From:	Cynthia
To:	Robertson, Julie (ECY)
Cc:	cynthia.kiehl@clark.wa.gov
Subject:	Clark County Request for Preliminary Draft Review
Date:	Tuesday, January 13, 2015 10:57:22 AM

Ms. Robertson,

Use the following link to download file(s) using SynaMan® - a remote file manager.

File(s) will be available for download until **1/27/15 10:57 AM**

Click here to download

Comments

Please follow the link provided and use the password “CCswmp2015” to download all (three) documents related to Clark County's request for prelimary draft review.

January 13, 2015

Julie Robertson
Waste 2 Resources Program
Washington State Department of Ecology
PO Box 47600
Olympia, WA 98504

Re: Clark County Draft Combined Hazardous and Comprehensive Solid Waste Management Plan

Dear Ms. Robertson,

At this time, Clark County would like to request Ecology's preliminary review of the Clark County Solid Waste Management Plan. Please follow the link provided and use the password "CCswmp2015" to download the following documents:

- Copy of transmittal letter requesting preliminary draft review
- Copy of Clark County's draft SWMP, dated January 2015
    - WUTC cost assessment questionnaire, completed on December 31, 2014 (Appendix C)
    - Final SEPA documents (Appendix B)
- Evidence of SWAC participation (December 2014 meeting minutes)

We are currently working with six cities and one town to execute our Interlocal Agreements through the planning period and will have those available for Final Review.

Please acknowledge your receipt of this package and advise when we can expect your comments.

Sincerely,

Peter DuBois, Acting Division Manager
Solid Waste and Environmental Education Division, Clark County

Clark County

Solid Waste Management Plan

2015

Managing and coordinating our community's solid waste program

Final v. 8 January 2015

Acknowledgments

PREPARED BY:
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1300 Franklin St., PO Box 9810
Vancouver, WA 98666-9810
(360) 397-2121

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Solid Waste Advisory Commission 2015
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Allan Jeska, Vice Chair (Public Interest Groups)
Simone Auger (Small Cities and Towns)
Richard Baker (County-at-Large)
Stephen Schrag (North Clark County)
Bill Turlay (City of Vancouver)
Brandon Vick (Clark County Business)
Steven Willis (North Clark County)
Rem Wilson (SE Clark County)

WASHINGTON STATE
Department of Ecology
Julie Robertson

CITIES
Battle Ground – Shane Bowman, Mayor
Camas – Scott Higgins, Mayor
La Center – James Irish, Mayor
Ridgefield – Ron Onslow, Mayor
Vancouver – Tim Leavitt, Mayor
Washougal – Sean Guard, Mayor
Town of Yacolt - Jeff Carothers, Mayor

City of Vancouver Public Works
Brian Carlson, Director
Rich McConaghy
Tanya Gray
Elsie Deatherage

The Clark County Environment Services Department recognizes all of these organizations and individuals (past staff and present) who participated in the development of this Plan.

Clark County residents also contributed to this document, through comments provided during public meetings and through various other channels. The Board of County Councilors and the Environmental Services Department gratefully acknowledge this input by the citizens. Thank you for your assistance.

This document is also available on-line at www.clark.wa.gov/environment/
Note that text that is highlighted in **GREEN** is hyperlinked to the corresponding resource for your reference

All images & graphics from Clark County, unless otherwise noted

For other formats, contact the Clark County ADA Office: **Voice** (360) 397-2322; **Relay** 711 or (800) 833-6388; **Fax** (360) 397-6165; **E-mail** ADA@clark.wa.gov.

Table of Contents

Foreword

The Clark County *Solid Waste Management Plan* (Plan) was developed to provide decision-makers with goals and policies for implementing, evaluating and modifying existing and future solid waste management programs. The Plan is divided into chapters which discuss the different components of the solid waste system. The chapters have an assessment of existing conditions and recommended actions, as well as timeframes for implementation. The Plan also includes an update to discuss solid waste programs in relation to our community's economic development. This Plan coordinates the County's solid waste system and programs with the State of Washington's *Beyond Waste Plan*.

