

Solid Waste in Washington State

Seventh Annual Status Report

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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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This is the seventh annual status report prepared by the Solid Waste & Financial Assistance Program. I have had the lead responsibility for its preparation but could not have done it without the help of the staff listed below. Special thanks go to the following Ecology staff for providing data and information for this annual report:

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Thanks to all who contributed.

Ellen Caywood
Environmental Planner
Solid Waste & Financial Assistance Program

Acknowledgments

Executive Summary

Summary of Findings

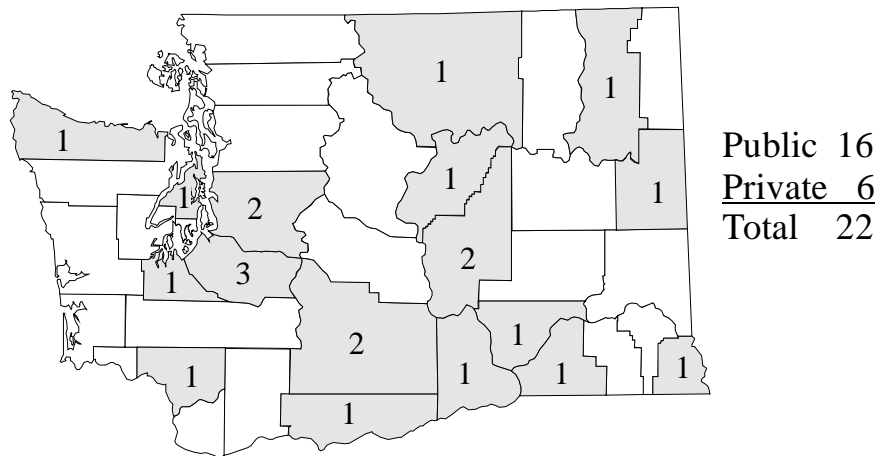
❖ Solid Waste Handling Infrastructure

As of July 1998, there were 352 solid waste facilities tracked in Ecology’s statewide database. These included five types of landfills (74), intermediate transfer and storage facilities (266), and incinerators (5). There are seven additional facilities classified as ancillary/other.

There are additional facilities, most notably compost and moderate risk waste facilities, that are co-located at other permitted facilities, and are not included in the above totals. Biosolids land application sites are also not included in the total.

In 1997, 23 municipal solid waste (MSW) landfills accepted waste, compared with 45 in 1991. In 1998, one MSW landfill ceased operation.

Location of MSW Landfills



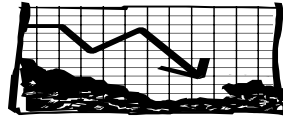
In 1998, the 22 operating landfills, 16 publicly owned and 6 privately owned, were located in seventeen of Washington’s 39 counties, compared with 45 MSW landfills in 35 counties in 1991. Projected permitted life of the MSW landfills shows an additional 10 facilities closing in the next 10 years, leaving 12 operating.

As MSW landfills continue to close, more counties will be relying on long-haul transport to facilities beyond their borders for disposal. In 1997, 36 of the 39 counties sent part of their waste by long-haul, to facilities in Washington or

Oregon. Seventeen of those relied on a distant facility for all of their disposal needs.

Of the remaining non-MSW facilities in the landfill classification in 1998, there were 24 inert/demolition landfills, 19 limited purpose landfills, 7 woodwaste landfills and one ash monofill.

❖ Waste Reduction/Recycling



The Ecology Youth Corps (EYC) picked-up 80,371 bags of litter and recyclables on 7,781 miles of Washington highways and 755 acres during 1998. Of that amount, 10,651 bags of litter were recycled. Both median crews and summer crews participated. Combined with our 1997 effort, Ecology cleaned up over 145,000 bags of litter, triple the amount collected in the previous biennium.

Ecology issued the new rule for biosolids management, chapter 173-308 WAC, *Biosolids Management*, effective March 1998. A statewide general permit was effective in May 1998. This new program replaces the system of managing biosolids through solid waste permits issued by local health departments.

The final “Compost Facility Resource Handbook¹” was issued in November 1998. It integrates regulatory requirements, and suggests facility designs and best management practices for compost facilities.

Ecology developed a Resource Efficient Building/Construction, Demolition, and Landclearing (CDL) Web Page² in 1998. It provides information and direct links to resources promoting waste reduction and recycling, the use of recycled content building materials, and sustainable building.

In 1998, Ecology, working with the Washington State Recycling Association, developed a website³ for WSRA to serve as a clearinghouse for rural recyclers to post incomplete loads of hard to recycle commodities.

In 1988, the Community Litter Cleanup Program was developed to provide funds from the Litter Control Account for local community cleanup efforts. Interagency agreements for the first round totaled approximately \$1,100,000.

Ecology issued almost \$15 million in grants through the Coordinated Prevention Grants program (CPG). These grants leveraged with local matching funds supported almost \$24 million worth of solid waste and moderate risk waste programs by local governments.

¹ “Compost Facility Resource Handbook – Guidance for Washington State”, November 1998, Publication #97-502.

² <http://www.wa.gov/ecology/swfa/cdl/cdlframe.html>

³ <http://www.wsra.net>

❖ **1997 Recycling Survey**



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% in spite of poor markets. In 1996, year the recycling rate leveled at 39%. In 1997, the recycling rate dipped to 33%.

❖ **Disposal of Solid Waste**

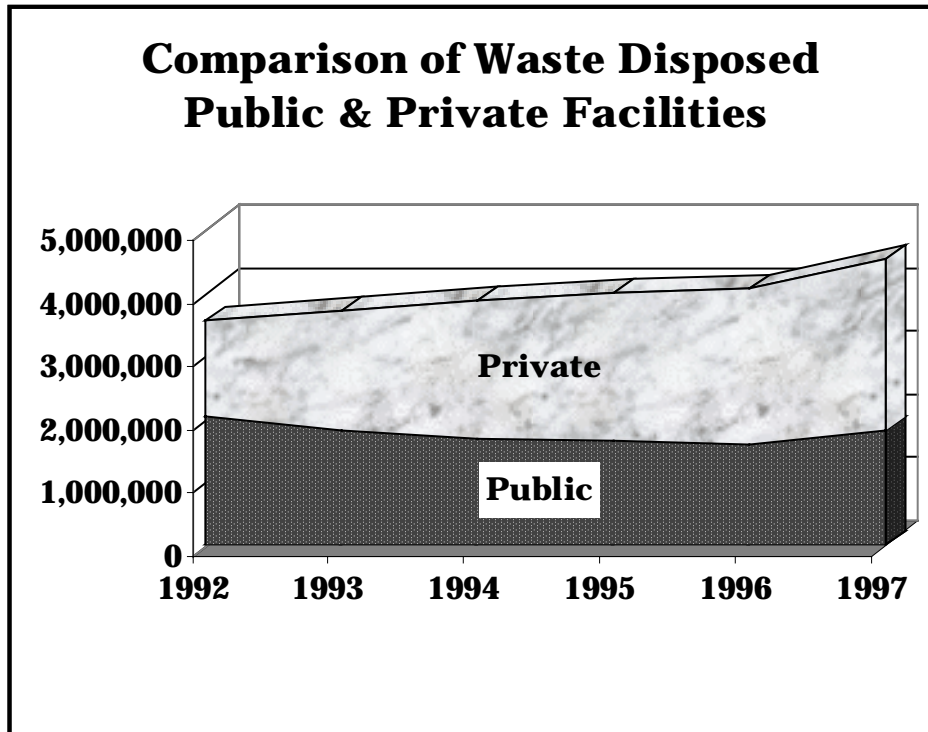


• **Municipal Solid Waste Landfills**

In 1997, 4,532,918 tons of solid waste were disposed in 23 MSW landfills. In 1996, a total of 4,083,755 tons was disposed in 24 MSW landfills.

In 1995, the per capita disposal rate had decreased (to 0.94 tons/person/day) for the first time since tracking began in 1991. However, there was a slight increase in 1996, with a more significant increase (to 1.04 tons/person/day) in 1997.

In 1997, public landfills accepted 40% of the waste (compared to 69% in 1991); 60% was disposed in private landfills (compared to 31% in 1991).



- **Energy Recovery/Incineration**

In 1997, 89% of the waste disposed in Washington was disposed in landfills and 11% was incinerated (compared to 2% of the waste stream incinerated in 1991). A total of 551,006 tons of municipal solid waste was incinerated at six facilities in 1997. This was an increase from the 365,464 tons incinerated in 1996. (Approximately 163,000 tons of the increase was wood waste incinerated at a municipal solid waste energy-recovery facility as a direct result of ice storms in western Washington in late December 1996.)

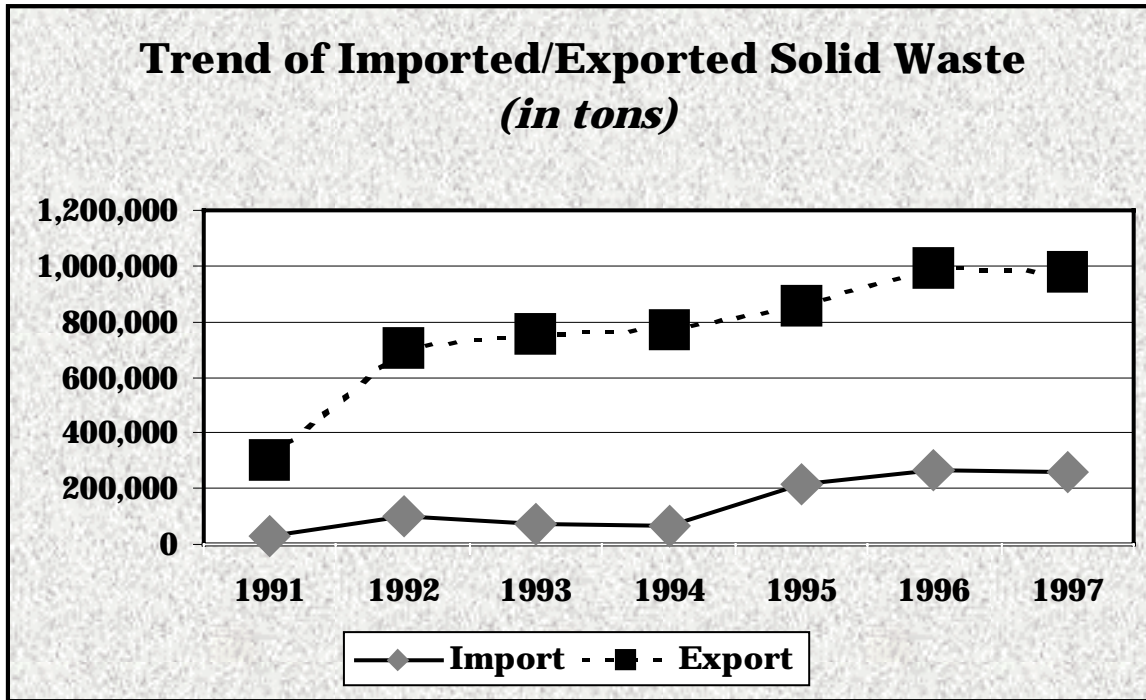
One energy recovery facility closed in 1998 and two additional ones ceased operations. The latter two may reopen with new operators in 1999.

A total of 119,483 tons of ash produced by the MSW energy recovery facilities was disposed at the only permitted ash monofill in Washington, Roosevelt Regional Landfill in Klickitat County.

- **Solid Waste Importation/Exportation**

In 1997, Washington's landfills and incinerators received 258,821 tons of waste from outside the state. This was a decrease from the 275,115 tons imported in 1996. This amounts to about 6% of the waste disposed in the state, compared with 1% in 1994.

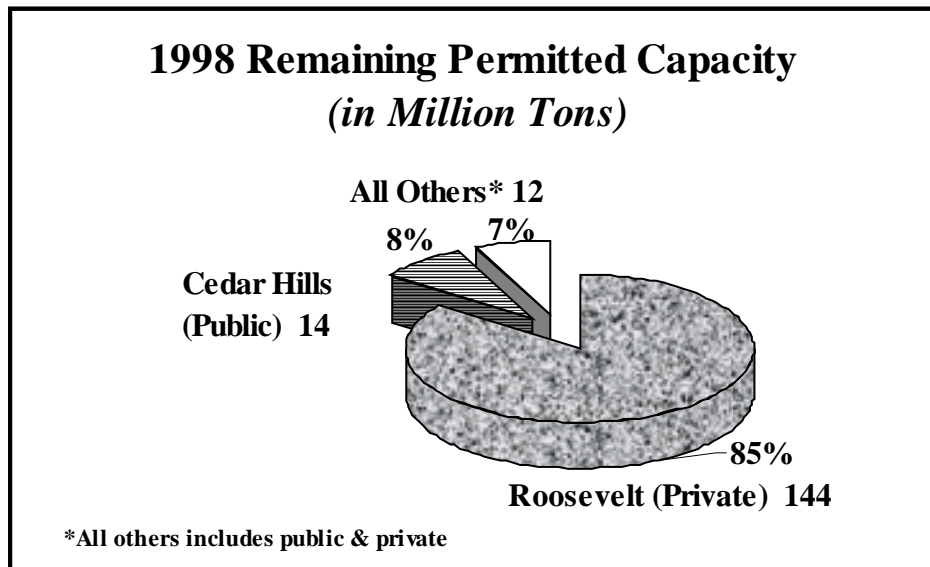
Washington exported 975,356 tons of waste to landfills in Oregon, a slight decrease from 989,173 tons in 1996.



- **Remaining Capacity for Municipal Solid Waste Landfills**

Self-reporting by the 22 MSW landfills operating in 1998, indicated about 170 million tons of permitted capacity remaining, or approximately 37.5 years at the current disposal rate.⁴ Of the remaining permitted capacity, 85% is at one facility, the Roosevelt Regional Landfill located in eastern Washington, in Klickitat County. The other capacity is at the other 22 landfills, most of which are operated to serve the citizens of the local area.

⁴ Many factors can affect the amount of remaining capacity including population growth, the importing of waste from other states, and waste reduction and recycling activities.



- **Other Solid Waste Landfills**

In 1997, five woodwaste landfills reported receiving 95,325 tons of waste, compared with 102,697 tons received at ten facilities in 1996.

In 1997, 19 inert/demolition landfills reported receiving 600,149 tons of waste, compared with 973,195 tons at 21 facilities in 1996

In 1997, 18 limited purpose landfills reported receiving 695,783 tons of waste, compared with 910,078 tons at 18 facilities in 1996.

❖ **Moderate Risk Waste**

Moderate risk waste reports for 1996⁵ indicated an increase in the total amount of household hazardous waste (HHW) and conditionally exempt small quantity generator (CESQG) collected statewide.

Used oil collection in 1996 accounted for 46.5% of the MRW waste stream and HHW accounted for 51.2%. The total amount of CESQG collected in 1996, while still a small part of the MRW program, is increasing statewide from past efforts.

The total quantity of reported MRW collected at public facilities was 7.45 million pounds in 1995 compared to 9.36 million pounds in 1996, an increase of 25.6%. It is anticipated that this trend will level in the coming years as collection programs mature. Some of the older programs, with fixed facilities established in the early 1990s, are experiencing relatively consistent collections from year to year compared with dramatic annual

⁵Data for 1997 are not yet available.

increases in the early years of operation. All but one county collected HHW in 1996. Fourteen of the 39 counties reported collection of CESQG wastes in 1996. We anticipate that all counties will report collection of HHW and more counties will have collected CESQG wastes in 1997.

Chapter I Issues Facing Solid Waste

Increased disposal and decreased recycling reported in 1997

In 1997, Washington's municipal solid waste landfills and energy-recovery facilities reported a higher percent increase in the amount of waste disposed than has occurred since the disposal rate was tracked beginning in 1991. At the same time, recyclers in the state reported fewer tons of waste recovered for recycling. Combined, this led to a significant decrease in the statewide recycling rate from 39% in 1996 to 33% in 1997.

What is being disposed?

Solid waste facilities are asked to report annually the amount of waste disposed in twelve categories.⁶ However, some facilities report all of their waste under the "municipal" category, so it is difficult to know exactly what is included in that portion of the disposed waste stream. In general, most categories of waste disposed in municipal solid waste landfills and energy recovery facilities have been going up over the years.

For some categories of waste, specific events can increase the overall disposal rate. For example, in 1994 and 1995, Ft. Lewis in Pierce County was demolishing old barracks, which showed up as an increase in the demolition category for the statewide totals. Flooding in 1995, also added to the demolition waste totals. In late 1996, an ice storm in some western Washington counties increased the amount of wood waste, as well as possibly a portion of the municipal and demolition waste totals, for both energy-recovery facilities and municipal solid waste landfills. Although portions of the disposed or incinerated materials are recyclable, there was probably not enough capacity in the recycling infrastructure to handle the "peak" load of materials.

Other categories of waste going to municipal solid waste landfills result from cleanups, such as petroleum contaminated soils (PCS) and asbestos. The December 22, 1998, compliance date for underground storage tank removal or upgrade has generated an increase in the amount of PCS disposed over the last two years. (Leaking tanks require cleanup of the surrounding contaminated soils.) Although the deadline is this year, there will likely continue to be cleanups into the next year, although volumes of PCS may start decreasing.

Increasing population usually results in an increase in waste disposal. The population in the state has steadily increased. With an increase of over 600,000 people since 1991, the overall disposal rate would be expected to rise. Looking at the *per capita* disposal rates, which are adjusted for the increased population, there was a significant increase in the

⁶ See Appendix B for summary reports from MSW landfills and energy-recovery facilities for all waste types.

amount of waste disposed per person in 1997. This number includes all residential, commercial, business, industrial and other wastes disposed in the municipal solid waste landfills and energy-recovery facilities.

Table 1.1
Pounds Disposed per Person per Day

Year	Population	Disposed Tons per Year	Pounds per Person per Day
1991	5,000,385	4,263,910	4.67
1992	5,116,685	4,630,981	4.99
1993	5,240,900	4,844,989	5.04
1994	5,334,400	5,047,301	5.20
1995	5,429,900	5,072,841	5.10
1996	5,516,800	5,195,387	5.16
1997	5,606,800	5,791,791	5.66

Why is more waste being disposed and less recycled?

At this time, we do not know exactly why there is more waste disposed and less recycled. Since there is only one year of data that has shown the changes, a trend cannot be predicted (though indications show the downward trend may continue) . However, the changes are significant enough to spend some time evaluating several questions and possible answers. Ecology, the State Solid Waste Advisory Committee, and other interested stakeholders, will be discussing over the next several months what may be occurring in the solid waste system that has led to increased disposal and decreased recycling.

As stated earlier, cleanups and "events" do contribute to the increase, but there has also been an increase in more general categories.

There may also be factors that favor disposal over recycling. The existing rate structure in certain parts of the state makes it easier for counties to pay for disposal versus recycling services. As counties close their landfills, losing the associated tipping fees, it becomes even more difficult to provide and encourage recycling.

Fewer local jurisdictions have their own landfills, and actual disposal of waste is often not a local issue any more. There are only 22 MSW landfills currently operating in 17 counties. Many jurisdictions have signed contracts with private disposal companies to long-haul their waste to other counties or to Oregon, and long-haul contracts may trigger the "out-of-sight, out-of-mind" response. There are no local NIMBY concerns for expansions or new landfills. What is the impact on recycling and waste reduction habits

when disposal is easier and there is little or no concern about a landfill being sited or expanded in "my backyard"?

In addition, as the solid waste industry has experienced mergers, and the system has increasingly privatized, there is more incentive to manage to "the bottom line." If recycling markets are not available or affordable (in other words if it is more expensive to recycle) the material will likely be disposed.

At present there are more than 37 years of remaining disposal capacity in the state. There appears to be no shortage or pending crisis for disposal. However, of that remaining capacity, 85% is at the private Roosevelt Regional Landfill in Klickitat County. While there is long-term capacity in Washington, and also in Oregon with Columbia Ridge and Finley Buttes landfills, is there a concern for the short-term? What if any of the major landfills had to close for even a few days, is there capacity for the other large facilities to handle the extra waste?

Have people changed their behavior? The economy has been good, and affluent people tend to consume and dispose more. Recycling takes time, waste reduction takes thought. Is it just easier to dispose? Some counties have indicated that participation rates in curbside recycling programs have leveled off and may even be declining.

What is in the waste stream? Just how many recyclables are being disposed of? Are there portions of the waste stream that could be recycled if targeted efforts were made? The last statewide waste composition study was completed in 1992. While some local governments have conducted their own studies more recently, no comprehensive evaluation has been made.

Another cause of the reduced recycling rate may be the depressed Asian markets. In Washington the lack of markets for paper had an impact on the total tonnage sold. In an informal survey, Oregon, Idaho and Minnesota also indicated that Asian markets were weak for exporting paper.

Some specific commodities highly dependent on the Asian market showed decreases. The 1996 recycling survey showed a 66% drop in the amount of ferrous metals collected. The 1997 recycling survey showed a large drop in the paper categories: corrugated paper dropped 41%; high grade paper was down 37%; mixed waste paper fell 29%; and newspaper dropped 39% from the previous survey. (We do not have data on how much of the recyclable materials that were collected, and had poor markets in 1997, may have been stockpiled by companies.)

In 1989, the "Waste Not Washington Act" refocused the waste priorities on waste reduction and recycling. Major statewide education programs were undertaken by Ecology. Local governments were given financial assistance to promote recycling in their communities. Were recycling programs set in motion and then expected to continue without any follow-on attention? Recycling promotion by the state was eliminated four to

five years ago. Some local governments are continuing the education but some have said they either are using the same information they have used for years or have decreased their efforts. More specifically, the state ran two statewide information campaigns that were coordinated with local government. Many of these materials are still in use and no longer catch the public eye. More likely, in many counties, these materials were never reprinted and never replaced. New Washingtonians may not be receiving educational materials.

