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2020 Solid Waste Data Update

October 2022

Goals and Methodology Summary

MassDEP's current waste reduction goal in the *2030 Solid Waste Master Plan* is to reduce disposal by 1.7 million tons from a 2018 baseline of 5.7 million tons to 4.0 million tons by 2030, a 30 percent reduction in tons disposed. The 2030 Solid Waste Master Plan also includes a longer term goal to reduce disposal by 5.1 million tons, by 2050, a 90 percent reduction. Table 1 summarizes the methodology for the disposal reduction calculation in future years.

Table 1: Methodology Summary

		Equation
Disposal Tonnage	=	In State Disposal (Landfill & Municipal Waste Combustor) + Export for Disposal – Import for Disposal
Disposal Tonnage Reduction	=	2018 Disposal Tons – Current Year (2020) Disposal Tons
percent Disposal Reduction	=	$\frac{\text{2018 Disposal Tons – Current Year (2020) Disposal Tons}}{\text{2018 Disposal Tons}}$

Progress in Meeting Current Disposal Reduction Milestone

Total disposal in 2020 was 5,920,000 tons, an increase of 260,000 tons, or 4.4 percent, from 2018. MassDEP does not have specific causal data available to explain this increase. While the impacts of COVID-19 on waste generation and disposal have not been fully assessed, qualitative information about waste disposal during the pandemic suggests several factors that could increase waste generation, including changes in consumption patterns, increased cleanouts, renovation and construction projects, and disruptions to business and institutional operations, resulting in increased waste.

Solid Waste Management Overview

Table 2 highlights how solid waste disposal changed from 2019 to 2020, measured in tonnage and percent change. From 2019 to 2020, total disposal increased by 410,000 tons, or 7 percent. Of the total waste that required disposal, 3,700,000 tons were disposed in-state, of which 660,000 tons were landfilled and 3,040,000 tons were combusted. Total in-state disposal decreased by 4 percent, or 170,000 tons, from 2019 to 2020. Massachusetts collectively exported 2,470,000 tons for disposal and imported 250,000 tons, and thus was a net exporter of about 2,220,000 tons of waste requiring disposal. This was an increase of 580,000 tons, or 35 percent, from 2019 to 2020. Of the net export, 800,000 tons was Municipal Solid Waste (MSW) and 1,420,000 tons was non-MSW. See Table 6 for a more detailed picture of disposal import and export data by state.

Table 2 Solid Waste Tonnage and Percent Change Summary: 2019 - 2020

	2019	2020	Tons Change	% Change
Disposal (Incl. Net Exports)	**5,510,000**	**5,920,000**	**410,000**	**7.4%**
In-State Disposal	**3,860,000**	**3,700,000**	**(160,000)**	**-4.1%**
Landfill	**880,000**	**660,000**	**(220,000)**	**-25.0%**
MSW	820,000	570,000	**(250,000)**	**-30.5%**
C&D	-	-	-	
Other	60,000	90,000	**30,000**	**50.0%**
Combustion	**2,990,000**	**3,040,000**	**50,000**	**1.7%**
MSW	2,970,000	3,020,000	**50,000**	**1.7%**
Non-MSW	10,000	20,000	**10,000**	**100.0%**
Net Exports	**1,640,000**	**2,220,000**	**580,000**	**35.4%**
Exports	1,970,000	2,470,000	**500,000**	**25.4%**
MSW	820,000	1,040,000	**220,000**	**26.8%**
Non-MSW	1,140,000	1,430,000	**290,000**	**25.4%**
Imports	330,000	250,000	**(80,000)**	**-24.2%**
MSW	310,000	240,000	**(70,000)**	**-22.6%**
Non-MSW	20,000	10,000	**(10,000)**	**-50.0%**

Note: Percent Change is calculated based on the rounded amounts in this table.

Percentages may not add exactly to 100 percent due to rounding.

