

Other Seattle Solid Waste
Programs



5



Julia Haack

Tracks 2, 2009

Latex paint on salvaged wood

54 x 44 x 3 inches

Contents

Chapter 5 Other Seattle Solid Waste Programs..... 3

5.1	Construction and Demolition Debris.....	3
5.1.1	Recommendations from 1998 Plan and 2004 Amendment.....	4
5.1.2	Planning Issues.....	4
5.1.3	Current Programs and Practices	16
5.1.4	Alternatives and Recommendations	19
5.1.5	Monitoring and Performance Measurement.....	23
5.2	Historic Landfills.....	24
5.2.1	Recommendations from 1998 Plan and 2004 Amendment.....	25
5.2.2	Planning Issues.....	26
5.2.3	Current Programs.....	26
5.2.4	Alternatives and Recommendations	26
5.2.5	Monitoring and Performance Measurement.....	27
5.3	Clean City Programs	27
5.3.1	Recommendations from 1998 Plan and 2004 Amendment.....	27
5.3.2	Planning Issues.....	27
5.3.3	Current Programs and Practices	28
5.3.4	Alternatives and Recommendations	33
5.3.5	Monitoring and Performance Measurement.....	34
5.4	Moderate Risk Waste	34
5.4.1	Recommendations from 1998 Plan and 2004 Amendments.....	35
5.4.2	Planning Issues.....	35
5.4.3	Current Programs and Practice.....	35
5.4.4	Alternatives and Recommendations	36
5.4.5	Monitoring and Performance Measurement.....	37
5.5	Special Wastes	37
5.5.1	Recommendations from 1998 Plan and 2004 Amendment.....	37
5.5.2	Planning Issues.....	37
5.5.3	Current Programs and Practices	37
5.5.4	Alternatives and Recommendations	39
5.5.5	Monitoring and Performance Measurement.....	39

List of Figures

Figure 5-1	Flow of Seattle-Generated C&D Materials.....	6
Figure 5-2	Overlap of MSW and C&D Generation in Seattle in 2007 and 2010.....	9
Figure 5-3	C&D Generation in Seattle in 2010 All Sources.....	10
Figure 5-4	C&D Recycling and Disposal Tons 2007 – 2010.....	11
Figure 5-5	C&D Recycling Rates without Concrete in 2007 – 2010.....	12

Chapter 5

Other Seattle Solid Waste Programs

Figure 5-6 C&D Disposed Tons via Private Stations and Intermodals in Seattle 2000 – 2010*	12
Figure 5-7 Number of DPD Permits issued by C&D Sector.....	13
Figure 5-8 Composition of C&D Disposed at Private Stations.....	14

List of Tables

Table 5-1 C&D Generation in Seattle 2007 – 2010.....	11
Table 5-2 C&D Recovery Rates by Material in 2010.....	15
Table 5-3 C&D Recycling New Program Evaluations for Seattle	20
Table 5-4 Levels of Facility Certification in Seattle C&D Program Options	20
Table 5-5 Seattle C&D Material Ban Schedule	23
Table 5-6 Six-year Budget to Maintain and Monitor Historic Landfills in Seattle	24
Table 5-7 Special Waste Programs in Seattle	38

Chapter 5 OTHER SEATTLE SOLID WASTE PROGRAMS

This chapter describes all the other solid waste-related programs run by the City of Seattle. The materials involved in these programs are not defined as municipal solid waste (MSW). Construction and demolition debris comprises the major portion of these materials. This chapter also discusses historic landfill management, programs that address street-side litter and illegal dumping, special wastes, and management of moderate risk waste. SPU's solid waste management team is also responsible for abating graffiti on public property, which is funded separately from solid waste functions.

5.1 CONSTRUCTION AND DEMOLITION DEBRIS

Construction and demolition debris (C&D) is a large portion of all Seattle's waste materials. Construction and demolition projects generate C&D materials. The materials include concrete, asphalt paving, aggregates, wood waste, structural metals, asphalt composition roofing, gypsum wallboard, insulation and other construction materials.

The materials SPU counts as C&D are not handled through the MSW system. However, some C&D-type materials do enter the MSW system. C&D waste generation is considerably more variable compared with MSW and is highly sensitive to economic upswings and downturns.

In the past, C&D handlers delivered materials to separate C&D landfills for disposal. Now most Seattle C&D is disposed in the large regional landfills in eastern Washington and Oregon (which also accept MSW).



5.1.1 Recommendations from 1998 Plan and 2004 Amendment

The 2004 Plan Amendment included neither specific goals nor objectives for C&D. The major reason was difficulty in tracking and measuring the amount of C&D handled outside Seattle's MSW system. However, the 2004 Amendment did propose pursuing measurement strategies and developing a recycling goal for C&D.

Since then, SPU carried out studies on waste generation, collection practices, recycling levels, processing facility capacity, and end-markets for C&D materials. The 2007 C&D Waste Stream Composition Study focused on types of C&D from sectors such as new construction, demolition, and remodeling. A major 2008 study researched the capacity of Seattle area C&D processing facilities. SPU also receives monthly data from the private transfer stations on amount of disposed C&D.

In 2007, SPU began tracking C&D amounts delivered to recycling facilities. We gather this information through a requirement on all recyclers doing business in Seattle. Recycling businesses must report their recycling tonnage directly to the city each year. However, many C&D recycling sites lie outside Seattle's city limits and are not required to report. Tracking C&D tonnage delivered for processing outside the city remains a challenge.

5.1.2 Planning Issues

The 2007 Seattle City Council Resolution 30990 (the *Zero Waste Resolution*) included a number of actions to reduce the amount of C&D waste disposed of in landfills. These included:

- Modifying the City of Seattle's Department of Planning and Development (DPD) demolition permit to allow salvage and deconstruction to more easily occur
- Examining public contracting, financial incentives or other assistance to develop more C&D processing capacity
- Assessing types of financial mechanisms that would create more incentives for more reuse or reprocessing of C&D
- Evaluating new city initiatives such as a deposit system, mandatory recycling or disposal bans to increase C&D recycling
- Evaluating if there should be a ban on the disposal of C&D recyclables at city transfer stations
- Market development, focusing on tear-off asphalt shingles

SPU and DPD carried out many of these action items. Among them were a new permit for deconstruction, and partnering with King County on new recycling market initiatives for tear-off asphalt shingles and carpet. SPU produced the facility processing capacity study in 2008, which recommended that the city proceed with processing facility certification.

A thorough appraisal of new recycling programs ruled out a deposit system. The city's DPD cannot legally charge more for permit fees than the cost of service. While SPU could implement a deposit system, it would have higher administrative costs than other approaches. Other possible approaches include mandatory recycling or banning C&D recyclables from landfill disposal.

Current planning issues and long-term goals for C&D group into four focus areas. Each focus area includes possible strategies for moving forward toward the goals.

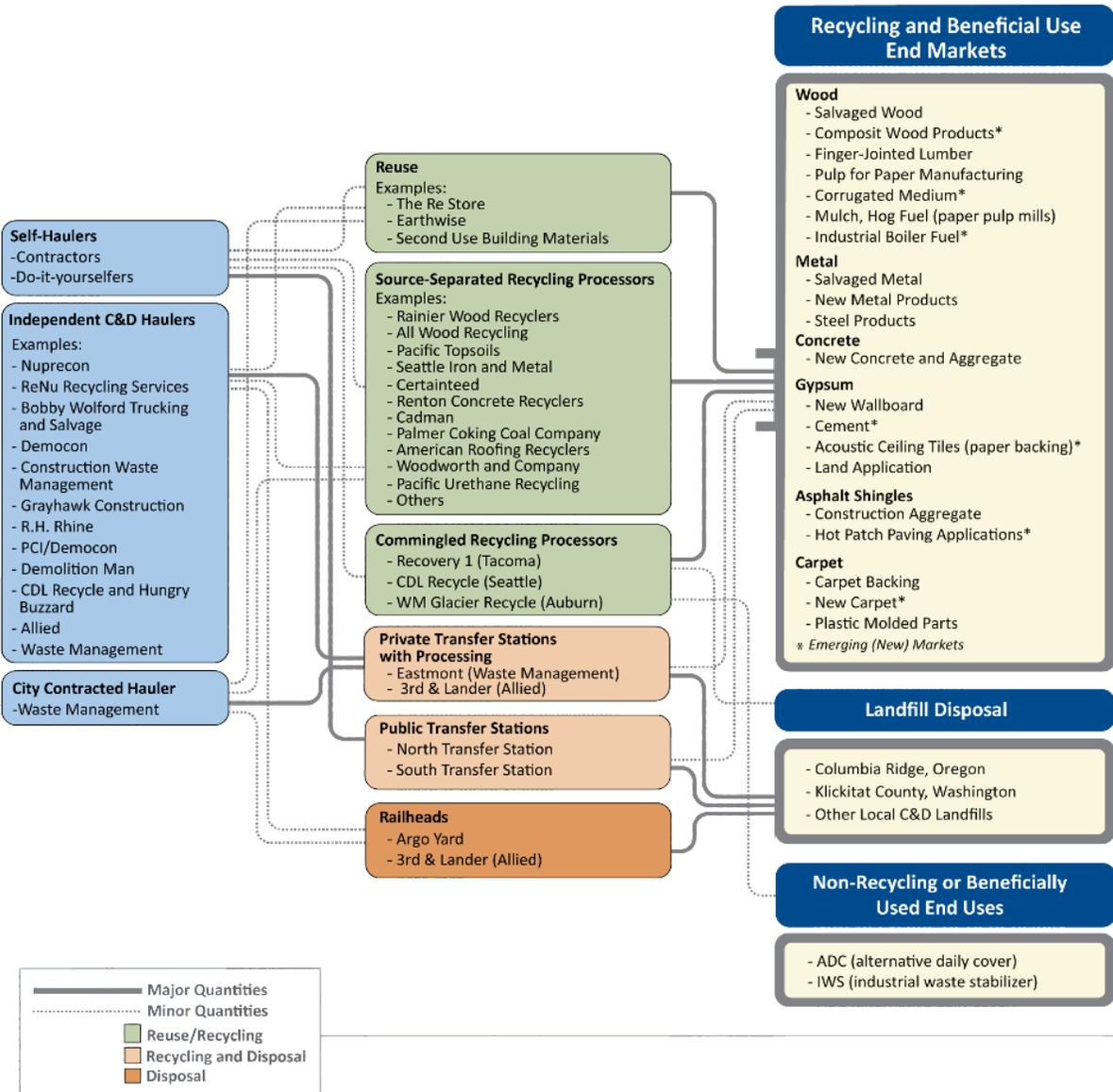
1. **Goal Setting** — What are appropriate and achievable recovery goals for C&D?
 - Develop an overall Seattle recovery goal for C&D delivered to private transfer stations for disposal
 - Set specific recovery goal targets for various C&D sectors such as new construction, demolition, and remodeling
2. **Program Strategy** — Which program strategies will lead to the most recovery at least cost to Seattle and the C&D industry?
 - Evaluate the costs and benefits of potential programs to increase recycling. These could include mandated recycling, and disposal bans on readily recyclable materials in jobsite containers. The City of Seattle could also mandate that construction wastes be delivered to transfer stations for disposal.
 - Ensure that recycling containers at C&D jobsites contain less than 10% non-recyclable materials
 - Adopt a suite of C&D recycling programs for 1) DPD building permit applicants who do not participate in Green Building programs, and 2) city transfer station customers who do small-scale home remodeling
 - Develop a process to "certify" C&D processing facilities in the region that meet Seattle's minimum recovery requirements. Direct contractors to these facilities in order to meet possible future recycling requirements and goals
 - Expand local recycling capacity in Seattle to decrease contractor travel time and vehicle greenhouse gas emissions
 - Expand the recovery of marketable C&D delivered to city transfer stations
 - Encourage deconstruction techniques for building removal rather than demolition
3. **End-Market Strategies** — How can Seattle promote robust markets for recovered materials?
 - Increase the supply of structural lumber and other salvageable commodities for reuse instead of disposal
 - Increase the supply of clean wood for recycling end-markets such as wood composite product or pulp and paper manufacturing, rather than diverting it to a lower value "beneficial use" end-markets such as industrial boiler fuel
 - Expand local processing capacity and end markets for certain C&D commodities that currently lack large, local markets, such as scrap carpet and tear-off asphalt shingles
 - Develop end-markets for difficult to recycle materials. Such materials often have a potentially hazardous attribute like lead-based paint on gypsum wallboard.
4. **Evaluation** — How can we tell if adopted strategies are working?
 - Improve reporting of how much C&D was recycled, "beneficially used " and disposed

