

## 2.0 Waste Stream Assessment

### 2.1 Introduction

This section provides an assessment of the Hawai`i County waste stream including background information about population and employment, historical and forecast waste generation, recycling, and disposal, and information about waste composition. The waste stream projections provided in this section include the effects of recommended reduction, re-use, and recycling programs outlined in this IRSWMP Update.

### 2.2 Population and Employment

This section provides historical and forecast information about population and employment. These variables, along with other factors such as increases in tourism and construction activity, are factors that contribute to increase waste generation within Hawai`i County.

Historical resident and de facto population for Hawai`i County is shown in Exhibit 2-1. The de facto population is a measure used by the State of Hawaii to account for the effects of tourism<sup>1</sup>. As shown, the population of Hawai`i County was 173,057 in 2007. The County population increased at an average annual rate of 2.7 percent during the 1980s, and has increased at an average annual rate of 2.2 percent since that time. The de facto population has increased somewhat more rapidly than the resident population.

Exhibit 2-2 provides a forecast of Hawai`i County resident population growth through the year 2030 in each of the County's nine council districts, and summaries for West Hawai`i and East Hawai`i. As shown, future population growth is projected to be slower than in the County's recent past, with more rapid growth expected in West Hawai`i than in East Hawai`i.

EXHIBIT 2-1  
Historical Population, Hawai`i County

Year	Persons		Average Annual Growth		Ratio De Facto/ Resident
	Resident	De Facto	Resident	De Facto	
1980	92,053	98,588			1.07
1990	120,317	133,202	2.7%	3.1%	1.11
2000	148,677	167,063	2.1%	2.3%	1.12
2006	169,419	191,733	2.2%	2.3%	1.13
2007	173,057	not available	-	-	-

Source: Hawai`i Department of Business, Economic Development, and Tourism. 2008. Hawai`i County Data Book, Table 1.1 last modified 4/16/08. Accessed at: [http://www.co.Hawai`i.hi.us/databook\\_current/section01.htm](http://www.co.Hawai`i.hi.us/databook_current/section01.htm)

<sup>1</sup> De facto population is defined as the number of persons physically present in an area, regardless of military status or usual place of residence. It includes visitors present but excludes residents temporarily absent.

EXHIBIT 2-2  
Resident Population Forecast by District, Hawai'i County

District	2000	2005	2010	2015	2020	2025	2030
<b>Population</b>							
Puna	31,458	37,054	42,546	48,361	54,322	57,827	61,452
South Hilo	47,572	47,168	47,427	47,209	46,437	49,432	52,531
North Hilo	1,727	1,675	1,718	1,746	1,752	1,865	1,982
Hamakua	6,132	6,316	6,554	6,733	6,834	7,275	7,731
North Kohala	6,062	6,750	7,909	9,173	10,514	11,192	11,893
South Kohala	13,183	15,962	18,165	20,463	22,780	24,250	25,770
North Kona	28,655	31,056	33,988	36,826	39,427	41,971	44,602
South Kona	8,623	10,451	11,402	12,314	13,143	13,991	14,868
Ka'u	5,850	6,568	7,043	7,475	7,842	8,347	8,871
<b>Total</b>	<b>149,261</b>	<b>163,000</b>	<b>176,750</b>	<b>190,300</b>	<b>203,050</b>	<b>216,150</b>	<b>229,700</b>
West Hawai'i	56,522	64,220	71,463	78,776	85,863	91,403	97,133
East Hawai'i	92,739	98,780	105,287	111,524	117,187	124,747	132,567
<b>Annual Growth Rate</b>							
West Hawai'i		2.6%	2.2%	2.0%	1.7%	1.3%	1.2%
East Hawai'i		1.3%	1.3%	1.2%	1.0%	1.3%	1.2%

Sources: The proportion of residents in each District in each year is from the County of Hawai'i General Plan 2005 (Amended December 2006), Table 2-2. Source: Economic Assessment, PFK Hawai'i, January 2000.

Those proportions were multiplied by County total forecast total resident population in each year from Hawai'i Department of Business, Economic Development, and Tourism. 2008. Population and Economic Projections for the State of Hawai'i to 2035, DBEDT 2035 Series. Accessed at: [http://Hawai'i.gov/dbedt/info/economic/data\\_reports/2035LongRangeSeries/2035\\_Long\\_Range\\_Series\\_Report1.pdf](http://Hawai'i.gov/dbedt/info/economic/data_reports/2035LongRangeSeries/2035_Long_Range_Series_Report1.pdf)

Historical employment in Hawai'i County is shown in Exhibit 2-3. Employment has grown substantially in recent years, from 40,850 in 1980 to 81,300 in 2006, which corresponds to an average annual growth rate of 2.7 percent over that period.