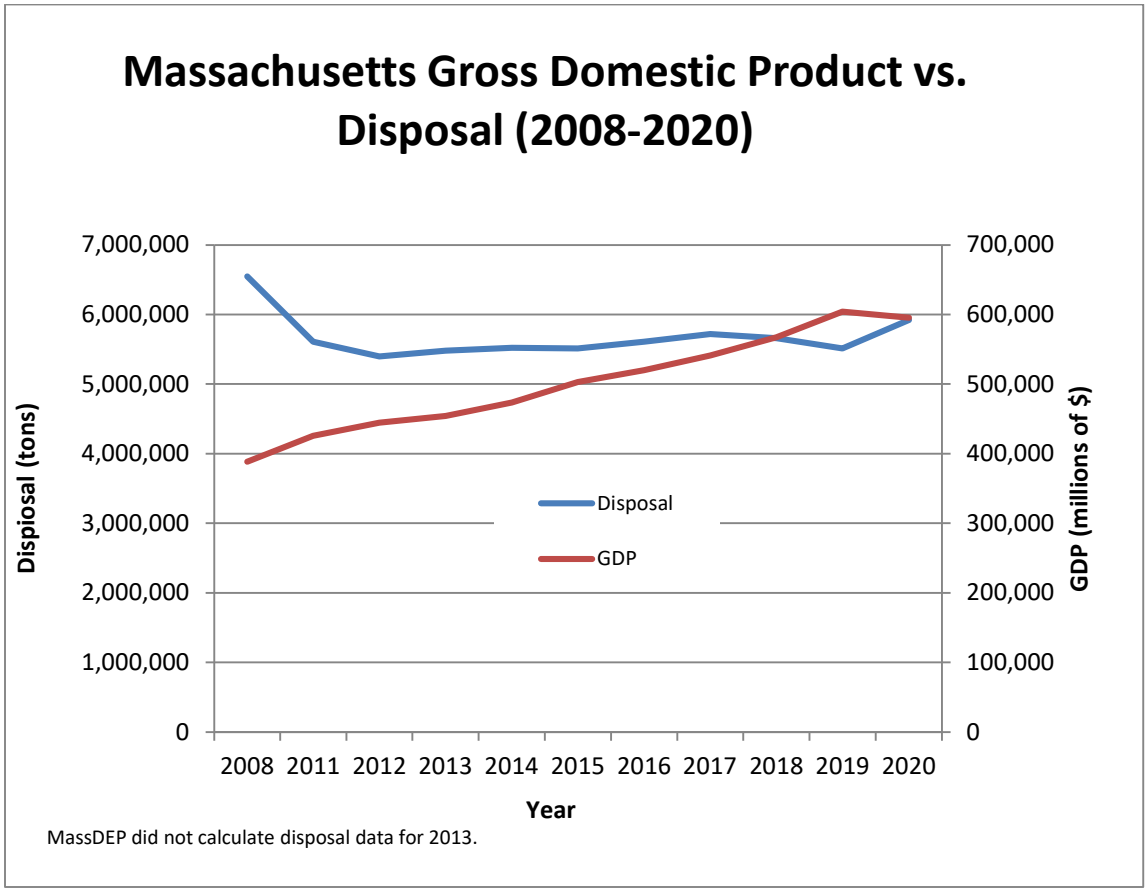
Table 3 presents solid waste disposal data from 2008-2020, excluding 2013, when MassDEP did not publish statewide solid waste data. Tables 3 and 4 also show the Master Plan baseline year of 2018 for comparison purposes. Table 4 shows how municipal solid waste (MSW) and non-MSW disposal changed from 2010 through 2020. MSW disposal increased slightly by 80,000 tons, or 2 percent, from 2019-2020. However, non-MSW disposal increased by 330,000 tons, a 28 percent increase compared with 2019.

Since the Master Plan baseline year of 2018, MSW disposal dropped slightly by 3 percent, while non-MSW disposal increased by about 1/3, or 34 percent. Total disposal increased by 5 percent from 2018 to 2020.

