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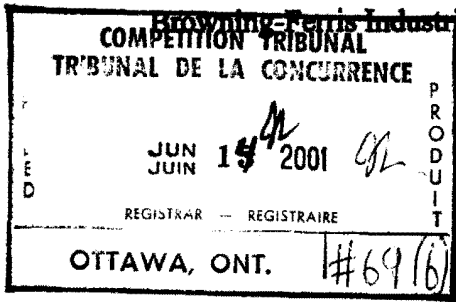
CT-2000/002

THE COMPETITION TRIBUNAL

IN THE MATTER OF the *Competition Act*, R.S. 1985, c. C-34; as amended;

AND IN THE MATTER OF an Application by the Commissioner of Competition under section 92 of the *Competition Act*;

AND IN THE MATTER OF the acquisition by Canadian Waste Services Inc. of certain assets of ~~Browning-Ferris Industries~~ Ltd., a company engaged in the solid waste business.



COMMISSIONER OF COMPETITION

Applicant

-and-

CANADIAN WASTE SERVICES HOLDINGS INC., CANADIAN WASTE SERVICES INC. AND WASTE MANAGEMENT, INC.

Respondents

AFFIDAVIT

I, CHRISTOPHER VELLTURO, of the city of Cambridge, in the state of Massachusetts, make oath and say as follows:

Attached as Exhibit "A" to this my affidavit is a true copy of my expert report with respect to this matter. My qualifications are as set out in the report and the attachments thereto.

SWORN BEFORE ME at the City of Cambridge, State of Massachusetts on May 24, 2001.

[Signature]
Commissioner, etc.

DEMSE VANVOOREN
NOTARY PUBLIC
MY COMMISSION EXPIRES 12/1/03

[Signature] 24-MAY-01
Christopher Velturo

EXHIBIT A

EXPERT REPORT OF CHRISTOPHER VELLTURO

A. Overview

Christopher Velturo is a Principal of Analysis Group/Economics. Analysis Group/Economics is a consulting firm headquartered in Cambridge, Massachusetts specializing in microeconomic analysis.

Dr. Velturo received a Bachelor of Science degree (*cum laude*) in applied mathematics and economics from Brown University in Providence, Rhode Island, and a Doctor of Philosophy (Ph.D.) degree in economics from the Massachusetts Institute of Technology (MIT) in Cambridge. While at MIT, Dr. Velturo specialized in industrial organization and econometrics. Dr. Velturo's curriculum vitae (including all publications and district court testimony) is attached as Appendix 1.¹

Dr. Velturo has extensive experience in developing models of imperfect competition, including models of spatial differentiation. A great deal of this experience has been directed at assessing antitrust issues, both in terms of liability and remedy. Dr. Velturo also has significant prior experience in evaluating the economics of waste disposal, and in developing models of price formation in the waste disposal industry.

B. Assignment

On March 28, 2001 the Competition Tribunal (the "Tribunal") released its Reasons and Order (the "Reasons and Order") which found that the acquisition of the Ridge landfill by Canadian Waste Services Inc. ("CWS") from Browning-Ferris Industries Ltd. ("BFI") would likely substantially prevent and lessen competition for the

¹ Analysis Group/Economics is being compensated for Dr. Velturo's work in this case.

disposal of institutional, commercial and industrial waste (“ICI”)² from the Greater Toronto Area (“GTA”). The Tribunal also found that the acquisition of the Ridge landfill by the Respondents would lead to a likely substantial lessening and prevention of competition for the disposal of ICI waste in the Chatham-Kent region.³

I have been asked to review the Tribunal’s Reasons and Order and evidence entered into the record over the course of hearings before the Tribunal and analyze the putative market for disposal of ICI waste from the GTA and from the Municipality of Chatham-Kent in order to determine the appropriate remedy to eliminate the substantial lessening and prevention of competition found by the Tribunal for waste generated in these geographical areas.

C. Sources Relied Upon

The sources I have relied upon to reach my opinions are enumerated throughout the text of this document. If additional information or materials are made available to me, I intend to review such information and materials, and may revise or refine my opinions if appropriate.

D. Assumptions/Maintained Hypotheses

Throughout my analysis, I have assumed the following:

- i. I assume, as per the Tribunal’s determination, that competition in the solid non-hazardous water disposal industry is characterized by spatial competition.

² Included in the total amount of ICI waste from the GTA is 207,820 tonnes of solid non-hazardous waste (“SNHW”) from the Britannia landfill that the Tribunal found would be disposed in Ontario once the Britannia landfill closes in 2002. For the purposes of this report, references to ICI waste from the GTA include the 207,820 tonnes of SNHW from the Britannia landfill. Since the Tribunal has determined that the entire 207,820 tonnes would be disposed in Ontario following the closure of Britannia, thus adding to the demand for SNHW disposal in Ontario, the conclusions as set forth in this report hold regardless of whether or not any portion of these 207,820 tonnes is of residential, rather than ICI, origin.

³ Reasons and Order of March 28, 2001, paragraphs 204, 224, 94, 203, 205, 234.

- ii. The flows of ICI from the GTA are as per the Tribunal's findings. Specific values for these flows, along with citations providing their sourcing in the evidentiary record, are provided in the tables that follow. Table 1 in Appendix 2 provides the waste streams into Southern Ontario landfills for the GTA landfill analysis. The waste streams for the Chatham-Kent landfill analysis are listed in Table 6.
- iii. The capacity of each landfill to accept ICI from the GTA is as per the Tribunal's findings. Specific values for these capacities, along with citations providing their sourcing in the evidentiary record, are provided in the tables that follow.
- iv. Distances and transportation costs from the GTA to each landfill are as per the Tribunal's findings. Specific values for these distances, along with citations providing their sourcing in the evidentiary record, are provided in the tables that follow.
- v. The Keele Valley landfill will be closed on or before January 1, 2003.
- vi. The Warwick and Richmond/Napanee landfills owned by CWS will be expanded to the full extent reflected in the Tribunal's findings.
- vii. The Petrolia landfill will continue to receive no ICI waste from the GTA. I note that the Tribunal's determinations imply that the Petrolia landfill is irrelevant to competition for GTA ICI, since it currently receives no ICI waste from the GTA, whereas Green Lane currently receives some such waste, and the Tribunal anticipates that Essex-Windsor might receive some such waste in the near future.
- viii. In keeping with the model of spatial competition accepted by the Tribunal, ICI from the GTA would flow to each landfill in Ontario in order of increasing distance, except where the evidence suggests that closer landfills may not provide customers with as attractive a disposal option as suggested by their distance. In particular, it is my understanding that while Green Lane is located closer to the GTA than all other landfills but Walker, the Tribunal has found that it does not enter the competitive mix in the manner suggested by its relative proximity to the GTA (Tribunal Reasons and Order, paragraph 210). Consequently, I assume that ICI from the GTA would first go

to Walker, then to Richmond/Napanee, then to Warwick, then to the Ridge, then to Green Lane, and finally to Essex-Windsor.