Forecast employment for Hawai'i County is shown in Exhibit 2-4. Employment is forecast to increase at an annual rate of 2.3 percent between 2006 and 2010, at an annual rate of 1.8 percent between 2011 and 2015, and at an annual rate of 1.5 percent thereafter. As noted in the table, the state of Hawai'i's employment forecast is based on information from a source that differs from the historical data reported in Exhibit 2-3.

EXHIBIT 2-3  
Historical Employment, Hawai'i County

Year	Employment	Average Annual Growth
1980	40,850	
1990	55,200	3.1%
2000	65,450	1.7%
2006	81,300	3.7%
1980 - 2006		2.7%

Source: Civilian employment from County of Hawai'i Data Book Section 11: Labor Force, Employment & Earnings, Table 11.4. Accessed at: [http://www.Hawai'i-county.com/databook\\_current/Table%2011/11.4.pdf](http://www.Hawai'i-county.com/databook_current/Table%2011/11.4.pdf)

EXHIBIT 2-4  
Forecast Employment, Hawai'i County

	2005	2010	2015	2020	2025	2030
Civilian Jobs	92,400	103,400	113,100	122,000	131,700	141,600
Annual Growth Rate		2.3%	1.8%	1.5%	1.5%	1.5%

Note: This forecast is based on data from the Bureau of Economic Analysis, which differs from the historical information provided in Exhibit 2-3 which is from the Bureau of Labor Statistics (personal communication with Yang-Seon Kim, Economist, DBEDT on August 12, 2008).

Source: Hawai'i Department of Business, Economic Development, and Tourism. 2008. Population and Economic Projections for the State of Hawai'i to 2035, DBEDT 2035 Series. Available at: <http://Hawai'i.gov/dbedt/info/economic/>

## 2.3 Generation, Disposal, and Recycling

### 2.3.1 Historical

Historical generation, recycling, disposal for Hawai'i County, and the resulting diversion rates are shown in Exhibits 2-5 and 2-6. Generation is the sum of recycling and disposal. As shown, estimated fiscal year<sup>2</sup> (FY) 07-08 generation was 296,473 tons, 29.2 percent of which was recycled (86,443 tons) with the remainder (210,030 tons) going into landfills for disposal.

Since FY 00-01, both recycling and disposal in the County have increased substantially. Recycling has increased from 26,416 tons in FY 00-01 to 86,443 tons in FY 07-08, and disposal has increased from 163,825 to 210,030 over the same period. These increases correspond to average annual growth rates of 18.5 percent and 3.6 percent, respectively.

Particularly strong growth was experienced in FY 03-04 and FY 04-05, which can be attributed, in part, to the effects of storm debris. The County's estimated diversion rate has

<sup>2</sup> The County fiscal year is from July 1 to June 30.

more than doubled in the past seven years increasing from 13.9 percent in FY 00-01 to 29.2 percent in FY 07-08<sup>3</sup>.

EXHIBIT 2-5  
Historical Generation, Recycling, and Disposal and Estimated Diversion Rate, Hawai'i County

	Generation	Recycling	Disposal	Diversion Rate
<b>Tons</b>				
FY 00-01	190,241	26,416	163,825	13.9%
FY 01-02	190,764	24,139	166,625	12.7%
FY 02-03	200,300	30,991	169,309	15.5%
FY 03-04	239,217	37,375	201,842	15.6%
FY 04-05	281,855	56,422	225,433	20.0%
FY 05-06	300,121	77,734	222,387	25.9%
FY 06-07	290,865	69,117	221,748	23.8%
FY 07-08	296,473	86,443	210,030	29.2%
<b>Percent Change FY 00-01 – FY 07-08</b>				
Total	156%	327%	128%	
Average Annual	6.5%	18.5%	3.6%	

Source: Hawai'i County Department of Environmental Management.

Exhibit 2-7 reports waste generation on a per-capita basis and compares Hawai'i County's per-capita generation to that of other Hawai'i counties, a reported U.S. average, Seattle, and Vancouver, B.C. For Hawai'i counties, the data are shown using both resident and de facto population. As shown, Hawai'i County's per-capita generation is less than that of the other counties in the state, excepting Kauai's when calculated on a defacto basis.

The estimates shown in Exhibit 2-7 are much higher than the 4.6 pound-per-capita-per-day U.S. average reported by the U.S. Environmental Protection Agency (EPA)<sup>4</sup>. This may be the result of the EPA using a different methodology for calculating generation, and because the EPA estimate excludes construction and demolition debris, which is included in the Hawai'i data.

<sup>3</sup> Quantifying recycling is challenging because of the number of entities involved and the corresponding lack of a centralized location for data reporting. While the County exerts considerable effort obtaining data from the many recyclers in the County to compile recycled quantity data, it is likely that some materials are recycled that are not included in the data reported in Exhibit 2-5. Thus, the County's actual recycling rate may be higher than what is shown.