Table 3 Solid Waste Disposal 2008-2020 (all data in tons)													
			2008	**2010**	**2011**	**2012**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**
Disposal			**6,550,000**	**5,430,000**	**5,610,000**	**5,400,000**	**5,520,000**	**5,510,000**	**5,610,000**	**5,720,000**	**5,660,000**	**5,510,000**	**5,920,000**
	Landfill		**1,740,000**	**1,560,000**	**1,650,000**	**1,700,000**	**1,560,000**	**1,380,000**	1,330,000	1,310,000	1,270,000	880,000	660,000
		MSW	1,560,000	1,280,000	1,390,000	1,380,000	1,380,000	1,260,000	1,170,000	1,140,000	1,190,000	820,000	570,000
		C&D	130,000	120,000	70,000	100,000	50,000	50,000	70,000	70,000	0	0	-
		Other	50,000	170,000	190,000	220,000	130,000	70,000	90,000	110,000	70,000	60,000	90,000
	Combustion		**3,230,000**	**3,180,000**	**3,260,000**	**3,210,000**	**3,270,000**	**3,250,000**	**3,190,000**	**3,180,000**	**3,200,000**	**2,990,000**	**3,040,000**
		MSW	3,210,000	3,170,000	3,250,000	3,210,000	3,260,000	3,250,000	3,170,000	3,140,000	3,180,000	2,970,000	3,020,000
		Non-MSW	10,000	10,000	10,000	0	0	10,000	20,000	30,000	20,000	10,000	20,000
	Net Exports		**1,580,000**	**690,000**	**700,000**	**490,000**	**690,000**	**880,000**	**1,090,000**	**1,230,000**	**1,190,000**	**1,640,000**	**2,220,000**
		Exports	1,850,000	1,270,000	1,340,000	1,050,000	1,190,000	1,380,000	1,560,000	1,790,000	1,820,000	1,970,000	2,470,000
		MSW	840,000	690,000	630,000	510,000	460,000	620,000	680,000	820,000	750,000	820,000	1,040,000
		Non-MSW	1,010,000	580,000	710,000	540,000	730,000	760,000	880,000	970,000	1,070,000	1,140,000	1,430,000
		Imports	270,000	580,000	640,000	560,000	490,000	500,000	460,000	570,000	630,000	330,000	250,000
		MSW	240,000	440,000	390,000	420,000	460,000	460,000	420,000	540,000	610,000	310,000	240,000
		Non-MSW	30,000	140,000	240,000	150,000	40,000	50,000	40,000	20,000	20,000	20,000	10,000

Table 4 MSW and Non-MSW Disposal 2010-2020													
	2008	2010	2011	2012	2014	2015	2016	2017	2018	2019	2020	% change vs 2018	% change vs 2019
Total Disposal (Tons)	6,540,000	5,440,000	5,620,000	5,390,000	5,510,000	5,510,000	5,620,000	5,720,000	5,660,000	5,510,000	5,920,000	4%	7%
MSW	5,370,000	4,700,000	4,880,000	4,680,000	4,640,000	4,670,000	4,600,000	4,560,000	4,510,000	4,310,000	4,390,000	-3%	2%
Non-MSW	1,170,000	740,000	740,000	710,000	870,000	840,000	1,020,000	1,160,000	1,140,000	1,200,000	1,530,000	34%	28%

Comparing Disposal Trends to State Economic Trends



The chart above gives a visual representation of Massachusetts waste disposal totals from 2008-2020 in the context of the state's Gross Domestic Product (GDP) over the same time frame, measured in millions of current dollars. While GDP has grown by 53 percent from 2008-2020, disposal decreased by 10 percent during that same period. From 2019 to 2020, GDP decreased by1 percent and disposal increased by 7 percent. This is an unusual trend since waste generation and disposal usually decrease when economic growth decreases. Qualitative information about waste disposal during the pandemic suggests a number of factors that could increase waste generation, including changes in consumption patterns, increased cleanouts, renovation and construction projects, and disruptions to business and institutional operations.

Table 5 below shows the change in GDP and disposal tons from 2010-2020. Note that the 2013 disposal data in Table 5 below is estimated based on averaging 2012 and 2014 disposal.

Table 5: Gross domestic product (GDP) by state (millions of current dollars)

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	% change vs. 2008	% change vs. 2019
GDP (millions of dollars)	409,763	425,593	444,330	454,346	473,454	502,678	519,741	540,949	567,255	604,208	595,183	53%	-1%
Total Disposal (tons)	5,430,000	5,610,000	5,400,000	5,480,000	5,520,000	5,510,000	5,610,000	5,720,000	5,660,000	5,510,000	5,920,000	-10%	7%
Accessed from the BEA website - https://bea.gov/regional/index.htm - December 2021													

Disposal Import/Export Data for 2019-2020

Table 6 shows MSW and non-MSW exported and imported for disposal by state. The export and import data for Massachusetts was collected from annual facility reports (AFR) submitted to MassDEP and from direct correspondence with other states. In some instances, the export data provided in the AFR differed from that reported from other states. In order to calculate the most inclusive estimate of export, the higher number from the two sources was used. For example, if an AFR reported that Massachusetts sent Connecticut 10,000 tons of MSW, and Connecticut reported receiving 16,326 tons of MSW from Massachusetts, 16,326 tons of export was used. This table shows the overall increase in exports, particularly for non-MSW, as well as the trend of more waste travelling farther via rail transfer.

