP	NP
Esquimalt	R	Esquimalt	—	4,000	NP	35,000
Methcosin	None	—	—	NP	NP	NP
North Saanich	None	—	—	NP	NP	NP
Oak Bay	R,C	Oak Bay	Oak Bay	NP	N/A	N/A
Saanich	R	Laidlaw	—	1,511	NP	N/A
Sidney	R,C	City Waste	—	NA	NP	N/A
Victoria	R,C	Victoria	Victoria (+ contracted)	12,820	N/A	11,118
View Royal	None	—	—	NP	NP	NP

Source: Telephone survey of municipalities.

R = Residential C = Commercial NP = Service not provided N/A = Data not available

Service type is defined from municipal perspective.

[redacted] [redacted]

2. Nanaimo Regional District -

All three municipalities within the Nanaimo Regional District provide a residential waste disposal service, which is partly contracted out in each case. Qualicum Beach includes a containerized commercial service (side-load) in conjunction with its residential service. This service is not contracted out.

3. Comox-Strathcona Regional District

The District of Campbell River offers a commercial and residential waste disposal service. Both of these services are contracted out. The Municipalities of Comox and Courtenay both contract out residential service to Lacey's Disposal. Courtenay also contracts out commercial service to Lacey's. Gold River, Tahsis and Zeballos provide their own commercial and residential service.

4. Capital Regional District

Within the CRD, five of the ten municipal governments provide their own residential waste disposal service, either directly or under contract. Two of these also provide a commercial service, one of which is contracted out.

D. Laidlaw's market position

The calculation of Laidlaw's market share depends on the ultimate definition of the market, which is discussed in Chapter VII. In this chapter, however, we provide information on Laidlaw's market position, which places Laidlaw's activities in perspective and forms the basis for the market share calculations in Chapter VII.

It is not possible to provide two potentially useful perspectives on Laidlaw's position, due to the lack of information. These are:

- Laidlaw's revenues in relation to the relevant revenues for the industry as a whole. To our knowledge, such information is not available from industry associations or statistical agencies.

- Laidlaw's customer base in relation to all customers in the regional districts. While it is potentially possible to independently estimate the number of commercial and residential establishments, such analysis is not feasible, because "customers" tend to be defined as billing addresses rather than as waste generating establishments. For example, multiple businesses often receive waste services on a joint basis through their building owner/manager, and some multi-establishment customers are billed through a single location. Work contracted to municipalities is typically identified as a single customer.

1. Volume of waste disposed

We have collected available data on waste volumes for the CVRD, NRD, and CSRD.

[redacted] [redacted]

Exhibit V-3 provides information provided by the NRD, with respect to the quantity of MSW landfilled at the Nanaimo (Cedar Road) site. These data, expressed in tonnes, represent about two-thirds of the waste volumes generated in the NRD; the remaining one-third is delivered to the Qualicum Beach landfill, where it is not weighed. Exhibit V-3 includes all major haulers, both private organizations undertaking waste haulage for a fee, and municipalities.

Exhibit V-3
Waste landfilled at Nanaimo (Cedar Road) site by major haulers

	1989		1990		1991 to May 31	
Waste Hauler	Tonnes	%	Tonnes	%	Tonnes	%
City of Nanaimo	8,274	25	5,960	16	2,531	15
J.B. Disposal/Lantzville[1]	641	2	629	2	228	1
Advance Operations	458	1	1,370	4	364	2
City Waste Systems[2]	1,024	3	2,535	7	1,056	6
Jones Disposal	7,930	24	8,915	24	3,650	21
Browning Ferris Ind.[3]	-	-	378	1	724	4
Canadian Oxy Chemicals[4]	-	-	-		308	2
Laidlaw Waste Systems	13,797	41	13,849	37	4,689	27
Other sources	1,203	4	3,865	10	3,637	21
Total all sources	33,326	100	37,500	100	17,188	100

Source: Nanaimo Regional District.

[1] *J.B. Disposal provided waste services until the end of 1990*
[2] *Opened account in August, 1989.*
[3] *Opened account in May, 1990.*
[4] *Opened account in April, 1991.*

Totals may not add due to rounding

At this site, Laidlaw's share of waste is decreasing. Those with increasing shares include:

- City Waste Systems.
- Browning Ferris Industries.
- "Other sources," which may include organizations or individuals opting to transport their own waste.

A breakdown of waste disposed by haulers at the two sites with weigh scales in the CVRD is presented in Exhibit V-4. These two sites are reported by the CVRD to represent about 90% of waste volumes delivered to disposal sites in the district.

[redacted] [redacted]

Exhibit V-4
Waste landfilled in the CVRD (TRP #2 and #3) by major haulers

	1990		1991 (Jan.-June)	
Waste Hauler	Tonnes	%	Tonnes	%
Pan Disposal	1,334	5	671	5
Laidlaw Waste Systems	8,188	33	4,577	35
Advance Operations	1,449	6	803	6
Jones Disposal	115	0	53	0
District of North Cowichan	4,418	18	1,753	13
City of Duncan	3,417	14	1,749	13
Town of Ladysmith	148	1	54	0
Other sources	5,645	23	3,502	27
Total all sources	24,714	100	13,180	100

Source: Cowichan Valley Regional District.

Notes: Jones Disposal operates out of Nanaimo. According to the CVRD, BFI is extending its refuse collection area into the CVRD, but volumes are not significant at this time.

Totals may not add due to rounding

Exhibit V-5 contains the breakdown of waste disposed of by major haulers at the Pigeon Lake facility at Cumberland, in the CSRD. The Pigeon Lake landfill serves the Courtenay/Comox/Cumberland area, where Laidlaw essentially does not operate. Weighing at this site began in July, 1991.

Exhibit V-5
Waste landfilled in the Cumberland landfill, July 1991 (tonnes)

Waste Hauler	Tonnes	%
Lacey's Disposal	1,640	68
Valley Disposal	176	7
Other sources	604	25
Total all sources	2,420	100

Source: Comox-Strathcona Regional District.

[redacted] [redacted]

Waste is not classified according to type of service at any of the facilities in the CVRD, NRD or CSRD. Estimates are available on the relative proportion of waste from "household" and "other" sources, because of periodic analyses of waste. However, these definitions of "household" and "other" are unique to the perspective of landfill operators, and do not correspond to:

- The distinction between residential and commercial service, as perceived by a local municipality. The latter definition excludes multi-family residential units, while the former includes it.
- The distinctions between service types as they are typically described by waste haulers.
- The PMS&K terminology presented in Chapter IV.

2. Container counts

Another method of assessing Laidlaw's position is to determine the number of Laidlaw's containers as a percentage of the total number of containers in service in the relevant region. This method is particularly useful because it provides accurate figures on containerized waste service.

We conducted a field survey of LOB bins in sample areas on Vancouver Island. We verified and supplemented the counts obtained with telephone interviews with waste haulage firms. The results of our telephone and field surveys are presented in Exhibit V-6.

[redacted] [redacted]

Exhibit V-6
LOB bins of major waste haulers in three regional districts on Vancouver Island (August 1991)

Region/Company	No. of Bins	%	Capacity (cubic yards)	%
City of Nanaimo (NRD)				
Laidlaw	942	90	3,573	91
Browning Ferris Industries	63	6	201	5
West Coast Waste	40	4	139	4
Subtotal	1,045	100	3,913	100
Cowichan Valley Regional District				
Laidlaw	485	88	1,942	90
West Coast Waste	2	—	10	—
PAN Disposal	65	12	210	10
Subtotal	552	100	2,162	100
Comox-Strathcona Regional District —South				
1. District of Campbell River (partial) (CSRD)				
Laidlaw	269	83	839	83
Camvest	54	17	166	17
Subtotal	323	100	1,005	100
2. Courtenay/Comox/Cumberland/Royston area (CSRD)				
Lacey's Disposal	500	83	1,556*	83
Valley Disposal	100	17	311*	17
Subtotal	600	100	1,867	100
3. Quadra Island				
QC Disposal	52	100	162*	100%

Source: PMS&K visual survey of containers in Campbell River, City of Nanaimo and Cowichan Valley. Interviews with competitors in Nanaimo, Cowichan Valley, and Comox-Strathcona.