<sup>4</sup> United States Environmental Protection Agency, 2008. *Municipal Solid Waste in the United States, 2006. Facts and Figures*. Accessed at: <http://www.epa.gov/msw/facts-text.htm>

EXHIBIT 2-6  
Historical Generation, Recycling, and Disposal, Hawai'i County

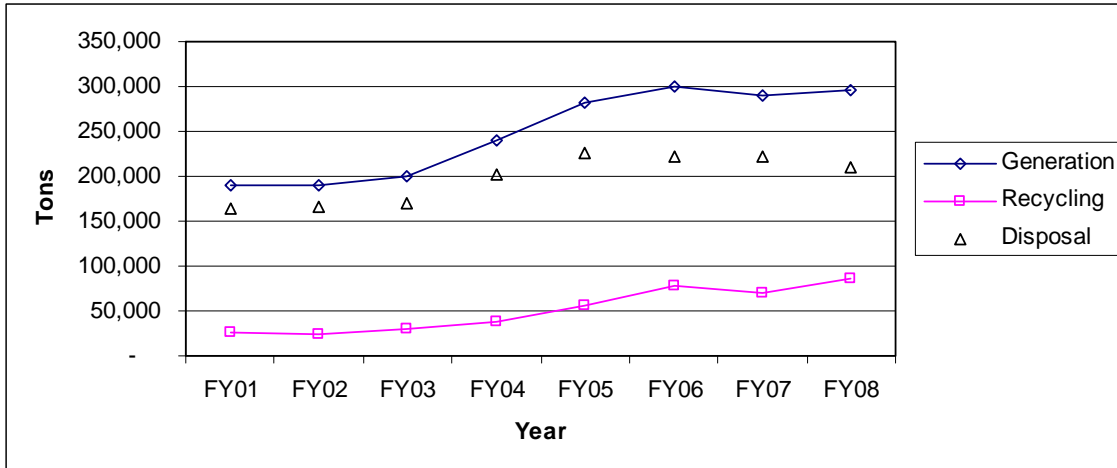


EXHIBIT 2-7  
Per-capita Generation Comparison

Jurisdiction	Pounds/Capita/Day
<b>Resident Population Basis</b>	
Hawai'i County FY 07-08 <sup>a</sup>	9.4
Honolulu County, 2004 <sup>b</sup>	9.5
Maui County FY 05-06 <sup>c</sup>	14.2
Kaua'i County 2005 <sup>b</sup>	10.0
Seattle, 2006 <sup>d</sup>	9.8
Metro Vancouver, B.C. <sup>e</sup>	8.6
<b>De Facto Population Basis</b>	
Hawai'i County FY 07-08 <sup>a</sup>	8.3
Honolulu County, 2004 <sup>b</sup>	8.7
Maui County FY 05-06 <sup>c</sup>	10.8
Kaua'i County 2005 <sup>b</sup>	7.4

<sup>a</sup>Exhibits 2-1 and 2-5.

<sup>b</sup>Draft IRSWMP, Kaua'i County, Section 2 and Hawai'i data book.

<sup>c</sup>Draft IRSWMP, Maui County, Table 2-4, and Hawai'i data book.

<sup>d</sup>Calculated based on information in City of Seattle. 2008. *Recycling Rate 2007 Update*, and population from the Greater Seattle Data sheet. Assumes 10% construction and demolition debris recycling rate.

<sup>e</sup>Calculated based on information in Metro Vancouver. 2005. *GVRD Solid Waste Management 2004 Annual Report*. Includes demolition, land clearing, and construction waste.

Exhibit 2-8 provides a breakdown of total waste discarded at County recycling and transfer stations and total commercial waste delivered directly to landfills between 2001 and 2008 for West and East Hawai'i. As shown, disposal at recycling and transfer stations has grown slightly faster in East Hawai'i than in West Hawai'i during this period. Commercial disposal growth in West Hawai'i has been particularly strong, increasing 53 percent in 7 years for an average annual rate of 6.3 percent. Commercial waste comprises approximately 61 percent, while waste from recycling and transfer stations comprise approximately 39 percent of the total disposed waste countywide. Commercial waste accounts for a larger share of the total in West Hawai'i (68 percent) than in East Hawai'i (51 percent).

