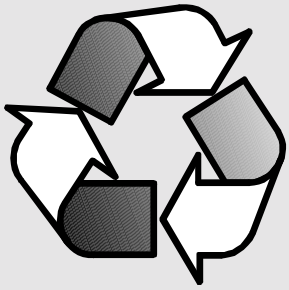
Solid Waste In Washington State



Eighth Annual Status Report

WASHINGTON STATE
DEPARTMENT OF
ECOLOGY

Solid Waste and Financial Assistance Program
December 1999
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Solid Waste in Washington State

Eighth Annual Status Report

Prepared by:

Washington State Department of Ecology
Solid Waste and Financial Assistance Program

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Acronyms

BACT	Best Available Control Technology
CESQG	Conditionally exempt small quantity generator
CDL	Construction, Demolition and Landclearing
CPG	Coordinated Prevention Grants
EPA	Environmental Protection Agency
ESSB	Engrossed Substitute Senate Bill
EYC	Ecology Youth Corps
GA	Department of General Administration
HDPE	High-density polyethylene
HHW	Household Hazardous Waste
HWTR	Hazardous Waste and Toxics Reduction Program
LDPE	Low-density polyethylene
MFS	Minimum Functional Standards
MRF	Material Recovery Facility
MRW	Moderate Risk Waste
MSW	Municipal Solid Waste
NIMBY	Not In My Back Yard
PCS	Petroleum Contaminated Soils
PPG	Public Participation Grants
RCW	Revised Code of Washington
SQG	Small quantity generator
SSB	Substitute Senate Bill
SSHB	Second Substitute House Bill
SW&FAP	Solid Waste & Financial Assistance Program
WAC	Washington Administrative Code
WR/R	Waste Reduction/Recycling

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Thanks to all who contributed.

Ellen Caywood
Environmental Planner
Solid Waste & Financial Assistance Program

Executive Summary

Summary of Findings

This annual solid waste report reflects conditions and activities in solid waste in Washington state. Chapter I discusses some emerging issues that Ecology is dealing with in the coming year including the completion of revisions to the rule for solid waste facilities, chapter 173-304 WAC, *Minimum Functional Standards for Solid Waste Handling (MFS)* and the progress toward revising the "State Solid Waste Management Plan".

The remaining chapters of the annual report discuss the solid waste infrastructure in the state, the implementation of solid waste activities through grants to local governments, the statewide recycling survey, litter collection efforts and information on waste disposal. Some of the data is for 1998 (recycling and disposal information), while other data is current to late 1999 (litter pickup numbers and facility status). A brief summary of significant information is highlighted below.

❖ Recycling

- The 1998 recycling rate remained low at 34.1% after an all time high of 39% in 1996. Poor markets continue to have an impact, as well as limited education program and reduced participation in recycling programs.

- In spite of the low recycling rate, the overall disposal rate at municipal solid waste landfills and energy-recovery facilities decreased slightly.

- In response to the lower recycling rate first seen in 1997, Ecology formed the Recycling Assessment Panel to review recycling in the state and to develop an action plan to address the most significant barriers to recycling. The recommendations will be provided to the Legislature in January 2000.

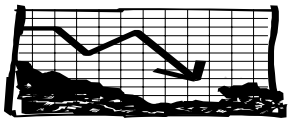
❖ Litter Collection Efforts

- 1999 litter collection by Ecology Youth Corps (EYC) picked up a total of 71.732 bags of litter and 64,632 pounds recycled.

- Other state agency programs were coordinated by Ecology. A report will provided to the Legislature in March 2000.

- The Community Litter Cleanup Program provides funds to local governments through contracts for local litter collection programs. In the first round of contracts (1998) local governments partnered with volunteer groups and worked with state and local offender crews and cleaned 15,015 road miles and 1,269 illegal dump sites. A total of 2,272,039 pounds of litter was collected with 226,893 pounds recycled.

❖ Waste Reduction/Recycling



- Ecology provided over $16 million in Coordinated Prevention Grants to local governments for the 1998/99 cycle. These funds leveraged local matching funds to support over $25 million worth of solid and moderate risk waste projects.

- Ecology continues efforts with the building industry and local governments to promote a sustainable approach to building practices and the effects on the environment and human health.

- Changes continue in the way solid waste is managed. Organics are being composting and land applied for beneficial use. The recycling of industrial by-products for beneficial uses, such as fertilizer is increasing and new standards are being developed to address the new technologies.

- With the adoption of *Biosolids Management* (chapter 173-308 WAC) in 1998, Ecology is working with local governments on delegation agreements (eight in place by the end of 1999), over 90% of the applicable facilities are under a provisional approval for a statewide permit, and over 100 facilities having submitted formal applications for "final approval" (11 have been granted).

❖ Recognizing Waste Reduction and Recycling Efforts

- Governor Gary Locke and Ecology Director Tom Fitzsimmons presented $15,000 in cash awards to ten schools winning the "Terry Husseman Outstanding Waste Reduction and Recycling in Public Schools Awards" for the 1998-99 school year. Each winning school was judged on the basis of comprehensive, efficient and innovative approaches to waste reduction and recycling during the school year.

- Ecology presented "Waste Reduction and Recycling Awards" at the Washington State Recycling Association Conference held at Ocean Shores, Washington in May 1999. These awards recognize a wide variety of programs being instituted by state and local governments, the private sector, non-profit groups and individuals, that show a commitment to finding ways to reduce waste or recycle material.

❖ Disposal of Solid Waste

- In 1998, 22 municipal solid waste landfills accepted 4,582,107 tons of waste. Two of those landfills closed in 1999, while a new landfill opened in Pierce County.
- Currently 18 of Washington's 39 counties have an operating landfill. Most counties without their own landfills have long-haul contracts to either Roosevelt Regional Landfill in Klickitat County or one of three landfills in Oregon.
- Six waste-to-energy facilities burned 369,778 tons of waste in 1998. In 1999, only three remained operating, with only two of those burning municipal solid waste.
- The amount of waste imported (307,850 tons) and exported (986,824 tons) remained fairly stable in 1998, with about three times as much waste exported as imported. The imported waste accounts for about 6% of the solid waste disposed and incinerated in Washington.
- With the opening of a new landfill in November 1999, the statewide permitted landfill capacity increased to 156 million tons, or approximately 34 years at the current rate of disposal. The majority of that permitted capacity (94%) is at private landfills, with Roosevelt Regional Landfill accounting for 77% of the statewide capacity.

Chapter I Issues Facing Solid Waste

In 1989, the *"Waste Not Washington Act"* was passed which set new priorities for solid waste management in the state:

1. Waste Reduction
2. Recycling of source separated materials
3. Incineration, energy recovery or landfilling of source separated solid wastes
4. Incineration, energy recovery or landfilling of mixed wastes.

The *Act* also set a statewide recycling goal of 50% by the year 1995. As part of this legislation, Ecology developed a new State Solid Waste Management Plan in 1991. It addressed the residential and commercial waste stream and how to meet the legislative goals and priorities. It was determined in order to meet the long range waste management needs of the state, recycling must be a vital and significant part of the waste management system. Significant private and public resources have been invested over the last 10 years in developing the recycling infrastructure in Washington

The recycling rate from the residential and commercial waste stream continued to rise from 23% in 1987 to 39% in 1996. Over 100 curbside recycling programs were in place around the state. In 1997, however, the recycling rate fell to 33%. Ecology formed the Washington State Recycling Assessment Panel in August 1999 to address these issues and identify key actions that can be taken by state and local government and the recycling industry to improve recycling in the near term.

There has also been a fundamental shift from a disposed-based solid waste handling system to a system more reliant on recycling, including composting, beneficial use of materials and land application of "wastes". These non-traditional waste streams are seldom included in a statewide recycling measure. A different regulatory approach is also needed that will allow for reinterpretation of existing regulations to make better distinctions between commodities (recyclables) and wastes. The revision of chapter 173-304 WAC, *the Minimum Functional Standards for Solid Waste Facilities (MFS)*, is continuing to better address current solid waste management activities.

With the many changes in how waste is managed and the increased emphasis on waste streams beyond the residential and commercial sector, a comprehensive look at the entire solid waste management system is needed and will be undertaken through a Sate Solid Waste Management Plan updating process. A revised State Solid Waste Plan will provide a vision for the future of solid waste management in Washington.

Declining Recycling in the Traditional Commodities

In 1997, the recycling rate in Washington State dropped significantly from a high of 39% in 1996 to 33%. There are a number of potential contributing factors that could have caused

the decrease. These include increased waste generation, poor Pacific Rim markets, a drop in recycling participation by generators, and a loss of funding for waste reduction and recycling education and awareness programs.

Questions have been raised about the recycling effort in Washington and the basic foundation upon which it is built. Is the goal the right goal? Should there be a greater emphasis on waste reduction as the primary method of eliminating the volume of waste disposed? Is the measurement system accurate? What are the barriers to increasing and sustaining recycling over the long term?

The Recycling Assessment Panel, formed in August 1999 to address these questions among others, is composed of representatives from a broad spectrum of interests including, but not limited to, the recycling industry, the waste management industry, manufacturers, wholesaler and retailers, citizens, local government and legislators.

The goal of this project is to review and evaluate the contributing factors that influence the recycling rate in the state and to develop a technically defensible and achievable action plan to address significant barriers to recycling identified through the review and evaluation process.

The Panel evaluated various areas including construction, demolition and land-clearing recycling, residential recycling, commercial recycling, market development, agricultural recycling, product stewardship, and data collection and tracking.

Recommendations of the panel will be provided to the Legislature in January 2000.

Measuring Reuse, Diversion and Recycling of New Materials

Ecology has measured a very specific part of the solid waste stream since 1986. It is roughly the part of the waste stream defined as municipal solid waste by the Environmental Protection Agency.[1] However, the Department has noted very large increases of recovery in "non-MSW" waste streams the most notable is a growing industry in recycling construction, demolition and landclearing debris.

Ecology is looking at ways to include these materials in future recycling rates. The main obstacle to calculating a recycling rate for these materials at present is that this material is not well characterized and there is not definitive information on the total volume of construction, demolition and landclearing debris generated or other non MSW waste. This lack of information makes it impossible to calculate a recycling rate for these materials.

[1] The recyclable portion of the waste stream is municipal solid waste as defined by the Environmental Protection Agency in the *Characterization of Municipal Solid Waste in The United States: 1996 Update*. This includes durable goods, nondurable goods, containers and packaging, food wastes, and yard trimmings. It does not include industrial waste, inert debris, asbestos, bio-solids, petroleum contaminated soils, or construction, demolition, and landclearing debris disposed at municipal solid waste landfills and incinerators.

Knowledge of this waste stream is increasing. King County[2] and the City of Seattle have both done sampling of this waste streams and have comparable results. Clark County will finish a study in early 2000.

The recycling rate as calculated by the state is a fairly narrow measure of Municipal Solid Waste. Increasingly, Washington counties and cities have been putting efforts into waste streams outside of the traditional municipal solid waste stream. The best example is for the construction and demolition waste streams. Many of these materials are now being recycled including asphalt roofing shingles, concrete, road asphalt, dimensional lumber, various metals, and more. Woodwaste is a very large waste stream in Washington and an increasing percentage of it is being used in new wood and paper products and as a feedstock in composting operations. In agriculture, waste materials are being composted and processed for land application as soil amendments. All of these uses of waste materials avoid disposal for more beneficial use.

However, it is difficult or impossible to figure a recycling rate for many of these materials because either we don't know the total amount of waste generated or the beneficial use does not meet the state's definition of recycling.[3]

In order to address these beneficial solid waste activities that reduce disposal of natural resources the state has begun collection of information about the beneficial use solid waste outside the scope of MSW or the result of processes that avoid disposal but do not meet the definition of recycling. The methodology is a simple as collecting the number of tons of material that are going to beneficial use as opposed to disposal.

Ecology will try to collect more of this information in the future. For the most part, these materials are collected and processed outside of the traditional residential and commercial waste stream and were not well addressed in *the "Waste Not Washington Act"* of 1989. Still, Ecology recognizes the creative efforts of local governments and businesses in addressing these wastes and plans to develop measuring tools to show these successes.

Revision of Regulations for Solid Waste Handling

Changes in the way solid waste is managed also necessitate an evaluation of chapter 173-304 WAC, the *Minimum Functional Standards for Solid Waste Handling*, last revised in 1985. Since that time, changes include land application of material for beneficial use, and new recycling and reuse methods for woodwaste and demolition wastes. Changes have also occurred with the movement of wastes into the solid waste system from the hazardous waste system through deregulation, and the increasing emphasis on different facilities, such as compost facilities, rather than landfills. In addition, in 1991, new standards for municipal solid waste landfills, formerly included in chapter 173-304 WAC, were completed in chapter 173-351 WAC, *Criteria for Municipal Solid Waste Landfills*.

[2] *Waste Monitoring Program: Construction, Demolition & Land Clearing Waste*, King County Solid Waste Division, January 1995.
[3] Revised Code of Washington 70.95.030 (16) "Recycling" means transforming or remanufacturing waste materials into usable or marketable materials for use other than landfill disposal or incineration

Because of the numerous changes since the last revision, and to address the intent of the 1998 legislation (ESSB 6203, an *Act Relating to Solid Waste Permitting*) and the findings of the 2960 Study, "SHB 2960 Report on Washington's Solid Waste Permit System"[4], Ecology chose to revise the outdated portions of chapter 173-304 WAC, *Minimum Functional Standards for Solid Waste Handling.*

Scoping meetings were held throughout the state in the fall of 1998 to gather ideas and opinions from health agencies, local governments, environmental interests, solid waste haulers and solid waste-related organizations regarding needed rule improvements. An external advisory committee was convened to provide Ecology additional advice on rule-related issues. Ultimately, Ecology's goal is to begin public review and comment in mid 2000 and adopt a revised rule by the end of that year.

Developing a Vision and Plan for Solid Waste Management

In 1989, the *Waste Not Washington Act (ESHB 1671)* was passed and revised the waste management hierarchy in chapter 70.95 RCW, *the Solid Waste Management Act*, to place waste reduction and recycling as the top priorities for handling solid waste. The last "Washington State Solid Waste Management Plan"[5] was completed in 1991. The emphasis was on the residential sector and the municipal solid waste stream, and Ecology and local governments worked to establish programs for residential curbside collection of recyclable materials. By 1999, most communities that had planned for these residential curbside programs have implemented them.

Since 1997, Legislative directives have focused SW&FAP activities into expanded areas to work with the private sector and industry to ease the regulatory burden and encourage reuse and recycling, including the land application of various materials. Based on Legislative direction and industry activities into waste reuse, diversion and recycling activities, solid waste management is focusing more on facilities and processes related to these activities to ensure environmental protection and appropriate permitting or exemption. These areas go beyond the traditional household recycling and focus more on industrial waste streams. There is more involvement of the private sector in all aspects of solid waste management.

There is a need to look comprehensively at the current solid waste environment, including the long-term impacts of the changes evolving in the management of solid waste. We need a state plan that is current, relevant and provides a vision for the statewide management of solid waste, for the state, local government, the private sector and citizens. Through the State Plan update process, we will be able to integrate and synthesize a number of efforts that have been standing alone, such as the Recycling Panel, the 304 rule revision, and recent legislative directives, and look comprehensively to the future.

[4] "SHB 2960 Report on Washington's Solid Waste Permit System", Study of the Solid Waste Permitting System, Publication #98-505, November 1998.
[5] "Washington State Solid Waste Management Plan", Washington State Department of Ecology, Publication Number 91-1, January 1991.

Chapter II Solid Waste Handling Infrastructure

This chapter describes the basic facilities making up the solid waste management infrastructure within Washington state. While disposal and recycling information is from 1998, the lists of facilities are current as of July 1999.

Once solid waste is generated, its handling can be categorized into three distinct classifications. Solid waste can either be: (1) landfilled; (2) intermediately handled - stored, transferred, processed; or, (3) incinerated. A fourth category, Ancillary-Other, explains anomalies to the three basic classifications of solid waste handling. Biosolids landspreading sites are not included in the total number of facilities. There is a new regulation proposed to deal exclusively with those types of sites.

Moderate risk waste is, by definition, excluded from regulation as dangerous waste, even though it may have the characteristics of dangerous waste. Moderate risk waste fixed facilities are regulated as interim solid waste handling sites.

Regulated solid waste facilities in the state are covered by three rules developed by Ecology. The first rule, chapter 173-304 WAC, *the Minimum Functional Standards* (MFS) identifies 16 distinct solid waste facility types, each with its own set of permitting criteria.

The second rule pertains to municipal solid waste landfills, chapter 173-351 WAC, *Criteria for Municipal Solid Waste Landfills*.

The third rule regulating solid waste handling facilities is chapter 173-306 WAC, *Special Incinerator Ash Management Standards*, which sets permitting, construction and operating standards for MSW incinerator ash monofills.

In this report, Ecology has identified 361 solid waste handling facilities in Table 2.1. Facility ownership in this chapter is categorized as either PUBLIC for those facilities owned by a recognized jurisdiction of government - a city, county or special purpose district - or as PRIVATE, for those facilities owned by corporations, partnerships or private individuals.

Table 2.1
Classification Table

Classification Facility Type	Statewide Total
Landfills	**74**
Ash Monofills	1
Inert/Demolition Waste Landfills	31
Limited Purpose Waste Landfills	16
Municipal Solid Waste Landfills	22 *
Woodwaste Landfills	4
Intermediate Classification	**273**
Compacting Stations	7
Compost Facilities	31
Drop Boxes	69
Piles	10
Recycling Facilities	49
Surface Impoundments	5
Transfer Stations	84
Moderate Risk Waste Facilities	16
Tire Piles	2
Incineration	**3**
Ancillary/Other	**9**
Landspreading Disposal Facilities	4
Other Facilities	5
Total All Facilities	**361**

* Includes one MSW landfill scheduled to open November 1999 and one landfill that is constructed but not operating.

As an overview of the solid waste facilities in the state, Table 2.2 identifies the types and number of facilities and the county in which they are located. This table includes only those facilities that are separately permitted in chapter 173-304 WAC or chapter 173-351 WAC. Several other “facility types” exist but are co-located at another permitted facility. This is especially true for composting and MRW facilities. Future reports will identify all of the facility types, whether they are separately permitted or co-located with other facilities.

For a greater understanding of Washington's solid waste infrastructure, a closer examination of each solid waste infrastructure classification and applicable "type" sub-category follows. In addition maps showing the counties where the facilities are located are included for each category. See Appendix A for a map identifying counties.

Table 2.2
Solid Waste Facilities in Washington
Permitted Under Chapter 173-304 WAC or Chapter 173-351 WAC
(as of November 1999)

	LANDFILLS				INTERMEDIATE											
County	MSW Landfill	Wood Waste	Inert/Demolition	Limited Purpose	Ash Monofill	Compacting Station	Compost Facility	Drop Boxes	Piles	Recycling Facility	Surface Impoundments	Transfer Stations	MRW Fixed Facility	Tire Piles	Incinerators	Other
Adams												2				
Asotin	1		1													
Benton	1		1					1		1		5	1			1
Chelan			3							1		3				
Clallam	1			2			1		1	1	1	2				
Clark				2						7		2	1			1
Columbia												1				
Cowlitz	1			1			2	1		3						
Douglas	1		1									1				1
Ferry												1				
Franklin	1								1			1				
Garfield			1					1								
Grant	2							15								
Grays Harbor		1	1	1					1	7	1	6				
Island			1			2				3		2	4	1		
Jefferson			1	1			1	2	1			1	1			
King	1		1				4	2		1		11	5			
Kitsap	1						1	5		2			1			
Kittitas			1						1		1	2				

	LANDFILLS				INTERMEDIATE											
County	MSW Landfill	Wood Waste	Inert/Demolition	Limited Purpose	Ash Monofill	Compacting Station	Compost Facility	Drop Boxes	Piles	Recycling Facility	Surface Impoundments	Transfer Stations	MRW Fixed Facility	Tire Piles	Incinerators	Other
Klickitat	1				1			2				3		1		
Lewis			1				1	8		2		3				
Lincoln												1				1
Mason		1		1				3				1				
Okanogan	1	1										2				
Pacific								1				1				
Pend Oreille								1				2				
Pierce	3*		3	3			2	1	2	8		9			1	
San Juan								2			2					
Skagit						5	4	1				1				
Skamania										2		3				
Snohomish	1**	1	1				4	6		1		3				1
Spokane	1		8	1			3		1			5	1		2	1
Stevens	1			1								4				
Thurston	1						1	3		5						
Wahkiakum								1								
Walla Walla	1						1									
Whatcom			1	2			1	6		4		4	2			1
Whitman			1	1			1			1						
Yakima	2		4				4	7	2			2				2
TOTAL	22	4	31	16	1	7	31	69	1	49	5	84	16	2	3	9

*One landfill under construction scheduled to open November 1999.

* *The landfill in Snohomish County is permitted but not operating

Landfill Classification

The regulated permanent disposal of solid wastes in landfills in Washington occurs in five types of facilities: (1) ash monofills; (2) inert/demolition landfills; (3) limited purpose landfills; (4) municipal solid waste landfills; and (5) woodwaste landfills. (See Table 2.3.) A short discussion of each landfill classification "facility type" and its relationship to the state's overall infrastructure follows. A more detailed discussion of waste types and amount disposed and incinerated, movement of waste into and out of state, as well as trends in waste management, is found in Chapter VI.

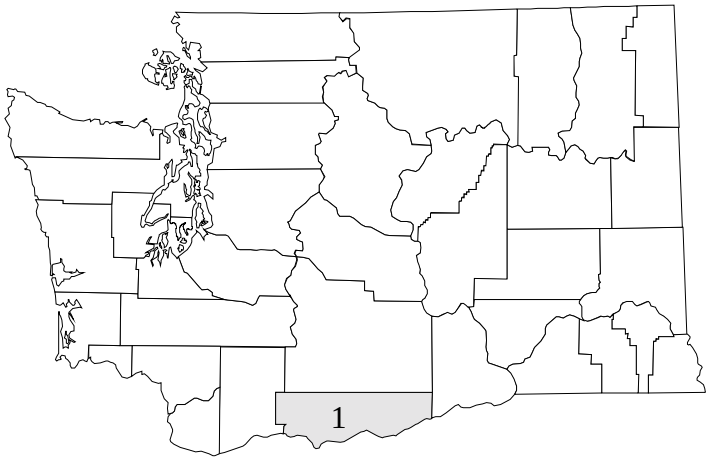
Table 2.3
Landfill Classification

FACILITY TYPE	TOTAL # STATEWIDE		TOTAL BY OWNERSHIP DESIGNATION			
	Active	Active	Public		Private	
	1998	1999	1998	1999	1998	1999
Ash Monofill	1	1	0	0	1	1
Inert/ demolition	24	31	8	10	16	21
Limited Purpose	19	16	1	1	18	15
Municipal solid waste	22	22	16	16	6	6
Woodwaste	7	4	0	0	7	4
TOTAL	73	74	25	27	48	47

Ash Monofills

Ash monofills are landfill units that receive ash residue generated by municipal solid waste incinerator/energy-recovery facilities. The *Incinerator Ash Residue Act*, chapter 70.138 RCW, gave direct permitting authority to Ecology, as well as giving the department the authority to develop rules to regulate the disposal of this ash. Under chapter 173-306 WAC, *Special Incinerator Ash Management Standards*, incinerators which burn more than 12 tons per day of municipal solid waste are required to have a Generator (Ash) Management Plan, approved by Ecology, in place prior to operation of a facility. The ash management plan identifies the location of ash monofills to be used for ash disposal.

Location of Ash Monofill



Public	0
Private	1
Total	1

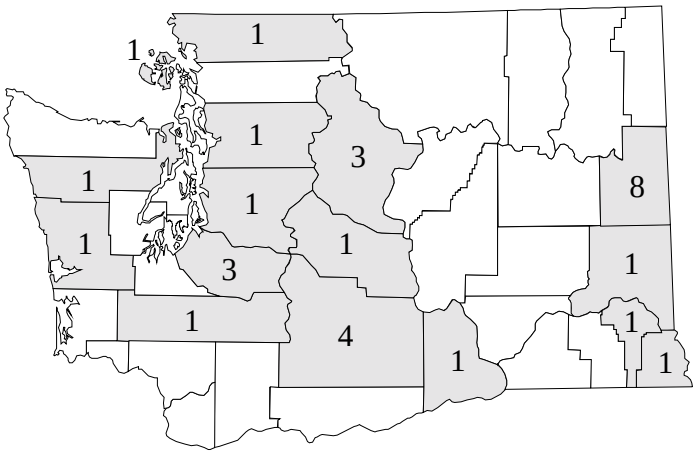
In 1999, there was only one permitted ash monofill in Washington, located at the Roosevelt Regional Landfill in Klickitat County. The monofill operates under a permit issued by Ecology, and received 112,087 tons of special incinerator ash in 1998.