Chapter 5
Other Seattle Solid Waste Programs

Opportunities to implement programs lie at various points in C&D generation, collection, processing, and disposal (Figure 5-1). The following sections describe this flow (or system).

See this chapter’s discussion of [Rule on End-Markets](#) for what the City of Seattle classifies as acceptable recycling and beneficial use end-markets.

Figure 5-1
Flow of Seattle-Generated C&D Materials



Note: Figure 5.1 is conceptual. The list of companies is not inclusive and shifts over time.

Who Collects C&D and where does it go?

Collection

Many types of collectors (or haulers) transport C&D materials. They deliver the C&D to a mix of private and public transfer and processing facilities, both inside and outside of Seattle. The term *self-haul* is used when the generator and collector of the waste material is the same person or entity. C&D collectors include:

- **Homeowners** taking remodeling debris to Seattle transfer stations.
- **C&D contractors** who do home or office remodeling and haul C&D debris to a city or private transfer station in Seattle. Waste Management and Republic Waste Services (formerly Allied Waste Services) operate the two private stations.
- **Large Independent C&D haulers** offering hauling services to construction or demolition contractors. Typically, these firms deliver C&D to private recycling facilities, often located outside Seattle. Because they receive a fee for their hauling services, these firms are not considered self-haulers. They cannot transport Seattle-generated C&D waste for disposal. They can only transport recycling.
- **City-contracted collector** of all C&D for disposal. Only the one firm holding the City of Seattle contract for this service may haul C&D bound for disposal. The city awarded this contract to Waste Management in 2007. They are the only company that can charge a fee for transporting C&D from any construction site within the city limits if the C&D is going to disposal.

C&D recyclables can be collected in either source-separated (separated onsite) or commingled (mixed materials) recycling containers. An example of *source-separated* recycling is a drop box for just clean wood waste. An example of *commingled* recycling is



a drop box for mixed recyclables such as wood waste, metal, wallboard, and packaging materials. New construction sites often use source-separated recycling containers since materials are easily set apart at each stage of building construction. Sites with limited space often use commingled boxes. By law, recycling drop boxes may contain no more than 10% non-recyclable C&D.

Usually, with demolition, some marketable materials (doors, windows, or flooring) are salvaged before the structure is removed. Demolition contractors often order a large, 100-cubic-yard intermodal container delivered to the jobsite. These wastes go directly to a railhead for landfill disposal. Sometimes structures contain a lot of potentially hazardous and difficult to recycle material. Recycling can be a major challenge when remodeling or demolishing such structures.

Processing

A wide variety of facilities receives and processes C&D materials in the Seattle area:

- **Reuse** — Businesses for fixtures, structural lumber, metal pieces and other salvageable materials. See Chapter 3, Waste Prevention, for more detail.
- **Source-Separated** — Recycling facilities for single commodities separated at the job site, such as clean wood waste, concrete, gypsum scrap, metal or tear-off asphalt shingles. Source-separated facilities account for much of the C&D recycling in the region.
 - Often located outside Seattle and have
 - Usually very low tip fees compared to disposal
 - Very high recovery rates, around 95%
- **Commingled** — Recycling facilities for a various commingled commodities such as wood waste, metal, gypsum scrap, carpet, packaging materials and aggregates.
 - Three permitted, commingled C&D processing facilities operate in the Seattle-Tacoma area.
 - Tip fees lower than disposal fees
 - Can recycle 80 to 85% of the primarily clean, recyclable C&D loads they receive
- **Material Recovery** — Operations at private transfer stations for mixed C&D. These facilities sort loads thought to have a high percentage of recyclable materials.
 - Charge higher tip fees due to the costs of manual or mechanical sorting
 - Recovery rates vary greatly, depending on the recyclability of materials in a load
 - Loads of relatively clean materials can reach 65% recovery
- **Drop Boxes** — Public transfer stations can offer drop boxes for source-separated materials such as clean wood waste.
 - Usually a fee for recycling clean wood since the city must transport it to a processing facility

Mixed C&D loads delivered to a city transfer station currently get disposed with MSW. The city transfer stations do not have a C&D sorting system.

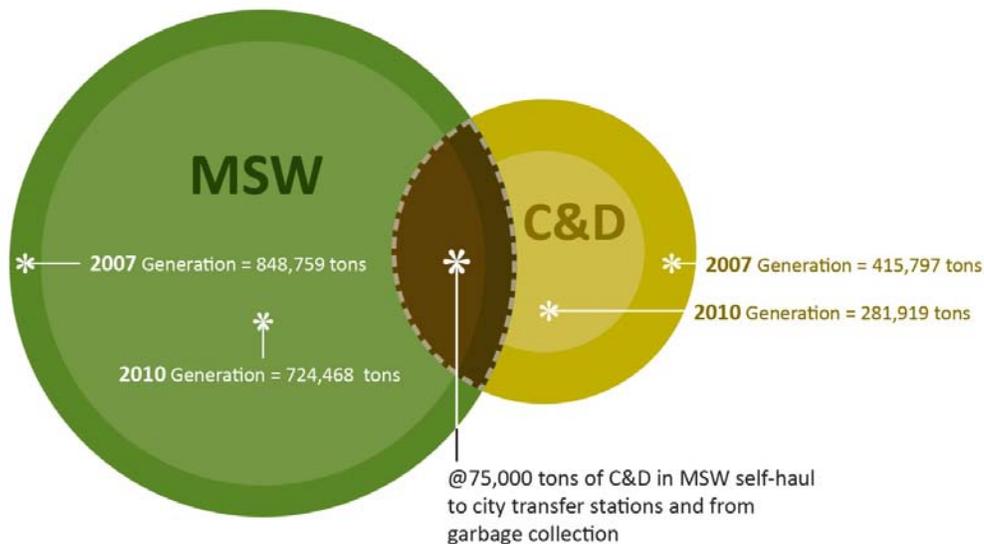
Disposal

Most non-recyclable C&D wastes in Seattle are disposed through private transfer stations. Private transfer stations typically have lower tip fees than the public stations. They are also set up to handle large, self-unloading trucks. Two railheads in Seattle accept large intermodal containers directly—mostly from demolition projects— for transport to a landfill.

C&D in MSW

Some C&D is not managed as just described. Instead, it becomes part of the MSW stream (Figure 5-2). Homeowners and small businesses deliver some C&D in their self-haul loads to the city transfer stations. C&D materials also turn up in curb or alley garbage containers set out for collection.

Figure 5-2
Overlap of MSW and C&D Generation in Seattle in 2007 and 2010



How Much C&D Does Seattle Have?

The first step in designing new programs for increasing C&D recycling is to understand how much C&D waste is generated in Seattle. This means understanding the amounts of C&D materials handled by the public and private sectors.

C&D Recycling Rate Definitions

The categories used for calculating the C&D recycling rate are essentially the same as for the MSW recycling rate.

- **Recycling** — wastes separated for recycling or reuse
- **Beneficial Use** — discards not recycled or reused, but used for some other purpose like industrial boiler fuel. Excluded from the recycling rate, counted as diverted in the diversion rate
- **Alternative Daily Cover (ADC) and Industrial Waste Stabilizer (IWS)**
ADC covers the active face of a landfill instead of soil. IWS provides structure in specialized landfills. Counted as disposal in the recycling rate.

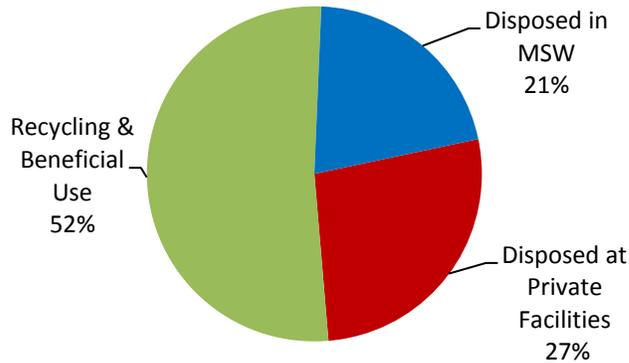
In addition to calculating the recycling rate, for C&D we calculate the "**diversion**" rate, the sum of recycling and beneficial use.

C&D Generation with MSW

Total generation consists of both recycling and disposal components.

Analysis done on 2010 tons, that included C&D from all sources including MSW, showed about half of all C&D was either recycled or beneficially used. The other half was disposed as C&D or MSW (Figure 5-3).

Figure 5-3
C&D Generation in Seattle in 2010 All Sources



In 2010, about 21% of all C&D entered the MSW system and was disposed. The remaining 79% of C&D (around 282,000 tons) went to:

- Private transfer stations and railhead intermodal facilities for landfill disposal (27%). This includes ADC and ISW produced by processing facilities.
- Recycling facilities that processed about 52% of the total 2010 tons for recycling and beneficial use end markets.