## EXHIBIT 2-8

Historical Disposal at Recycling and Transfer Stations and Commercial Customers for West and East Hawai'i

	West Hawai'i		East Hawai'i		Total County	
	Recycling/ Transfer Stations	Commercial	Recycling/ Transfer Stations	Commercial	Recycling/ Transfer Stations	Commercial
<b>Tons</b>						
FY 00-01	35,757	56,745	33,302	38,021	69,059	94,766
FY 01-02	37,721	58,593	34,278	36,033	71,999	94,626
FY 02-03	37,789	63,582	32,765	35,173	70,554	98,755
FY 03-04	44,699	81,759	37,756	37,628	82,455	119,387
FY 04-05	47,072	95,007	40,456	42,898	87,528	137,905
FY 05-06	45,230	93,501	40,400	43,257	85,629	136,758
FY 06-07	44,131	94,208	40,586	42,823	84,717	137,031
FY 07-08	41,655	86,888	39,575	41,912	81,230	128,800
<b>Percent Change FY 00-01 – FY 07-08</b>						
Total	16.0%	53.0%	19.0%	10.0%	18.0%	36.0%
Average Annual	2.2%	6.3%	2.5%	1.4%	2.3%	4.5%
<b>Percent of Total</b>	<b>32%</b>	<b>68%</b>	<b>49%</b>	<b>51%</b>	<b>39%</b>	<b>61%</b>

Commercial includes waste delivered directly to landfills by commercial haulers, and some businesses, institutions, and residents.

Source: Hawai'i County Department of Environmental Management.

FY 07-08 disposal totals broken down by recycling and transfer station are shown in Exhibit 2-9. Total disposal during 2008 at recycling and transfer stations ranged from a low of 207 tons at the Miloli'i station, to a high of 14,707 tons at the Hilo station.

EXHIBIT 2-9  
FY 07-08 Disposal by Recycling and Transfer Station

<b>West Hawai'i</b>	<b>Tons</b>	<b>Percent of Subtotal</b>	<b>Percent of Total</b>
Kailua	7,860	23.3%	10.7%
Keahou	5,017	14.8%	6.8%
Ke`ei	2,025	6.0%	2.8%
Waiea	2,968	8.8%	4.0%
Miloli`i	207	0.6%	0.3%
Ka`u	3,447	10.2%	4.7%
Waimea	6,376	18.9%	8.7%
Puako	2,681	7.9%	3.7%
Kohala	4,145	12.3%	5.6%
Honoka`a	3,459	10.2%	4.7%
Pa`auilo	1,922	5.7%	2.6%
Laupahoehoe	1,547	4.6%	2.1%
Subtotal	33,795	100.0%	46.1%
<b>East Hawai'i</b>			
Hilo	14,707	37.2%	20.0%
Kea`au	7,443	18.8%	10.1%
Pahoa	5,759	14.6%	7.8%
Kalapana	1,069	2.7%	1.5%
Glenwood	2,940	7.4%	4.0%
Volcano	1,929	4.9%	2.6%
Pahala	1,304	3.3%	1.8%
Papaikou	2,563	6.5%	3.5%
Honomu	1,727	4.4%	2.4%
Other	135	0.3%	0.2%
Subtotal	39,575	100.0%	53.9%
<b>Total Recycling and Transfer Stations</b>	<b>73,370</b>		<b>100.0%</b>

Source: Hawai'i County Department of Environmental Management.

### 2.3.2 Forecast

Tons per person-employee (persons + employment) is a metric that is useful for projecting future generation because it considers factors that tend to influence both residential and commercial waste. The generation forecast was prepared by examining forecast population and employment, past generation trends, and potential changes to those trends.

Historical generation in tons, pounds per-capita per-day, tons per person-employee, population, and employment are shown in Exhibit 2-10. As shown, the overall trend over the past seven years through FY 07-08 had been for strong growth in all of these variables, including more than 4 percent annual growth in per-capita and per person-employee generation. However, the slowdown in the world economy resulted in a substantial decline in waste generation in Hawaii County during FY 08-09. During the first eight months of the fiscal year, disposal was down 17 percent from the first eight months of FY 07-08.

**EXHIBIT 2-10**  
Historical Generation Trends, Hawaii County

Year	Tons				
	Generation (tons)	Population	Employment	Pounds/capita/day	Tons/person-employee
FY 00-01	190,241	149,261	214,711	7.0	0.52
FY 01-02	190,764	150,860	218,160	6.9	0.52
FY 02-03	200,300	153,162	219,312	7.2	0.54
FY 03-04	239,217	156,320	230,370	8.4	0.62
FY 04-05	281,855	160,129	235,629	9.6	0.71
FY 05-06	300,121	164,770	243,420	10.0	0.74
FY 06-07	290,865	169,419	250,719	9.4	0.69
FY 07-08	296,473	173,057	256,207	9.4	0.69
FY 08-09 est.	254,920				
Average Annual Percent Change	6.5%	2.1%	2.6%	4.3%	4.1%

The forecasts shown in Exhibits 2-11 through 2-13 assume 0 percent growth in generation per person-employee in FY 08-09, 5 percent per year in FY 09-10 – FY 11-12 (as the economy improves from recession), and 1 percent growth thereafter. The reasons for these assumptions include:

- The severe worldwide recession has resulted in a dramatic (17 percent) decline in disposal during the first eight months of the 2009 fiscal year (compared to the first eight months of FY 07-08). It is likely that it will take some time for construction and underlying waste generation to approach the levels that existed prior to the recession.
- Waste generation (per person-employee) did not change significantly between FY 04-05 and FY 05-06 and has declined thereafter: FY 07-08 tons per person-employee is about 7 percent lower than what it was in FY 05-06.
- The strong growth in FY 03-04 and FY 04-05 was in part related to booming construction and disposal of large quantities of storm debris.