Inert/Demolition Waste Landfills

Inert/Demolition Waste landfills are facilities which receive "more than two thousand cubic yards of inert wastes and demolition wastes."[6] These facilities are regulated under WAC 173-304-461.

Twenty-two of the inert/demolition landfills reported 494,528 tons of waste in 1998. In 1999, there were 31 inert/demolition landfills listed for the state. Most (68%) of the inert/demolition landfills are privately owned and operated. Public inert/ demolition landfills make up 32% of this facility type.

Location of Inert/Demolition Waste Landfills



Public	10
Private	21
Total	31

[6] WAC 173-304-461(1)

Limited Purpose Waste Landfills

Limited purpose landfills are facilities that receive "solid wastes of limited types, known and consistent composition, other than woodwastes, garbage, inert waste and demolition waste."[7] These facilities are regulated under WAC 173-304-460(5). Limited purpose landfills are identified by the type of waste. In other words, the waste associated with a limited purpose landfill is unique to that facility.

Thirteen limited purpose landfills that reported in 1998, accepted 626,896 tons of waste. The waste disposed in these facilities is usually generated by the owner of the landfill. Only one limited purpose landfill is publicly owned.

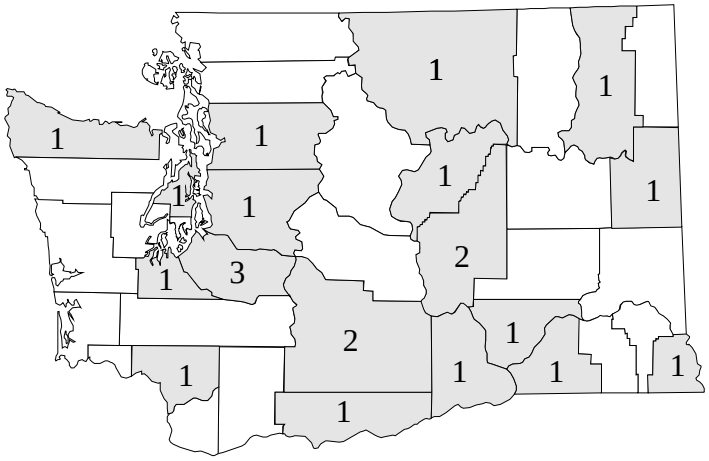
Municipal Solid Waste Landfills

In 1998, 22 MSW landfills accepted 4,582,107 tons of waste. (See Chapter VI for additional discussion of waste types, amounts and sources.)

In 1999, one MSW landfill in Pierce County started construction, and was scheduled to start receiving waste by November 1999.(The MSW landfill in Snohomish County is permitted but is not operating at this time.). Of the remaining 20 operating MSW landfills, the majority, 73%, of MSW landfills are operated by public entities. This has historically been true in Washington. Private MSW landfills constitute only 27% of this facility type. Even though most of the landfills are owned by public entities, the majority of landfill capacity (87%) is under the control of the private sector. (See the discussion on landfill capacity, in Chapter VI.)

[7] WAC 173-304-100(98)

Location of MSW Landfills



Public 16
Private 6
Total 22

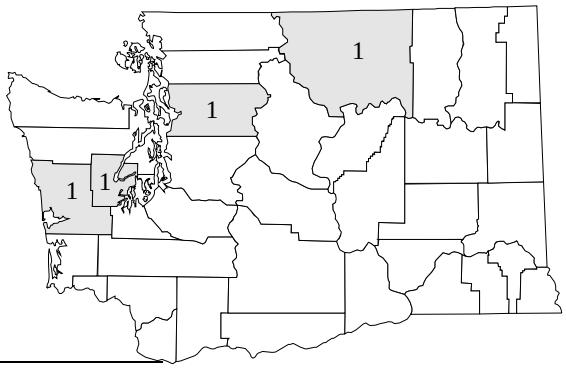
Woodwaste Landfills

Woodwaste landfills are those facilities which landfill "more than 2,000 cubic yards of woodwaste, including facilities that use woodwaste as a component of fill."[8]
These facilities are regulated under WAC 173-304-462.

The MFS defines woodwaste as "solid waste consisting of wood pieces or particles generated as a by-product or waste from the manufacturing of wood products, handling and storage of raw materials and trees and stumps. This includes, but is not limited to, sawdust, chips, shavings, bark, pulp, hog fuel, and log sort yard waste, but does not include wood pieces or particles containing chemical preservatives such as creosote, pentachlorophenol, or copper-chrome-arsenate."[9]

In 1998, five woodwaste landfills reported 59,410 tons of waste. In 1999, four operating woodwaste landfills were listed in the state list, all privately owned.

Location of Woodwaste Landfills



Public 0
Private 4
Total 4

[8] WAC 173-304-462(1)

[9] WAC 173-304-100(91)

Intermediate Classification

Solid waste, prior to its final disposal or incineration, is often accumulated at a storage facility, consolidated at a transfer station, converted into a useful product, or prepared for recycling or disposal at a processing center. The storage, transfer or processing of solid wastes are regulated by the MFS and fall under the interim[10] or intermediate classification of solid waste handling facilities. Some moderate risk waste fixed facilities are regulated as interim solid waste handling sites.

Specifically, a storage facility primarily holds "solid waste materials for a temporary period"[11] while a processing center is in the operation of converting "solid waste into a useful product or to prepare it for disposal."[12] A transfer station, on the other hand, is a "permanent, fixed, supplemental collection and transportation facility, used by persons and route collection vehicles to deposit collected solid waste from off-site into a larger transfer vehicle for transport to a solid waste handling facility."[13]

The distinguishing characteristic of all interim or intermediate classification solid waste handling facilities is that they are not designed for final disposal. There are 10 types of intermediate facilities: (1) baling stations; (2) compacting stations; (3) composting facilities; (4) drop boxes; (5) moderate risk waste fixed facilities; (6) piles; (7) recycling centers; (8) surface impoundments; (9) transfer stations; and (10) tire piles.

Bale Station

A bale station is a facility that processes loose solid waste into large bound bundles. The purpose of binding waste in this fashion is to place the bundles into lifts at a landfill. These facilities are regulated under WAC 173-304-410. Because this technology is often confused with compacting stations, and since bale stations are regulated under the same section of the MFS, to date no bale stations have been permitted as separate facilities. One county does have a bale station located at its transfer station, but it does not have a separate permit.

Compacting Station

A compacting station is a facility which employs mechanical compactors to compress solid wastes into dense packets of material for shipment. These facilities are regulated under WAC 173-304-410.

Ecology identified seven compacting stations statewide in 1999. All compacting facilities are under public ownership and are affiliated with recycling operations.

[10] WAC 173-304-100(38)

[11] WAC 173-304-100(76)

[12] WAC 173-304-100(62)

[13] WAC 173-304-100(82)

Compacting stations are located in the more urban, northwestern counties of the state. Larger urban centers are more inclined to use this technology to process large amounts of recyclables for shipment. Compactors are also used at transfer stations, though they are not permitted separately.

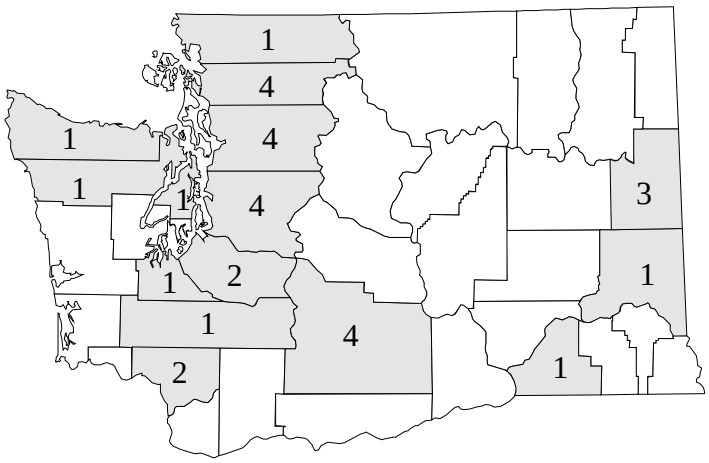
Compost Facilities

A compost facility is a facility which promotes the biological decomposition of organic solid waste, and other organic material, yielding a product for use as a soil conditioner. Composting is considered a key element of the state's strategy of reaching the statewide 50% recycling goal.

Compost facilities are currently regulated under two sections of the MFS: the pile standards (WAC 173-304-420), or the recycling facility standards (WAC 173-304-300). Jurisdictional health departments have the authority to decide under which standards, or combination of standards, compost facilities should be regulated. Most compost facilities are currently permitted under the more stringent pile standards due to their potential to generate leachate. There are 31 compost facilities identified statewide in 1999. Some of these are co-located at other solid waste facilities and may not have a separate permit.

Ecology has published the "Compost Facility Resource Handbook".[14] The handbook describes the regulatory framework for compost facilities and recommends facility design criteria to meet regulations. It also recommends management practices to promote well run facilities. (See Chapter IV for additional discussion.)

Location of Compost Facilities



Public	14
Private	17
Total	31

[14] "Compost Facility Resource Handbook – Guidance for Washington State", November 1998, Publication #97-502.

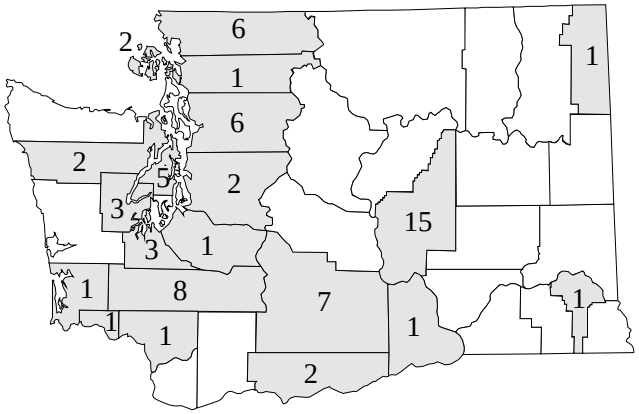
Drop Boxes

A drop box is defined in the MFS as "a facility used for the placement of a detachable container including the area adjacent for necessary entrance and exit roads, unloading and turn-around areas."[15] It is regulated under WAC 173-304-410.

Drop boxes normally serve the general public by receiving loose loads of waste that are transported to the site by an individual for later disposal or recycling. Typically drop boxes for household waste are located in the more rural areas of the state.

Ecology identified 69 operating drop boxes in 1999. The map depicts the profile of regulated drop boxes statewide. The majority, over 90%, are public and are primarily operated by county public works departments.

Location of Drop Boxes



Public	62
Private	7
Total	69

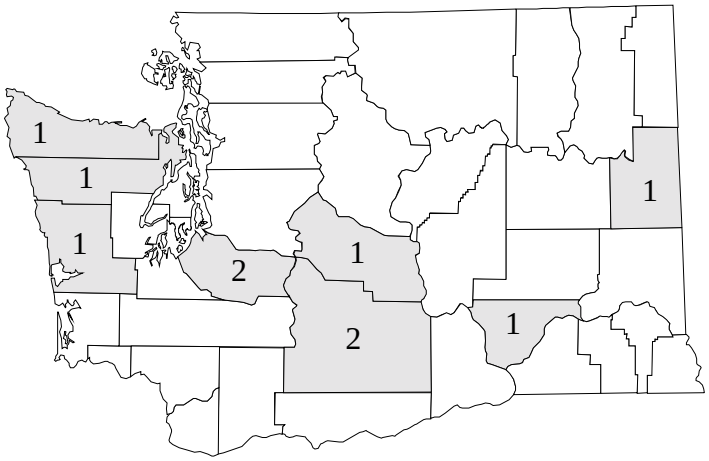
Piles

A solid waste pile is described in the MFS as any "non-containerized accumulation of solid waste that is used for treatment or storage."[16] Pile storage/treatment areas are usually associated with the storage and processing of wastes requiring remedial actions, such as petroleum-contaminated soils. Pile facilities or areas used for storage and treatment are regulated by WAC 173-304-420. (Compost facilities can also be regulated under this section as discussed above.) Ten privately owned piles (non-composting) were identified in 1999.

[15] WAC 173-304-100(25)

[16] WAC 173-304-100(56)

Location of Piles



Public 0
Private 10
Total 10

Recycling Facilities

A regulated recycling facility refers to an operation engaged in the collection and utilization of solid waste for the purpose of transforming or re-manufacturing the waste materials into usable or marketable materials for use other than landfill disposal or incineration. Chapter 70.95 RCW, the *Solid Waste Management Act* refers to "recyclable materials" as "those solid wastes that are separated for recycling or reuse, such as papers, metals, and glass, that are identified as recyclable material pursuant to a local comprehensive solid waste plan."[17] Recycling facilities are regulated under WAC 173-304-300.

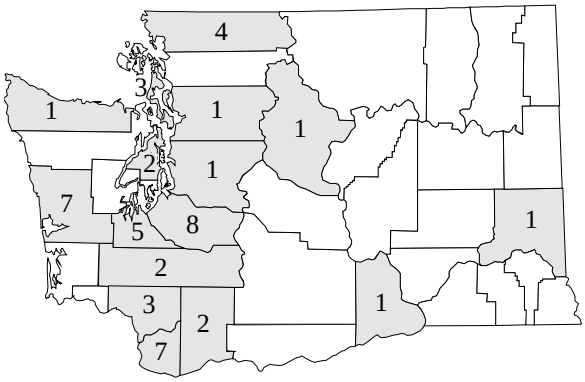
It is important to note that many types of recycling facilities are not regulated by the MFS. For example, the regulations do not apply to single family residences and single family farms engaged in composting of their own wastes (exempt from any other regulations); facilities engaged in the recycling of solid waste containing garbage, such as garbage composting; facilities engaged in the storage of tires; problem wastes; facilities engaged in recycling solid waste stored in surface impoundments, which are otherwise regulated in the MFS (WAC 173-304-400); woodwaste or hog fuel piles to be used as fuel or raw materials stored temporarily in piles being actively used; nor do they apply to any facility that recycles or uses solid wastes in containers, tanks, vessels, or in any enclosed building, including buy-back recycling centers. Composting and land application of materials are regulated under other portions of chapter 173-304 WAC.

Because of the distinction between regulated recycling facilities and non-regulated activities that promote recycling, only 49 recycling facilities permitted under the MFS requirements were identified in 1999. The majority (94%) of the regulated recycling

[17] RCW 70.95.030(14)

facilities were private facilities and public recycling facilities constituted 6% of this facility type.

Location of Recycling Facilities



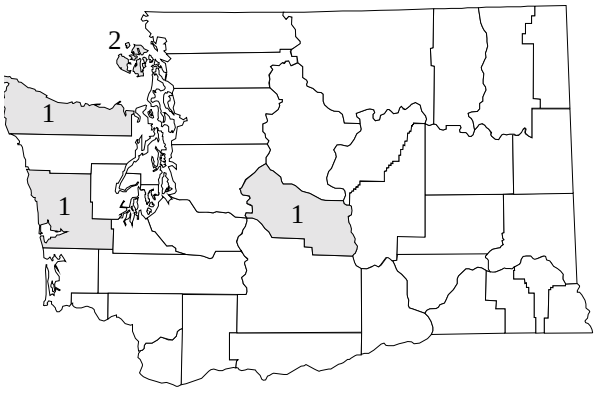
Public 3
Private 46
Total 49

Surface Impoundments

A surface impoundment refers to "a facility or part of a facility which is a natural topographic depression, man-made excavation, or diked area formed primarily of earthen materials (although it may be lined with man-made materials), and which is designed to hold an accumulation of liquids or sludges. The term includes holding, storage, settling, and aeration pits, ponds, or lagoons, but does not include injection wells."[18]

Some surface impoundments are regulated under WAC 173-304-430.[19] Ecology identified five regulated facilities in 1999. All six of these surface impoundment facilities were septage lagoons. The category remains in the intermediate classification pending interpretation or clarification under the biosolids rule. Four of the regulated surface impoundment facilities are publicly-owned, and one is privately-owned.

Location of Surface Impoundments



Public 4
Private 1
Total 5

[18] WAC 173-304-100(80)

Transfer Stations

A transfer station is defined as "permanent, fixed, supplemental collection and transportation facility, used by persons and route collection vehicles to deposit collected solid waste from off-site into a larger transfer vehicle for transport to a solid waste handling facility."[20] The regulations applicable to transfer stations are contained in WAC 173-304-410.

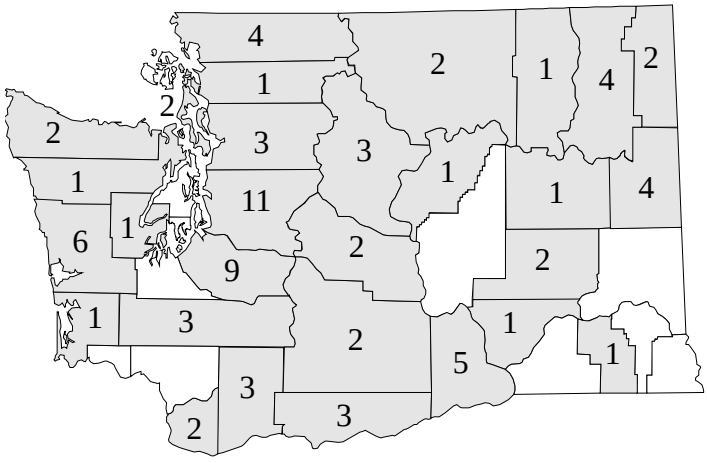
Typically, transfer stations are areas where individual collection vehicles can be off-loaded, the waste stored for a short period of time and reloaded onto larger vehicles for transfer to the disposal facility.

In the past, transfer stations were generally located in larger, urban areas; however, with the new federal regulations applicable to municipal solid waste landfills, jurisdictions are now viewing transfer stations as an option to operating a landfill. Wastes can be collected at these centers for long-hauling to regional MSW landfills.

Transfer stations often have areas where the public can bring waste for disposal. Many also have recycling facilities and/or household hazardous waste collection areas. There were 84 regulated transfer stations operating in 1999.

The profile map shows that the majority of the transfer stations continue to be publicly operated entities, 64%.

Location of Transfer Stations



Public	54
Private	30
Total	84

[19] Surface impoundment facilities permitted under federal, state or local water pollution control laws are excluded from regulation under WAC 173-304-430.

[20] WAC 173-304-100(82)

Moderate Risk Waste Facilities

Moderate risk waste is, by definition, excluded from regulation as dangerous waste, even though it has the characteristic of dangerous waste. Moderate risk waste fixed facilities are regulated as interim solid waste handling sites. Some of these facilities are co-located at other types of permitted facilities, such as transfer stations and landfills, and do not receive a separate permit. In 1999, Ecology had 16 MRW fixed facilities in its tracking system that received a separate permit.

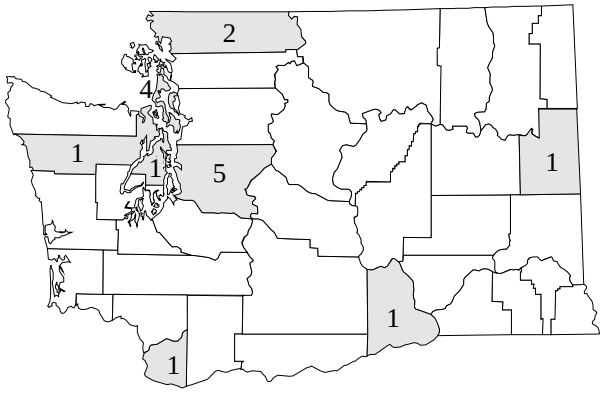
MRW facilities vary in the types and number of materials the handle. Some received only limited types of materials, such as used motor oil, batteries and oil-based paints, while others can collect many types of waste including those generated by small quantity generators

In 1996, 14 county MRW collection programs accepted small quantity generator wastes. Some fixed facilities typically have a hazardous materials management plan pursuant to article 80 of the *Uniform Fire Code*, as well as a solid waste handling permit issued by the jurisdictional health district. There are currently 43 fixed facilities in Washington.

Generally, used oil collection facilities are not required to have solid waste handling permits in accordance with the MRW Fixed Facility Guidelines[21], but often have a permit from the local fire department. Household hazardous waste collection events require no permit under state law. However, Ecology has provided guidelines[22] which are widely used. Some local jurisdictional health departments issue permits for collection events or mobile collection sites.

Despite the large volumes of hazardous waste now entering the moderate risk waste collection and management system, there have been no major releases to the environment to date at any facility or event.

Location of MRW Facilities
(With separate solid waste permits)



Public 14
Private 2
Total 16

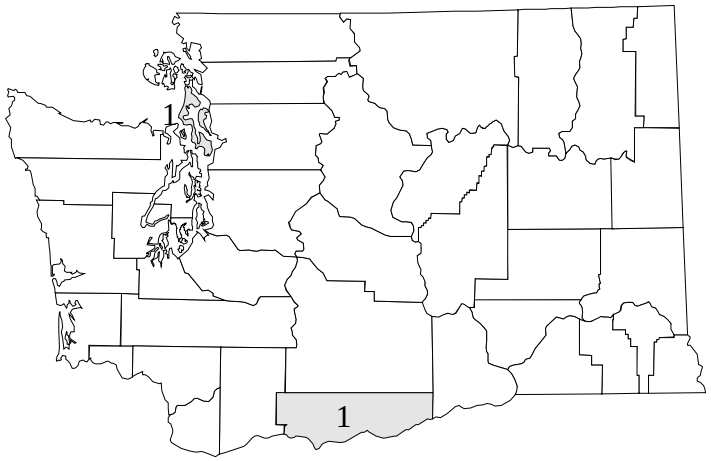
[21] *Moderate Risk Waste Fixed Facility Guidelines*, Department of Ecology, Publication No. 92-13, March 1992 (revised May 1993).

Tire Piles

In Washington state, about four million used tires are generated each year. The used tires may be taken to tire pile storage facilities. A regulated tire pile facility in Washington is any tire pile that temporarily stores or accumulates more than 800 tires. Tire pile standards are contained in WAC 173-304-420.

A major problem with used tires has been illegal tire piles. This section, however, deals specifically with regulated tire piles. (See Chapter III for additional information about the cleanup of illegal tire piles.) Ecology identified two permitted tire piles in the state in 1999, both privately owned.

Location of Tire Piles



Public	0
Private	2
Total	2

Incineration Classification

An energy recovery facility is considered a combustion plant which specializes in the "recovery of energy in a useable form from mass burning or refuse-derived fuel incineration, pyrolysis or any other means of using the heat of combustion of solid waste that involves high temperature (above twelve hundred degrees Fahrenheit) processing."[23] By definition, incineration as it applies to solid waste materials, means "reducing the volume of solid wastes by use of an enclosed device using controlled flame combustion."[24]

Energy recovery and incinerator facilities are regulated under WAC 173-304-440 applies to "all facilities designed to burn more than twelve tons of solid waste per day, except for facilities burning woodwaste or gases recovered at a landfill."[25]

[22] *Household Hazardous Waste Guidelines for Conducting Collection Events*, Department of Ecology, Publication #88-6, February 1989.

[23] WAC 173-304-100(26)

[24] WAC 273-304-100(37)

[25] WAC 173-304-440(1)

In 1998, Ecology identified six regulated solid waste incinerator facilities that burned a total of 369,778 tons of waste. As of November 1999, only three incinerators were operating.

One of the incinerators, Inland Empire Paper in Spokane, falls under the *Minimum Functional Standards* as a solid waste incinerator because they burn more than 12 tons of solid waste per day. At this facility, the waste is composed of the paper sludge from the pulp and papermaking process. The other five incinerators burned municipal solid waste.

In addition to solid waste handling permit requirements under the MFS, solid waste incinerators may be subject to regulations under chapter 70.138 RCW, the *Incinerator Ash Residue Act*. The rules implementing this, chapter 173-306 WAC, *Special Incinerator Ash Management Standards*, require certain solid waste incinerators to prepare generator (ash) management plans. These rules do not apply to the operation of incineration or energy recovery facilities that burn only tires, woodwaste, infectious waste, sewage sludge or any other single type of refuse, other than municipal solid waste. They also do not apply to facilities which burn less than 12 tons of municipal solid waste per day

Of the four solid waste incinerators still operating in 1999, three of these facilities were subject to both the requirements of chapter 173-304 WAC and chapter 173-306 WAC. These three were required to have a generator ash management plan, approved by Ecology, which discusses the handling, storage, transportation and disposal of the incinerator ash. All three facilities, two public and one private, had approved generator ash management plans and solid waste handling permits.