**Based on average capacity of bins in District of Campbell River.*

VI

Economics Of The Waste Haulage Industry

A. Introduction

In this Chapter, we discuss the economic structure of the waste disposal industry on Vancouver Island. The waste haulage/disposal industry is characterized by a cost structure heavily influenced by economies of scale and economies of contiguity. These factors have significant influence on the structure of the market. Topics covered in this Chapter include:

- Laidlaw's cost structure.
- Economies of scale.
- Economies of contiguity.
- Cross-elasticity of demand.
- Cost impact of remote service.
- The self-disposal option.

Data sources on which this chapter are based are primarily information from Laidlaw's internal financial records, and a review of literature of the economics of waste haulage.

B. Laidlaw's cost structure

Exhibit VI-1 contains a summary of the cost structure of Laidlaw's LOB operations in Victoria, Nanaimo and Campbell River for the period September 1, 1990 to June 30, 1991. The costs have been presented in terms of operating costs and allocated costs.

Operating costs are defined as those costs that pertain directly to the operation of the LOB service. The principal operating cost elements are tipping fees, labour, maintenance and depreciation.

[redacted]

Tipping fees vary substantially from jurisdiction to jurisdiction, as evidenced in Exhibit VI-1. Tipping fees amount to 39% of total costs in Victoria, 30% in Nanaimo and 0% in Campbell River. This has a substantial impact on the overall cost structure and the relative prices charged for LOB service in each jurisdiction.

Exhibit VI-1
Laidlaw cost structure for front-load service* ($000s)

	Division		
	Victoria	Nanaimo	Campbell River

Note: Columns may not match subtotals and totals due to rounding.

**For ten-month period September 1, 1990 to June 30, 1991. Based on Laidlaw's internal financial records.*

Allocated costs include four cost elements, which can be defined as follows:

- **Overhead**—the costs of operating the local office. The allocation is made on the basis of net revenues (gross revenues minus tipping fees) for each type of service.
- **Sales, general, administration**—consists of selling labour, commissions, bad debt expense, benefits, and miscellaneous. Commissions are directly attributed to the type of service, while the balance is allocated on the basis of net revenues.

- **Management fees**—share of corporate costs. Allocated on the basis of net revenues.
- **Interest**—based on current assets and cash flow.

The variable costs of providing front-load service include operating costs, plus bad debt expense and commissions paid. The ratios of variable costs to revenues for the three divisions of Laidlaw are shown in Exhibit VI-2.

Exhibit VI-2
Ratio of variable costs to revenues

Division	Variable Costs as a Percentage of Revenues
Victoria	73%
Nanaimo	62%
Campbell River	53%

Source: Based on Laidlaw's internal financial records for the period September 1, 1990 to June 30, 1991.

C. Economies of scale

The economic literature on waste hauling contains very few references to private operations, and virtually nothing on the operation of LOB services. Most of the literature deals with the provision of residential service by municipal, contract or private operators. Nevertheless, the literature does contain some valid observations with respect to the waste hauling industry in general.

Economies of scale in the collection of residential solid waste are thought to be due to improved labour utilization, improved equipment utilization, labour specialization (e.g., hiring of preventive maintenance personnel), separation of functions (scale sufficient to justify the employment of supervisors, accountants, etc.), volume purchasing, and spreading overhead costs. A 1977 study by Columbia University[1] estimates that economies of scale can account for up to a 25% reduction in the costs of collection of residential solid waste.

The 1977 study determined that, regardless of service arrangement (i.e., municipal, contract, private), most economies of scale were realized when a market was able to sustain eight

[1] *Savas, E.S., The Organization and Efficiency of Solid Waste Collection, Lexington Books, Lexington, Massachusetts, 1977.*

[redacted] [redacted]

collection vehicles in a single area or in a number of proximal areas. (It is not clear if this relates to a single service type, or several.) This would indicate that small markets are more efficiently served by one solid waste collection operator. On the other hand, in larger markets, it is possible that several operators can achieve similar economies of scale, and effectively compete for business.

Laidlaw's Vancouver Island operating divisions currently have the following numbers of collection vehicles:

Division	Number of Collection Vehicles
Victoria	19
Nanaimo	7
Campbell River	5

The numbers shown above include rear-load, front-load, side-load, roll-off, and recycling collection vehicles (see Exhibit IV-1 for further information). Laidlaw would appear to be achieving most of the potential economies of scale in its Victoria Division. Laidlaw's Campbell River and Nanaimo Divisions would appear to be achieving some of the potential economies of scale.

Indications that Laidlaw is achieving some economies of scale, as suggested by the 1977 study, include:

- One sales supervisor, located in Victoria, covers all of Vancouver Island.
- The sales representative located in Nanaimo is responsible for sales in Nanaimo, Campbell River and the Cowichan Valley.
- The front-load collection vehicles serving the Cowichan Valley are serviced in Nanaimo.
- One customer service representative covers Nanaimo and the Cowichan Valley.
- Laidlaw receives significant volume discounts (based on national volumes) for the purchase of vehicles, tires and fuel.
- The ability to spread overhead costs is apparent by comparing Victoria with Nanaimo and Campbell River. As indicated in Exhibit VI-3, the overhead costs per vehicle are much lower in Victoria than in either Nanaimo or Campbell River. Some anomalies, such as amortization of goodwill, skew the Nanaimo figures to a level higher than Campbell River.

[redacted] [redacted]

Exhibit VI-3
Overhead costs per collection vehicle

D. Economies of contiguity

A common feature of the solid waste collection industry, and others such as the parcel pick-up/delivery industry, is the existence of economies of contiguity (i.e., density of pick-up points). The shorter the distance between pick-up points, the lower the cost per pick-up.

Laidlaw estimates that a minimum of 300 pick-ups per week of front-load bins is necessary to justify one truck. This is consistent with the views of Laidlaw's competitors in Nanaimo, Cowichan Valley and Campbell River, who provided figures ranging from 250 to 350 pick-ups per week.[1] The optimal number of pick-ups is estimated to be about 400 per week per truck. Exhibit VI-4 contains a summary of Laidlaw's performance in this respect.

Exhibit VI-4
Current utilization of front-load collection vehicles

Division	Average Pick-ups per Week*	No. of Trucks	Pick-ups per Week Per Truck
Victoria	2,042	6	340
Nanaimo/Duncan	1,916	5	383
Campbell River	811	2	406

Source: Laidlaw records.

**For the period February 1, 1991 to July 31, 1991.*

[1] *Based on transcripts of cross-examination of Mr. J. Pecman by Mr. A. Henderson for Laidlaw Waste Systems Ltd., Ottawa, July 9-11, 1991.*

[redacted] [redacted]

The impact of the economies of contiguity on Laidlaw's current operations is illustrated by the calculations summarized in Exhibit VI-5. The example presented is based on Laidlaw's current operations in Nanaimo. The principal assumptions used in this analysis are as follows:

- The number of pick-ups per truck per day are spread over 100 miles, including trips to the landfill. (The normal feasible distance to be travelled by one truck during the course of a day is estimated by Laidlaw to be about 100 miles.)
- Non-productive hours (lunch break, coffee breaks, trips to the landfill) are constant.
- Driving time is constant for the 100-mile route and excludes the time of each pick-up.