SWMP Update Schedule

Date	Task	Involvement
Jan. 2012 – May 2014	Update chapters per laws, business, etc.	Staff, stakeholders
	Review suggested language with SWAC	Staff, SWAC
	Review potential policy / code changes	Staff
	Review completed Draft chapters with Cities	Staff, City reps
September 2014	Prepare public information materials	Staff
October 2014	Submit compiled Draft to SWAC	Staff
October 2014	Preliminary Draft Plan to Cities	Staff, City reps
November - December 2014	Public Outreach	Staff, public, stakeholders
December 2014	SEPA review	Staff, DOE
January 2015	BOCC work session	Staff, BOCC, stakeholders
Start January 2015 (on-going)	Finalize updates to Interlocal Agreements	City reps, staff
January 2015 - April 2015 (120 days)	Preliminary Draft Plan to Dept. of Ecology & WUTC	Staff, WA DOE, WUTC
April 2015	Update Draft Plan per DOE comments	Staff
April 2015	SWAC recommendation to BOCC	SWAC, staff
April - May 2015	Formal adoption of Plan Update by cities	City reps
April 2015	Formal adoption of Plan Update by BOCC	BOCC public hearing
May 2015 (45 days)	Final Plan Update to WA DOE	Staff
May 2015	Finalize outreach materials for public use	Staff
June 2015	Final comments from WA DOE	Staff, DOE

Executive Summary

The purpose of the solid waste management activities in Clark County is to protect and preserve human health, environmental quality and natural resources through efficient, cost-effective programs and services.

The Solid Waste Management Plan (Plan) was prepared to provide a guide for solid waste activities in Clark County. The Plan addresses recent changes while also looking forward to the future needs of the County.

The contents of this Plan have been prepared in accordance with requirement and intent of RCW 70.95.090. This Plan also incorporates the County's Moderate Risk Management Plan as required by RCW 70.105.220. The Plan was developed through a team effort by Clary County, the cities and town, and the Solid Waste Advisory Commission (SWAC). The SWAC members represented the interests of their agencies, businesses and public interest groups. As members of the community they also represented the public's interest.

The Plan is divided into chapters which discuss the different components of the solid waste system. The chapters contain an assessment of existing conditions and recommended actions. The Plan contains a five-year implementation schedule (Chapter 19) that lists all of the recommended actions and timeframes for implementation. The Plan also contains a new chapter, *Waste to Wealth: Economic Development*. This chapter details the economic benefits associated with the County's solid waste system. Recommendations from this chapter emphasize business opportunities and future economic development. This Plan also coordinates the County's solid waste system and programs with the State of Washington's Beyond Waste Plan.

Clark County is incorporating into this Plan the hierarchy for solid waste handling as identified by the United States Environmental Protection Agency (EPA). This hierarchy adopted in the Plan is as follows:

1. Source Reduction and Reuse
2. Recycling and Composting
3. Energy Recovery
4. Treatment and Disposal

Goals and Objectives

The goals of the Plan are:

- Promote sustainable actions and behaviors that ensures resources and options for future generations
- Maintain a solid waste system that supports economic vitality and conserves, natural and fiscal resources
- Achieve a reasonable balance among public convenience, public expenses, public health, and the environment
- Maintain flexibility to anticipate future changes and needs
- Promote source reduction, reuse and recycling
- Increase local control of solid waste management
- Maintain accurate waste stream measurement and monitoring
- Encourage cooperative and coordinated efforts among government agencies, citizens, and the private sector for managing solid wastes

Established with this Plan are the overall objectives of the regional solid waste management system. These are separated into longer-term (5-year) system objectives and shorter-term (2 year) objectives. These provide an important context and emphasis for education and outreach approaches.

The longer-term system objectives are:

- Increase the recycling rate to 55% and the total diversion rate to 70%
- Reduce per person per day landfilled volumes (pounds) by 5%
- Reduce the amount of total waste generated per person per day by 5% (this includes what is landfilled, recycled and recovered)

The shorter-term program objectives are grouped into these board categories:

- Increase and strengthen our public/private partnerships
- Broaden volunteer programs
- Develop programs to engage targeted audiences
- Raise community awareness of solid waste programs
- Increase participation in core programs: Green Business, Green Neighbors, and Green Schools
- Enhance the solid waste management system

Chapter 5 Education and Outreach outlines the specific targets for these program objectives.

Overview of Changes

Many of the changes to chapters and recommendations are a result of condensing and streamlining the information in this Plan. For example, internet links have been included as references to reduce language and appendices; duplicate recommendations in various chapters have been eliminated; more general recommendations have been removed to focus on recommendations that are action oriented and quantifiable.

Chapter 19 Implementation Schedule is a summary of all of the recommendations for the Plan. The implementation dates for each recommendation are shown on this schedule. Many of the recommendations are on-going and are currently in place.