- ix. For the purpose of analyzing an appropriate remedy, I assume, as per the determination of the Tribunal, that ICI from the GTA would be disposed entirely within Ontario. I assume that non-GTA SNHW currently being received by Southern Ontario landfills will continue to be received by the same landfills. Since CWS's Sarnia landfills are set to close by the end of 2002, I assume that the non-GTA SNHW volume currently received by CWS at Sarnia will, after the Sarnia closures, flow to Warwick, the next most attractive CWS facility in Ontario.
- x. While I obtain results under the above set of maintained assumptions that indicate that prices would not be lower "but for" the proposed transaction, I nonetheless determine the divestitures required to maintain various assumed price decreases (as per the Tribunal's finding). Specifically, I assume certain reductions in price⁴ and estimate the size of the divestiture required to ensure that the combined firm will not have an incentive to leave prices at currently prevailing levels, rather than dropping them to the (assumed) lower levels.
- xi. I assume that the marginal costs per tonne of ICI that is disposed at the Respondents' facilities will be as currently reflected in the available financial records in the evidentiary record.

E. Methodology

1. The Spatial Model of Competition.

Following the Tribunal's determination, I assume that the solid non-hazardous waste industry is characterized by the spatial model of competition⁵ and that ICI from the

⁴ Importantly, I do not predict prices, but rather assume such prices parametrically for the purpose of determining an appropriate remedy.

⁵ A primer to models of competition featuring spatial differentiation can be found in *The Theory of Industrial Organization*, Jean Tirole, 1988, p. 279. Seminal work on this topic can be found in Hotelling, "Stability in Competition", *Economic Journal*, 1929, v. 39, pp. 41-57.

GTA would not leave the Ontario area following the expansion of the CWS Warwick and Richmond/Napanee facilities.

The spatial model of competition specifies that customers will dispose of their ICI at the facility that offers them the lowest price to dispose their ICI, where price is defined as the sum of the facility's tipping fee and customers' transportation costs to that facility.

The equilibrium in such a model is solved by iteratively disposing of the total amount of ICI emanating from the GTA in landfills that present successively higher total disposal costs (transportation costs + tipping fee) to customers. The last facility at which ICI from the GTA would be disposed is referred to as the "last active landfill". The facility that is the next distant from the GTA relative to the last active landfill is referred to as the "marginal landfill". Note that in equilibrium, no ICI waste is disposed at the marginal landfill. I provide a schematic representation of the spatial model as it relates to GTA waste disposal in Exhibit 1.⁶

The equilibrium price in the spatial competition model is determined by computing the incremental savings that a customer can realize by disposing of its marginal tonne of waste at the last active landfill, rather than the marginal landfill (which would be his next best option, given that no more ICI waste could be accepted at any of the lower total disposal cost (transportation costs + tipping fee) landfills).

To be precise, the highest tipping fee (per tonne) that the last active landfill can charge, while still obtaining non-zero volumes, is the total disposal cost (per tonne) that the customer faces at the marginal landfill, less the transportation costs (per tonne) to the customer of hauling ICI to the last active landfill. The profit-maximizing price for the last active landfill to charge (assuming that firms act as rational economic agents and seek to maximize profits) would be just less than this amount.

In equilibrium, each landfill that actually obtains ICI from the GTA would set its tipping fee in exactly the same manner – they would charge a tipping fee that leaves the

⁶ Note that values used in the schematic are for illustrative purposes only and do not reflect actual conditions that are expected to prevail with respect to GTA ICI waste.

customer just indifferent between disposing of ICI at their facility, and hauling it to the marginal facility.

Note that this equilibrium is broadly consistent with the arguments advanced by the Commissioner, and accepted by the Tribunal. Favorably located landfills obtain economic rents by virtue of their locational advantage.

2. The Critical Loss Exercise

Assuming the existence of some competitive harm, I construct the appropriate remedy by performing a critical loss analysis.

A critical loss analysis evaluates the tradeoffs that a firm faces upon considering a price increase (or equivalently, upon considering not decreasing its price). Setting a higher price will yield the firm higher margins on those units of output that it continues to sell after implementing the posited price increase. Thus, the firm's profit increases on the units it continues to sell after the increase. However, setting a higher price results in the loss of some units of output to the firm, and the firm loses the entire incremental (per unit) profits that it made prior to the price increase on each unit of output that is lost as a result of the price increase. If a price increase results in the loss of only a few customers, then the profits gained by the firm on those units it continues to sell will likely exceed the losses to the firm on those units it no longer sells. In such a circumstance, the price increase would be in the profit-maximizing interest of the firm. If, however, the price increase results in the loss of substantial sales, the profits gained on the output it continues to sell will be more than offset by the profit losses associated with lost sales, and the price increase will not be in the profit-maximizing interest of the firm.

The critical loss required to ensure that a firm would not have an incentive to raise price is determined by solving for the minimum volume loss that would render a price increase (or, correspondingly, a failure to decrease price) unprofitable to the firm.

The appropriate remedy for the competitive harm envisioned by the Tribunal, and which I assume (as per the Tribunal's findings) would in fact develop as a result of the proposed transaction, is to require divestitures that provide third parties with the right to dispose of ICI volumes. Sufficient volumes would be divested so that the amount of ICI

volume that the Respondents stand to lose following a unilateral price increase (or a failure to decrease price from current market levels) would render the price increase unprofitable.

Without a divestiture, the Respondents would stand to lose volumes -- if they were to raise price -- to the last active landfill equal to the remaining unused capacity at that landfill. The needed divestiture equals the difference between the total required critical loss and the capacity already available to discipline the Respondents at the last active facility. This divestiture will ensure that the Respondents will be unable to “push” the marginal GTA ICI waste into the marginal (next most distant) facility, thereby enabling prices to rise under the spatial model of price formation.

If third parties did control such volumes, any unilateral price increase by the Respondents would result in the loss of volumes at least equal to the critical loss. Customers would dispose of their ICI waste with the third party who controlled the divested volume rather than with the Respondents. By design, this third party would be able to serve sufficient volume that the Respondents would face lower profits by having implemented the price increase. As a result, the Respondents would not implement the price increase in the first instance, since it would not be in their profit-maximizing interest to do so.

F. Summary of Opinions

Based on my review and analyses of the cited sources, assuming that the proposed transaction would have resulted in anti-competitive effects in the market for disposing of ICI waste originating from the GTA, and assuming the existence of several other circumstances that are detailed in tables attached to this report, I have reached the following conclusions and opinions regarding the appropriate remedy for the competitive problem identified by the Tribunal:

1. Under the Tribunal’s findings, no divestiture will be required to restore competition until such a time when the Richmond/Napanee and Warwick

expansions are completed to a scale sufficient to engender the price decreases envisioned by the Tribunal.

2. In the spatial model of competition that is at the heart of the Commissioner's allegations, and that has been accepted by the Tribunal, it is the marginal landfill that sets the prices of all the active landfills in the industry.
3. My analysis indicates that Green Lane would be the last active landfill and Essex-Windsor the marginal landfill under the maintained assumptions.
4. The spatial model of competition accepted by the Tribunal, when populated with evidence from the record, does not indicate that post-expansion prices will be lower than currently prevailing prices regardless of who owns or controls the Ridge landfill.
5. As a result, no remedy is needed in order to prevent the realization of assumed decreases in price that are less than 5% below currently prevailing prices, since Green Lane will continue to have sufficient excess capacity to discipline the Respondents from seeking such price increases (or correspondingly, failing to decrease price).⁷
6. In order to provide the Tribunal with an understanding of the divestitures required to ensure that the proposed transaction would not result in the Respondents being able to profitably forestall even larger decreases to the currently prevailing price, I have performed the critical loss exercise under the maintained assumption that prices would have decreased absent the transaction by larger amounts. Table 1 provides a summary of the divestitures required in order to ensure that the proposed transaction would not lead to the ability to resist price declines for ICI originating from the

⁷ Green Lane is the last active facility by a relatively small amount of output. The Tribunal may have some concern that errors of approximately 50,000 tonnes in the amount of ICI that can be disposed of in the Respondents' landfills would result in one of the Respondents' landfills being the last active landfill. Irrespective of whether it makes any economic sense for a firm to consider lowering prices dramatically on over 1 million tonnes of output in order to gain some 50,000 tonnes of incremental output, if the Tribunal's concern is that even such small amounts of capacity could have such drastic impacts on the market price, this concern can be addressed simply by requiring the divestiture of this 50,000 tonnes of capacity.