Of all C&D tons generated in 2010 (including the estimated MSW portion), the overall diversion rate for C&D was 52%, and 48% was disposed in a landfill.

C&D Generation without MSW

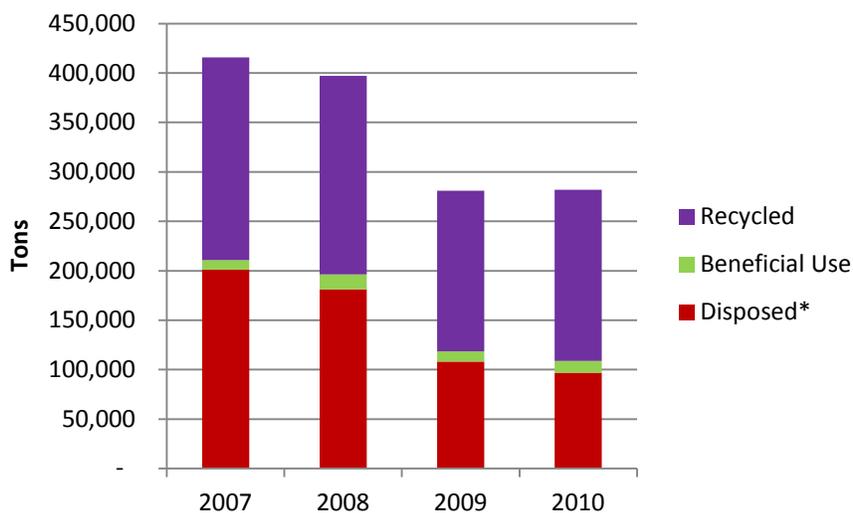
Seattle’s C&D planning focuses on the C&D stream that does not include MSW (Table 5-1). Chapter 4, Seattle’s MSW System: Managing Discards, section 4.3 addresses planning for C&D materials in MSW. The discussion from this point forward focuses on C&D without MSW. Recycling and diversion rates are much higher when MSW is excluded (Figure 5-4).

Table 5-1
C&D Generation in Seattle 2007 – 2010

Year	Total Generated	Disposed*	Recycled	Beneficial Use	Recycle Rate	Diversion Rate
2007	415,797	201,156	204,903	9,738	49.3%	51.6%
2008	396,930	181,240	200,729	14,961	50.6%	54.4%
2009	281,081	108,071	162,648	10,362	57.9%	61.6%
2010	281,919	96,946	173,109	11,864	61.4%	65.6%

*Disposed includes ADC and IWS. Recycling rate does not include ADC or IWS. Diversion rate equals recycling plus beneficial use.

Figure 5-4
C&D Recycling and Disposal Tons 2007 – 2010

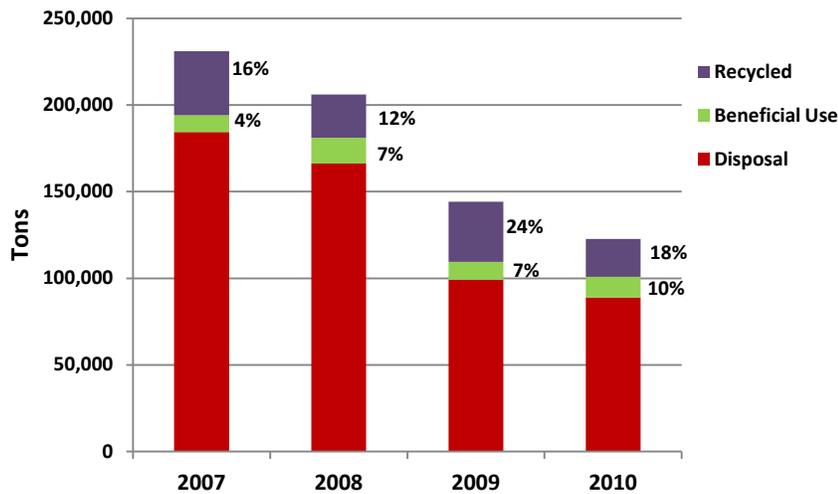


Source: City of Seattle 2007 – 2010 annual recycling report data

By far, concrete and other aggregates have the highest recycling rate of any material. In 2010, concrete and aggregates accounted for 82% of the diversion rate.

Based on 2010 analysis, after removing concrete from the recycling and disposal data, the diversion rate drops by over 75% (Figure 5-5).

**Figure 5-5
C&D Recycling Rates without Concrete in 2007 – 2010**

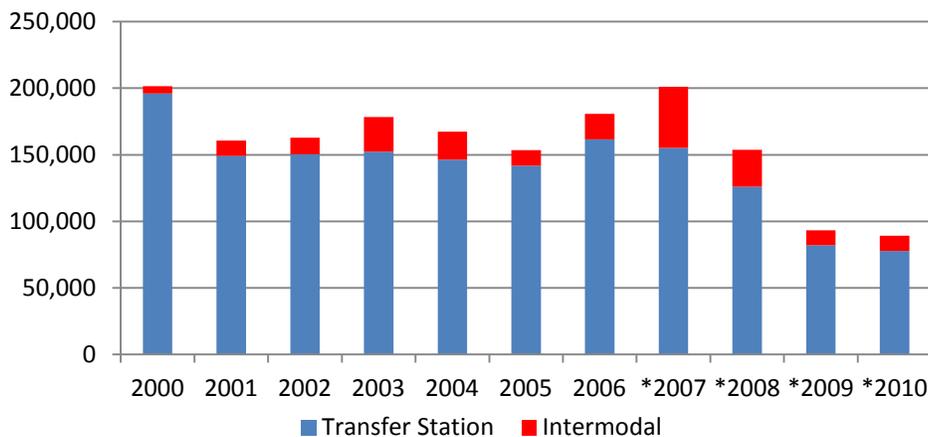


Variability of C&D Tons

A notable feature of the C&D waste stream is how greatly it varies due to changing levels of construction activity. The high point over the last decade occurred in 2000, followed by 2007, the benchmark year for many SPU studies of C&D. The year 2009 marked the low point, when disposed C&D tons dropped by more than 50% compared to 2007.

C&D amounts delivered to the private transfer stations and intermodal facilities are shown on Figure 5-6. The blue bars are loads delivered to these facilities in trucks. The red bars show disposal loads delivered directly to railheads operated by Allied and Waste Management.

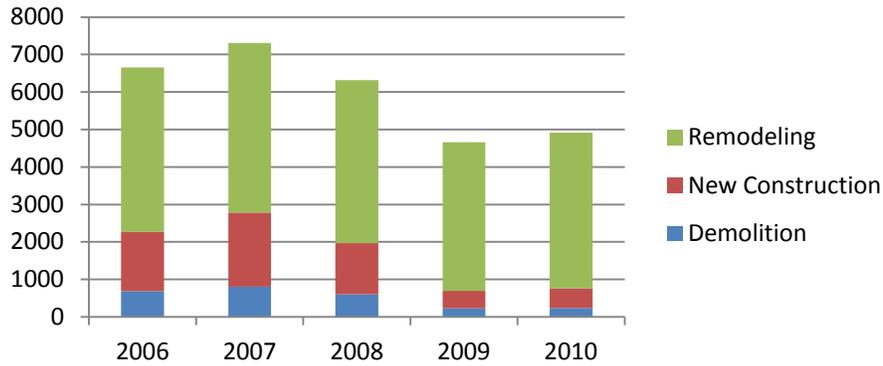
**Figure 5-6
C&D Disposed Tons via Private Stations and Intermodals in Seattle 2000 – 2010***



*2007-2010 includes Third and Lander Street intermodal tons and Argo Yard. Allied and Waste Management operate the private stations.

The drop in DPD permits over the past 3 to 4 years parallels the decreases in disposed C&D for large projects. The number of permits for new C&D projects fell dramatically from 2007 to the end of 2009. The permits for remodeling remained constant by comparison (Figure 5-7).

Figure 5-7
Number of DPD Permits issued by C&D Sector



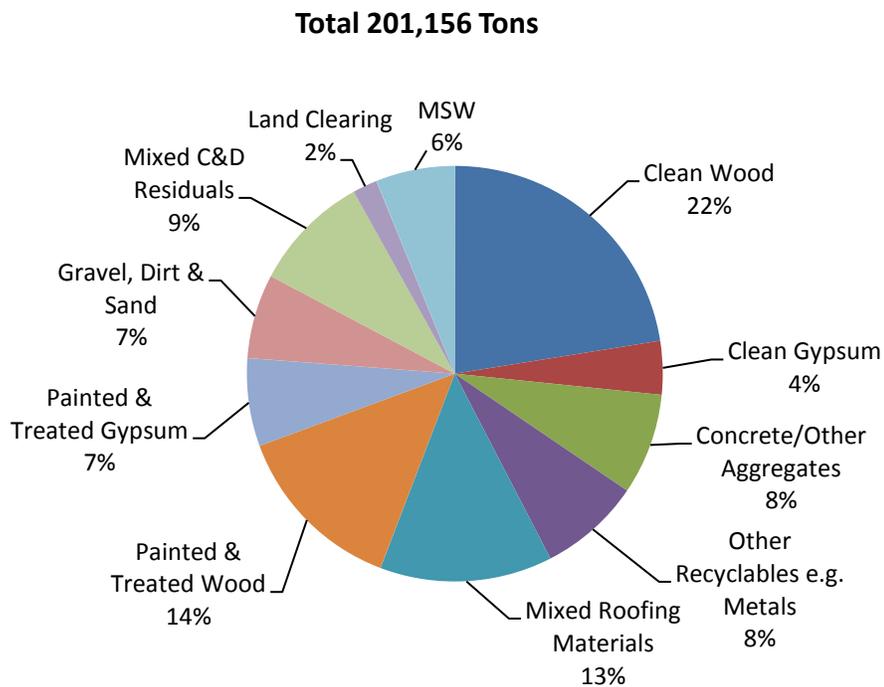
Regional economic forecasting shows a gradual rebound of construction over the next 5 years. The forecasting uses a range of variables, including Seattle and King County building permit data. Longer term forecasting expects construction projects to stay below the 2007 level.



What is in C&D Waste?

In 2007, the City of Seattle studied the composition of the C&D waste streams delivered to private transfer stations and intermodal containers operated by Republic Waste Services and Waste Management (Figure 5-8).