Some of the changes include:

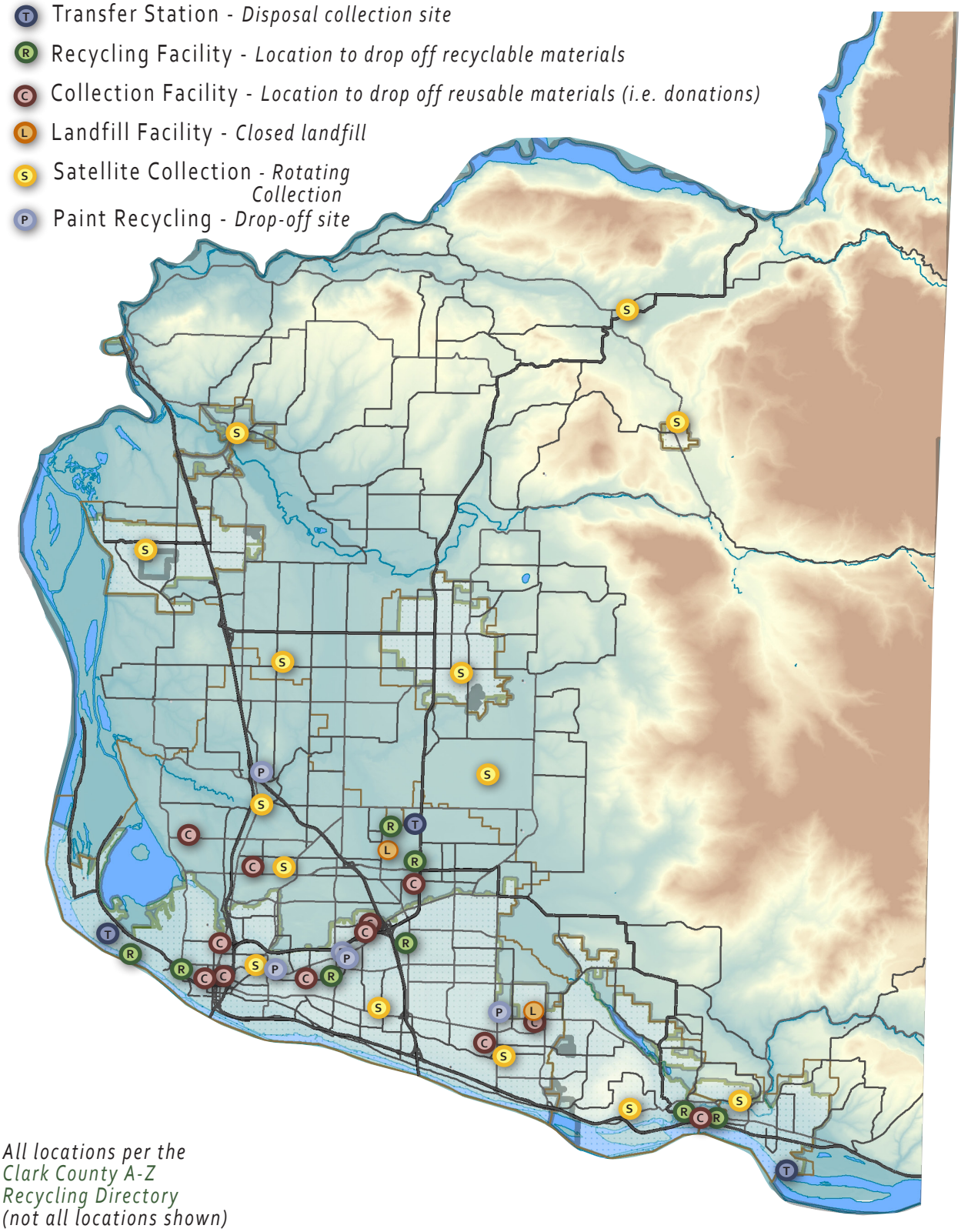
- ☑ ***Chapter 3 Sustainable Choices*** has been revised to provide more focus on sustainable materials management within the solid waste system.
- ☑ ***Chapter 5 Education and Outreach*** has been revised to focus on the process of how programs and outreach materials are developed and evaluated. This chapter discusses the goals and objective as well as measuring program effectiveness. Implementation of our three core programs (Green Businesses, Green Neighbors and Green Schools) is emphasized; current and ongoing programs are itemized. More emphasis has been placed on social media and community based social marketing.
- ☑ ***Chapter 7 Landfill Disposal*** has new recommendations for master planning the Leichner Landfill site and decommissioning the Rufener Landfill site.
- ☑ ***Chapter 13 Organic Wastes*** has several new recommendations including conducting a feasibility study on organic material processing capacity.
- ☑ Finally, ***a new chapter on Economic Development*** has been added to the Plan. This chapter and recommendations are designed to facilitate business growth within waste related industries.

