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WASTE MANAGEMENT
THE PRICE OF
SOLID WASTE COLLECTION
AND DISPOSAL SERVICES
IN VERMONT

Overview of Survey Results
by Region

FINAL REPORT
June 1999

Prepared for:

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THE PRICE OF SOLID WASTE
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FINAL REPORT

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SOLID WASTE COLLECTION
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FINAL REPORT TO THE
VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION,
SOLID WASTE PROGRAM
June 1999

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INTRODUCTION

DSM Environmental Services, Inc. (DSM) was contracted by the Vermont Department of Environmental Conservation's Solid Waste Program (DEC) to conduct a limited survey of the prices charged for solid waste management services in the State of Vermont. The cost of solid waste services was identified as a critical issue when the DEC updated the State Solid Waste Management Plan (Plan Update) and monitoring prices was specified as a necessary action step in the Plan Update. This Price Survey was conducted to provide baseline data on current prices in different regions of the state. The Solid Waste Prices Survey (Survey) was part of the consulting services contract to assist in the revision of the State Solid Waste Management Plan.

DSM surveyed private solid waste management companies on the prices charged for solid waste collection and disposal services. This included the prices charged for construction and demolition (C&D) waste collection and disposal. As part of the prices survey, DSM also requested information about the availability and cost of recycling services to both residential and commercial customers.

DSM also surveyed solid waste districts and other municipal entities about the availability of MSW and C&D collection, and drop-off and recycling services in their region. As part of this information gathering step, DSM obtained data on the costs and prices of solid waste drop-off services in the region.

The information gathered is summarized below including the methodology used to collect data.

SURVEY METHODOLOGY

DSM, in conjunction with the DEC, selected four regions of the state to conduct the solid waste prices survey to determine if differences existed in the price of services throughout the state. These four regions and the reason for their selection are listed below:

<i>Region</i>	<i>Reason for Inclusion in Survey</i>
Chittenden County:	Highest population county in the State.
Northeast Kingdom:	Most rural region of the State where solid waste services were expected to be limited.
Bennington County:	Rural region of the State in which no one solid waste district has a lead role in public management of solid waste.

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Upper Valley: Bi-state region where solid waste collection services and disposal options are often jointly delivered to both States.

DSM then developed and implemented a survey of three different groups. First, DSM surveyed solid waste districts on the types and availability of solid waste management services in their region, including any cost and pricing information. Second, DSM surveyed solid waste hauling companies on the prices charged for residential and commercial solid waste collection and disposal, recycling collection, and C&D waste collection and disposal. Finally, DSM undertook a limited survey of commercial businesses on the prices they were paying for solid waste collection and disposal and recycling services.

District Survey

DSM developed a memorandum and survey form which was distributed at the Solid Waste District Manager's Meeting on October 29, 1998. Districts were asked to fill out and return a survey form to DSM.

DSM followed up the survey distribution with telephone calls to District Managers. In some cases, DSM faxed a second form out to District Managers. All District Managers were supplied with a survey form for inclusion in the study.

Upon receipt of some of the District survey data, DSM followed up with telephone calls to clarify information or collect additional information. All Districts, except for Rutland and the Northwest District, completed the survey form. However, DSM collected some of the data over the telephone from these two Districts.

Solid Waste Hauling Company Survey

DSM developed a survey form for DSM's use in collecting data from solid waste hauling companies over the telephone. The survey form was comprehensive and included line items for residential and commercial solid waste and recycling collection and disposal costs. The form also included line items for C&D waste collection and disposal costs.

DSM obtained a list of registered solid waste haulers from the Vermont DEC. The list included the name, address and contact person for each hauling firm as well as the number of trucks registered with the State. A total of 181 different hauler names were registered with the State. However some of these hauler names were independent companies that had been purchased by other companies but who had not changed their name. In addition, approximately 26 names on the list appeared to be construction firms or other companies who were registered to operate their own trucks but whom did not offer solid waste collection services to other parties other than customers (i.e. plumbing company or appliance service business).