Ancillary - Other Classification

The classification of Ancillary - Other, is not covered or spelled out in regulation but is included here to explain certain anomalies discovered in the reporting process that may have an effect in subsequent reporting years. To qualify for inclusion in this category, a facility type must be either under regulatory modification, be exempted from regulation, or determined to be an obscure facility type needing reclassification or elimination outright. This classification includes: (1) Exempted-Tribal Facilities; (2) Landspreading; and (3) Other.

Exempted Facilities

Exempted facilities, for the purpose of this report, are those solid waste handling facility types that are identified under Washington statute or rule but are either (1) not under the jurisdiction of state or local governments, such as Tribal solid waste facilities; or (2) are exempted for consideration by other federal, state or local laws, such as woodwaste facilities which fall under Department of Natural Resources rules. One such facility was identified in 1999.

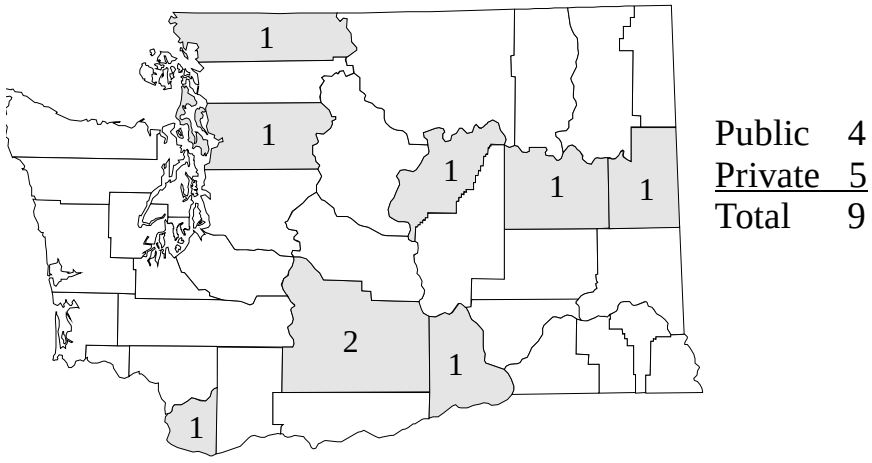
Landspreading Disposal Facilities

A landspreading disposal facility under the MFS is a facility that applies sludges or other solid wastes onto or incorporates solid waste into the soil surface at greater than agronomic rates and soil conditioners/immobilization rates. Landspreading disposal facilities are regulated under WAC 173-304-450. There were two landspreading sites identified, as well as one sludge and one septage facility in 1999. (Many sites using biosolids for land application will be permitted under the new biosolids regulation discussed Chapter IV.)

Other Facilities

The "other" category of facility types is an actual category of the MFS and applies to "other methods of solid waste handling such as a material resource recovery system for municipal waste not specifically" identified elsewhere in the MFS. The specific regulations for "other" facilities are in WAC 173-304-470. This type of facility is basically a miscellaneous category which is designed to cover new solid waste technologies that are developed between MFS revisions. There were three sites included in the 1999 database. One treated PCS, one vactor waste and one medical waste.

Location of Other Facilities



Public	4
Private	5
Total	9

Operator Certification Program

In Washington state, solid waste landfills and incinerators are required to have certified operators on site at all times, per chapter 70.95D RCW, *Solid Waste Incinerator and Landfill Operators*. The Landfill and Incinerator Operator Certification program was created by the legislature in 1989, through the "Waste Not Washington Act". The implementation rule was adopted in June 1991, chapter 173-300 WAC, *Certification of Operators of Solid Waste Incinerators and Landfill Facilities*.

The requirements for having certified operators on site at all times apply to the following types of facilities: municipal solid waste landfills; inert and demolition landfills; limited

and special purpose landfills; and all incinerators that burn solid waste. The law also requires that any person inspecting an applicable solid waste facility must be certified.

Course offerings began in 1992, with those taking the course and passing the test receiving certifications of competency for 3 years. Yearly training courses were held on landfill and incinerator operations until 1995. Direct funding for implementing this program at Ecology is not available. Because of reduced staffing, a home study course was instituted. This not only reduced the level of effort for Ecology, it provided a cost savings to those who took the course. The certification training however no longer focuses on Washington specific issues for both operators and inspectors.

Over 950 persons have taken one or both courses since the programs inception. To date, a total of 525 people have been certified for landfill operations and 350 have been certified for incinerator operations. Certification renewals began in 1994.

In 1999, 45 certificates were up for renewal (37 landfill and 8 incinerator). Notices were sent out in September. Re-certification requests must be submitted to Ecology by years' end.

There continues to be a significant decrease in the number of persons taking the landfill course since 1995. The reduction in the number of certified landfill operators can be attributed to a reduction in the number of landfills since the program began. The number of persons taking the incinerator course has stayed fairly stable.

Chapter III Implementing Solid Waste Activities

Local Planning

Local solid waste planning is the cornerstone of solid waste management in Washington state. The state Legislature asks counties and cities to make sound solid waste handling decisions based on approved and "current" comprehensive solid waste management plans (RCW 70.95110(1)).

These comprehensive plans detail and inventory all existing solid waste handling facilities within a county and provide an estimate of long-range needs for solid waste facilities projected over a 20-year period. The plans are intended to serve as a guiding document for a county to develop its infrastructure. Since 1989, counties and cities have been required to provide detailed information on waste reduction strategies and recycling programs and schedules for program implementation in the plans.

Ecology provides technical assistance to local governments in preparing and implementing their plans. Ecology also approves the plans. Table 3.1 identifies the local solid waste plans for each county and two cities, Seattle and Everett, that do individual plans. This table shows the status of each local comprehensive solid waste management plan for each county, organized by planing phases, the year the plans were last approved, the waste reduction/recycling goals and comments concerning future planning efforts as of July 1999.

Table 3.1
Current Status of Solid Waste Plans in Washington

COUNTY PLANNING STATUS BY PHASES (as of November 1999)			
COUNTY	**CURRENT STATUS (date last approved)**	**WR/R GOAL**	**COMMENTS**
PHASE I			
King	Yes - 1994	50% by 1995 65% by 2000	Recycling goals being reevaluated in update scheduled for completion in 2000
Seattle	Yes - 1999	recycle or compost: 60% by 2008	
Kitsap	Yes - 1993	50% by 1995	Currently updating plan. Preliminary review completed with final plan expected to be approved in 1999
Pierce	Yes - 1993	50% WRR by 1995	Currently updating plan
Snohomish	Yes - 1990	24% by 1992 36% by 1995 50% by 1999	Currently updating plan with scheduled completion in mid to late1999. Recycling goals are being reevaluated with update.
Everett	Yes - 1996	35% recycling by 2005 3% to 5% WR	
Spokane	Yes - 1998	50% Recycling by 2008	

COUNTY PLANNING STATUS BY PHASES (as of November 1999)			
COUNTY	**CURRENT STATUS (date last approved)**	**WR/R GOAL**	**COMMENTS**
PHASE II			
Clallam	Yes - 1993	20% by 1996 40% long range goal	Currently updating plan
Clark	Yes - 1994	50% WRR by 1995	Currently updating plan
Cowlitz	Yes - 1993	50% WRR by 1995	Probably write an amendment
Grays Harbor	Yes - 1992	50% WRR by 1995	Currently updating plan
Island	Yes - 1994	Assist the State in achieving its goal of 50% by 1995	Currently updating plan with first draft expected in late 1999.
Jefferson	Yes - 1993	30% WRR by 1996	Currently updating plan
Lewis	Yes - 1993	18% WRR by 1995	Currently updating plan
Mason	Yes - 1998	35% WRR by 1998	Implementation
Pacific	Yes - 1992	32% WRR by 1996	Currently updating plan
San Juan	Yes - 1996	50% by 1995	
Skagit	Yes - 1994	50% or better by 1995	
Skamania	Yes - 1992	40% WRR by 1998 50% long range goal	Currently updating plan
Thurston	Yes - 1993	40% WRR by 1995 60% by 2000	Preparing to update plan
Wahkiakum	Yes - 1994	20% WRR by 1996	
Whatcom	Yes - 1999	50% diversion	
PHASE III			
Adams	Yes - 1993	50% WR/R BY 2012	Currently updating plan
Asotin	Yes - 1998	26% by 1997	
Benton	Yes - 1994	35% by 1995	Currently updating plan
Chelan	Yes - 1995	26% by 1995	
Columbia	Yes - 1994	20% WR/R by 1996	
Douglas	Yes - 1994	25% by 1995	Currently updating plan
Ferry	Yes - 1993	35% WR/R by 1995 50% WR/R by 2013	
Franklin	Yes - 1994	35% R by 1995 5% WR by 1998	
Garfield	Yes - 1993	26% WR/R by 1997	
Grant	Yes - 1995	22% WR/R by 2000	Currently amending plan
Kittitas	YES- 1999	50% by 2006 (in update)	
Klickitat	Yes - 1991	50% by 1995	Currently updating plan
Lincoln	Yes - 1992	35% WR/R by 1997	Currently updating, expected approval 12/99
Okanogan	Yes - 1993	30% by 2000	
Pend Oreille	Yes - 1994	45% WR/R by 2015	
Stevens	Yes - 1994	36% WR/R by 2012	Currently updating
Walla Walla	Yes - 1994	40% by 2002	
Whitman	Yes - 1997	40% WR/R by 2001	
Yakima	Yes - 1994	35% by 1995	

In addition to solid waste plans, local governments were required to prepare moderate risk waste plans. By January 1992, the last of the 32 plans (representing all of Washington's jurisdictions) was approved.

Financial Assistance to Local Governments

In addition to regulation and technical assistance, Ecology helps to ensure proper waste management by financial assistance through grants and interagency agreements (IAA). Ecology helps local governments fulfill their role as waste managers by providing financial assistance in the form of Coordinated Prevention Grants to develop, implement and enforce their local solid and moderate risk waste management plans.

A new financial assistance program entitled "Community Litter Cleanup Program" began in 1998. The program assists local government through interagency agreements to pay for the cost of picking up litter and cleaning up illegal dumps on public land.

Coordinated Prevention Grants (CPG)

Most of the local solid and moderate risk waste projects supported by grants are funded through the Coordinated Prevention Grant program. Ecology launched this consolidated program of prevention grants for waste management in 1992. Since then, local governments have received over $82.8 million in grants to fund solid and moderate risk waste activities.

The coordinated structure encourages local governments to work together to examine their waste management needs and decide the activities they will propose for grant funding. Ecology allocates the available funds for countywide areas, using a base amount for each county plus a per capita amount, minus the enforcement allocation. These allocations are not entitlements. Local governments must submit satisfactory applications that meet eligibility requirements.

Grant recipients must provide a cash match of at least 25 to 40 percent of the total eligible costs of their projects. The lower match amount is available to counties with high unemployment and low per capita income (also referred to as economically disadvantage).

This is the second year of the two-year grant cycle which runs from January 1, 1998 through December 31, 1999. In addition to the original awards of $14,876,025 in grants for waste management activities, $1,305,640 in new grants were issued in 1999. The grants leveraged local matching funds to support a total of $25,771,150 or 63 percent worth of solid and moderate risk waste projects.

The waste management activities that the Coordinated Prevention Grant Program funded for the current 1998/99 cycle are broken down in the following categories:

		1998	1999
Hazardous Waste Planning	$	86,650	22,190
Household Hazardous Waste Implementation	$	663,259	78,450
Household Hazardous Waste Collection and Disposal	$	4,979,005	118,023
Small Quantity Generator Implementation	$	1,018,099	3,750
Solid Waste Planning	$	334,559	0
Solid Waste Enforcement	$	2,676,225	82,246
Groundwater Monitoring Wells	$	25,800	0
Waste Reduction and Recycling – Activities	$	4,284,312	313,258
Waste Reduction and Recycling – Capital	$	811,116	618,672
Moderate Risk Waste - Capital	$	0	69,051
Total	$	14,876,025	1,305,640

Changes in the Coordinated Prevention Grants Program

Modifications that were made to the Coordinated Prevention Grant program for the 1998/99 cycle included funding changes to the enforcement grant activities and new reporting requirements for both enforcement and solid/hazardous waste grant activities.

The enforcement grants, which are used by local health agencies to conduct such activities such as inspections and enforcement at solid waste facilities, and investigation of illegal dump complaints, continue to be a part of the CPG grant. However, unlike past grant cycles, the funds were allocated separately and not made available for other uses under the grant. Ecology's intent was to direct more funds to local health agencies for implementing enforcement required by state law and regulation. Enforcement activities eligible for grant funding were expanded to include developing and revising ordinances, reviewing plans and providing general customer assistance.

The allocations for enforcement activities are $100,000 per single county health department/district and $150,000 per multi-county health department/district.

Additional changes require both solid waste enforcement and solid/hazardous waste planning/implementation activities to report accomplishments and successes in a new format. The statewide quantitative and qualitative data on all grant activities is needed to be able to measure and communicate the positive results of the grants. By changing the type and the format of the information reported on the progress reports, information will be available to quantity the results of the program, and thereby communicate its value more effectively.

2000-01 Coordinated Prevention Grant Cycle

In July 1999, Ecology announced the opening of the application period for the 2000-01 Coordinated Prevention Grant Program. Ecology has allocated $16.8 million for this two year grant cycle.

Community Litter Cleanup Program

The Community Litter Cleanup Program was developed and implemented in 1998. Legislation passed in 1998 (SSB 3058) directs Ecology to provide twenty percent of litter account appropriations to local community cleanup efforts.

For the first round in 1998, forty interagency agreements were written. Each agreement stipulates that the recipient of the litter funds track the following information

- number of labor hours used on the project
- amounts of litter collected
- number of illegal dumps cleaned
- number of road miles and acres cleaned
- value of goods and services donated.

Several local governments partnered with volunteer groups providing for 667 volunteer hours. Others utilized state or local offender crews logging 70,474 correction crew hours to clean up litter and illegal dumps. 15,015 road miles and 1,269 illegal dump sites (6,507 acres) were reported cleaned with 2,272,039 pounds of litter collected and 226,893 pounds recycled.

$1,312,000 from the Waste Reduction, Recycling and Litter Control Account was provided for the calendar year of 1999 (second round) with forty-one interagency agreements written for projects beginning in January 1999.

In September 1999 meetings were held around the state to gather input from interested parties on how the program can operate most effectively. The results from these meeting were used in the revision of the 2000-01 Community Litter Cleanup Program Guidelines.

A new application period will open November 1, 1999, for projects that will run from January 1, 2000 to June 30, 2001. Approximately $49,500 will be available for eligible jurisdictions, totaling $2,030,761.

Grants to Citizens

Public Participation Grants (PPG)

Washington's chapter 170.105D RCW, *Hazardous Waste Cleanup - Model Toxics Control Act*, provides for a Public Participation Grant program. These grants make it

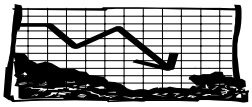
easier for people (groups of three or more unrelated individuals or not-for-profit public interest organizations) to be involved in two types of waste grant issues:

- The cleanup of hazardous waste sites.
- Carrying out the state's solid and hazardous waste management priorities.

Public Participation Grant projects motivate people to change their behavior and take action that will improve the environment. These projects create awareness of the causes and the costs of pollution. They provide strategies and methods for solving environmental problems. This highly competitive program applies strict criteria to applications, awarding grants to projects that prevent pollution and produce measurable benefits to the environment.

From July 1, 1998 through June 30, 1999, Ecology awarded 16 Public Participation grants, for a total of $400,968. These funds provided eight grants for cleanup of hazardous waste sites and eight grants for carrying out solid and hazardous waste management priorities.

Chapter IV Waste Reduction/Recycling



Ecology's Efforts

Washington State has established priorities for solid waste management in the *Solid Waste Management Act*, chapter 70.95 RCW (see sidebar). Waste reduction is the highest priority, followed by recycling. The statute defines waste reduction as, "reducing the amount or toxicity of waste generated or reusing materials." Strategies include purchasing less and promotion of the reuse of products. Recycling is defined as; "transforming or re-manufacturing waste materials into usable or marketable materials for use other than landfill disposal or incineration".

SOLID WASTE MANAGEMENT PRIORITIES
Chapter 70.95 RCW

1. Waste reduction.
2. Recycling, with source separation of recyclable materials as the preferred method.
3. Energy recovery, incineration, or landfilling of separated waste.
4. Energy recovery, incineration, or landfilling of mixed waste.

Ecology is working in several areas of waste reduction/recycling. The Solid Waste & Financial Assistance Program's (SW&FAP's) regional Recycling Specialists help counties and cities implement the waste reduction and recycling recommendations within their local solid waste management plans. Efforts have also focused on several aspects of the managing the organics waste stream and work has continued with sustainable building initiatives.

Assistance to Local Governments

Technical Assistance

The first priority of Ecology staff is to provide ongoing "technical assistance" to local government Recycling Coordinators with the tasks of designing, implementing and evaluating waste reduction and recycling programs. The wide range of possible program areas includes waste reduction, reuse, recycling, moderate risk waste, public education, backyard and centralized composting and business assistance.

Training Courses and Workshops

Related to this basic level of technical assistance is providing local government with opportunities for the training they need for job performance. This training is currently more important in central and eastern Washington where staffing levels and expertise may not have had the time to mature as much as their western Washington counterparts. SW&FAP Recycling Specialists continually work to build capacity within local government staff. Technical training includes such workshops as Master Composting, public education program development, waste reduction program measurement,

marketing environmental programs, and informational training such as tire recycling options.

Recycling Coordinator Meetings

Another valuable tool is the quarterly "Recycling Coordinator Meeting" held in each region. These meetings offer Ecology and local government staff an opportunity to meet and share information. SW&FAP staff work to develop team-building skills and networking opportunities among local government staff in order to draw on each other's expertise, share successful ideas and programs and keep each other from having to "reinvent the wheel". Most importantly, these meetings include roundtable discussions aimed at solving specific problems through county-to-county technical assistance.

Planning and Grants Assistance

SW&FAP's Recycling Specialists assist grant officers in determining appropriate activities for the Coordinated Prevention Grant Program, Community Litter Cleanup Program, and solid waste enforcement grant program. Staff also help planners review the waste reduction and recycling portions of local solid waste management and moderate risk waste plan revisions.

Education and Outreach

SW&FAP conducts several activities aimed at public education as well as recognition for outstanding waste reduction and recycling programs in government, business and schools. All of the education and outreach efforts listed here, along with technical assistance and training, work together to promote waste reduction and recycling in Washington State.

Recognizing Waste Reduction and Recycling Efforts

Each year, Ecology presents "Waste Reduction and Recycling Awards" at the Washington State Recycling Association conference. These awards recognize a wide variety of programs being instituted by federal, state and local governments, the private sector, non-profit groups and individuals that show a commitment to finding ways to reduce waste or recycle material. Table 4.6 lists the awards winners for 1999.

Additionally, all of Washington's public schools received applications for Ecology's annual Waste Reduction and Recycling Public School Awards. Over 100 Washington schools have received cash awards over the years. Table 4.5 identifies the 1998-1999 school award winners.

WSRA Conference Assistance

Every year, SW&FAP Recycling Specialists assist the Washington State Recycling Association (WSRA) in planning and producing their annual conference. Staff help in the organization of sessions that cover a wide variety of issues important to the recycling

industry and community. In 1999, Ecology had a representative serving on the WSRA Board of Directors. Success of the conference can be measured by attendance levels and the WSRA survey results from the conference presenters, exhibitors, and attendees. In 1999, the conference was held in Ocean Shores. The 2000 Conference is scheduled to be in Pasco.

Regional Newsletters

Each of Ecology's four regional offices produces a newsletter, which is published and sent to approximately 550 individuals and organizations across the state. The newsletter provides a mechanism to relay important information to public works departments, health districts, private recyclers and other clients and stakeholders. All SWFAP staff and local government personnel are encouraged to contribute articles. The newsletters provide an avenue for stakeholders to stay current on legislative matters, share program successes and ideas, and announce upcoming meetings. Copies of the regional newsletters can also be found on the Ecology SW&FAP Homepage, http://www.wa.gov/ecology/swfa/swhome.html.

Public Requests for Information and Educational Materials

The SW&FAP program provides a centralized information and education resource for state and local governments, teachers, community groups and the public. Curriculum guides, videos, posters, brochures, reports, and laws and regulations concerning all aspects of solid waste are frequently requested. Ongoing public education is an important step in achieving waste prevention goals.

Recycling Information Line

Ecology operates 1-800-RECYCLE to help citizens find ways to reduce waste and recycle. In 1998, over 20,000 callers were assisted. In addition to the traditional recycling calls from the public, which are referred to recycling centers or to local governments for curbside programs, calls of a more complex nature are also received. Alternatives to using products that produce household toxic wastes are suggested, and methods and locations for the safe disposal of household hazardous waste are provided. For businesses, information on locations for the recycling and disposal of construction, demolition and landclearing debris is provided, and referrals are made to companies that offer commercial pickup for business recycling. Information on used oil recycling and used oil haulers is provided.

While many local governments have developed their own information lines, the statewide information line continues to serve as a first contact for many citizens. Ecology's statewide information line can also provide a caller with information on specialized recycling opportunities in other cities or counties.

A database is maintained by periodically contacting all recyclers to determine commodities accepted, fees if any, and hours. The information from the can be found at http://1800recycle.wa.gov. Targeted waste streams, such as construction and demolition, offer the information line increased opportunities. The database is currently being expanded to include a greater range and specificity of recyclable materials.

The 1-800-RECYCLE web site has a new addition, a WebPage developed for kids of all ages. "Fun with Recycling" has neat links to other environmental education sites and fun environmental games to play. It also has interesting trivia facts on different recyclable materials. Check it out at: http://1800recycle.wa.gov/kids.

Earth Day

SW&FAP staff provide technical assistance to local governments in order to help plan, organize, implement and promote community Earth Day events. Earth Day activities provide an opportunity for Ecology staff and local government to get the word out about the importance and benefits of waste reduction, recycling and proper solid waste management.

America Recycles Day

The mission of America Recycles Day is to hold an annual national awareness event to promote the social, environmental and economic benefits of recycling and buying recycled. The goals are to increase the purchase of products made from recycled materials and increase recycling throughout America. The 1999 theme was "For our Children's Future…Buy Recycled Today". Ecology staff helped local governments implement the third annual national America Recycles Day on November 15th by promoting a statewide public school poster contest and providing assistance for hundreds of local community events promoting buying recycled products.

Organics

Organics continue to be a major portion of the waste stream. New methods of handling these materials are being used by the public and private sector. Ecology is addressing several portions of the organic waste stream and the new handling methods used for the management of those wastes, including composting, biosolids management and the land application of solid wastes for beneficial uses.

Composting

Composting is considered a key element of the state's strategy of reaching the statewide 50% recycling goal. Operators expanding or developing compost facilities face potentially inconsistent requirements from various regulating entities. To support the composting industry in facing these challenges, Ecology developed the "Compost Facility

Resource Handbook"[26] and issued the final document in November 1998. The handbook is a guidance document that describes the current regulatory framework for compost facilities and provides criteria for baseline facility designs and management practices.

The Compost Facility Resource Handbook highlights those areas of the current chapter 173-403 WAC, the *Minimum Functional Standards for Solid Waste Facilities (MFS)* involving composting that need updating. Ecology will use the handbook during development of a new section in the MFS on compost facility standards. The new standards will use a tiered approach to regulate compost facilities based on feedstock type and volume. Ecology's goal is to promote composting while protecting the environment. (See Chapter I for a discussion of the MFS revision project.)

Biosolids

In the spring of 1998, Ecology issued a new rule, chapter 173-308 WAC, *Biosolids Management*, and a new statewide general permit, for biosolids management. Since that time, staff have been focussing on three workload areas:

- State program delegation to local health departments
- Permit program implementation
- Technical assistance

Delegation

Currently, eight local health departments have entered into delegation agreements to work with Ecology on implementation of the biosolids program. The primary barriers to delegation at this time are concerns regarding implementation of the septage management portion of the state program, and that some local health departments may simply exercise the option not to participate in the program. Ecology expects several more delegations in the coming year and will continue to work on aspects of the state program which may improve prospects for local delegation and partnership.

Permit Program

Ecology has identified about 340 Treatment Works Treating Domestic Sewage (these are the facilities which are subject to permitting under the state program). Most of these are publicly owned treatment works (municipal sewage treatment plants). Several of these facilities manage their biosolids at commercial farming operations that are also subject to the state permitting program. All facilities are obligated to comply with any applicable requirements of the state rule, regardless of their status under the permit system.