GTA that would result in prices that are 5%, 10% and 15% below currently prevailing prices.

7. Tables 2 through 4 detail my analyses of these critical losses. Table 5 outlines the source of data used, assumptions and calculations made in Tables 2 through 4.
8. With respect to Chatham-Kent, I use the combined ICI volume that the Respondents' facilities receive from Chatham-Kent to determine the critical loss required to ensure that the Respondents would not have the incentive to thwart price decreases of 5%, 10% and 15% below currently prevailing prices.⁸ Those analyses are detailed in Table 6.
9. Table 7 summarizes the total divestitures for the GTA and Chatham-Kent required to ensure that the Respondents would not have the incentive to thwart specified price decreases.
10. It is my understanding that the City of Toronto's contract with the Republic Landfill expires in about five years. At that point, the City of Toronto may seek to dispose of at least some of its 1.2 million tonnes of residential annual waste stream in Ontario. If these tonnes were to be disposed in Ontario, the Respondents' landfills would represent even more infra-marginal disposal capacity in Ontario. Given this significant degree of uncertainty surrounding the potential dynamic of SNHW flows under these conditions, I believe it would be highly speculative to estimate an appropriate remedy (if one is required at all) for the period after the current contract expires.
11. It is my understanding that [REDACTED]
In such a scenario, there would be insufficient capacity in Southern Ontario to dispose of ICI from the GTA as well as the non-GTA SNHW currently being disposed of in Southern Ontario. To be precise, in this world the evidentiary record provides no guidance as to what the marginal landfill in

⁸As mentioned earlier, my analysis of the appropriate remedy applies to scenarios in which the (assumed) competitive harm would be the prevention of price decreases as well as scenarios in which the (assumed) competitive harm would be the realization of price increases.

Southern Ontario would be.⁹ Thus any putative anti-competitive effects, particularly those premised on the existence of excess capacity, would be highly speculative at best, and counter to the premises underlying the Tribunal's Reasons and Order.

12. As a result of findings 1 and 11, a remedy is only required for the time periods between when the Richmond/Napanee and Warwick expansions are effective and when the Walker facility closes (at the latest). Once again, the necessity of any remedy during this period will also depend on the status of the City of Toronto contract.
13. The divestitures I have outlined provide an effective remedy for the (assumed) competitive harm as long as the per unit disposal cost imposed by the Respondents on the recipient of the divested capacity is sufficiently low that the recipient of the divested capacity will be able to generate incremental profits at the posited price levels.
14. The divestitures I have outlined do not require the Respondents to set aside airspace at any particular landfill. It is sufficient for Respondents to ensure that third parties will have the ability to dispose of waste in volumes equal to the critical loss amount.
15. Since the finding of competitive harm in Chatham-Kent must be premised on the existence of an actual horizontal overlap, and the evidentiary record indicates that the Gore landfill will be closed in about five years, any remedy to address competitive effects with respect to Chatham-Kent waste disposal are only required for the period that the Gore landfill would have remained open "but for" the proposed transaction.

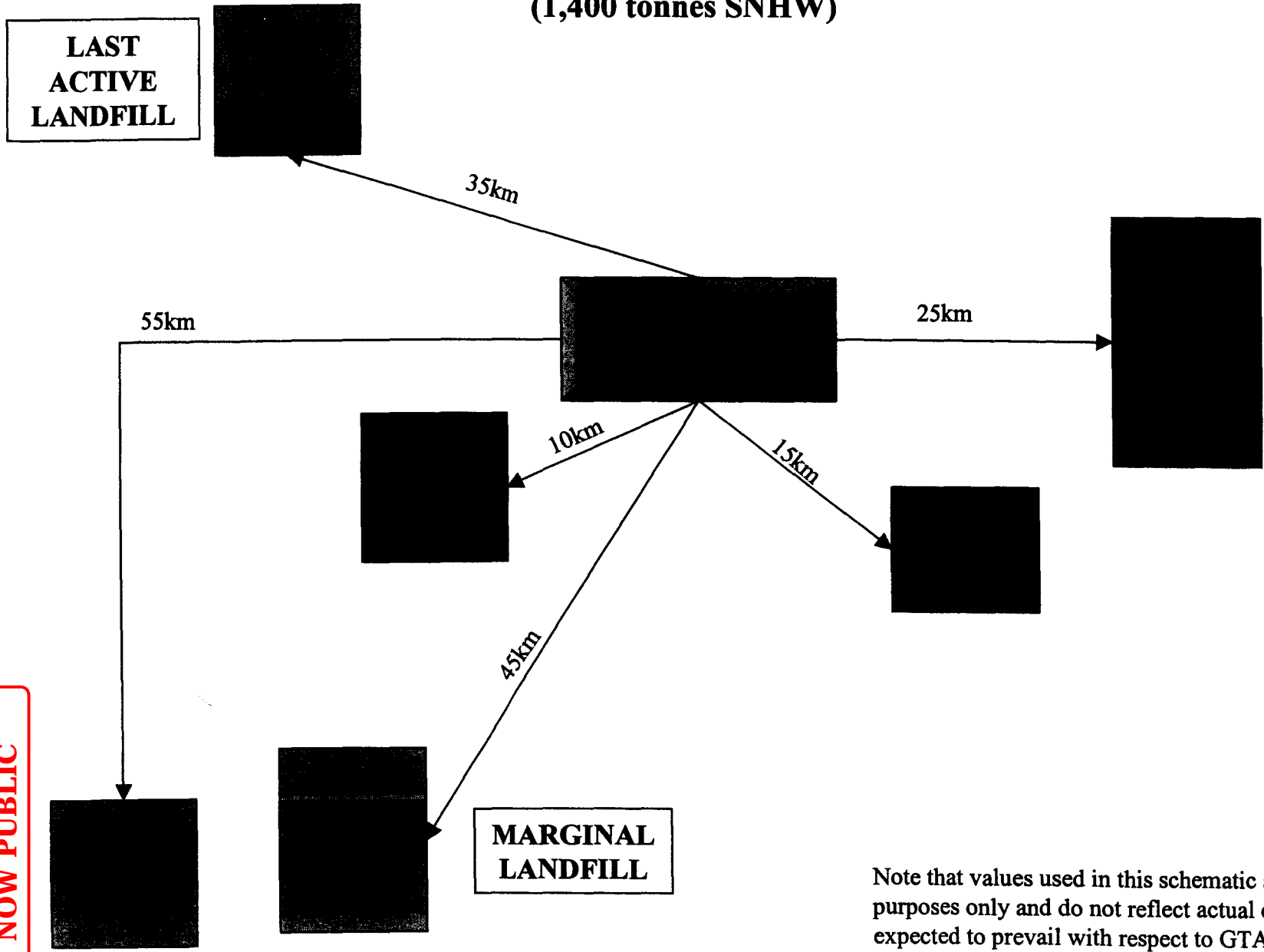
⁹ It is my understanding that such conditions are currently prevailing in these markets, and that SNHW from the GTA is currently being disposed of in Michigan.