Complete recycling does not occur until recycled products are purchased and the loop is closed. Is there a lack of domestic markets and end-uses for recyclables? Is the public encouraged to use recycled products?

What Can Be Done?

Solid waste programs have undergone many changes in the past few years. Definitions of what is a solid waste, what is a beneficial product or fertilizer are changing. New recycling, and waste handling and processing technologies are being addressed in Ecology's rule revision process and legislative studies that have been conducted in the last two years (see discussion following).

Before any specific action can be taken, reasons for the decreased recycling rate and increased disposal need to be determined. The entire solid waste system should be evaluated to determine how it has changed over the past several years. Ecology has begun this process with the State Solid Waste Advisory Committee and other interested stakeholders.

Changes in the Solid Waste Regulatory Structure

In the past, the majority of solid waste was disposed, either in landfills or by incineration. Landfills were not required to be lined and leachate often contaminated the ground and surface water. Environmental statutes and regulations were developed for solid waste handling facilities to protect our resources.

Chapter 70.95 RCW, the *Solid Waste Management Act*, establishes the environmental and regulatory requirements for solid waste. It views all components of the solid waste stream as waste. By law, the definition of solid waste includes recyclables. This means recyclable materials and their processing facilities are subject to the same environmental regulations and permitting requirements as other types of solid waste handling facilities such as landfills, even when there is little or no environmental risk associated with the material.

The current regulation, chapter 173-304 WAC, *the Minimum Functional Standards for Solid Waste Handling Facilities (MFS)*, does not provide for an assessment of the risk associated with a particular handling method, but rather requires all solid waste handling facilities to be permitted.

In 1989, the "Waste Not Washington Act" directed a fundamental shift from disposal by

making waste reduction and recycling higher priority methods of solid waste handling. As more and more waste types are recycled, the existing solid waste handling statute and regulation may place an unnecessary burden on these operations.

In 1997, Ecology began a review of the solid waste permitting and regulatory system. This includes evaluating the solid waste statute, chapter 70.95 RCW, the *Solid Waste Management Act*, as well as evaluating the solid waste regulation, chapter 173-304 WAC, the *Minimum Functional Standards for Solid Waste Handling Facilities (MFS)*, discussed below.

Solid Waste Permitting System Review

With the fundamental shift from a disposal based solid waste handling system to a system more reliant on recycling, a different statutory approach is needed that will allow for re-interpretation of existing regulations to make better distinctions between commodities (recyclables) and wastes. In addition, inconsistencies in how recycling facilities are currently permitted needed to be reviewed. There is also concern to ensure the safety of solid wastes that are being reused or recycled. This safety concern is expressed in terms of potential human health hazards and potential environmental threats to air, water or soil. Regulatory oversight should be matched to the degree of risk present. As resources at both the state and local level diminish over time, changes to the permitting system should allow both state and local staff to focus on real environmental risk, and allow for easier recycling.

The 1997 Legislature passed ESHB 1419 directing Ecology to review the solid waste permit system to determine how the use and reuse of materials can be improved. Areas reviewed include alternatives to statutory definitions, permitting requirements, risk assessment, and the overall regulatory system as it pertains to solid waste and recyclables.

Ecology worked with the State Solid Waste Advisory Committee, held public workshops and gained input from a wide group of interested parties during this process. A final report, “ESHB 1419 Report Washington’s Solid Waste Permit System”,⁷ was submitted to the appropriate legislative committees December 1997. Subsequently, two pieces of legislation were passed in 1998 which directed Ecology to look further at different aspects of the solid waste regulatory structure.

Substitute House Bill 2960 (SHB 2960) was a study bill directing Ecology to look at the following additional issues of the current solid waste permit system and report back to the Legislature by December 1, 1998:

1. The applicability of a permit-by-rule process for solid waste recycling facilities;
2. The consistency of permitting for regional, multi-jurisdictional recycling facilities;

⁷ “ESHB 1419 Report Washington’s Solid Waste Permit System”, Washington State Department of Ecology, Solid Waste and Financial Assistance Program, Publication #97-505, Revised December 1997.

3. The application for best available control technology on a consistent basis, so that similar recycling facilities are subject to the same requirements; and
4. Methods of integrating facility standards with the recommendations from the study.

Engrossed Substitute Senate Bill 6203 (ESHB 6203), aimed at removing impediments to recycling, directed Ecology to develop a rule that provides:

1. Criteria for exempting non-disposal facilities from the solid waste permit process;
2. Criteria for exempting material from solid waste permit requirements when it is being beneficially used and;
3. A process for deferring solid waste permits for non-disposal activities to other environmental permits that provide equal or greater protection.

SHB 2960 Report on Washington's Solid Waste Permit System

In undertaking the review required under SHB 2960, Ecology studied two types of solid waste facilities for possible use of new approaches to permitting: composting facilities and material recovery facilities (MRFs). Both types of facilities have grown in popularity as methods of processing solid waste/materials to recycle rather than dispose of solid waste. The findings of the study could also be extended to other types of solid waste handling facilities.

To carry out the provisions of the study, Ecology conducted interviews with many interest groups, toured facilities, studied existing permits and conducted workshops. Ecology also issued a focus sheet and made available electronic drafts of the study on the Ecology Homepage.

The report, "SHB 2960 Report on Washington's Solid Waste Permit System",⁸ was prepared in consultation with the State Solid Waste Advisory Committee and completed in November 1998.

⁸ "SHB 2960 Report on Washington's Solid Waste Permit System", Supplementary Study of the Solid Waste Permitting System, Publication # 98-505, November 1998.

Terminology Used in the 2960 Study

A *permit-by-rule* is a permit that would replace an individual solid waste permit which contains conditions specific to each facility being permitted. A permit-by-rule would establish standard conditions in the rule that would allow similar facilities to be permitted without individual negotiations. In theory, a permit-by-rule should require less time, effort and paper to issue than individual permits.

Best available control technology (BACT) is an emission limitation reflective of air pollution controls or operating methods selected on a case-by-case basis, depending upon the judgement of regulators taking into account the highly variable factors of energy, environmental and economic impacts.

Consistency is defined as "permit" consistency, i.e. when a permit is issued, how a permit is issued and what requirements are placed in a solid waste permit so there is statewide consistency from one jurisdictional health department to the next. It is different than a permit being consistent with the local solid waste management plan.

Recommendations of the 2960 Study

1. The permit-by-rule mechanism would not be beneficial to the solid waste regulation of either compost facilities or material recovery facilities (MRFs). The regulation of compost facilities should be improved through the promulgation of performance oriented standards in the solid waste rules, the *MFS*.
2. "Clean" material recovery facilities, handling source separated recyclable materials, should be excluded from permitting as authorized by the recently passed ESSB 6203. Facilities where recyclable materials may be extracted from mixed solid waste should be considered transfer stations and permitted as such. This approach should be consistent with the local solid waste management plan.
3. Set performance standards in the *MFS*. To avoid unnecessary discouragement of composting operations, the *MFS* should emphasize performance standards not only for odors but also for other factors as well, such as the quality of the primary product, the composted material. (Ecology should use the existing compost quality guidance⁹ already developed as a starting point for the standards.) Ecology should review the setting of composting standards in a manner that is consistent, to the degree possible with approaches taken to landfilling, transfer stations and incinerators in the *MFS*.
4. Best available control technology (BACT) should not be used to set standards for composting facilities. BACT is much too specific and prescriptive a mechanism to address the rapidly developing technologies of composting processes. It is also highly dependent on the judgement of the individual regulator. Since BACT is specified in

⁹ "Compost Facility Resource Handbook - Guidance for Washington State", Publication #97-502, November 1998.

some local air quality control regulations, BACT should remain a technique used by local air quality regulators, not solid waste regulators.

5. Development of clearly written performance standards for compost facilities and clear permit exemption language for clean material recovery facilities should address the permit consistency issue fully. Consistency of permits is an issue that is bound to arise when 33 different health districts regulate solid waste facilities. Much of the difference in solid waste permitting that has occurred is the result of indistinct or confusing language in the current solid waste rules. The *MFS* was written over a decade ago, before compost and material recovery facilities played such a prominent role in solid waste management.
6. Other recommendations
 - A. Operator certification of all compost facilities should be required. This could be achieved through an amendment of the law, chapter 70.95D RCW, *Solid Waste Incinerators and Landfill Operators*, that currently requires certification for operators of landfills and incinerators.
 - B. The *MFS* should define the terms "clean MRF" and "dirty MRF" to help clarify when a MRF needs to be permitted.
 - C. Reporting of all MRFs should be required as part of this annual status report. This could be done in conjunction with the *MFS* changes to the definitions discussed above.

Revision of chapter 173-304 WAC

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*. This regulation was last revised in 1985. Since that time, changes include land application of material for beneficial use, new recycling and reuse methods for woodwaste and demolition wastes, 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*.

Because of the numerous changes since the last revision, and to address the intent of the 1998 legislation (ESSB 6203) and the findings of the 2960 Study, 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 adopt a revised rule by 2000.

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 1997, the lists of facilities are current as of July 1998.

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 352 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	Statewide Total
Facility Type	
Landfills	74
Ash Monofills	1
Inert/Demolition Waste Landfills	24
Limited Purpose Waste Landfills	19
Municipal Solid Waste Landfills	23
Woodwaste Landfills	7
Intermediate Classification	266
Compacting Stations	7
Compost Facilities	30
Drop Boxes	70
Piles	9
Recycling Facilities	44
Surface Impoundments	6
Transfer Stations	81
Moderate Risk Waste Facilities	17
Tire Piles	2
Incineration	5
Ancillary/Other	7
Landspreading Disposal Facilities	2
Other Facilities	5
Total All Facilities	352

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 July 1998)

County	LANDFILLS				INTERMEDIATE											
	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				4	1			1
Chelan			2	1						1		3				
Clallam	1			2			1		1	1	1	2				
Clark				2						6		2	1			1
Columbia												1				
Cowlitz	1			1			2	1		4						
Douglas	1											1				1
Ferry												1				
Franklin	1											1				
Garfield			1					1								
Grant	2							15								
Grays Harbor		1	1	2					1	6	1	6				
Island			1			2				3		2	4	1		
Jefferson			1	1			1	2	1			1	1			
King	2						4	2		1		11	5			
Kitsap	1	1					1	5		2			1			
Kittitas			1						1		1	2				

County	LANDFILLS				INTERMEDIATE											
	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					8		1		3				
Lincoln				1						1						
Mason		1		1				3		1		1				
Okanogan	1	1										2				
Pacific								2				1				
Pend Oreille								1				2				
Pierce	3		2	3			2	1	2	7		9			2	
San Juan								2			2					
Skagit						5	4	1				1	1			
Skamania										1		3				
Snohomish	1*	2	1				4	6		1		3				1
Spokane	1		5	1			3		1		1	4	1		2	1
Stevens	1			1								4				
Thurston	1						1	3		3						
Wahkiakum								1								
Walla Walla	1						1									
Whatcom		1	1	2			1	6		4		4	2		1	1
Whitman			1	1			1			1						
Yakima	2		4				4	7	2			2				1
TOTAL	23	7	24	19	1	7	30	70	9	44	6	81	17	2	5	7

* 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.

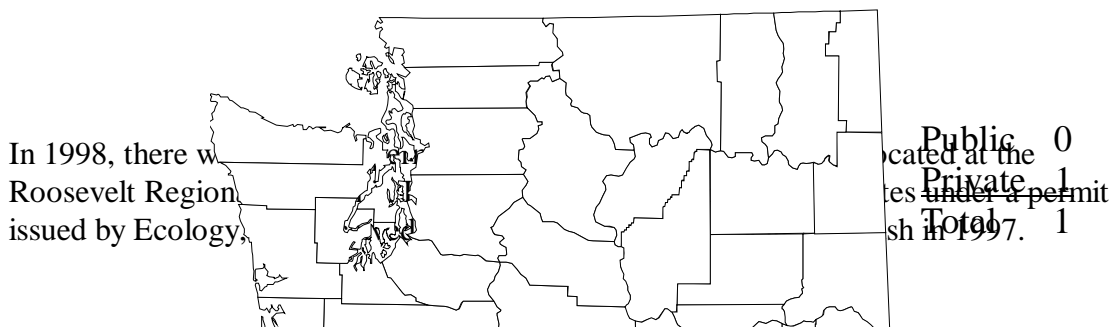
Table 2.3
Landfill Classification

FACILITY TYPE	TOTAL # STATEWIDE		TOTAL BY OWNERSHIP DESIGNATION			
	Active	Active	Public		Private	
	1997	1998	1997	1998	1997	1998
Ash Monofill	1	1	0	0	1	1
Inert/ demolition	21	24	6	8	15	16
Limited Purpose	18	19	2	1	16	18
Municipal solid waste	23	22	17	16	6	6
Woodwaste	10	7	0	0	10	7
TOTAL	73	73	25	25	48	48

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

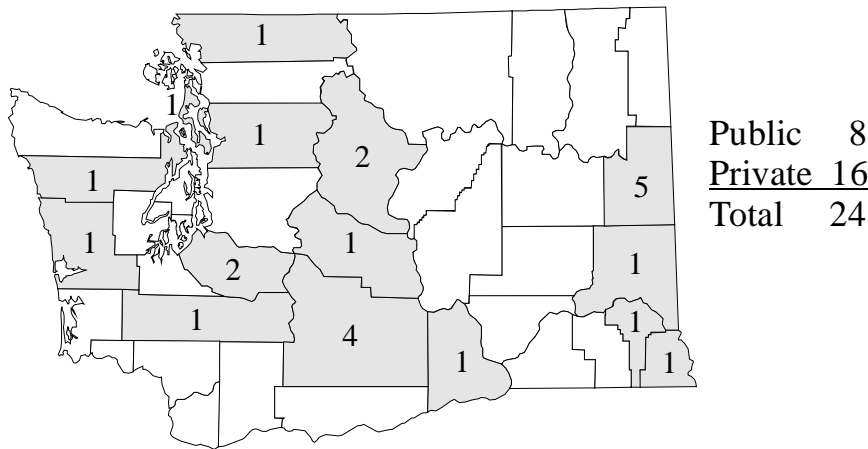


Inert/Demolition Waste Landfills

Inert/Demolition Waste landfills are facilities which receive "more than two thousand cubic yards of inert wastes and demolition wastes."¹⁰ These facilities are regulated under WAC 173-304-461.

Nineteen of the inert/demolition landfills reported 600,149 tons of waste in 1997. In 1998, there were 24 inert/demolition landfills listed for the state. Most (66%) of the inert/demolition landfills are privately owned and operated. Public inert/ demolition landfills make up 33% of this facility type.

Location of Inert/Demolition Waste Landfills



Limited Purpose Waste Landfills

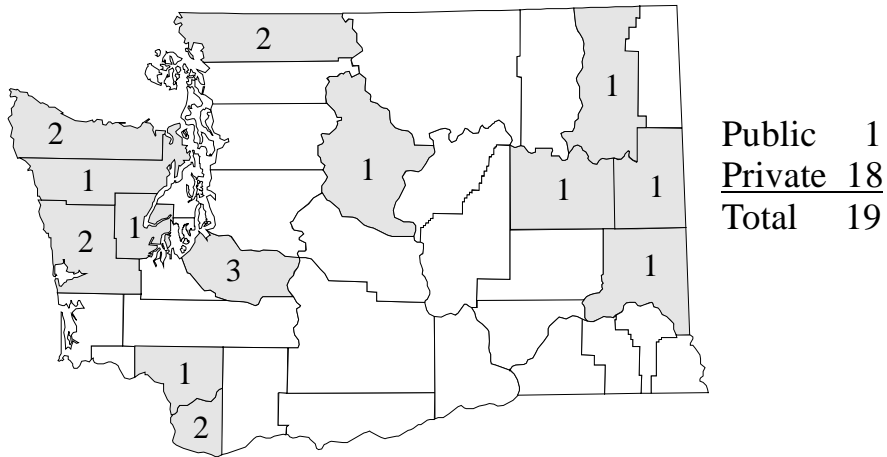
Limited purpose landfills are facilities that receive "solid wastes of limited types, known and consistent composition, other than woodwastes, garbage, inert waste and demolition waste."¹¹ These facilities are regulated under WAC 173-304-460(5). Limited purpose landfills are identified by the type of waste. In other words, the waste associated with a limited purpose landfill is unique to that facility.

¹⁰ WAC 173-304-461(1)

¹¹ WAC 173-304-100(98)

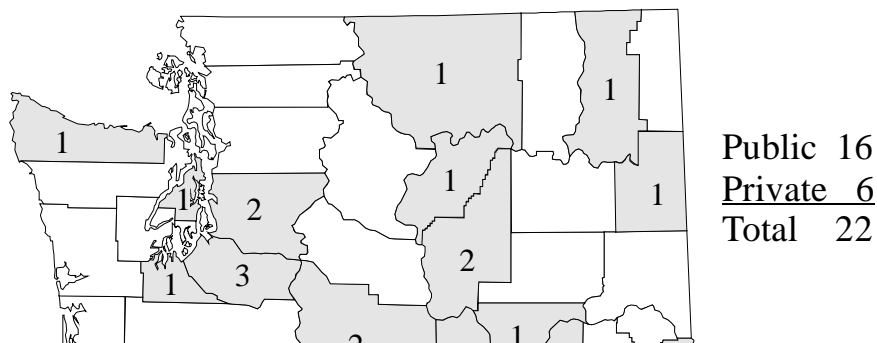
Nineteen limited purpose landfills that reported in 1997, accepted 695,783 tons of waste. The waste disposed in these facilities is usually generated by the owner of the landfill. Only one limited purpose landfill is publicly owned.

Location of Limited Purpose Landfills



Municipal Solid Waste Landfills

Location of MSW Landfills



In 1997, 23 MSW landfills accepted 4,532,918 tons of waste. (See Chapter VI for additional discussion of waste types, amounts and sources.)

In 1998, one MSW landfill closed. Of the remaining 22 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.)

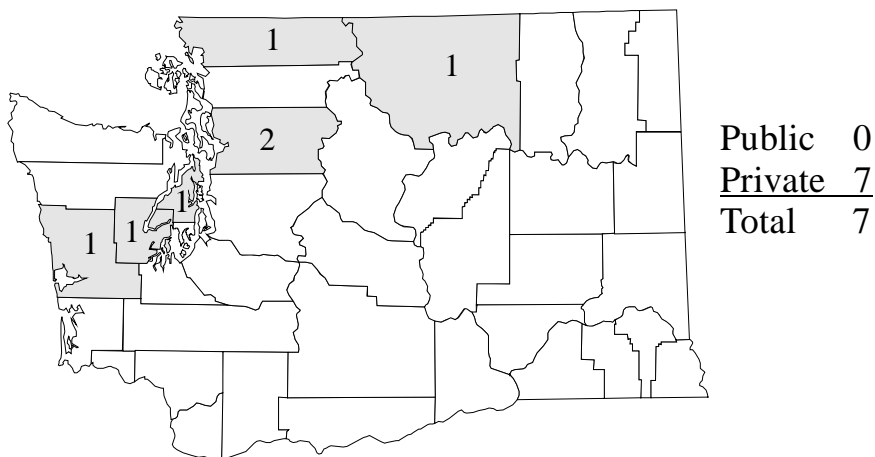
Woodwaste Landfills

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."¹² 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."¹³

In 1997, five woodwaste landfills reported 95,325 tons of waste. In 1998, seven woodwaste landfills were listed in the state list, all privately owned.

Location of Woodwaste Landfills



¹² WAC 173-304-462(1)

¹³ 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 interim¹⁴ 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"¹⁵ while a processing center is in the operation of converting "solid waste into a useful product or to prepare it for disposal."¹⁶ 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."¹⁷

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.

¹⁴ WAC 173-304-100(38)

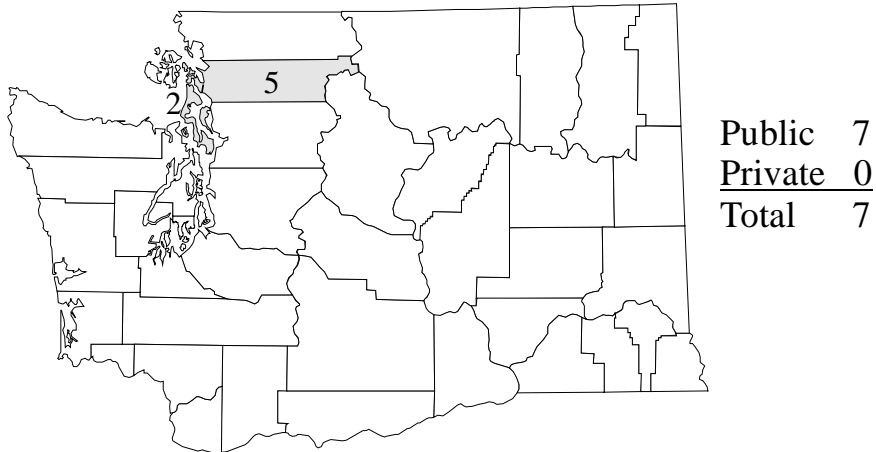
¹⁵ WAC 173-304-100(76)

¹⁶ WAC 173-304-100(62)

¹⁷ WAC 173-304-100(82)

Ecology identified seven compacting stations statewide in 1998. All compacting facilities are under public ownership and are affiliated with recycling operations. 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.