Treatment works come under the biosolids permit system in two phases. The first phase, called "provisional approval," obligates a facility to comply with all applicable

[26] "Compost Facility Resource Handbook – Guidance for Washington State", November 1998, Publication #97-502.

requirements of the statewide general permit. More than 90 percent of applicable facilities have submitted the required Notice of Intent to obtain provisional approval of coverage under the statewide permit. The second phase – final approval – is the process whereby facility specific requirements beyond those required under the rule or basic general permit are developed and put in place. This process is necessarily slower due to the complexity of reviewing individual permit applications and limited staff resources.

Over 100 facilities have submitted formal applications, and 11 have been granted final approval of coverage. During the next year twenty to twenty-five additional facilities are expected to receive final approval of coverage. The number of facilities granted final approval of coverage is expected to increase significantly over the next two to three years as staff gain experience and various policy and technical issues are resolved.

Two Notices of Correction were issued to facilities found to be out of compliance with state program requirements. The department expects to issue additional notices during the coming year as more inspections are conducted, facility annual reports are evaluated (226 received for 1998), and operations are reviewed for final approval of coverage under the statewide permit.

Technical Assistance

Staff provide a broad range of technical assistance to the regulated community, local government officials, consultants, and other interested parties. Technical assistance activities include phone consultations, field visits, attendance at meetings, and presentations at workshops and conferences. In addition, Ecology is working to update guidelines and other technical assistance tools. Continued heavy workload is expected in the technical assistance area, especially as program staff push forward with permitting. Staff will work to balance technical assistance against permit program implementation so that a measure of success can be achieved on both fronts.

Year Ahead

The state program was developed around a minimum budget. Therefore resources are strained and the agency does not expect this to change. The approach using a statewide general permit and Notice of Intent to obtain provisional coverage has worked well. The department will focus on bringing the less than 10 percent of facilities which have not submitted the required Notice of Intent, under the permit program during the coming year.

Dealing with septage management issues has been a significant and unanticipated drain on resources. The fee system developed by Ecology is not adequately recovering costs for this activity. The department has not yet determined the best approach to resolving this issue.

Staff are frequently and increasingly called upon to provide their expertise in the management of organic residuals other than biosolids. This is consistent with observations of a growing preference for composting and land application of organic

residuals (sometimes in combination with biosolids), as opposed to landfilling. The department will have to balance this workload with other obligations.

Resource constraints and septage management questions notwithstanding, during the year ahead the department expects to make significant strides in biosolids program implementation. Headquarters staff are assembling and refining data base tools which will greatly aid in evaluating statewide biosolids quality, biosolids management practices, and compliance. A new guidance document, "Managing Nitrogen from Biosolids"[27] was completed in 1999 and Ecology plans to release a revised version of the Biosolids Management Guidelines (WDOE 93-80) by spring of 2000. In addition, the department plans to release two reports on septage; one on management recommendations and another on septage quality. Ecology also expects to submit a request for delegation of federal program authority to U.S. EPA sometime in the year 2000.

Waste-To-Fertilizer

Some firms are recycling industrial by-products which are classified as solid waste or hazardous waste according to state regulations, but are allowed by law to be removed from such classification if legitimately used in a product which has beneficial uses, such as fertilizer. Under existing Ecology regulations, some hazardous and solid waste are recycled as ingredients in fertilizers and soil amendments.

Waste-derived fertilizer products can also contain “tag-along” contaminants. Metals are thought to be the most potentially hazardous of the tag-along contaminants, however, some products may also contain organic contaminants such as dioxin. Fertilizer products from natural sources can also contain tag-along contaminants, especially metals. The risk of contamination in fertilizer products continue to be evaluated.

Current land application activities involve applying various types of solid wastes to the land as fertilizers or soil amendments. Waste may include the application of gypsum wallboard mixed with yard waste, the application of chicken daft or by-products from meat packing plants, or such wastes as cement kiln dust or industrial wastewater treatment plant sludges. It is expected as the practice of land application increases, public awareness of the process, as well as controversy regarding the practice will also increase. The issue is also being driven by increasing volumes of waste from hazardous waste deregulatory activities and cleanup activities including sediments, air and water.

In the fall of 1997, the Departments of Ecology, Agriculture and Health assembled a work group with a cross-section of interests from industry, agriculture, environmental groups, governments and citizens, to advise the agencies on a legislative proposal and rule-making to address contaminants in fertilizers. The Department of Labor and Industries also joined the work group. Issues addressed included establishing standards for allowable levels of non-nutrient contents, labeling requirements and funding for a fertilizer monitoring program. Legislation based on the findings of the group, Substitute

[27] "Managing Nitrogen from Biosolids", Washington State Department of Ecology and Northwest Biosolids Management Association, Publication #99-508, April 1999.

Senate Bill 6474 (SSB 6474), an *Act Relating to Fertilizer Regulation*, passed during the 1998 Legislative session.

The *Fertilizer Regulation Act* directed the Washington State Department of Agriculture (WSDA) to conduct a crop-uptake study. Ecology was directed to conduct three fertilizer studies: (1) dioxins and metals in fertilizers, (2) metals in soils and (3) dioxins in soils. Ecology and WSDA were to develop a fertilizer registration process. Ecology has finalized its review criteria for fertilizers and is developing procedures for soil amendments. WSDA adopted emergency amendments to chapter 15.54 RCW, *Fertilizer, Minerals and Limes*, in summer 1998, and adopted permanent rules to implement the *Fertilizer Regulation Act* in 1999.

The HWTR Program is the Ecology lead for implementing most of SSB 6474. SW&FAP is implementing Section 18 of SSB 6474, which allows for soil amendments meeting the new fertilizer standards, per RCW 15.54.800, to be exempt from the solid waste permitting requirements of chapter 173-304 WAC. In order to meet the intent of this directive, Ecology must develop a statewide process and criteria to determine which solid wastes applied to the land as a soil amendment may be done safely without a solid waste permit.

In January 1999, an advisory group provided initial comments about what should be included in the exemption process and criteria. The comments provided have been used to develop draft language. A second draft is currently being reviewed by the external advisory committee. This will ensure that the final process and criteria are both functional and protect human health and the environment.

During the last year there have been a number of other activities focusing on land application. These included Ecology's Persistent Bio-accumulative Toxins Initiative, legislative bills during the 1999 session related to the release of dioxins to the environment, EPA's risk assessment on dioxin in cement kiln dust, revisions to chapter 173-304 WAC, the *Minimum Functional Standards for Solid Waste Handling (MFS*), and the current rule development process in Ecology's Hazardous Waste Program. It is important to the success of the exemption process for waste-derived soil amendments to ensure that the process does not conflict with other important environmental goals or projects.

SW&FAP intends to use the finalized process for exempting waste-derived soil amendments from solid waste permitting requirements, per SSB 6474, as a forum for running pilot projects through in preparation for the broader exemption process to be incorporated into the *MFS*, , when the rule revision process is complete. Upon completion of the exemption process for soil amendments, two to four facilities seeking exemption will be processed as pilot projects. Problems associated with the process and criteria will be identified as the pilot projects are processed.

Waste from the Agricultural Industry

Agriculture and related activities represent the largest industry in Central and Eastern Washington. Additionally, agriculture is the largest industrial waste producer in the eastern half of the state. More specifically, the four industries in the agricultural regime which require a strong environmental focus by Ecology and other environmental entities are:

- Farming Operations (growers of fruits, vegetables and grains)
- Fruit and Vegetable Food Processors
- Fruit Packing and Storage Facilities
- Livestock Operations (dairies and feedlots)

The primary waste streams generated by these industries requiring careful management and continuing environmental monitoring, in the form of permits and technical assistance, are wastewaters heavily laden with pollutants and large quantities of solid wastes. Agricultural wastes are currently being handled in a variety of ways. Some is being disposed in landfills, some is being applied to agricultural land, some is being given away as soil amendments, a minimal amount is composted, and a large quantity is being piled illegally. Local health departments have noticed an increase of illegal handling of this material.

The regulations and guidelines pertaining to these materials are confusing and contradictory. Guidelines and regulations for biosolids (sewage sludge), which are no longer defined as solid waste, deal only with material produced at municipal wastewater treatment plants. The food processors fearing more stringent regulations lobbied not to be included in any of the biosolids statute (chapter 70.95J RCW). Therefore, the only place in the regulations which pertain to this waste material is the recycling section 300 of chapter 173-304 WAC, the *Minimum Functional Standards for Solid Waste Facilities (MFS)*, which uses guidelines from the early 1980's for beneficial use of organics on the land. WAC 173-304-450 was intended to discourage "over-application" of organics on the land. The revision process for the MFS will address these concerns.

In addition, some generators of this waste stream are having it registered as a fertilizer through the Department of Agriculture fertilizer registration program. Once these materials are registered as fertilizers, the generators claim that the material is no longer a solid waste and should not be regulated as a solid waste. SSB 6474 amended chapter 70.95 RCW to allow this.

The solid waste permit exemption process and criteria for soil amendments under the SSB 6474 will provide a foundation for developing a broader exemption process and criteria, per Engrossed Substitute Senate Bill (ESSB) 6203, *an Act Relating to Solid Waste Permitting*, passed in 1998.. ESSB 6203 directs Ecology to develop by rule an exemption processes for specific solid wastes that are beneficially used or reused in specific ways. Additionally, Ecology is to develop an exemption process for certain categories of waste handling facilities. Final disposal facilities, large scale composting

facilities and those that handle mixed solid waste that has not been processed to segregate solid waste materials destined for disposal from other solid waste materials destined for beneficial use are excluded.

Increased emphasis is being given by many agencies to nutrient and organic loading of soil profiles, and surface and ground water in Ecology's Central and Eastern Regions. Many thousands of acres are currently permitted for biosolids and organics applications in Ecology's Central Region. Because of the significant acreage and quantities to be applied and composted, there needs to be continued coordination between Ecology, Washington State University, and conservation districts to address short and long term nutrient management.

Sustainable Building Program

Construction demolition and landclearing debris (CDL) reduction, reuse and recycling is one aspect of the larger issue of sustainable building practices. Ecology's original and continuing efforts to promote CDL reduction, reuse and recycling have contributed direct measurable reductions in waste and increases in recycling. A natural evolution has taken place within SW&FAP's CDL initiative and the industry has increasingly been approached with a more comprehensive look at building practices and their effects on the environment and human health. This expansion of program activities, which promote a sustainable approach to building, has SW&FAP a highly visible and documented expression of the agency's goal of "seeking sustainable natural resource use."

Working through various partnerships, we are developing firsthand relationships with architects, building owners, private construction contractors, waste haulers and recyclers to raise awareness of sustainable building principles, to promote higher waste management standards, more thorough waste reduction and more recycling within the construction industry. Sustainable building practices work, but they need to be more generally understood and accepted and the logistical infrastructure to support them must be developed in some locations to accomplish statewide effectiveness. Ecology efforts, outlined below, have been focused to meet those needs.

Partnership Facilitation

In order to leverage resources and to provide the most effective sustainable building program services, Ecology staff invest a great deal of effort to facilitate partnerships amongst various organizations involved in sustainable building issues. Organizations and associated activities include:

Construction, Demolition and Land Clearing (CDL) Council of the Washington State Recycling Association (WSRA):

SW&FAP staff serve as chair of the Council, which has diverse representation from state and local government, non-profit and private organizations. The Council members have worked to achieve mutual objectives of mainstreaming sustainable building practices

within the Washington state construction industry and was instrumental in the formation of the Cascadia Chapter of the US Green Building Council which took on sustainable building issues. This has allowed the CDL Council to go back to its roots, promoting construction waste reduction, reuse and recycling and the mainstreaming use of recycled content building materials. Some of the CDL Council's activities during late 1998 and 1999 include:

- **Development & Implementation of Industry Outreach Events & Activities**
  - Choosing Sustainable Materials - A Seminar for Architects and Designers
  - Washington Department of General Administration Sustainable Building Seminar
  - How to Develop, Implement & Document Job-site Recycling Workshop
  - Seminar on Bidding a Green Project
  - Incorporating the Recycling Message into Sustainable Building Seminar
  - Planning for the upcoming seminars:
    - Spawning Great Ideas for Construction: A Seminar on Sustainable Building and Salmon Recover
    - Job-site Recycling in Pierce County
  - Twice yearly CDL Council members meetings
  - Writing and publishing various magazine and newsletter articles

- **Policy Work:**
  - Governor's Salmon Recovery Plan - The CDL Council has provided the Governor's Office comments on the salmon recovery plan and provided some specific recommendations for incorporating sustainable building into an effective statewide strategy for salmon recovery
  - Prompted the reuse industries response to the EPA rule changes covering lead painted debris

US Green Building Council - Cascadia Chapter:

This chapter of the US Green Building (USGBC) Council became official in the summer of 1999, and will serve the Washington, Oregon and British Columbia in promotion of sustainable building. The USGBC and its Cascadia Chapter share the same mission: the initiation, development, and accelerated implementation of green building concepts, technologies and principles. SW&FAP staff serve on the Board of Directors and was actively involved in the Chapter formation. The Chapter and its members have elected to adopt the Northwest Sustainable Building Action Plan (the Plan) develop by many sustainable building advocates in this region. Ecology participated throughout the Plan development and served as the lead in for the Public Education portion of the plan. Beyond development of a 5-year plan, hiring a project manager, procuring office space for the Chapter, and raising funds, the chapter has three main areas of focus in implementing the Plan; developing guidelines, incentives, and industry education programs.

Resource Efficient Building and Remodeling Council (REBAR):

SW&FAP staff serve as Secretary to this public/private organization which is committed to establishing sustainable building practices as standard operating procedure and the infrastructure these practices in Eastern Washington, where sustainable building is still a relatively new concept to many building professionals.

In 1998, the Council set new project goals with extensive input provided by SW&FAP staff. In 1998-99, the REBAR Council completed by-laws, incorporated and is currently applying for 501(c)3 status, which would provide for tax exempt status from the IRS and allow REBAR to solicit donations and for donors to claim exemptions for charitable donation. Staff led the Council's major effort expand the Council's membership and develop a Marketing Plan for the Council.

Northwest EcoBuilding Guild:

SW&FAP staff work with this organization, which is committed to promotion of sustainable building practices within the building industry, primarily residential designers and builders in the Pacific Northwest. Efforts in Eastern Washington are focussed on creation of several new chapters to achieve access to the Guild's educational resources statewide. To that end, staff assisted in the development of Guild field offices in the Tri-Cities, which is expected to evolve into a full-fledged Chapter in 2000. Another new Chapter was started in Ellensburg in 1999.

Technical Assistance Projects & Services

Providing technical assistance to the public and private sector groups, and corporations regarding the development and implementation of sustainable building practices and programs is one of the Solid Waste Program's core activities and provides these services on a ongoing basis.

- **Assistance to local governments:** Ecology provides technical assistance to state and local government staff to develop and service CDL/sustainable building programs at local government level. Ecology also serves as agent of technology transfer by sharing lessons learned in one jurisdiction with all other local governments in Washington State.

- **Direct technical assistance to architects, builders, waste managers and recyclers**: Work directly or through professional associations with architects, contractors, waste haulers and recyclers to set up sustainable building projects.

- **Assistance through professional associations**: Ecology staff work through positions of membership and on action committees for professional and nonprofit industry associations.

- **State agency sustainable building program:** Department of Ecology works in partnership with the Department of General Administration's (GA) Division of Engineering and Architectural Services to develop and administer this effort to establish Washington state as a leader in sustainable building efforts: Some of the activities initiated to date include:

  - Providing or facilitating education opportunities for state project managers, contractors and clients such as the Sustainable Building Seminar, jobsite recycling workshop, salvage and reuse workshop, and organized tours of sustainable facilities.
  - Development of contract language and specifications for waste reduction, salvage and recycling requirements on state building projects. The goal is to make these strategies standard practice on all state jobs.
  - Establishment of specified goals for upcoming state projects which meet or exceed:

    - 50% recycling rate on three new building projects and three remodels;
    - 20% recycled content building materials in three new projects and three remodels;
    - and energy efficiency to beat code by 20% on three new projects and three remodels.

  - Technical Assistance on specific projects including the UW/CCC Bothell Campus, and the State Liquor Control Board Warehouse
  - Development of Sustainable Design and Construction Services description and fee schedule to promote GA sustainable building services and establish funding sources for project assistance.

Information Programs

Staff of the Solid Waste Program continue to develop and maintain it's sustainable building information resources including:

- **The Sustainable Building Connections Webster:** The most up-to-date and comprehensive sustainable building information resource available in Washington state which provides information such as organizations, publications, sample specifications, regional plans, financial assistance and much, much, more. (http://www.wa.gov/ecology/swfa/cdl/cdlframe.html.)

- **Telephone Hotline and Internet Enhancements for CDL Recycling Services:** Updated and expanded information made available through SW&FAP's toll free recycling hotline (1-800-RECYCLE) to include construction waste salvage, recycling and reuse opportunities. In addition to access via the toll free hotline the target audience can now also access the information online.

- **Train-the-Trainers Program for Contractors, Local Government Officials:** Eastern Region staff has been working with the REBAR Council to develop a training

program targeted at staff from a select list of targeted commercial builders and local government officials. A marketing plan to design the training is being completed. The training program will emphasize a mentoring approach to training, where designated construction project managers will work with a specific member of the REBAR Council to implement training in materials management and on-site waste reduction and recycling. In return for this sustained individual attention, recipients of this training will be required to share this training with other site superintendents within their company and report the use of this training by way of at least one project case study in the year following their training.

- **Construction Waste Recycling Infrastructure Development in Eastern Washington:** In late 1999 staff began work with local government officials and the Resource Efficient Building and Remodeling (REBAR) Council to identify gaps in the recycling and waste disposal services in Eastern Washington and recommend/implement changes and improvements to fill those gaps in recycling services to the construction industry in Eastern Washington.

Litter Programs

In 1998, the Legislature passed the *1998 Litter Act* (SSHB 3058), amending chapter 70.93, RCW, *the Waste Reduction, Recycling and Model Litter Control Act*. The legislation established several changes in the implementation and administration of statewide litter programs. The changes were based on recommendations of the Litter Task Force, that examined the effectiveness of litter control in Washington State as it is carried out in accordance with *the Waste Reduction, Recycling and Model Litter Control Act*. The legislation clearly put Ecology in the leadership role of coordinating between various industry organizations and all the state agencies and local governments that receive funding from the Litter Account. Work during 1999 has focused on implementing the legislation including:

- Administering allocations from the Litter Account;
- Developing relationships with other state agencies (Natural Resources, Corrections, Parks, Transportation and Revenue) and beginning to coordinate litter control and prevention activities;
- Conducting the biennial litter survey; and,
- Deploying the Ecology Youth Corps.

Ecology's New Coordinating Role

A central coordinator within Ecology was hired to track progress in litter prevention and pickup, manage the budgeting process for litter pickup programs, and serve as a central resource for collecting and sharing litter information. With the legislation, Ecology became responsible and accountable for administering allocations of the Litter Account. The legislation provides clear direction on how litter funds are to be allocated: twenty percent to fund the Community Litter Cleanup Program (CLCP), thirty percent to fund

waste reduction and recycling efforts within Ecology, and fifty percent to fund litter clean-up efforts. Besides funding the Ecology Youth Corps (EYC), the fifty percent dedicated to clean-up efforts funds litter activities carried out by other state agencies.

Late in 1998, Ecology formed a state agency workgroup comprised of representatives from Departments of Corrections, Natural Resources, Transportation, and the Parks and Recreation Commission. Through an interagency agreement process, Ecology distributed approximately $500,000 to the other state agencies to augment litter clean-up activities in fiscal year 1999. With Ecology's leadership, the state agencies agreed to standard reporting items to track litter activities.

In early 1999, the workgroup began to develop a budget for state agency litter work in the 00/01 biennium. By spring the group reached consensus on how approximately $1 million dollars would be allocated and by the first quarter of FY00, interagency agreements were in place. Ecology continues to work with the state agency workgroup to improve reporting, ensure accountability and address coordination issues. In the future, the workgroup plans to improve accountability through performance measures to guide future expenditure of litter funds and quantify accomplishments.

In addition to working with the state agency workgroup, the coordinator has spent considerable time establishing relationships with people inside and outside the agency involved in litter work including: Ecology's regional EYC coordinators, members of the Committee for Litter Control and Recycling, and representatives from other states. These contacts will prove invaluable in the coming year, as the program begins development of a focused litter prevention strategy.

Litter Survey

The legislation directed Ecology to conduct a litter survey each biennium, starting July 1999. In the fall of 1998, regional EYC staff and headquarters staff worked with consultants to develop the survey site sampling plan and a methodology for conducting the survey. The goal of the litter survey is to gain information about litter composition, litter generation rates, and about littering behavior. This information will help Washington reach its "zero litter" goal, and help Ecology coordinate cleanup efforts and develop better overall litter prevention and control programs. In addition, results of the litter survey will provide baseline information against which to measure progress in litter reduction.

As part of the survey, 182 locations were randomly selected from the following categories: interstates, state routes, county roads, highway interchanges, highway rest areas, state recreation areas, and state and county parks. By the end of 1999, litter crews will have visited each survey site multiple times. First, crews visit survey sites to delineate, map and measure sampling areas. The crews initially clean the sites, then revisit them to collect the litter that has accumulated in a set time period. The litter samples were transported to a sorting crew who analyzed its composition. See Table 4.1 for a summary of the litter survey effort.

Table 4.1
Results of the Litter Survey

Litter Survey Work – October 1998 – October 1999		
Number of Sites	**Site Descriptions**	**Number of Litter Bags**
84	Interstate, state route and county road sites, varying between 1/10 and 1 mile segments, including both shoulders and the median	3,913
28	Highway interchanges, including 2 ramps and portions of the median	4,172
26	State and county parks	486.5
26	Highway Rest Areas	723.5
26	State recreation areas, including Dept. of Natural Resources campgrounds and trail heads and Dept. of Fish & Wildlife recreational access areas	466
Total Sites		**Total Bags**
190		**9,761**

In addition to the collection of actual litter samples, focus groups and a telephone survey were conducted to learn peoples' perceptions of littering behavior and to explore potential prevention strategies. Combined with the sampling results, this information should help with the development of prevention strategies.

The Ecology Youth Corps conducted a majority of the litter survey sampling work, with assistance from litter crews from other state agencies and local organizations. Although the litter survey work impacted EYC's routine workload, a great deal was accomplished.

Data collection was completed by late November and the consultant plans to have a final report available by January 2000. During the winter, staff will begin evaluating the overall project and planning for next biennium's survey.

Ecology Youth Corps

1999 marked the 24th year of operation for the Ecology Youth Corps (EYC). Under chapter 70.93 RCW, the *Waste Reduction, Recycling, and Model Litter Control Act*, the EYC operates as a "…litter patrol program to employ youth from the state to remove litter from places and areas that are most visible to the public…" The Act finds that the proliferation of litter discarded around the state is a public health hazard and impairs the healthful, clean and beautiful environment.

EYC operates two types of crews, median crews and summer youth crews. Median crews are composed of youth 18 years and older who clean complex and challenging areas such as highway median strips, barriered interchanges, and other high traffic areas. Some median crews begin operation as early as spring and run through the end of fall, while others work solely in the spring or fall. This year, in addition to their usual duties the Median crews took on the additional task of assisting with the statewide litter survey. Median crews contributed an immense amount of their time in 1999 working on this survey. Some crews took on the responsibility of helping to map & measure sites, and all crews were involved in cleaning and taking litter samples from the specified sites. (This included picking up thousands of cigarette butts and pieces of glass.) Supervisors received special instruction on procedures to be followed in this survey.

The EYC Summer Youth crews consist of 14–17 year old youth who clean shoulder areas and interchanges of major state and interstate highways as well as city and county roads, public access areas, school grounds and other public areas. Each summer crew member works one four-week session, with a complete turnover of crews occurring mid-summer. Summer Youth crews also participated in the statewide litter survey by picking up litter on many of the public area sites.

Statewide, a total of 57 EYC litter crews were deployed in 1999. There were 31 Summer Youth crews (6/28 – 8/25), 10 Spring Median crews (3/1 – 6/18), 3 Summer Median crews (6/16 – 8/22), 9 Fall Median crews (8/23 – 11/30), 2 Spring Weekend crews (3/20 – 5/31), and 2 Fall weekend crews (9/4 - 10/29).

This year crews were responsible for picking up a grand total of 71,732 bags of litter over a total 5,373 road miles and 5,112 acres. Of this total amount of litter 7,755 bags were recycled. Crews recycled a total of 64,632 lbs. of materials (Table 4.2).

Table 4.2
Recycling Totals from EYC Crews

Recyclable	Pounds
Aluminum	17,994 lbs.
Metal	18,430 lbs.
Glass	20,864 lbs.
Plastics	3,282 lbs.
Misc.	4,062 lbs.