Table 6 Disposal Import/Export Data by State (tons): 2019-2020					
MSW Exported			**Non-MSW Exported**		
State	**2019**	**2020**	**State**	**2019**	**2020**
AL	959	23,707	**CT**	748	0
CT	12,200	16,326	**ME**	209	0
ME	27,652	6,520	**NH**	316,587	310,291
MI	86	50,962	**NY**	80,288	130,346
NH	382,764	398,953	**OH**	637,121	971,996
NY	287,255	346,951	**VA**	13,097	14,784
OH	38,038	59,633	**VT**	95,794	0
SC	51,345	102,007	**MI**	0	282
VA	21,935	37,386			
GA		664			
TOTAL	**822,234**	**1,043,109**	**TOTAL**	**1,143,844**	**1,427,699**
MSW Imported			**Non-MSW Imported**		
State	**2019**	**2020**	**State**	**2019**	**2020**
CT	44,851	31,782	**CT**	5,033	3,900
ME	6	2,045	**ME**	1	30
NH	89,231	85,697	**NH**	14,992	6,834
NY	6,564	2,267	**RI**	628	1,391
RI	163,720	110,720	**VT**	16	19
VT	2,620	3,257			
TOTAL	**306,992**	**235,768**	**TOTAL**	**20,670**	**12,174**

Management of Ash from Municipal Waste Combustors

Table 7 shows the amount of waste combustion ash generated by individual municipal waste combustors (MWC) and where it was disposed, as well as the amount of metal recovered from each. Table 7A shows the Massachusetts landfills accepting MWC ash and their anticipated lifespan according to current permit conditions.

Table 7: Municipal Waste Combustor Ash Management (2020)

Combustion Facility	Ash Disposed (tons)	Disposal Facilities	Pre-Combustion Metal Recovery (tons)	Post-Combustion Metal Recovery (tons)
Haverhill	158,877	Ward Hill, Haverhill	33	15,673
Millbury	125,075	Shrewsbury	74.38	9,711
North Andover	100,252	Shrewsbury		7,280
Pittsfield	2,534	Bondi's Island, Springfield		1,785
Saugus	109,601	Saugus, Shrewsbury		6,075
SEMASS	175,855	Bourne, Carver/Marion/Wareham	22,473	10,463
Springfield	34,487	Bondi's Island, Springfield		3,978
Totals	**706,681**		**22,580.38**	**54,965**

Table 7A: Ash Landfills Anticipated Capacity

Landfill	Projected Closure Year
Bondi’s Island, Springfield	2030
Carver Marion Wareham	Closed 2021
Peabody	2025
Ward Hill Haverhill	2022
Wheelabrator Saugus	2026
Wheelabrator Shrewsbury	2028

Rail Transfer Capacity

Table 8 illustrates the growing trend of increased rail disposal capacity in Massachusetts, including the current permit status, tons/day, tons/year, and types of waste accepted. In addition to the capacity below, MassDEP expects several other new or expanded rail transfer operations to be permitted within the next several years.

Table 8: Summary of Rail Transfer Facilities						
Facility Name	**Region**	**Town**	**Current Status**	**Tons/Day**	**Tons/Year**	**Waste**
Champion City Recovery	SERO	Brockton	Operating	1,000	286,000	C&D
Devens Recycling Center	CERO	Devens	Operating	1,500	390,000	MSW, C&D
Lenox Valley Waste Transfer Facility	WERO	Lenoxdale	Operating	250	67,250	MSW, C&D
McNamara Transfer Station	WERO	Springfield	Operating	699	181,740	MSW, C&D
New England Waste Disposal	SERO	Taunton	Operating	1,650	495,000	MSW, C&D
Tri-County Recycling	WERO	Ware	Operating	750	195,000	C&D
Trojan Recycling	SERO	Brockton	Operating	500	140,400	MSW, C&D
Upper Cape Regional Transfer Station	SERO	Falmouth	Operating	286	74,360	MSW, C&D
United Materials Management of Leominster	CERO	Leominster	Operating	1,000	300,000	MSW, C&D
Western Recycling	WERO	Wilbraham	Operating	645	312,000	MSW, C&D
Yarmouth-Barnstable Regional Rail Transfer Station	SERO	Yarmouth	Operating	530	137,800	MSW
Casella	WERO	Holyoke	Permitted	1,250	382,500	MSW, C&D
Howard Transfer Station	NERO	Roxbury	Permitted	810	-	MSW-
Wood Recycling, Inc.	NERO	Peabody	Permitted	1,350	-	MSW-C&D
Parallel Products of New England	SERO	New Bedford	Seeking approval	1,500	390,000	MSW, C&D
TLA Holbrook	SERO	Holbrook	Seeking Approval	1,000	260,000	MSW
Totals				**14,720**	**3,612,050**	