Location of Compacting Stations



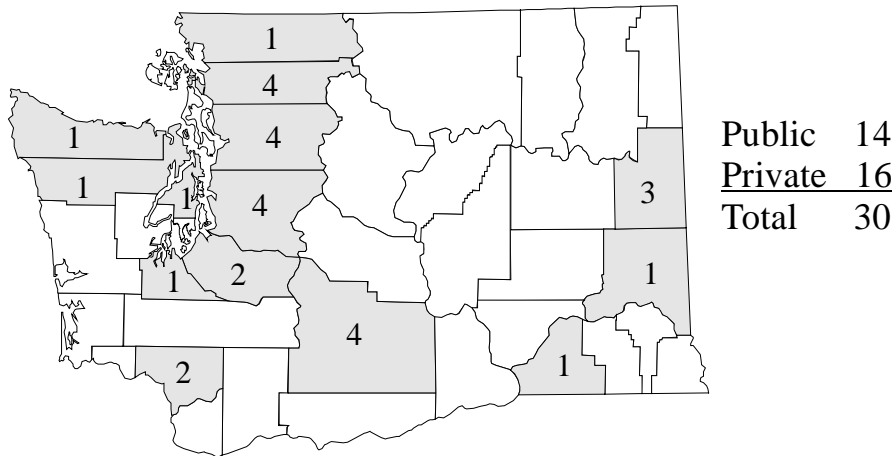
Compost Facilities

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 30 compost facilities identified statewide in 1998. 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".¹⁸ 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



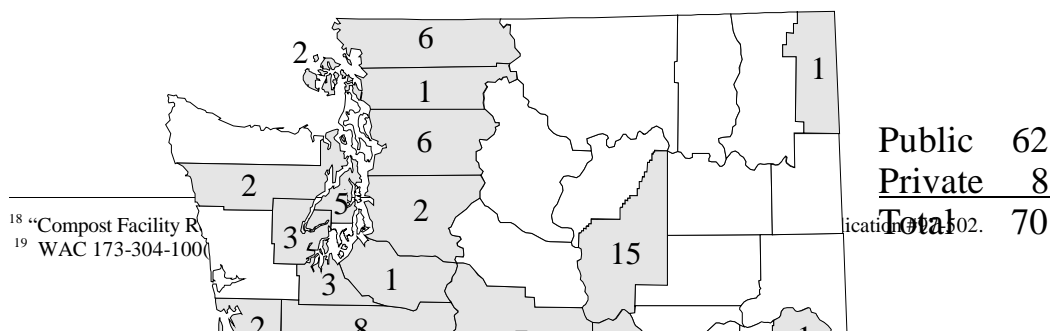
Drop Boxes

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."¹⁹ 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 70 operating drop boxes in 1998. The map depicts the profile of regulated drop boxes statewide. The majority, over 89%, are public and are primarily operated by county public works departments.

Location of Drop Boxes



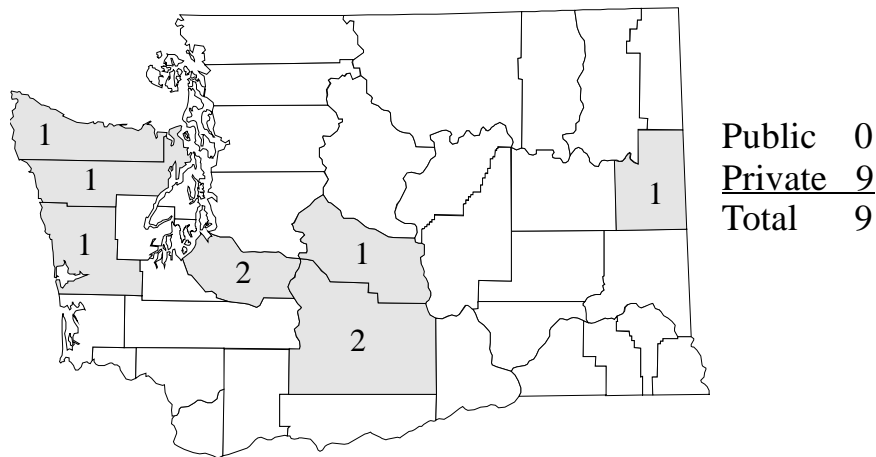
¹⁸ "Compost Facility Resource Handbook"
¹⁹ WAC 173-304-100

Ecology 102.

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."²⁰ 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.) Nine privately owned piles (non-composting) were identified in 1998.

Location of Piles



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 remanufacturing 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."²¹ 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

²⁰ WAC 173-304-100(56)

²¹ RCW 70.95.030(14)

identified six regulated facilities in 1998. 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 two are privately-owned.

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."²⁴ The regulations applicable to transfer stations are contained in WAC 173-304-410.

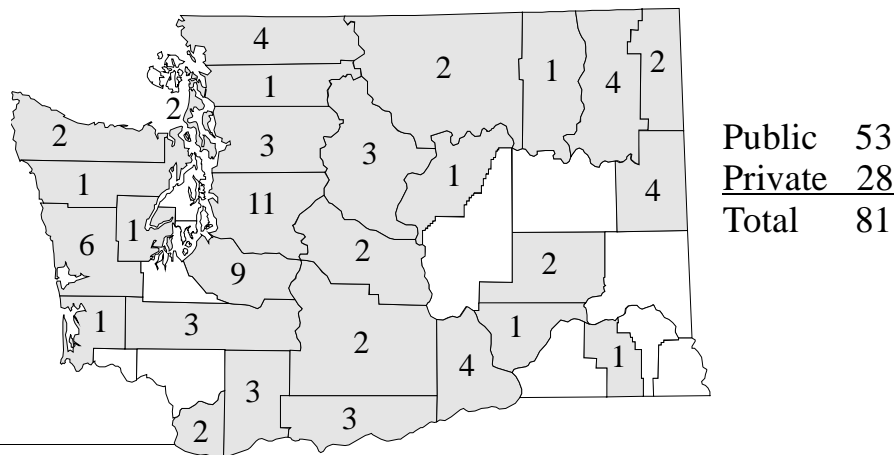
Typically, transfer stations are areas where individual collection vehicles can be off-loaded, the waste stored for a short period of time and reloaded onto larger vehicles for transfer to the disposal facility.

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 81 regulated transfer stations operating in 1998.

The profile map shows that the majority of the transfer stations continue to be publicly operated entities, 65%.

Location of Transfer Stations



²⁴ 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 1997, Ecology had 17 MRW fixed facilities in its tracking system that received a separate permit.

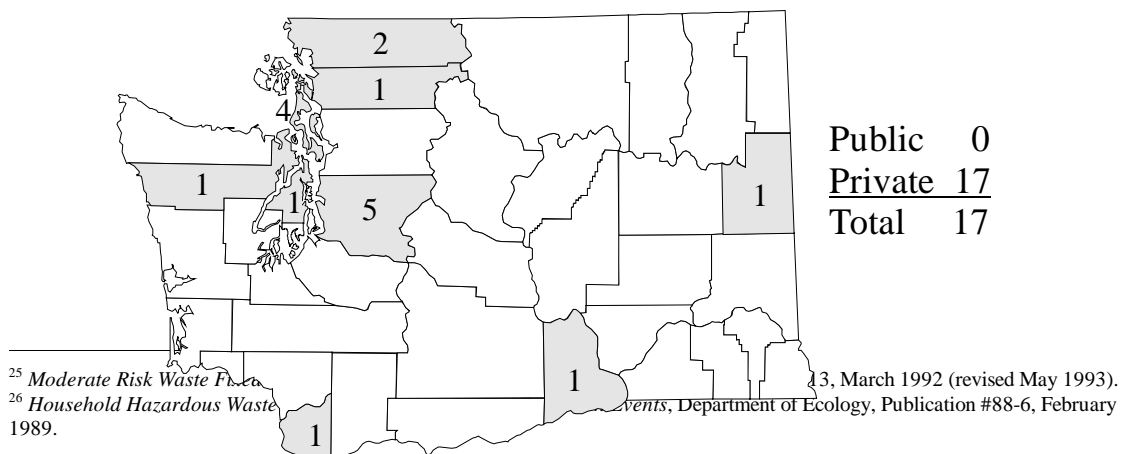
MRW facilities vary in the types and number of materials they handle. Some receive only limited types of materials, such as used motor oil, batteries and oil-based paints, while others can collect many types of waste including those generated by small quantity generators.

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 Guidelines²⁵, 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 guidelines²⁶ 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)

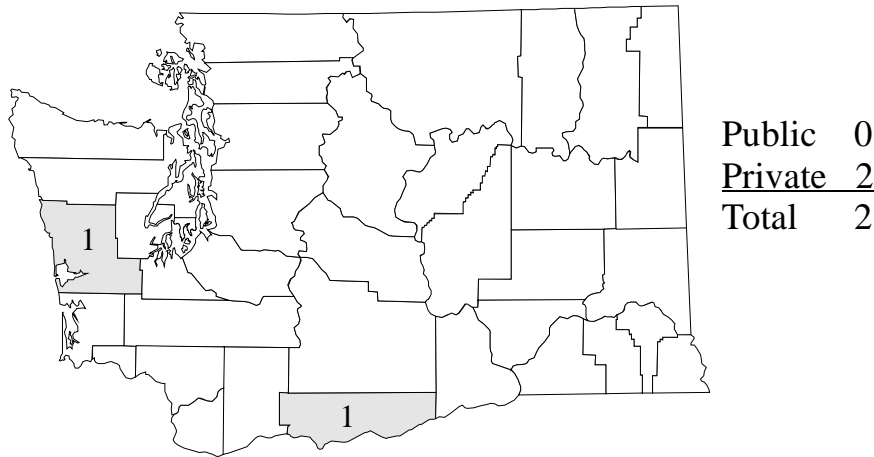


Tire Piles

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 1998, both privately owned.

Location of Tire Piles



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."²⁷ 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."²⁸

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."²⁹

²⁷ WAC 173-304-100(26)

²⁸ WAC 273-304-100(37)

²⁹ WAC 173-304-440(1)

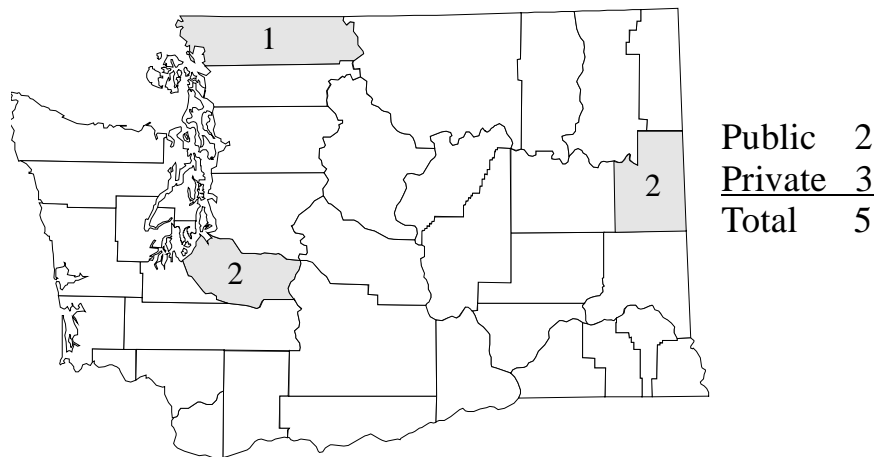
In 1997, Ecology identified six regulated solid waste incinerator facilities that burned a total of 551,006 tons of waste. One of the incinerators, Inland Empire Paper in Spokane, falls under the *Minimum Functional Standards* as a solid waste incinerator because they burn more than 12 tons of solid waste per day. At this facility, the waste is composed of the paper sludge from the pulp and papermaking process. The other five incinerators burn 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 six solid waste incinerators operating during 1997, five of these facilities were subject to both the requirements of chapter 173-304 WAC and chapter 173-306 WAC. These five 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 five facilities, two public and three private, had approved generator ash management plans and solid waste handling permits.³⁰

As of December 1998, one energy-recovery facility in Whatcom county had permanently closed. The two energy-recovery facilities in Pierce County were also closed, however they may reopen in 1999 with new operators.

Location of Incinerators



³⁰ One of the public municipal solid waste incinerators ceased operations in May 1994.

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 1998.

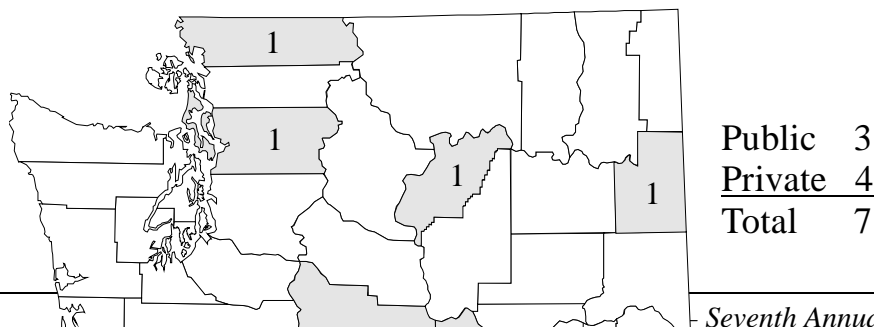
Landspreading Disposal Facilities

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 1998. (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 1998 database.

Location of Other Facilities



One treated PCS, one vector waste and one medical waste.

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. It must be noted that 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 1998, 93 certificates were up for renewal (68 landfill and 25 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 that do individual plans (Seattle and Everett). This table shows the status of each local comprehensive solid waste management plan for each county, organized by planning phases, the year the plans were last approved, the waste reduction/recycling goals and comments concerning future planning efforts as of October 1998.

Table 3.1
Current Status of Solid Waste Plans in Washington

COUNTY PLANNING STATUS BY PHASES			
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 1998
Seattle	Yes - 1998	recycle or compost: 60% by 2008	
Kitsap	Yes - 1993	50% by 1995	Currently updating plan with scheduled completion in 1998
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 early 1998. Recycling goals are being reevaluated with update.
Everett	Yes - 1996	35% recycling by 2005 3% to 5% WR	Currently updating plan
Spokane	Yes - 1992		Currently updating plan
PHASE II			

COUNTY PLANNING STATUS BY PHASES			
COUNTY	CURRENT STATUS (date last approved)	WR/R GOAL	COMMENTS
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	
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	
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	
Pacific	Yes - 1992	32% WRR by 1996	Currently updating plan
San Juan	Yes - 1994	50% by 1995	Currently updating plan
Skagit	Yes - 1994	50% or better by 1995	Currently updating plan
Skamania	Yes - 1992	40% WRR by 1998 50% long range goal	
Thurston	Yes - 1993	40% WRR by 1995 60% by 2000	Preparing to update plan
Wahkiakum	Yes - 1994	20% WRR by 1996	
Whatcom	Yes - 1994	50% by 1995	Currently updating plan
PHASE III			
Adams	Yes - 1993	50% WR/R BY 2012	Currently updating plan
Asotin	No - 1993	26% by 1997	Currently updating plan -
Benton	Yes - 1994	35% by 1995	Currently updating plan--est. completion 12/99
Chelan	Yes - 1995	26% by 1995	
Columbia	Yes - 1994	20% WR/R by 1996	
Douglas	Yes - 1994	25% by 1995	Currently updating plan—est. completion 12/99
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	Scoping for update
Kittitas	No - 1990	50% by 2006 (in update)	Currently updating plan
Klickitat	Yes - 1991	50% by 1995	Currently updating plan
Lincoln	Yes - 1992	35% WR/R by 1997	
Okanogan	Yes - 1993	30% by 2000	
Pend Oreille	Yes - 1994	45% WR/R by 2015	
Stevens	Yes - 1994	36% WR/R by 2012	
Walla Walla	Yes - 1994	40% by 2002	
Whitman	No - 1991	40% WR/R est by 2001	Currently updating plan - expected approval November 1997
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 formula based on the previous grant cycle award level, minus the enforcement allocation. This formula funding is not an entitlement program. 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).

Under the current grant cycle that runs from January 1, 1998 through December 31, 1999, Ecology has awarded \$14,876,025 in grants for waste management activities. The grants leveraged local matching funds to support \$23,715,642 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:

Hazardous Waste Planning	\$	86,650
Household Hazardous Waste Implementation	\$	663,259
Household Hazardous Waste Collection and Disposal	\$	4,979,005
Small Quantity Generator Implementation	\$	1,018,099
Solid Waste Planning	\$	334,559
Solid Waste Enforcement	\$	2,676,225
Groundwater Monitoring Wells	\$	25,800
Waste Reduction and Recycling – Activities	\$	4,284,312
Waste Reduction and Recycling – Capital	\$	<u>811,116</u>
Total	\$	14,876,025

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.

In addition, both solid waste enforcement and solid/hazardous waste planning/implementation activities are required 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/or the format of the information reported on the progress reports, information will be available to quantify the results of the program, and thereby communicate its value more effectively.

Community Litter Cleanup Program

The Community Litter Cleanup Program (CLCP) was developed and implemented in 1998. This local community funding allocation program is provided through a \$2 million appropriation of the Waste Reduction, Recycling and Litter Control Account. The 1997 Litter Task Force worked closely with Ecology in developing the program.

The CLCP will become an ongoing program, as the litter legislation passed in 1998 (SSHB 3058) directs Ecology to provide twenty percent of future litter account appropriations to local community cleanup efforts. If funding remains at the current level, this will amount to approximately \$2 million available each biennium.

The first round of funding for the Community Litter Cleanup Program was advertised broadly, including distribution of information letters to officials in each city and county, State Solid Waste Advisory Committee members, Jail Information Board officials, and Litter Task Force members (2,500 letters total) in January, 1998. Eight information workshops were held statewide in March and attracted representatives from all counties, several cities, and state and local correction agencies.

Interagency agreements for the first round of agreements total approximately \$1,100,000. All of the agreements represent a partnership between Ecology and local governments to work towards cleaning up local jurisdictions and the state's goal of zero litter. Thirty-eight out of forty-one eligible applicants applied for funds. Of the thirty-eight applying for funds, thirty-four are utilizing either state or local offender crews to clean up litter and illegal dumps. In addition, several local governments have partnered with volunteer groups and civic organizations to clean up parks, local trails, state forests and other public areas. Local governments are investing their time and money to make these projects successful.

The program will offer local governments a second round of Community Litter Cleanup Program agreements for calendar year 1999. The application period will be open from November 1, 1998 through February 28, 1999. Projects may begin as early as January 1, 1999. Eligible applicants may apply for up to \$32,000 to conduct litter and illegal dump cleanup projects.

Ecology plans to evaluate the CLCP during the summer and fall of 1999 and will invite local community officials and others involved in the program to participate in this effort. The evaluation results will be used to guide the development of the program for the future.

Local communities using this funding are being asked to track the number of labor hours used on the projects, amount of litter collected, number of illegal dumps cleaned, number of road mile and acres cleaned and value of goods and services donated. This will help Ecology evaluate the effectiveness of the projects.

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, 1997 through June 30, 1998, Ecology awarded 20 Public Participation grants, for a total of \$460,6876. These funds provided ten grants for cleanup of hazardous waste sites and ten grants for carrying out state and hazardous waste management priorities.

Tire Pile Cleanup Contracts

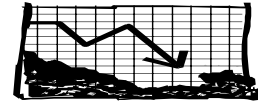
The legislature established a one-dollar-per-tire fee on the retail sale of new vehicle tires in 1989. The funding source has been used to clean up existing unauthorized tire piles around the state. The fee sunset in 1994. Ecology, in conjunction with local jurisdictional health departments, created a prioritized cleanup list containing 25 sites located in seven counties.

The first cleanup contracts were executed in May 1991. By the end of 1995, Ecology had completed the cleanups of all 25 originally identified sites. During the process of cleaning up the original 25 piles, the cost per site decreased and funds remained for additional tire pile cleanups.

The 1996 legislature appropriated the remaining Tire Account fund balance to clean up additional illegal tire piles. In April 1996, cleanup of a Lewis County site (Winlock Tire Pile), a pile containing an estimated 1.7 to 2.3 million tires, commenced. The cleanup of the pile was completed in June 1998. The final estimate of tires cleaned up was 4 million tires. A mixture of shredded and whole tires in a number of piles caused the incorrect estimate.

The cleanup of the Lewis County site exhausted all remaining funds in the Tire Account. There are additional illegal tire piles around the state, with more being created each year. Without the Tire Account funding, neither the state nor local governments have the resources to clean them up.

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

SOLID WASTE MANAGEMENT PRIORITIES <i>Chapter 70.95 RCW</i>	
1. Waste reduction.	amount or toxicity of waste generated or reusing materials.” Strategies include purchasing less and promotion of the reuse of products. <u>Recycling</u> is defined as; “transforming or re-manufacturing waste materials into usable or marketable materials for use other than landfill disposal or incineration”.
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 Waste Reduction Specialists assist counties and cities in implementing the waste

reduction and recycling recommendations within their local solid waste management plans. Staff have been working with local governments and the recycling industry to improve rural recycling opportunities. Efforts have been focused on several aspects of the organics waste stream and work has continued with the construction and demolition waste stream.

Assistance to Local Governments

Technical Assistance and Training

The first priority of Ecology staff is to provide on-going “technical assistance” (TA), assisting local government's Waste Prevention Specialists in the tasks of designing, planning, implementing and evaluating waste reduction and recycling programs. The wide range of programs includes household hazardous waste, school curricula, and business/commercial programs.

Related to this basic level of TA is providing local government with opportunities for the training they need for job performance. Training is currently more important on the east-side of the state, where staffing levels and expertise have not had the time to grow as much as their western counterparts. SW&FAP Waste Prevention Specialists continually work to “build capacity” within local government staff. Technical training includes such workshops as Master Recycling and Composting, public education program evaluation, waste reduction program measurement, public speaking and project management.

SW&FAP staff work to develop team-building skills among local government staff so that they draw on each other for expertise and share successful ideas and programs.

Staff working on construction, demolition and landclearing issues, provide technical assistance on using recycled content building materials and sustainable building through their work with the Washington State CDL Council and the Resource Efficient Building and Remolding (REBAR) Council.