Litter Activity by Other State Agencies

Fiscal Year 1999 was the first year the Departments of Corrections, Natural Resources, Transportation, and the Parks and Recreation Commission received funding from the Litter Account through interagency agreements administered by Ecology. (Previously, the agencies received direct appropriations). For Corrections and Natural Resources, the agreement funding was used to establish new litter crews. Transportation received

funding to augment litter disposal costs and to purchase equipment. Parks and Recreation used the funding to provide park staff with litter removal supplies; they will also be developing anti-litter educational materials to distribute to park visitors.

As the state agencies learned about each department's litter programs, opportunities for cooperation and coordination became evident. For example, Corrections and Natural Resources crews assisted Ecology in the litter survey effort. Corrections mobilized community service crews to support the Community Litter Cleanup Program. The interagency agreement process also required that each agency be accountable and responsible for reporting on how monies were spent and what work was accomplished. The standard reporting items that each agency agreed to will help meet legislative reporting requirements and provide information for future planning. It will also allow Ecology to report on the total litter control effort and tell the story of the litter work conducted in the state. The tables below highlight some of the information now being provided to Ecology on a routine basis.

The Department of Transportation is responsible for picking up litter along state roads, including the bags of litter collected by Ecology Youth Corps, Department of Corrections and Adopt-a-Highway Groups. The data in Table 4.3 provide a glimpse of the total amount of roadside litter in the state.

Table 4.3
Department of Transportation Litter Removal Activity
July 1, 1998 – June 30, 1999

DOT Region	Amount of Litter Disposed (Cubic Yards)	Total Pickup Costs (Labor/Equipment)*
Northwest	1,523	$92,980
North Central	1,232	$44,513
Olympic	1,186	$91,123
Southwest	582	$47,675
South Central	466	$62,570
Eastern	876	$60,049
Total	**5,865**	**$398,910**
*Does not include disposal costs		

The Department of Corrections runs community based correctional litter crews as well as crews based from correctional institutions. These crews pickup litter on state roads, on state lands and in local communities providing valuable cleanup service (Table 4.4).

Table 4.4
Department of Corrections Litter Removal Activity
July 1, 1998 – June 30, 1999*

Hours of Work (supervisor and offender)	37,369
Pounds of Litter Removed	396,936
# of illegal dumpsites cleaned	69
Miles of road cleaned	2,210
Acres cleaned	1,916
*Includes institutional crews from Washington State Reformatory, Coyote Ridge and Airway Heights, and community based crews in Ellensburg, Wenatchee, Yakima, Colville, Davenport, Ephrata, Okanogan, Othello, and Spokane.	

Looking Ahead

In the coming year, work will divided into four major areas. First, **we** will be analyzing survey results and planning prevention strategies. Second, we will continue to work with EYC, state agencies, and local governments on reporting criteria; moving towards standardization that will help measure our progress towards zero litter. Third, we will continue to address litter activity coordination issues at the micro and macro levels. Fourth, we will be reviewing the litter survey procedures and methodology and planning for next biennium's survey.

Recognizing Waste Reduction and Recycling Efforts

Terry Husseman Outstanding Waste Reduction and Recycling in Public Schools Awards

On May 14, 1999, at a ceremony in the state Capitol rotunda, Governor Gary Locke welcomed and congratulated the award recipients. Ecology Director Tom Fitzsimmons presented $15,000 in cash awards to ten schools. Each winning school was judged on the basis of comprehensive, efficient, and innovative approaches to waste reduction and recycling during the 1998-99 school year. The 1999 ceremony was attended by 250 school children and Governor Gary Locke.

All of Washington's 1,700 public schools received applications to apply for the Terry Husseman Outstanding Waste Reduction and Recycling in Public Schools Awards. The annual awards program was established by the Legislature in 1989 as part of the Waste Not Washington Act, and is administered by Ecology's Solid Waste and Financial Assistance Program. A total of 111 cash awards have been received by Washington schools over the past nine years.

Several of this year's winning schools had also won awards in past years, and they continue to build on previous accomplishments and win new recognition. Many of the winning schools are being recognized *again,* this time for improving and building upon their award winning programs.

Award winning schools carry out active waste reduction and recycling programs during the school year. Each school also has an education component to support their waste reduction and recycling goals, often based on Ecology's waste management teacher training and curriculum package, "A-Way with Waste." In varying numbers, each school recycles aluminum and other metals, glass, cardboard and mixed paper, white paper, newsprint, food wastes, and plastic. The schools also practice many classroom and office waste reduction techniques, such as making two-sided copies, purchasing recycled products, reuse of surplus items, etc. Some of the additional innovative activities include: building counter-tops and shelves out of gym flooring; creative art projects using materials that are typically recycled or thrown-away; and using plastic containers for everything from sorting supplies to conducting hydroponic experiments.

Many schools practice environmental stewardship with school-based beautification projects. School recycling programs often extend into the local communities. In several cases the school program is the largest recycling effort the community has, and the reason why local citizens and businesses are staying involved in the recycling effort.

Table 4.5 shows this year's recipients, their location, and the award they received. For detailed information about the schools' recycling program, contact the Recycling Coordinator at the school.

Table 4.5
1998-99 Terry Husseman Outstanding Waste Reduction and Recycling in Public Schools Awards

School	Location
Outstanding Waste Reduction and Recycling Programs ($2,500 each)	
Acme Elementary	Acme, Whatcom County
Sequim Senior	Sequim, Clallam County
Best Waste Reduction Program ($1,000 each)	
Mount Baker Junior/Senior	Deming, Whatcom County
Harmony Elementary	Bellingham, Whatcom County
Maple Falls Elementary	Maple Falls, Whatcom County
Trout Lake K-12	Trout Lake, Klickitat County
Port Townsend High	Port Townsend, Jefferson County
Best Recycling Program ($1,000 each)	
Cashmere Middle	Cashmere, Chelan County
Toppenish Junior	Toppenish, Yakima County
Discovery Elementary	Gig Harbor, Pierce County
Pathfinder Elementary	Seattle, King County

This was the first year that Weyerhaeuser Recycling Foundation did not participate in the ceremony. In the past, our awards program was held in conjunction with Weyerhaeuser's awards to school districts. Ecology has made efforts towards getting Weyerhaeuser to reinstate their awards program. Unfortunately, they do not have the funding for it at this time.

Since our public schools make up approximately a fifth of Washington's population, it is important that Ecology continue to conduct outreach activities such as the school awards program. Such a large segment of our state's population cannot be ignored if we hope to reach our recycling goal of 50 percent.

The awards program coordinator, in conjunction with fellow Ecology staff and local government contacts, has developed a plan to revitalize the school awards program within existing resources.

Waste Reduction and Recycling Awards

Each year, Ecology presents "Waste Reduction and Recycling Awards" at the Washington State Recycling Association Conference. These awards recognize a wide variety of programs being instituted by state and local governments, the private sector, non-profit groups and individuals, that show a commitment to finding ways to reduce waste or recycle material. Table 4.6 lists the award winners for 1999.

Table 4.6
1999 Waste Reduction & Recycling Awards for Local Government and Businesses

Best Small-Business Program (under 100 employees)
United Coatings

Since 1993, United Coatings of Greenacres has focused on reducing solid and hazardous wastes, air emissions, and discharges to water. The results of these efforts have been a significant reduction and/or elimination of certain hazardous wastes and production-process chemicals. The company worked with suppliers and customers to purchase and sell less-toxic products wherever practical.

Other than paint products, United Coatings targets the majority of the materials it receives for recycling: 100 percent of all paper and cardboard materials are recycled; 88 percent of metal drums are exchanged for re-use, recycling or reconditioning; 90 percent of fiber drums are given to community businesses for in-house recycling programs; and, all inbound pallets are re-used for future shipments or material storage.

United Coatings currently is working to eliminate several waste streams altogether. They have found that preventing pollution is compatible with successful business objectives.

Best Large-Business Program (more than 100 employees)
Sellen Construction Company

Sellen Construction Company of Seattle is the second-largest contractor in the state. Some of their recent construction projects include: The Woodinville Target Store; Microsoft buildings four, five and six; the KCPQ–TV building in Tacoma; AT&T Wireless at the Redmond Town Center; and Providence St. Peter Hospital in Olympia. Together, these projects averaged a 76 percent recycling rate. During the construction of these buildings, 4,654 tons of recycled materials were collected. This translated into a disposal savings of $429,000. Materials recycled from its job sites include: concrete, asphalt, bricks, wood waste, metals, gypsum drywall, acoustical ceiling tile, cardboard, and office materials such as paper, glass and cans.

Sellen also salvages materials from buildings for resale or re-use, extending the life cycle of these materials. The company successfully salvages materials such as brick, doors and frames, hardware, fixtures, structural wood, and wood flooring. Sellen has proved that preventing waste reduces both supply costs and disposal fees.

Best Small-Government Program (population under 75,000)
City of Olympia's Waste Management Section

The City of Olympia's Waste Management Section sought to solve three serious internal problems: the rising costs of collection, limited recycling opportunities due to small and obsolete equipment, and frequent injuries to collectors.

The solution called for a dramatic change in the City of Olympia's recycling and garbage-collection program. They switched to bi-weekly collection, alternating weeks for garbage and recycling. This allowed them to move to a dual purpose semi-automated system, reducing fleet size and physical strain on the collectors' backs. The city provided customers with wheeled carts for garbage and recycling.

The first six months of the new system saw 452 more tons of recyclables collected than in the same period the year before. The city collected 121 fewer tons of garbage. Olympia boasts a 98 percent curbside-recycling subscription rate and a 35 percent curbside yard-waste subscription rate. Over all, the city has reduced the volume of residential trash for five years in a row, from about 7,600 tons in 1994 to 7,000 tons 1998. At the same time, the city continues to grow in population by one to two percent each year.

Best Large-Government Program (population more than 75,000)
The City of Tacoma's Public Works Solid Waste Utility

In 1995, the City of Tacoma's public works solid waste utility staff began looking into new and different methods to increase recycling and reduce waste. The question was brought to Tacoma residents themselves. Customer surveys indicated that citizens would recycle more if offered convenience, financial incentive, and a wider variety of materials they could recycle. Tacoma expanded its recycling collection to include four new materials; implemented a one-bin co-mingled recycling system; and gave residents the choice of smaller, reduced-rate garbage containers.

Then the City asked, "How are 51,000 residential customers going to learn about these changes?" The answer was an innovative, popular promotional campaign featuring "The Collectors," a group of five Solid Waste Utility employees that sing catchy songs about recycling. This marketing campaign brought these five "singing garbagemen" national media attention, and built local awareness and support for the new program. Tacoma's active residential participation rates dramatically increased by an estimated 75 to 85 percent, and the amount of collected recyclables increased by 200 to 300 percent.

Best Federal Facility
Fairchild Air Force Base

Fairchild Air Force Base, located just outside of Spokane; slowly and quietly has emerged as a leader in recycling and waste reduction. Beyond that, the base is committed to completing the loop by buying products made from recycled materials. The base operates much like a small city, with its population of 6,000 residents and employees, a shopping center, a movie theater, schools, restaurants, gas stations and places of worship. Fairchild established its recycling program in 1988, added curbside recycling in 1990, and offered curbside pickup of compostable materials beginning in 1996. As further evidence of its commitment, a brand-new recycling facility was opened this past July. The base has reduced its solid-waste disposal rate by 40 percent from 1992 to 1998.

The recycling program has created significant direct and indirect financial benefits. In 1998, Fairchild recycled 1,600 tons of material. This saved approximately $190,000 in trash removal fees. Additionally, the $36,000 from selling the recyclables was used to offset equipment and operation costs at the new recycling center.

Special Recognition Award for Achievement
RE Sources' the RE Store

Bellingham based RE Sources' the RE Store diverts more than 1.5 million pounds of materials from untimely disposal each year and also sells re-refined motor oil and compost bins. The store has set up a latex paint remix operation, which accepts and sells approximately 200 gallons of used latex paint each month. The RE Store has built partnerships with some of the largest contractors in the state, some of whom find The RE Store's salvage service to provide a competitive edge in the bidding process. Salvage provided by The RE Store at two Seattle schools undergoing renovation inspired the Seattle School District to include salvage of usable materials into new renovation bids.

RE Sources and The RE Store provide educational outreach to the public in the form of a quarterly newsletter, displays, workshops and a planned reused materials home tour. RE Sources used money generated from the sale of used materials at The RE Store to fund more than 150 in-class waste prevention and recycling presentations in Whatcom County this past year.

Chapter V The 1998 Recycling Survey for Washington

In 1989, the Legislature, in amending the Solid Waste Management Act set a state 1995 recycling goal of 50%. They also stated that recycling should be made at least as affordable and convenient to citizens as garbage disposal.

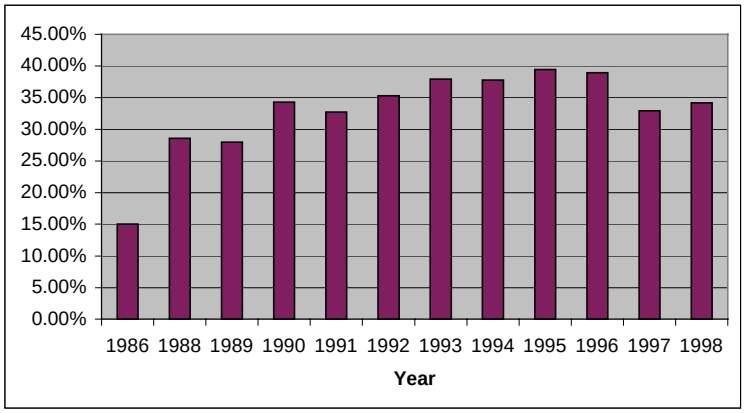
In response, local governments began offering its citizens various forms of recycling ranging from drop boxes to curbside collection of a variety of recyclable materials. In 1999, over 100 cities and counties offered curbside collection of recyclable materials such as glass, paper, and metals while an increasing number are offering curbside collection of yard waste.

Recycling Rates

Each year since 1987, Ecology has conducted a survey to measure the statewide recycling rate. Information is provided by local governments, haulers, recyclers, brokers and other handlers of materials from the recyclable portion[28] of the waste stream that are collected for recycling.

From 1987 to 1993, the measured statewide recycling rate increased from 23% to 38%. This increase had been fairly steady, with a slight dip in 1991. In 1994 the measured recycling rate remained steady at 38%. In 1995, the recycling rate resumed its climb to 39% an in 1996 the recycling rate leveled at 39% (38.95%). The1997 recycling rate dropped to 33% as a result of poor paper fiber market in Asia and a continued glut in the metals market. The poor paper and metal market trend continued in 1998, but improved enough to raise Washington's recycling rate to 34.1%. (See Figure 5.1)

Figure 5.1
Recycling Rates 1986-1998



[28] The recyclable portion of the waste stream is municipal solid waste as defined by the Environmental Protection Agency in the *Characterization of Municipal Solid Waste in The United States: 1996 Update*. This includes durable goods, nondurable goods, containers and packaging, food wastes, and yard trimmings. It does not include industrial waste, inert debris, asbestos, bio-solids, petroleum contaminated soils, or construction, demolition, and landclearing debris disposed at municipal solid waste landfills and incinerators.

Many of the reasons for a lower recycling rate remain. The Asian paper market remained soft through 1998 as did the national metals market. The State's population has increased by about 265,000 since 1995. The Department believes that this group may not participate as much in recycling programs since they were not exposed to the waste reduction and recycling outreach programs run by Ecology and the counties 1990 to 1995. Finally, the waste industry has undergone tremendous consolidation and privatization in the last 4 years. It appears this consolidation may have left some areas of the state with fewer recycling services. Some good news is that the disposal tonnage for the state did not grow.

In the fall of 1999 a panel of stakeholders, the Recycling Assessment Panel, will be working with Ecology to look at the causes for the drop in the recycling rate and propose solutions.

We can expect the recycling rate to reflect market conditions in the near future because counties and cities have "built" the collection infrastructure initiated by the Waste Not Washington Act. Only one new curbside program was added in 1999 (Walla Walla). As of this writing, 91% of the state's population has access to recycling services that are at least as convenient as disposal.

1998 Recycling Survey Process and Results

There are several problems in obtaining all of the information needed to prepare a complete and accurate recycling survey. In spite of these obstacles, Ecology believes the results are reliable based on review of draft numbers sent to local governments, and comparisons to waste characterization, disposal data, and commodity end-user information. The footnotes explain some of the discrepancies with individual commodities.

Recycling survey forms are sent to recycling firms and haulers to obtain information about types and quantities of recyclable materials collected. However, since reporting is not mandatory, and there is no penalty for not returning the information, some firms do not respond. Others, because they want to protect the confidentiality of who purchases their materials, do not complete the entire survey which leads to difficulties such as under counting or double counting of materials. These factors make it very difficult to compile good recycling information for specific counties.

Table 5.1 provides the results of the 1996-1998 statewide recycling surveys.

Table 5.1
State Tonnage by Commodity: 1996-1998 Washington State Recycling Surveys[29]

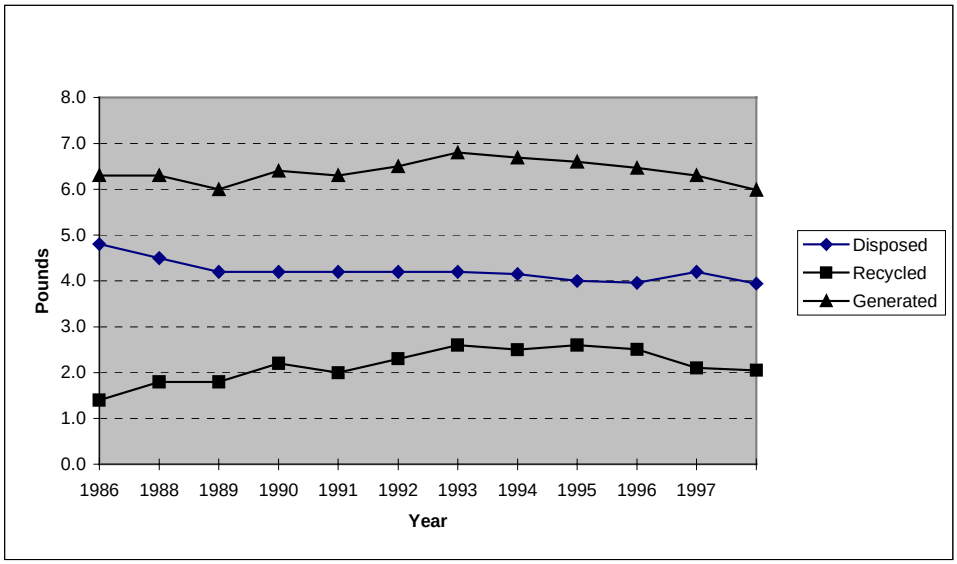
Commodity	1996	1997	1998
Newspaper	298,616	187,044	200,447
Corrugated Paper	639,291	392,314	344,885
High Grade	80,203	56,245	69,435
Mixed Waste Paper	260,883	194,201	207,225
Aluminum Cans	19,064	19,601	12,716
Tin Cans	12,786	15,149	13,003
Ferrous Metals	220,667	300,068	225,372
Nonferrous Metals	75,926	45,568	55,384
White Goods	14,358	15,126	12,233
Refillable Beer Bottles	2,579	633	261
Container Glass	73,197	79,566	113,076
PET Bottles	3,853	4,965	3,031
LDPE Plastics	2,135	1,693	1,341
HDPE Containers	4,033	3,835	3,889
Other Recyclable Plastics	1,642	13,945	1,608
Vehicle Batteries	16,365	15,294	7,743
Tires	7,043	5,520	211
Used Oil	6,141	7,299	1,235
Yard Waste	337,534	384,848	608,127
Food Waste	103,073	75,020	92,391
Wood Waste	223,828	265,887	115,289
Textiles (Rags, clothing, etc.)	9,186	11,046	3,979
Gypsum	50,202	56,373	31,062
Photographic Films	3	22	0
Total Recycled	2,495,857	2,151,608	2,123,946
Total Disposed[30]	3,984,929	4,386,397	4,088,100
Total Generated	6,480,786	6,538,005	6,212,046
Recycling Rate	38.51%	32.91%	34.19%

[29] Detail may not add due to rounding.
[30] The amount of material disposed represents only the quantity defined "recyclable portion" of the waste stream and excludes industrial, inert, asbestos, bio-solids, petroleum contaminated soils, and construction, demolition and landclearing debris disposed at municipal solid waste landfills and incinerators.

Individual Waste Generation

Figure 5.2 illustrates an average of how each person in the state contributes to the municipal solid waste stream. These numbers are about 2 pounds per person above the national averages for the categories of disposal, recycling, and generation. The difference is accounted for by a different ferrous metal measurement by Washington and are relatively larger amounts of yard and wood waste than the national average. Along with county review and end-use information these numbers provide a good check for the state's recycling numbers.

Figure 5.2
Pounds Disposed, Recycled and Generated Per Person/Day



Diversion as a Measurement Option

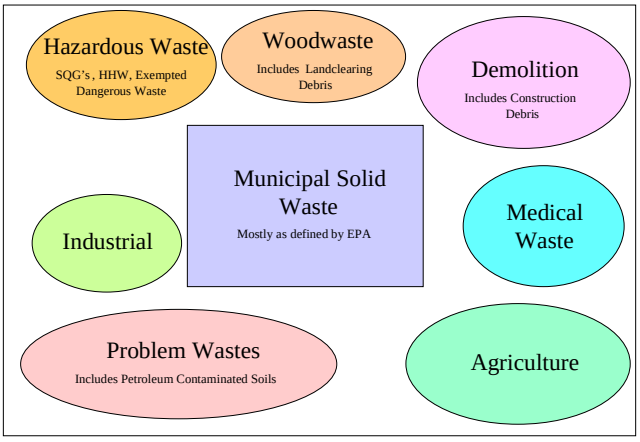
Ecology has measured a very specific part of the solid waste stream since 1986. It is roughly the part of the waste stream defined as municipal solid waste by the Environmental Protection Agency.[31] However, Ecology has noted very large increases of recovery in "non-MSW" waste streams, the most notable is a growing industry in recycling construction, demolition and landclearing debris.

Ecology is looking at ways to include other types of materials in future recycling rates. The main obstacle to calculating a recycling rate for these other materials at present is that the wastes are not well characterized and there is no definitive information on the total volume of waste generated. This lack of information makes it impossible to calculate a recycling rate for these materials.

The recycling rate as calculated by the state is a fairly narrow measure of Municipal Solid Waste (Figure 5.3). Increasingly, Washington Counties and Cities have been putting efforts into waste streams outside of the traditional Municipal Solid Waste stream. The best example is for the construction and demolition waste streams. Many of these materials are now being recycled including asphalt roofing shingles, concrete, road asphalt, dimensional lumber, various metals, and more. Knowledge of this waste stream is increasing. King County[32] and the City of Seattle have both done sampling of this waste streams and have comparable results. Clark County will finish a study in early 2000.

Woodwaste is another large waste stream in Washington and an increasing percentage of it is being used in new wood and paper products and as a feedstock in composting operations. In agriculture, waste materials are being composted and processed for land application as soil amendments. All of these uses of waste materials avoid disposal for more beneficial use.

Figure 5.3
The Universe of Solid



[31] The recyclable portion of the waste stream is municipal solid waste as defined by the Environmental Protection Agency in the *Characterization of Municipal Solid Waste in The United States: 1996 Update*. This includes durable goods, nondurable goods, containers and packaging, food wastes, and yard trimmings. It does not include industrial waste, inert debris, asbestos, bio-solids,

The Universe of Solid Waste

However, it is difficult or impossible to figure a recycling rate for many of these materials because either we don't know the total amount of waste generated or the beneficial use does not meet the state's definition of recycling.[33]

In order to address these beneficial solid waste activities that reduce disposal of natural resources the state has begun collection of information about the beneficial use solid waste outside the scope of MSW or the result of processes that avoid disposal but do not meet the definition of recycling. The methodology is a simple as collecting the number of tons of material that are going to beneficial use as opposed to disposal. Many recycling survey respondents have voluntarily listed this information on the recycling survey. For 1998, the materials in Table 5.2 were reported.

Table 5.2
Materials Not Included in the Recycling Survey

Anti-freeze	1230 tons
Construction , demolition and landclearing debris	231,648 tons
Freon	.05 tons
Used Oil for Energy Recovery	88 tons

The Department will try to collect more of this information in the future. For the most part, these materials are collected and processed outside of the traditional residential and commercial waste stream and were not well addressed in the Waste Not Washington Act of 1989. Still, the Department recognizes the creative efforts of local governments and businesses in addressing these wastes.

petroleum contaminated soils, or construction, demolition, and landclearing debris disposed at municipal solid waste landfills and incinerators.

[32] *Waste Monitoring Program: Construction, Demolition & Land Clearing Waste*, King County Solid Waste Division, January 1995.