Figure 5-8
Composition of C&D Disposed at Private Stations



Source: City of Seattle 2007 C&D Waste Stream Composition Study

The 2007 study found that about 51.3 % of disposed C&D was readily recyclable. These materials included concrete, asphalt and other aggregates, clean wood, ferrous and non-ferrous metals, clean gypsum, land clearing debris and aggregates. Another 13%, such as tear-off asphalt shingles, was on the verge of being recyclable as local end uses emerge. Tear-off asphalt roofing shingles may soon be recyclable with more market development for using them in hot mix paving. About 35.7% (71,813 tons) of the C&D waste stream was non-recyclable. The non-recyclable portion was potentially hazardous or mixed solid waste.



How Much of C&D Recycling is Recovered?

The various commodities in disposed C&D have different recovery rates (Table 5-2).

Table 5-2
C&D Recovery Rates by Material in 2010

	Landfilled	Recycled	Beneficial Use	Recovery %
Clean Wood	21,784	15,420	9,119	44%
Treated & Painted wood	15,646	0	N/A	0%
Clean Gypsum Board	4,024	7,094	N/A	63%
Painted/Demo Gypsum	6,621	0	N/A	0%
Roofing	12,997	1,468	N/A	10%
Sand & Soil	5,300	0	N/A	0%
Concrete & Aggregates	8,049	151,230	N/A	95%
Other C&D	9,801	3,244	0	48%
Metal & Other Ferrous	3,812	4,084	N/A	51%
MSW Recyclables (carpet, plastic film, paper, land clearing debris)	6,825	carpet only 67	N/A	1%
Hazardous & Other	4,595	0	N/A	0%
ADC and IWS	13,282	N/A	N/A	N/A
Total Tons with Concrete	96,946	173,109	11,864	61.4%
Total Tons without Concrete	88,897	21,879	11,864	17.8%

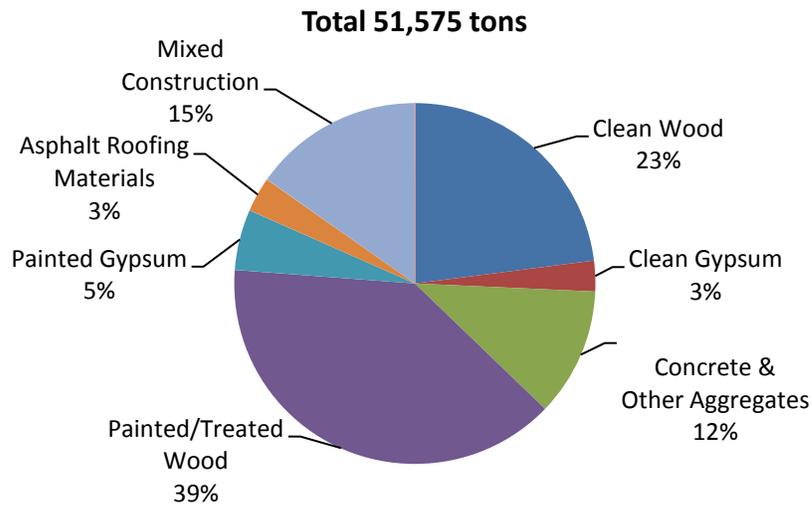
Source: City of Seattle 2010 annual recycling report data and 2010 disposal data from private transfer stations

See section 5.1.4, [Recycling Program Alternatives](#), for detail on recovery of these commodities.

C&D in MSW Self-Haul Composition

According to the 2008 composition study for the self-haul waste stream, self-haulers delivered around 51,575 tons of C&D to City of Seattle transfer stations (Figure 5-10). About 37% was readily recyclable (clean wood, clean gypsum, concrete and aggregates). Another 3%, tear-off asphalt roofing shingles, is expected to become recyclable soon.

Figure 5-10
Seattle Self-Haul C&D Waste Composition in 2008



Source: City of Seattle 2008 Self-Haul Waste Stream Composition Study

5.1.3 Current Programs and Practices

The City of Seattle has developed many programs focused on providing contractor education, technical assistance, and incentives for reducing C&D generation and disposal. In recent years, we also put major efforts into market development for C&D materials with low recovery rates. SPU does this work in coordination with King County and other public agencies.

C&D Programs Linked with Waste Prevention

Several programs important to C&D waste prevention and recycling are discussed in Chapter 3, Waste Prevention.

Green Building Programs

The City provides technical assistance for the building industry to support the following:

- U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) standards
- Master Builder's of King and Snohomish counties' local Built Green standards for residential construction
- Green Home Remodel Program

These green building programs have been a great incentive for contractors to divert construction wastes from disposal to recycling to gain credits for LEED and Built Green certification.

According to the City Green Building 2008 to 2009 Progress Report, the City of Seattle diverted about 30,600 tons of C&D materials to recycling through these projects. Under

the Built Green program, by 2009 about 568 tons of construction waste was sent to recycling.

Deconstruction Permit

Deconstruction means taking apart a structure in an orderly manner to get the most reuse and recycling. In 2008, DPD started a new demolition permit for residential housing that allows more time for salvage and deconstruction. Per the terms of the permit, applicants submit a *waste diversion plan* that DPD must approve. The plan shows how the project will meet minimum salvage and deconstruction requirements. Across 2009-2010, 10 buildings were removed through deconstruction permits.

Deconstruction Research

The city has done research on deconstruction to see how more of it can be encouraged. A series of pilots over 2007 to 2009 removed single-family houses using deconstruction techniques. Broadcasting education materials to the building community was a key aspect of the pilots. In 2009, SPU developed a business plan model for a Hybrid Deconstruction Center. Such a center would accept sections of structures for taking apart to recover materials. A Washington State Department of Ecology Coordinated Prevention Grant funded the business plan model. See Chapter 3, Waste Prevention, for more detail on the model and other sustainable building programs.

Recycling Technical Assistance for Contractors

The Resource Venture, SPU, and King County Green Tools Program websites all have information on where to recycle various types of materials. A published [King County/Seattle Recycling Directory](#) is also available. The city used to offer onsite recycling help through the Resource Venture. These contracted services ended in 2008 due to budget cuts.

Market Development

Market development works to develop local processing capacity and end-markets. Targeted C&D materials for market development include scrap carpet and asphalt shingles.

A carpet facility would separate the face fiber from the backing to recover commodities such as different types of nylon. The nylon can be used in new carpet or a variety of plastic molded products.

To develop a statewide market of tear-off asphalt shingles, the city has supported the [King County Linkup Program's](#) efforts on this material. These efforts include a major demonstration project by King County Roads Division. In this project, the process blends shingles into a hot mix paving application. State and local agencies, paving companies, and recycling processors all took part in developing material specifications. King County paved a 4-mile stretch of roadway with various mixtures of recycled asphalt shingles in 2009. King County will monitor the demonstration project over several years. If successful, the program will significantly expand the use of tear-off asphalt shingles.

Chapter 3, Waste Prevention, contains additional discussion of Green Building, Deconstruction, Contractor Technical Assistance, and Market Development programs.

Ban on Disposal of Asphalt Paving, Bricks and Concrete

In March 2011, the Seattle City Council passed Ordinance 123553. The ordinance forbids disposing asphalt paving, bricks, and concrete in any type of garbage container at construction sites. It also forbids disposing the same materials at private or public transfer stations. The prohibitions start in 2012. The city will conduct education and outreach about this new requirement in 2012. Penalties may apply in 2013. These materials already see a very high rate of reuse or recycling. In addition, public construction projects are required to keep them out of the garbage. Exceptions to this disposal ban include painted materials, those made with hazardous constituents, or those present only in very small quantities.

City of Seattle Regulations and Collection Contracts

Washington State law assigns primary responsibility for solid waste management to local government. This responsibility includes the collection, transfer, and disposal of solid waste. It also includes recycling and waste prevention. When the City of Seattle took control of its commercial waste stream in 2001, it became responsible for regulating C&D waste hauled for disposal. Seattle Municipal Code 21.36.012(5) states that materials are considered the “City’s waste” if they contain more than 10% by volume of non-recyclables. The following lists City of Seattle regulations that govern collection contracts:

- **Hauling of C&D Materials:**
 - **Hauling for Recycling** — Any company is allowed to collect materials destined for recycling, including recyclable or beneficially used C&D. However, the collected materials may contain no more than 10% non-recyclable or non-beneficially used material, by volume. Recycling collection containers must be clearly labeled. C&D generators save money if they recycle because they avoid city and state solid waste (garbage) taxes.
 - **Hauling for Disposal** — In 2008, the city awarded an exclusive contract to Waste Management for hauling C&D disposal waste. Businesses that haul their own waste, or haul wastes that result from another service provided by the business, are exempt from using this contract. For example, roofing companies usually haul tear-off asphalt shingles from their own jobs.
 - **Statewide Rule on Jobsite Containers** — A recent statewide rule requires jobsites to place a clearly labeled garbage container to keep contamination in recycling containers to a minimum.
- **Disposal Flow Control** — City of Seattle requirements govern where C&D disposal wastes can go (known as *destination* flow control).
- **Transfer Tax Applied to Jobsite Intermodal Containers of C&D** — A transfer tax now applies to the intermodal containers of C&D loaded at job sites and delivered to Seattle's two railheads for landfill disposal.
- **Rule on End-Markets for Recycling and Beneficial Use** — Seattle Municipal Code (SMC) 21.36.010 (9) allows the Director of SPU to define what counts as "beneficial use." SPU's definition of "beneficial use," as well as "recycling" and "disposal," is set down in Administrative Rule #SPU-DR-01-07. Examples of *recycling* end-markets include concrete made into new concrete, wood waste made into paper pulp for paper

products, and gypsum wallboard reprocessed into new wallboard. An example of *beneficial use* is unpainted and untreated wood waste chipped and sent to an industrial boiler for energy recovery. The Washington State Department of Ecology may also approve a specific use as “beneficial use” under WAC 173-350-200. *Disposal* includes using mixed C&D at a landfill as alternative daily cover for garbage, and as industrial waste stabilizer placed in industrial waste landfills. Disposal also includes energy recovery at a waste-to-energy facility.



5.1.4 Alternatives and Recommendations

C&D Alternatives Development

The process to develop C&D recommendations involved two stages of stakeholder outreach and econometric modeling.

Stakeholder Feedback Phase I

SPU discussed program options with industry stakeholders during the fall of 2010. Alternatives included a disposal ban on asphalt paving, bricks and concrete; mandatory recycling for all DPD applicants, with diversion levels set for different categories of projects; and C&D processing facility certification.

Stakeholders did not support mandatory recycling coupled with all DPD permits—particularly if tied to a project receiving its Certificate of Occupancy. Project managers rely on haulers and facilities to provide the proper reporting. The haulers and facilities usually don’t have the reports ready until after DPD issues a Certificate of Occupancy.