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Using the survey list, DSM grouped the haulers by region and attempted to contact 75% of listed haulers in each region selected. In most cases, DSM selected the larger haulers in the region and did not include most haulers with two or fewer registered trucks.

DSM made at least three attempts to contact and survey selected haulers. DSM left messages where machines were available. When DSM was able to contact the appropriate person, DSM solicited their participation in the survey and told the survey participant that the results would be held confidential. DSM collected survey data in the four regions from November, 1998 through January, 1999.

Generator Survey

The last step was for DSM to undertake a limited survey of commercial generators in each of the four regions to determine what prices they were charged for solid waste collection and disposal and recycling services. DSM developed a survey form for use over the telephone by DSM staff.

DSM then developed a list of businesses representing different industries and services and attempted to contact about 30 businesses during the months of December, 1998 and January, 1999.

RESULTS

Based on survey data collected from solid waste districts, commercial hauling companies, and generators, results were compiled in three cost categories: residential service, commercial service, and collection and disposal of construction and demolition waste.

DSM collected survey data from a total of 19 hauling companies in the four regions. Of the 19 hauling companies surveyed, 10 provided service to commercial customers and 2 of those 10 provided limited commercial service (had no or limited container services available). In addition, only 11 of the 19 hauling companies offered C&D collection and disposal services.

Residential Costs

Table 1 shows the results by region for the average prices charged for weekly residential curbside MSW collection and bi-weekly recycling collection. The prices include both collection and disposal costs. The prices shown by region are calculated by averaging prices charged by the surveyed haulers in that region. The average prices in each of the four regions were then averaged to calculate an average price for the entire State.

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Of interest is that haulers in the regions without mandatory recycling did not offer curbside recycling service included in the cost of MSW collection; they only offered curbside recycling as an add-on service.

Table 1

CURBSIDE COLLECTION PRICES SUMMARY
Monthly cost for weekly residential MSW collection
and bi-weekly recyclables collection

Region	Cost/HH For MSW & Recycling	Cost/HH For MSW Only	Cost/HH For Recycling Only	Total Cost (\$)	Max. Volume Per Set-out (gallons) (3)
Chittenden County	\$25	\$20	\$8	\$25	99
Bennington County	NA	\$23	\$6	\$28	90
Northeast Kingdom	NA	\$26	\$2	\$28	100
Upper Valley	NA	\$26	\$4	\$30	70
Average Cost in State:	NA	\$23.75	\$5	\$27.75	90

- (1) Average prices quoted for service in November 1998 - January 1999 for weekly MSW collection and bi-weekly recycling collection, and include all disposal costs.
- (2) NA indicates service not available included in the price of MSW collection.
- (3) Average maximum quantity of MSW that can be set-out without an increase in price.
- (4) Average cost converted to cost per bag of MSW (assuming that customer set-out is at the maximum volume and based on 30 gallon bag) would be **\$2.15 per bag** including recycling and **\$1.85 per bag** with no recycling.
- (5) Numbers may not add due to rounding.

DSM also surveyed haulers, private operators, solid waste districts and municipalities about the cost to residents of solid waste drop-off services. Table 2 shows the results of this information request.

Finally, when surveying about MSW drop-off prices, DSM also requested information on prices charged for recycling, if any. Table 2 also shows the reported prices for recycling.

Of the 64 sites in which the prices for recycling were reported, 30 charged nothing for recycling, 11 charged only .25 per car and 5 (in Chittenden County) only charge for every bag of recyclable material delivered greater than the trash quantity disposed. Of the other 18 that did charge for recycling, the prices ranged from a low of \$.50 to a high of \$1.50 per 30 gallon bag delivered. This resulted in an average price paid in the state of .29 per bag or box of recyclables delivered.

