

Chapter VII Moderate Risk Waste Management



The term “Moderate Risk Waste” was created by revisions to Washington State’s 1986 Hazardous Waste Management Act (RCW 70.105). MRW is a combination of household hazardous waste (HHW) conditionally exempt small quantity generator (CESQG) waste. HHW is considered waste that was generated in the home, while CESQG is small quantities of business or non-household waste. Both HHW and CESQG waste are exempt

from hazardous waste regulations.

MRW collections started in the early 1980’s primarily as HHW-only events, also known as “round-ups.” These events usually transpired once or twice a year. In the late 1980’s permanent collection facilities, now known as fixed facilities, began to replace the collection events in order to fulfill the need for year-round collection. In addition, collection facilities have further developed with mobile units, satellite facilities, and tailgate events. These efforts resulted in a larger number of customers served, decreased costs, and increased reuse and

MRW FACTOIDS

- Total MRW collection in 2002 was over 24 million pounds.
- The average amount of HHW disposed by the 6% of all households that used a HHW collection event or fixed facility was 146 pounds.
- The counties that had the most CESQG waste per capita were Kittitas, Yakima, and Skamania.
- The counties that collected the most used oil per Housing Unit were Columbia, Adams, Stevens, Skamania, Pacific, and Kittitas.
- The counties that had the largest percentage of participation per housing unit at HHW events or facilities were Island, Whatcom, San Juan, Yakima, and Skagit.
- The two categories of waste type that increased the most in amounts collected are Electronics and CRT’s.

recycling of MRW. While the bulk of material collected continues to be HHW, CESQG collection programs have increased. Currently there are twenty public MRW programs that collect CESQG waste, fourteen at fixed facilities.

Funding

The 1988 Model Toxics Control Act in Washington State provides a large part of the funding, through the Coordinated Prevention Grant (CPG) program for public MRW programs. Funds are used to meet the planning and implementation requirements for local hazardous waste (MRW) programs in each local jurisdiction.

By 1991 all local governments in the State of Washington had submitted MRW plans. Aspects included in every local MRW plan are CESQG Technical & Disposal Assistance, MRW Public Education, MRW Enforcement and HHW Collection.

Accuracy of Data Collection

Ecology has created and does circulate a standard reporting form to all MRW programs; however, the reported data can vary depending on a program's collection process, how the data is reported, and how the reported data is interpreted.

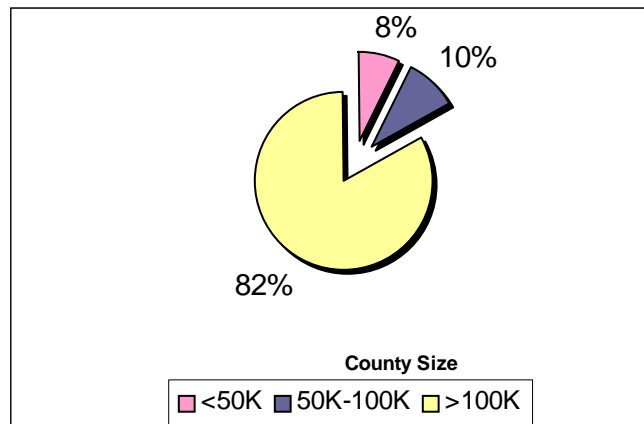
For the 2002 reporting year only one county failed with submitting the required annual reports; and a couple counties had no activity. In addition, not every program reported all the required information. This report will note key areas where there is unusual data or anomalies.

Year 2002 Data

Figure 7.1

Percent of State Population by County Size

This year's report focuses on year 2002 data with some comparisons to the data published in last year's report. In an attempt to provide useful information for individual programs, it was determined that data would be presented in categories by county size. Figure 7.1 and Table 7.1 indicates a distinction between counties with a population of less than 50 thousand, 50 thousand to 100 thousand, and populations greater than 100 thousand.