SW&FAP waste specialists also provide technical assistance to local governments for composting, waste-to-fertilizer issues, and implementation of the new statewide biosolids regulation.

Planning and Grants Assistance

Ecology's Waste Prevention Specialists also assist the grants officers in determining appropriate activities for the Coordinated Prevention Grants (CPG), Community Litter Cleanup Program contracts, and enforcement grants. Staff also review the waste reduction and recycling portions of the local solid waste plan revisions.

Education and Outreach

Ecology 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.

WSRA Conference Assistance

Each year, staff assists the Washington State Recycling Association (WSRA) plan and produce their annual conference. Sessions that cover a large variety of issues of importance to the recycling industry and community. Success of the conference can be measured by attendance levels and the WSRA survey results from the conference presenters, exhibitors, and attendees.

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 SW&FAP staff and local government personnel are encouraged to contribute articles. The newsletters provide an avenue for local governments 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>.

Waste Prevention Specialist Meetings

Another valuable tool are quarterly meetings and/or workshops in each region. Originally focused on waste reduction and recycling, these meetings are expanding to cover solid waste interests in general. Waste prevention specialists are now joined by public works department workers, health officials, legislative and planning interests. They provide notification of current issues, training, and build teamwork within local government staff and SW&FAP. These sessions are constantly being evaluated and improved upon with suggestions from local governments.

Public Requests for Information and Educational Materials

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

The 1-800-RECYCLE information line helps citizens find ways to reduce waste and recycle. The supporting database can be found at <http://1800recycle.wa.gov>. Other specific databases on the SW&FAP homepage provide information on using recycled content building materials and sustainable building materials (<http://wa.gov/ecology/swfa/cdlframe.html>) and information about solid waste facilities and disposal data (<http://wa.gov/ecology/swfa/swhome.html>).

Events

Earth Day and Recycle Week have traditionally been venues in which the program has solicited participation. This included designing and distributing materials for use by local government, and often hosting a featured event. For the past several years, SW&FAP has promoted an autumn program titled "Recycle Week". Similar to Earth Day, Ecology staff produce a guidebook to help local government plan and implement public educational events to support recycling. These efforts have declined, largely due to budgetary constraints. In 1998, the program joined a national campaign to buy recycled materials, America Recycles Day. Being a new program and its success may take a few years to realize the potential benefits of a national campaign similar to Earth Day.

Rural Recycling Opportunities

Markets for recyclable commodities remain volatile. The problem of an uneven market is of even more concern in the rural portions of Washington, where distance to market, as well as the ability to consolidate marketable quantities of materials, are significant problems.

The current statewide recycling rate is 33%. However in the Eastern Washington Waste Generation Area the rate is about 22%. Collection of materials is only part of the solution. Getting those materials to a viable market is also essential.

Gathering and sharing of the most current waste reduction and recycling information is also crucial for rural recycling endeavors to succeed. Sharing of case studies, successful as well as unsuccessful programs, and the most current technology available is equally important.

Ecology took the lead in developing a strategy to address rural recycling by assisting the recycling industry trade organization, the Washington State Recycling Association (WSRA), with an Internet Web Page³¹ where current commodity prices can be accessed. The WSRA will assume responsibility for maintaining the site at the end of this biennium. Part of the WSRA web page established a clearinghouse for rural recyclers to post incomplete loads of hard to recycle commodities to enable them to coordinate loads and cooperatively market those materials. There are links to Ecology's homepage as well as other pertinent web sites. Providing small recyclers and interested local government staff with the current market value of commodities, as well as helping them coordinate with others to consolidate and market materials, will assist in increasing the recycling rate for that portion of the state.

Ecology also set up informal meetings with interested local recyclers to hear their concerns and allow them an opportunity to network. Staff also visited local recyclers at their place of business whenever possible and actively recruited local recyclers to attend the regional Waste Coordinators meetings.

Rural recycling is an ongoing activity for which Ecology will continue to provide technical assistance and networking opportunities through regularly scheduled recycling coordinators meetings and the sessions offered at the annual Washington State Recycling Association's Conference. Ecology will continue to be opportunistic in identifying new opportunities to assist local governments and local private recyclers in increasing the recycling rates for rural Washington and in implementing their Solid Waste Management Plans.

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 unclear and potentially inconsistent regulation from various regulating entities. To support the composting industry in facing these challenges, Ecology developed the "Compost Facility Resource Handbook"³² and issued the final document in November 1998. The handbook is

³¹ <http://www.wsra.net>

³² "Compost Facility Resource Handbook – Guidance for Washington State", November 1998, Publication #97-502.

a guidance document that describes the regulatory framework for compost facilities and provides criteria for baseline facility designs and management practices.

Ecology will continue to provide technical support to local governments and the private sector in the interpretation and use of the handbook. Staff will be looking for opportunities to share information in the handbook via programs and projects at local and state levels. For example, portions of the handbook will be available for the Compost Education & Resources for Western Agriculture workshop series.

The Compost Facility Resource Handbook highlights those areas of the current MFS that need updating. Ecology will use the handbook during development of a new section in the MFS on compost facility standards. (See Chapter I for a discussion of the MFS revision project.)

Biosolids

1998 was a landmark year for biosolids management in Washington State. Ecology adopted a new rule for biosolids management (chapter 173-308 WAC, *Biosolids Management*) on February 16, 1998, effective March 21st. On March 25th, Ecology issued a statewide general permit for biosolids management, effective May 15, 1998. Release of a final version of Ecology's draft *Biosolids Management Guidelines*, and a new companion document, *Managing Nitrogen for Biosolids* is expected by the end of 1998.

The new state biosolids program replaced the previous program of managing biosolids through solid waste permits issued by local health departments. This change was necessary in order for Ecology to seek delegation of federal program authority (an undertaking planned for 1999). Alternatively, the state would have managed biosolids under both local and federal permits; federal program implementation would not accommodate recognition of local permit programs.

Recognizing the interest many local health departments have in biosolids management, Ecology provided for delegation of state program elements to the local level. At this time it is unclear how many local health jurisdictions will ultimately take delegation of state program authorities, but it appears that at least half will enter into some type of delegated partnership with the state.

Implementation of the new state program with the regulated community has gone well. Ecology estimates that there are about three-hundred facilities subject to permitting, and well over two-hundred had submitted a Notices of Intent by the established deadline. A Notice of Intent is the first step in the process of bringing a facility under final coverage of the statewide general permit. Those which missed the Notice of Intent deadline are primarily small to very small facilities and Ecology believes the problem is largely an educational one. This belief is reinforced by a good response to permit fee billings and a lack of appeals or formal objections to the state program.

The new state program includes specific reporting requirements which Ecology hopes will facilitate a fair appraisal of biosolids management practices and problems in Washington over the next year or so. Ecology will be inputting data into a new *Biosolids Data Management System* provided by U.S. EPA. Findings and reports will be shared with local health departments, the regulated community, and the interested public.

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 is being evaluated.

News stories have created concern among some members of the public that use of industrial wastes in fertilizer is potentially unsafe. Current data does not support that conclusion, however in August 1997, Governor Locke asked the Department of Ecology, the Department of Agriculture and the Department of Health, to gather more information to determine with more certainty whether there is a potential public health problem.

The Solid Waste & Financial Assistance Program (SW&FAP) is involved in the process because of certain solid wastes that are used for fertilizer and soil amendments. We are working with Hazardous Waste and Toxics Reduction Program (HWTR) at Ecology on this effort.

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 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 will adopt permanent rules to implement the *Fertilizer Regulation Act* in 1999 by the end of 1998, to be effective January 31, 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.

An advisory group has been asked to provide initial comments about what should be included in the exemption process and criteria. The comments provided will be used to develop draft language. The external advisory group will review the information and provide recommendations. This will ensure that the final process and criteria are both functional and protect human health and the environment.

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. 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.

SW&FAP intends to develop an interim exemption process for soil amendments by earlier spring 1999. At that time, 2 to 4 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. The solid waste exemption process should be finalized by summer of 1999.

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.

Also, 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.

Construction, Demolition, and Landclearing Waste

Construction, demolition and landclearing debris (CDL) recycling is one aspect of the larger issue of sustainable building practices. Sustainable Building is a solution to many of the environmental impacts of the building industry. This includes impact on habitat, water consumption, water quality, depletion of resources, and energy efficiency.

Department of General Administration Sustainable Building Project

The CDL program plan stated that Ecology would help Washington State Department of General Administration (GA) develop a strategy and/or a procedure that would facilitate the use of resource efficient building principles in all state funded projects as a standard practice. Since then Ecology has formed a partnership with GA working toward the State of Washington becoming a leader and serving as an example of how to build in a sustainable fashion. A high profile project, the University of Washington-Bothell/Cascadia Community College Co-Location Campus (UWB/CCC), was selected to receive technical assistance over the next few years. This gives us the opportunity to see how to integrate sustainable design elements into a working model. This technical assistance team includes representatives of GA, Ecology and King County Solid Waste.

The Sustainability Team's objective is to be a resource to the UWB/CCC Design and Construction Team to help make the campus as sustainable as we can in Phase I without impacting budget and schedule. In subsequent phases, with lessons learned, additional sustainable features will be possible through planning and collaboration. It is our hope that this campus not only becomes a model of advanced learning and communication technology, but one of environmental awareness and sustainability.

To date the Sustainability Team has provided input to the project in the following ways:

- ❖ Reviewed and commented on the Design Development Documents,
- ❖ Reviewed and commented on the Energy Life Cycle Costs Analysis.
- ❖ Identified utility assistance and initiated partnering between the Landscape Designer and water utility (Seattle Public Utilities) with regards to the irrigation system.
- ❖ Initiated partnering with King County's Water and Land Resources Division to provide signage for the Wet Lands Restoration project and volunteer, on site, native plant salvage.
- ❖ Initiated partnering with Mortenson's Sustainability Coordinator to facilitate a successful job site recycling effort.
- ❖ Providing assistance to CDi (Project Mechanical Engineers) in the evaluation of ground water availability for use in the central plant cooling system.
- ❖ Initiated partnering with the Chair of the UW Construction Management program to provide assistance in identifying opportunities for recycled content building materials.

Ecology was designated the communications lead for the technical assistance group. This includes the production and distribution of an electronic newsletter called "Sustainability Update," used to inform Design, Construction, Project, Client, and Sustainability Team members of the sustainable efforts planned, under development, and completed. Key personnel are identified. Successes and missed opportunities will be documented. The "Sustainable Update" provides a communication tool and a means of documenting the sustainable efforts.

GA and Ecology co-sponsored a sustainable building seminar for the project managers and their clients in charge of the construction of state facilities. There were 80 attendees for the seminar on September 11, 1998. Evaluations of the workshop reveal that those in attendance thought the workshop was well worth their time and that they planned to use the information learned in future projects.

Washington State CDL Council

The Washington State CDL Council, was formed in May 1997, to formalize and expand the roles of a group called the Regional CDL Coordinators, who have been meeting since 1994. The group joined the Washington State Recycling Association (WSRA) as the first council of the WSRA and continues to grow and diversify its membership. As the membership diversifies so does the Steering Committee to include more private industry representatives such as waste haulers and recyclers, demolition contractors, and general contractors.

The Council has considered expanding the mission to promote sustainable building across the state of Washington with emphasis on maximizing waste prevention. This change would reflect the work the Council has already been doing. With the increased activity the steering committee voted to form subcommittees to address a wide range of issues.

The Council's main activities are providing a stakeholder forum and educational programs such as workshops to promote waste reduction and recycling in the building industry. During 1998 several workshops were held including:

- Deconstruction and Reuse
- Job Site Recycling
- Use of Sustainable Building Materials for Architects
- Washington State Department of General Administration's Division of Engineering and Architectural Service's Sustainable Building Seminar
- WSRA Sessions:
 - Resource Efficient Building
 - Deconstruction and Reuse
 - CDL "On the Road in Eastern Washington"-Reuse of Concrete for Road Builders

Resource Efficient Building/ CDL Webpage

An initial draft of a Resource Efficient Building/ Construction, Demolition, and Landclearing (CDL) Web Page has been developed. It provides information and direct

links to resources promoting waste reduction and recycling, the use of recycled content building materials, and sustainable building. There is still work to be done to make the site more user friendly but the information is on the internet and can be accessed through <http://www.wa.gov/ecology/swfa/cdl/cdlframe.html>

Northwest Sustainable Building Action Plan

The City of Seattle received a grant from the Department of Energy's Urban Consortium Energy Task Force to develop a regional sustainable building action plan for the Pacific Northwest. People from around the region met for a series of four meetings, sharing their expertise, experience and opinions about sustainable building. The last of the meetings was held on September 25th to work out more details of seven strategies identified by the group. These include developing a vision for Sustainable Building, Industry Education, General Public Education, Awards Program, Analytic Models, Incentive Programs, and Guidelines & Requirements. Ecology is being looked at to play a role in one or many of the implementation plans being developed.

Recycling Information Line

Ecology operates 1-800-RECYCLE to help citizens find ways to reduce waste and recycle. In 1997, 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 database has been redesigned for easy posting to the SW&FAP Homepage, and can now be found at <http://1800recycle.wa.gov>. Targeted waste streams, such as construction and demolition, offer the information line increased opportunities

Litter Programs

Passage of the 1998 Litter Act

A 17 member task force was formed in July, 1997 to examine the effectiveness of litter control in Washington State as it is carried out in accordance with chapter 70.93 RCW,

the *Waste Reduction, Recycling and Model Litter Control Act*. The charge to the Litter Task Force was to evaluate the system in place and to recommend changes that could significantly improve litter prevention and pickup in the future. The Task Force established and committed to work toward a standard of zero litter throughout the State. Several recommendations were made for improving the existing system and moving toward the zero litter goal. These recommendations were presented to the 1998 State Legislature and formed the basis for Second Substitute House Bill 3058 (SSHB 3058).

The legislation made Ecology responsible and accountable for administering state agency allocations of Litter Tax Funds. A central coordinator within Ecology will work cooperatively with other state agencies (Departments of Corrections, Natural Resources, Transportation, Revenue and Parks) to develop programs and monitor their progress and results. By centralizing management of the fund, Ecology hopes to focus on coordinating litter collection and prevention efforts. Ecology also plans to improve accountability by developing performance measures to guide future expenditure of litter funds and quantify accomplishments by all agencies.

The legislation provided clear direction on how litter funds are to be allocated in the future; twenty percent is to fund the Community Litter Cleanup Program (CLCP), thirty percent is to fund Ecology's waste reduction and recycling efforts, and fifty percent is to fund litter clean-up efforts. Besides funding Ecology's own Youth Corps, the fifty-percent dedicated to clean-up efforts will fund litter activities carried out by the other state agencies (Natural Resources, Corrections, Parks, Transportation and Revenue).

Ecology's Progress in Implementing the New Legislation

Although Ecology was not required to begin implementation of SSHB 3058 until the start of the fiscal year in July 1998, SW&FAP began working with local governments to develop and implement the Community Litter Cleanup Program in early 1998 (see chapter III for additional information.)

In July 1998, a statewide litter programs coordinator was hired to track progress in litter prevention and pickup, manage the budgeting process for litter programs, and serve as a central resource for collecting and sharing litter information.

Efforts to coordinate with other state agencies began in the fall of 1998. Through an interagency agreement process, Ecology distributed approximately \$850,000 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 and began development of forms and a database. By the end of 1998, Ecology and the other state agencies will have a budget proposal for the next biennium.

One of the provisions in the new legislation directs Ecology to conduct a statewide litter survey, which is to be used to guide prevention and cleanup efforts. The survey will

examine litter composition and generation rates, determine sources of litter, describe the demographic characteristics of persons who litter, identify geographic trends in litter generation, and gain information to develop effective litter prevention programs.

In the fall of 1998, regional EYC staff and headquarters staff worked with a consultant to develop the survey site sampling plan and a methodology for conducting the survey. Litter crew supervisors from EYC and Department of Corrections personnel participated in litter survey training sessions and by October fieldwork had begun.

In 1999, EYC crews will continue to work on the statewide litter survey. Site sampling is scheduled to be completed by early fall at which time the data will be analyzed. The consultant is expected to present a final litter survey report by late fall. The litter programs coordinator will continue to work with EYC and the other state agencies to improve accountability and develop work plans that will help move Washington towards its zero litter goal.

Ecology Youth Corps

1998 marked the 23rd 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.

In response to public concerns about a perceived rise in litter volume across the state, the 1997 Legislature increased funding to Ecology for additional litter cleanup efforts. As a result, additional EYC litter crews were added in both 1997 and 1998.

A total of 60 EYC litter pick-up crews operated statewide in 1998. The crews were responsible for picking up a total of 80,371 bags of litter over a total of 7,781 road miles and 755 acres. Of this total amount of litter 10,651 bags of litter were recycled. Crews recycled over 104,618 pounds of materials, as follows:

Aluminum	21,470 lbs.
Metal	36,388 lbs.
Glass	39,207 lbs.
Plastics	6,139 lbs.
Misc.	3,198 lbs.

EYC operates two types of crews, median crews, and summer crews. Median crew members are 18 years and older, and they work on the more complex cleanup challenges of highway median strips, interchanges and on/off ramps. Summer youth crew members are 14 to 17 years of age, and they work on road shoulders and public access areas. Each summer crew member works one four-week session, with a complete turnover of crews in the middle of the summer. 1998 litter removal results are show in Table 4.1 below.

Table 4.1
1998 EYC Litter Pickup

Crew Type	Road Miles Cleaned	Off-Road Acreage Cleaned	Bags of Litter & Recyclables Filled
Median	3,658.45 miles	26 acres	38,356.45
Summer youth	4,122.55 miles	729 acres	42,014.45
Totals	7,781.00 miles	755 acres	80,370.90

Recognizing Waste Reduction and Recycling Efforts

School Awards Program

All of Washington's 1,700 public schools received applications to apply for Ecology's annual Waste Reduction and Recycling Public School 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 99 Washington schools have received cash awards over the 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.

On May 8, 1998, at a ceremony in the state Capitol rotunda, Ecology Director Tom Fitzimmons presented \$13,000 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 1997-98 school year.

The 1998 ceremony was co-sponsored by Weyerhaeuser Company Foundation, which also gave \$10,000 in cash awards to four Washington school districts through its "Excellence in Recycling" program. Ecology and Weyerhaeuser have worked together on this project since 1991. This was Weyerhaeuser's last year of participation, as their program is being discontinued.

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.

Many schools practice environmental stewardship with school-based beautification projects. School recycling programs often extend into the local communities. In several cases the school's 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 4.2 identifies the 1997-1998 School Award winners.

Table 4.2
1997-1998 School Awards

Award	School	Location
Best Waste Reduction Program \$2,500	Deming Elementary School	Deming, Whatcom County
Best Recycling Program \$2,500	Wilson Creek Junior/Senior High School	Wilson Creek, Grant County
Outstanding Waste Reduction and Recycling Programs (\$1,000 each)	Waldron Island School	Waldron Island, Island County
	Green Mountain Elementary School	Bremerton, Kitsap County
	Enatai Elementary School	Bellevue, King County
	Montlake Elementary School	Seattle, King County
	Cashmere Middle School	Cashmere, Chelan County
	Washington Middle School	Yakima, Yakima County
	Liberty Bell Junior/Senior High School	Winthrop, Okanogan County
Sadie Halstead Middle School	Newport, Pend Oreille County	

Weyerhaeuser Excellence in Recycling Awards

Weyerhaeuser Company Foundation awarded \$3,000 each to the Seattle, Eastmont, and Conway School districts, and \$1,000 to Medical Lake School District for their recycling achievements during the 1997-98 school year. The awards were presented by Betsy Seaton, Weyerhaeuser Vice-President of Recycling, and Tony Angell, Environmental Education Manager for the Washington Superintendent of Public Instruction

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 4.3 lists the award winners for 1998.

Table 4.3
1998 Waste Reduction & Recycling Awards for
Local Government and Businesses

1998		
CATEGORY	BUSINESS /ENTITY	ACCOMPLISHMENT
Best Small Government Waste Reduction and Recycling Program	San Juan County Solid Waste Program	This county has overcome unique challenges to keep their program going. They run a recycling program in a county that has 172 islands of which only 42 are inhabited. San Juan County has built a solid infrastructure for handling recyclables with recycling facilities available on the 4 main islands for residences. They have also partnered with their franchised hauler in putting together a complete package of promotional and education programs.
Best Large Government Waste Reduction & Recycling Program	Clark County/City of Vancouver Solid Waste Programs	These two governments combined resources to better serve their citizens. The team boasts a 40% recycling rate with nearly 70% of the entire county population being served by curbside and volunteer subscription Yard Waste Recycling. Multi-family recycling serves 24,000 residences in the urban service area.
Best Public Information/Education Program on Waste Reduction and Recycling	Clean Green Environmental Products Program Richland	This program was designed to promote environmentally friendly products through partnerships between Tri-City area utilities, solid waste handlers and local businesses. Criteria for product selection and promotion by the program focuses on the product having a design to save money, use less energy, less natural resources and be environmentally friendly. The first product selected was the battery powdered electric mulching lawn mower.
Most Innovation Waste Reduction & Recycling Program	Buildwise Bellevue/City of Bellevue Utilities Department	Buildwise Bellevue Program's goal is to educate and encourage architects to incorporate sustainable building practice in their projects. To date, over 220 architects and their staff from 15 firms in the Bellevue area have participated in presentations and workshops.