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EXHIBITS

Exhibit 1

Schematic Depiction of Spatial Price Formation in Landfills (1,400 tonnes SNHW)



Note that values used in this schematic are for illustrative purposes only and do not reflect actual conditions that are expected to prevail with respect to GTA ICI waste.

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TABLES

Table 1
Divestiture Summary for GTA Landfills

Initial Price Decrease Assumption	Necessary Price Increase	Divestiture (tonnes)
5% Below Current Market Price	5.3%	0
10% Below Current Market Price	11.1%	53,225
15% Below Current Market Price	17.6%	155,647

Necessary Price Increase indicates the percentage price increase needed to get back to the current market price after the posited price decrease.

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Table 2
Critical Loss Analysis for GTA Landfills
Initial Price: 5% Price Decrease from Current Market Price

PANEL 1: Capacity, Cost, Price Data

Total ICI GTA Waste Disposal Required in S. Ontario (tonnes) 1,933,908 [1]
 Transportation Cost per tonne-km 0.05 [2]

Landfill	Total Annual Capacity (tonnes) [3]	Non-GTA Waste [4]	Sarnia Non-GTA Waste Allocation [5]	ICI Annual Capacity (tonnes) [6]	Tipping Fee (per tonne) [7]		Distance from Toronto (km) [8]	Transportation Cost (per tonne) [9]	Effective Price (per tonne) [10]
					Minimum	Maximum			
Walker	617,000	[REDACTED]		[REDACTED]	[REDACTED]	[REDACTED]	138	[REDACTED]	[REDACTED]
Green Lane	262,500	[REDACTED]		[REDACTED]	[REDACTED]	[REDACTED]	227	[REDACTED]	[REDACTED]
Richmond/Napanee	750,000	[REDACTED]		[REDACTED]	[REDACTED]	[REDACTED]	230	[REDACTED]	[REDACTED]
Warwick	750,000	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	265	[REDACTED]	[REDACTED]
Ridge	680,000	[REDACTED]		[REDACTED]	[REDACTED]	[REDACTED]	306	[REDACTED]	[REDACTED]
EWSWA	320,000	[REDACTED]		[REDACTED]	[REDACTED]	[REDACTED]	378	[REDACTED]	[REDACTED]
TOTAL CAPACITY [11]	3,379,500	795,468		2,217,227					

PANEL 2: Critical Loss Calculations

ICI SNHW	1,933,908	[12]	ICI Annual Capacity (tonnes)	Total Disposed	Remainder to Dispose	Available Capacity in Landfill	
Walker	[REDACTED]	[13]	[REDACTED]	[REDACTED]	[REDACTED]	0	[31]
Richmond/Napanee	[REDACTED]	[14]	[REDACTED]	[REDACTED]	[REDACTED]	0	[32]
Warwick	[REDACTED]	[15]	[REDACTED]	[REDACTED]	[REDACTED]	0	[33]
Ridge	[REDACTED]	[16]	[REDACTED]	[REDACTED]	[REDACTED]	0	[34]
Green Lane	[REDACTED]	[17]	[REDACTED]	[REDACTED]	0	151,618	[35] ← Last Active Facility
EWSWA	131,701	[18]		1,933,908	0	131,701	[36] ← Marginal Facility

THE MARGINAL FACILITY IS NOT A CWS FACILITY; DIVESTITURE ANALYSIS FOLLOWS HOWEVER.

Current Tipping Fee per tonne @ Ridge	[REDACTED]	[37]		
Post-Expansion Price Decrease	5%	[38]	Assumed Price Increase	[REDACTED] [40]
Post-Expansion Price	[REDACTED]	[39]	Post Increase Tipping Fee per tonne @ Ridge	[REDACTED] [41]
Incremental Cost per tonne @ Ridge	[REDACTED]	[42]	Incremental Cost per tonne @ Ridge	[REDACTED] [43]
Gross Profits per Tonne	[REDACTED]	[44]	Post Increase Gross Profits per Tonne	[REDACTED] [45]
Total affected commerce (Tonnes)	[REDACTED]	[46]		
Critical Loss (Tonnes)	102,422	[47]		
Required Divestiture (Tonnes)	0	[48]		
Critical Output (Tonnes)	[REDACTED]	[49]		

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**Table 3
Critical Loss Analysis for GTA Landfills
Initial Price: 10% Price Decrease from Current Market Price**

PANEL 1: Capacity, Cost, Price Data

Total ICI GTA Waste Disposal Required in S. Ontario (tonnes) 1,933,908 [1]
 Transportation Cost per tonne-km 0.05 [2]

Landfill	Total Annual Capacity (tonnes) [3]	Non-GTA Waste [4]	Sarnia Non-GTA Waste Allocation [5]	ICI Annual Capacity (tonnes) [6]	Tipping Fee (per tonne) [7]		Distance from Toronto (km) [8]	Transportation Cost (per tonne) [9]	Effective Price (per tonne) [10]
					Minimum	Maximum			
Walker	617,000	[REDACTED]		[REDACTED]	[REDACTED]	[REDACTED]	138	[REDACTED]	[REDACTED]
Green Lane	262,500	[REDACTED]		[REDACTED]	[REDACTED]	[REDACTED]	227	[REDACTED]	[REDACTED]
Richmond/Napanee	750,000	[REDACTED]		[REDACTED]	[REDACTED]	[REDACTED]	230	[REDACTED]	[REDACTED]
Warwick	750,000	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	265	[REDACTED]	[REDACTED]
Ridge	680,000	[REDACTED]		[REDACTED]	[REDACTED]	[REDACTED]	306	[REDACTED]	[REDACTED]
EWSWA	320,000	[REDACTED]		[REDACTED]	[REDACTED]	[REDACTED]	378	[REDACTED]	[REDACTED]
TOTAL CAPACITY [11]	3,379,500	795,468	366,805	2,217,227					

PANEL 2: Critical Loss Calculations

ICI SNHW	1,933,908 [12]						
	ICI Annual Capacity (tonnes)	Total Disposed	Remainder to Dispose	Available Capacity in Landfill			
Walker	[REDACTED] [13]	[REDACTED] [19]	[REDACTED] [25]	0 [31]			
Richmond/Napanee	[REDACTED] [14]	[REDACTED] [20]	[REDACTED] [26]	0 [32]			
Warwick	[REDACTED] [15]	[REDACTED] [21]	[REDACTED] [27]	0 [33]			
Ridge	[REDACTED] [16]	[REDACTED] [22]	[REDACTED] [28]	0 [34]			
Green Lane	[REDACTED] [17]	[REDACTED] [23]	0 [29]	151,618 [35]			← Last Active Facility
EWSWA	131,701 [18]	1,933,908 [24]	0 [30]	131,701 [36]			← Marginal Facility

THE MARGINAL FACILITY IS NOT A CWS FACILITY; DIVESTITURE ANALYSIS FOLLOWS HOWEVER.