- The County's record-keeping practices have steadily improved over the period, particularly in recycling. Thus, actual increases in generation in the early years may have been less than shown in Exhibit 2-10.
- The recent slowdown in the economy has the potential to moderate per-capita waste generation for a period of time.
- Ongoing efforts by the County and local residents, businesses, and institutions to reduce waste may help moderate waste generation in the future.
- Most jurisdictions in the U.S. report little change in per-capita generation in recent years. Nationwide, the EPA reports long-term per-capita waste generation growth of 1.2 percent per year from 1960 to 2006, with per-capita generation being essentially unchanged since 1990.

Forecast generation, recycling, and disposal are shown in Exhibits 2-11 and 2-12. As shown, assuming planned increases in the County's diversion rate, disposal is projected to increase from 210,030 in FY 07-08 to 253,085 by FY 27-28.

Forecast disposal for recycling and transfer stations and commercial customers in both East and West Hawai'i are presented in Exhibit 2-13.

#### EXHIBIT 2-11

##### Forecast Generation, Recycling, and Disposal and Recycling Rate, Hawai'i County

Year	Generation	Recycling	Disposal	Recycling Rate
FY 07-08	296,473	86,443	210,030	29.2%
FY 12-13	315,881	126,352	189,529	40.0%
FY 17-18	357,759	157,414	200,345	44.0%
FY 22-23	402,442	177,075	225,368	44.0%
FY 27-28	451,937	198,852	253,085	44.0%
<b>Average Annual Growth Rate</b>				
FY 07-08 – 12-13	1.3%	7.9%	-2.0%	
FY 12-13 – 17-18	2.5%	4.5%	1.1%	
FY 17-18 – 22-23	2.4%	2.4%	2.4%	
FY 22-23 – 27-28	2.3%	2.3%	2.3%	

Assumes diversion rate ramps up from 29.2 percent in FY 07-08 to 44 percent by the end of the 5-year planning cycle (FY 14-15). In order to be conservative for the purposes of estimating remaining capacity at County landfills, the diversion rate is assumed to remain at 44 percent throughout the forecast period. Future recycling programs would hopefully reduce waste going to landfills further.

Assumes 0 percent growth in generation per person-employee in FY 08-09, 5 percent per year in FY 09-10 – FY 11-12 (as the economy improves from recession), and 1 percent growth thereafter.

EXHIBIT 2-12  
Generation, Recycling, and Disposal Forecast, Hawai'i County

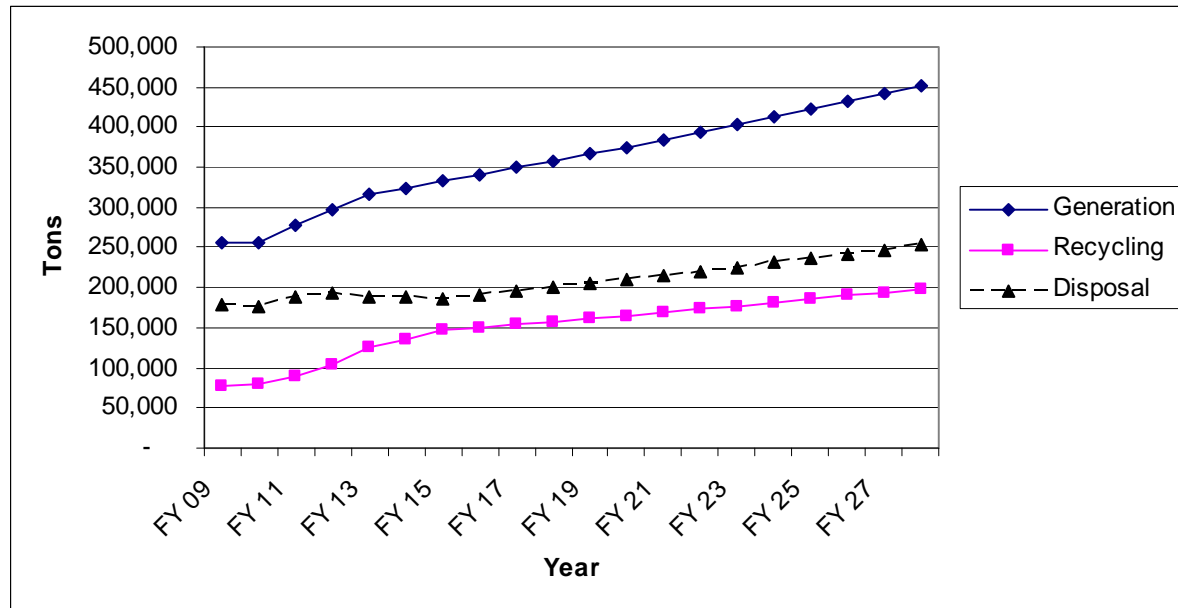


EXHIBIT 2-13  
Disposal Forecast, Hawai'i County (tons)