In Washington State there are 42 programs that manage MRW. All programs are required to provide individual MRW reports. These programs include all 39 counties. King County generates four reports: King County Waste Mobile and Used Oil Collection System, Seattle Solid Waste Utility (HHW), Port of Seattle (HHW) and Seattle City Light (CESQG). King County data is segregated from Seattle data in the form of Seattle Solid Waste Utility, Port of Seattle, and Seattle City Light. Many HHW collection systems are approaching stability. Most of the state is now serviced with permanent fixed facilities. Only Chelan, Clallam, Douglas, Ferry, Garfield, Grant, and Wahkiakum Counties do not have fixed facilities. Garfield residents use the facility in Asotin County, Cowlitz County conducts a mobile unit in Wahkiakum County, Ferry County usually conducts a collection event, however, did not conduct one during 2002. Clallam, Chelan, Douglas, Grant and Skamania Counties also conduct collection events but may convert to fixed facilities in the future.

Collection services for CESQG's continue to expand statewide. For 2002, there are fourteen fixed facilities accepting material from CESQG's and there were 6 collection events providing collection services for CESQG's.

**Table 7.1
Individual County Population by Size**

<50K		50K-100K		>100K	
Adams	16,600	Chelan	67,600	Benton	147,600
Asotin	20,700	Clallam	64,900	Clark	363,400
Columbia	4,100	Cowlitz	94,400	King*	1,203,510
Douglas	33,100	Grant	76,400	Kitsap	234,700
Ferry	7,300	Grays H	68,400	Pierce	725,000
Franklin	51,300	Island	73,100	Skagit	105,100
Garfield	2,400	Lewis	70,200	Snohomish	628,000
Jefferson	26,600	Walla Walla	55,400	Spokane	425,600
Kittitas	34,800			Thurston	212,300
Klickitat	19,300			Whatcom	172,200
Lincoln	10,200	50K-100K total	570,400	Yakima	225,000
Mason	49,800				
Okanogan	39,800				
Pacific	21,000			Seattle*	570,802
Pend Oreille	11,800			>100K total	5,063,212
San Juan	14,600				
Skamania	9,900				
Stevens	40,400				
Wahkiakum	3,800				
Whitman	40,600				
<50K total	447,800				
<ul style="list-style-type: none"> King excludes Seattle 					

HHW (no UO sites) Pounds Per Participant by County Size

Figure 7.2 shows the total pounds of HHW (no UO sites) collected per participant by county size in 2001. The average pounds collected statewide per participant for HHW collections was 103.

Figure 7.2

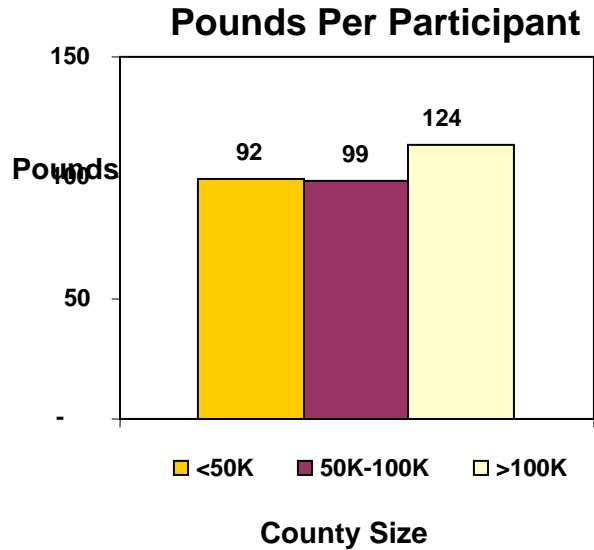


Table 7.2 shows the top five counties with the highest collections of HHW in pounds per capita (not participant) for 2000, 2001, and 2002.

Table 7.2
High Collections of HHW (no UO Sites) Pounds Per Capita
by County in 2000-2002

HHW 2000			HHW 2001			HHW 2002		
County	Size	Lbs./Capita	County	Size	Lbs./Capita	County	Size	Lbs./Capita
Klickitat	<50K	5.96	Cowlitz	50K-100K	9.46	Island	50K-100K	6.04
Pend Oreille	<50K	4.78	Pend Oreille	<50K	7.16	Whatcom	>100K	5.25
Benton	>100K	3.97	Mason	<50K	6.26	San Juan	<50K	4.69
Yakima	>100K	3.82	King	>100K	4.65	Yakima	>100K	4.46
Kittitas	<50K	3.61	Whatcom	>100K	4.62	Skagit	>100K	4.24

MRW COLLECTED

As shown in Table 8.2, Washington collected over 13.5 million pounds of HHW, almost 9.2 million pounds of used oil (UO) from collection sites, and over 1.4 million pounds of CESQG waste, for a total of over 24.1 million pounds of MRW collected during 2002. This is a decrease from 2001, however, CESQG collection has increased significantly.