1998		
CATEGORY	BUSINESS /ENTITY	ACCOMPLISHMENT
Special Recognition for Outstanding Achievement in Waste Reduction and Recycling	Thurston County Solid Waste/WSU Masters Gardners	In Thurston County, at the Hawks Prairie Landfill, Thurston County Solid Waste and the WSU Cooperative Extension Master Gardeners and Composters have collaborated to build "Closed Loop Park". The park is so named because many of the construction materials are reclaimed and recycled content products and because the closure of the landfill returns the land back to the community. Residents can visit the site anytime the landfill is open and take tours, or can participate on workshops offered on-site.
Best Large Business Waste Reduction & Recycling Program	The Boeing Company Seattle	In 1997, 50 million pounds of aluminum were recycled from Boeing's Puget Sound Locations. The tooling center collects over 1 million used drill bits, which are re-sharpened and then re-used. All this adds up to a 60% recycling rate. In Puget Sound, over \$40 million dollars is generated by recycling while another 10 million is saved by diverting materials from the landfill.
Best Small Business Waste Reduction & Recycling Program	Milne Fruit Products, Inc. City of Prosser	This organization found that doing the right thing for the environment could be achieved while saving resources and money as well. The replaced old fluorescent lights with energy efficient fixtures and saved \$16,000 dollars/year; recycled 40 tons of scrap metal, 52 tons of cardboard and office paper and aluminum cans for a revenue of \$3,400; and land applied 76,000 tons of agriculture by-product for composting for a cost avoidance of \$212,800/year.
Best Federal Facility Waste Reduction & Recycling Program	Navy Whidbey Recycle/NAS Whidbey Island	Navy Whidbey Recycle emphasis working with the community in achieving it's objectives. Participation includes military personnel, citizens and local and state government. The recycling rates have reached 61%. The navy also operates a hazardous waste minimization program and practices procurement programs for recycled materials.

Chapter V The 1997 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.

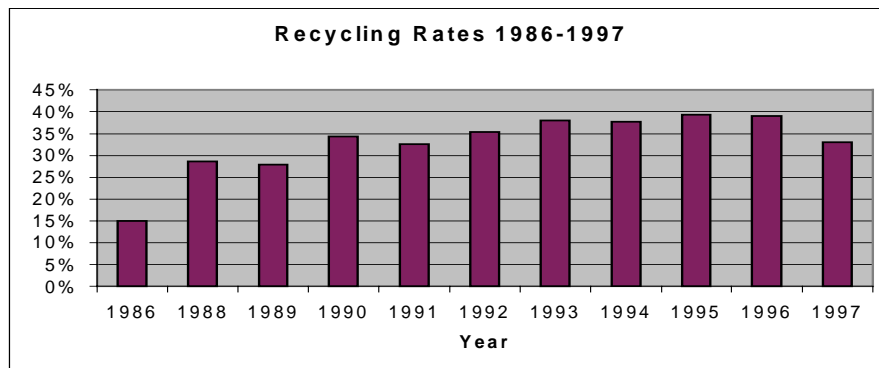
In response, local governments began offering citizens various forms of recycling ranging from drop boxes to curbside collection of a variety of recyclable materials. In 1996, more than 100 cities and counties offered curbside collection of recyclable materials such as glass, paper, and metals. An increasing number are offering curbside collection of yard waste and plastic.

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 portion³³ 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% in spite of poor markets. In 1996 year the recycling rate leveled at 39%. This year the recycling rate has dipped to 33%. The following graph (Figure 5.1) shows the recycling rate over time since the department began gathering recycling data.

Figure 5.1
Recycling Rates Over Time



³³ 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: 1995 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.

Table 5.1 shows tonnage recycled by commodity type from 1995 through 1997. Major decline in recovery of newsprint, corrugated paper, mixed waste paper, and ferrous metals are apparent. Major increases have been realized in other recyclable plastics, used oil, yard waste and gypsum. It should be noted that fluctuations in the amount recycled of specific commodities should be anticipated. However, the commodities noted demonstrate a dramatic shift in total tons processed and indicate potential problems.

Table 5.1
State Tonnage by Commodity: 1995-1997 Washington State Recycling Surveys³⁴

Commodity	1995	1996	1997
Newspaper	286,984	298,616	187,044
Corrugated Paper	480,198	639,291	392,314
High Grade	50,416	80,203	56,245
Mixed Waste Paper	278,371	260,883	194,201
Aluminum Cans	21,213	19,064	19,601
Tin Cans	13,223	12,786	15,149
Ferrous Metals	691,843	220,667	300,068
Nonferrous Metals	31,559	75,926	45,568
White Goods	14,051	14,358	15,126
Refillable Beer Bottles	3,278	2,579	633
Container Glass	77,108	73,197	79,566
PET Bottles	4,955	3,853	4,965
LDPE Plastics	634	2,135	1,693
HDPE Containers	5,250	4,033	3,835
Other Recyclable Plastics	2,542	1,642	13,945
Vehicle Batteries	18,331	16,365	15,294
Tires	6,575	7,043	5,520
Used Oil	961	6,141	7,299
Yard Waste	295,915	337,534	384,848
Food Waste	78,148	103,073	75,020
Wood Waste	192,056	223,828	265,887
Textiles (Rags, clothing, etc.)	13,022	9,186	11,046
Gypsum	1,216	50,202	56,373
Photographic Films	20	3	22
Total Recycled	2,566,661	2,495,857	2,151,608
Total Disposed ³⁵	3,968,241	3,984,929	4,386,397
Total Generated	6,534,902	6,480,786	6,538,005
Recycling Rate	39%	39%	33%

³⁴ Detail may not add due to rounding.

³⁵ 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.

While study needs to be done, there appear to be at least five interrelated reasons for the decrease in recycling:

- The Asian recycling market softened in 1997 and then crashed in 1998, this does not look good for the next survey.
- There was a 400,000-ton increase in disposal in Washington State. This increase alone would account for a 3% drop in the recycling rate.
- The State's population has increased by over 250,000 since 1995. This group may not participate as much in recycling programs since they were not exposed to the outreach programs run by Ecology and the counties 1990 to 1995.
- The waste industry has undergone tremendous consolidation and privatization in the last 3 years. This consolidation may have left some areas of the state with reduced recycling services.
- The decline in the number of small private buy-back recycling has reduced the opportunities to recycle. For many people, the motivation to recycle was the financial reward paid to them for bringing material to the recycling center. Without this motive, this group may have given up participation.

Ecology has started a cooperative process with major stakeholders to assess the reasons for the drop in the recycling rate. We will consider many factors and hope to find ways to work together to reverse the downward trend. Some of our preliminary issues to review include:

- Market trends for recyclable material. Are there opportunities to improve markets and how should identified opportunities be implemented?
- Disposal rates. Is there a correlation between economic prosperity and increased disposal? What are the generation trends in various waste generation areas of the state?
- Population increases. Has there been a drop in the awareness of the public to recycle? What mechanisms need to be in place to assure continued public awareness of recycling needs and opportunities?
- Consolidation and regionalization of the solid waste system. Has the consolidation of the waste management industry, the reduced involvement of local government in the day-to-day management of solid waste and the systems set up within the state for solid waste management eliminated the long term environmental protection ethic and the financial benefits of resource conservation and replaced them with purely short-term financial gains?

- The intent of the Waste Not Washington Act was to improve and increase opportunities for the public to recycle. Has the decline of the recycling buy-back industry caused a reduction in recycling and recycling participation?

Regional Recycling

Compilation of regional recycling information is part of a larger effort to analyze changes in the solid waste stream since the passage of the “Waste Not Washington Act” and to formulate solid waste policy to keep improving the recycling rate. Looking at the state’s waste stream in smaller areas, providing information to make appropriate policy choices based on regional needs.

The following table (5.2) illustrates the county groupings: Central Puget Sound (CPSWGA), Western Washington (WWWGA), and Eastern Washington (EWWGA). The groupings correspond to a waste characterization study conducted by Ecology in 1992.³⁶ The table is grouped geographically whereas other parts of the annual report compare the counties by planning Phases.³⁷ Ecology felt the groupings of Central Puget Sound, the rest of Western Washington and Eastern Washington provided good comparisons in terms of demographics and markets. These comparisons provide useful information towards policy development for working towards the 50% recycling goal without compromising proprietary information.

Table 5.2
Recycling Tonnage by Waste Generation Areas

Commodity	State Total	CPS	EW	WW
Newspaper	187,044	107,294	39,794	30,852.72
Corrugated Paper	392,314	217,947	76,715	75,910.36
High Grade	56,245	27,028	5,343	22,261.57
Mixed Waste Paper	194,201	149,732	8,352	27,644.70
Aluminum Cans	19,601	10,319	5,045	3,500.70
Tin Cans	15,149	9,336	2,122	3,612.64
Ferrous Metals	300,068	115,232	79,998	58,854.43
Nonferrous Metals	45,568	16,010	11,112	3,947.08
White Goods	15,126	2,463	6,557	2,509.31
Refillable Beer Bottles	633	407	27	101.00
Container Glass	79,566	50,109	10,759	18,557.20
PET Bottles	4,965	3,565	803	499.17
LDPE Plastics	1,693	1,579	68	-

³⁶ 1992 *Washington State Waste Characterization Study*, (Six Volumes), Washington State Department of Ecology, July 1993, Publication #93-45.

³⁷ The planning phases are nearly identical to Waste Generation Areas with only one exception, Spokane county. Spokane is included in Phase 1³⁷ and not in the Central Puget Sound. Conversely, the Eastern Washington Waste Generation Area includes Spokane county and the Phase 3³⁷ planning group does not

Commodity	State Total	CPS	EW	WW
HDPE Containers	3,835	1,964	5,343	750.02
Other Recyclable Plastics	13,945	13,659	109	171.19
Vehicle Batteries	15,294	4,366	3,783	6,584.97
Tires	5,520	1,620	447	7,818.86
Used Oil	7,299	360	3,697	27,782.44
Yard Waste	384,848	311,513	42,339	30,996.14
Food Waste	75,020	67,187	6,346	1,487.00
Wood Waste	265,887	197,398	899	65,280.45
Textiles(Rags, clothing, etc.)	15,149	5,493	4,504	428.92
Gypsum	56,373	48,958	2,000	5,415.54
Photographic Films	22	0	17	0
Recycling Total	2,151,608	1,353,226	306,813.88	357,479.77
MSW Disposal Total	4,386,397	2,216,391	1,080,378.00	894,316.00
Generated Recycling Total	6,538,005	3,569,617	1,387,191.88	1,251,795.77
Recycling Rate	33%	38%	22%	29%
Population	5,606,800	2,920,700	1,260,200	1,504,400
Recycling, pounds/person/day	2.10	2.54	1.33	1.30
Disposal, pounds/person/day	4.29	4.16	4.70	3.26
Generation, pounds/person/day	6.39	6.70	6.03	4.56

Central Puget Sound Waste Generation Area (**CPSWGA**) - King, Pierce, Snohomish
 Western Washington Waste Generation Area (**WWWGA**) - Clallam, Clark, Cowlitz, Grays Harbor, Island, Jefferson, , Kitsap, Lewis, Mason, Pacific, San Juan, Skagit, Skamania, Thurston, Wahkiakum, Whatcom

Eastern Washington Waste Generation Area (**EWWGA**) - Adams, Asotin, Benton, Chelan, Columbia, Douglas, Ferry, Franklin, Garfield, Grant, Kittitas, Klickitat, Lincoln, Okanogan, Pend Oreille, Spokane, Stevens, Walla Walla, Whitman, Yakima

1997 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

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, by 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 1997, 23 municipal solid waste landfill accepted waste totaling 4,532,918 tons.³⁸ Of the 23 landfills, 17 were publicly owned, and six were privately owned.

In analyzing the size of the MSW landfills it was found that of the 23, eight received over 100,000 tons of waste in 1997. The two largest landfills in Washington, Cedar Hills in King County and Roosevelt Regional Landfill in Klickitat County received 864,397 tons and 1,967,384 tons, respectively. In 1997, two landfills received less than 10,000 tons,

³⁸ 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.

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. Three of the largest landfills and all but one of the smaller landfills are publicly owned

Figure 6.1
MSW Landfills - Disposed Tons Per Year

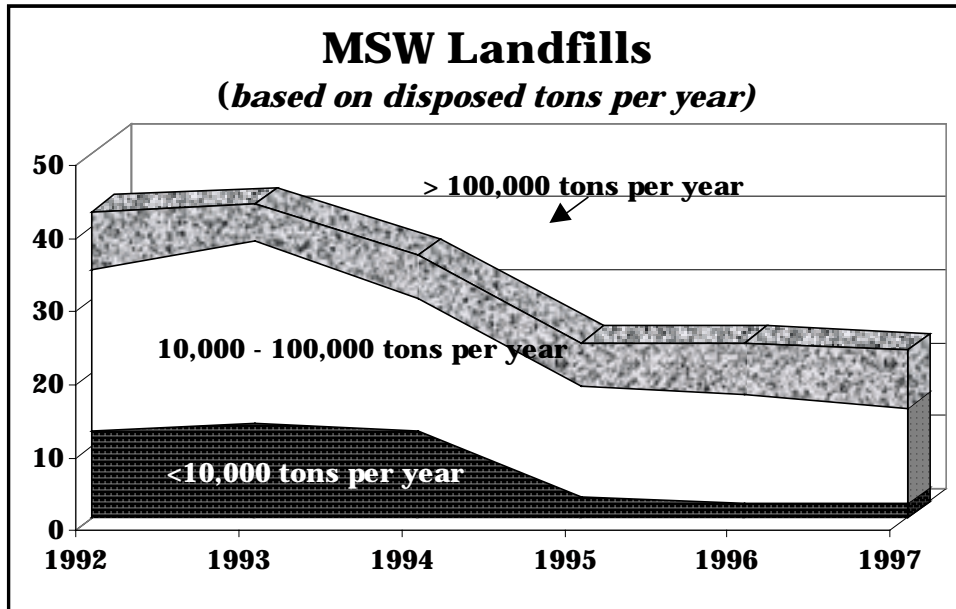


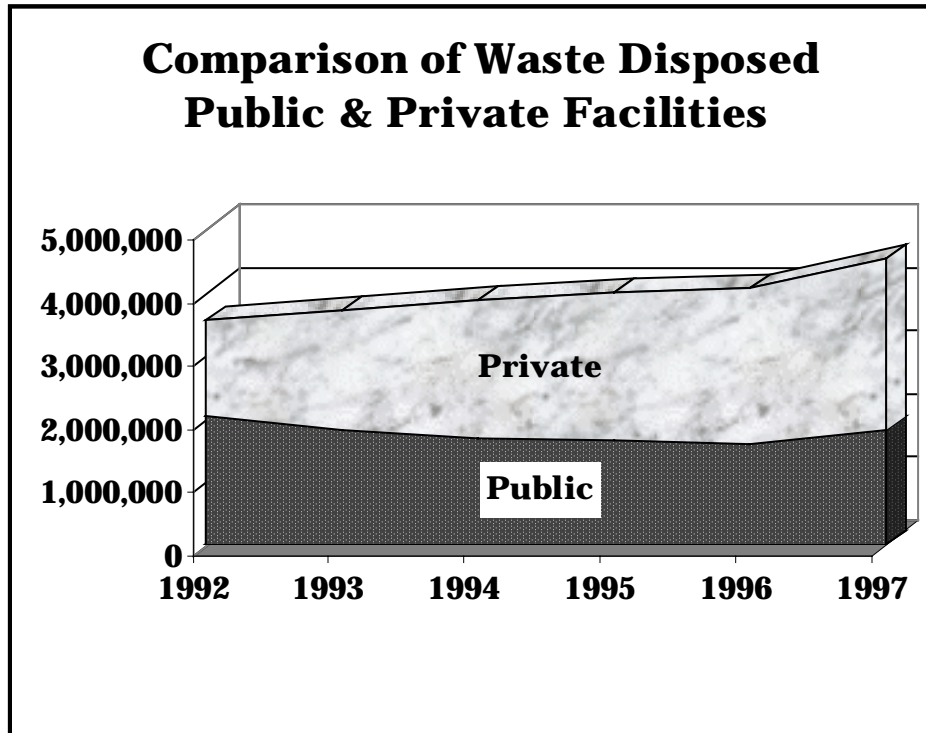
Table 6.1 shows the relationship of waste disposed to public/private ownership. As the table illustrates, 1,803,526 tons of solid waste disposed went to publicly owned facilities (40%), with the remaining 2,729,392 tons going to private facilities (60%).

Table 6.1
Waste Disposed in MSW Landfills – Public/Private

OWNERSHIP	NUMBER OF MSW LANDFILLS		AMOUNT OF WASTE DISPOSED (Tons)		% TOTAL WASTE DISPOSED	
	1991	1997	1991	1997	1991	1997
PUBLIC	36	17	2,696,885	1,803,526	69	40
PRIVATE	9	6	1,192,207	2,729,392	31	60
TOTAL	45	23	3,889,092	4,532,918	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 60% in 1997. 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.³⁹ 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. Sixteen of the 23 landfills reported a significant amount of solid waste disposed, other than municipal solid waste. Demolition, industrial, commercial, woodwaste, sludge, asbestos, petroleum contaminated soils (PCS) and tires were the major waste streams. (Some 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).

³⁹ "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)
Municipal Solid Waste*	2,694,800	2,641,551	2,725,084	2,777,030	2,807,998	3,083,286
Demolition Waste	250,144	331,231	459,979	382,513	375,412	385,412
Industrial Waste	101,607	44,471	150,218	161,779	145,617	163,431
Inert Waste	1,027	0	31,248	5,154	30,061	117,512
Commercial Waste	143,466	180,691	92,498	142,258	109,093	173,863
Woodwaste	60,523	98,595	22,668	37,850	57,667	57,128
Sewage Sludge	64,311	33,854	64,364	66,728	49,205	72,741
Asbestos	8,247	7,076	11,819	7,859	7,965	9,558
Petroleum Contaminated Soils	224,560	273,429	249,552	255,288	254,414	444,260
Tires	na	1,288	1,815	28,712	12,787	14,912
Special	na	na	Na	na	10	6
Other**	12,053	113,869	69,371	136,644	233,526	10,809
TOTAL	3,560,738	3,726,055	3,878,615	4,001,815	4,083,755	4,532,918

* 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 1997, increased amounts were reported for all waste types except for woodwaste and "other."

The increase in the amount of tires disposed at MSW landfills as seen since 1995 (28,712 tons) is a result of some failed recycling efforts for tire pile cleanups. Recycling of tires is currently not occurring very widely in Washington. Illegal tire piles cleanups are being diverted to landfills for disposal.

Waste-to-Energy/Incineration

Six waste-to-energy facilities/incinerators statewide burned 551,006 tons of solid waste. Of that amount, 8,167 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. Approximately 163,000 tons of wood waste was also incinerated at a municipal solid waste energy-recovery facility. This amount was a direct result of ice storms in western Washington in late December 1996. The amount of solid waste incinerated statewide increased from 8% in 1996 to 11% in 1997. The highest percent 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 1997, there were five energy recovery/ incinerators that meet these criteria. All of the municipal solid waste incinerator ash (119,483 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 and Energy Recovery (as of July 1998)



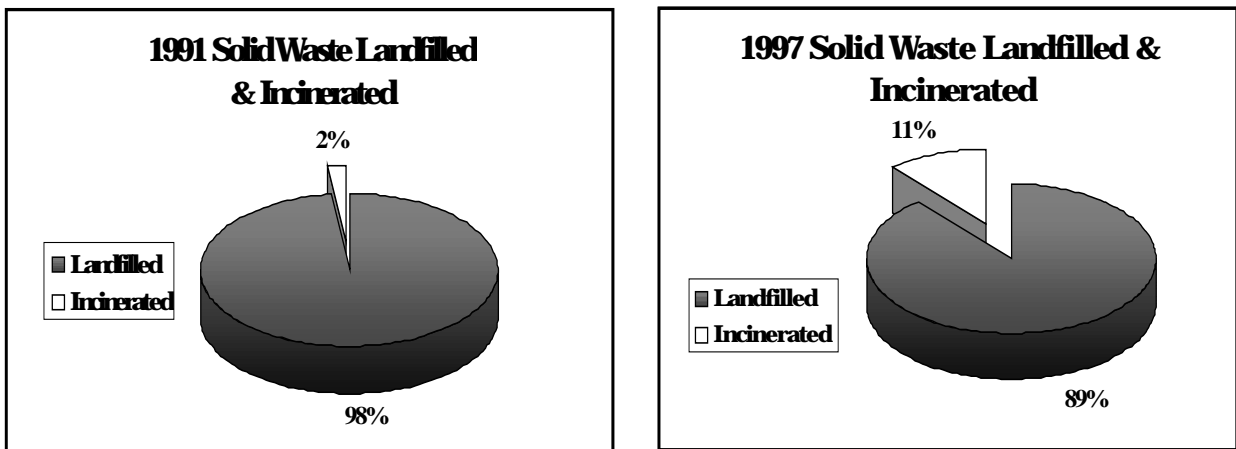
A comparison of the amount of solid waste disposed in municipal solid waste landfills and waste-to-energy facilities and incinerators in 1997 is shown in Table 6.3.

**Table 6.3
Waste Disposed in MSW Landfills
and Incinerators in 1997**

FACILITY TYPE	TONS	PERCENT (%)
MSW Landfills	4,532,918	89%
Incinerators	551,006	11%
TOTAL	5,083,924	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 was 12%, decreasing to 11% in 1997. (See Figure 6.3)

**Figure 6.3
Comparison of Solid Waste Landfilled & Incinerated
1991 and 1997**



The amount of waste incinerated will likely decrease in 1998, since one energy-recovery facility closed permanently in March 1998, and two others ceased operating in 1998, but may reopen in 1999 with new operators.