Year	West Hawaii		East Hawaii		Total		Total County
	Recycling/ Transfer Stations	Commercial	Recycling/ Transfer Stations	Commercial	Recycling/ Transfer Stations	Commercial	
FY 07-08	41,655	86,888	39,575	41,912	81,230	128,800	210,030
FY 12-13	36,547	77,535	36,755	38,692	73,301	116,227	189,529
FY 17-18	39,214	81,039	38,270	41,822	77,485	122,861	200,345
FY 22-23	44,562	90,124	42,600	48,082	87,162	138,205	225,368
FY 27-28	49,922	100,044	47,960	55,159	97,882	155,203	253,085

Assumes diversion rate ramps up from 29.2 percent in FY 07-08 to 44 percent by the end of the 5-year planning cycle (FY 15). In order to be conservative for the purposes of estimating remaining capacity at County landfills, the diversion rate is assumed to remain at 44 percent throughout the forecast period. Future recycling programs would hopefully reduce waste going to landfills further.

Assumes 0 percent growth in generation per person-employee in FY 09, 5 percent per year in FY 09-10 – FY 11-12 (as the economy improves from recession), and 1 percent growth thereafter.

## 2.4 Waste Composition

A waste composition study was recently conducted for Hawai'i County and is included as Appendix B. That report includes composition estimates, both for the overall waste stream and broken down by recycling/transfer station, commercial, and self-haul wastes<sup>5</sup> disposed at the landfill. The results are based on samples taken at the West Hawai'i Landfill during

<sup>5</sup> Self-haul refers to waste delivered directly to the landfill (as opposed to a transfer station).

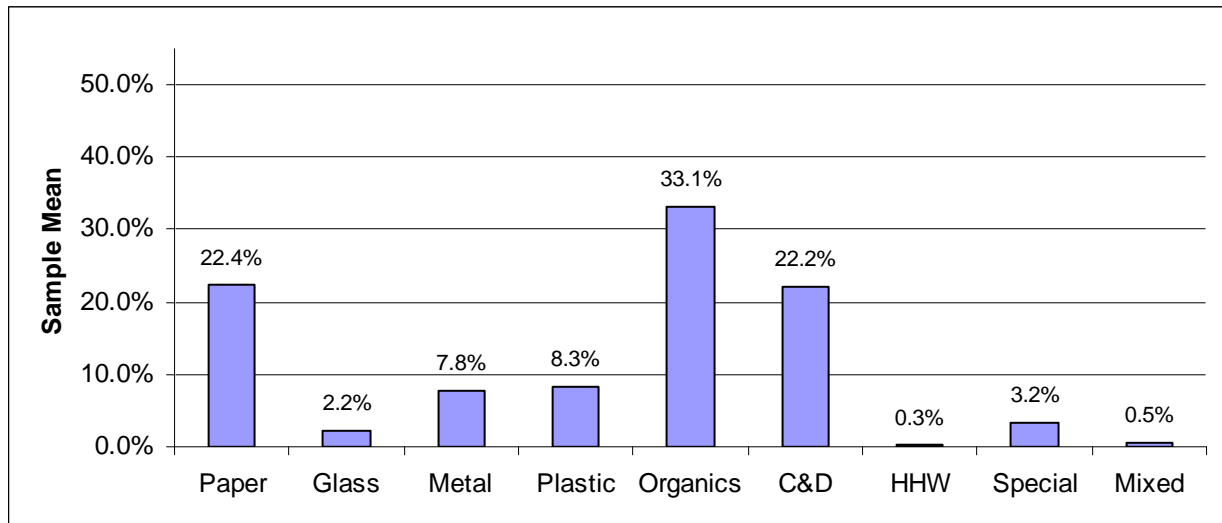
May of 2008. A similar study was performed at the South Hilo Landfill in 2001<sup>6</sup>. We have used the results of the 2001 study and current County disposal data to estimate the composition of waste that enters the East Hawai`i landfill. The results are combined to provide waste composition estimates for total County disposal.

Exhibits 2-14, 2-15, and 2-16 show disposed composition estimates for nine waste categories for the entire County, for West Hawai`i, and for East Hawai`i, respectively. When combined, organics and paper comprise more than half of the waste stream. The organics category contains such components as food, green waste, and textiles. Construction and demolition waste accounts for another 22 percent by weight. The construction and demolition category includes such components as clean lumber and gypsum scrap.