Current Tipping Fee per tonne @ Ridge	[REDACTED] [37]		
Post-Expansion Price Decrease	10% [38]	Assumed Price Increase	11.1% [40]
Post-Expansion Price	[REDACTED] [39]	Post Increase Tipping Fee per tonne @ Ridge	[REDACTED] [41]
Incremental Cost per tonne @ Ridge	[REDACTED] [42]	Incremental Cost per tonne @ Ridge	[REDACTED] [43]
Gross Profits per Tonne	[REDACTED] [44]	Post Increase Gross Profits per Tonne	[REDACTED] [45]
Total affected commerce (Tonnes)	[REDACTED] [46]		
Critical Loss (Tonnes)	204,843 [47]		
Required Divestiture (Tonnes)	53,225 [48]		
Critical Output (Tonnes)	[REDACTED] [49]		

Table 4
Critical Loss Analysis for GTA Landfills
Initial Price: 15% Price Decrease from Current Market Price

PANEL 1: Capacity, Cost, Price Data

Total ICI GTA Waste Disposal Required in S. Ontario (tonnes) 1,933,908 [1]
 Transportation Cost per tonne-km 0.05 [2]

Landfill	Total Annual Capacity (tonnes) [3]	Non-GTA Waste [4]	Sarnia Non-GTA Waste Allocation [5]	ICI Annual Capacity (tonnes) [6]	Tipping Fee (per tonne) [7]		Distance from Toronto (km) [8]	Transportation Cost (per tonne) [9]	Effective Price (per tonne) [10]
					Minimum	Maximum			
Walker	617,000	[REDACTED]		[REDACTED]	[REDACTED]	[REDACTED]	138	[REDACTED]	[REDACTED]
Green Lane	262,500	[REDACTED]		[REDACTED]	[REDACTED]	[REDACTED]	227	[REDACTED]	[REDACTED]
Richmond/Napanee	750,000	[REDACTED]		[REDACTED]	[REDACTED]	[REDACTED]	230	[REDACTED]	[REDACTED]
Warwick	750,000	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	265	[REDACTED]	[REDACTED]
Ridge	680,000	[REDACTED]		[REDACTED]	[REDACTED]	[REDACTED]	306	[REDACTED]	[REDACTED]
EWSWA	320,000	[REDACTED]		[REDACTED]	[REDACTED]	[REDACTED]	378	[REDACTED]	[REDACTED]
TOTAL CAPACITY [11]	3,379,500	795,468	366,805	2,217,227					

PANEL 2: Critical Loss Calculations

ICI SNHW	1,933,908	[12]						
	ICI Annual Capacity (tonnes)		Total Disposed		Reminder to Dispose		Available Capacity in Landfill	
Walker	[REDACTED]	[13]	[REDACTED]	[19]	[REDACTED]	[25]	0	[31]
Richmond/Napanee	[REDACTED]	[14]	[REDACTED]	[20]	[REDACTED]	[26]	0	[32]
Warwick	[REDACTED]	[15]	[REDACTED]	[21]	[REDACTED]	[27]	0	[33]
Ridge	[REDACTED]	[16]	[REDACTED]	[22]	[REDACTED]	[28]	0	[34]
Green Lane	[REDACTED]	[17]	[REDACTED]	[23]	0	[29]	151,618	[35] ← Last Active Facility
EWSWA	131,701	[18]	1,933,908	[24]	0	[30]	131,701	[36] ← Marginal Facility

THE MARGINAL FACILITY IS NOT A CWS FACILITY; DIVESTITURE ANALYSIS FOLLOWS HOWEVER.

Current Tipping Fee per tonne @ Ridge	[REDACTED]	[37]		
Post-Expansion Price Decrease	15%	[38]	Assumed Price Increase	[REDACTED] [40]
Post-Expansion Price	[REDACTED]	[39]	Post Increase Tipping Fee per tonne @ Ridge	[REDACTED] [41]
Incremental Cost per tonne @ Ridge	[REDACTED]	[42]	Incremental Cost per tonne @ Ridge	[REDACTED] [43]
Gross Profits per Tonne	[REDACTED]	[44]	Post Increase Gross Profits per Tonne	[REDACTED] [45]
Total affected commerce (Tonnes)	[REDACTED]	[46]		
Critical Loss (Tonnes)	307,265	[47]		
Required Divestiture (Tonnes)	155,647	[48]		
Critical Output (Tonnes)	[REDACTED]	[49]		

**Table 5
Notes for Critical Loss Analysis for GTA Landfills**

Notes:

- [1] Appendix 2, Table 1, line 5 of this document.
- [2] Affidavit of Michael R. Baye, Table 2
- [3] "Reality Check: Supply and Demand Assumptions," Supply Capacity of the Commissioner
- [4] "Reality Check: Supply and Demand Assumptions," Demand Capacity of the Commissioner
- [5] "Reality Check: Supply and Demand Assumptions," Demand Capacity of the Commissioner as directed by counsel.
- [6] = [3] - [4] - [5]
- [7] Richmond/Napanee and Warwick: Tipping fees are not available. (See Agreed Statement of Facts, Confidential Appendix B, Table 1.)
EWSWA: Exhibit 161, EWSWA submittal to City of Toronto Request for Proposal, Envelope 2, Price Proposal, page 2.
Remaining landfills: Agreed Statement of Fact, Confidential Appendix B, Table 1
- [8] Supplementary Statement of Fact, Appendix F
- [9] = [2] * [8]
- [10] = [7] Minimum + [9]
- [11] = sum of column
- [12] = [1]
- [13]-[18] = [6] for relevant landfill
- [19] = [13]
- [20] = [19] + [14] if less than [12]; otherwise [12]
- [21] = [20] + [15] if less than [12]; otherwise [12]
- [22] = [21] + [16] if less than [12]; otherwise [12]
- [23] = [22] + [17] if less than [12]; otherwise [12]
- [24] = [23] + [18] if less than [12]; otherwise [12]
- [25] = [12] - [19]
- [26] = [12] - [20]
- [27] = [12] - [21]
- [28] = [12] - [22]
- [29] = [12] - [23]
- [30] = [12] - [24]
- [31] = [13] - [19]
- [32] = [14] - (([20] - [19]))
- [33] = [15] - (([21] - [20]))
- [34] = [16] - (([22] - [21]))
- [35] = [17] - (([23] - [22]))
- [36] = [18] - (([24] - [23]))
- [37] = [7] Minimum for Ridge
- [38] Assumption
- [39] = [37] * (1 - [38])
- [40] = (1 / (1 - [38])) - 1
- [41] = [39] * (1 + [40])
- [42] Exhibit 211, page 10, year 2, Variable Cost per Unit + Host Fees per Unit. I selected year 2 because it seems representative of the costs faced by CWS once the Ridge expansion is fully operational.
- [43] Exhibit 211, page 10, year 2, Variable Cost per Unit + Host Fees per Unit. I selected year 2 because it seems representative of the costs faced by CWS once the Ridge expansion is fully operational.
- [44] = [39] - [42]
- [45] = [41] - [43]
- [46] = min ((([14] + [15] + [16]) - (([32] + [33] + [34]))), [12] - [13])
- [47] = [46] * (([45] - [44]) / [45])
- [48] = max(0, [47] - Available Capacity at Last Active Landfill)