Clark County Solid Waste Facilities

Clark County continues to expand the locations of facilities that collect various waste products for recycling, reuse and disposal. Other regional (southwest Washington / metropolitan Portland) facilities are available, as described in Chapter 12.

Legend:

- Transfer Station - *Disposal collection site*
- Recycling Facility - *Location to drop off recyclable materials*
- Collection Facility - *Location to drop off reusable materials (i.e. donations)*
- Landfill Facility - *Closed landfill*
- Satellite Collection - *Rotating Collection*
- Paint Recycling - *Drop-off site*



All locations per the Clark County A-Z Recycling Directory (not all locations shown)

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Chapter 1
Introduction

The Clark County Solid Waste Management Plan was developed to provide the community with goals and policies for implementing, evaluating and modifying existing and future solid waste management programs. This Plan includes updated descriptions of existing conditions and programs to reflect progress and accomplishments over the previous years. It lists policies and practices reviewed by the Solid Waste Advisory Commission (SWAC), solid waste staff, representatives of the six cities, one town, interested citizens, solid waste industry representatives and others. The policies and practices recommended by SWAC were adopted by the Clark County Board of County Commissioners and City Councils. They will guide solid waste policy into the future and outline programs and approaches for the coming five years.

This Plan provides the community with several important tools:

- **Promotes sustainable practices** for governments, non-governmental organizations, businesses and residents;
- **Review of pertinent regulations** and other management plans;
- **Guidelines for the development** of programs, policies and operating plans;
- **Planning for solid waste infrastructure** and operations (including facility siting criteria and process);
- **Background information to support facility permitting** decisions by Clark County Public Health and other state and local government agencies;
- **The technical support and justification for grant applications**, capital project fund requests, budget planning and future programs;
- **Serves as education** and information to the public;
- **Identifies and presents opportunities for collaborations** with others in the region and statewide;

The Plan also provides the general public with information about solid waste management in Clark County. More program and historical information is available on the internet or through the Clark County Solid Waste Program.

The Clark County Solid Waste Program is administered through the Department of Environmental Services, Solid Waste and Environmental Education Division. The purpose of solid waste management activities in Clark County is to protect and preserve human health, environmental quality and natural resources through efficient, cost-effective programs and services.

Plan Goals and Objectives

The intent of the Plan is to establish the foundation for a viable and functional system for the proper management of solid and moderate risk wastes in Clark County, both now and in the future. The Plan incorporates the following guiding or philosophical principles:

- **Promote sustainable actions** and behaviors that ensures resources and options for future generations
- **Maintain a solid waste system** that supports economic vitality and conserves natural, fiscal resources
- **Achieve a reasonable balance** among public convenience, public expenses, public health and the environment
- **Maintain flexibility** to anticipate future changes and needs
- **Promote source** reduction, reuse and recycling
- **Increase local control** of solid waste management
- **Maintain accurate waste stream** measurement and monitoring
- **Encourage cooperative and coordinated** efforts among government agencies, citizens and the private sector for managing solid wastes.

Federal and State Guidelines and State Planning Requirements

The United States Environmental Protection Agency (EPA) has identified the following hierarchy as the most environmentally sound strategies for managing municipal solid waste (Figure 1-1). Source reduction and reuse is the most preferred method, followed by recycling and composting. Last is disposal in combustion facilities with energy recovery and properly designed landfills.