Stakeholders favored the idea of facility certification. A certified facility would meet recycling rate and other standards. Stakeholders further suggested a third party might best verify facilities for the program, instead of the city. Certification would increase the accountability of facilities. Stakeholders viewed this as a better first step compared to starting with mandated recycling rates on projects.

Another option offered by stakeholders was to set a requirement for sorting all C&D waste before any goes to disposal. This would shift the focus away from sorting at job sites, to facilities and their sorting efficiencies.

SPU used this phase of stakeholder feedback to shape further work on potential C&D recycling programs.

Recycling Potential Assessment Analysis

The first phase of stakeholder input gave SPU information to help figure out potential C&D recycling program options to analyze. The analysis used the same modeling tool as used for MSW recycling programs (Table 5-3). The model analyzed variations on

mandatory recycling percents, certain materials banned from the garbage, and enhanced outreach. Almost all options included a certification program (that a processing facility meets some level of set recycling standards).

Table 5-3
C&D Recycling New Program Evaluations for Seattle

	#	Program Options	Recycling Rate*	Additional Tons Recycled/Year*
		Baseline Program – Expanded Voluntary + Status Quo	58.2%	
Basic	1	Mandatory Recycling for All DPD Permittees with Report	70.0%	17,462
	2	Mandatory Recycling for Only New Construction and Demolition with Report and Diversion %	69.0%	14,149
	3	Mandatory Recycling for All DPD Permittees with Report and Meeting Diversion %	71.1%	21,279
Advanced	4	Bans Beyond Asphalt Paving, Bricks and Concrete for All DPD Permittees with Report	72.0%	23,634
	5	Bans Beyond Asphalt Paving, Bricks and Concrete for All DPD Permittees with Report and Diversion %	74.2%	31,769
	6	All Waste Sorted Before Disposal for New Construction and Demolition with Report	70.5%	19,076
	7	All Waste Sorted Before Disposal for All DPD Permittees with Report	75.3%	35,244

*By the year 2020

SPU analysis of the C&D program options shown in Table 5-3 assumed the levels of certification shown in Table 5-4.

Table 5-4
Levels of Facility Certification in Seattle C&D Program Options

Program Option	Report Tonnages Recycled and Disposed of to City	Minimum Recycling Requirements	Sample Residuals for % of Targeted Recyclables
Status Quo	Only if in City	No	No
Basic Certification	Yes, even if outside of City	Yes	No
Advanced Certification	Yes, even if outside of City	Yes	Yes

SPU evaluated the model’s results in combination with Phase 1 stakeholder input. This process resulted in the C&D recycling recommendations put forward in the August 2011 “Preview” Draft of this Plan. SPU then returned to stakeholders for more review and feedback.

Stakeholder Feedback Phase 2

After releasing the 2011 Preview Draft of Seattle’s Solid Waste Plan revision, SPU carried out a public review process to get feedback on the Plan’s recommendations. The review process included a separate, parallel, process for C&D recommendations. SPU focused its C&D outreach on construction trade groups, property managers, recycling haulers, and processing facilities. We used meetings, forums, newsletter articles, and the Plan website to share information and gather feedback. The C&D presentations and feedback are compiled the “2011 Stakeholder Outreach and Responsiveness Summary” referenced in Appendix C: Public Involvement.

Stakeholders generally supported third-party certification of facilities. They also thought the C&D sector could achieve the overall citywide goal to recycle 70% of C&D by 2020—even with market fluctuations. As for overall strategies, they preferred the option that included landfill bans on target C&D materials, with project recycling reports due after getting a final permit. As in Phase 1, stakeholders did not favor linking mandatory recycling reports with Certificates of Occupancy.



Stakeholder Issues

- Need for flexibility in implementing the disposal bans on targeted materials, due to the volatility of end markets for certain commodities like wood waste.
- Need for SPU to clearly spell out how it will carry out the education and enforcement phases of the materials bans at construction job sites and transfer stations.
- Cost of compliance for smaller construction projects
- Adequacy of local recycling infrastructure for materials subject to disposal bans
- Importance of market development and public agency procurement of materials with recycled content
- Cost of third party certification to smaller facilities
- Coordination needed between public agencies involved with permitting
- Space constraints for multiple recycling containers at Seattle construction job sites. Whether a one-box option for all C&D (recyclable and not) would be permitted
- Differing perceptions of the 90/10 Hauling Rule. Some view it as a deterrent to recycling. Others see it as an important tool for reducing "sham" recycling

For the preliminary draft version of the Plan, SPU modified the C&D recommendations to push out the start dates for disposal bans on metal, cardboard, and clean wood. This will give time to develop the certification program fully. The changes also allow time for wood waste end markets to recover from current volatility.

C&D Recommendations

Recommendations to increase C&D recycling include continuing programs and new initiatives, including bans. The new actions are needed to increase Seattle's C&D recycling rate. They mainly reflect the chosen set of programs in Option #4 of Table 5-3

Create Overall C&D Recycling Goal

Set a recycling goal of 70%, citywide, by 2020. Adding the recommended new programs will increase C&D recycling to the new goal. Forecasting on current "baseline" programs showed those programs would only maintain current recycling levels if left status quo.

Continue Existing Programs

Most baseline C&D programs overlap with information presented in waste prevention programs. They need to continue to achieve C&D recycling goals.

- **LEED and Built Green:** continue promotion and technical support for voluntary, industry-driven programs for material reuse and recycling. Work with U.S. Green Building Council to change what gets counted as recycling for waste diversion credits (e.g. no ADC)
- **Salvage:** continue and expand pre-demolition voluntary salvage assessments
- **Hybrid deconstruction:** develop training programs for hybrid deconstruction techniques for residential and small commercial structures to reduce traditional demolition.

Implement Facility Certification

SPU will develop, with private processors, an "advanced level" facility certification process in 2012. The program's components will include:

- Expectations for facilities to achieve compliance with all applicable regulations
- Standardized verification methods for recording facility inputs and outputs
- Requirements to report on amounts and types of materials handled by the facility
- Minimum recycling levels
- Sampling protocol for residuals – measuring the percent of targeted materials left in the residual after processing
- Web page listing of certified facilities for contractors to use

Implement Disposal Bans on Target Materials

The city will ban certain C&D materials from being disposed as garbage in a landfill. They will phase in as shown in Table 5-5. Several of the targeted materials have similar bans in the MSW recycling recommendations, but with different timing.

**Table 5-5
Seattle C&D Material Ban Schedule**

Effective Year	2011 Status	Material
2012	Adopted	Asphalt Paving, Brick, Concrete
2013	Recommended	Metal Cardboard Plastic Film Wrap Carpet Scrap Gypsum from New Construction
2014	Recommended	Clean Wood Tear-Off Asphalt Shingles

All bans will begin with one year of education before the start of enforcement at construction job sites and facilities. The SPU Director will hold authority to delay or rescind disposal bans in the event of local recycling facility closures, or if end markets for targeted materials collapse. Work to develop and maintain end markets also overlaps with some activities described in Chapter 3, Waste Prevention.

Require DPD Permit Holders to Report

Construction and demolition contractors, as a term of their Seattle project permit, will need to file a recycling report after receiving their Final Permit. The report will document where materials from the project were taken.

5.1.5 Monitoring and Performance Measurement

The annual City of Seattle recycler reporting will be used to measure progress towards a 70% recycling goal for 2020. As a condition of certification, certified processing facilities located outside Seattle will also be required to report regardless of where they are located. The city will also gauge the effectiveness of its disposal bans for C&D materials at both the private and City of Seattle transfer stations.

A C&D Waste Stream Composition Study will be conducted in 2012 at the public transfer stations and in 2013 at the private stations to set a baseline for the major components of the disposed C&D waste stream. The last waste composition studies for C&D were conducted in 2007 at the private stations, and in 2008 at the public stations. Studies after 2013 will be considered for C&D monitoring and program planning.

Construction sites and processing facilities will also be inspected to ensure that significant amounts of targeted materials do not end up in either disposal containers or disposal areas of transfer stations or recycling facilities.

5.2 HISTORIC LANDFILLS

Until the 1960s, Seattle disposed its solid waste at various landfills within the city limits. Between 1966 and 1986, the City of Seattle operated two major landfills south of Seattle: Midway and Kent Highlands. The Midway Landfill accepted garbage until October of 1983 and Kent Highlands Landfill through 1986.

Between 1986 and 1991, Seattle took its solid waste for disposal at King County's Cedar Hills Landfill. From 1991 to the present, the city ships its solid waste to the Oregon Columbia Ridge Landfill, which Waste Management owns and operates.

After Midway and Kent Highlands closed for accepting waste, they went through the process for environmental closure. During the 1980s, the U.S. Environmental Protection Agency (EPA) added the Midway and Kent Highlands landfills to its Superfund list as Washington State Department of Ecology leading Superfund sites. Cleanup undertaken through legally binding agreements with the Washington State Department of Ecology (Ecology) was completed at Midway in 1991 and at Kent Highlands in 1995. Cleanup for these two landfills cost more than \$110 million. SPU continues to monitor the landfills per agreements with Ecology.

In 1984, Public Health - Seattle & King County assessed 12 historic landfills in Seattle. The study's objective was to determine if any public health problems existed at the sites. The assessment included sampling for the following:

- Methane gas
- Non-specific organic and non-organic trace gases
- Water quality (in seepage and surface water), including pH, temperature, dissolved oxygen, conductivity, and turbidity

The assessment concluded that no further action was needed at Green Lake, Judkins Park, the Arboretum, Rainier Playfield, and Sick's Stadium. It recommended specific actions for the remaining sites (Interbay, Genessee, Montlake, Haller Lake, West Seattle, South Park, and 6th Avenue South). The direct actions recommended in the 1984 study have been implemented or are underway.

Annual operating costs for all post-landfill closure activities are about \$900,000. There are also landfill capital projects in the city's 6-year Capital Improvement Plan. Anticipated capital costs between 2011 and 2015 are shown in Table 5-6-and included in Chapter 6, Administration and Financing, section 6.3.