**Table 6
Critical Loss Analysis for Landfills Receiving Chatham-Kent SNHW**

[1]	Chatham-Kent ICI to Gore (tonnes)	[REDACTED]		
[2]	Chatham-Kent ICI to Ridge (tonnes)	[REDACTED]		
[3]	Total Affected Commerce (tonnes)	37,218		
[4]	Current Tipping Fee per tonne @ Ridge	[REDACTED]		
[5]	Incremental Cost per tonne @ Ridge	[REDACTED]		
[6]	Post-Expansion Price Decrease	5%	10%	15%
[7]	Post-Expansion Price	[REDACTED]	[REDACTED]	[REDACTED]
[8]	Post-Expansion Gross Profits per Tonne	[REDACTED]	[REDACTED]	[REDACTED]
[9]	Assumed Price Increase	5.3%	11.1%	17.6%
[10]	Post Increase Tipping Fee per tonne @ Ridge	[REDACTED]	[REDACTED]	[REDACTED]
[11]	Post Increase, Post-Expansion Gross Profits per Tonne	[REDACTED]	[REDACTED]	[REDACTED]
[12]	Total Affected Commerce (Tonnes)	[REDACTED]	[REDACTED]	[REDACTED]
[13]	Required Divestiture (Tonnes)	2,385	4,770	7,154
[14]	Critical Output (Tonnes)	[REDACTED]	[REDACTED]	[REDACTED]

Table 6 (continued)
Critical Loss Analysis for Landfills Receiving Chatham-Kent
SNHW

Notes:

- [1] Supplementary Statement of Fact, Appendix G
- [2] Supplementary Statement of Fact, Appendix G
- [3] = [1] + [2]
- [4] Tribunal's Reasons and Order, paragraph 102
- [5] Exhibit 211, page 10, year 2, Variable Cost per Unit + Host Fees per Unit
- [6] Assumption
- [7] = [4] * (1 - [6])
- [8] = [7] - [5]
- [9] = (1 / (1 - [6])) - 1
- [10] = [7] * (1 + [8])
- [11] = [10] - [5]
- [12] = [3]
- [13] = [12] * (([11] - [8]) / [11])
- [14] = [12] - [13]

Table 7
Divestiture Summary for Southern Ontario Landfills
Including GTA and Chatham-Kent

Initial Price Decrease Assumption	Divestiture for GTA Landfills	Divestiture for Chatham-Kent Landfills	Total Divestiture
5% Below Current Market Price	0	2,385	2,385
10% Below Current Market Price	53,225	4,770	57,995
15% Below Current Market Price	155,647	7,154	162,801

Necessary Price Increase indicates the percentage price increase needed to get back to the current market price after the posited price decrease.

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APPENDIX 1

CHRISTOPHER A. VELLTURO

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Dr. Vellturo has performed economic analysis and provided expert testimony in the context of mergers and acquisitions, antitrust litigation, intellectual property litigation, and other matters. He has provided economic analysis in over one hundred mergers and acquisitions spanning a broad array of industries. He has appeared before the U.S. Department of Justice, the Federal Trade Commission, various states' Attorneys General offices, the Federal Reserve Bank Board of Governors, and various Federal Reserve Banks and other regulatory agencies on merger-related issues. He has also appeared at hearings before the European Commission and has presented evidence at the Canadian Competition Bureau. Dr. Vellturo has performed economic analysis relating to litigation matters in more than fifty antitrust actions and more than one hundred intellectual property actions. He has testified in U.S. District Court and before the American Arbitration Association.

Prior to joining Analysis Group/Economics, Dr. Vellturo was a Senior Vice President and member of the Board of Directors at National Economic Research Associates (NERA) and a founding director of Cambridge Economics, Inc.

Dr. Vellturo has published on a variety of topics, including merger and acquisition-related efficiencies, price discrimination, differentiated product analysis and market definition. His research has appeared in leading academic journals, including *Antitrust*, the *Antitrust Law Journal*, and the *Journal of Economics and Management Strategy*. Dr. Vellturo is a recipient of the Bradley Fellowship in Public Economics and has served as a referee for *American Economic Review* and *Rand Journal of Economics*.

Dr. Vellturo holds a Ph.D. in Economics from the Massachusetts Institute of Technology and a Sc.B. in Applied Mathematics and Economics from Brown University, where he graduated *magna cum laude* and *Phi Beta Kappa*.

EDUCATION

- | | |
|------|--|
| 1989 | Ph.D. in Economics, Massachusetts Institute of Technology
<i>Primary Fields:</i> Econometrics, Industrial Organization
<i>Secondary Fields:</i> Public Finance, Game Theory, Law and Economics |
| 1983 | Sc.B. in Applied Mathematics and Economics (<i>magna cum laude</i>), Brown University |

PROFESSIONAL EXPERIENCE

- 2000-Present **Analysis Group/Economics**
Principal - Direct research and provide expert testimony on a variety of microeconomic issues with particular emphasis on antitrust, intellectual property, and mergers and acquisitions. Expert reports and testimony presented in U.S. District Court. Presented antitrust economic analyses to Federal Trade Commission, U.S. Department of Justice, Federal Reserve Bank Board of Governors and the European Commission.
- 1996-2000 **National Economic Research Associates, Inc.**
Senior Vice President (1999-00)
Vice President (1996-99)
- 1991-1996 **Cambridge Economics, Inc.**
Director - Directed research and provided expert testimony on a variety of microeconomic issues with particular emphasis on antitrust, intellectual property, and mergers and acquisitions. Prior expert testimony provided in U.S. District Court and before the American Arbitration Association. Presented antitrust economic analyses to U.S. Department of Justice, Federal Trade Commission (Antitrust Division), state Attorneys General offices, and the Federal Reserve Bank Board of Governors.
- 1989-1991 **National Economic Research Associates, Inc.**
Senior Consultant - Directed and performed research relating to issues of antitrust, intellectual property, mergers and regulation.
- 1987 **Department of Economics, M.I.T.**
Teaching Assistant - Undergraduate econometrics.
- 1985-89 **Dean Ann F. Friedlaender, M.I.T.**
Research Associate - Participated in research relating to transportation pricing and capital allocation responses to regulatory changes.
- 1983-85 **National Economic Research Associates, Inc.**
Research Associate - Conducted research on a wide variety of issues including antitrust, railroad rate setting, optimal landfill pricing, and PCB and asbestos abatement strategies.

AWARDS AND PROFESSIONAL ACTIVITIES

- Recipient, Bradley Fellowship in Public Economics, 1987 and 1988-89
M.I.T. Departmental Fellowship, 1986
Phi Beta Kappa, Brown University, 1983
Sigma Xi, Brown University, 1983
Journal Referee for *American Economic Review* and *Rand Journal of Economics*

Member, American Economic Association

TESTIFYING HISTORY (PAST FOUR YEARS)