[33] Revised Code of Washington 70.95.030 (16) "Recycling" means transforming or remanufacturing waste materials into usable or marketable materials for use other than landfill disposal or incineration

Chapter VI Disposal of Solid Waste in Washington

One of the goals of this report is to identify the types and quantities of solid waste disposed in the various types of landfills and energy recovery facilities in the state. This includes waste imported into the state for disposal and waste exported to Oregon.

Landfilling is the basic method of final disposal and includes five types of landfills - municipal solid waste landfills, woodwaste landfills, limited purpose landfills, inert/demolition landfills and ash monofills.

As part of the annual reporting requirements of chapter 173-304 WAC, *the Minimum Functional Standards (MFS)* and chapter 173-351, *Criteria for Municipal Solid Waste Landfills*, forms were sent to the various types of landfills for them to report the types and quantities of waste they received for disposal. The categories of solid waste specified on the form were municipal, demolition, industrial, inert, commercial, woodwaste, sewage sludge, asbestos, petroleum contaminated soils, tires, special waste and other. The facilities were also asked to report the source of their waste: out-of-county, out-of-state or out-of-country.

The two major landfills in Oregon accepting waste from Washington are Finley Butte and Columbia Ridge. They both provide information for use in preparing this report.

The other method of waste disposal in Washington is energy-recovery facilities. Annual report forms were also sent to these facilities. The same type of waste information was requested.

Municipal Solid Waste Landfills

Amount of Waste Disposed in Municipal Solid Waste Landfills

In 1998, 22 municipal solid waste landfill accepted waste totaling 4,582,107 tons.[34] Of the 22 landfills, 16 were publicly owned, and six were privately owned.

In analyzing the size of the MSW landfills it was found that of the 22, eight received over 100,000 tons of waste in 1998. The two largest landfills in Washington, Cedar Hills in King County and Roosevelt Regional Landfill in Klickitat County received 75,496 tons and 1,917,008 tons, respectively.[35] In 1998, two landfills received less than 10,000 tons,

[34] Throughout this report, different disposal amounts are discussed. These numbers vary based on the types of facilities being discussed, the source of the waste and the purpose of the discussion. For example, the recycling survey only accounts for "traditional" municipal waste in the disposed amount used to calculate the statewide recycling rate. See discussions in Chapter V and this chapter for further information.

[35] The third largest landfill in thes state, Hidden Valley in Pierce County, closed December, 1998.

compared with 12 MSW landfills in 1994. This trend (Figure 6.1) indicates that the smaller facilities have been closing in response to more stringent regulations.

Figure 6.1
MSW Landfill Size
based on Disposed Tons Per Year)

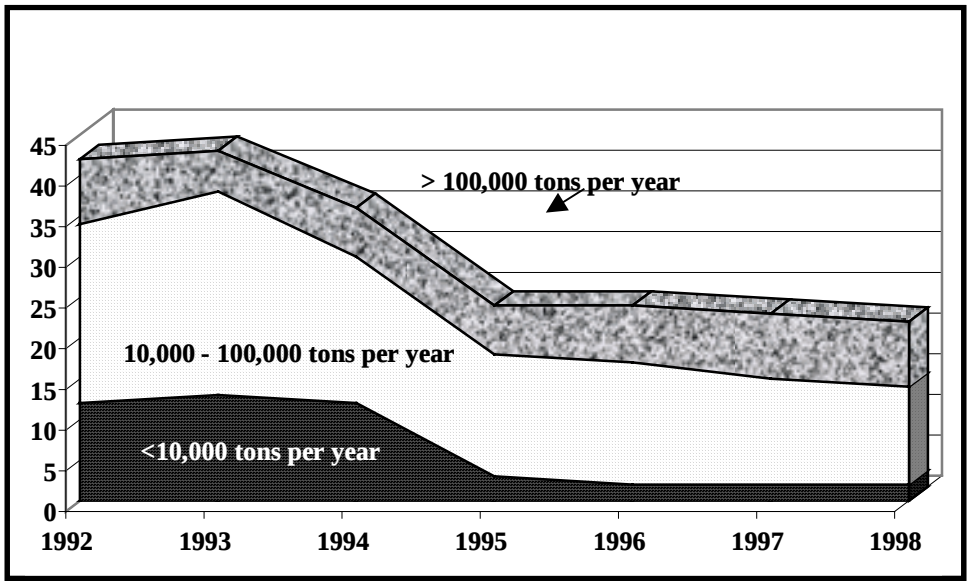


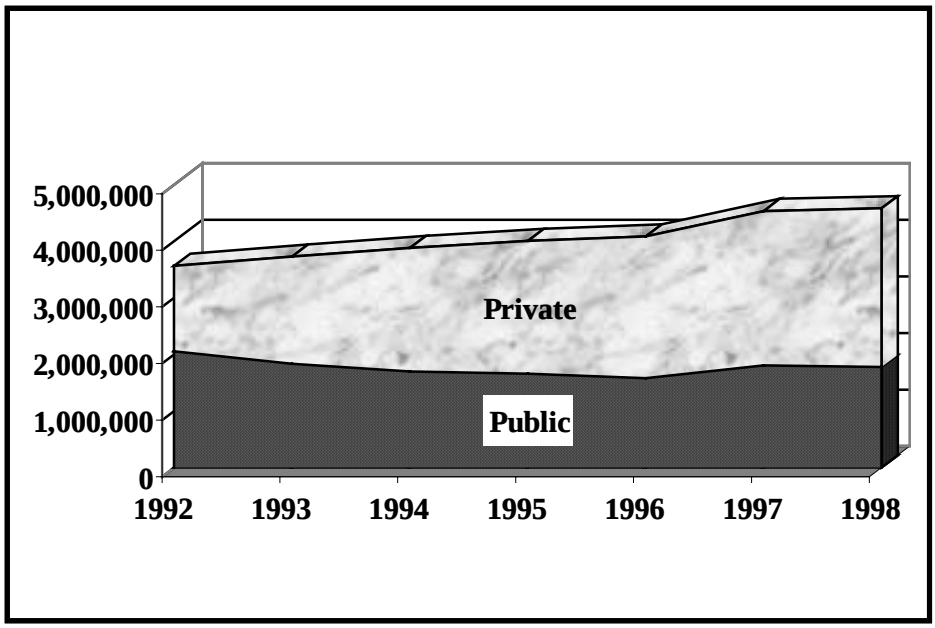
Table 6.1 shows the relationship of waste disposed to public/private ownership. As the table illustrates, 1,777,281 tons of solid waste disposed went to publicly owned facilities (39%), with the remaining 2,804,826 tons going to private facilities (61%).

Table 6.1
Waste Disposed in MSW Landfills – Public/Private

OWNERSHIP	NUMBER OF MSW LANDFILLS		AMOUNT OF WASTE DISPOSED (Tons)		% TOTAL WASTE DISPOSED	
	1991	1998	1991	1998	1991	1998
PUBLIC	36	16	2,696,885	1,777,281	69	39
PRIVATE	9	6	1,192,207	2,804,826	31	61
TOTAL	45	22	3,889,092	4,582,107	100	100

The amount of waste disposed in MSW landfills shows movement from the publicly owned facilities to those owned by the private sector (see Figure 6.2). The trend has continued since 1991, when the state first started tracking this type of information. The amount of waste disposed in the private facilities has increased from 31% since 1991 to 61% in 1998. The majority of this increased amount can be accounted for by the private Roosevelt Regional Landfill in Klickitat County.

Figure 6.2
Comparison of Waste Disposed for Public and Private Facilities



Types of Waste Disposed in Municipal Solid Waste Landfills

Traditionally, many people think of the waste disposed in MSW landfills as being mostly household waste.[36] Annual facility reports show that a much wider variety of waste is disposed of in the MSW landfills. These wastes need to be considered in terms of remaining available capacity. Fifteen of the 22 landfills reported a significant amount of solid waste disposed, other than municipal solid waste. Demolition, industrial, inert, commercial, woodwaste, sludge, asbestos, petroleum contaminated soils (PCS) and tires were the major waste streams. (A few landfills report all types of waste under the general "municipal" category so exact amounts cannot be determined.) Table 6.2 shows changes in waste, types and amounts disposed in MSW landfills from 1992 through 1997. (See Appendix B Table B.1 for specific MSW facility data).

[36] "Household waste" as defined in chapter 173-351 WAC, *Criteria for Municipal Solid Waste Landfills*, means any solid waste (including garbage, trash, and sanitary waste in septic tanks) derived from households (including single and multiple residences, hotels and motels, bunkhouses, ranger stations, crew quarters, campgrounds, picnic grounds, and day-use recreation areas).

Table 6.2
Waste Types Reported Disposed in MSW Landfills

WASTE TYPES	1992 (Tons)	1993 (Tons)	1994 (Tons)	1995 (Tons)	1996 (Tons)	1997 (Tons)	1998 (Tons)
Municipal Solid Waste*	2,694,800	2,641,551	2,725,084	2,777,030	2,807,998	3,083,286	3,222,639
Demolition Waste	250,144	331,231	459,979	382,513	375,412	385,412	446,172
Industrial Waste	101,607	44,471	150,218	161,779	145,617	163,431	159,781
Inert Waste	1,027	0	31,248	5,154	30,061	117,512	107,452
Commercial Waste	143,466	180,691	92,498	142,258	109,093	173,863	158,256
Woodwaste	60,523	98,595	22,668	37,850	57,667	57,128	60,383
Sewage Sludge	64,311	33,854	64,364	66,728	49,205	72,741	67,419
Asbestos	8,247	7,076	11,819	7,859	7,965	9,558	10,684
Petroleum Contaminated Soils	224,560	273,429	249,552	255,288	254,414	444,260	288,407
Tires	na	1,288	1,815	28,712	12,787	14,912	19,130
Special	na	na	Na	na	10	6	904
Other**	12,053	113,869	69,371	136,644	233,526	10,809	40,880
TOTAL	3,560,738	3,726,055	3,878,615	4,001,815	4,083,755	4,532,918	4,582,107

* Some facilities include demolition, industrial, inert, commercial and other small amounts of waste types in the MSW total.

** Some of the "other" types of waste reported include auto fluff, non-municipal ash and white goods.

In examining the types of waste that were disposed in the MSW landfills in 1998, increased amounts were reported for the categories of MSW, demolition, woodwaste asbestos, tires, special and "other" waste.

The increase in the amount of tires disposed at MSW landfills as seen since 1995 is a result of some failed recycling efforts for tire pile cleanups. Recycling of tires is currently not occurring very widely in Washington

Waste-to-Energy/Incineration

Six waste-to-energy facilities/incinerators statewide burned 369,778 tons of solid waste. Of that amount, 8,550 tons was identified as woodwaste at the Inland Empire Paper facility in Spokane. This is the only incinerator reporting that does not burn municipal solid waste. The amount of solid waste incinerated statewide decreased to 7% in 1998. The highest percent of waste incinerated in the state was 12% in 1995. (See Appendix B, Table B.2 for specific incinerator data.)

Ash Monofill

For waste-to-energy facilities or incinerators that are regulated by chapter 173-304 WAC and chapter 173-306 WAC (see in Chapter II), the ash generated must be disposed in a properly constructed ash monofill. In 1998, there were five energy recovery/ incinerators that meet these criteria. All of the municipal solid waste incinerator ash (112,087 tons) from those facilities was disposed at the ash monofill at the Roosevelt Regional Landfill in Klickitat County.

Trends in Municipal Solid Waste Disposal Methods

The two basic ways to dispose of solid waste are landfilling and burning. (See Map A for the location of MSW landfills and energy recovery facilities.)

Map A: Location of MSW Landfills & Energy Recover Facilities (as of November 1999)

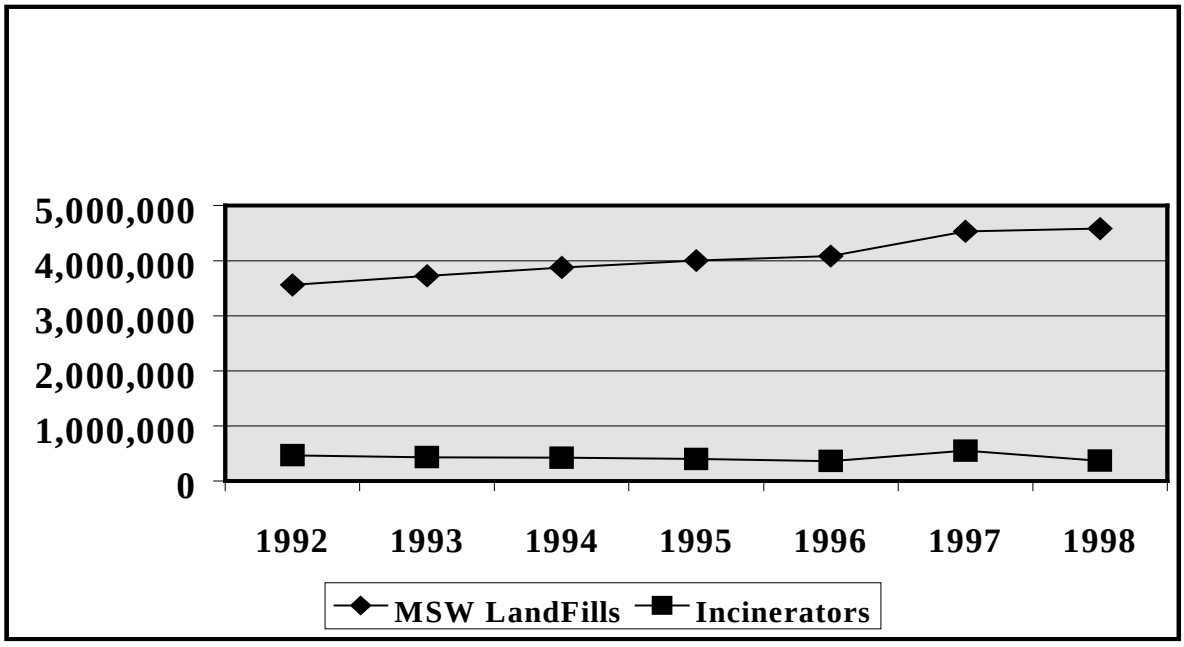
A comparison of the amount of solid waste disposed in municipal solid waste landfills and waste-to-energy facilities and incinerators in 1998 is shown in Table 6.3.

Table 6.3
Waste Disposed in MSW Landfills
and Incinerators in 1998

FACILITY TYPE	TONS	PERCENT (%)
MSW Landfills	4,582,107	93%
Incinerators	369,778	7%
TOTAL	4,951,885	100%

The largest change in disposal methods over the past few years has been between landfilling and energy recovery/incineration. In 1991, 98% of the waste was disposed in MSW landfills and 2% was incinerated. In 1995, the highest percent of incinerated waste was12%. That has decreased to 7% in 1998. (See Figure 6.3)

Figure 6.3
Comparison of Solid Waste Landfilled & Incinerated
1991 through 1998 (in tons)



The amount of waste incinerated will likely decrease in 1999, with the permanent closure of two energy-recovery facilities in 1998.

Inert/Demolition, Limited Purpose and Woodwaste Landfills

In addition to municipal solid waste landfills, there are three other types of landfills in the state: inert/demolition, limited purpose, and woodwaste. These three types of landfills are discussed in Chapter II. Annual report forms received from these types of landfills show a variety of waste types disposed, as seen in Tables 6.4 - 6.6.

Table 6.4 shows the waste types and amounts reported for inert/demolition landfills. The total amount of waste decreased in all categories except PCS, even with 22 landfills reporting versus 19 in 1997. (See Appendix B, Table B.3 for specific inert/demolition landfill data.)

Table 6.4
Waste Types and Amount Disposed at Inert/Demolition Landfills

WASTE TYPES	1992	1993	1994	1995	1996	1997	1998
Municipal	0	0	0	0	0	0	0
Demolition	750,627	168,066	157,758	103,903	133,469	262,793	180,268
Industrial	0	0	0	0	0	121	0
Inert	139,366	272,047	200,172	121,943	226,362	326,331	252,506
Commercial	0	0	0	0	0	0	0
Wood	609	120	0	167	39	0	156
Sludge	0	0	0	0	0	0	0
Asbestos	0	12	4	0	0	0	4
PCS	0	16,233	19,179	18,295	846	10,285	60,545
Tires	0	500	0	0	33	618	449
Other	14,486	2,260	740	33,125	58,953	1	600
TOTAL (tons)	905,088	459,238	377,853	277,433	419,702	600,149	494,528

Table 6.5 shows the types and amounts of waste reported disposed at Limited Purpose landfills. There was a slight decrease in the overall tonnages with only 13 landfills operating, versus 19 in 1997. (See Appendix B, Table B.4 for specific limited purpose landfill information.)

Table 6.5
Waste Types and Amount Disposed at Limited Purpose Landfills

WASTE TYPES	1992	1993	1994	1995	1996	1997	1998
Municipal	0	0	0	0	0	0	0
Demolition	13,698	12,894	95,568	151,230	180,529	85,916	98,072
Industrial	194,689	17,680	212,008	315,930	371,496	277,419	225,779
Inert	44,572	37,274	104,419	138,577	141,759	109,174	112,714
Commercial	0	25,019	0	0	0	0	0
Wood	94,541	156,261	86,088	58,628	22,660	14,589	7,700
Sludge	0	0	21	0	0	2,275	0
Asbestos	0	0	226	797	512	1,310	1,058
PCS	0	99,360	82,279	148,932	98,221	121,066	56,407
Tires	0	0	0	0	29,227	434	559
Other	35,615	59,259	60,642	40,797	65,675	83,600	124,607
TOTAL (tons)	383,115	407,747	642,251	874,116	910,078	695,783	628,896

Table 6.6 shows the waste types and amounts reported at woodwaste landfills. A high demand for wood products has increased the reuse and recycling of woodwastes that had been disposed in the past. This is shown in the decrease in woodwaste disposed at woodwaste landfills. Reduced amounts of woodwaste were also reported at

inert/demolition and limited purpose landfills. Five woodwaste landfills reporting in 1998, the same number as in 1997. (See Appendix B, Table B.5 for specific woodwaste landfill data.)

Table 6.6
Waste Types and Amount Disposed at Woodwaste Landfills

WASTE TYPES	1992	1993	1994	1995	1996	1997	1998
Municipal	0	0	0	0	0	0	0
Demolition	57,328	20,775	0	8,600	18,780	17,718	21,313
Industrial	0	0	0	0	0	0	0
Inert	0	0	0	0	0	0	0
Commercial	0	0	0	0	0	0	0
Wood	122,381	96,708	93,310	105,080	81,886	69,498	36,777
Sludge	0	0	0	0	0	0	0
Asbestos	0	0	0	0	0	0	0
PCS	0	0	0	0	0	0	0
Tires	0	0	0	0	0	0	0
Other	1,785	4,614	3,213	2,079	2,031	8,109	1,320
TOTAL (tons)	181,494	122,097	96,523	115,759	102,697	95,325	59,410

Movement of Solid Waste

Movement of Waste between Counties

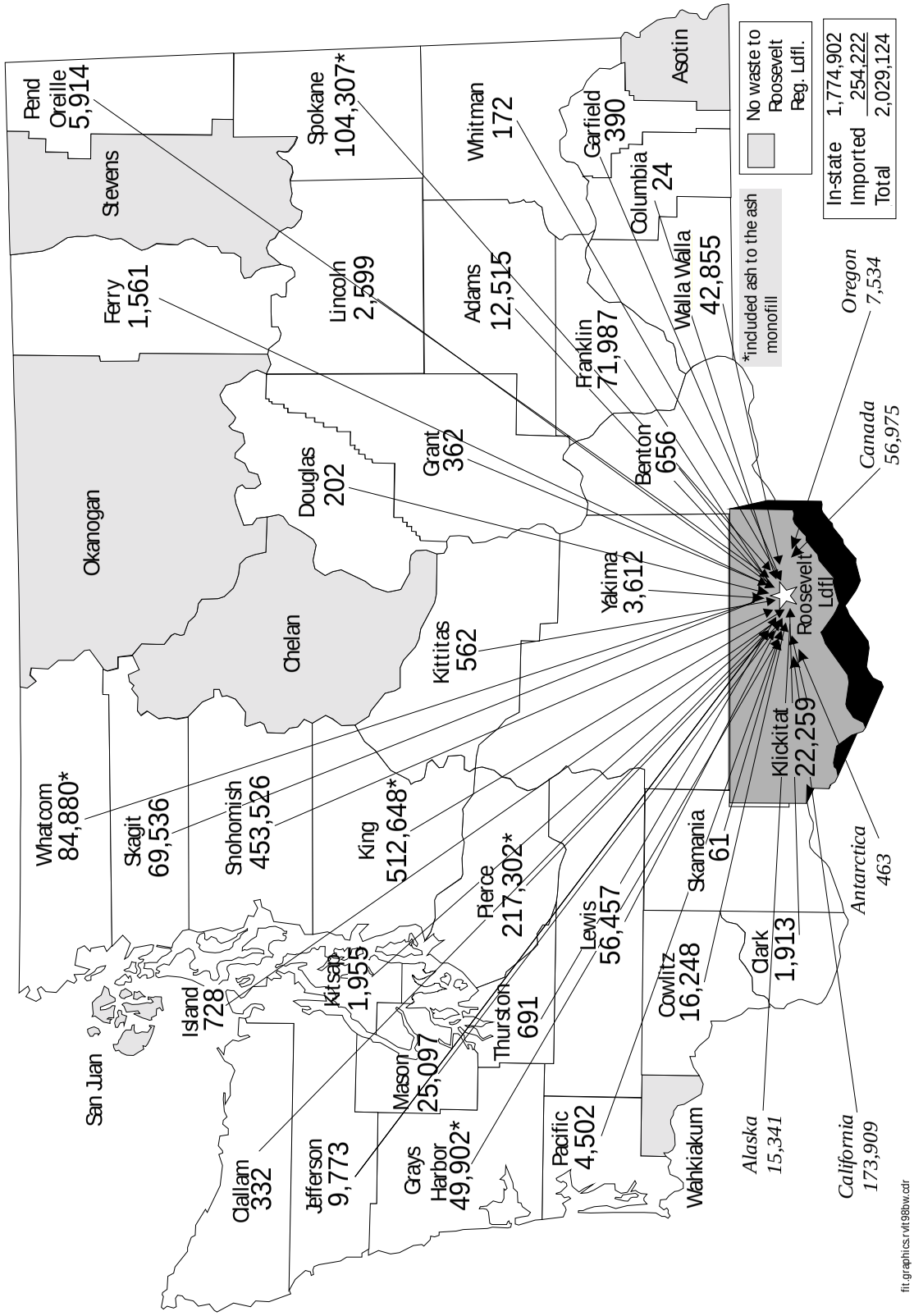
All landfills and incinerators were asked to report the source, types and amounts of waste they received from out-of-county. Twelve of the 22 active MSW landfills reported receiving over 1.8 million tons of solid waste from other counties in 1998.

Some of the municipal solid waste movement was because of closer proximity to a neighboring county's landfill, especially for the smaller landfills which received municipal waste from other counties without there own landfills. Some of the waste disposed from other counties was non-municipal waste such as PCS, industrial, demolition and asbestos.

With the closure of many local landfills because of the new state/federal regulations, Roosevelt Regional Landfill in Klickitat County, and to a lesser extent, Oregon's regional landfills, have become the chosen disposal option. The Roosevelt Regional Landfill received some type of solid waste from 30 of the 39 Washington counties and also from out-of-state and out-of-country (see Map B). For many counties that still have operating MSW landfills, Roosevelt Regional Landfill has become an option to dispose of some of their non-municipal waste, thus saving local landfill capacity for future need. Ten of the 30 counties rely on Roosevelt for the majority of their MSW waste disposal and four other counties send a significant portion of their MSW to Roosevelt. Five counties and the City of Seattle send the majority of their MSW waste and one other county sends a significant portion of MSW waste to Oregon facilities.

In addition to waste movement to MSW landfills, three of the waste-to-energy facilities received 2,120 (MSW and medical waste) of waste from beyond its home county. Six inert/demolition landfills received 20,505 tons or waste (inert and demolition) and four limited purpose landfills received 27,547 tons of waste (asbestos, demolition, PCS, industrial) from other counties.

Map B: 1998 Solid Waste to Roosevelt Regional Landfill (in Tons)



Waste Imported from Outside the State

Washington state landfills and incinerators were also asked to report the source, types and amounts of waste received from out-of-state or out-of-country. In 1998, a total of 279,969 tons of solid waste, about 6% of the waste disposed and incinerated in Washington, was imported from beyond the state's boundaries for disposal at municipal solid waste landfills and energy recovery facilities, about the same percentage as in 1997. In 1994, 67,113 tons of waste, 1% of the disposed amount, was imported.