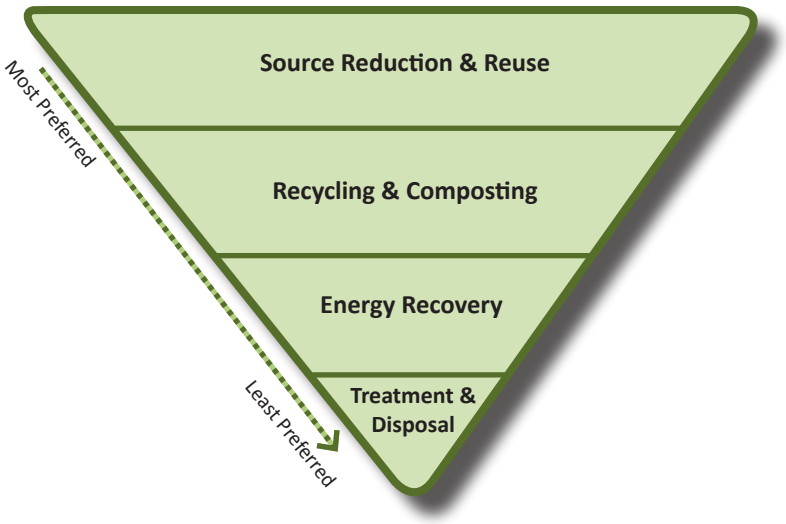

Figure 1-1

As are all counties in the state, Clark County is required by the Washington Solid Waste Management, Reduction and Recycling Act (Revised Code of Washington [RCW] 70.95) to prepare a 20-year Comprehensive Solid Waste Management Plan (the Plan). The Plan must be developed in association with cities and towns located in the county and reviewed (and revised if necessary) at least every 5 years.

The Plan has been prepared in accordance with requirements and intent of RCW 70.95 and the Washington Department of Ecology's *Guidelines for the Development of Local Solid Waste Management Plans and Plan Revisions* (February 2010, Publication No. 10-07-005). Clark County is incorporating into this Plan priorities for solid waste handling which place energy recovery at a higher hierarchy level than the state. The County will continue to emphasize "Reduce, Reuse & Recycle" in its programs and messages. The County has established the United States Environmental Protection Agency (US EPA) hierarchy to assist in developing policy and programs for solid waste management.

In accordance with RCW 70.95, the Plan emphasizes the source separation of recyclable materials from solid wastes as a fundamental component of a local jurisdiction's solid waste management strategy, and implements waste reduction and recycling programs to assist the state in effectively reaching the state's goal of a statewide recycling rate of 50% of the waste stream.

The Plan includes an inventory and evaluation of existing programs and facilities, a twenty-year forecast of facility and program needs, an implementation plan and schedule, and methods for monitoring and evaluating solid waste management activities within the County and cities.

Relationship to Other Plans and Reports

The following plans and reports that are already in effect or are being developed separately may interact with the contents of this Plan. The following summarizes the more significant of these and their connection with the Plan.

Washington State Solid Waste Management Plan

Washington State, through the Department of Ecology, is required under RCW 70.95 (*The Waste Not Washington Act*) to develop and maintain a long-range plan for the management of solid wastes. The goals and policies expressed in the state plan establish the framework upon which solid waste systems are to be administered and implemented throughout the state. Local plans should be consistent with these goals and policies, unless these management approaches are superseded by new state laws, regulations or plans. The current state plan, *Washington State's Beyond Waste Plan*, was issued in November 2004 and updated in 2009 and 2014. The vision of the plan views waste as inefficient and challenges programs across the state to target toxics for elimination within one generation.

> "We can transition to a society where waste is viewed as inefficient, and where most wastes and toxic substances have been eliminated. This will contribute to economic, social and environmental vitality."
>
> - *"Beyond Waste Plan" vision*

2014 State Waste Plan Sections

1. Managing Hazardous Waste and Materials
2. Managing Solid Wastes and Materials (includes some MRW, building materials)
3. Reducing Impacts of Materials and Products (includes some MRW, building materials)
4. Measuring Progress
5. Providing Outreach and Information

The vision, goals and recommendations of the *Beyond Waste Plan* are being incorporated into this Plan and will be included in program opportunities during the upcoming 5 years.

Oregon State Solid Waste Management Law

In addition to the requirement of the State of Washington, this Plan must also meet the State of Oregon's requirements. All out-of-state local government jurisdictions that use Oregon solid waste disposal facilities must comply with Oregon statutes. Clark County and its cities therefore must also meet the applicable Oregon Recycling requirements. In 1983, Oregon Revised Statute (ORS 459) required source-separated curbside collection for residents. The law was updated in 1991 (ORS 459A) with additional requirements for curbside collection and education, including curbside recycling, the expansion of the promotion / education of recycling programs and requirements for multi-family facilities to provide recycling options.

Previous Clark County Solid Waste Management Plans

Solid waste planning in Clark County was initiated in 1967 with the adoption of the County's first Solid Waste Management Plan. The County adopted updates to the Plan in 1973, 1981, 1985, 1994, 2002, 2008, and this current update. The Plan was also amended in 1986, 1988 and 2006 to address particular focused needs. The Milestones in *Appendix G* provides an overview of the planning history. This Plan is the most current plan for Clark County's rapidly changing solid waste system and replaces all previous plans.