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Table 2

DROP-OFF PRICES SUMMARY
Price paid per bag of MSW disposed and per box of recyclables
at drop-off centers/transfer stations

Region	Number of MSW drop-offs reported	Average Price per bag of MSW(1)	Number of Recycling drop-offs reported	Average Price for recyclables (2)
Addison County	11	\$2.31	13	\$.25/car
Bennington County	4	\$2.00	3	\$.00
Central Vermont	13	\$2.10	11	\$.00
Chittenden County	5	\$2.75	5	\$.00
Greater Upper Valley	6	\$2.05	6	\$.00
Lamoille Region	7	\$2.11	6	\$1.00/bag
Mad River Valley	4	\$2.50	4	\$.67/bag
Northeast Kingdom	4 (4)	\$1.38	4	\$.50/bag
Northwest Region	4	\$2.50	4	\$1.50/bag
Rutland District	10 (5)	\$1.88	4	\$.00
Windham County	4	\$1.83	4	\$.00
Totals:	72		64	
Average price charged per bag:		\$2.13	Average price per region:	\$.29

- (1) Some prices are partially subsidized by the municipality. Additional sticker charge not included in price.
- (2) Most prices are subsidized by the site owner/operator or included in the cost of MSW disposal.
- (3) There are an 10 additional drop-off facilities with no pay per bag provision where cost is included in taxes.
- (4) There are an additional 5 drop-off facilities with no pay per bag provision where cost is included in taxes.
- (5) Prices reported from December through June, 1999.

Commercial Costs

DSM obtained results on commercial solid waste collection and disposal prices from hauling companies and generators. A total of 11 hauling companies provided some data on prices charged to commercial customers and a total of 11 commercial generators provided data on the prices they paid for solid waste management services.

Although DSM ultimately was able to get participation from 13 companies who provided commercial service in the four regions, only 11 could provide good information on commercial solid waste management costs. DSM collected cost data from these 11 businesses in order to determine average prices paid per loose cubic yard collected. DSM also surveyed the 11 businesses about the costs of recycling services. However, only 5 could provide information on

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their recycling costs. Because of the limited data reported, DSM combined data from both hauler and generators to calculate average prices paid.

In order to work with a common denominator, DSM asked haulers for prices charged for weekly collection of non-compacted MSW in different sized containers (i.e. 2 yard, 8 yard). DSM then asked generators what they paid on a monthly basis and the level of service they obtained (container size and service frequency). With this information, DSM was able to calculate a price per loose cubic yard collected. Table 3 shows these average prices per region. DSM attempted to also obtain prices charged per compacted cubic yard collected but only a few haulers could provide accurate information on average prices charged for compacted waste.

It should be noted that there is substantial variation in commercial prices depending on location, type of container leased, use of compactor versus uncompacted waste collection, type of waste, proximity to other generators, length of service, and the negotiating skills of each company. For this reason, these prices should be viewed as a rough approximation only.

Table 3

COMMERCIAL CURBSIDE COLLECTION PRICES SUMMARY (1999) ¹

Region	Average MSW Prices Charged			Average Recycling Prices ²			
	Per Loose Cubic Yard	Container Lease	Price Range Reported	Glass, tin, plastic	Unit	OCC, Paper	Unit
Chittenden County	\$10.07	Included	\$8.88 - \$11.26	5.93	65 gal.	14.09	Cu. Yd.
Bennington County	\$ 9.80	Included	\$7.78 - \$16.67				
Northeast Kingdom	\$ 7.39	Included	\$2.33 - \$10.47				
Upper Valley	11.45	Included	\$7.67 - \$15.24				

Average Price: \$ 9.68 Per Loose Cubic Yard Collected

Average Price: \$ 110.61 Per Ton when loose cubic yard price is converted to tons at average density of 175 lbs/cubic yard³

Example: \$1,998 Annual cost to business for weekly collection of 4 cubic yard container.

- (1) Average price quoted for solid waste services in November, 1998 - January, 1999 and based on limited data. (See accompanying report text.)
- (2) Not enough information available on recycling costs to report data.
- (3) The average density of commercial waste placed in containers by the businesses accounting for the empty space in the leased container.
- (4) Prices data available on compacted waste were limited and averaged \$22.22 per compacted cubic yard.