The types of waste received from out-of-state for disposal are shown in Table 6.7. The majority of this waste (254,188 tons) went to Roosevelt Regional Landfill. The majority of that (173,909 tons) was imported from California, with the remainder from Alaska, Oregon, Canada, and Antarctica. Roosevelt also received the majority of out-of-state demolition waste, PCS and tires.

Nez Perce County, Idaho, disposed of 24,100 tons of MSW in the Asotin County Landfill. This disposal is considered incidental movement because Asotin County, Washington, and Nez Perce County, Idaho, prepared a joint local comprehensive solid waste management plan to meet the requirements of Washington state statute and have an agreement for joint use of the landfill.

In addition to the MSW landfills, three incinerators received 1,674 tons from out-of-state. Three limited purpose landfills imported a total of 27,547 tons of waste from predominately Oregon and Idaho. The Weyerhaeuser limited purpose landfill in Cowlitz County received most of this waste (21,644 tons), waste resulting from their other wood processing operations in Oregon.

Table 6.7
Out-of-State Waste Disposed in Washington

TYPE OF WASTE	QUANTITY (TONS)	
	1991	1998
Municipal Solid Waste	24,475	235,408
Demolition	1,412	14,245
Industrial	0	28,032
Woodwaste	208	23
Sludge	36	207
Asbestos	0	637
Petroleum Contaminated Soils	0	19,831
Tires	0	7,202
Medical	na	1,432
Other	0	828
TOTAL	26,131	307,850

Under the "Guidelines for Reporting Imported Solid Waste"[37] MSW landfills or incinerators receiving waste from out-of-state are required to notify Ecology if the amount from one generator will exceed 10,000 tons per year. An equivalency determination for the state or province is required. In addition, the facility must submit quarterly reports on all solid waste received from out-of-state. Roosevelt Regional Landfill is currently the only landfill falling under the reporting guidelines.

Waste Exported from the State

Another aspect of solid waste movement is the amount exported from Washington to another state for disposal. In 1998, a total of 986,824 tons of waste generated in Washington was disposed in Oregon landfills, an increase from 705,608 tons in 1992. Table 6.8 compares the waste amounts and types exported and imported.

Major exporters of municipal solid waste in Washington included the City of Seattle (454,139 tons of MSW), Benton County, Clark County, Island County, Pacific County, San Juan County, Skamania County, and Whitman County. Reasons for exportation out-of-state are related to the closure of local landfills, negotiation of favorable long-haul contracts with Oregon facilities and extending the life of local landfills by exporting non-municipal waste.

Table 6.8
Comparison of Imported-to-Exported Waste for all Solid Waste Facilities

TYPE OF WASTE	IMPORTED		EXPORTED	
	1997	1998	1997	1998
Municipal Solid Waste	213,322	235,408	785,741	801,663
Demolition	12,264	14,245	94,905	94,546
Industrial	39,517	28,032	50,158	57,556
Woodwaste	0	207	0	0
Sludge	1,413	23	0	0
Asbestos	358	637	5,440	2,856
Petroleum Contaminated Soils	12,127	19,831	39,112	24,999
Tires	7,895	7,202	0	0
Medical Waste	1,300	1,432	0	5,204
Other	0	828	0	0
TOTAL	258,821	307,850	975,356	986,824

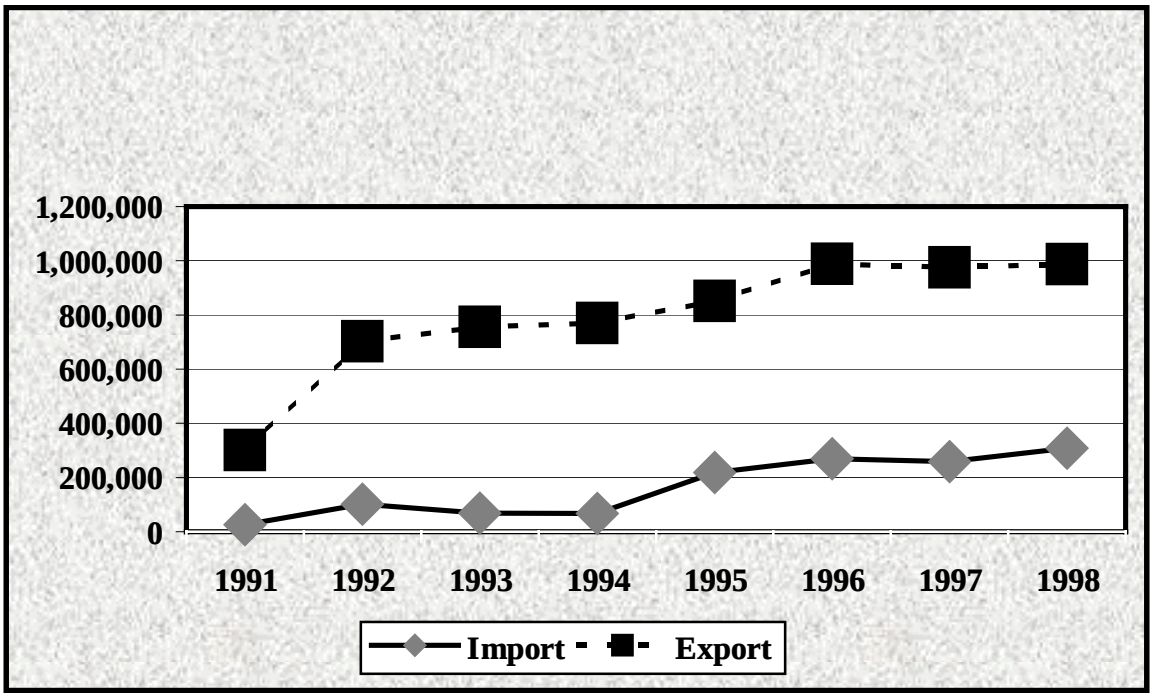
[37] *Guidelines for Reporting Imported Solid Waste*, Department of Ecology, Publication #94-140, September 1994.

Trends in Interstate Waste Movement for Washington

The first significant movement of waste across Washington state boundaries started in 1991. In mid-1991, the City of Seattle started long-hauling waste to the Columbia Ridge Landfill in Arlington, Oregon. In late 1991, the Roosevelt Regional Landfill began operating in Klickitat County, Washington, accepting waste from British Columbia, Idaho, and Oregon.

As can be seen in Figure 6.4, Washington exports have been much higher than imports since 1991. Both imported and exported waste amounts increased slightly in 1998. Still, about three times as much waste is exported to Oregon's landfills, Columbia Ridge, Wasco and Finley Buttes.

Figure 6.4
Trend of Imported/Exported Solid Waste



Determining the Amount of Solid Waste Disposed

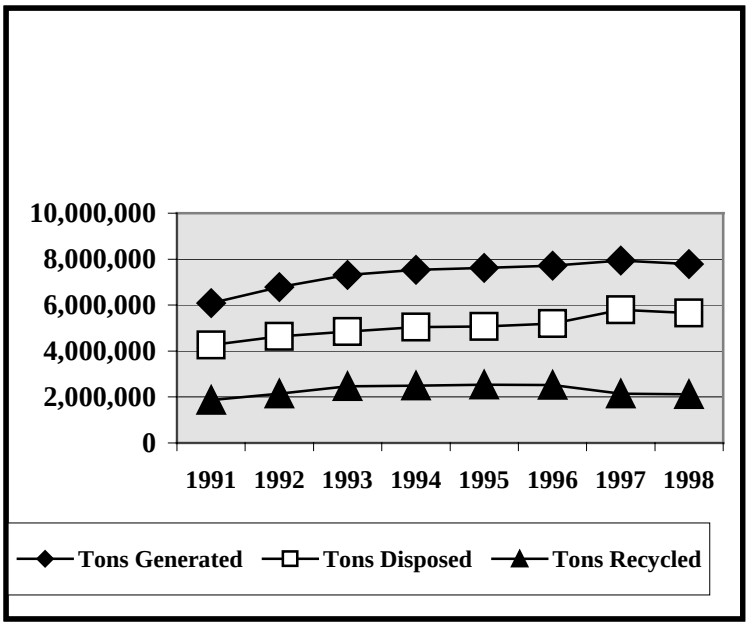
The figure arrived at for the amount of solid waste disposed varies depending upon the types of wastes included, the source of waste generation or the types of facilities included in the calculation.

Waste Generated by Washington Citizens for Disposal at MSW Facilities

Since 1987, Ecology has conducted a recycling survey that has reported the amount of waste generated, recycled and disposed each year. This waste stream was the "recyclable waste stream" made up of waste types included in the recycling categories, but not including sludge, asbestos, petroleum contaminated soils, construction and demolition, or industrial waste (when it could be specifically identified[38]). It was also typically the waste stream generated and reported by municipalities (cities and counties). The report for the recycling survey included waste that was disposed of outside of Washington, but excluded imported waste.

Figure 6.5 shows the amount of waste recycled, disposed and generated in Washington. It is based on waste disposed at MSW landfills and incinerators in Washington and Oregon, excluding imported waste. All types of waste are included in the disposal numbers. The trend until 1997 showed an increase in the amounts generated, recycled, and disposed. In 1997, there was an increase in generation, disposal and a decrease in recycling. 1998 numbers show a stabilized recycling rate with a slight downward movement of the disposed and generated figures.

Figure 6.5
Washington State Trends in Solid Waste Generated, Recycled and Disposed



[38] Some facilities and government entities that report information for the annual recycling survey on waste generated and disposed include other waste in with the total for municipal solid waste. These waste types are typically inert, demolition, industrial, and commercial.

Washington State's population has continued to grow since disposal numbers were tracked in 1991 (see Table 6.9). The increased population has had a correlated increase in waste disposed. In 1995, the per capita disposal rates (0.93 tons/person/year) decreased from the 1994 level (0.95 tons/person/year). In 1997, the per capita disposal rate increased to 1.03 tons/person/year. There was also a significant decrease in the recycling rate per person, from 0.47 tons/person/year in 1995 to 0.38 tons/person/year in 1997. In 1998, there was a slight decrease in the per capita disposal rate to 1.00 tons/person/year. There was also a slight decrease in the recycling rate to 0.37 tons/person/year.

Table 6.9
Washington State Population

1991	5,000,385
1992	5,116,685
1993	5,240,900
1994	5,334,400
1995	5,429,900
1996	5,516,800
1997	5,606,800
1998	5,685,300

Figure 6.6 analyzes the trends in per capita generation, recycling and disposal. This looks at the number of tons per year generated, recycled and disposed by each person. The total is not what each person produces at each household, but includes all residential, business, commercial and industrial waste generated in the state that is disposed of in municipal solid waste landfills and incinerators. Table 6.10 shows the per capita numbers from 1991 through 1997.

Figure 6.6
Washington State Trends in Solid Waste Generated, Recycled and Disposed

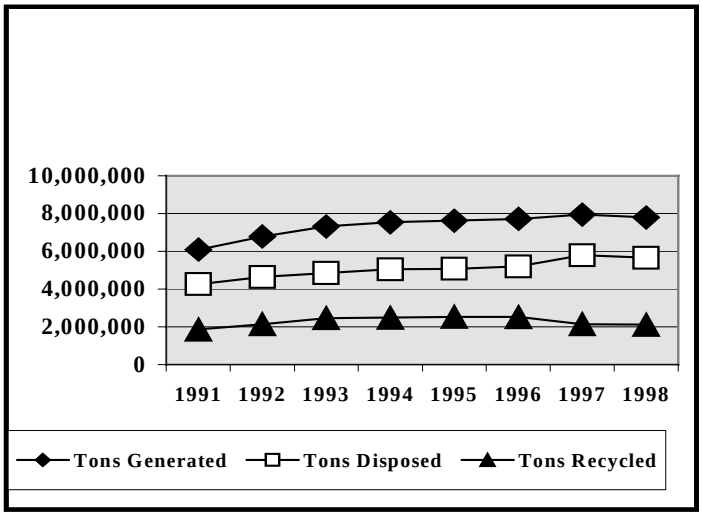


Table 6.10
Per Capita Disposed, Recycled and Generated Numbers
(tons/person/year)

Per Capita	1991	1992	1993	1994	1995	1996	1997	1998
Disposed[39]	0.85	0.91	0.92	0.95	0.93	0.94	1.03	1.00
Recycled	0.37	0.42	0.47	0.47	0.47	0.46	0.38	0.37
Generated	1.23	1.33	1.40	1.41	1.40	1.40	1.42	1.37

As the population continues to increase, the total amount of waste generation will continue to increase. That is why the current emphasis on household recycling should continue and an increasing emphasis on waste reduction by the residential sector and waste reduction and recycling by the commercial and industrial sector needs to become a priority.

Total Waste Disposed in Washington State

The three other categories of landfills for which information was obtained this year include woodwaste, inert/demolition and limited purpose. The waste disposed in these facilities is more typically generated by the private sector (business and industry). There is a significant amount of waste that is disposed of in-state that is not included in the disposal numbers discussed above.

To gain a more complete picture of solid waste disposal in the state, it is necessary to include all categories of waste that are disposed or incinerated in Washington state landfills and incinerators. This includes waste imported from out-of-state, but does not include exported waste. When all categories are included, tons of waste were disposed of in all types of landfills and incinerators in Washington in 1998 (see Table 6.11).

Table 6.11
Total Amounts of Solid Waste Disposed in Washington

	AMOUNT OF WASTE (TONS)					
DISPOSAL METHOD	1993	1994	1995	1996	1997	1998
Municipal Solid Waste Landfills	3,726,055	3,878,615	4,001,815	4,083,755	4,532,918	4,582,107
Incinerated Waste	431,928	421,626	397,588	365,464	551,006	369,778
Woodwaste Landfills	122,097	32,625	115,759	102,697	95,325	59,410
Inert/Demolition Landfills	834,238	657,614	479,638	873,195	600,149	494,528
Limited Purpose Landfills	407,747	642,251	874,116	910,078	695,783	628,896
TOTAL	5,522,065	5,632,731	5,868,916	6,335,189	6,475,181	6,134,719

[39] Disposed amounts include all waste generated from Washington disposed in MSW landfills and incinerators, both instate and exported.

Remaining Capacity

Future Capacity at Municipal Solid Waste Landfills

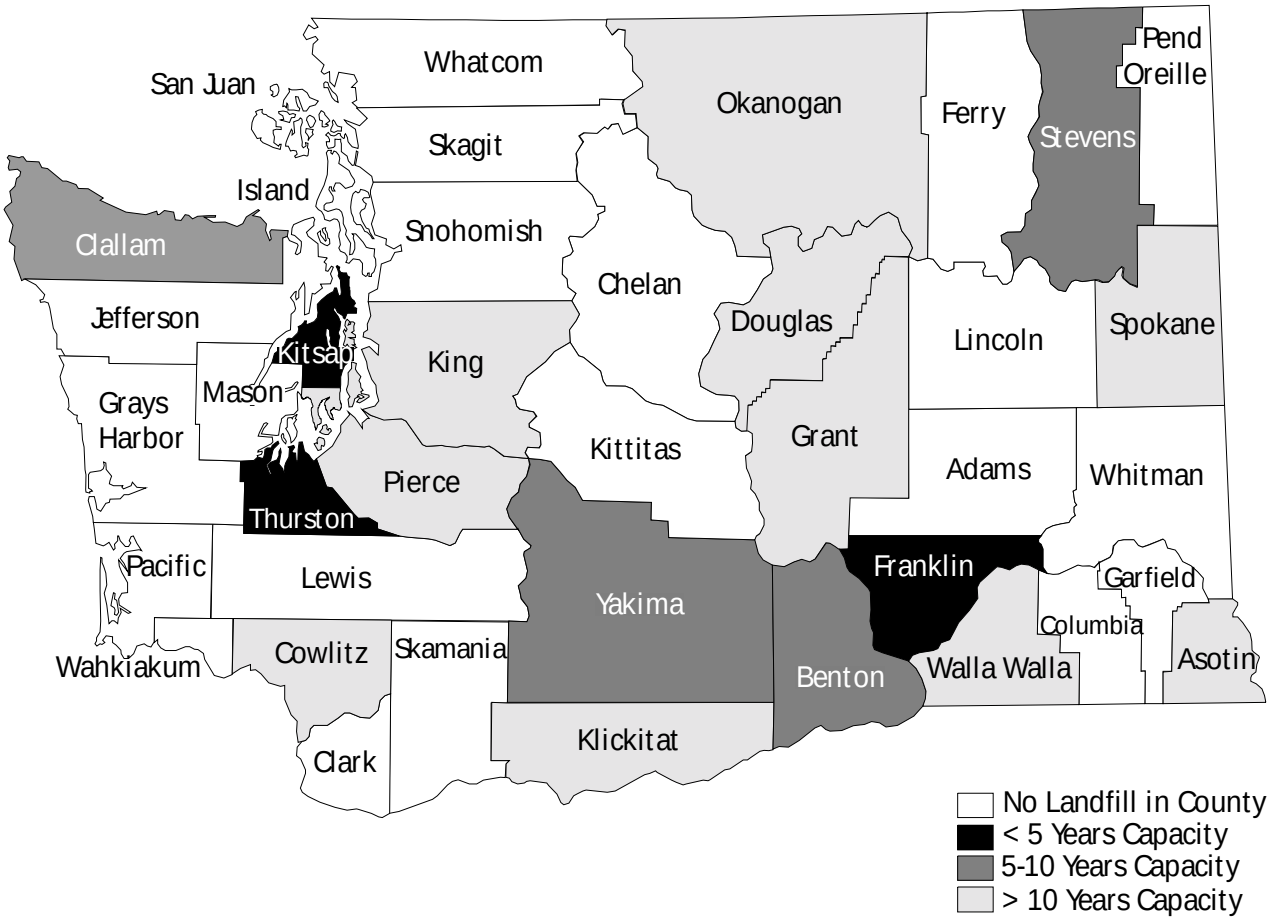
There are currently 21 municipal solid waste landfills operating as of November 1999.[40] (See Map A for the location of operating MSW landfills and incinerators.) The amount of remaining capacity for the 21 MSW landfills was determined by asking the facilities to report remaining permitted capacity, as well as the expected closure date. In 1999, the facilities estimated about 156 million tons, or 34 years, of capacity at the current disposal rate.[41] In 1994, facilities reported approximately 181 million tons of remaining capacity, about 49 years of remaining capacity statewide.[42] Changes in permit conditions, landfill closures and projections of fewer expansions, and changing volumes affect remaining capacity. Of the 21 currently operating landfills, only 12 have greater than 10 years of remaining permitted capacity. (See Table 6.12 for an estimated number of facilities with specified remaining years of life.) Map C shows the counties and the remaining years of capacity of their MSW landfills.

Table 6.12
Estimated Years to Closure for MSW Landfills

YEARS TO CLOSURE	% OF TOTAL REMAINING CAPACITY	NUMBER OF FACILITIES	PUBLIC	PRIVATE
Less than 5 years	2%	4	1	3
5 to 10 years	2%	5	5	0
Greater than 10 years	96%	12	9	3
TOTALS		21	15	6

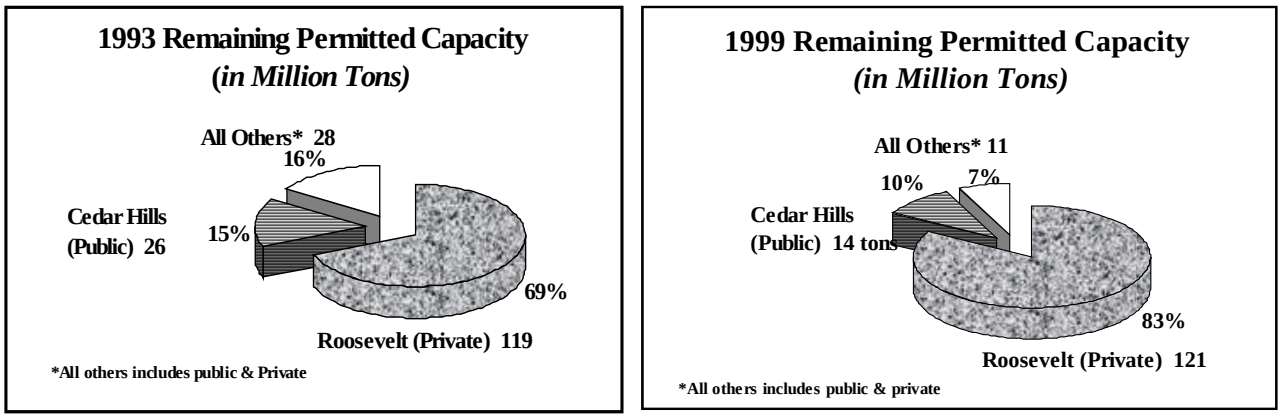
[40] Hidden Valley Landfill in Pierce County stopped accepting waste in December 1998. Vashon Landfill in King County stsopped accepting waste in July 1999. The LRI Landfill in Pierce County was scheduled to start operating in November 1999.
[41] This does not include a site in Adams County that has been permitted for 90,000,000 tons. Construction start of this facility is undecided at this time.
[42] *Solid Waste in Washington State - Third Annual Status Report*, Department of Ecology, Publication #94-194, December 1994.

Map C: Remaining Permitted MSW Landfill Capacity
(as of April 1999)



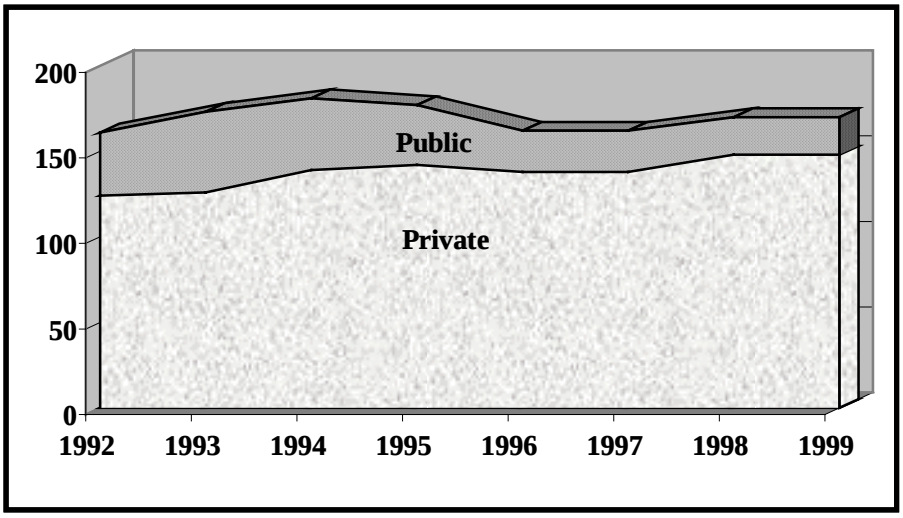
1999 capacity numbers indicated that 96% of the remaining capacity was at landfills with greater than 10 years to closure. Fifteen of the 21 operating MSW landfills are publicly owned with 6% of the remaining capacity (9 million tons). However, 94% of the remaining permitted capacity (148 million tons) is at the six privately-owned facilities, compared to 73% in 1993. The majority of the capacity, about 77% of the total statewide capacity, is at the privately owned Roosevelt Regional Landfill in Klickitat County. Another 15% of the statewide total capacity is at newly constructed, privately owned landfill in Pierce County, with the remaining 8% of capacity spread among the remaining 19 landfills in the state (see Figure 6.7).

Figure 6.7
Comparison of Remaining Permitted Capacity
1993 and 1998



The remaining capacity at private landfills has exceeded that for public facilities since the amounts were tracked in 1992. Private facility capacity showed a slight increase in 1998 (Figure 6.8).

Figure 6.8
Remaining Capacity MSW Landfills
(public private in million tons)



Besides the amount of remaining capacity, the availability of that capacity needs to be considered. The Roosevelt Regional Landfill is operated to accept waste from a wide variety of locations (see Map B). In 1997, the facility received some type of solid waste from 30 counties in Washington, including the majority of the solid waste from ten counties. Waste was also received from Alaska, California, Oregon, British Columbia and Antarctica. Other landfills in the state are operated to accept the majority of waste

from the county in which they operate. In order to reserve the capacity for local citizen needs, some are also using the regional facility for some of their disposal needs.

The 34 year estimate of total remaining permitted capacity is based on the amount of waste disposed in MSW landfills in 1998. This amount will vary depending upon waste reduction and recycling activities, population growth or decline, as well as the impact of waste being imported into the state for disposal or additional waste which is currently disposed out-of-state, being disposed in-state. As discussed previously, there has been an increase in the types of waste, other than municipal waste, being disposed of in MSW landfills. Part of this is the liability concern (that is, it is better to pay a higher cost and transport further to dispose in a well designed landfill). If requirements for other types of landfills (woodwaste, inert/demolition, and limited purpose) become more stringent in the future, some of those facilities may close and there may be an additional shift of the types of solid waste moving to the MSW landfills for disposal.