Table 7.3

Total Pounds per Waste Category for Years 1998, 1999, 2000, 2001, and 2002

Collection Year	HHW lbs. (no UO Sites)	Used Oil lbs. (Collection Sites)	CESQG lbs.	Total MRW lbs.
1998	9.6M	9.2	500K	19.3M
1999	9.9M	9.3M	637K	20.4M
2000	10.5M	8.3M	1.1M	19.8M
2001	15.6M	11.3M	1.0M	27.9M
2002	13.5M	9.2M	1.4M	24.1M

Collection by Waste Category and Type

As shown in Table 7.4, the dominant types of HHW collected in 2002 were Non-contaminated Used Oil, latex and oil-based paint, Lead Acid Batteries, and flammable liquids. These totals include used oil collected at all collection sites. These specific waste types accounted for 91% of the estimated 22.7 million pounds of HHW collected in 2002. These are the same top five HHW types as in 1998, 1999, 2000 and 2001. Table 7.5 provides summary information on total pounds collected in all three categories of MRW by waste types.

Table 7.4

HHW Dominant Waste Types Collected in 2002

Waste Type	Total Lbs.
Oil Non-contaminated	11,019,344
Latex Paint	3,541,175
Oil Based Paint	2,593,203
Lead Acid Batteries	2,262,305
Flammable Liquids	1,232,511
Total	20,648,538

Table 7.5

Total Pounds of MRW Collected by Waste Category

Waste Type	HHW	CESQG	UO Sites
Acids	136,823	15,810	
Lead Acid Batteries	2,262,305	60,582	
Antifreeze	344,067	140,024	259,054
Bases	87,362	20,182	
Bases, aerosols	2,232	2	
Electronic	27,602	50	
CRT's	20,248	1,692	
Chlorinated Solvents	8,406	3,030	
N/NIMH.Lith	16,531	3,052	
Dry Cell Batteries	185,568	6,411	
Flammable Solids	25,953	4,970	
Flammable Liquids	1,232,511	203,898	
Flammable Liquids, aerosols	103,333	3,785	
Flammable Liquids Poison	62,833	7,800	
Flammable Liq. Pois., aerosols	18,217	545	
Flammable Gas	279,828	1,514	
Flammable Gas Poison	546	1	
Flammable Gas Pois., aerosols	14,686	489	

Waste Type	HHW	CESQG	UO Sites
Latex Paint	2,684,987	113,057	
Latex Paint, Contaminated	856,188	2,845	
Oil-Based Paint	2,593,203	257,481	
Oil Contaminated	212,465	4,116	
Oil Filters	71,886	44,110	42,450
Oil Filters Crushed	7,600		
Oil Non-Contaminated	1,840,517	423,403	9,178,827
Oil with Chlorides	93	9,263	
Oil with PCBs	3,726	767	
Other Dangerous Waste	44,922	38,410	
Organic Peroxides	1,83	65	
Oxidizers	23,239	2,242	
Mercury.	908	488	
Pesticide/Poison Liq	276,801	9,244	
Pesticide/Poison Sol	77,071	4,050	
MRW TOTAL	13,513,356	1,395,950	9,480,331

Figure 7.3 shows which counties have permanent facilities, the number of facilities in each county, and which counties are likely to develop a permanent facility in the future.