As indicated in Exhibit VI-5, a 28% increase in the number of pick-ups along a 100-mile route results in a revenue increase of $350 with an increase of $116 in labour and landfill costs. All other costs remain constant in this example, as the distances driven do not change.

At the margin, each additional pick-up that can be accomplished within the 100-mile route results in the following changes to costs and revenues:

► Additional revenue	$25.00
► Additional costs:	
• Labour	$0.67
• Landfill	$7.60
• Total	$8.27
► Additional net income	$16.73

As illustrated, solid waste disposal firms can achieve significant economies of contiguity.

[redacted] [redacted]

Exhibit VI-5
Impact of density of pick-up points

	Current	Hypothetical Example
Parameters		
Number of pick-ups per day	64 pick-ups[1]	50 pick-ups
Miles driven per day	100 miles	100 miles
Minutes per pick-up[2]	2 minutes	2 minutes
Revenue per pick-up[3]	$25.00/pick-up	$25.00 pick-up
Labour cost per hour[4]	$20.00/hour	$20.00/hour
Landfill costs per cubic yard[3]	$2.00/cu. yd.	$2.00/cu. yd.
Cubic yards per pick-up[3]	3.8 cu. yds./pick-up	3.8 cu. yds./pick-up
Non-productive hours[5]	3 hours	3 hours
Driving time[5]	4.9 hours	4.9 hours
Pick-up time[6]	2.13 hours	1.67 hours
Revenues		
Total revenue	$1,600	$1,250
Costs		
Landfill costs	$486	$380
Labour costs	$201	$191
Total labour and landfill costs	$687	$571

Source: PMS&K analysis.

[1] *Based on Laidlaw's current operations in Nanaimo.*

[2] *Estimated by Laidlaw.*

[3] *Based on Laidlaw's internal records.*

[4] *Assumed.*

[5] *Based on Laidlaw's experience.*

[6] *Calculated from the number of pick-ups and the time per pick-up.*

[redacted] [redacted]

E. Cross-elasticity of demand

The potential for cross-over from LOB service to roll-off or hand-load service is a determinant of the cross elasticity of demand. From a purely financial perspective, this potential depends on the combination of bin size, pick-ups per week and price.

1. Price analysis

Exhibit VI-6 represents the monthly cost paid by a hypothetical customer for "commercial" waste disposal in Campbell River. Customer costs are based on list prices. Campbell River was chosen for this analysis because Laidlaw offers roll-off, LOB and hand-load service in this market. The monthly costs are based on Laidlaw's current list prices in Campbell River for:

- Roll-off service once a week with a twenty or thirty cubic yard container.
- Hand-load service once a week (4 bags).
- Front-load service using three, four or six cubic yard bins and different pick-up frequencies.

As indicated in this exhibit, hand-load service amounting to four bags per week is roughly the same cost as a three or four cubic yard front-load bin picked up once per week. Once the volume increases to twelve bags per week (about 1.5 cubic yards), the cost of hand-load service exceeds the cost of front-load service (a three cubic yard bin picked up once per week).

At the other end of the scale, roll-off service becomes cost competitive with front-load service at the following combinations of bin size and pick-up frequency:

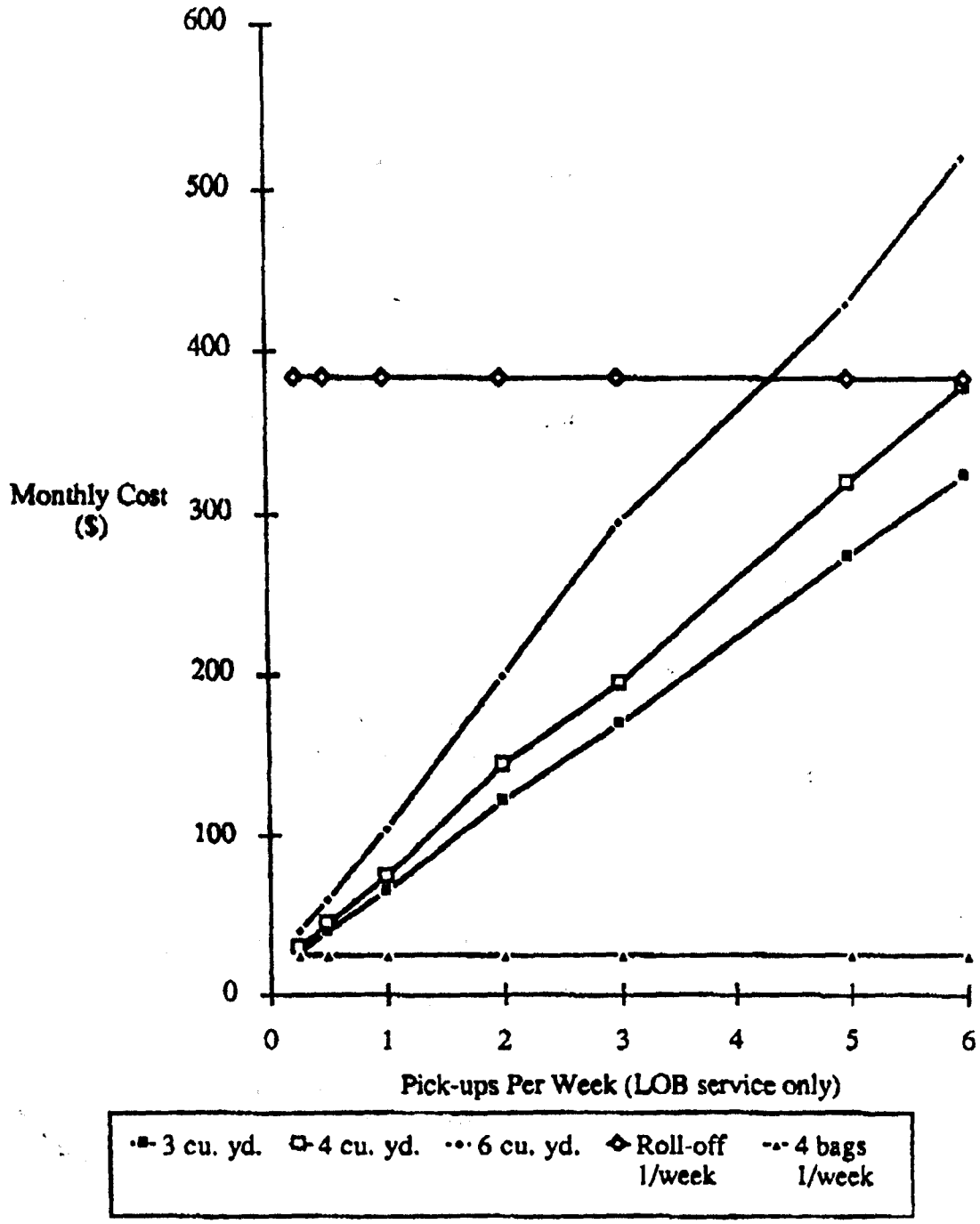
- 6-cubic yard bin with pick-up frequency of 4 times per week.
- 4-cubic yard bin with a pick-up frequency of 6 times per week.
- 3-cubic yard bin with a pick-up frequency of 7 times per week.

The cross-over point is thus in the range of twenty-five cubic yards of waste per week.

Exhibit VI-7 indicates the effects of a five per cent increase in the price of front-load service. As indicated in this exhibit, a significant change in the cross-over point does not occur.