- *Massachusetts Businessman's Association Inc., v. Blue Cross and Blue Shield of Massachusetts, Inc.*
Superior Court of the Commonwealth of Massachusetts, (C.A. No. 97-02279).
- *Union Carbide Chemicals & Plastics Technology Corp. and Union Carbide Corp. v. Shell Oil Company, Shell Chemical Company and CRI Catalyst Company*
U.S. District Court, District of Delaware, C.A. No. 99-274 (SLR)
- *Bio-Rad Laboratories Inc and Cornell Research Foundation Inc., v. Carl Zeiss Jena GMBH and Carl Zeiss Inc.*
U.S. District Court, Southern District of New York, C.A. 98 CIV 8012
- *Sulzer Intermedics, Inc. v. Medtronic, Inc., et al.*
U.S. District Court, Southern District of Texas, (C.A. H-97-3526)
- *Joseph E. Seagram & Sons, Inc., The Seagram Company Ltd. and JDC S.A. de C.V. v. St Maarten Spirits, Ltd., and St. Maarten Spirits Limited*
Superior Court of the State of California, for the County of Los Angeles, (No. BC 191 681)
- *General Electric Capital Corporation v. DirecTV, Inc., Hughes Electronics Corporation and General Motors Corporation*
U.S. District Court, District of Connecticut, 3:97 CV 01901 (PCD)
- *Bristol Technology, Inc. v. Microsoft Corporation*
U.S. District Court, District of Connecticut, C.A. No. 398-CV-1657 (JCH)
- *America Online, Inc. v. AT&T Corporation*
U.S. District Court, Eastern District of Virginia, C.A. No. 98-1821-A
- *Forty-Niners Truck Plaza, Inc. v. Unocal Corporation*
Superior Court in and for the County of Sacramento, California, Case No. 531830
- *Dade Behring Marburg GmbH, Syva Company v. Biosite Diagnostics, Inc.*
U.S. District Court, Southern District of New York, C.A. No. 97-501 MMS
- *CBS Broadcasting Inc., et al., v. PrimeTime 24 Joint Venture*
U.S. District Court, Southern District of Florida, C.A. No. 96-3650-CIV-Nesbitt
- *Becton Dickinson and Company v. Syntron Bioresearch, Inc.*
U.S. District Court, Southern District of California, C.A. No. 97-CV-1634K (POR)
- *Hard Rock Café International (USA), Inc., (f/k/a Rank Licensing, Inc.), v. Peter A. Morton and Hard Rock Hotel, Inc.*
U.S. District Court, Southern District of New York, C.A. No. 97-CIV-9483 (RPP)
- *Wang Laboratories, Inc. v. FileNet Corporation*

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U.S. District Court, District of Massachusetts, C.A. No. 94-12141

- *Neles-Jamesbury, Inc. v. Fisher Controls International, Inc. and Fisher Service Company*
U.S. District Court, District of Massachusetts, C.A. No. 94-40200
- *The Toro Company v. White Consolidated Industries, Inc. and WCI Outdoor Products, Inc.*
U.S. District Court, District of Minnesota, C.A. No. 4-95-656
- *Polo Ralph Lauren, L.P. v. The Magnin Company, Inc.*
American Arbitration Association Commercial Arbitration Tribunal, Case No. 74-181-1094-96
- *Roll Systems, Inc. v. Wallace Computer Services Inc.*
U.S. District Court, District of Massachusetts, C.A. No. 94-10372-MEL
- *Black & Decker (U.S.), Inc. and Black & Decker, Inc. v. The Coleman Co., Inc.*
U.S. District Court, Eastern District of Virginia, C.A. No. 96-656-A
- *Century Wrecker Corporation v. Chevron, Inc.*
U.S. District Court, Western District of Pennsylvania, C.A. No. 89-1452
- *Federal Trade Commission v. New Balance Athletic Shoe, Inc.*
Boston, Massachusetts, File No. D9268
- *Minnesota Mining and Manufacturing Co. v. Avery Dennison Corp.*
U.S. District Court, District of Minnesota, C.A. No. 4-93-1070
- *Becton Dickinson and Co. and Becton Dickinson Vascular Access Inc. v. Critikon Inc.*
American Arbitration Association, Arbitration No. 13 133 00388 93
- *Minnesota Mining and Manufacturing Co. v. Norton v. Bay State Abrasives Co.*
U.S. District Court, District of Delaware, C.A. No. 89-533 (JJF)

AFFIDAVITS

- Expert Report In Connection With *Union Carbide Chemicals & Plastics Technology Corp. and Union Carbide Corp. v. Shell Oil Company, Shell Chemical Company and CRI Catalyst Company*
October 2000, U.S. District Court, District of Delaware, C.A. No. 99-274 (SLR).
- Expert Report in connection with *Carl Zeiss Jena GmbH, Carl Zeiss Inc., v. Bio-Rad Laboratories, Inc., Cornell Research Foundation Inc., and Bio-Rad Laboratories, Inc., Cornell Research Foundation Inc., v. Carl Zeiss Jena GmbH, Carl Zeiss Inc., May 2000* — U.S. District Court, Southern District of New York, (98 CIV. 8012 RCC (DFE)).

- Expert Report in connection with *Omniglow Corporation v. Unique Industries, Inc.*, November 1999 — U.S. District Court, District of Massachusetts, (C.A.No. 99-30052-MAP).
- Expert Report in connection with *Joseph E. Seagram & Sons, Inc., The Seagram Company Ltd. and JDC S.A. de C.V. v. St Maarten Spirits, Ltd., and St. Maarten Spirits Limited*, August 1999 — Superior Court of the State of California, for the County of Los Angeles, (No. BC 191 681).
- Expert Report in connection with *General Electric Capital Corporation v. DirecTV, Inc., Hughes Electronics Corporation and General Motors Corporation*, August 1999 — U.S. District Court, District of Connecticut, (3:97 CV 01901 (PCD)).
- Expert Report in connection with *America Online, Inc. v. AT&T Corporation*, March 1999 — U.S. District Court, Eastern District of Virginia, C.A. (98-1821-A).
- Expert Report in connection with *Ashraf M. Dahod v. Bay Networks, Inc. and LanCity Corporation, Inc.*, September 1998 — U.S. District Court, District of Massachusetts, C.A. (No. 96-11907 REK).
- Expert Report in connection with *Harris Corporation, et. al v. Atmel Corporation*, June 1998 — U.S. District Court, Eastern District of Virginia, C.A. (No. 98-98-A).
- Expert Report in connection with *Critikon, Inc. v. Becton Dickinson Vascular Access, Inc.*, June 1998 — U.S. District Court, District of Delaware, C.A. (No. 93-108 (JJF)).
- Expert Report in connection with *CBS Broadcasting Inc., et al., v. PrimeTime 24 Joint Venture*, May 1998 — U.S. District Court, Southern District of Florida, C.A. No. 96-3650-CIV-Nesbitt.
- Expert Report in connection with *Becton Dickinson and Company v. Syntrol BioResearch, Inc.*, May 1998 — U.S. District Court, Southern District of California, C.A. No. 97-CV-1634K.
- Expert Report in connection with *Luigino's, Inc. v. Pezrow Company, Inc. and Pezrow Company of New Jersey, Inc.*, October 1997 — U.S. District Court, District of Minnesota Fifth Division, C.A. No. 5-96-244.
- Supplemental Expert Report in connection with *Neles-Jamesbury, Inc. v. Fisher Controls International, Inc. and Fisher Service Company*, October 1997 — U.S. District Court, District of Massachusetts, C.A. No. 94-40200).
- Expert Report in connection with *Neles-Jamesbury, Inc. v. Fisher Controls International, Inc. and Fisher Service Company*, August 1997 — U.S. District Court, District of Massachusetts, C.A. No. 94-40200.
- Expert Report in connection with *The Toro Company v. White Consolidated Industries, Inc. et al.*, May 1997 — U.S. District Court, District of Minnesota, C.A. No. 4-95-656.