49 MRW Facilities as of 2002

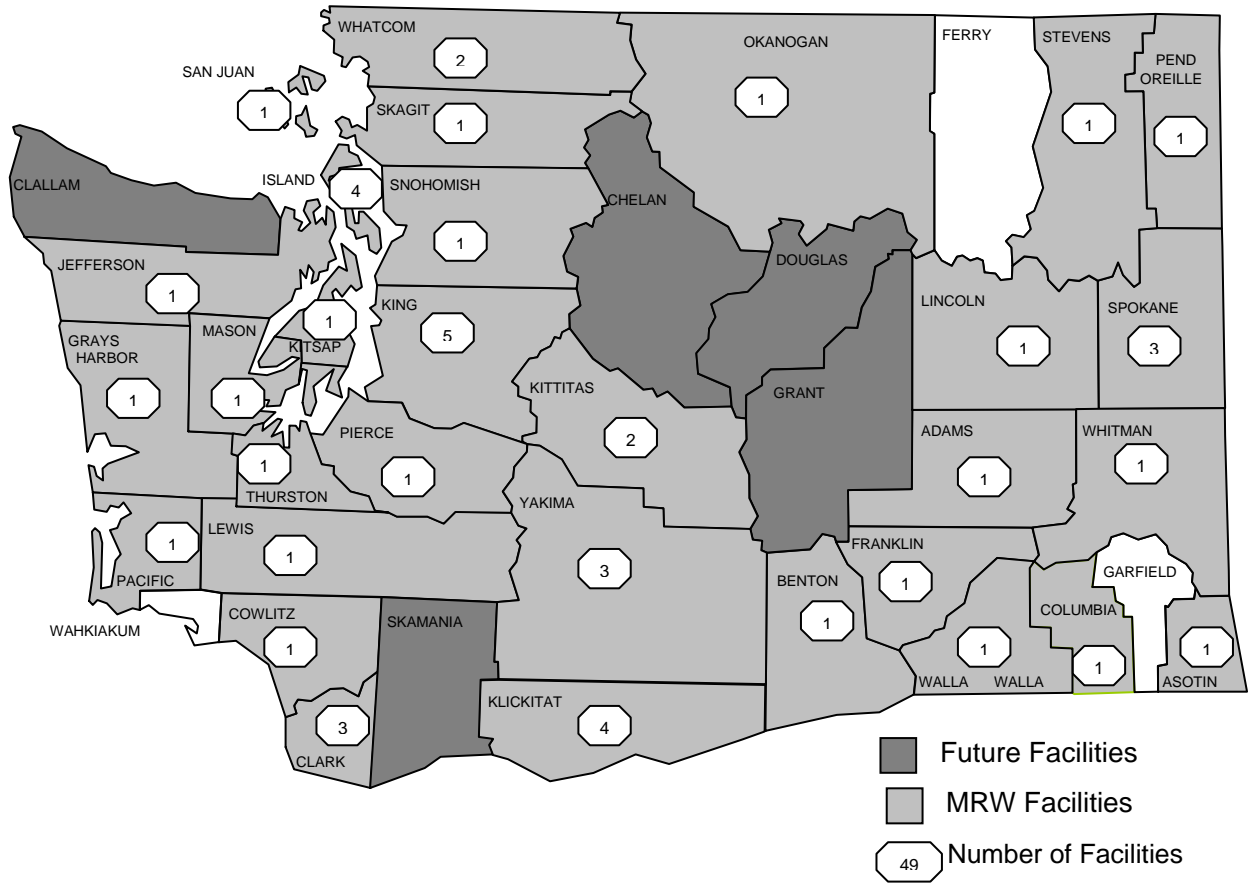


Table 7.6 shows various data by county. This information can be used to evaluate efficiencies within each county by comparing costs per participant and percentage of participants per housing units*.

*** Housing Units are the number of households in each county. This data is used instead of per capita because participants typically represent a household.**