[redacted] [redacted]

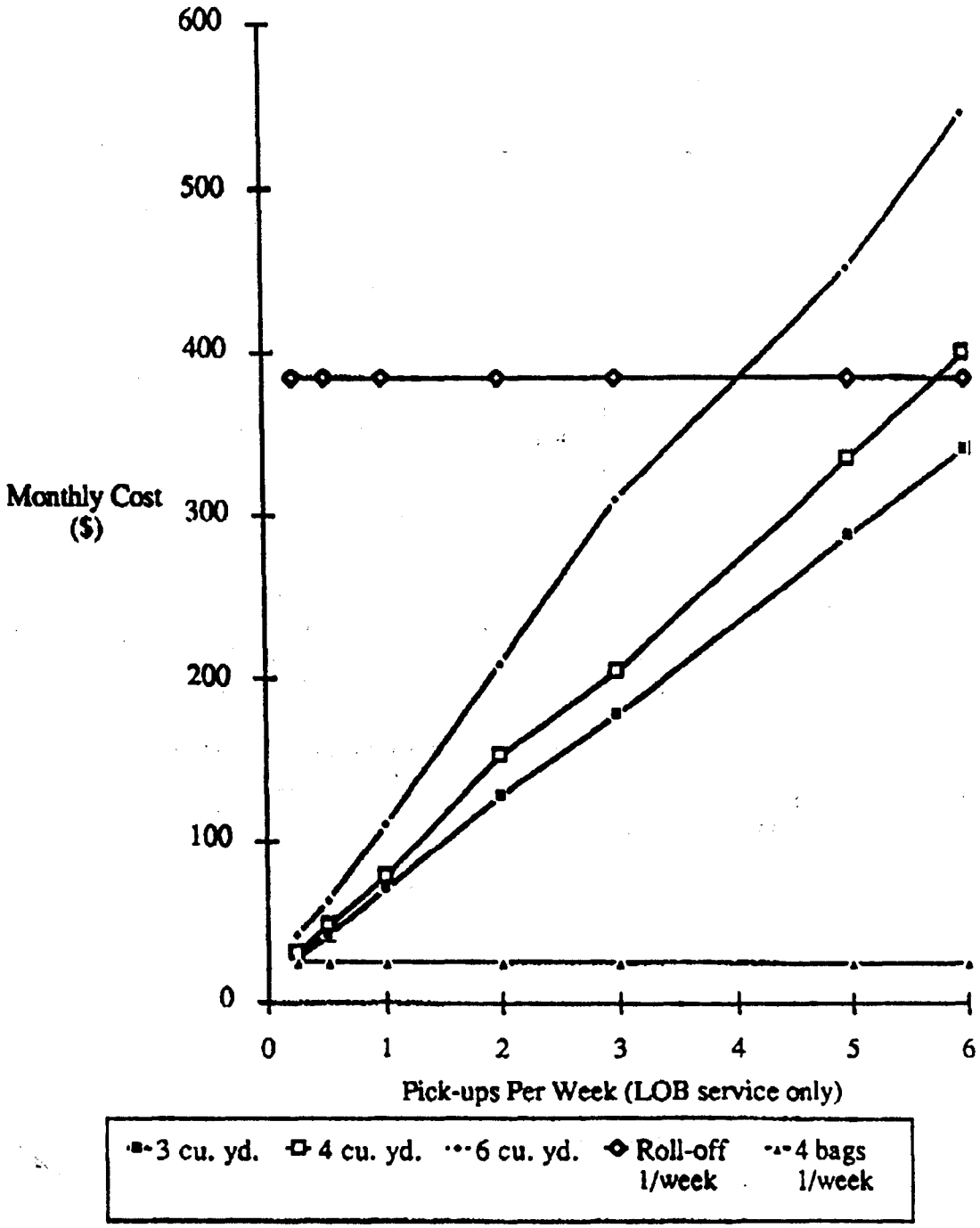
Exhibit VI-6
Monthly cost vs pick-ups per week



[redacted]

[redacted]

Exhibit VI-7
Monthly cost with 5% increase for LOB service



[redacted] [redacted]

2. Relevance to customer base

Exhibits VI-8 and VI-9 summarize the distribution of bin size and frequency of pick-up for both the Nanaimo and Campbell River Divisions of Laidlaw. This information is based on a sample of customer records. Those customers whose volume and frequency of service creates the potential for cross-over are highlighted.

In terms of cross-over to hand-load service, only the two, three and four cubic yard bins with a pick-up frequency of once per month could be realistically considered. This is further limited (by cost to the customer) to a volume not exceeding two cubic yards (16 bags) of waste per month. About 4% of the existing bins fall in this category in both Nanaimo and Campbell River.

In terms of cross-over to roll-off service, less than 2% of the existing bins have sufficient weekly volumes of waste to be considered.

Based on this analysis, we calculate that cross-elasticity of demand or substitutability is not readily apparent within the commercial waste haulage industry.

F. Cost impact of remote service

The ability of a waste hauler to institute a non-transitory price increase may be constrained by the ability of a competitor from an adjacent area to service the same market. We have examined the economics of remote service. Our analysis is based on serving the Cowichan Valley directly from Nanaimo, though the results are applicable on a broader basis as well.

The assumptions used in this analysis are shown below. The assumptions pertaining to inputs and costs were determined in discussion with Laidlaw operating staff.

- Distance to market.
  - A. 23 km to start of routes (service provider would most likely re-align routes to minimize the distance travelled per day).
  - B. 51 km to central point.
- Driving speed—70 km/hour.
- Fuel consumption—1.1 km/litre (3.0 miles/gallon).
- Fuel cost—$0.36/litre.
- Labour rate—$18.52/hour.

[redacted] [redacted]

Exhibit VI-8
Frequency of pick-up—Nanaimo*

Frequency of Pick-up	Bin Size (cubic yards)					
	2	3	4	5	6	8
Monthly	**3**	**16**	**1**	0	1	0
Every 3 weeks	0	1	0	0	0	0
Every 2 weeks	13	95	4	0	4	0
1 x weekly	24	146	58	0	44	1
2 x weekly	2	54	22	0	26	0
3 x weekly	2	11	9	0	4	**1**
4 x weekly	0	3	0	0	**2**	0
5 x weekly	0	1	1	0	**1**	0
6 x weekly	0	0	**4**	0	**4**	0
Total	44	327	99	0	86	2

Source: Sample of Laidlaw customer records (August 1991).

**Figures shown as "3" represent potential areas for cross-over to roll-off or hand-load service.*

Exhibit VI-9
Frequency of pick-up—Campbell River*

Frequency of Pick-up	Bin Size (cubic yards)					
	2	3	4	5	6	8
Monthly	0	**11**	**1**	0	0	0
Every 3 weeks	0	4	0	0	0	0
Every 2 weeks	0	32	3	0	0	0
1 x weekly	2	122	32	0	9	1
2 x weekly	0	34	21	0	0	0
3 x weekly	0	12	6	0	5	0
4 x weekly	1	0	0	0	**1**	0
5 x weekly	0	1	0	0	0	0
6 x weekly	0	10	**3**	0	0	0
Total	3	226	66	0	15	1

Source: Sample of Laidlaw customer records (August 1991).

**Figures shown as "3" represent potential areas for cross-over to roll-off or hand-load service.*

- Benefits—22%

- Tire cost
  - Front—$600/tire (2 required).
  - Rear—$350/tire (8 required).
  - Rear recaps—$110/tire (maximum of 5 recaps per tire).

- Tire life.
  - Front—40,000 km.
  - Rear—23,000 km.
  - Each kilometre of highway driving is equivalent to 0.5 kilometres of wear. (Most tire wear is caused by maneuvering at pick-up site and at the landfills.)

- Preventative maintenance.
  - $30 at 100 hours.
  - $30 at 200 hours.
  - $220 at 300 hours.
  - $200 at 400 hours.
  - Maintenance cycle then repeats itself.

- Average revenue per pick-up—$20.00 (estimated based on examination of Laidlaw price schedules and revenue records).

- Pick-ups per day—74 (based on August 1991 data for Laidlaw's routes in he Cowichan Valley).