The composition of waste disposed in West Hawai`i is similar to the composition of disposed waste in East Hawai`i. Two differences that merit mention include: there are more organics disposed of in West Hawai`i (35.3 percent) than in East Hawai`i (29.6 percent); and there is more special waste disposed of in East Hawai`i (5.2 percent) than in West Hawai`i (1.9 percent). The majority of the special wastes disposed of in East Hawai`i consist of industrial sludge, bulky items, and tires.

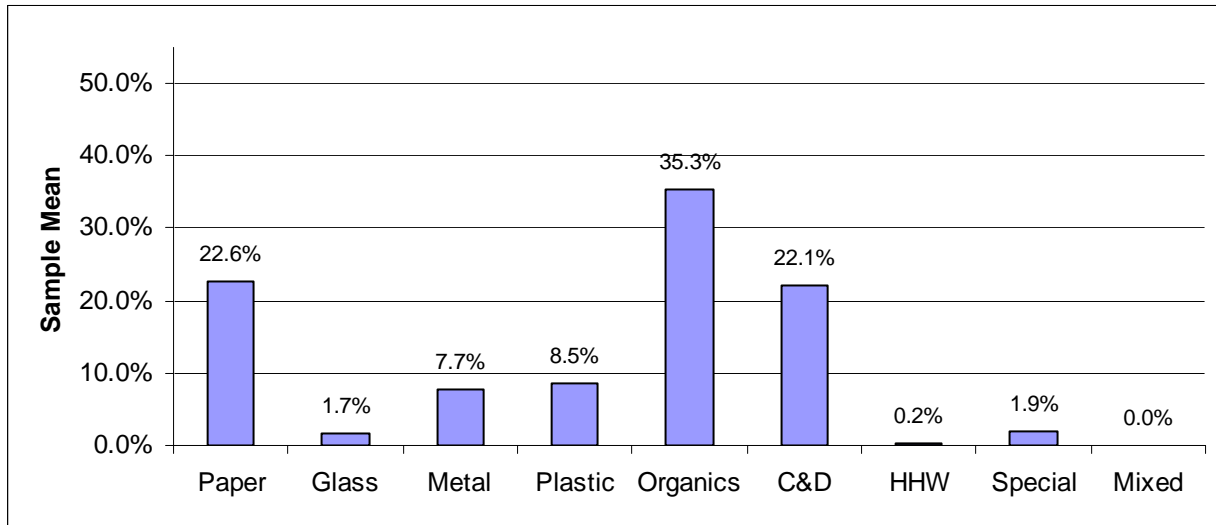
The waste stream assessment developed data for the amount of waste disposed of for 58 different types of waste. Countywide composition estimates for all 58 waste components evaluated during the study are shown in Exhibit 2-17.

EXHIBIT 2-14  
Disposed Composition Estimates by Waste Category: Total County

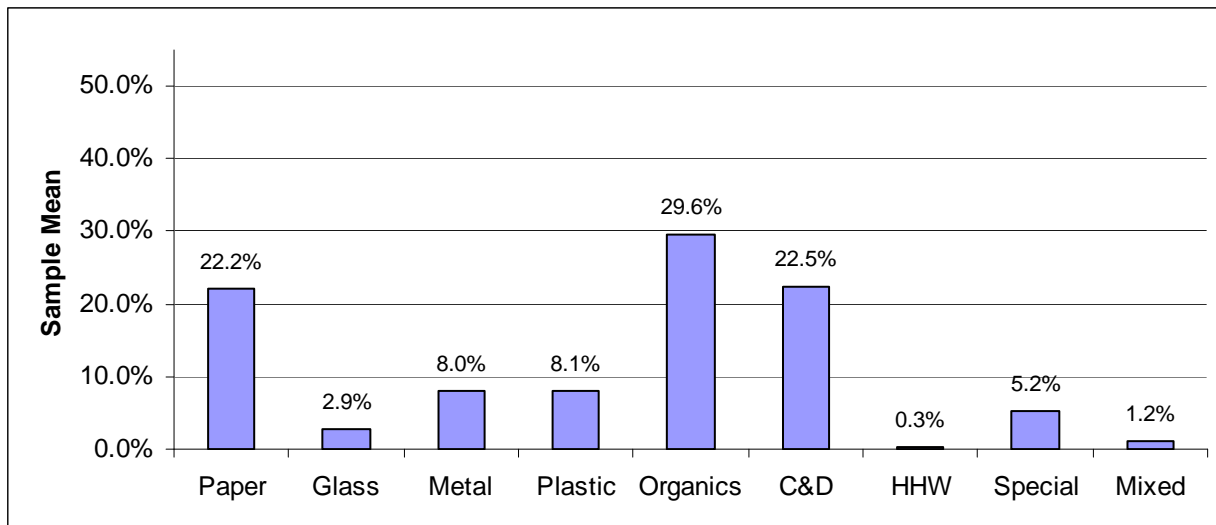


<sup>6</sup> Cascadia Consulting Group, 2001. *Waste Composition Study, South Hilo Landfill, County of Hawai`i*.