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Construction and Demolition (C&D) Waste Costs

As part of the solid hauling company survey, DSM requested information on the price of C&D waste collection and disposal. DSM obtained pricing from a total of 11 haulers, however three of these eleven did not have regular container leasing and collection services and were only able to provide hourly pull rates and per ton costs. As a result of the limited data, C&D collection and disposal prices are reported on a statewide basis only, based on the eight haulers that provided pricing information. These results are shown below in Table 4.

Table 4

C&D COLLECTION AND DISPOSAL PRICES SUMMARY

Curbside Collection Service	Average Price	Unit
C&D Waste Collection and Disposal (1)	\$ 12.75	Cubic yard
Example: Total collection and disposal price for 30 yard roll-off with 4.5 tons of mixed C&D.	\$382.44	30 yard roll-off
C&D Container Pull (Collection cost only) (1)	\$ 91.67	Per pull
C&D Waste Disposal Only	\$ 79.39	Per Ton
Example: Total collection and disposal price for 30 yard roll-off with 4.5 tons of mixed C&D.	\$448.93	30 yard roll-off
Drop-off/Transfer Stations Accepting C&D		
Average Tip Fee	\$ 70.07	Per Ton

(1) Includes container lease for limited time period.

Other District Solid Waste Management Services

During the District survey, DSM obtained information on the amount and use of Solid Waste Management District (District) solid waste surcharges. The surcharge is applied to each ton of waste disposed that was generated in any District member municipality and is typically used to pay for any solid waste management services that are not billed directly to the public. This includes waste prevention, reuse and recycling programs, special waste collections, and unregulated hazardous waste (UHW) management services such as UHW collections and permanent programs. Surcharges also cover the cost of District management and administration. In some Districts revenues are raised through both the surcharge and through assessments on the member town's population.

Table 5 outlines the surcharge amount in each District as reported by the Districts for 1997. The variation in District surcharges collected contributes to regional differences in both

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the cost and level of solid waste management services available in each region. The variation in population in each District also contribution to the surcharge rate,

Table 5

VERMONT SOLID WASTE MANAGEMENT DISTRICT SURCHARGES⁽¹⁾
Surcharges Applied in Calender Year 1997

District	Number of Towns	Estimated Population	Annual Tons Surcharged	Tons Per Capita	Surcharge or Assessment Per Ton Disposed	Total Surcharges/ Assessments Collected
Addison County	48	32,000	13,000	0.41	\$29.54	\$ 384,020
Central Vermont	22	58,680	28,700	0.49	\$12.00	\$ 344,400
Chittenden	17	140,000	99,000	0.71	\$17.61	\$1,743,390
Greater Upper Valley	10	16,806	10,000	0.60	\$15.00	\$ 150,000
Lamoille	12	22,000	10,933	0.50	\$17.00	\$ 185,861
Northeast Kingdom	26	20,574	7,500	0.36	\$14.12	\$ 105,900
Northwest	12	23,000	13,500	0.59	\$15.00	\$ 202,500
Rutland	16	40,000	29,500	0.74	\$12.97	\$ 382,615
Windham	15	31,340	NA	NA	\$22.21	\$ 696,061
Totals:	178	384,400	212,133			\$4,194,747

Average Surcharge: \$17.27

(1) This table is presented to show the impact of district surcharges on solid waste disposal costs and does not represent that the types and level of related solid waste management services are the same in each region.

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ESTIMATED TOTAL SOLID WASTE COLLECTION AND DISPOSAL COSTS

The information provided by the residential and commercial price survey provide good baseline price data to enable a comparison of 1998 prices, statewide and by region, to prices in future study years. This was the primary intent of this prices

However the VT DEC has requested that DSM also estimate total solid waste collection and disposal costs for 1999 for planning purposes. DSM has made these estimates for residential and commercial costs based on a number of assumptions and data limitations. Because of these many assumptions and limitations, which are detailed below, the actual cost estimates provided in both Table 6 and Table 7 should be viewed as accurate to within a minimum of 20% plus or minus the total figure shown. Despite this limitation, these total cost estimates do provide a rough, order of magnitude, estimate of total costs to Vermont residents and businesses.