The calculation of incremental costs of Scenarios A and B is contained in Exhibit VI-10.

The potential daily revenue for a truck operating in the Cowichan Valley is $1,480 (74 pick-ups X $20 per pick-up). The incremental costs thus represent the following percentage of average daily revenue:

- Scenario A—2.2%.

- Scenario B—5.0%.

[redacted]

[redacted]

Exhibit VI-10
Incremental cost of serving Cowichan Valley from Nanaimo

Cost Element	Scenario A	Scenario B
Labour	2x(23km/70 km/hr)x$18.52x1.22 = $14.85	2x(51km/70 km/hr)x$18.52x1.22 = $32.92
Fuel	2x(23km/1.1 km/litre)x$0.36 = $15.05	2x(51km/1.1 km/litre)x$0.36 = $33.38
Maintenance	((46/70)/100x$30)+((46/70)/200x$30) ((46/70)/300x$220)+((46/70)/400x$200) = $1.11	((102/70)/100x$30)+((102/70)/200x$30) ((102/70)/300x$220)+((102/70)/400x$200) = $2.45
Tires—Front	46kmx0.50x($600x2)/25,000 = $1.10	102kmx0.50x($600x2)/25,000 = $2.45
Tires—Rear	46kmx0.50x($800x8)/138,000 = $1.07	102kmx0.50x($800x8)/138,000 = $2.37
Total Incremental Cost	$33.18	$73.57

Source: PMS&K analysis.

Given the result of this analysis, it would be difficult for a hypothetical monopolist operating in the CVRD to impose a non-transitory price increase without providing an incentive for waste haulers located in Nanaimo to enter the market.

The results of this analysis indicate that economic limits of a market area are relatively broad. Any pick-up route that has at least part of its length within 30 miles (50 kilometres) of the base of operations of another provider of the same service is potentially open for competition. In such circumstances, the potential competitor could restructure the route such that the only additional driving distance was to the pick-up point nearest its base of operations.

G. The self-disposal option

Self disposal of waste is an option for any generator of waste, though it may only be realistic for small volume generators. An analysis has been performed of this option using the following assumptions.

- Volume of waste.
  a) 4 bags per week = 0.5 cubic yards.
  b) 8 bags per week = 1.0 cubic yards.
  c) 12 bags per week = 1.5 cubic yards.
  d) 16 bags per week = 2.0 cubic yards.
- 1 cubic yard of waste weights 200 lbs (national average).
- Landfill costs.
  - Nanaimo—$50/tonne or $2 per bag or can.
  - Cowichan Valley—$32/tonne—$2 minimum charge.
  - Campbell River—$0 per car load or pick-up truck load.
- Value of time—$10 per hour.
- Roundtrip time—1 hour (load-drive-unload-drive).
- Distance (roundtrip)—30 km.
- Vehicle operating cost—$0.315 per kilometre (federal government rate).

Exhibit VI-11 contains the results of our analysis. By comparing the costs of self-disposal with Laidlaw rates in this exhibit, it is apparent that LOB service is generally cheaper than self-disposal if two or more trips to the landfill are required each month. This would indicate that the self-disposal option is most attractive to small volume waste producers with a waste product that can be kept on site for a long period of time. As indicated previously in Exhibits VI-8 and VI-9, very few Laidlaw customers would find it attractive to haul their own waste to the landfill.

[redacted] [redacted]

Exhibit VI-11
Analysis of self-disposal option

	Nanaimo	Cowichan Valley	Campbell River
Cost Element (per trip)			
Automobile	$9.45	$9.45	$9.45
Labour	10.00	10.00	10.00
Tipping Fee			
- 4 bags	8.00	2.00	0.00
- 8 bags	8.00	2.63	0.00
- 12 bags	8.00	3.95	0.00
- 16 bags	9.10	5.27	0.00
Total Cost (per trip)			
4 bags (0.5 cubic yards)	27.45	21.45	19.45
8 bags (1.0 cubic yards)	27.45	22.08	19.45
12 bags (1.5 cubic yards)	27.45	23.40	19.45
16 bags (2.0 cubic yards)	28.55	24.72	19.45
Laidlaw Rates[1] (per trip)			
2 cubic yard bin—1x monthly	45.00	33.96	27.00
2 cubic yard bin—2x monthly	30.00	22.95	20.00
2 cubic yard bin—1x weekly	23.75	15.71	16.50

Source: PMS&K analysis.

[1] *Laidlaw rates were for a three cubic yard bin in Campbell River.*

VII

The Definition Of The Markets And Laidlaw's Market Share

A. Introduction

In this chapter, we draw on the material prepared in earlier chapters, to develop what we judge to be the most reasonable definition of the relevant market within which Laidlaw provides the services identified by the Director. In other words, we have sought to identify "...the smallest group of products and the smallest geographic area in relation to which sellers, acting as a ..."hypothetical monopolist"..., could profitably impose and sustain a significant and non-transitory price increase above levels that would (otherwise) likely exist...."[1]

We have approached the issue on the assumption that the market(s) so defined must encompass both the geographic areas identified in the Director's Application (Nanaimo Regional District, Cowichan Valley Regional District, and the District of Campbell River), and also the product identified in his submission (the provision to commercial customers of the service of containerized solid waste haulage and disposal).

We have addressed the issue of market definition within the framework identified in Part 3 of the Merger Enforcement Guidelines, and particularly the "evaluative criteria" in Parts 3.2.2 and 3.3.2.

Below, we discuss both the product and the geographic dimensions of the market. These two dimensions are linked, but it is straightforward to discuss them one at a time, as is done below. Following this discussion we provide estimates of Laidlaw's market shares. To the extent possible, these results are intended to describe the situation as at September, 1991.

B. The product dimension

In our opinion, the most reasonable definition of the product dimension of the market is what we have described in Chapter IV as lift-on-board (LOB) services, i.e., the provision to customers of the service of solid waste pickup, haulage, and disposal, using bins of a

[1] *See Merger Enforcement Guidelines, page 7.*

[redacted] [redacted]

size of between 2 and 8 cubic yards, lifted and dumped into front, side, or rear-load compactor trucks.

The product dimension excludes the services that Laidlaw refers to as "commercial hand-load," and also excludes roll-off services. It encompasses both LOB services provided and billed directly to individual customers, as well as those performed under contract to municipalities.

We exclude recycling services and portable toilet services from the product dimension of the definition. The following summarizes our rationale:

- Although the same flatbed service vehicles that distribute LOB bins to customer sites are used to pick up and deliver the portable toilets, end uses are completely distinct, and no substitution is possible.

- Virtually all recycling activity on Vancouver Island uses specialized recycling trucks, which are not compatible with LOB service. One minor exception is an old corrugated cardboard (OCC) recycling program that Laidlaw is just beginning in Victoria and Nanaimo, which uses LOB and roll-off bins.

1. The comparison of roll-off and LOB services

Below, we compare roll-off and LOB services, along the relevant dimensions provided by Section 2.2.2 of the Merger Enforcement Guidelines.

From the perspective of the buyer, significant differences exist between the two types of service. These include the following:

- As the analysis in Chapter VI shows, the financial trade-off between the two services occurs at a level of waste volume and pick-up frequency that is typical of only a very small portion of the total customers for LOB services, and the trade-off is relatively insensitive to a 5% non-transitory price increase.

- The behaviour of the trade itself leads to a distinction between the two services. The nature of the agreements between Laidlaw and both Advance Operations and Jones Disposal support this view, as does customary industry terminology.

On the other hand, the two types of service are functionally interchangeable for that group of customers which:

- Can store waste on site for periods of time (e.g., no food waste), and

- Have sufficient space at the customer site to accommodate a roll-off bin.