Waste Management Capacity Projections

The disposal capacity projections in Table 9 reflect either actual permitted capacity, approved capacity contingent on receiving permits, or capacity based on facility contract commitments. However, some landfills may take in less than their permitted tonnage in a particular year. In these cases, capacity for a particular landfill may last beyond the date shown in these projections. In other cases, a landfill may choose to accept a different material than MSW, such as municipal waste combustor ash, so that a portion of this permitted capacity may not be available for MSW. MassDEP attempts to take these factors into account by projecting only the percent of potential landfill capacity that is actually used for MSW and C&D disposal. The combustion capacity is shown as level based on permit limits, although this actual amount managed will always be somewhat lower than these limits.

The waste management capacity projections shown in Table 10 show two scenarios:

1. Baseline Disposal Tonnage – Assumes that disposal tonnage remains at 2020 levels through 2030.
2. Reduced Disposal Tonnage – Assumes that disposal tonnage will decrease in line with achieving the proposed 2030 disposal reduction goal of 4,000,000 tons.

In table 9, the data shown for 2020 is the actual disposal data. The capacity projections shown are based on the permitted tonnage, adjusted by the percent of that tonnage that has been utilized

in recent years. In the case of the Agawam and Pittsfield combustion facilities, given the anticipated closure of the Agawam and Pittsfield combustion facilities, for purposes of these projections, MassDEP has assumed that this capacity will not be available after 2022. Under the 2030 Solid Waste Master Plan, MassDEP would then review permit applications for the same amount of replacement combustion capacity. Projected net export for 2030 ranges between 800,000 and 2.7 million tons, depending on our degree of success in meeting our waste reduction goals.

Table 9: Projected Disposal Capacity 2020-2030 (Tons Per Year)

Municipality	Permitted Capacity	End of current permitted capacity	Lifetime of LF	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Active Landfills														
Bourne	30,000	2021	**2040**	37,865	30,000	30,000	30,000	30,000	219,000	219,000	219,000	219,000	219,000	219,000
Dartmouth	115,000	2024	**2026**	98,443	115,000	115,000	115,000	115,000	115,000	115,000	0	0	0	0
Middleborough	60,000	2020	**2031**	58,569	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000
Nantucket	26,000	2029	**2029**	3,000	26,000	26,000	26,000	26,000	26,000	26,000	26,000	26,000	26,000	0
Westminster	390,000	2020	**2024**	332,907	538,200	538,200	538,200	538,200	0	0	0	0	0	0
Municipal Waste Combustors														
Agawam	131,400			106,103	131,400	131,400	-	-	-	-	-	-	-	-
Haverhill	602,250			587,741	602,250	602,250	602,250	602,250	602,250	602,250	602,250	602,250	602,250	602,250
Millbury	529,575			475,313	529,575	529,575	529,575	529,575	529,575	529,575	529,575	529,575	529,575	529,575
North Andover	547,500			425,263	547,500	547,500	547,500	547,500	547,500	547,500	547,500	547,500	547,500	547,500
Pittsfield	84,000			63,092	84,000	84,000	-	-	-	-	-	-	-	-
Rochester	1,250,000			1,007,872	1,250,000	1,250,000	1,250,000	1,250,000	1,250,000	1,250,000	1,250,000	1,250,000	1,250,000	1,250,000
Saugus	547,500			373,606	547,500	547,500	547,500	547,500	547,500	547,500	547,500	547,500	547,500	547,500
TOTAL PERMITTTED COMBUSTION CAPACITY	*3,518,225*			*3,038,990*	*3,692,225*	*3,692,225*	*3,476,825*	*3,476,825*	*3,476,825*	*3,476,825*	*3,476,825*	*3,476,825*	*3,476,825*	*3,476,825*
ADJUSTED TOTAL COMBUSTION CAPACITY				*3,038,990*	*3,120,000*	*3,120,000*	*2,937,983*	*2,937,983*	*2,937,983*	*2,937,983*	*2,937,983*	*2,937,983*	*2,937,983*	*2,937,983*
TOTAL POTENTIAL CAPACITY LF&CMBST				**3,663,400**	**3,889,200**	**3,889,200**	**3,707,183**	**3,707,183**	**3,357,983**	**3,357,983**	**3,242,983**	**3,242,983**	**3,242,983**	**3,216,983**
KEY:														
Permitted Capacity	Number without shading													
Potential Additional Cap	Number with shading													
ESTIMATED TOTAL POTENTIAL AVAILABLE CAPACITY				**3,700,321**	**3,889,200**	**3,889,200**	**3,707,183**	**3,707,183**	**3,357,983**	**3,357,983**	**3,242,983**	**3,242,983**	**3,242,983**	**3,216,983**
100% of potential for LFs and 85 % of potential for combustion														
Actual combustion varies per year, has never reached capacity														
Total Potential Landfill Capacity				661,331	769,200	769,200	769,200	769,200	420,000	420,000	305,000	305,000	305,000	279,000