Total Residential Costs

Table 6 shows the estimated annual solid waste collection and disposal costs for the residential sector. The assumptions and data limitations for Table 6 include:

- The percentage of residents using curbside versus drop-off services was not measured however VT DEC obtained estimates from hauling companies that approximately 40% of the population was using curbside collection services. This leaves the other 60% using drop-off locations to dispose of their waste.
- Residential waste generation and disposal by household or by capita in Vermont has not been analyzed. For the purposes of this cost estimate, DSM assumed that households dispose 1692 lbs per year (.846 tons) of waste, on average, which is based on refuse disposal figures from 77 towns in Massachusetts and DSM's best professional judgement.
- Residential drop-off waste disposal costs assume that the average bag of waste disposed weighs 23.5 lbs (estimate provided by the Central Vermont Solid Waste District) and therefore residents dispose an average of 72 bags per year. This equates to an annual cost of \$153 per household based on the average price in Vermont of \$2.12 per bag of MSW disposed at drop-off centers.
- Some households (i.e. Burlington and Brattleboro) are on municipal-wide contracted MSW collection service provided by a private hauling company under contract to the municipality. In these cases, the average cost per household is likely to be significantly lower because of the inherent efficiencies in servicing more households per street or route. These variations in costs have not been averaged into the total costs shown for curbside service in Table 6.

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The costs of recycling and other special waste management services, such as the collection and management or disposal of bulky waste, tires, UHW and other hard to handle wastes, have not been included in these total cost estimates. While the surcharges on waste disposal help to pay for some of these services and are included in prices charged for MSW, the total costs of these services are also spread amongst other fees including property taxes, assessments and direct management and disposal charges to residents and businesses. (A discussion of the prices charged and total costs of recycling follows after Table 6.)

Table 6

**ESTIMATED ANNUAL COSTS FOR RESIDENTIAL SOLID WASTE COLLECTION
AND DISPOSAL IN VERMONT (1998 DATA)**

Type of Service	Annual Costs Per Household (1)	Number of Households (2) (3)	Total Estimated Annual Cost	Annual Tons Per Household (4)	Estimated Annual Tons
Curbside MSW Collection	\$285	95,461	\$27,214,556	0.846	80,760
Drop-off	\$153	143,192	\$21,959,894	0.846	121,140
Totals:	NA	238,653		NA	201,900

Total Estimated Annual Costs: (5) \$49 Million

- 1) Drop-off costs assume that 72 bags are disposed per household per year at 24 lbs per bag or 1692 lbs/household/year and do not include costs of transportation to the drop-off location.
- 2) Total number of year round housing units in 1996, VT Department of Health.
- 3) Assumption that 40% population uses curbside service and 60% uses drop-off centers based on VT DEC conversations with hauling companies and not compiled data.
- 4) Assumes that curbside and drop-off waste disposal quantities per household are the same.
- 5) Estimated costs are rounded to the nearest million to reflect the uncertainty associated with this estimate and the many inherent assumptions used to derive this estimate. These estimated costs do not include recycling or other special waste management services.

Total Recycling Costs

As stated above, the total annual residential costs shown above do not include the costs of recycling services. The survey indicated that the average prices charged for residential recycling services range from \$5 per month for those households who have curbside service to .29 per bag/box for those who drop-off material. However, it is impossible to estimate total residential recycling costs for the following reasons.

First, the number of residents using curbside and drop-off *recycling* services are difficult to measure. While some of the larger towns and cities, such as Brattleboro and Burlington, offer

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municipal wide curbside recycling collection, the majority of towns have curbside recycling available only through private hauling companies. The number of households contracting directly with private hauling companies has not been surveyed.

Second, the quantities recycled by residents versus businesses are also difficult, if not impossible, to measure on a statewide basis. While data on total tons recycled are available by processing facility, there is no way to break out commercial from residential quantities.

Finally, recycling costs are often subsidized by solid waste collection and disposal costs, or by property or other taxes. While DSM does have data on the amount of MSW surcharges applied to recycling services in each region and the average prices charged to residents, additional costs for recycling collection and processing are hidden in other solid waste management costs and in municipal and state taxes and are difficult to break out.