[redacted] [redacted]

We have done no formal analysis of the share of the customer base that meets these criteria, although discussions with Laidlaw staff suggest that these restrictions preclude a significant number of customers from the use of roll-off service.

LOB and roll-off services are provided through separate means; neither the containers nor the trucks are interchangeable, nor can they realistically be adapted to be interchangeable.

This comparison strongly supports the exclusion of roll-off services in the product definition.

2. Comparison of hand-load and LOB services

We compare hand-load and LOB services along the relevant dimensions below.

Based on industry discussions, the two services appear to be viewed somewhat differently by customers. The point of economic crossover, based on price alone, occurs at a volume of waste and frequency of pick-up that is typical of only a small percentage of the total LOB customer base, and the trade-off is relatively insensitive to a 5% price increase.

From the perspective of the trade a meaningful distinction exists between the product areas—primarily because of the greater labour requirements for hand-load services. On the other hand, at low volumes of waste, these services have similar end uses, although many customers find the packaging and storing of individual bags and/or cans costly or unappealing.

No absolute distinction exists between the product types on the basis of physical and technical characteristics. Rear- and side-load (hand-load) trucks can be adapted to lift smaller LOB containers. Alternatively, a limited hand-load service can be provided with a front-load LOB truck, using an empty container carried on the forks to the hand-load customer.

On balance, it is our judgement that relatively little substitutability exists between the two services, and that competition from providers of hand-load services would not be sufficient to undercut the effect of a hypothetical 5% price increase. Thus, we exclude hand-load service from the product definition.

C. The geographic dimension

In our opinion, the most reasonable geographic markets for the product, which encompass the three geographic areas advanced by the Director, are as follows:

- A single geographic market encompassing the entire Nanaimo Regional District and the Cowichan Valley Regional District, but excluding the municipalities of Duncan and Lake Cowichan.

- The eastern portion of the Comox-Strathcona Regional District, including:

  - The municipalities of Courtenay, Comox, Cumberland, and the surrounding unincorporated areas of Subdivision C;

  - The Village of Sayward, the District of Campbell River, and the surrounding unincorporated areas of Subdivision B; and

  - Quadra Island.

The primary factor determining the geographic dimension of the market is the interplay between the volumes of LOB waste generated in various locations, and the locations of and access to disposal sites. As a practical matter, very little waste moves, or would be expected to move, across regional district boundaries. On the other hand, within the areas identified by the Director, little impediment exists, apart from transportation costs per se, to disposing of intra-regional district waste at any of the permitted disposal sites in the regional district.

1. The CVRD-NRD market

The primary bases for considering the NRD and CVRD as a single market are:

- Excess capacity exists in both the NRD and CVRD markets (this issue is discussed in Chapter VIII).

- A hypothetical 5% price increase in either market is sufficient to support the additional costs of serving either region from the other (based on the analysis in Chapter VI).

Additional supporting considerations include the following:

- Laidlaw considers both regions as a single operating division, and conducts both its marketing and administrative functions, as well as its equipment maintenance activities for both regional districts in Nanaimo. It also serves the northern CVRD from Nanaimo.

- We understand that Browning Ferris Industries and West Coast Waste Systems serve customers in the Northern CVRD area from operating bases in Nanaimo.

- We further understand that Advance Operations services its roll-off customers in Nanaimo from its base in the CVRD.

[redacted] [redacted]

The fact that Laidlaw bases a truck in the CVRD to serve customers in that Regional District suggests that this is the least cost approach to serving those customers, although we have not analyzed this issue directly. Laidlaw's decision to operate in this manner is not directly relevant to the issue of the sustainability of a hypothetical 5% price increase. We place our weight on the analyses reported in Chapter VI and referred to above.

On balance, therefore, we combine the CVRD and the NRD in a single geographic market. However, circumstances exist that lead us to exclude specific municipalities within the CVRD from the market definition, because they directly provide an LOB service to waste generators in their municipalities. The municipalities that provide such a service are as follows:

- The City of Duncan (in the CVRD) provides an LOB service to commercial customers. Because of a municipal by-law, LOB business in Duncan is effectively not accessible to private sector haulers, and we presume that the City of Duncan will not supply services outside the municipal boundaries. On this basis, we exclude the City of Duncan from our definition. In fact, Duncan does not have the capability to lift larger LOB bins, and private sector haulers have a very small number of customers in this category within the city.

- The Village of Lake Cowichan (in the CVRD) provides an LOB service to commercial customers, along with its residential service. The system by which costs are recovered (i.e., through a tax) effectively precludes private sector competition, except for those customers that are unable to operate using the small side-load bins supplied by the Lake Cowichan system. We exclude Lake Cowichan from the market definition.

The Town of Qualicum Beach (in the NRD) also provides a commercial service along with its residential service. However, in this case, they serve a small number of customers (about 20) and no barriers to entry exist for private sector providers who also operate in the area. Thus, we include Qualicum Beach in the market definition.

Other municipalities provide what they define as commercial services, including LOB services, to their residents by tendering to private sector providers. In our view, such municipalities should be included in the market area. Although there are differences in customer relationships, depending on whom the private hauler contracts with, providers of LOB services to contracted municipalities are potential competitors in the "free market" municipalities, and vice versa. In fact, we understand from discussions with Laidlaw and regional district staff that a municipal tender is viewed as an attractive entry mode in the industry.

Communities in other nearby regional districts can not be considered part of this market due to prohibitive transportation costs.

[redacted] [redacted]

2. The CSRD market

Laidlaw operates primarily in the District Municipality of Campbell River, and also serves the Village of Sayward. The three municipalities of Courtenay, Comox and Cumberland are about 25 to 30 miles from Campbell River, and are served by other providers. Historically, the community of Oyster River has been viewed as the dividing line by operators in both areas, although providers are expanding in both directions across this boundary.

Some excess capacity exists in both of these geographic areas. In addition, the results of our analysis in Chapter VI, although not conducted directly for these markets, suggests that a 5% price increase by a hypothetical monopolist would be offset by competitive incursions.

Consequently, we combine the District Municipality of Campbell River and the Comox/Courtenay/Cumberland area in a single market. In addition, because Laidlaw currently serves Sayward from Campbell River, we have included Sayward in the market area as well. Primarily for convenience, we have included the remainder of Subdivisions A and B. The definition excludes Subdivision D, including the three municipalities (Zeballos, Tahsis and Gold River), which are served by other providers.

Lastly, we have included Quadra Island, because an existing operator in this market dumps waste in the same Campbell River landfill as Laidlaw currently uses. This provider has excess capacity, and could be expected to seek to enter the Campbell River market in the face of a 5% price increase. Laidlaw also provides roll-off service to a small number of commercial customers on Quadra Island. This indicates that Laidlaw considers Quadra Island to be part of the market served from their Campbell River base.

D. Analysis of Laidlaw's market share

With perfect information, the best method to calculate Laidlaw's market share would be through a comparison of their revenue for LOB service versus the total revenue for LOB service provided by all waste haulers in the market. Unfortunately, we do not have access to the information required to undertake this analysis.

The next best proxies are to use either the estimated number of containers or the estimated amount of waste delivered to the landfills/incinerators. In this context, we used three different methods to assess Laidlaw's market share within regional districts and the relevant markets. The three methods are:

- A count of containers in regional districts or parts thereof for each provider of LOB service.

[redacted] [redacted]

- Calculation of Laidlaw's weighed LOB waste as a percentage of all weighed LOB waste at facilities with weighing capabilities.
- Estimation of Laidlaw's total LOB waste as a percentage of all (weighed and unweighed) LOB waste at disposal facilities in the markets.

The results of these approaches are summarized in Exhibit VII-1.