Comprehensive Growth Management Plan

The Clark County Comprehensive Growth Management Plan was updated in 2007 with amendments in 2008, 2009 and 2010. This land use plan established a framework for how Clark County land should be used in the future, including areas designated for urban development and areas identified and designated for rural and natural resource preservation. Plan updates are scheduled for 2016.

Emergency Debris Plan

The Clark Regional Emergency Services Agency (CRESA) is a regional public safety agency that provides 9-1-1 dispatch, emergency management, and other public safety

related activities to the community. CRESA's service area includes each of the six cities and one town within Clark County as well as the unincorporated areas of the county. These services are provided through an Interlocal Agreement.

Response plans have been prepared and can be seen online at www.cresa911.org/response-plans. As a part of their responsibilities, CRESA activates the Emergency Operations Center to help emergency responders effectively coordinate during emergencies. Environmental Services, Public Works and Public Health Departments all participate in the Emergency Operations Center.

During an emergency event, the County will work with the cities, CRESA and the Emergency Operations Center to facilitate and coordinate the removal, collection, and disposal of debris following a disaster. Natural and man-made disasters precipitate a variety of debris. The quantity and type of debris generated from any particular disaster is a function of the location and kind of event experienced, as well as its magnitude, duration, and intensity.

Moderate Risk Waste Management Plan

The original *Moderate Risk Waste Management Plan* was prepared for both Clark County and Skamania County and was adopted on December 14, 1988. The *Moderate Risk Waste Management Plan* was amended in May 1991, July 1991, July 1992, September 1992 and March of 1994. The two counties prepared separate plans when the *Clark County Moderate Risk Waste Plan* was incorporated as a chapter into the *Clark County Comprehensive Solid Waste Management Plan* (the 2002 and 2008 updates). The *Moderate Risk Waste Plan* has been updated as a chapter in this Plan. In 1997, program responsibility for Moderate Risk Waste for Clark County shifted from the Southwest Washington Health District (now known as Clark County Public Health) to the Clark County Solid Waste Program.

Programmatic Environmental Impact Statement for the Plan

A Determination of Non-significance has been issued with this Plan. The *Determination of Non-significance and the State Environmental Policy Act (SEPA) Environmental Checklist* for this Plan are in *Appendix B*. This *Checklist* evaluates the environmental impacts associated with implementing the programs or the non-site-specific aspects of the programs and facilities recommended in the Plan.

Washington Utilities and Transportation Commission Cost Assessment

A cost assessment has been prepared for submittal to the Washington Utilities and Transportation Commission (WUTC) as part of the Plan. This cost assessment is required by RCW 70.95 and provides the WUTC with an opportunity to review and comment on the impacts of implementing the Plan's programs on solid waste collection rates. The report was prepared to conform with the *Cost Assessment Guidelines for Local Solid Waste Management Planning* (Second Edition) revised and issued by the WUTC in August 2001. The cost assessment is presented in *Appendix C*

Emergency Response Source: C2G Environmental

Biosolids Management Plan

Currently, the county, cities and biosolids handlers use EPA's 40 CFR Part 503, WAC Chapter 173-308, and the Washington Department of Ecology's Best Management Practices (BMP's) as guidance to maintain regulatory compliance.

NPDES Stormwater Management Program

The NPDES Municipal Stormwater Permits (issued by the Washington Department of Ecology) govern how jurisdictions manage their municipal separated stormwater sewer system (MS4s) to protect stormwater runoff per the Clean Water Act. Clark County is a Phase I permittee while the cities of Battle Ground, Camas, Vancouver and Washougal are Phase II permittees. Secondary permittees include Clark College, Port of Vancouver and Washington State University - Vancouver. The Department of Ecology issued updated modified permits in December 2014 outlining updated requirements for the permittees. The stormwater management programs are designed to reduce the amount of pollutants discharged to waterways, such as streams, lakes and wetlands, from municipal-owned stormwater sewers to the maximum extent practicable. The Solid Waste Program education on proper storage, use, and disposal of hazardous or toxic materials supports the stormwater programs. The Solid Waste Program for Household Hazardous Waste collection and disposal is an important effort to reduce pollutants that may enter stormwater. Other Solid Waste Program actions that support stormwater management are projects or activities that reduce the use of pesticides and fertilizers, such as natural gardening. The Green Business program and Business Technical assistance program educates businesses on solid waste issues that may contribute to stormwater pollution.