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. In the past "Other" waste included soil from a PCS treatment facility in Snohomish County which is used as backfill. This increased the total amount disposed for inert/demolition

landfills. It will no longer be included in the total of disposed waste, (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
Municipal	0	0	0	0	0	0
Demolition	750,627	168,066	157,758	103,903	133,469	262,793
Industrial	0	0	0	0	0	121
Inert	139,366	272,047	200,172	121,943	226,362	326,331
Commercial	0	0	0	0	0	0
Wood	609	120	0	167	39	0
Sludge	0	0	0	0	0	0
Asbestos	0	12	4	0	0	0
PCS	0	16,233	19,179	18,295	846	10,285
Tires	0	500	0	0	33	618
Other*	14,486	2,260	740	33,125	58,953	1
TOTAL (tons)	905,088	459,238	377,853	277,433	419,702	600,149

*In previous years, soils used as backfill had been included in the "Other" category. Those amounts have been removed from all years.

Table 6.5 shows the types and amounts of waste reported disposed at Limited Purpose landfills in 1997. There was a decrease in most categories and overall volumes with the same number of facilities reporting. (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
Municipal	0	0	0	0	0	0
Demolition	13,698	12,894	95,568	151,230	180,529	85,916
Industrial	194,689	17,680	212,008	315,930	371,496	277,419
Inert	44,572	37,274	104,419	138,577	141,759	109,174
Commercial	0	25,019	0	0	0	0
Wood	94,541	156,261	86,088	58,628	22,660	14,589
Sludge	0	0	21	0	0	2,275
Asbestos	0	0	226	797	512	1,310
PCS	0	99,360	82,279	148,932	98,221	121,066
Tires	0	0	0	0	29,227	434
Other	35,615	59,259	60,642	40,797	65,675	83,600
TOTAL (tons)	383,115	407,747	642,251	874,116	910,078	695,783

Table 6.6 shows the waste types and amounts reported in 1997 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. (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 ⁴⁰	1995	1996	1997
Municipal	0	0	0	0	0	0
Demolition	57,328	20,775	0	8,600	18,780	17,718
Industrial	0	0	0	0	0	0
Inert	0	0	0	0	0	0
Commercial	0	0	0	0	0	0
Wood	122,381	96,708	93,310	105,080	81,886	69,498
Sludge	0	0	0	0	0	0
Asbestos	0	0	0	0	0	0
PCS	0	0	0	0	0	0
Tires	0	0	0	0	0	0
Other	1,785	4,614	3,213	2,079	2,031	8,109
TOTAL (tons)	181,494	122,097	96,523	115,759	102,697	95,325

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. Eleven of the 23 active MSW landfills reported receiving over 2.1 million tons of solid waste from other counties in 1997.

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 their 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 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 (four fewer than 1996⁴¹) 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. Thirteen of the 34 counties rely on Roosevelt for the majority of their MSW waste disposal and four other counties send a significant portion of their MSW to

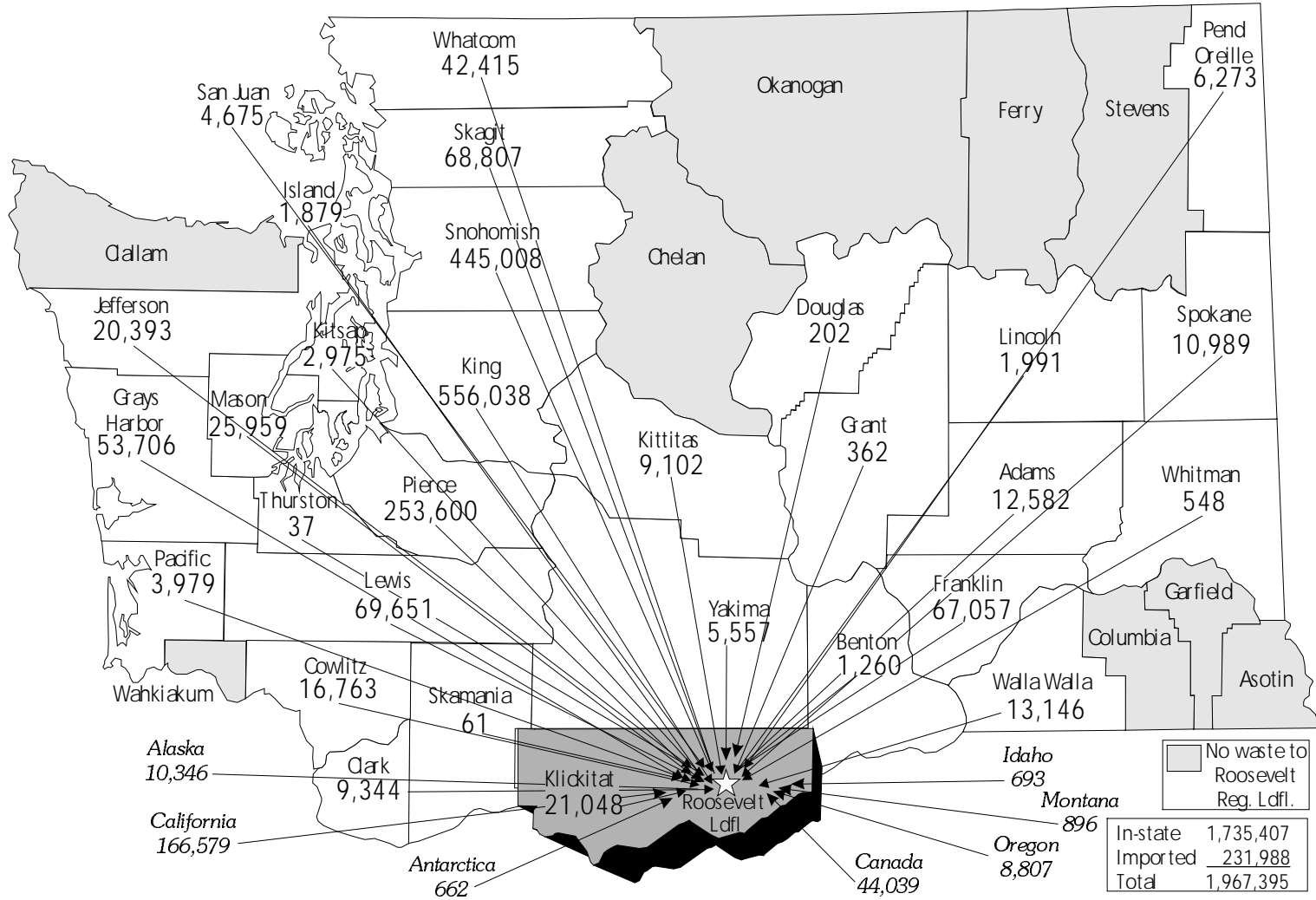
⁴⁰ Data entry error from 1994 corrected. An additional 63,898 tons of woodwaste waste disposed in 1994.

⁴¹ The four counties, Okanogan, Chelan, Columbia, and Garfield sent minimal amounts of waste in 1996.

Roosevelt. Four counties and the City of Seattle send the majority of their MSW waste and two other counties send a significant portion of their MSW waste to Oregon facilities.

In addition to waste movement to MSW landfills, five of the waste-to-energy facilities received 102,294 tons (wood, MSW and medical waste) of waste from beyond its home county and ten other types of landfills (inert/demolition and limited purpose) received 302,225 tons of waste, predominantly inert/demolition waste, from other counties.

Map B: 1997 Solid Waste to Roosevelt Regional Landfill (In Tons)



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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 1997, a total of 258,821 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. 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 (232,023 tons) went to Roosevelt Regional Landfill. The majority of that (166,579 tons) was imported from California, with the remainder from Alaska, Oregon, Canada, Idaho, Montana, and Antarctica. Roosevelt also received the majority of out-of-state demolition waste, PCS and tires.

Nez Perce County, Idaho, disposed of 23,945 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.

Table 6.7
Out-of-State Waste Disposed in Washington

TYPE OF WASTE	QUANTITY (TONS)	
	1991	1997
Municipal Solid Waste	24,475	213,322
Demolition	1,412	12,264
Petroleum Contaminated Soils	0	12,127
Industrial	0	39,517
Asbestos	0	358
Sludge	36	0
Woodwaste	208	1,413
Tires	0	7,895
Medical	na	1,300
Other	0	0
TOTAL	26,131	258,821

Under the "Guidelines for Reporting Imported Solid Waste"⁴² 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

⁴² *Guidelines for Reporting Imported Solid Waste*, Department of Ecology, Publication #94-140, September 1994.

all solid waste received from out-of-state. Roosevelt Regional Landfill is currently the only landfill falling under the reporting guidelines.

In addition to the MSW landfills, three incinerators received 3,344 tons from out-of-state. Three limited purpose landfills imported a total of 29,375 tons of waste from predominately Oregon and Idaho. The Weyerhaeuser limited purpose landfill in Cowlitz County received most of this waste (25,441 tons), waste resulting from their other wood processing operations in Oregon.

Waste Exported from the State

Another aspect of solid waste movement is the amount exported from Washington to another state for disposal. In 1997, a total of 975,356 tons of waste generated in Washington was disposed in Oregon landfills, an increase from 705,608 tons in 1992, but a slight decrease from 1996 (989,123 tons). 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 (455,934 tons, mostly MSW), Benton County, Clark County, Island County, Pacific County, Pierce County, San Juan County, Snohomish 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	
	1996	1997	1996	1997*
Municipal Solid Waste	203,180	213,322	778,107	785,741
Demolition	9,904	12,264	137,314	94,905
Petroleum Contaminated Soils	13,706	12,127	29,574	39,112
Asbestos	422	39,517	2,564	5,440
Industrial	39,272	358	20,949	50,158
Woodwaste	71	0	0	0
Sludge	14	1,413	7,062	0
Tires	7,605	7,895	0	0
Medical Waste	na	1,300	5,209	0
Other	941	0	8,394	0
TOTAL	275,115	258,821	989,173	975,356

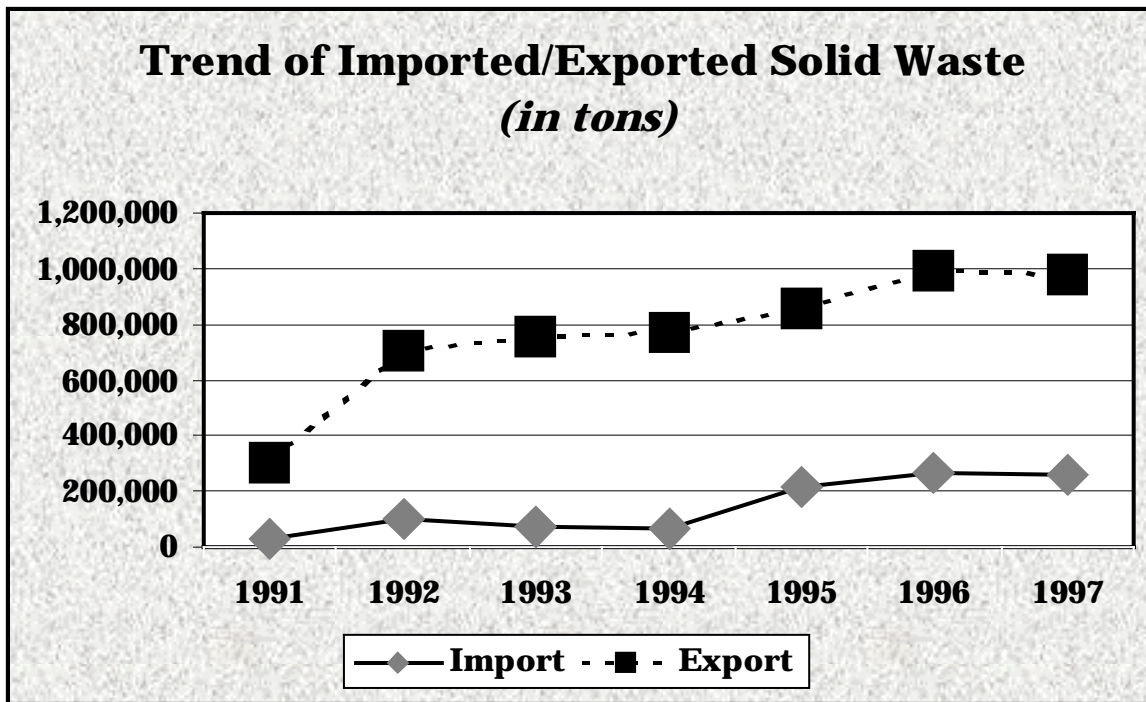
*Waste previously classified as “sludge” and “other” is included in “Industrial” in 1997 totals.

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 decrease slightly in 1997. Still, about three and a half times as much waste is exported to Oregon's two landfills, Columbia Ridge 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.

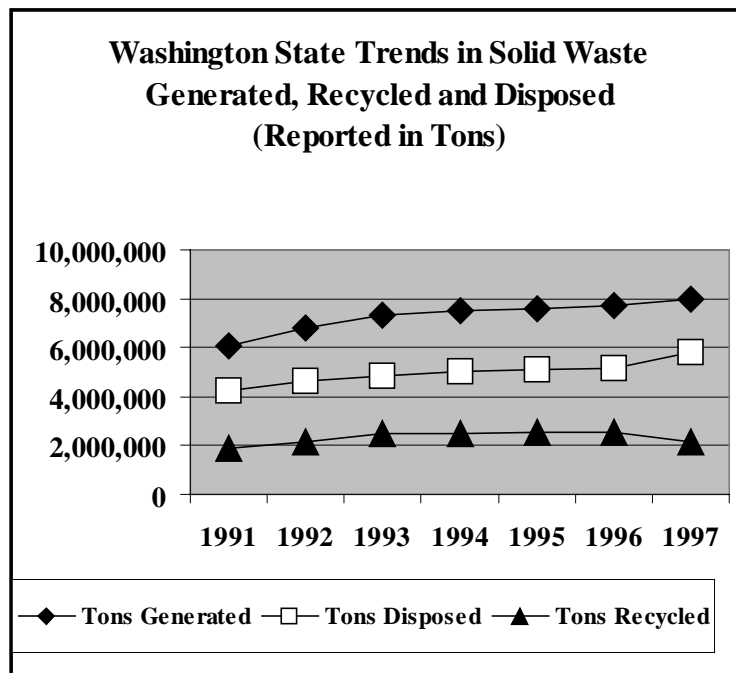
Waste Generated by Washington Citizens for Disposal at MSW Facilities

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 identified⁴³). 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.

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



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/day) decreased from the 1994 level (0.95 tons/person/day). In 1997, the per capita disposal rate increased to 1.03 tons/person/day. 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.

⁴³ 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.

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

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. (See Chapter I and Chapter V for further discussion of the changes.)

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

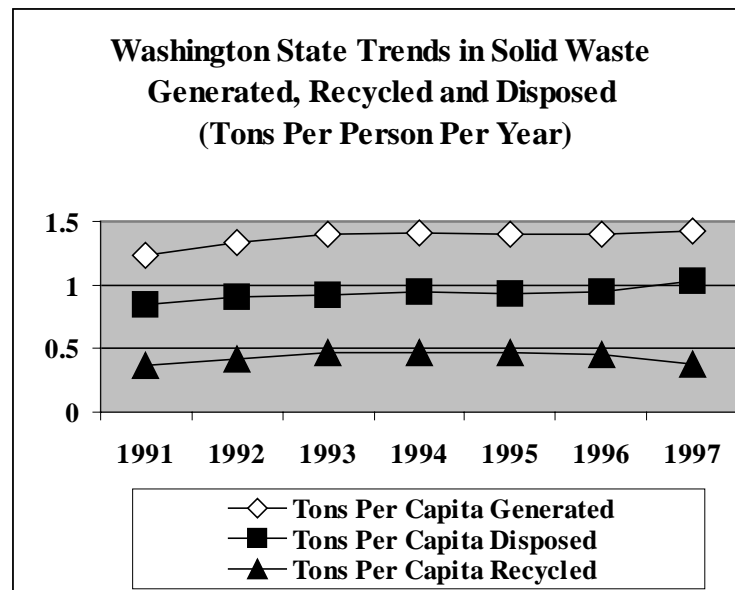


Table 6.10
Per Capita Disposed, Recycled and Generated Numbers
(tons/person/year)

Per Capita	1991	1992	1993	1994	1995	1996	1997
Disposed ⁴⁴	0.85	0.91	0.92	0.95	0.93	0.94	1.03
Recycled	0.37	0.42	0.47	0.47	0.47	0.46	0.38
Generated	1.23	1.33	1.40	1.41	1.40	1.40	1.42

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, 6,475,181 tons of waste were disposed of in all types of landfills and incinerators in Washington in 1997 (see Table 6.11).

Table 6.11
Total Amounts of Solid Waste Disposed in Washington

DISPOSAL METHOD	AMOUNT OF WASTE (TONS)					
	1992	1993	1994	1995	1996	1997
Municipal Solid Waste Landfills	3,560,738	3,726,055	3,878,615	4,001,815	4,083,755	4,532,918
Incinerated Waste	424,387	431,928	421,626	397,588	365,464	551,006
Woodwaste Landfills	181,494	122,097	32,625	115,759	102,697	95,325
Inert/Demolition Landfills	905,088	834,238	657,614	479,638	873,195	600,149
Limited Purpose Landfills	383,115	407,747	642,251	874,116	910,078	695,783
TOTAL	5,454,822	5,522,065	5,632,731	5,868,916	6,335,189	6,475,181

⁴⁴ Disposed amounts include all waste generated from Washington disposed in MSW landfills and incinerators, both in-state and exported.

Remaining Capacity

Future Capacity at Municipal Solid Waste Landfills

There are currently 22 municipal solid waste landfills operating⁴⁵. (See Map A for the location of operating MSW landfills and incinerators.) The amount of remaining capacity for the 22 MSW landfills was determined by asking the facilities to report remaining permitted capacity, as well as the expected closure date. In 1998, the facilities estimated about 170 million tons, or 37.5 years, of capacity at the current disposal rate. In 1994, facilities reported approximately 181 million tons of remaining capacity, about 49 years of remaining capacity statewide.⁴⁶ Changes in permit conditions, landfill closures and projections of fewer expansions, and changing volumes affect remaining capacity. Of the 22 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.

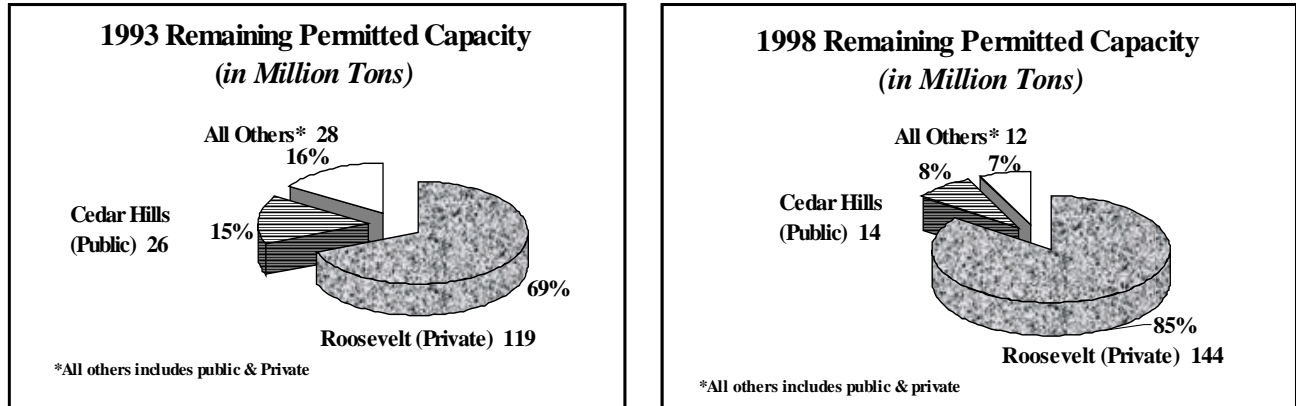
Table 6.12
Estimated Years to Closure for MSW Landfills

YEARS TO CLOSURE	% OF TOTAL REMAINING CAPACITY	NUMBER OF FACILITIES	PUBLIC	PRIVATE
Less than 5 years	2.5%	6	3	3
5 to 10 years	12.5%	4	3	1
Greater than 10 years	85%	12	10	2
TOTALS		22	16	6

⁴⁵ Kittitas County landfill stopped taking waste in 1998 and will close permanently in 1999.

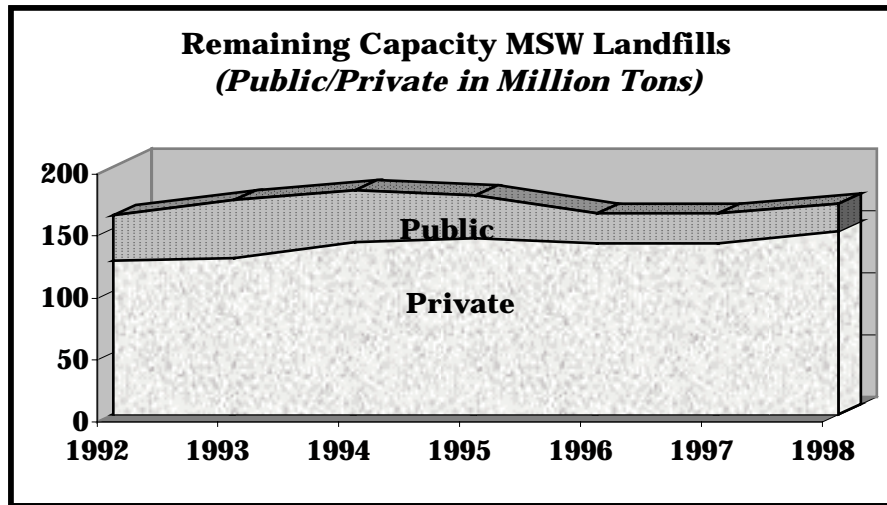
⁴⁶ *Solid Waste in Washington State - Third Annual Status Report*, Department of Ecology, Publication #94-194, December 1994.