**EXHIBIT 2-15**  
 Disposed Composition Estimates by Waste Category: West Hawai i



**EXHIBIT 2-16**  
 Disposed Composition Estimates by Waste Category: East Hawai i



## EXHIBIT 2-17

## Disposed Composition Estimates: Total County

	<b>Tons Disposed</b>	<b>Percent of Total</b>		<b>Tons Disposed</b>	<b>Percent of Total</b>
<b>Paper</b>	<b>47,130</b>	<b>22.4%</b>	<b>Construction and Demolition</b>	<b>46,702</b>	<b>22.2%</b>
Cardboard	16,182	7.7%	Concrete	5,128	2.4%
Bags	723	0.3%	Asphalt Paving	2,212	1.1%
Newspaper	4,193	2.0%	Asphalt Roofing	381	0.2%
White Ledger	1,540	0.7%	Clean and Treated Lumber	22,984	10.9%
Colored Ledger	280	0.1%	Gypsum Board	1,471	0.7%
Computer	92	0.0%	Rocks and Soil	1,707	0.8%
Office	1,510	0.7%	R/C Demo	12,819	6.1%
Magazines	2,424	1.2%	<b>Household Hazardous</b>	<b>527</b>	<b>0.3%</b>
Directories	109	0.1%	Paint	171	0.1%
Miscellaneous	8,634	4.1%	Vehicle Fluids	20	0.0%
R/C Paper	11,443	5.4%	Oil	54	0.0%
<b>Glass</b>	<b>4,592</b>	<b>2.2%</b>	Batteries	117	0.1%
Clear Containers	1,476	0.7%	R/C Hazardous	165	0.1%
Green Containers	1,296	0.6%	<b>Special</b>	<b>6,762</b>	<b>3.2%</b>
Brown Containers	1,024	0.5%	Ash	93	0.0%
Other Containers	307	0.1%	Sewage Sludge	0	0.0%
Flat Glass	160	0.1%	Industrial Sludge	2,826	1.3%
R/C Glass	329	0.2%	Treated Medical	139	0.1%
<b>Metal</b>	<b>16,388</b>	<b>7.8%</b>	Bulky Items	2,177	1.0%
Aluminum Cans	565	0.3%	Tires	1,124	0.5%
Tin Cans	1,525	0.7%	R/C Special	404	0.2%
Ferrous	7,441	3.5%	<b>Mixed</b>	<b>997</b>	<b>0.5%</b>
Nonferrous	504	0.2%	Mixed Residue	997	0.5%
White Goods	742	0.4%			
R/C Metal	5,611	2.7%			
<b>Plastic</b>	<b>17,482</b>	<b>8.3%</b>			
#1 Containers	1,067	0.5%			
#2 Containers	882	0.4%			
Other Containers	818	0.4%			
Film	6,170	2.9%			
Durable	4,002	1.9%			
R/C Plastic	4,543	2.2%			
<b>Organics</b>	<b>69,448</b>	<b>33.1%</b>			
Food	34,230	16.3%			
Textiles	5,485	2.6%			
Leaves and Grass	6,160	2.9%			
Prunings	7,057	3.4%			
Stumps	2,637	1.3%			
Crop Residue	3	0.0%			
Manure	0	0.0%			
R/C Organic	13,875	6.6%			
<b>Total Tons</b>	<b>210,030</b>				
<b>Sample Count</b>	<b>100</b>				

An estimated diversion rate for the nine waste categories is shown in Exhibit 2-18. The results suggest that more than half of the metal and glass generated in the County is recycled (60 and 58 percent, respectively). Conversely, only 15 percent of paper is recycled and there is very little construction and demolition debris currently being recycled.

EXHIBIT 2-18  
FY 07-08 Diversion Rate by Waste Category

	Tons			Diversion Rate
	Generation	Recycling	Disposal	
Paper	55,296	8,166	47,130	14.8%
Glass	10,872	6,280	4,592	57.8%
Metal	40,784	24,395	16,388	59.8%
Plastic	18,730	1,248	17,482	6.7%
Organics	115,248	45,799	69,448	39.7%
C&D	46,738	35	46,702	0.1%
HHW	698	171	527	24.5%
Special	7,111	349	6,762	4.9%
Mixed	997	0	997	0.0%
<b>Total</b>	<b>296,473</b>	<b>86,443</b>	<b>210,030</b>	<b>29.2%</b>

Recycling composition from Hawai'i County Department of Environmental Management with some additional allocations by CH2M HILL. Disposal composition from CH2M HILL, 2008. *Draft Waste Composition Study*, County of Hawai'i.

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