Total Commercial Costs

Table 7 shows the estimated annual solid waste collection and disposal costs for the commercial sector. The assumptions and data limitations for Table 7 include:

- Because no Vermont data are available on commercial waste disposal rates, annual commercial waste disposed has been estimated by subtracting estimated annual residential waste disposal from total solid waste disposal in calendar year 1997, as reported by DEC the last year in which data was compiled.
- Similar to the residential sector, no breakdown is available on the percent of commercial waste disposed curbside versus drop-off. In addition, no breakdown is available on the amount of commercial waste that is collected for disposal in a compacting unit versus loose (each collection method carries a different price). Therefore DSM made rough estimates based on the fact that Vermont has a large number of small businesses (and high percentage of employment in small businesses). With this type of employment, it has been assumed that the commercial sector is using drop-off facilities and paying on a per bag basis for as much as 35% of commercial waste and that perhaps only 20% of commercial waste is collected in compacting roll-off containers at the place of business. Finally, it has been assumed that the remaining 45% of commercial waste is collected loose in leased containers.
- Since prices for commercial waste disposal are quoted on a per cubic yard basis, and are based on the size of the container that is leased to the business (i.e. 2, 8, 16 cubic yards), the average density of commercial waste in the leased container when it is picked up must be approximated in order to estimate costs from commercial tons disposed. For example, a business may pay \$160 per month for weekly collection of a four cubic yard container (or \$10 per yard) even though the container is typically

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75% full. DSM assumed that commercial curbside waste collected loose averaged 175 lbs/cubic yard container paid for and waste collected in a compacting unit averaged 500 lbs/cubic yard container paid for to account for the fact that the container may not always be full when it is emptied or pulled.

Finally, DSM obtained limited price data on compacted commercial waste. Based on prices charged by three haulers, the average price per cubic yard was \$22.22. This figure was used to help estimate total commercial waste costs.

Table 7

**ESTIMATED ANNUAL COSTS FOR COMMERCIAL SOLID WASTE COLLECTION
AND DISPOSAL IN VERMONT (1998 DATA)**

Type of Service	Estimated % Commercial Waste	Estimated Tons Disposed (1) (2)	Estimated Price per Ton		Estimated Total Annual Costs
Curbside Collection (loose)	45%	67,062	\$111	(3)	\$7,443,877
Curbside Collection (compacted)	20%	29,805	\$89	(4)	\$2,652,673
Drop-off (in bags)	35%	52,159	\$180	(5)	\$9,410,869
Total:	100%	152,160	Total Costs:		\$19 Million

(1) Total commercial waste disposed is derived from subtracting estimated residential waste disposed (Table 6) from total MSW disposed in 1997, which was 350,927 tons.

(2) The % of commercial waste disposed via curbside service compacted, curbside service loose and drop-off was not measured. Assumptions are presented for cost estimating purposes only.

(3) Loose commercial waste is assumed to average 175 lbs/cubic yard when collected at the commercial site's dumpster to account for less than full loads.

(4) Compacted commercial waste is assumed to average 500 lbs/cubic yard at the commercial site's dumpster to account for less than full loads.

(5) Drop-off waste price per ton is based on an average of 23.5 lbs per bag disposed at a cost of \$2.12 per bag. Does not include transport cost to drop-off location.

(6) Total estimated costs are rounded to the nearest million and do not include recycling or other special waste management services.

Construction & Demolition Waste Costs

DSM did not estimate the total cost of C&D waste collection and disposal for two main reasons. First, no estimates are available on the quantities of C&D collected by private hauling companies vs delivered directly to transfer stations and disposal sites by the contractor in smaller trucks. In addition, the transportation cost to the contractor to deliver C&D waste to the transfer

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station or disposal site should be included in this estimate and varies greatly depending on the distance and availability of C&D transfer/disposal sites to the job site.

Second, private hauling companies typically charge for C&D waste collection and disposal both by cubic yard and by ton. Therefore the average density of C&D waste is critical to estimate total collection and disposal costs based on the 1997 data that 56,338 tons of C&D waste were disposed by Vermont businesses and residents in 1997.