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



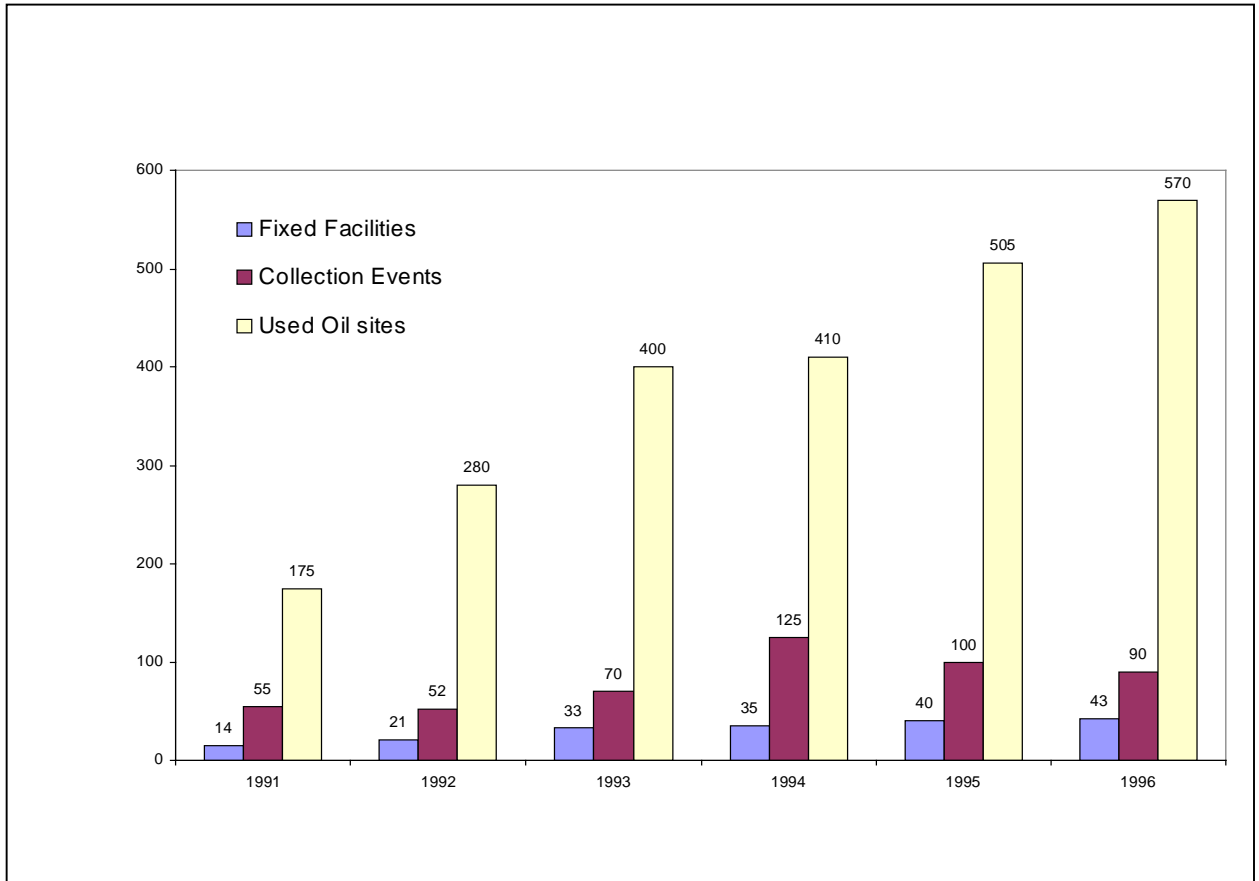
Besides the amount of remaining capacity, the availability of that capacity needs to be considered. The Roosevelt Regional Landfill is operated to accept waste from a wide variety of locations (see Map B). In 1997, the facility received some type of solid waste from 30 counties in Washington, including the majority of the solid waste from 13 counties. Waste was also received from five other states, 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 37.5 year estimate of total remaining permitted capacity is based on the amount of waste disposed in MSW landfills in 1997. 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.

The remaining permitted capacity does not include a site in Adams County that has been permitted for 90,000,000 tons. Construction start of this facility is not decided at this time.

Figure 7.1
MRW Collection Infrastructure, 1991-1996



During the early years of the MRW collection program, events and the wastemobile were the primary methods for collecting moderate risk waste, because of the limited number of fixed facilities. The decline in collection events, from 100 during 1995 to 90 events during 1996, suggests a greater reliance on a growing number of fixed facilities as the primary waste collection resource for the public. The statewide trend of MRW collection has steadily increased since 1992 when the data was first tracked.

Waste collected from conditionally exempt small quantity generators (CESQG or SQG for short) has increased from 1,493 pounds in 1994 to 562,213 pounds in 1996 (see Figure 7.2 and Table 7.1). This large increase is due mainly to a very successful program in Yakima County. Other counties, such as King and Pierce, where there are many hazardous waste contract facilities, refer CESQGs' waste to private companies. The CESQG waste collected in this manner are not reflected in the annual MRW reports received from the counties.

Figure 7.2
MRW Statewide Collection Quantities & Trends 1992-1993

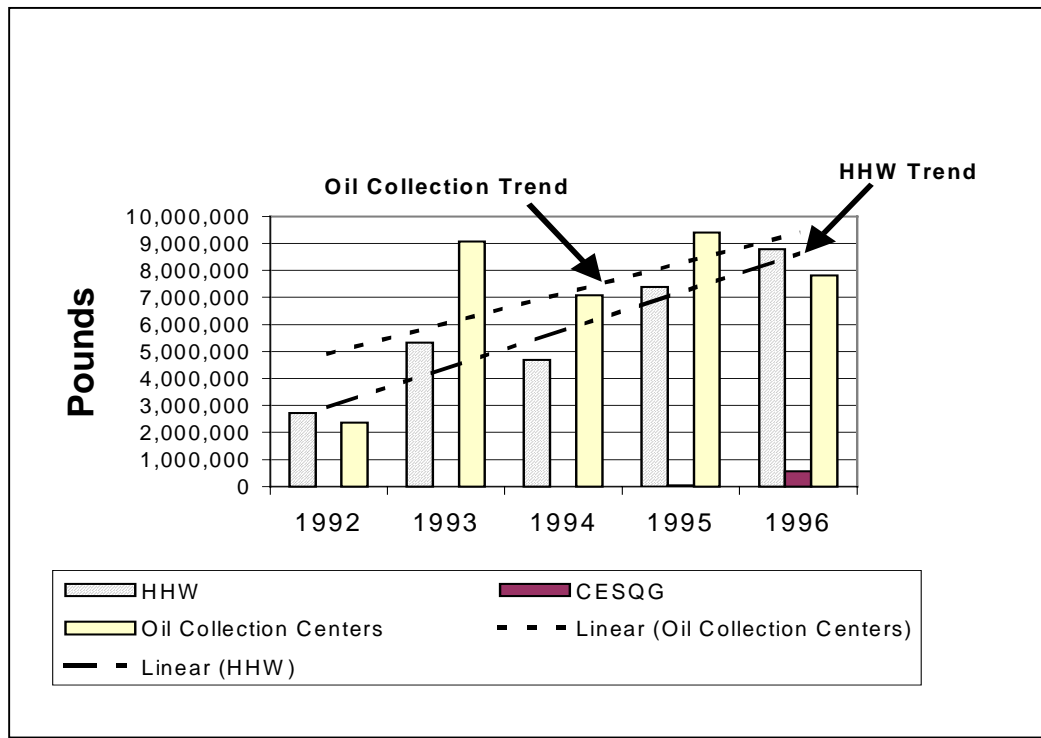


Table 7.1
Estimated MRW Collection Quantities 1992-1996

	1992	1993	1994	1995	1996
HHW	2,710,662	5,332,400	4,675,600	7,399,067	8,792,792
CESQG	0	0	1,493	49,036	562,213
Oil Collection Centers	2,373,089	9,085,100	7,074,114	9,410,210	7,827,148

Figure 7.2 shows that from 1993 through 1995 the total amount of used oil from collection centers has been greater than the amount of HHW reported. However, in 1996 the opposite occurred, with the total amount of HHW collected exceeding that of used oil. An initial estimate of used oil collection sites operating in 1997 shows a decrease in the number of sites, and it will be interesting to see if the 1997 reports will also reflect this decrease in the quantity collected.

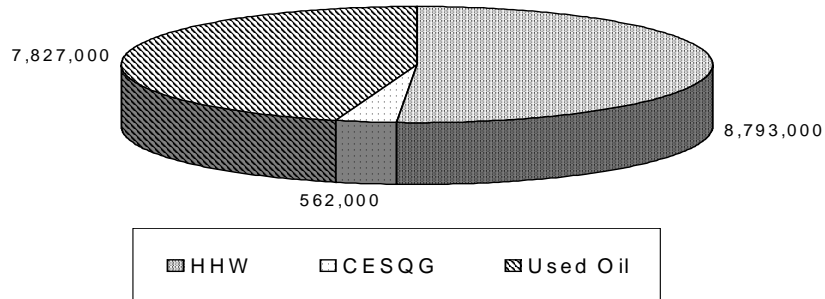
In 1996, the statewide collection of moderate risk waste from all counties totaled 17,182,000 pounds. The collection of household hazardous waste (HHW) accounted for 51.2% of the total waste collected and the collection of used oil at collection centers accounted for 45.6% (see Figure 7.3). There is also used oil collected at many fixed facilities and collection events that is included in the 51.2% HHW calculation.

186,697 household participants brought HHW to an MRW facility or event in 1996. There is approximately 1 additional household's HHW brought for every 10 participants. So the total households served statewide is estimated to be 205,367. Consequently, it is estimated that 8.66% of all Washington households delivered HHW to a locally sponsored collection point in 1996. The average participating household sent approximately 43 pounds of HHW for management in the MRW collection system. The Washington Office of Financial Management estimated that there were approximately 2,372,000 households in the state as of April 1, 1997. Typically, households that take used oil and related wastes to a used oil collection center are not counted. Therefore the actual rate of participation in the entire MRW collection system is somewhat greater. Additionally, some programs have not been tracked. These include federal military bases and some private marinas.

In 1996, there was a statewide average of 3.11 pounds of moderate risk waste per capita collection reported. Other statewide totals can be compared with this from other hazardous waste generators. For instance the total for all fully-regulated hazardous waste generators, for those that report wastes that occur every year, was 44.05 pounds per capita in 1996. So, the pounds of moderate-risk waste diverted from improper disposal was equivalent to 7% of the total hazardous waste generated by the fully-regulated generators in 1996. The trend for collection of moderate-risk waste is growing, while the trend for generation of fully-regulated hazardous waste is declining. Consequently, if current trends persist, the proportion of moderate-risk is likely to become relatively more significant in the future.

A significant change in 1996 was that CESQG collection was a significant proportion of the total waste reported. It now represents approximately 3.3% of the total MRW reported in the system. It is becoming more common for communities to collect CESQG wastes; 14 Counties did so in 1996.

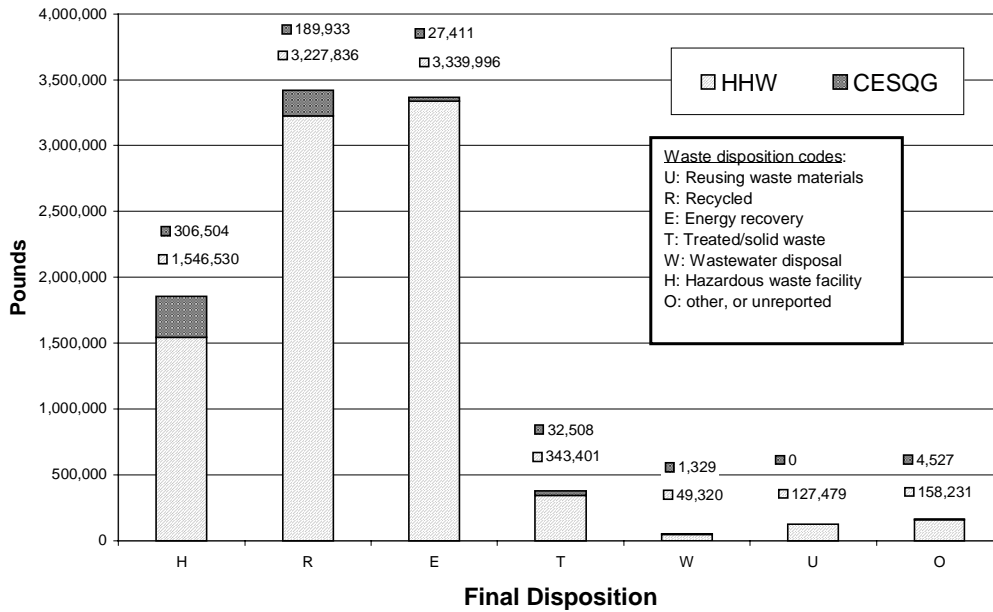
Figure 7.3
1996 MRW Collection Totals Statewide (pounds)



The intent of this waste reduction program is to divert moderate risk waste materials from entering the solid waste stream or from improper disposal methods. From a water quality perspective, this is a non-point urban source control measure. From a solid waste perspective MRW management reduces the toxicity of the solid waste stream (defined as waste reduction) and moves the management of this waste up the waste management hierarchy.

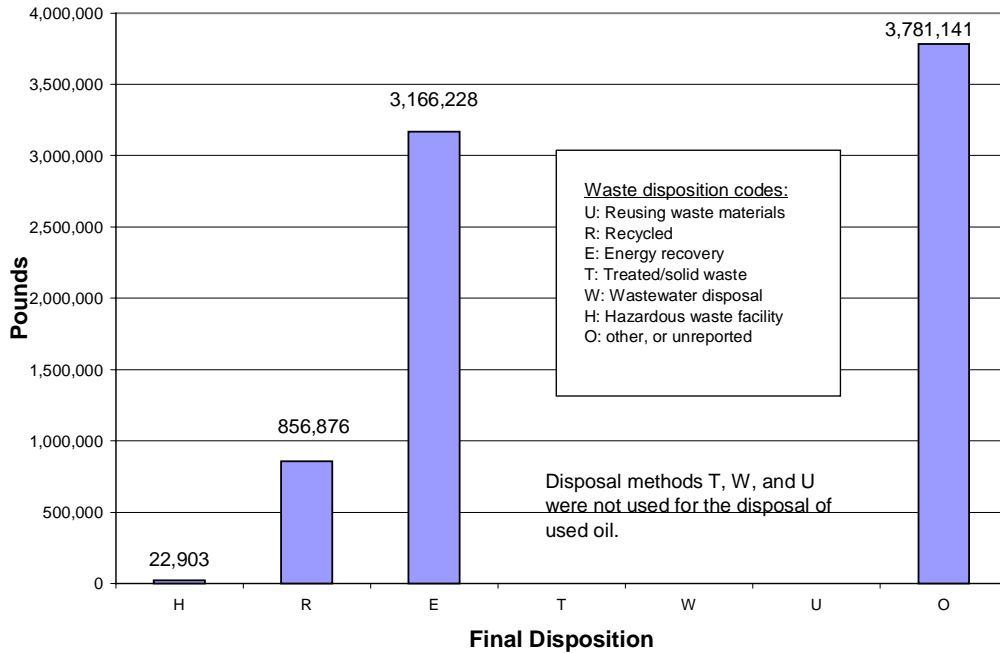
Once collected, most MRW is managed through recycling the waste or recovering potential energy from the waste. The third most common disposition is to send this MRW to a regulated hazardous waste treatment, storage and disposal facility, TSDF. Some local programs treat MRW (e.g. neutralization followed by wastewater disposal, or by encapsulation or solidification followed by landfilling). As more programs use waste exchanges it is anticipated that the reuse category will become a larger proportion of the total waste disposition for MRW. Figure 7.4 shows that the majority of collected waste is being recycled or used for the recovery of energy, often by converting oil-based compounds into energy.

Figure 7.4
Final Disposition of 1996 MRW



The final disposition for non-contaminated used oil was usually either energy recovery or recycled (see Figure 7.5). Contaminated used oil was disposed of at hazardous waste facilities. The 3,781,141 pounds of oil categorized as "other" was due to no reported disposition from some counties.

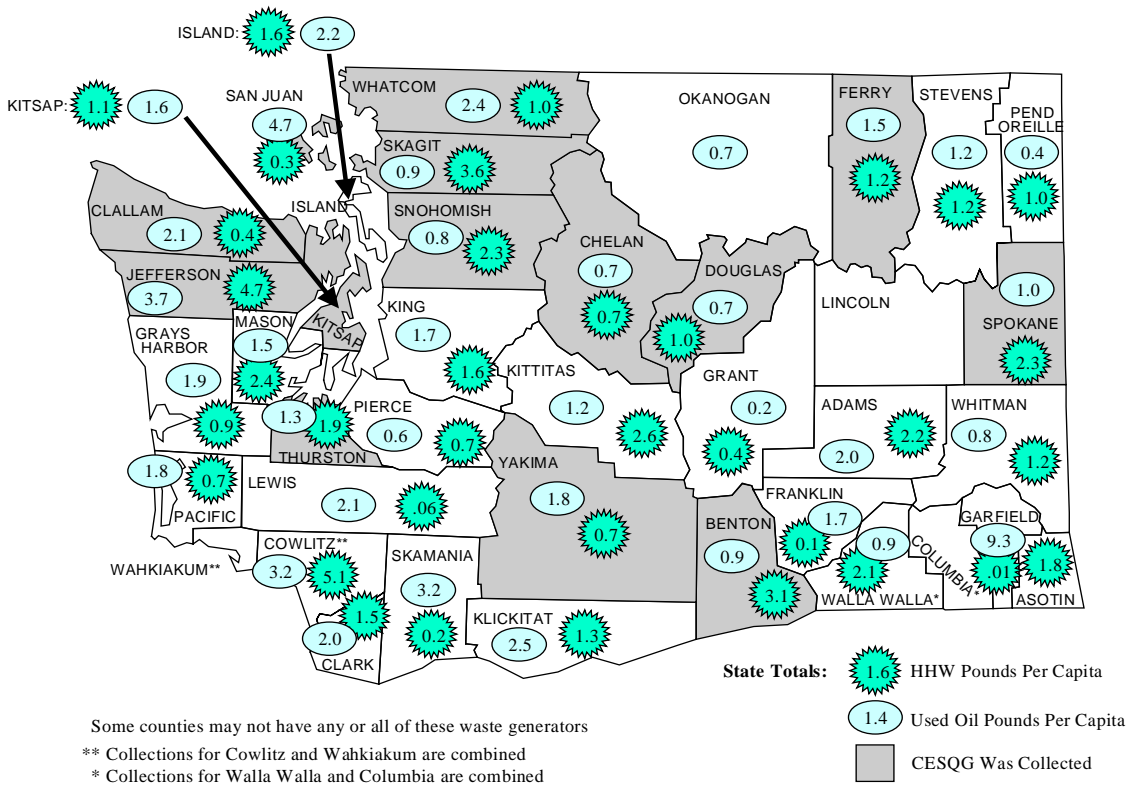
Figure 7.5
Final Disposition of 1996 Used Oil Collections



Regional comparison and analysis

Map E compares the amount of HHW and used oil collected per capita in each county based on population estimates for 1996. Counties that are shaded collected SQG waste as part of their locally run MRW collection system in 1996. Lincoln County did not hold MRW collections in 1996 but has resumed collections in 1997.

Map E -- 1996 HHW and Used Oil Collected Per Capita by County



Cowlitz County and Jefferson County had the two highest per capita collection of HHW with 5.1 and 4.7 pounds per person each, respectively. There were also several counties with a very high per capita collection of used oil. Garfield County collected 9.3 pounds of oil per capita and the next highest was, San Juan County, with 4.7 pounds per capita.

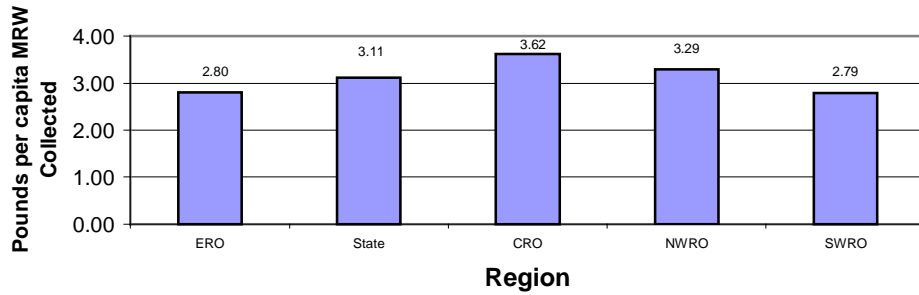
It is interesting to compare the number of counties with greater used oil collections per capita versus HHW collection per capita to the number of counties with greater HHW collections per capita than used oil per capita. The result is 17 counties have larger per capita amounts of used oil collected and the same number, 17 counties, have larger per capita amounts of HHW collected than used oil at collection centers. Two counties had equal collection rates. This difference may show to some extent the relative strengths of county programs across the state, but it also demonstrates some consistency in collecting HHW and used oil from the public statewide. Part of the differences between counties is also attributed to local demographics and variations in waste generation patterns. The information for all counties is listed in Table 7.2.