Table 5-6
Six-year Budget to Maintain and Monitor Historic Landfills in Seattle

Project	2011	2012	2013	2014	2015	2016
Kent Highlands Flare Replacement	\$450,000	\$50,000				
South Park Development	\$690,000	\$667,000	\$10,082,000	\$9,981,600		
Midway Flare Improvements		\$46,000				
Historic Landfill Improvements	\$25,000					
Backhoe Replacement	\$200,000					
Kent Highlands North Pond Diversion	\$10,000	\$170,000				

5.2.1 Recommendations from 1998 Plan and 2004 Amendment

Recommendations	Status
1998 Plan	
Continue monitoring per regulatory agreements	Regular 5-year Ecology reviews of groundwater and surface water conditions at both landfills: 2008 Kent Highlands review validated current remedy protective of human health, and no specific actions required 5-year review for Midway completed 2010 validated remedy is protective of human health and no specific actions required
Consider options for recreation after 30-year monitoring period	Monitoring period still under way
Respond to problems at historic landfills case-by-case	Done
2004 Amendment	
Continue monitoring per regulatory agreements	Regular 5-year Ecology reviews of groundwater and surface water conditions at both landfills: 2008 Kent Highlands review validated current remedy protective of human health, and no specific actions required 5-year review for Midway completed 2010 validated remedy is protective of human health and no specific actions required
Perform an assessment of old in-City of Seattle landfills to determine if any additional work is needed	Landfill gas monitoring and targeted gas control completed at Genessee 2006. Final report submitted to Public Health - Seattle & King County 2007 showed landfill gas controlled <i>South Park Landfill Agreed Order with Ecology</i> signed in 2008 to complete RI/FS studies to support upcoming final site remediation
Safely manage WSDOT and City of Kent construction activities that may affect these landfills	Addressed next two items for: 1. Relocate Kent Highlands leachate forcemain 2. Refuse removal for WSDOT I-5 construction at Midway
Relocate Kent Highlands leachate force main, decommission some probes and wells per agreement with City of Kent construction of 228th St	Kent Highlands leachate forcemain crossing the Green River replaced 2006. New line activated 2008 after leachate pump station replaced
Refuse removal, gas well removal and relocation of storm water facilities in preparation for the WSDOT I-5 construction at Midway	Preliminary engineering for waste removal at Midway to accommodate WSDOT I-5 construction completed 2006. Project has been delayed due to lack of state funding Midway gas extraction wells on I-5 right-of-way removed in 2007 because no longer needed
Complete discussions with Ecology per recent Kent Highlands review. Implement any required activity	Ecology concerns from 2003 5-Year review addressed in 2007 work plan. Part of work plan modified stormwater pond to improve stormwater quality Modifications successful and 2008 review for Kent Highlands validated current remedy protective of human health. No specific actions required at this time
Continue to respond to questions on old in-city landfills	SPU continues to consult on city projects located on or adjacent to known historical landfills

WSDOT: Washington State Department of Transportation

Other Actions Since 2004

The City of Seattle has made other improvements at the Kent Highlands and Midway sites:

- A failing storm drain at Kent Highlands partially replaced in 2009
- A new records retention facility constructed at Kent Highlands to maintain the administrative records for the Kent Highlands and Midway landfills in 2009
- Emergency generators purchased 2009 to allow continued operation of the gas extraction systems at Kent Highlands and Midway, leachate treatment and pump station at Kent Highlands, and the landfill field office at Kent Highlands

5.2.2 Planning Issues

Both EPA and Ecology have adopted greenhouse gas reporting requirements. However, the requirements do not apply to historical landfills in Seattle. SPU will evaluate the applicability to the former Midway and Kent Highlands landfills and prepare the estimates in 2011.

The Potentially Liable Parties at the South Park Landfill have entered into an Agreed Order with Ecology to complete a Remedial Investigation/Feasibility Study for the site and select a permanent remedy under the Model Toxics Control Act. This work will continue through 2015. The cleanup of the city-owned portion of the landfill is part of the redevelopment of SPU's South Recycling and Disposal Station.

5.2.3 Current Programs

Dedicated SPU staff monitor the Kent Highlands and Midway sites and facilities for:

- Gas extraction and flare system to ensure proper operation cover and perimeter security, inspecting to ensure they are intact, including general maintenance
- Surface water quality testing
- Groundwater sampling and reporting, and ensuring the test wells are in good order
- Ensuring leachate discharge to the sanitary sewer meets permit limitations
- Pump maintenance, for groundwater, surface water, and leachate

SPU will replace the flare at Kent Highlands to better match decreasing landfill gas flows. During the flare replacement, we will evaluate the alarm systems at all landfill pump stations for upgrades.

At the Interbay and Genessee historic landfills, SPU crews operate and maintain gas control systems, and monitor and evaluate methane levels along site perimeters.

5.2.4 Alternatives and Recommendations

No major new initiatives are being considered for Seattle's historic landfills. Instead, it is more a matter of staying the course on the decisions and investments that have already been made. For the planning period, SPU will:

- Continue to monitor and maintain Kent Highlands and Midway in accordance with regulatory requirements and to the satisfaction of adjacent communities
- Reduce monitoring requirements as appropriate, with regulatory concurrence
- Continue to monitor and control landfill gas at Interbay and Genessee

- Respond to problems at historic in-city landfills on a case-by-case basis
- Pursue possible site de-listing and future beneficial use of the Kent Highlands and Midway landfill sites. In 2007, EPA funded and completed an evaluation of future uses of these sites. As development in the area increases, these sites may become viable for future economic development.

5.2.5 Monitoring and Performance Measurement

The Washington State Department of Ecology formally tracks the performance of landfill closure programs for both Midway and Kent Highlands in a 5-year review cycle. Public Health - Seattle & King County monitors performance at the historic Seattle landfills.

5.3 CLEAN CITY PROGRAMS

Clean City is a set of programs that provides tools to abate graffiti, illegal dumping, and litter. The programs are an extension of traditional City of Seattle solid waste services for keeping streets and neighborhoods clean and healthy by collecting garbage and encouraging environmental awareness. Clean City programs:

- Make Seattle a more livable place by creating cleaner and more secure communities
- Encourage urban stewardship

5.3.1 Recommendations from 1998 Plan and 2004 Amendment

The key goal for the Clean City programs is to keep Seattle's neighborhoods clean and safe by partnering with communities. A key objective was to increase the efficiency and fairness of services.

The 2004 amendment included three strategic focus areas for Clean City programs:

1. Maintain existing service levels for graffiti removal, litter pick up, and response to illegal dumping
2. Evaluate strategies for increasing efficient, effective, and equitable service delivery
3. Fully implement the public place recycling program

See section 5.3.3, [Current Programs and Practices](#), for more detail on progress on these areas.

5.3.2 Planning Issues

Clean City programs face two major challenges. First, City of Seattle general tax revenues pay for the programs, making the programs compete with other General Fund activities, such as public safety and human services. SPU projects significant ongoing budget shortfalls in the years following the 2007 – 2012 Global Recession, which may result in resource restrictions for the Clean City programs.

Second, increasing population diversity, including minority and immigrant communities and non-English speakers, increases the challenge of ensuring equitable services to all citizens. Program messages must include and be delivered in culturally relevant ways. The goal of such

messaging is to promote collaboration and civic engagement that include a wide range of Seattle's diverse populations.

At the same time, the City of Seattle's anti-graffiti program may benefit from other recent developments. Ongoing interdepartmental and inter-agency collaboration may leverage results for cleanup, outreach, and apprehension. Program enhancements may include recruiting more volunteers for graffiti cleanup, and strategic partnerships for outreach to repeatedly tagged areas and increased surveillance and apprehension.

5.3.3 Current Programs and Practices

Clean City programs are grouped into four areas: anti-graffiti, illegal dumping, litter, and community cleanup.

Anti-Graffiti

The success of the anti-graffiti program relies on cooperation and rapid abatement (removal or painting over) by the various responsible parties. Those involved in graffiti abatement include public and private property owners, volunteers, non-profit and community organizations, city departments, and other government entities. SPU provides five main, ongoing roles:

- **Hotline** — The Hotline is a citywide central point for reporting graffiti on public property, or on private property where the graffiti has persisted for a period of time. Customers may reach the Hotline through the [online graffiti report](#) form, or by calling the graffiti report line at (206) 684-7587. Hotline staff route public property reports either to the entity responsible for abatement or to code enforcement staff who are responsible for graffiti nuisance. Hotline staff is required to dispatch reports within 1 business day.
- **Abatement** — SPU's "Graffiti Rangers" abate graffiti on SPU-assigned properties. The Graffiti Rangers take care of reported graffiti and any they discover while working within specified geographic boundaries. Abatement includes painting, chemical removal and sandblasting. The citywide abatement performance target for obscene and hate graffiti is 1 business day. The performance targets for other reported graffiti are:
 - 90% of reports on SPU-assigned properties (light poles, street side litter cans, etc.) cleaned up within 6 business days of receiving the report
 - 90% of reports on roadway structures (bridges, retaining walls and stairwells) cleaned up within 10 business days of receiving the report
- **Enforcement** — Enforcement of the city's graffiti nuisance code (SMC 10.07) follows a prescriptive code process. The process uses pre-determined step-by-step actions that are applied the same to all. It requires property owners to promptly abate graffiti or be subject to fines. The performance target for enforcement staff includes identifying the property owner(s) and initiating the code notification process within 5 working days of receiving a hotline report.
- **Anti-graffiti Outreach and Education** — Outreach and education includes recruiting volunteers and coordinating abatement and community outreach activities. Program staff track and report the number of volunteers, volunteer hours dedicated to abatement efforts, and a summary of community outreach efforts.

- **Business Improvement Area (BIA) Grants** — BIA grants provide supplemental funding for cleaning contracts for graffiti removal within BIA areas.

Anti-Graffiti Progress on Recommendations

The anti-graffiti program has made good progress within the three focus areas outlined in the 2004 amendment:

- Service levels have been upgraded so that all city departments share common performance targets
- Strategies to improve service equity have been evaluated and implemented
- Efficiency and effectiveness strategies have been evaluated and implemented

The following initiatives benefitted the anti-graffiti program and the illegal dumping program:

- **Benchmark Studies** — Assessed programs in peer communities, identified best management practices, and incorporated program improvements based on studies.
- **Database Development** — Improvements 1) eliminated system problems that hindered staff productivity, 2) resolved issues of quality, duplication, and incompleteness, 3) automated work orders, and 4) automated tracking reports that were previously manual processes. Reports now support strategic objectives of trustworthy data and easier data sharing.
- **Report Hotline** — Upgraded reporting phone line to be answered live during normal business hours.

To evaluate service delivery, staff mapped service provision by geographic area to assess if service delivery is equitable across Seattle communities. Focusing work within geographic sectors continues. See this chapter's section on [Illegal Dumping](#), for more detail.