Groundwater Management Plan

In order to protect the quality of the existing groundwater resources, the county, cities and major water purveyors have engaged in ongoing groundwater planning. These planning efforts involve close cooperation among local governmental agencies within the county. The primary objective of these planning projects is to develop and implement programs that will protect the quality and quantity of the groundwater resources.

Clark County's Groundwater Management Planning Program was initiated in 1987 following Ecology's recognition of Clark County as a critical groundwater supply area. A network of advisory committees were established to guide the development of plans. Information and programs developed for the planning efforts supports the county's effort to comply with the state Growth Management Act and Federal Clean Water Act. It also provides valuable information to comply with the Endangered Species Act.

The City of Vancouver has the *Water Resources Protection Ordinance* to protect the rivers, lakes, streams and groundwater in the community. The Ordinance requires everyone to follow minimum standards that help protect the "critical" aquifers underlying the entire city. It also establishes greater standards of compliance for businesses and industries that manage hazardous materials; creates "Special Protection Areas" around the City's water stations as an additional safeguard; and provides cooperative, cost-effective solutions through technical assistance, education

and public outreach.

A variety of plans and programs are now in place to guide planning efforts, coordination, protection and enforcement related to groundwater resource assets. The 2011 Coordinated Water System Plan Update outlines the various components that are currently in place. The plan outlines the role of the county as well as the cities that utilize the area's aquifers.

Shoreline Management Plan

The Washington State Shoreline Management Act requires counties and cities to update their Shoreline Master Programs (SMPs). SMPs govern activities on and near lakes, streams, and rivers. Battle Ground, Camas, Clark County, La Center, Ridgefield, Vancouver, Washougal, and Yacolt partnered in a two- to three-year effort to update their respective SMPs. The plan's process included:

1. Determine "shoreline jurisdiction" or where the SMPs apply;
2. Inventory, analyze, and characterize shoreline functions, ecosystem processes, public access opportunities, shoreline uses, and potential protection and restoration areas;
3. Develop goals, policies and regulations for shorelines regulated by the SMPs. Analyze cumulative impacts;
4. Develop a restoration plan and demonstrate no-net-loss of ecological functions;
5. Adopt individual Shoreline Master Programs; and,
6. The County approved the updated plan in September 2012. SMP regulations are included in Clark County Code Chapter 40.460.

System Related Contracts

The County and cities have entered into major long-term contracts with private service providers for solid-waste-related services. The Columbia Resource Company (CRC) contract, between Clark County, the City of Vancouver and CRC, gives CRC responsibility for developing and operating transfer stations and a recycling processing facility. The contract is for processing and marketing of residentially collected recyclables and for transfer, transport and landfill disposal of wastes at the Finley Buttes and Wasco Landfills in Eastern Oregon. CRC is a wholly owned subsidiary of Waste Connections, Inc.

The County and cities have entered into other contracts with private companies for collection of residential recyclable materials and yard debris. Some cities contract for garbage collection if this is not done through municipal crews or through state franchises. Additional contracts have been entered into for the recycling and disposal of household hazardous waste.

Post Closure Agreements:
The Disposal Agreement between Clark County, the City of Vancouver and the Leichner Brothers Land Reclamation Corporation establishes responsibilities for closure, post-closure maintenance and groundwater remediation of the closed Leichner Landfill.

The Settlement Agreement is between Clark County, the City of Vancouver, Clark County Disposal Group companies and the WUTC. The agreement establishes funding channels for closure, post-closure maintenance and remediation activities at the Leichner Landfill.

Other Closed and Decommissioned landfills - The County contracts for landfill gas monitoring and groundwater monitoring at the closed English Pit Landfill. The Rufener Landfill has been inactive for more than a decade and has been closed and decommissioned. More information on these landfills is located in Chapter 10 Landfill Disposal.

Solid Waste & Recycling Contractor Services

	Single-family Recycling	Multi-family Recycling	Yard Debris	Garbage
Ridgefield	Contractor: WCW Expires: December 31, 2019 Option to extend for 2 – 5 year periods			
Camas*	Contractor for recycling & yard waste: WCW Expires: December 31, 2019 Option to extend for 4 – 5 year periods			
	Contractor for roll off service: WCW Extended through December 31, 2018 Option to extend for 1 more 5 year period			
Washougal	Contractor: WCW Expires: April 1, 2024 Option to extend for 4 – 5 year periods			
Vancouver	Contractor: WCW Expires: January 31, 2020 Option to extend w/annexations. The City may extend the contract for two additional one-year periods			
County-Urban (includes City of Battle Ground)	Contractor: WCW Expires: December 31, 2018 (one-year extension)		Contractor: WCW Expires: July 31, 2023 with two 1-year options to extend.	WUTC
County-Rural (includes City of La Center, Town of Yacolt)			La Center through WUTC	WUTC