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- Supplemental Expert Report in connection with *Century Wrecker Corporation v. Chevron, Inc.*, May 1997 — U.S. District Court, Western District of Pennsylvania, C.A. No. 89-1452.
- Supplemental Rebuttal Expert Report in connection with *Polo Ralph Lauren, L.P.. v. The Magnin Company, Inc.*, May 1997 — American Arbitration Association Commercial Arbitration Tribunal, C.A. No. 74-181-1094-96.
- Rebuttal Expert Report in connection with *Polo Ralph Lauren, L.P.. v. The Magnin Company, Inc.*, May 1997 — American Arbitration Association Commercial Arbitration Tribunal, C.A. No. 74-181-1094-96.
- Expert Report in connection with *Wang Laboratories, Inc. v. FileNet Corporation*, April 1997 — U.S. District Court, District of Massachusetts, C.A. No. 94-12141 RLC.
- Affidavit in Support of Ag-Chem Equipment Co. Inc. and Soil Teq, Inc.'s Motion For Summary Judgment, gust 1996 — U.S. District Court, District of Minnesota, C.A. No. 4-93-1228.
- Expert Report and Supplemental Expert Report in connection with *Roll Systems, Inc. v. Wallace Computer Services Inc.*, July 1996 and December 1996 — U.S. District Court, District of Massachusetts, C.A. No. 94-10372-MEL.
- Expert Report in connection with *Dynamic Manufacturing Inc. et al. v. Chevron Inc.*, April 1996 — U.S. District Court, Eastern District of Virginia, C.A. No. 2:95CV947.
- Expert Report in connection with *Century Wrecker Corp. v. Chevron Inc.*, March 1996 — U.S. District Court, Western District of Pennsylvania, C.A. No. 89-1452.
- Expert Report in connection with *Medtronic v. Pacesetter and St. Jude Medical Inc.*, February 1996 — American Arbitration Association.
- Expert Report in connection with *Cedar Ridge Trailer Sales et al. v. National Community Bank of New Jersey et al.*, December 1995 — Superior Court of New Jersey , C.A. No. BER-L-09277-92.
- Expert Report in connection with *Federal Trade Commission v. New Balance Athletic Shoe, Inc.*, 1995 — Boston, Massachusetts, File No. D9268.
- Expert Report in connection with *Minnesota Mining and Manufacturing Co. v. Avery Dennison Corp.*, 1995 — U.S. District Court, District of Minnesota, C.A. No. 4-93-1070.
- Expert Report in connection with *Minnesota Mining and Manufacturing Co. v. Norton v. Bay State Abrasives Co.*, 1994 — U.S. District Court, District of Delaware, C.A. No. 89-533 (JFF).

PUBLICATIONS AND PRESENTATIONS

“What Drives Consolidation?” Presented at the 28th Semiannual Members Meeting MIT/CRE, Cambridge, MA, May 14, 1998.

“Proving Unilateral Effects and Efficiencies in Merger Cases: A Demonstration.” Presented at the 46th Annual ABA Antitrust Meeting, Washington, DC, April 1, 1998.

“Creating An Effective Diversion: Evaluating Mergers With Differentiated Products,” *Antitrust*, Spring 1997.

“Economic Battles in the Antitrust Wars: Network Industries and Their Relevance to Antitrust in the Computer Industry.” Presented at the Washington State Bar Association’s Thirteenth Annual Antitrust, Consumer Protection and Unfair Business Practices Conference, November 8, 1996.

“Differentiated Products: New Tools for New Methods.” Presented at NERA’s Seventeenth Annual Antitrust & Trade Regulation Seminar, Santa Fe, NM, July 5, 1996.

“Market Definition Under Price Discrimination” (with J. A. Hausman and G. K. Leonard), *Antitrust Law Journal*, Vol. 64, No. 2 (Winter 1996).

“Learning-by-Doing in the Context of Antitrust Analysis” (with J. Hausman), April 1995.

“An Economic Analysis of ATM Surcharging,” prepared for Southeast Switch Inc., October 5, 1995.

“Cost Effects of Mergers and Deregulation in the U.S. Rail Industry” (with Berndt et al.), *Productivity Issues in Services at the Micro Level*, ed. Zvi Griliches and Jacques Mairesse, Kluwer Academic Publishers, 1993.

“Cost Effects of Mergers and Deregulation in the U.S. Rail Industry” (with Berndt et al.), *Journal of Productivity Analysis*, 4, 127-144, 1993.

“Rail Costs and Capital Adjustments in a Quasi-Regulated Environment” (with Friedlaender et al.), *Journal of Transport Economics and Policy*, 131-152, May 1993.

“Deregulation, Mergers and Cost Savings in Class I U.S. Railroads, 1974-1986” (with Berndt et al.), *Journal of Economics and Management Strategy*, Vol. 1, No. 2, 1992.

“Observations on Pre-Trial Bargaining Models,” MIT Mimeo, September 1989.

“The Deregulation of the U.S. Rail Industry: Efficiency and Equity in Attaining Rail Viability,” Ph.D. Dissertation, Department of Economics, MIT, 1989.

“Achieving Cost Efficiency Through Merger: Evidence from the U.S. Rail Industry,” Presented at the American Economic Association Symposium on Mergers and Acquisitions, New York, December 29, 1988.

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APPENDIX 2

WASTE STREAMS INTO SOUTHERN ONTARIO LANDFILLS

Appendix 2

Table 1

Waste Streams in Southern Ontario

	Tonnes	Source
Tribunal Accepted ICI from GTA		
ICI going to Keele (minus 100,000 tonnes minimum)	468,200	"Reality Check"
ICI from GTA going to Ridge	██████████	"Reality Check"
ICI from GTA going to Walker	██████████	"Reality Check"
ICI from GTA going to Sarnia	██████████	"Reality Check"
ICI from GTA going to Richmond	██████████	"Reality Check"
ICI from GTA going to Greenlane	██████████	"Reality Check"
ICI from GTA going to US sites	██████████	"Reality Check"
[1] Waste from GTA going to Britannia	207,820	"Reality Check"
[2] Total	1,889,108	
 ICI from GTA Not Referenced by Tribunal		
ICI from GTA going to Arbor Hills via City of Toronto	44,800	Exhibits 342 and 307
[3] Subtotal	44,800	
[4] Total	1,933,908	
 Tribunal Accepted Residential Waste		
Waste managed by the City of Toronto	2,076,000	AGSF
SNHW diverted through recycling	-256,000	AGSF
Private ICI managed by City of Toronto	-613,000	AGSF
[5] Total	1,207,000	
 Total SNHW disposed of from GTA:		
[6] Total ICI from GTA (plus Britannia)	1,933,908	
[7] Total Residential from GTA	1,207,000	
[8] Total SNHW from GTA	3,140,908	

Notes:

- [1] Included in the total amount of ICI waste from the GTA is 207,820 tonnes of solid non-hazardous waste ("SNHW") from the Britannia landfill that the Tribunal found would be disposed of in Ontario once the Britannia landfill closes in 2002. For the purposes of this report, references to ICI waste from the GTA include the 207,820 tonnes of SNHW from the Britannia landfill. Since the Tribunal has determined that the entire 207,820 tonnes would be disposed in Ontario following the closure of Britannia, thus adding to the demand for SNHW disposal in Ontario, our conclusions hold regardless of whether or not any portion of these 207,820 tonnes is of residential, rather than ICI, origin.
- [2] = sum of Tribunal Accepted ICI from GTA
- [3] = sum of ICI from GTA Not Referenced by Tribunal
- [4] = [2] + [3]
- [5] = sum of Tribunal Accepted Residential Waste
- [6] = [4]
- [7] = [5]