Exhibit VII-1
Analysis of Laidlaw's market share—LOB service—1991

	Method 1 (see Note 1)	Method 2 (See Note 2)	Method 3 (see Note 3)	Best Estimate
Cowichan Valley Regional District (CVRD)	90%	86%	80%	85%
Nanaimo Regional District (NRD)	91	87	73	73
Cowichan Valley/Nanaimo Regional District Market	91	86	75	78
Comox-Strathcona Regional District (CSRD) Market	46	NA	NA	46

Source: PMS&K analysis.

Notes:

1. *Based on a physical count of containers in portions of each area, and telephone discussions with other providers of LOB service regarding the number of containers that they have in place.*
2. *Based on analysis of the composition of the waste stream by service type (e.g., LOB, roll-off or hand-load) at weighed landfills/incinerators and the amount of waste delivered by each hauler.*
3. *Based on 1990 regional district estimates of waste stream (weighed and unweighed landfills/incinerators), 1990/91 average waste stream composition from records on weighed facilities, the amount of waste delivered to weighed facilities by all haulers, and the amount of waste hauled to unweighed facilities by Laidlaw. This method includes volumes delivered to unweighed landfills/incinerators.*

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1. Method 1—Container count-

To determine the number of containers in the market, and the share of the total of each provider of LOB service, we conducted a field survey in sample areas within the CVRD, NRD (City of Nanaimo) and the CSRD (District of Campbell River). We verified and supplemented the field survey information with telephone interviews with most of Laidlaw's competitors for LOB service. The results of this survey were presented earlier in this report in Exhibit V-6.

This approach has the following strengths:

- We obtained a relatively complete count for the CVRD and the relevant parts of the CSRD.
- Adjustments could be made for the different mix of bin sizes noted for each waste hauler.
- Using container counts avoids analytical problems associated with conflicting data about the waste stream.

The weaknesses of this approach include:

- The number of pick-ups (lifts) per week for each bin is not accounted for.
- Areas sampled, particularly in the NRD, may not be indicative of the region as a whole. Laidlaw's business, for example, is concentrated within the City of Nanaimo where the container count took place, but Laidlaw is believed to have a smaller share of the LOB business in other areas of the NRD.
- The survey cannot account for price differentials.

2. Method 2—Share of weighed waste

This method of calculating market share involves a number of steps. First, we classified the waste stream at each landfill/incinerator into the categories of LOB, hand-load and roll-off, based on the weight of waste and the type of service offered by each hauler. Regional district records (see Exhibits V-3 and V-4) were used as the basis for this calculation. Second, we calculated the total weighed LOB waste delivered to these facilities. Third, we calculated Laidlaw's market share by dividing Laidlaw's verified LOB waste at each site by the estimated total LOB waste at each site.

The benefit of this approach is that it is based on weighed volumes of waste, for which the regional district has records. The results of this analysis generally confirm the number derived from the container count. We believe this occurs because the

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container count was undertaken in the catchment area for the landfills/incinerators that weigh waste.

The weaknesses of this approach include the following:

- The analysis ignores part of the geographic market served by disposal sites without weighing facilities, in particular:
  - The incinerator and landfill at Lake Cowichan, which is estimated to account for 10% of the waste stream in the CVRD.
  - The landfill at Qualicum Beach, which is estimated to have accounted for about one-third of the waste stream in the NRD prior to being closed in August 1991.
- We were unable to obtain data on the weight of waste delivered to landfills in the CSRD.
- The allocation of waste hauler to type of waste is not precise, if a particular hauler has significant volumes of more than one type of waste.

This method has a potential bias if, as we believe, Laidlaw's share of the waste volumes in the catchment areas of unweighed facilities is much less than it is elsewhere, particularly in the Nanaimo Regional District.

3. Method 3—Share of weighed and unweighed waste

This method of calculating market share was used to overcome the principal limitation of Method 2, i.e., the exclusion of waste disposal at sites without weighing capability. The major steps in the analyses were as follows:

- Using the results of Method 2, we determined that the average composition of the waste stream during 1990 and 1991, at the weighed sites in the CVRD and NRD, is approximately as follows:

Waste Type	CVRD	NRD
Hand-load (including waste transported by individuals and residential services)	45%	41%
Lift-on-board	49	35
Roll-off	6	24

- These waste share estimates were multiplied by regional district estimates of total waste generated to arrive at an estimate of total LOB waste volumes for each regional district.

VIII

Other Findings

Chapter VII dealt with the first three items for which we were asked to prepare evidence (see page 2). In this chapter, we discuss the remaining four:

- The minimum number of customers required to sustain a single truck.
- Evidence related to special characteristics of the industry that support the notion that exclusivity is a natural or efficient response.
- Analysis of the height of entry barriers.
- Collection of evidence of actual entry into the market.

A. Minimum number of customers required to sustain a single truck

We have not conducted a formal analysis of the minimum number of customers to sustain a single truck. A trade-off clearly exists between pricing and the number of customers required to be viable. In small, isolated markets, the upper limit on pricing is set by the potential for self-hauling; this issue is addressed in Chapter VI. The analysis in Chapter VI suggests that, in an isolated "one-truck" market, operations can be viable with a small number of customers (containers). For example, we understand that one supplier serves Quadra Island, with about 52 bins.

In larger and more competitive markets, one would expect pricing to be determined primarily by cost structures at efficient levels of operation. We have not analyzed this issue directly. However, a number of sources suggest that one LOB truck is made viable when it makes about 300 pick-ups per week (generally about 300 containers on the ground) and is optimally used at about 400 containers.

B. Exclusivity

The terms of reference request the "collection and analysis of any evidence related to special characteristics of the industry which support the notion that exclusivity is a natural or efficient response to the market."

The three markets (Campbell River, Nanaimo and Cowichan Valley), that are the subject of the current review as defined by the Director, can best be described as small. Exhibit VIII-1 contains a summary of the estimated number of pick-ups per week in each market based on Laidlaw's records and our assessment of Laidlaw's market share.

Exhibit VIII-1
Estimate of LOB market size

Region	Laidlaw Market Share[1]	Pick-ups per Week	
		Laidlaw[2]	Total[3]
District of Campbell River	83%	811	977
Nanaimo Regional District	73%	1,441	1,974
Cowichan Valley Regional District	85%	475	559

[1]Based on Exhibits V-6 and VII-1.

[2]Based on Laidlaw records.

[3]Estimate based on market share and Laidlaw volumes.

Laidlaw and its competitors agree that, on average, a minimum of 300 pick-ups per week is necessary to justify one LOB vehicle (assuming one pick-up per container per week on average). Laidlaw estimates that 400 pick-ups per week is optimal. Exhibit VIII-2 indicates the number of LOB vehicles in each of the regions and the maximum number justified by these general economic standards.

Exhibit VIII-2
Number of LOB trucks economically justified in markets as defined by the Director

Region	Current LOB Trucks[1]			Economically Justified Trucks[2]	
	Laidlaw	Others[3]	Total	@ 300 (min.) pick-ups/week	@ 400 pick-ups/week
District of Campbell River	2	1	3	3	2
Nanaimo Regional District	4	2	6	6	5
Cowichan Valley Regional District	1	2	3	2	1[4]

[1]Front-load and rear-load trucks.

[2]Based on market size as defined in Exhibit VIII-1.

[3]Based on survey of waste hauling firms.

[4]The market justifies about 1.5 trucks. This is further indicated by Laidlaw's operation of one truck in this region on a part-time basis from Nanaimo, plus the full-time truck that is based in Duncan.

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This analysis suggests that excess capacity exists in both the NRD and CVRD.

If the CVRD were considered a market in itself, it is not really large enough for two trucks to economically operate in. Given the presence of economies of scale and contiguity, it would probably be economically most efficient for one operator to service this region.

The District of Campbell River also appears to have excess capacity (in the order of one-half truck).