Anti-Graffiti Program Changes

Since 2004, several city events resulted in anti-graffiti program changes not anticipated in the 2004 amendment. These events changed SPU's services as follows:

- Due to General Fund reductions, SPU was directed to incorporate graffiti abatement on roadway structures in 2006. The roadway structures work is a significant amount of the Graffiti Rangers' workload.
- The 2007 to 2008 budget process resulted in added functions, but not as requested. The original budget proposal included funding for a citywide 48-hour graffiti cleanup policy on public property, by adding General Fund resources to multiple City of Seattle departments. While the budget was maintained for SPU, the budget for additions in other city departments was cut. Rather than enhance the service level for SPU only, the additional SPU resources upgraded the graffiti hotline to a live operator (from a voicemail system) and incorporated one staff position to focus on education and graffiti prevention.

- In 2008, the Mayor's Office sponsored a Customer Service Improvement project, which focused on graffiti removal on public property. A task force developed recommendations to provide external customers a more responsive and consistent approach to graffiti removal across city departments. Specific recommendations that affected SPU services include:
 - Promotion of the Graffiti Report Line (hotline) as the central citywide reporting conduit
 - Establishment of common service levels across city departments. This resulted in a more aggressive performance target (from 10 to 6 business days) for most public infrastructure
 - Establishment of common metrics across city departments
 - Development of ongoing, regularly-scheduled interdepartmental meetings of dedicated field abatement staff to coordinate efforts and discuss challenges and opportunities

Illegal Dumping

Illegal dumping program staff respond to reports of illegally dumped materials on public property and coordinate cleanup with Washington State Department of Corrections (DOC) work crews. The program's performance target is to clean up 90% of all reported illegal dumping within 10 days. Program staff also track and report the pounds of garbage and recycling collected by DOC crews. Seattle's DPD responds to waste accumulation and "junk storage" issues on private property.

Illegal Dumping Progress on Recommendations

Most of the illegal dumping program's progress on the recommendations from the 2004 plan is described above under [Anti-Graffiti](#), including benchmarking, hotline improvements and database development. Additionally, this program found ways to leverage resources by developing an interdepartmental agreement for cleanup of illegally dumped materials too large or heavy for regular (DOC) cleanup crews.

Illegal Dumping Changes

SPU sponsored a customer service pilot project, which was not planned in the 2004 Amendment. To improve clean up efficiency, illegal dumping staff developed and implemented a "direct dispatch" pilot. Direct dispatch meant sending out cleanup crews before the reported illegal dumping sites were inspected. The pilot lasted 8 months, ending after an evaluation phase. DOC crews were able to clean up only 31% of the direct-dispatch cases, resulting in lower productivity for all DOC cleanup cases. The pilot also resulted in putting higher priority on cleaning up mundane and non-hazardous items such as mattresses, sofas, and chairs. These types of cleanup cases are the most fitting to defer while cleaning up cases that are more complex, or potentially hazardous to human health and the environment.

Litter

SPU provides several programs designed to reduce ground litter and/or provide disposal options for incidental litter. Programs include:

- **Adopt-a-Street** — offers residents, businesses, and community groups tools to collect ground litter. Volunteers can conduct a one-time cleanup or agree to adopt 1 mile or more for a minimum of 2 years. The city provides collection supplies, free solid waste disposal, and street signs that credit 2-year adopters. Program staff track and report the number of Adopt-a-Street volunteers, and volunteer hours dedicated to ground litter collection.
- **Street Side Litter** — provides collection and disposal of garbage put in containers located along city streets in business areas. Program includes about 900 collection cans for litter from pedestrians. Program staff track and report the total number and location of collection cans, service frequencies and contractor performance (number of missed collections).
- **Public Place Recycling** — program in Seattle business areas, to strategically pair street side litter cans with a recycling option for beverage containers. About one-third of all street side litter cans are paired with a recycling can. Program staff track and report the total number and location of collection cans, number and location of cans that exceed acceptable contamination level, and contractor performance.
- **Litter Collection in Parks** — provides collection and disposal of publicly-generated garbage placed in more than 3,000 cans located in city parks. Collects recyclables from select locations in outdoor open spaces. Program also supports ground litter collection in downtown retail core parks. SPU and Seattle Parks and Recreation have developed a detailed agreement that identifies costs related to these services. The agreement requires tracking and reporting of costs associated with labor, equipment, and materials.
- **Secured Load Requirements** — Roughly 40% of litter on Washington State highways comes from [unsecured loads](#), or vehicle loads that are not tied, covered or properly confined. In addition to creating litter issues, road debris causes about 400 accidents on Washington State highways every year. To reduce litter and road debris, state and local law requires vehicle operators to secure loads to prevent spillage while the vehicle is moving (RCW 46.61.655 and SMC 21.36.450). Vehicle operators will be charged an additional fee at all Seattle and private transfer stations for unsecured loads.

Litter Progress on Recommendations

Progress on the 2004 recommendations includes maintaining service levels and improving service delivery:

- **Parks Litter** — Assessed program to determine costs and developed clear and detailed scope of work. Worked to document responsibilities and associated funding into formal agreement.
- **Streetside Litter** — Developed guidelines for can siting and reallocation. Transitioned collection to the City of Seattle's solid waste contractors to increase efficiency.

A further recommendation was to implement fully the public place-recycling program. SPU's 2003 plan to reach 60% recycling committed us to fully implementing this recycling program. The program pairs, in heavy pedestrian areas, about 300 streetside litter cans with cans that accept beverage containers for recycling. While public place recycling recovers a small quantity of recyclables, its value is in the enhanced visibility of recycling.

Litter Changes

In 2007, the Mayor and City Council requested that SPU and Seattle Parks and Recreation (Parks) jointly develop and submit a plan to guide recycling efforts within City of Seattle parks. A systemwide assessment revealed outdoor open spaces offered the fewest opportunities for patrons to recycle in Seattle parks. As a result, SPU and Parks ran a pilot project in 2008 in selected outdoor open spaces to assess program and cost effectiveness. The project collected co-mingled beverage containers, including aluminum, plastic and glass, in designated south region parks.

The pilot project, which collected 19.1 tons of recyclable material, was costly. In general, an outdoor open-space recycling program compares unfavorably with other possible recycling programs. The pilot's price per recycled ton proved high compared to other possible programs. In addition to being more cost-effective, other potential programs could yield more recycling and greater environmental benefits. The pilot project resulted in designing a more cost-effective citywide outdoor open-space recycling program that:

- Integrates collection of recyclables into regular duties of staff who are already conducting work activities in parks
- Locates cans in higher volume locations, including ball fields, park entries or kiosks, boat ramps, and picnic shelters
- Offers the program on a seasonal basis only (stores cans during non-peak seasons)

Community Cleanup

The fourth program area, Community Cleanup, includes a group of programs that provide resources to help community members clean up litter, illegal dumping, and graffiti themselves:

- **Spring Clean** — an annual program (typically April through May) that supports community-developed projects within the public right-of-way and on other city-owned parcels. SPU provides supplies, including trash bags, safety vests and gloves, and trash disposal for the collection projects. Program staff track and report the total number of projects, number of volunteer hours dedicated to cleanup, and estimated number of pounds of materials collected.
- **Home Cleanup** — aims to reduce illegal dumping by providing a coupon to qualifying households for one annual free-of-charge disposal of up to 500 pounds of garbage at the City of Seattle's transfer stations. Program staff report numbers of coupons sent to customers and numbers redeemed and pounds of material disposed of by program participants.

- **Senior Assist** — provides seniors with one annual free-of-charge service for disposal of up to 500 pounds of garbage. Program metrics include tracking and reporting number of seniors served.

Community Cleanup Progress on Recommendations

The key action in response to the 2004 Plan's recommendations for this program was revising the coupons. Coupons now allow free transfer station drop-off to increase accountability and coordination among stakeholders. Better controls also reduce risk of unintended revenue loss at the transfer stations.

Community Cleanup Changes

There have not been significant changes to the Community Cleanup programs in addition to those planned in the 2004 Amendment.

5.3.4 Alternatives and Recommendations

The following section describes near- and longer-term changes to Clean City programs.

Anti-Graffiti

Building on the 2008 Customer Service Improvement project, a follow-on task force focused on graffiti on private property in 2009 to 2010. SPU asked the group to:

- Review current anti-graffiti code, enforcement protocol and support (outreach and technical assistance) related to private property
- Develop recommendations for improvement

Select recommendations include enhancements to encourage reporting, translation of outreach materials, and development of strategic partnerships to leverage resources. The recommendations were further developed and implemented in 2010.

The Seattle Office of the City Auditor (OCA) conducted a performance audit of the City of Seattle's anti-graffiti efforts. The audit compared the city's efforts to best practices and made recommendations for potential improvements. Implementation of several audit recommendations that affect SPU's anti-graffiti services include:

- Amend the Seattle Municipal Code (SMC 12.A.08.020) to include stickers in the list of prohibited materials
- Redeploy abatement resources across city departments to better address graffiti abatement on multi-space parking pay stations
- Enhance community involvement and public education activities by developing a comprehensive community outreach and engagement plan and convening an anti-graffiti outreach coalition

To better determine customer satisfaction with SPU anti-graffiti program services, a customer satisfaction tool will be developed and launched.

Illegal Dumping

A 2009 study included several alternatives for improving the illegal dumping program. Recommendations include further development of enforcement protocol, additional staff training, and expanded use of the existing database.

Litter

King County Metro Transit policy requires them to provide their bus shelter structures with litter can service as well as a host of other scheduled maintenance services, such as sidewalk power washing. However, the City of Seattle is spearheading a center-city bus zone conversion, which converts bus shelter zones to canopy bus zones when private property is redeveloped. These canopies are an integrated element into a new or redeveloped building's streetside façade, so that a traditional bus shelter is not needed.

Currently no formal rules lay out roles and responsibilities for these new canopy zones. Once a canopy zone is built and Metro stops maintenance, these activities shift to the property owner/manager, the City of Seattle, or the Metropolitan Improvement District. Formalized roles, responsibilities and design standards for the bus zone transition projects need to be developed to ensure adequate litter services are provided.

Longer-term program changes may include:

- **Graffiti** — Increased emphasis on prevention, apprehension and prosecution and interdepartmental/inter-agency collaboration
- **Illegal Dumping** — Increased emphasis on enforcement

5.3.5 Monitoring and Performance Measurement

Program staff track the performance of all Clean City programs by specified metrics and customer service levels. They report monthly and/or quarterly to SPU and other City of Seattle leaders. Specific programs are evaluated to find efficiencies and to ensure effective and equitable service delivery.

5.4 MODERATE RISK WASTE

Moderate risk waste (MRW) is hazardous waste generated by residents and in small quantities by businesses and institutions. Revisions to Washington State's 1986 Hazardous Waste Management Act (RCW 70.105) defined MRW. MRW includes two categories of waste:

1. **Household hazardous waste** (HHW), which is generated by residents, and
2. **Conditionally exempt small quantity generator waste** (CESQG), which is generated in small quantities by businesses, schools, and other institutions. This term refers to both the waste and generator of that waste.