Chapter VII Moderate Risk Waste Collection System

Moderate risk waste (MRW) is a category of solid waste. MRW includes household hazardous waste (HHW) and conditionally exempt small quantity generator (CESQG) waste. There are three primary methods of MRW collection, fixed facilty collection, collection events/mobile collections and used oil collection centers.

Map D shows how the three collection methods are dispersed in different counties. For each county the number of each type of collection method used is represented in the center of it's correspond symbol. For instance, in Okanogan County there are 4 used oil collection sites and the county had one collection event in 1997.

Map D: 1997 MRW Collection System Infrastructure

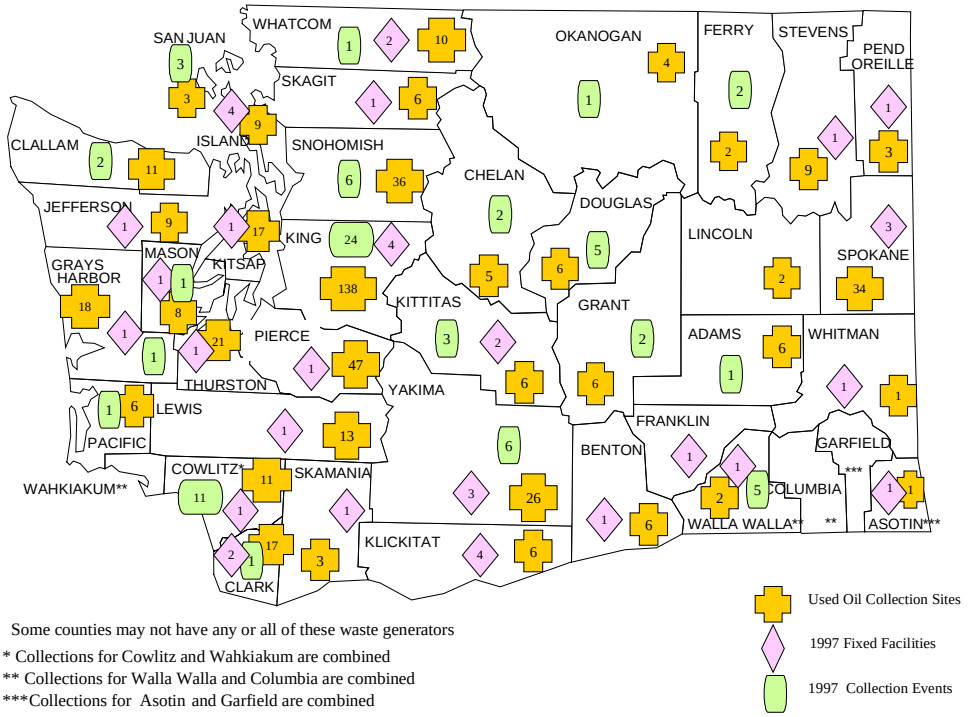


Figure 7.1 shows the trends for different types of collection methods during the period 1991-1997.

Figure 7.1
Growth in MRW Collection Infrastructure
1991-1997

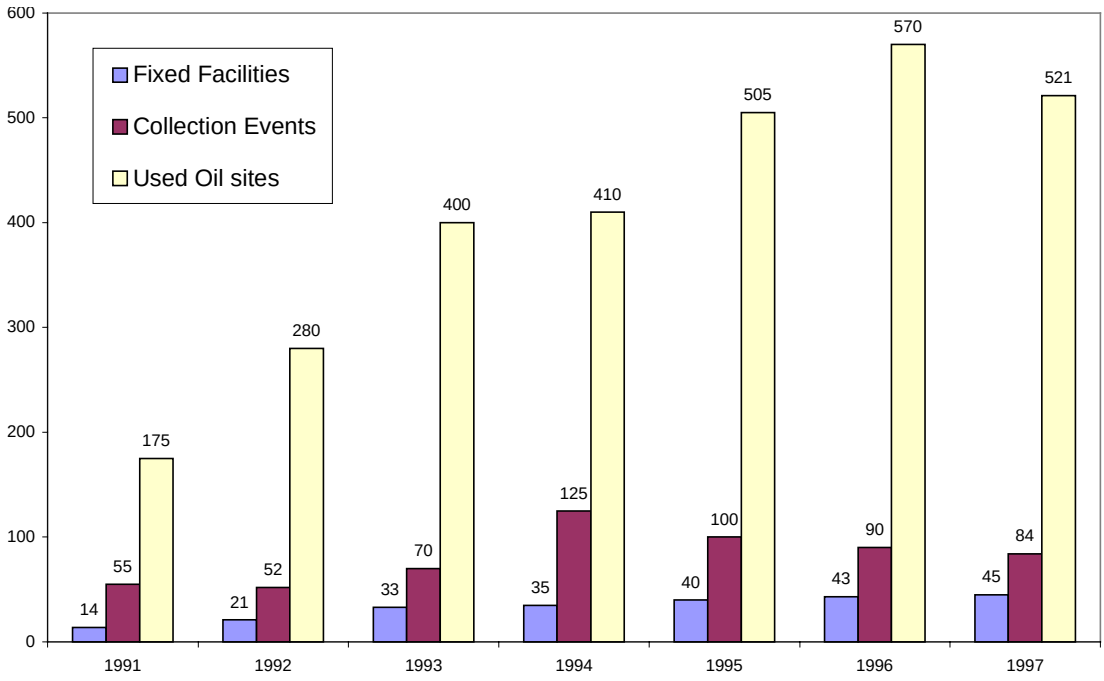


Figure 7.1 shows that the number of Used Oil collection sites has rised consistently from 1991-1996. In 1997, there was a small drop in the number of used oil collection sites reported. The number of Fixed Facilities contines to increase which tend to suplant some used oil collection centers as well as collection events. Collection events peaked in 1994 and are continuing to decerase; from 90 events in 1996 to 84 events in 1997.

Table 7.1 shows both HHW and Used Oil quantities collected in the MRW system increasing, despite 6 fewer collection events and a slight drop in the total number of used oil collection centers. The table also shows a decrease in the total quantity of CESQG waste collected from 1996 to 1997. This was due to a drop in lead acid batteries and used oil from CESQG's in Yakima County. Because Yakima runs the highest volume publicly-operated CESQG waste collection system in the state it has a relatively large effect on the statewide statistics.

Table 7.1
MRW System - Pounds Collected 1993-1997

Statewide	1993	1994	1995	1996	1997
HHW	5,332,400	4,675,600	7,399,067	8,792,792	9,231,000
CESQG	0	1,493	49,036	562,213	396,000
Used Oil	9,085,100	7,074,114	9,410,210	7,827,148	8,007,000
MRW Collect. System Totals	**14,419,493**	**11,753,201**	**16,860,308**	**17,184,149**	**17,634,000**

Figure 7.2 shows the overall trend in MRW collection system in millions of pounds per year.

Figure 7.2
MRW Collection System Totals

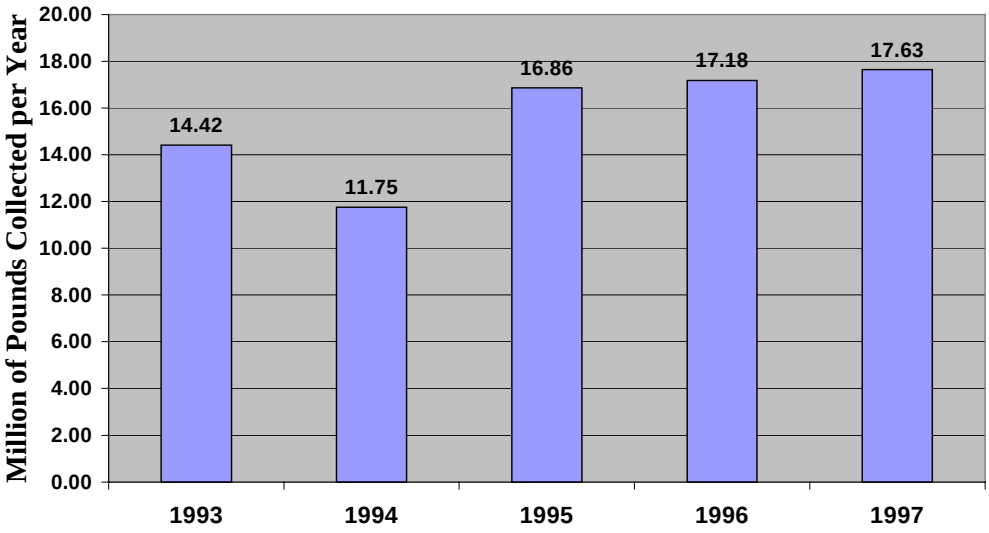
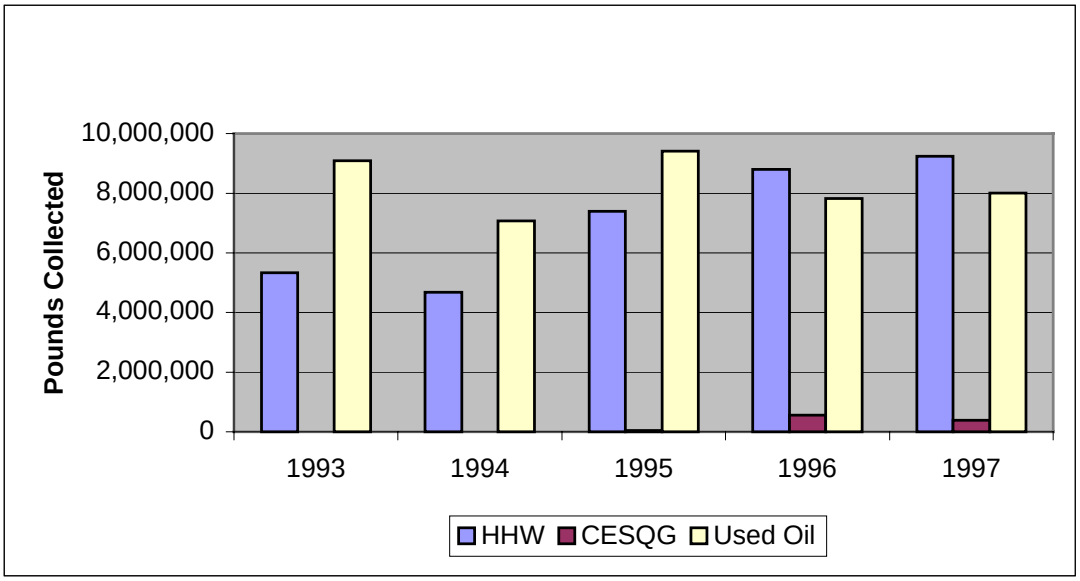


Figure 7.3 shows the amount of MRW collected by HHW versus CESQG versus Used Oil Collection Centers from 1993 through 1997.

Figure 7.3
MRW Collection System Trends



As predicted last year there is a decrease in number of used Oil collection sites, however the total collection of used oil has increased.

APPENDIX A

STATE MAP WITH COUNTY NAMES


San Juan
Whatcom
Okanogan
Ferry
Pend Oreille
Stevens
Skagit
Island
Snohomish
Chelan
Clallam
Douglas
Lincoln
Spokane
Jefferson
Kitsap
King
Grays Harbor
Mason
Kittitas
Grant
Adams
Whitman
Pierce
Thurston
Pacific
Lewis
Yakima
Franklin
Garfield
Columbia
Cowlitz
Skamania
Benton
Walla Walla
Asotin
Wahkiakum
Klickitat
Clark

APPENDIX B

Facility Specific Disposal Data for 1998

Table B.1 1998 Total Waste Disposed in Municipal Solid Waste Landfills

Landfill Name	County	MSW	Demo	Ind	Inert	Comm'l	Wood	Sludge	Asb	PCS	Tires	Special	Other	Total Waste
Asotin County	Asotin	36,457	0	0	0	0	0	0	0	0	0	0	0	**36,457**
Cedar Hills	King	867,726	0	1,252	0	0	0	0	113	180	0	0	6,225	**875,496**
Cheyne Road	Yakima	60,858	0	0	0	0	1,293	50,516	0	0	311	0	3,949	**116,927**
Cowlitz County-B	Cowlitz	47,285	4,076	3,978	0	26,097	0	0	91	0	0	0	0	**81,527**
Delano	Grant	14,393	1,200	0	625	525	0	0	0	0	2	0	0	**16,745**
Ephrata	Grant	70,981	0	0	0	0	0	0	22	0	131	0	0	**71,134**
Fort Lewis #5	Pierce	19,259	0	0	857	0	973	0	16	0	0	0	0	**21,105**
Greater Wenatchee	Douglas	153,843	0	0	0	0	0	312	128	1,445	3	896	0	**156,627**
Hawks Prairie	Thurston	108,417	25,030	0	0	0	0	0	352	0	0	0	0	**133,799**
Hidden Valley (closed)	Pierce	240,065	10,282	0	91,343	41,898	0	832	0	0	42	0	0	**384,462**
Horn Rapids	Benton	23,396	6,572	7,113	5,854	22,693	2,767	1,083	0	17	19	0	2	**69,516**
Kittitas County Ryegrass (closed)	Kittitas	0	0	0	0	0	0	0	0	0	0	0	0	**0**
New Waste Inc.	Franklin	2,042	441	0	1,968	7,483	749	0	785	2,318	0	0	1,670	**17,456**
Northside	Spokane	2,137	3,347	0	44	0	0	0	0	0	0	8	0	**5,536**
Okanogan Central	Okanogan	21,753	18	0	0	0	16	10	13	0	724	0	0	**22,534**
Olympic View	Kitsap	73,521	54,929	16,457	6,761	59,450	0	990	3,231	64,769	4	0	28,056	**308,168**
Port Angeles	Clallam	50,000	12,000	0	0	0	4,000	1,600	120	3,000	0	0	0	**70,720**
Roosevelt Regional	Klickitat	1,174,004	327,460	127,621	0	0	37,660	12,076	4,973	216,130	17,084	0	0	**1,917,008**
Stevens County	Stevens	21,468	817	3,360	0	110	0	0	0	548	285	0	84	**26,672**
Sudbury Road	Walla Walla	48,232	0	0	0	0	0	0	94	0	47	0	62	**48,435**
Tacoma, City of	Pierce	21,113	0	0	0	0	0	0	21	0	0	0	0	**21,134**
Terrace Heights	Yakima	157,461	0	0	0	0	12,925	0	725	0	478	0	832	**172,421**
Vashon Landfill (closed)	King	8,228	0	0	0	0	0	0	0	0	0	0	0	**8,228**
		3,222,639	**446,172**	**159,781**	**107,452**	**158,256**	**60,383**	**67,419**	**10,684**	**288,407**	**19,130**	**904**	**40,880**	**4,582,107**

Table B. 2 1998 Total Waste Disposed Energy Recovery/Incinerators

Facility Name	MSW	Demo	Ind	Inert	Comm'l	Wood	Sludge	Biomedical	Tires	Special	Other	Total
Fort Lewis WTE Plant (closed)	8,118.00	0.00	0.00	0.00	0.00	1,779.00	0.00	0.00	0.00	0.00	80.00	**9,977.00**
Inland Empire Paper	0.00	0.00	0.00	0.00	0.00	8,550.00	0.00	0.00	0.00	0.00	0.00	**8,550.00**
Olivine Corporation (closed)	750.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**750.00**
RECOMP (closed)	9,923.00	0.00	0.00	0.00	0.00	0.00	0.00	3,932.00	0.00	0.00	0.00	**13,855.00**
Spokane Regional Waste to Energy Facility	298,561.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**298,561.00**
Tacoma RDF Steam Plant #2	10,892.00	0.00	0.00	0.00	0.00	27,193.00	0.00	0.00	0.00	0.00	0.00	**38,085.00**
	328,244.00	**0.00**	**0.00**	**0.00**	**0.00**	**37,522.00**	**0.00**	**3,932.00**	**0.00**	**0.00**	**80.00**	**369,778.00**

Table B.3 1998 Total Waste Disposed Inert/Demolition Waste Landfills

Facility Name	Demo	Inert	Wood	Asbestos	PCS	Tires	Other	Total Waste
Acme Crestline Recycling	0.00	81,178.00	0.00	0.00	0.00	0.00	0.00	**81,178.00**
Adams Street Inert Waste Disposal	0.00	2,344.00	0.00	0.00	0.00	0.00	0.00	**2,344.00**
Anderson Demolition Site	30,240.00	0.00	0.00	0.00	9,648.00	0.00	600.00	**40,488.00**
Asotin County I & D Landfill	1,881.00	0.00	0.00	0.00	0.00	0.00	0.00	**1,881.00**
Box Canyon Site	2,862.00	3,433.00	0.00	0.00	0.00	0.00	0.00	**6,295.00**
Busy Bee Landfill	6,000.00	1,500.00	0.00	0.00	0.00	0.00	0.00	**7,500.00**
Caton Inert & Demo Landfill	4,285.00	393.00	118.00	0.00	0.00	0.00	0.00	**4,796.00**
Central Pre-Mix Site	0.00	98,125.00	0.00	0.00	0.00	0.00	0.00	**98,125.00**
Centralia Mining CDL	0.00	150.00	0.00	0.00	0.00	449.00	0.00	**599.00**
Chester Landfill	30,440.00	2,460.00	0.00	0.00	0.00	0.00	0.00	**32,900.00**
County Construction Recyclers, Inc.	15,518.00	7,500.00	0.00	0.00	0.00	0.00	0.00	**23,018.00**
Coupeville Demolition LF	1,786.00	200.00	0.00	4.00	0.00	0.00	0.00	**1,990.00**
CSR Associated	53,409.00	0.00	0.00	0.00	50,897.00	0.00	0.00	**104,306.00**
Fillion Inert/Demo Site	1,710.00	0.00	0.00	0.00	0.00	0.00	0.00	**1,710.00**
Foran Landfill	12,315.00	54,256.00	0.00	0.00	0.00	0.00	0.00	**66,571.00**
Indian Island Landfill	76.00	0.00	0.00	0.00	0.00	0.00	0.00	**76.00**
Kittitas County Inert & Demo Landfill	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00	**2,000.00**
McChord Demolition Landfill	1,505.00	594.00	38.00	0.00	0.00	0.00	0.00	**2,137.00**
Poe Asphalt Paving Inc	4,000.00	0.00	0.00	0.00	0.00	0.00	0.00	**4,000.00**
Prosser Inert-Demo Site	150.00	373.00	0.00	0.00	0.00	0.00	0.00	**523.00**
Whitman College Site	11,206.00	0.00	0.00	0.00	0.00	0.00	0.00	**11,206.00**
Yakima Training Center Inert/Demo	885.00	0.00	0.00	0.00	0.00	0.00	0.00	**885.00**
	180,268.00	**252,506.00**	**156.00**	**4.00**	**60,545.00**	**449.00**	**600.00**	**494,528.00**

Table B.4 1998 Total Waste Disposed Limited Purpose/Special Use Facilities

Facility Name	Demo	Ind	Inert	Wood	Asbestos	PCS	Tires	Other	Total Waste
ALCOA Inert Waste/Demolition	0.00	0.00	5,867.00	0.00	2.00	0.00	0.00	0.00	**5,869.00**
Arco Products Company	0.00	0.00	0.00	0.00	0.00	2,500.00	0.00	2,244.00	**4,744.00**
Boise Cascade/Rufener	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Dayton Landfill	0.00	0.00	0.00	4,344.00	0.00	0.00	0.00	13,286.00	**17,630.00**
Dickson - So 50th & Tyler St	0.00	0.00	1,469.00	0.00	0.00	0.00	0.00	0.00	**1,469.00**
Dickson -East 48th & Waller Road Fill	0.00	0.00	73,936.00	0.00	0.00	0.00	0.00	0.00	**73,936.00**
Graham Road Recycling & Disp	72,607.00	0.00	19,410.00	1,839.00	1,013.00	27,391.00	556.00	36,381.00	**159,197.00**
Intalco Aluminum Corp	2,551.00	3,873.00	5,140.00	0.00	0.00	0.00	3.00	921.00	**12,488.00**
Kettle Falls Generating Station Wood Ash Landfill	0.00	0.00	0.00	0.00	0.00	0.00	0.00	31,583.00	**31,583.00**
Lady Island Landfill	0.00	0.00	6,892.00	1,139.00	0.00	0.00	0.00	8,448.00	**16,479.00**
Lawson Limited Purpose Site	0.00	0.00	0.00	0.00	0.00	0.00	0.00	28,181.00	**28,181.00**
Port Townsend Paper	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3,563.00	**3,563.00**
Rayonier Inc. (Mt. Pleasant)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
TPS Technologies Inc (PCS treatment)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Weyerhaeuser Regional Landfill	20,887.00	221,906.00	0.00	378.00	0.00	26,516.00	0.00	0.00	**269,687.00**
Whitman County Limited PurposeLandfill	2,027.00	0.00	0.00	0.00	43.00	0.00	0.00	0.00	**2,070.00**
	98,072.00	**225,779.00**	**112,714.00**	**7,700.00**	**1,058.00**	**56,407.00**	**559.00**	**124,607.00**	**626,896.00**

Table B.5 1998 Total Waste Disposed for Woodwaste Landfills

Facility Name	Demolition	Wood Wst	Other	Total Waste
Hilltop Farm Woodwaste Landfill (closed)	0	0	0	**0**
Northwest Hardwoods	0	3,000	0	**3,000**
Simpson/Matlock Landfill	0	9,168	0	**9,168**
Stafford Creek Woodwaste Landfill	21,313	11,357	0	**32,670**
Summit Landfill (closed 10/98)	0	672	0	**672**
Washington Veneer	0	12,580	1,320	**13,900**
	21,313	**36,777**	**1,320**	**59,410**

Table B.6 Total Waste Composted 1998

Company	County	Yard Wst	Wood Wst	Sawdust	Biosolids	Vegetative	Manure	Post Consumer	Mixed MSW	Other	Total Waste
Bailey Compost	Snohomish	7,500.00	0.00	0.00	0.00	0.00	4,000.00	0.00	0.00	0.00	***11,500.00***
Cedar Grove Composting Co	King	134,150.00	5,496.00	0.00	0.00	11,301.00	0.00	0.00	0.00	0.00	***150,947.00***
Cedar Grove Composting-Arlington	Snohomish	8,880.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	***8,880.00***
Cheney WWT& Reclamation	Spokane	1,868.00	250.00	0.00	210.00	0.00	0.00	0.00	0.00	0.00	***2,328.00***
Cheyne Road Landfill	Yakima	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	***0.00***
Cowlitz County Landfill-B	Cowlitz	932.00	1,500.00	200.00	1,400.00	0.00	0.00	0.00	0.00	0.00	***4,032.00***
Dykstra Composting Facility	Skagit	1,035.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	500.00	***1,535.00***
Ecocycle Inc	Spokane	7,758.50	2,403.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	***10,161.50***
GROCO	King	0.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	0.00	***3,000.00***
Hi Q Compost	Skagit	107.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	***107.00***
Land Recovery, Inc	Pierce	42,343.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	***42,343.00***
Lincoln Composting	Yakima	375.00	0.00	0.00	0.00	0.00	4,000.00	0.00	300.00	200.00	***4,875.00***
Miller Creek	King	0.00	0.00	0.00	63.00	0.00	0.00	0.00	0.00	250.00	***313.00***
Pacific Topsoils	Snohomish	44,218.00	22,741.00	0.00	0.00	0.00	7,712.00	0.00	0.00	27,019.00	***101,690.00***
Pt. Townsend Biosolids Composting	Jefferson	2,384.13	0.00	0.00	388.32	0.00	0.00	0.00	0.00	0.00	***2,772.45***
Skagit Sand & Gravel	Thurston	4,700.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	***5,700.00***

Company	County	Yard Wst	Wood Wst	Sawdust	Biosolids	Vegetative	Manure	Post Consumer	Mixed MSW	Other	Total Waste
Skagit Soils	Skagit	7,203.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	356.00	***7,559.00***
Soil Life Systems, Inc	Walla Walla	0.00	0.00	0.00	0.00	0.00	7,200.00	0.00	0.00	19,500.00	***26,700.00***
Spokane Regional	Spokane	25,356.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	***25,356.00***
Washington State U/Pullman	Whitman	0.00	0.00	0.00	215.00	20.54	8,906.50	82.16	0.00	1,507.20	***10,731.40***
		288,809.63	***33,390.00***	***200.00***	***5,276.32***	***11,321.54***	***31,818.50***	***82.16***	***300.00***	***49,332.20***	***420,530.35***