Table 7.6

Various Data by County

COUNTY	HOUSING UNITS	HHW Participants	% Participant /Housing Unit	HHW Cost /Participant	HHW lbs. /Participant	HHW Ttl. lbs.	MRW and Used Oil Ttl. lbs.	
Adams	6,020	Number of Participants and Costs Not Reported				11,323	216,895	
Asotin*	9,311	926	9.9%	\$ 29.36	28.35	26,255	26,255	
Benton	59,745	7,390	12.4%	\$ 42.86	61.28	452,869	505,419	
Chelan	31,429	735	2.3%	\$ 16.29	103.57	76,126	130,681	
Clallam	31,976	PNR		CNR		49,341	202,157	
Clark	146,072	3,413	2.3%	\$ 76.93	300.27	1,024,826	1,707,150	
Columbia	2,096	285	13.6%	CNR	44.22	12,604	84,872	
Cowlitz*	40,157	1,271	3.2%	\$ 84.17	169.16	215,003	267,781	
Douglas	13,517	476	3.5%	\$ 53.97	76.95	36,628	128,920	
Ferry	3,919	PNR		CNR		0	500	
Franklin	17,776	PNR		CNR		5,627	153,183	
Garfield	1,296	4	0.3%		31.25	125	125	
Grant	30,418	509	1.7%	\$ 113.69	116.37	59,234	114,549	
Grays Harbor	33,211	1,430	4.3%	\$ 109.50	74	105,829	256,978	
Island	34,452	3,434	10%	\$ 45.74	128.6	441,658	471,258	
Jefferson	14,965	1,542	10.3%	\$ 42.72	46.93	72,372	150,711	
King*	494,530	22,525	4.6%	\$ 160.60	92.57	2,085,136	4,514,889	
Seattle	280,883	15,867	5.6%	\$ 80.89	80.81	1,282,250	1,282,250	
Kitsap	96,635	5,227	5.4%	\$ 117.91	117.21	612,660	1,018,358	
Kittitas	16,475	PNR		CNR		92,156	218,185	
Klickitat	8,633	PNR		CNR		75,655	124,266	
Lewis	29,585	1396	4.5%	\$ 62.47	69.09	96,453	268,577	
Lincoln	5,298	PNR		CNR		1,000	1,000	
Mason	25,515	3,582	13.3%	\$ 27.80	26.24	93,988	239,354	
Okanogan	19,085	PNR		CNR			QNR	
Pacific	13,991	467	3.3%	CNR	90.7	42,358	122,352	
Pend Oreille	6,608	1,674	24.1%	\$ 29.69	28.48	47,682	84,801	
Pierce	277,060	11,632	4%	\$ 27.36	27.74	322,673	654,968	
San Juan	9,752	150	1.4%	\$ 196.57	456.28	68,411	115,751	
Skagit	42,681	2098 - 4.7% - \$36.62 - 212.23					445,265	633,225
Skamania	4,576	128	2.7%	CNR	96.19	12,312	51,352	
Snohomish	236,205	1,426	0.6%	\$ 528.58	1,617.51	2,306,816	3,716,271	
Spokane	175,005	39,969	221.9%	\$ 17.92	25.99	1,038,635	1,716,904	
Stevens	17,599	557	3%	\$ 61.92	113.23	63,068	227,237	
Thurston	86,652	7,593	8.3%	\$ 54.46	29.59	213,065	657,329	
Wahkiakum	1,869	31	1.7	\$25.55	75.45	2,339	4,747	
Walla Walla*	21,671	1,856	8.6%	\$ 75.84	33.75	62,648	133,369	
Whatcom	73,893	5,102	6.5%	\$ 39.20	177.09	903,499	986,699	
Whitman	16,676	492 - 8.6% - \$76.38 - 106.12					52,209	72,137
Yakima	79,174	2,894	3.5%	\$ 22.90	346.95	1,004,066	1,731,536	
Statewide	N/A	155,473	N/A	N/A	N/A	13,514,196	22,693,023	

PNR: Participants not reported CNR: Costs not reported QNR: Quantities not reported

CESQG

There are twenty local MRW programs that collect CESQG waste from the public. Counties that sponsor CESQG waste collections are Asotin, Benton, Clark, Chelan, Clallam, Cowlitz, Douglas, Grant, Grays Harbor, Island, Jefferson, King, Kitsap, Kittitas, Skagit, Skamania, Snohomish, Thurston, Whatcom, and Yakima. Also Included in CESQG waste totals for year 2002 are data from Philip Services. Philip Services primarily serves CESQG's in three counties: King, Pierce and Clark. The top five counties that collected the most CESQG material per capita were Kittitas, Yakima, Skamania, Grays Harbor, and Whatcom Counties. Yakima County collected almost 44% of the total statewide volume of CESQG waste.

As shown in Table 7.7 the dominant 20 types of CESQG waste collected in 2002 were non-contaminated oil, oil based paint and flammable liquids. These 3 specific waste types accounted for 65% of the 1.2 million pounds of CESQG waste collected in 2002.