Table 7.2
Pounds Per Capital Collected

County	HHW	Used Oil
Adams	2.2	2.0
Asotin	1.8	0.0
Benton	3.1	0.9
Chelan	0.7	0.7
Clallam	0.4	2.1
Clark	1.5	2.0
Cowlitz	5.1	3.2
Douglas	1.0	0.7
Ferry	1.2	1.5
Franklin	0.1	1.7
Garfield	0.0	9.3
Grant	0.4	0.2
Grays Harbor	0.9	1.9
Island	1.6	2.2
Jefferson	4.7	3.7
King	1.6	1.7
Kitsap	1.1	1.6
Kittitas	2.6	1.2
Klickitat	1.3	2.5
Lewis	0.1	2.1
Lincoln	0.0	0.0
Mason	2.4	1.5
Okanogan	0.0	0.7
Pacific	0.7	1.8
Pend Oreille	0.9	0.4
Pierce	0.7	0.6
San Juan	0.3	4.7
Skagit	3.6	0.9
Skamania	0.2	3.2
Snohomish	2.3	0.8
Spokane	2.3	1.0
Stevens	1.2	1.2
Thurston	1.9	1.3
Walla Walla	2.1	0.9
Whatcom	1.0	2.4
Whitman	1.2	0.8
Yakima	1.0	1.8

Figure 7.6 shows a regional comparison of the total pounds of all MRW collected per capita. The Central Region (CRO) has the highest per capita rate of all four regions with pounds per capita; this is a direct result of Yakima County's strong SQG collection program.

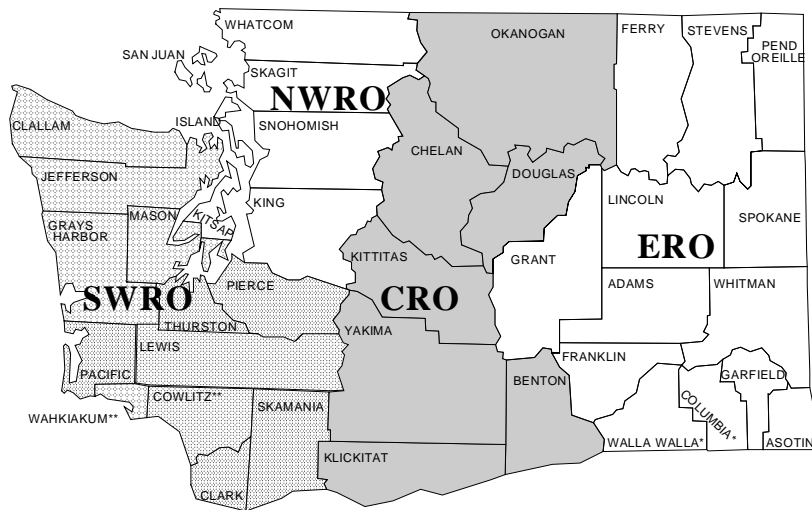
Figure 7.6
1996 Regional Comparison of Total MRW Collection Pounds per capita



ERO = Eastern, CRO = Central, NWRO = Northwest, SWRO = Southwest

The regions in Figure 7.6 are divided according to the regional offices of Ecology. Map F shows the Counties in each region.

Map F -- Counties In Ecology Regions



Central = CRO, Southwest = SWRO, Northwest = NWRO, and Eastern = ERO

Figure 7.7 reiterates the increasing trend in HHW pounds per capita collected statewide. It is anticipated that this trend will plateau as fixed facilities become established and stabilize the level of participation in the future. A recent national study indicates that on average, fixed facilities reach single digit increase per year by the 7th year of operation. This is in contrast to an average annual increase of 100% in the second year and 40-50% average annual increase in the third and fourth years of operations. Some of the older facilities in Washington are realizing this plateauing trend. However, it remains to be seen if the trend for pounds per capita of used oil will continue to be erratic, increase, or even decline. The 1997 report, which is still being collected as of the writing of this chapter, should help shed more light in this area.

Figure 7.7
Statewide HHW Collection Rates

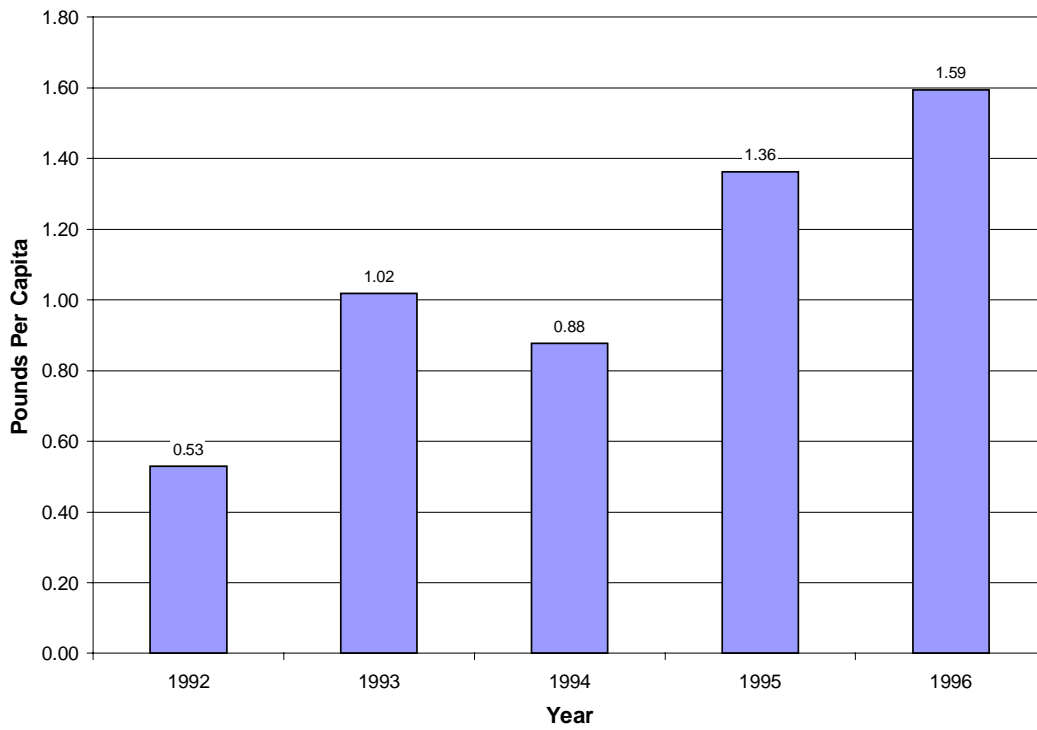


Table 7.3 shows the total wastes collected throughout the State in 1996 by MRW category and shows the disposition within each category. It is on two pages. The first page lists HHW. The second page lists CESQG waste and wastes collected at used oil collection centers.

Waste Type (Category)	Haz. Waste Disposal	Recycled/ Reused	Energy Recovery	Treated/ Landfilled	Treated/ Wastewater	Other	Totals
HHW							
Acids	14,252			3,616	23,144		41,013
Aerosols	400		1,734			1,157	3,291
Antifreeze	86,915	286,590				400	373,904
Bases	105,586			18,430	25,227		149,243
CFC/ Freon	590	1,760					2,350
Chlorinated	3,217	17,000	11,390			1,352	32,959
Crushed Cans	625	171,462	902				172,989
Dry Cell Batteries	124,797	43		5,087			129,926
Flammable Solids	12,604		840	125		7,748	21,317
Flammable Liquids	159,443		958,468	2,505			1,120,416
Flammable Gas	27,654		24,120	250			52,024
Latex Paint	565,772	611,529		249,419		84,772	1,511,491
Lead						240	240
Lead Acid Batteries		890,718					890,718
Mercury	69						69
Oil Based Paint	264,381	61,824	1,397,467	11,700		4,905	1,740,277
Oil Contaminated	2,250		117,410	2,200		2,502	124,362
Oil Filters		17,952		4,800			22,752
Oil Filters Crushed		8,160					8,160
Oil Non-		1,049,906	827,665				1,877,570
Oil with PCBs	2,684					647	3,331
Other Dangerous	1,107	39,957		1,345			42,409
Oxidizers	13,255			958	873	376	15,461
Pentachlorophenol	4,813			3,500			8,313
Personal Protect.						250	250
Pesticides	87,298	1,831		37,786		2,874	129,789
Poison	67,534			1,680		1,482	70,696
Reactives	1,270				76	211	1,557
Subtotals	1,546,514	3,158,731	3,339,996	343,401	49,320	108,915	8,546,876
						Participants	186,697

Table 7.3 -- MRW Disposition (continued)

Waste Type (Category)	Haz. Waste Disposal	Recycled/ Reused	Energy Recovery	Treated/ Landfilled	Treated/ Wastewater	Other	Totals
CESQG							
Acids	1,807			1,039		315	3,161
Aerosols	30						30
Antifreeze	32,590	24,310					56,900
Bases	32,283			1,125		315	33,723
Chlorinated	1,783						1,783
Dry Cell Batteries	1,692						1,692
Flammable Solids	280		50			32	362
Flammable Liquids	18,579		14,733			185	33,497
Flammable Gas	155					227	382
Latex Paint	9,102	2,788		1,494			13,384
Lead Acid Batteries	4,715	97,971					102,686
Mercury	27						27
Oil Based Paint	63,001	10,060	12,219			1,076	86,357
Oil Non-	123,843	54,804	409			74	179,130
Oil with PCBs	5,500						5,500
Other Dangerous	5,138			28,716	1,329	2,303	37,486
Oxidizers	127			8			135
Pesticides	2,046			109			2,155
Poison	3,807						3,807
Reactives				17			17
Subtotals	306,504	189,933	27,411	32,508	1,329	4,527	562,213
Used Oil Collection Centers							
Antifreeze	16	186,584				6,716	193,316
Oil	22,903	856,876	3,166,228			3,781,141	7,827,148
Oil Filters		10,000				42,600	52,600
Subtotals	22,919	1,053,460	3,166,228			3,830,457	8,073,064
GRAND TOTALS	1,875,938	4,402,123	6,533,635	375,909	50,649	3,943,899	17,182,152

APPENDIX A

STATE MAP WITH COUNTY NAMES



APPENDIX B

Facility Specific Disposal Data for 1997

Table B.1 1997 Total Waste Disposed in Municipal Solid Waste Landfills

Landfill Name	County	MSW	Demolition	Industrial	Inert	Commercial	Wood Waste	Sludge	Asbestos	PCS	Tires	Other	Total
Asotin County MSW	Asotin	37,468	0	0	0	0	0	0	0	0	56	0	37,524
Badger Hills Landfill	King	864,256	0	0	0	0	0	0	141	0	0	0	864,397
Bayne Road	Yakima	58,758	0	0	0	0	1,536	41,341	0	0	296	6,255	108,186
Benton County Landfill - B	Cowlitz	47,304	4,013	4,623	0	25,586	0	0	154	0	161	0	81,841
Blaine Landfill	Grant	11,733	1,200	0	1,625	525	900	0	0	0	2	0	15,985
Bozeman Landfill	Grant	45,789	0	0	0	0	0	0	29	0	91	0	45,909
Butler Lewis Landfill #5	Pierce	1,200	0	0	12,587	0	0	0	0	0	0	0	13,787
Chelan Wenatchee Reg	Douglas	114,397	0	646	0	0	0	332	51	1,714	3	1	117,144
Chimney Prairie	Thurston	106,683	23,508	0	0	0	0	0	23	0	0	0	130,214
Chimney Valley	Pierce	165,060	9,953	0	88,017	35,210	0	856	49	0	42	0	299,187
Chimney Rapids	Benton	22,530	4,640	4,336	1,540	22,596	2,804	648	0	438	0	188	59,720
Chimney County Ryegrass	Kittitas	26,380	15,773	0	0	0	0	0	0	18,063	0	0	60,216
Chimney Waste Inc	Franklin	1,380	447	0	2,924	4,131	259	324	94	1,519	17	1,288	12,383
Chimney	Spokane	1,194	1,973	0	141	0	0	0	0	0	0	2,522	5,836
Chimney Central	Okanogan	21,708	23	0	0	0	22	11	1	0	23	0	21,788
Chimney View	Kitsap	67,028	32,632	49,883	10,678	73,249	0	1,198	3,473	81,361	5	0	319,507
Chimney Angeles Sanitary	Clallam	28,744	4,000	0	0	11,300	0	0	200	1,000	0	0	45,244
Chimney Regional -MSW	Klickitat	1,169,006	287,250	101,459	0	0	37,977	13,433	4,376	340,165	13,718	0	1,967,384
Chimney County	Stevens	22,822	0	2,484	0	1,266	0	0	0	0	0	0	26,572
Chimney Road	Walla Walla	53,780	0	0	0	0	0	0	67	0	36	48	53,931
Chimney, City of	Pierce	32,886	0	0	0	0	0	0	0	0	0	0	32,886
Chimney Heights	Yakima	175,000	0	0	0	0	13,630	14,598	900	0	462	507	205,097
Chimney	King	8,180	0	0	0	0	0	0	0	0	0	0	8,180
County Count: 23		3,083,286	385,412	163,431	117,512	173,863	57,128	72,741	9,558	444,260	14,912	10,809	4,532,912

Table B. 2 1997 Total Waste Disposed Energy Recovery/Incinerators

Facility Name	County	MSW	Demolition	Wood Waste	Biomedical	Other	Total
Lewis Waste-To-Energy Plant	Pierce	5,032	0	1,213	0	27	6,272
Grand Empire Paper	Spokane	0	0	8,167	0	0	8,167
Weyerhaeuser Paper Corporation	Whatcom	4,371	496	208	0	0	5,075
WYCOMB of Washington-Incinerator	Whatcom	22,578	0	0	3,829	0	26,407
Spokane Regional Waste to Energy Facility	Spokane	302,085	0	0	0	0	302,085
Yakima RDF Steam Plant #2	Pierce	40,000	0	163,000	0	0	203,000
Facility Count: 6		374,066	496	172,588	3,829	27	551,006

Table B.3 1997 Total Waste Disposed Inert/Demolition Waste Landfills

Landfill Name	County	Demolition	Industrial	Inert Waste	Commercial	Wood Waste	Sludge	Asbestos	PCS	Tires	Special	Other	Total Waste
me Crestline Recycling	Spokane	0	0	89.904	0	0	0	0	0	0	0	0	89.904
ams Street Inert Waste	Grays Harbor	0	0	7.121	0	0	0	0	0	0	0	0	7.121
erson Demolition Site	Yakima	117.653	0	0	0	0	0	0	10.266	0	0	0	127.919
otin County I & D Landfill	Asotin	1.763	0	0	0	0	0	0	0	0	0	0	1.763
x Canyon Site	Chelan	13.027	0	4.602	0	0	0	0	0	0	0	0	17.629
sv Bee Landfill	Spokane	8.000	0	3.750	0	0	0	0	0	0	0	0	11.750
entral Pre-Mix Site	Spokane	0	0	85.219	0	0	0	0	0	0	0	0	85.219
entralia Mining CDL	Lewis	0	0	3	0	0	0	0	0	570	0	0	573
ester Landfill	Spokane	33.395	0	3.566	0	0	0	0	0	0	0	0	36.961
ounty Construction Recyclers.	Whatcom	14.852	0	0	0	0	0	0	0	0	0	0	14.852
upeville Demolition LF	Island	2.295	121	0	0	0	0	0	0	0	0	0	2.416
SR Associated	Snohomish	49.121	0	44.293	0	0	0	0	19	0	0	0	93.433
lion Inert/Demo Site	Chelan	2.205	0	0	0	0	0	0	0	0	0	0	2.205
ran Landfill	Pierce	0	0	85.168	0	0	0	0	0	0	0	0	85.168
urfield County Landfill	Garfield	105	0	0	0	0	0	0	0	48	0	1	154
lian Island Landfill	Jefferson	618	0	0	0	0	0	0	0	0	0	0	618
Chord Landfill	Pierce	68	0	2.705	0	0	0	0	0	0	0	0	2.773
e Asphalt Paving Inc	Whitman	6.000	0	0	0	0	0	0	0	0	0	0	6.000
itman College Site	Spokane	13.691	0	0	0	0	0	0	0	0	0	0	13.691
Community Count: 19	TOTAL	262.793	121	326.331	0	0	0	0	10.285	618	0	1	600.149

Table B.4 1997 Total Waste Disposed Limited Purpose/Special Use Facilities

Landfill Name	County	Demolition	Industrial	Inert Wst	Wood Wst	Sludge	Asbestos	PCS	Tires	Other	Total Waste
co Products Company	Whatcom	0	0	0	0	2,275	0	2,500	0	0	4,775
yton Landfill	Mason	0	0	0	4,500	0	0	0	0	16,709	21,209
ckson - So 50th & Tyler St	Pierce	0	0	1,465	0	0	0	0	0	0	1,465
ckson -East 48th & aller Road Fill Site	Pierce	0	0	74,851	0	0	0	0	0	0	74,851
aham Road Recycling & sp	Spokane	66,668	32,527	19,388	3,280	0	1,284	109,994	434	0	233,573
alco Aluminum Corp	Whatcom	4,285	3,563	6,077	0	0	0	0	0	498	14,423
dy Island Landfill	Clark	0	0	7,393	2,776	0	0	0	0	0	10,169
wson Limited Purpose Site	Clallam	0	0	0	0	0	0	0	0	28,783	28,783
lessa Limited Purpose Site	Lincoln	0	0	0	0	0	0	0	0	0	0
rt Townsend Paper	Jefferson	0	0	0	0	0	0	0	0	4,774	4,774
yonier Inc. (Mt. Pleasant)	Clallam	100	392	0	2,795	0	0	0	0	5,864	9,151
eyerhaeuser Bio-Pond Site (osed 10/97)	Grays Harbor	0	0	0	675	0	0	0	0	0	675
eyerhaeuser Regional ndfill	Cowlitz	12,559	240,937	0	563	0	0	8,572	0	0	262,631
hitman County Landfill	Whitman	2,304	0	0	0	0	26	0	0	0	2,330
WP Ash Landfill	Stevens	0	0	0	0	0	0	0	0	26,972	26,972
city Count: 15		85,916	277,419	109,174	14,589	2,275	1,310	121,066	434	83,600	695,783

Table B.5 1997 Total Waste Disposed for Woodwaste Landfills

Facility Name	County	Demolition	Industrial	Inert Wst	Comm'l	Wood Wst	Sludge	Asbestos	PCS	Tires	Special	Other	Total Waste
Hilltop Farm Woodwaste Landfill	Whatcom	0	0	0	0	0	0	0	0	0	0	0	0
Northwest Hardwoods	Snohomish	0	0	0	0	1,200	0	0	0	0	0	0	1,200
Omak Wood Products	Okanogan	0	0	0	0	17,226	0	0	0	0	0	1,859	19,085
Pope & Talbot Landfill	Kitsap	0	0	0	0	0	0	0	0	0	0	6,250	6,250
Simpson/Matlock Landfill	Mason	0	0	0	0	16,290	0	0	0	0	0	0	16,290
Stafford Creek Woodwaste Landfill	Grays Harbor	17,718	0	0	0	30,366	0	0	0	0	0	0	48,084
Summit Landfill	Snohomish	0	0	0	0	4,416	0	0	0	0	0	0	4,416
Facility Count: 7		17,718	0	0	0	69,498	0	0	0	0	0	8,109	95,325

Table B.6 Total Waste Composted 1997

Company	County	Yard Wsst	Wood Wst	Saw-dust	Bio-solids	Vegetative	Man-ure	Post Con-sumer	Mixed MSW	Other	Total Waste
iley Compost	Snohomish	7,500	0	0	0	0	4,000	0	0	0	11,500
dar Grove Composting Co	King	178,000	2,100	0	0	12,600	0	0	0	0	192,700
eney Wstwater Treat & Reclam	Spokane	1,966	540	0	165	0	0	0	0	0	2,671
eyne Road Landfill	Yakima	0	0	0	0	0	0	0	0	0	0
wlitz County Landfill-B	Cowlitz	1,500	0	0	1,300.00	0	0	0	0	0	2,800
kstra Composting Facility	Skagit	1,745	0	0	0	0	0	0	0	1,500	3,245
ocycle Inc	Spokane	10,554	2,538	0	0	0	0	0	0	0	13,092
e Mountain Farms, Inc	Yakima	0	0	0	0	0	0	0	0	0	0
OCO	King	0	0	15,000	2,400	0	0	0	0	0	17,400
wks Prairie Landfill	Thurston	8,125.00	0	0	0	0	0	0	0	0	8,125
Q Compost Facility	Skagit	240	0	0	0	0	0	0	0	0	240
coln Composting Facility	Yakima	200	0	0	0	0	2,000	0	0	5,500	7,700
yd's Compost Facility	King	11,590	2,135	0	0	602	0	0	0	197	14,526
ler Creek Compost Facility	King	0	0	0	48	0	0	0	0	628	676
nroe, City of WWTP	Snohomish	0	0	0	0	0	0	0	0	0	0
cific Topsoils	Snohomish	31,416	23,059	0	0	0	8,411	0	0	0	62,886
oenix Organic YW Composting	Snohomish	4,700	100	0	0	0	0	0	0	0	4,800
erice County Compost	Pierce	41,7280	0	0	0	0	0	0	0	1,339	43,067
rt Angeles Sanitary Landfill	Clallam	3,500	500	0	1,600	0	0	0	0	0	5,600
COMP of Washington	Whatcom	4,510	0	0	0	0	0	0	1,341	0	5,851
agit Soils	Skagit	0	0	0	0	0	0	0	0	0	0
il Life Systems, Inc	Walla Walla	0	0	0	0	0	7,809	0	0	45,809	53,618
okane Regional Compost	Spokane	23,294	0	0	0	0	0	0	0	0	23,294
nland Bark & Topsoils	Skagit	0	0	0	0	0	0	0	0	0	0
m's Organic Topsoil	Kitsap	0	0	0	0	0	0	0	0	0	0
ashington State U/Pullman	Whitman	68	0	0	0	31	8,825	125	0	1,660	10,710
ility Count: 26		330,636	30,972	15,000	5,513	13,233	31,045	125	1,341	56,633	484,502