C. Analysis of the height of entry barriers

The terms of reference ask for "analysis of the height of entry barriers, including a discussion of the potential success of a new entrant to the market using a single, used truck and operating out of their home."

In some respects, the commercial waste haulage industry is similar to the trucking industry:

- No technological barriers exist.
- The level of training required is minimal.
- Training is easy to acquire.
- Tangible assets (trucks, containers) exist against which financial institutions will lend money.

The principal barriers to entry pertain to the economics of the markets, namely economies of scale and economies of contiguity.

A small operator may seek to overcome the problem of competing with other operators that have achieved economies of scale. This is accomplished by operating the business out of a house, purchasing used trucks, and undertaking all vehicle maintenance, bookkeeping and sales personally. This approach generally results in long hours and a small business.

The barrier presented by the need to achieve economies of contiguity is much more difficult to overcome. In a large market, it is much easier for small operators to concentrate their activities on a particular portion of the market to achieve the necessary economies of contiguity. In small markets this is not possible.

The small operator must look at the whole market to develop enough business for one truck. This operator is thus at a disadvantage to a competitor that has more than one truck in the market. The competitor will be able to structure routes to take advantage of the economies of contiguity, while this will not be easy for the small operator with one truck.

The commercial waste haulage industry usually uses contracts with customers as a means of consolidating its business base. The contracts are used to protect the investment in developing the market and retaining the economies achieved. This represents a barrier to entry for additional competitors. New competitors must rely on expiration of contracts, new business and customers not under contract to develop their own business base.

Three potential means of penetrating a market are possible:

1. Operating a low overhead business and gradually achieving market share.

2. Purchasing the assets and/or client base of a competitor.

3. Financing the penetration of a market with corporate resources.

The low overhead approach usually does not result in a large market share, although there are undoubtably exceptions to this rule. The purchase and financing alternatives are much more common in the commercial waste haulage sector, as evidenced by the activities of the major commercial waste haulage operators (Laidlaw, Browning Ferris Industries, West Coast Waste Systems). These latter two options are usually precluded to smaller operators due to their inability to raise the necessary capital or absorb the losses, yet they appear to be the alternatives most likely to achieve the necessary economies.

D. Evidence of actual entry into the market

The terms of reference ask for "collection of any evidence of actual entry into the market, and success by the new entrant."

Considerable evidence exists of new entry in the markets discussed in Chapter VII. In particular:

- Laidlaw only entered these markets in 1985, and has successfully maintained its position.

- In the NRD, Advance Operations entered the LOB market in August 1987, and sold their ongoing operations to Laidlaw in March 1990.

- Browning Ferris Industries, which has a strong position in the CRD, entered the LOB market in the spring of 1990, and has begun to serve customers in the CVRD from its Nanaimo base.

- West Coast Waste Systems entered the Nanaimo market in the spring of 1990, and has begun to serve customers in the CVRD from its Nanaimo base.

It is too soon to determine whether these entrants will ultimately be successful, but it is clear that they have eroded Laidlaw's market share in the NRD (see Exhibit V-3).

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In the market of CSRD South, Camvest Disposal entered the market in the Spring of 1989, and continues to operate.

We have not had discussions with these operators concerning their ease of entry or their perceptions regarding the long-term viability of their operations in these markets. With this proviso, the entry behaviour identified above suggests that barriers to entry are surmountable and that new entrants can be successful.

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THE COMPETITION TRIBUNAL

IN THE MATTER OF an Application by the Director of Investigation and Research under s. 79 of the Competition Act R.S.C. 1985 c. C-34 as amended.

AND IN THE MATTER of certain practices by Laidlaw Waste Systems Ltd. in the communities of Cowichan Valley Regional District, Nanaimo Regional District and the District of Campbell River, British Columbia.

BETWEEN:

The Director of Investigation and Research

Applicant

AND:

Laidlaw Waste Systems Ltd.

Respondent

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- The regional district records of Laidlaw's weighed waste (see Exhibits V-3 and V-4), plus Laidlaw's internal estimates of waste disposed of at unweighed facilities (see Exhibit IV-4) were divided by the estimate of total LOB waste to arrive at estimates of Laidlaw's regional district share of LOB waste.

The benefits of this method of calculation of market share include:

- The market share analysis is based on the entire regional district, therefore removing the problem of varying market share in different areas of each regional district. This is particularly important in the NRD because the Qualicum landfill, prior to closing in August 1991, accounted for about one-third of the total waste stream in the NRD, but a much smaller share of Laidlaw's waste.

- The analysis makes use of reliable sources of data, such as regional district estimates of the total waste stream, regional district statistics on weight of waste disposed of by waste haulers at weighed facilities, and Laidlaw's internal data on volume of waste disposed of at unweighed sites.

The principal weaknesses of this method of analysis include:

- The analysis assumes that the composition of the waste stream by type of waste (LOB, roll-off, hand-load) is consistent throughout the regional district. It is our belief that, if anything, this method underestimates the total LOB waste stream. We believe that less densely populated areas will tend to produce less roll-off waste and higher proportions of hand-load and LOB waste. This thesis is apparently borne out by comparing the waste composition for the CVRD (LOB=49%) which is less densely populated than the NRD (LOB=35%).

- The analysis is not based strictly on actual (containers or weighed waste) data.

- This method of analysis cannot be applied to the CSRD.

4. Our best estimate of Laidlaw's market share

In summary, we find that Method 3 provides the most accurate assessment of market share within a regional district, particularly if, as in the case of the NRD, there is a significant amount of unweighed waste and a potential for the other methods to skew the results. This method is not perfect, but has the advantage that it is based on an assessment of entire regional districts.

Method 3 is of most relevance to the NRD because of the large volume of unweighed waste. It is of less significance in the CVRD, because there is a smaller proportion of

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unweighed waste. As expected, Method 3 produces results for share in the CVRD relatively similar to Method 2. Method 3 is not appropriate for the CSRD due to the lack of data on the weight of waste.

Our best estimate of Laidlaw' share of LOB waste in each regional district are shown in Exhibit VII-1. Our reasons for choosing these estimates of market share are as follows:

- **Cowichan Valley Regional District (CVRD)**—Methods 1 and 2 both have slight biases built in to the method of calculations which are overcome by Method 3. Method 3, however, is based on assumptions that are extremely difficult to verify. Insofar as the three methods of analysis result in estimates of Laidlaw's proportion of LOB waste in the CVRD that are not too dissimilar, we have averaged the three estimates to arrive at our best estimate of 85%.

- **Nanaimo Regional District (NRD)**—Methods 1 and 2 both result in very similar estimate of Laidlaw's proportion of total LOB waste in the NRD. These methods of analysis are both skewed by the fact that they only consider the LOB waste generated in the City of Nanaimo and disposed of at the Cedar Road landfill. Method 3, on the other hand, results in a much different estimate of Laidlaw's proportion of LOB waste in the NRD, because it includes the estimate of LOB waste disposed of at the Qualicum landfill, a facility which is used relatively little by Laidlaw. Due to the apparent skewing of the estimates provided by using Methods 1 and 2, we have based our best estimate of Laidlaw's proportion of LOB waste generated in the NRD on the result of Method 3, i.e., 73%.

- **Comox-Strathcona Regional District (CSRD)**—Neither Methods 2 nor 3 can be used for the CSRD because data does not exist on the weight of waste disposed of at landfills within the Regional District. Accordingly, we rely on the result of Method 1, which indicates that Laidlaw's proportion of the LOB waste generated in the CSRD (the geographic extent of which was defined earlier in Chapter VII) as being 46%.

In summary, our best estimates of Laidlaw's market share for the geographic markets we have defined are as follows:

Geographic Market	Laidlaw's LOB Market Share
CVRD/NRD	78%
CSRD	46%