Table 7.7

CESQG by Waste Type Collected in 2001(top 20 types)

Waste Type	Total lbs. CESQG
Oil Non-Contaminated	423,403
Flammable Liquids	203,898
Oil based Paint	257,481
Antifreeze	140,024
Lead Acid Batteries	60,582
Latex Paint	115,902
Oil Filters	44,110
Bases	20,182
Acids	15,810
Flam. Liquids, Poison	7,800
Oil w/Chlorides	9,263
Pesticide/Poison Liq.	9,244
Oils, PCBs	767
Used Oil, Contaminated	4,116
Dry Cell Batteries	6,411
Flam.Liq.aerosols	3,785

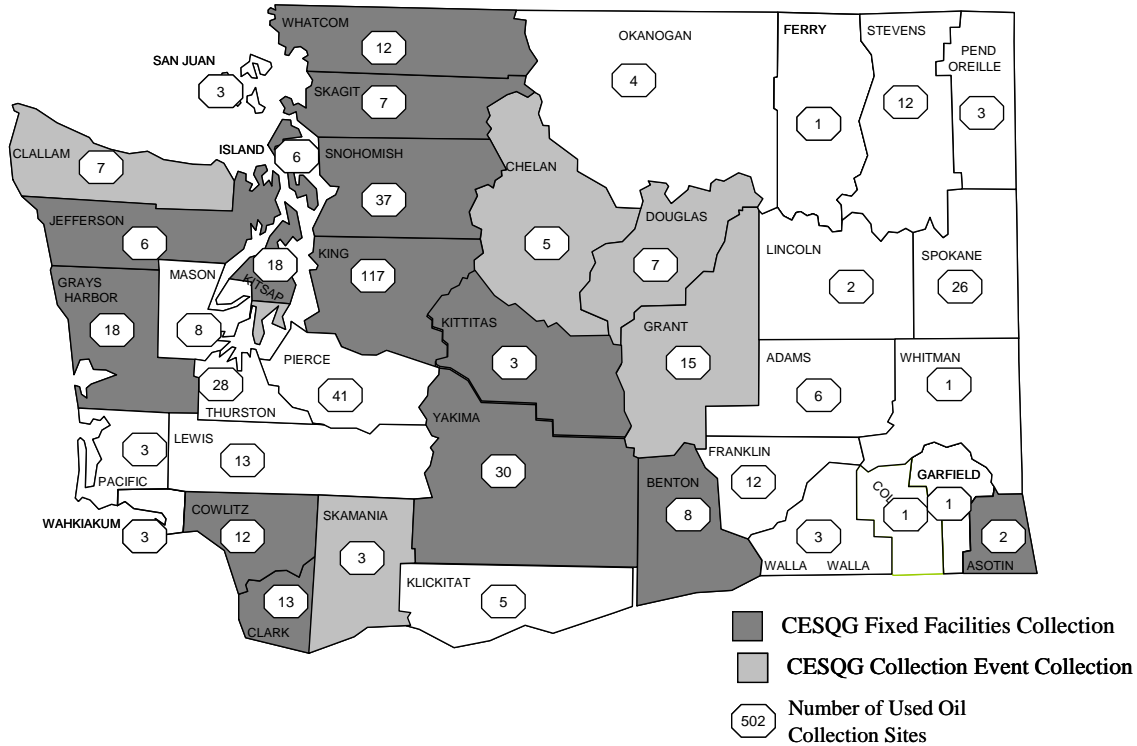
Oxidizers	2,242
N/NIMH/Lith Batteries	3,052
Pesticide/Poison Sol	4,050
Chlorinated Solvents	3,030
Electronic/CRT's	1,742
All other types	59,056
TOTALS	1,395,950

Figure 7.4 shows counties that have fixed facilities for CESQG collection, counties that use collection events for CESQG collection, counties that have no CESQG collection program, and figure 8.5 also shows the number of used oil collection sites by county.