These wastes include many common materials—cleaning, yard care and automotive products—that contain toxic, flammable, reactive, or corrosive ingredients. Seattle Municipal Code (SMC 21.36.026) prohibits disposing HHW and CESQG waste in garbage. Disposed of improperly, these products can pose a threat to human health and the environment.

The Local Hazardous Waste Management Program in King County (LHWMP) manages HHW and CESQG materials in Seattle. The LHWMP is a regional intergovernmental program jointly managed by the City of Seattle, King County, Public Health - Seattle & King County, and the county's suburban cities. LHWMP's mission is to protect and enhance public health and environmental quality in King County by reducing the threat posed by the production, use, storage, and disposal of hazardous materials.

5.4.1 Recommendations from 1998 Plan and 2004 Amendments

All cities and counties in Washington are required to develop plans to manage HHW and CESQG waste (RCW 70.105). In the 1980s, the City of Seattle and other local governments within King County recognized the need to address MRW in a comprehensive, regionally-coordinated manner. Seattle codified its support of a regional MRW management approach in 1991 with the adoption of the LHWMP's decision-making process and fee structure as outlined in the LHWMP's 1990 Plan (SMC 10.76.010).

Since 1991, the City of Seattle has participated in LHWMP's policy and decision-making bodies and has provided services for the program.

5.4.2 Planning Issues

The Local Hazardous Waste Management Plan for King County (1990) provides detailed plans for managing MRW. Updates to this plan were completed in 1997 and 2010. Major issues for the LHWMP include:

- Increased population, changes in the distribution of the population, and changes in the diversity of the population
- Increased awareness that segments of the population, including infants, young children, and pregnant women, are disproportionately vulnerable to toxic exposures
- Increased awareness that segments of the population, such as homebound, multi-family dwellers, and minority cultural communities, are underserved
- Sharp increases in the number, type and complexity of hazardous materials, chemicals and products
- Need to reduce the toxicity of products in their design and manufacturing stages
- Recognition that education and voluntary efforts alone will not achieve safe use, storage, and disposal of hazardous chemicals, products, and wastes

5.4.3 Current Programs and Practice

The LHWMP provides a wide range of work, concentrated in three areas:

1. Reducing threats posed by the production of products
2. Reducing threats posed by the use and storage of hazardous chemicals, products and materials
3. Providing proper collection and disposal of hazardous materials

The partners in the LHWMP provide services and programs, which are available to all King County residents and CESQGs. Specifically, the City of Seattle provides the following LHWMP programs.

- **MRW Collection and Disposal** — SPU operates and maintains two fixed MRW collection facilities that accept waste generated by residents and CESQGs. In addition, SPU staff provide home collection services for the elderly and homebound. Used motor oil and filters are also collected at SPU transfer stations. Some products with a low potential for environmental harm and low toxicity, such as motor oil, car wax, or furniture polish, are available to the public at the site where they are collected.
- **Pesticide Use Reduction** — SPU staff serve as regional experts for natural yard care and pesticide reduction programs. Integrated pest management (IPM) is promoted with private landscape businesses, including non-English speaking gardeners and landscapers, and commercial nurseries. SPU staff and contractors train horticulture students and neighborhood communities. [The Garden Hotline](#) provides specialized information to residents and businesses.
- **Environmental Justice Network in Action (EJNA)** — SPU recognizes the need to address historically underserved populations. Our staff works directly with community-based organizations to communicate and deliver services to minority cultural groups or English-as-second-language populations.
- **Product Stewardship** — SPU works with other local, state, and regional governments and agencies, businesses, and non-profit groups to implement product stewardship programs to manage hazardous materials. Current efforts include development and support of statewide legislation for mercury-containing lamps and tubes and paint.

Other partner agencies implement an array of additional programs and services that are available to Seattle residents and CESQGs. These programs include technical assistance to businesses, hazardous materials exposure reduction for children, and the EnviroStars business recognition program.

5.4.4 Alternatives and Recommendations

To address changes that have occurred within King County, the LHWMP has committed to:

- Monitor and assess SPU-operated MRW collection services to provide the maximum number of service hours possible
- Collect materials from CESQGs on an on-going basis
- Expand outreach for hazardous materials collection services, and provision of targeted outreach to the elderly, homebound, non-English speaking population, and historically underserved communities
- Work to secure state product stewardship legislation for unwanted medicines, mercury containing lighting and paint

5.4.5 Monitoring and Performance Measurement

LHWMP staff has developed a project monitoring and performance measurement framework to facilitate evaluation and assess effectiveness. For additional information, see Chapter 10 Performance Measurement and Evaluation in the [2010 update](#) to the Local Hazardous Waste Management Program in King County.

The LHWMP website provides additional information on all aspects of the program. Or contact the Office of the Program Administrator, Local Hazardous Waste Management Program in King County, 150 Nickerson Street, Suite 100, Seattle, WA 98109-1658.

5.5 SPECIAL WASTES

This section is about wastes not allowed in the regular municipal solid waste (MSW) system, but not hazardous enough to qualify as “Dangerous” under state or federal law. Federal, state, and local regulations ban dangerous wastes from garbage. These wastes are generally toxic, hazardous, and industrial. The Washington State Department of Ecology regulates dangerous wastes and should be contacted for guidance.

Special wastes require special handling and disposal due to regulatory requirements or other reasons such as toxicity, volumes, or particular handling issues. In some cases, special wastes can be landfilled if properly managed.

5.5.1 Recommendations from 1998 Plan and 2004 Amendment

The 1998 Plan and 2004 Amendment described standard practices for certain special wastes: tires, asbestos, biosolids, biomedical waste, dangerous waste, and contaminated soils. Neither document contained new policy or programmatic recommendations for special wastes.

5.5.2 Planning Issues

Special wastes do not presently cause problems in the City of Seattle's MSW system. Seattle's most recent waste sorts have found minimal presence of special wastes. Waste and recycling receiving facilities have not expressed increasing issues with special wastes.

5.5.3 Current Programs and Practices

This current plan update may be used as a starting reference for the community for questions about special wastes. In some cases, these wastes are accepted in Seattle's system. For all else, SPU maintains awareness and up-to-date information for referring citizens to the proper authority.

Table 5-7 lists some special wastes of historical and current interest, with some guidance on their handling. The agency that regulates the waste should be contacted for direction on its proper handling. See the [SPU website](#) for more information on what to do with special and hazardous materials. See also King County's [“What Do I Do With..?” web pages](#).

Chapter 5
Other Seattle Solid Waste Programs

Table 5-7
Special Waste Programs in Seattle

Material	Comments/Contacts
Tires	Banned from garbage If separated, up to four per trip allowed at City of Seattle transfer stations for a fee Also collected privately Mostly shredded for industrial fuel For other disposal options, see King Co. “What do I do with..?” website
Appliances (including old refrigerators, freezers, air conditioners)	Banned from garbage Recycling ensures any problem materials in them are properly managed (for example, CFCs in coolant and PCBs in capacitors) Contact SPU for Bulky Item Pick Up for a fee, or up to two accepted at City of Seattle transfer stations for a fee For other disposal options, see SPU’s special materials web pages or King County’s “What do I do with..?” website
Asbestos	Not accepted at SPU transfer stations or at MRW facilities For removal and disposal options, see SPU’s special materials web pages or visit Puget Sound Clean Air Agency or call (206) 343-8800
Biosolids (treated sewage sludge)	Seattle’s sewage goes to King Co. wastewater treatment plants Managed by King Co.
Biomedical wastes	For options on disposing sharps (syringes), see SPU’s special materials web pages Accepted from residents at SPU’s transfer stations if properly prepared Do not dispose of leftover medicines in garbage or down drain or toilet. Some pharmacies have a medicine take-back program For other biomedical waste banned from garbage, call Public Health - Seattle King County at 206-205-4394
Contaminated Soils	Large quantities can be accepted at City of Seattle transfer stations for a fee, if accompanied by a Waste Clearance form from Public Health - Seattle & King County. Call 206-263-8528 See SPU’s special materials web pages for other disposal options
Electronics (TVs, computers, other consumer electronics)	Banned from garbage SPU provides Seattle residential service for a fee (206-684-3000) Statewide free TV and computer drop-off or call 1-800-RECYCLE for locations For cell phones, stereos, VCRs, printers, computer mice and keyboards, ask where purchased. Check Take It Back Network
Batteries	Alkaline, rechargeable, button, vehicle: Accepted at household hazardous waste facilities Alkaline: Accepted in garbage Rechargeable: Banned from garbage. Ask where purchased or check for recycling locations at Call2Recycle or 1-800-BATTERY Vehicle: Banned from garbage. Accepted for recycling at city transfer stations for free
Fluorescent bulbs and tubes	Contain mercury Banned from garbage Check where purchased or Take It Back Network For broken bulbs, follow Ecology precautions
Used Motor Oil	Curbside collection for recycling available to residential customers free Uncontaminated in sealed 1-gal containers, up to 2-gal Up to 5 gal and oil filters per trip accepted at City of Seattle transfer stations
Latex Paint, Latex Stain	Accepted in garbage if solidified

Screening for Special Wastes

The City of Seattle's transfer stations workers screen for prohibited wastes entering the facilities. Signage at the scale houses and throughout the stations informs users of the prohibited wastes. Workers visually observe all loads and deny access to vehicles carrying prohibited wastes. If prohibited material does get in, employees remove it from the tipping areas (if they can do so safely) or otherwise make sure the material is appropriately managed.

The Columbia Ridge Landfill, in Arlington, Oregon to which Seattle sends its garbage, prohibits certain wastes, including:

- Discarded or abandoned vehicles
- Hazardous wastes
- Lead-acid batteries
- Liquid wastes
- Large metal appliances
- Source-separated recyclable materials except if contaminated
- Used oil
- Whole tires

The City of Seattle's transfer stations collect many of these waste types, such as used oil, lead-acid batteries, whole tires, and large metal appliances for recycling.

Landfill staff are trained in material identification and proper procedures in the event they find banned materials.

5.5.4 Alternatives and Recommendations

SPU will continue to maintain up-to-date referral information for special wastes. We will also continue programs to create better end-of-life solutions for problem materials, as Washington State has done for fluorescent lighting and consumer electronics. See Chapter 3, Waste Prevention, for a discussion of those programs.

5.5.5 Monitoring and Performance Measurement

SPU will continue to screen for prohibited wastes at the transfer stations, as will staff at the Oregon landfill. If it appears more prohibited wastes are entering the system, we will evaluate the problem and take appropriate action. The first course of action would be to increase public awareness through education programs.