2020 capacity for MWCs is actual tonnage burned minus post combustion metal recovery.
MWC disposal capacity is not a fixed tonnage amount, but rather a function of the facility's air permit and may vary slightly. Capacity projections assume Pittsfield and Springfield not available after 2022.

2020 % Landfill Capacity	100%
2015-2020 % Permitted Combustion Capacity Used	84.50%

Average total combustion (last five years):
3120000

Note: Bourne 189,000 of 219,000 tons of annual capacity dedicated to SEMASS ash disposal through 2024.

Table 10: Waste Management Capacity Projections: 2021-2030											
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Total Disposal (baseline)	5,920,000	5,920,000	5,920,000	5,920,000	5,920,000	5,920,000	5,920,000	5,920,000	5,920,000	5,920,000	5,920,000
Total Disposal (reduced)	5,920,000	5,692,080	5,472,935	5,262,227	5,059,631	4,864,835	4,677,539	4,497,454	4,324,302	4,157,816	3,997,740
Combustion Capacity	3,038,990	3,120,000	3,120,000	2,937,983	2,937,983	2,937,983	2,937,983	2,937,983	2,937,983	2,937,983	2,937,983
Potential LF Capacity	661,331	769,200	769,200	769,200	769,200	420,000	420,000	305,000	305,000	305,000	279,000
In-state Disposal Capacity	3,700,321	3,889,200	3,889,200	3,707,183	3,707,183	3,357,983	3,357,983	3,242,983	3,242,983	3,242,983	3,216,983
Net Disposal Export (baseline disposal)	2,219,679	2,030,800	2,030,800	2,212,817	2,212,817	2,562,017	2,562,017	2,677,017	2,677,017	2,677,017	2,703,017
Net Disposal Export (reduced disposal)	2,219,679	1,802,880	1,583,735	1,555,044	1,352,448	1,506,852	1,319,556	1,254,471	1,081,319	914,833	780,758
Assumptions for Annual Percent Change:											
Baseline Disposal Tonnage	0.0%										
Decreased Disposal Tonnage/year	3.85%										
2020 data shows actual figures.											

Landfill Cover Material

Table 11 shows the amount of materials that Massachusetts landfills reported using as cover material in 2020. This material is not included in the disposal data shown earlier in this report.

Table 11: Landfill Cover Material Use in 2020	
Material Type	**Tons**
Contaminated Soil	569,896
Auto Shredder Residue/Auto Fluff	70,896
Bottom Ash	67,924
Soil/Sand	41,298
Cullet (crushed glass)	28,711
Sludge Ash	18,933
Street Sweepings	17,225
Compost	9,750
C&D Fines	8,332
Wood Chips	5,427
Foundry Sand	1,099
Other	636
C&D Residuals	496
Total	**840,623**