Figure 7.4

CESQG and Used Oil Collection Sites

CESQG Waste Collection and Used Oil Collection Sites as of 2002



Used Oil Sites

In 2002, reported used oil collection sites yielded 9,178,827 pounds of used oil. Used oil collection by county size showed variability in pounds per capita. For example, Both Columbia and Adams Counties had unusually high used oil collection, yet had very low numbers for HHW collection. This may be explained by the combination of a low population county and a high incidence of farming activity. See Table 7.8 for the six highest collections in pounds per capita by county size for 2000, 2001 and 2002.

Table 7.8
Used-Oil Sites, High Collection Counties, pounds per capita by county size

Used Oil Sites - 2000			Used Oil Sites - 2001			Used Oil Sites - 2002		
County	Size	Lbs./Capita	County	Size	Lbs./Capita	County	Size	Lbs./Capita
Stevens	<50K	3.9	Mason	<50K	4.0	Columbia	<50K	17.6
Cowlitz	50K-100K	3.7	Stevens	<50K	4.0	Adams	<50K	12.3
Pacific	<50K	3.6	King	>100K	3.9	Stevens	<50K	4.0
Douglas	<50K	2.9	Cowlitz	50K-100K	3.5	Skamania	<50K	3.9
Lewis	50K-100K	2.8	Skamania	<50K	3.2	Pacific	<50K	3.8
Franklin	<50K	2.7	San Juan	<50K	3.0	Kittitas	50K-100K	3.6

Statewide Level of Service

The US Census Bureau reports that as of 2002 there were an estimated 2,516,411 Housing Units¹ in Washington State. MRW Annual Reports revealed there were 155,473 participants in HHW collection in 2002 excluding numbers for Okanogan County because this information was not provided. The actual number of households served is larger due to the fact that most used oil sites do not record or report numbers of participants (Spokane is the exception). Also because some participants that are counted at events or by facilities bring HHW from multiple households, the number of households served can be estimated by adding ten percent to the participant values for an estimated 171,020 households served in 2002. This number represents 6.8% of all households in Washington State. This is an increase from the 6.1% of 2001 but a slight decrease from 2000 and 2001 when an estimated 7.8% and 6.6% respectively of Washington households were served.

Trends in Collection

As fixed facilities continue to gain popularity, the numbers of collection events are decreasing. Some programs are eliminating collection events altogether or using hybrid mobile collection systems. Reasons for this shift include: increased cost of collection events per amount of waste collected, fixed facilities providing a sense of permanence and normality to the collection of MRW, and increased operation efficiencies with fixed facilities including the option of having an efficient location to conduct a collection service for CESQG's. This supports an increase in the collection numbers for CESQG waste.

New Waste Streams

MRW collection programs are well established statewide. Many of these programs are exploring management of various other components of municipal solid waste. Mercury-containing lamps and electronic wastes are two of these emerging waste types.

There is a need to pay attention to the collection of mercury waste streams. Fluorescent and high intensity lamps contain small amounts of mercury. There will be an estimated 35 tons of mercury discharged into the atmosphere from the 550 million lamps currently in use by Americans (Greskovich 1997).

Used electronics are also of concern. Components in a number of electrical and electronic products are known to contain one or more of the following substances: mercury, lead; cadmium; embedded batteries; and polychlorinated biphenyls (PCBs).

As technology continues to lead to better electronic products, and as more people become financially able to obtain these popular commodities, disposal of the leftovers as well as

¹ This information was downloaded from Website <http://quickfacts.census.gov/hunits/states/53cty.html>.

their components becomes a concern for Ecology and local solid waste managers. For example, in the European Union an estimated four percent of their municipal solid waste stream is electronics, other electrical devices and appliances as of 1999. By the year 2010, predictions for this waste sub-stream will double (Ecology 1999). Since this waste stream is just beginning in 2002, we expect this waste stream to more than double within the next three or four years.

Annual Reporting

Local programs are required to submit MRW report forms annually. For the past few years, Ecology has requested annual reports be received by March for previous calendar year collections. The information received from local programs through the MRW annual reports provides Ecology with data on MRW infrastructure, collection trends, costs, waste types received by collection events and fixed facilities. This data is translated into the information contained in Chapter 7 of Ecology's Solid Waste Annual Status Report and is specifically designed to be useful to those who operate or work MRW programs within Washington State.

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