** Camas hauls residential*

Regional solid waste disposal system (includes recycling processing) - facilities used by County & all municipalities	Clark County contracts with Columbia Resource Company for the regional long-term disposal system. Contract Expires: December 31, 2021. Option to extend for 1-5 year period. Note: Under State law, the County is required to plan for solid waste facility needs twenty years into the future. After conducting a competitive process, in 1990 Clark County entered into a contract with Columbia Resource Company (CRC) to provide processing, transfer and disposal of municipal solid waste and processing of recyclable materials.

Waste Connections of Washington (WCW) - www.wasteconnections.com) ; www.wcnorthwest.com

WCW: Holds contract for School Recycling (Battle Ground, Camas, Evergreen, Hockinson, La Center, Ridgefield, Vancouver, and Washougal school districts). Expires September 31, 2018. No additional options to extend on this contract.

Stericycle: Mobile Collection & Door-to-Door. Contract expires: December 31, 2015. www.stericycle.com

EmpowerUp: Contract expires December 31, 2015 for foam collection services.

Plan Development and Adoption Process

The Solid Waste Advisory Commission (SWAC) used the following evaluation criteria to determine if a recommendation should be implemented for this Plan:

- **A practical commitment to sustainability** that ensures resources and options for future generations
- **Reasonable balance among public convenience, public expenses, public health,** and the environment. *Recommendations* should look at solid waste management practices in the context of attempting to balance environmental values/benefits with both economic and social equity considerations and natural resource conservation and environmental health values.
- **Flexibility to anticipate** future changes and needs. *Recommendations* should support long term goals and allow for changing circumstances.
- **Commitment to waste prevention,** reduction and recycling. *Recommendations* should support the prevention and reduction of toxicity and solid waste as well as encourage recycling and other waste diversion opportunities.
- **Increased local control** of solid waste management.
- **Solid waste services should be regulated** by the appropriate level of government as close to the citizens as possible instead of policies set for other regions. The County and Cities should have the management tools to achieve the goals of the Plan while fostering competition among service providers.
- **Integrity of waste stream measurement** and monitoring. *Recommendations* should allow the County to measure, compare and report our past and present efforts in a way that allows us to plan for the future and evaluate the effectiveness of our programs and the resources that we devote to them.
- **Encouragement of cooperative and coordinated** efforts among government agencies, citizens, and the private sector for managing solid wastes.
- **The County should maintain its commitment** to collaborative management of solid waste by informing and involving citizens, other agencies, and the private sector.

The current process for this update involved an internal and external review of the chapters with recommended language changes. Updates include changes in the solid waste system and recommended changes or additions/deletions to alternatives. This language was reviewed by the cities and town. SWAC reviewed each chapter along with staff. This included a status review of Plan recommendations and any suggested changes. Analysis and discussion occurred during the regular monthly SWAC meetings. SWAC reviewed and recommended the Preliminary Draft Plan.

A Preliminary Draft Plan was submitted to the Washington Department of Ecology for review and comment and to the WUTC for evaluation for collection ratemaking purposes. On the basis of the comments received from the Washington Department of Ecology and the WUTC, revisions were made to the Plan. The Plan was reviewed and adopted in public meetings by the participating cities in accordance with the Interlocal Agreements with those jurisdictions. The Plan was adopted by the Clark County Board of Commissioners in a public hearing.

Plan Modification and Revision

RCW 70.95 requires that the Plan be reviewed and revised, if necessary, at least every five years; updating can occur at the five-year review or at other points in time, as needed. With each update, the Plan must be extended to show a revised 6-year construction and capital acquisition plan and any long-range needs for the next 20 years. The next plan review and update will be scheduled for 2020.

The County and/or participating cities may elect to modify the Plan prior to the full plan update. Minor adjustments to the plan are within the five-year planning window and are termed amendments. In addition, the Washington Department of Ecology maintains the authority to require minor changes to the Plan. For minor revisions, such as not undertaking activities from the 5 or 20-Year Plans, the County will:

- **Explain in writing** how the deviation will better contribute to accomplishing one or more goals of the Plan;
- **Notify all cities** and town;
- **Notify and give the public** an opportunity to comment, either prior to, or at a regular SWAC meeting;
- **Notify the Washington Department of Ecology** of the proposed modification;
- **Discuss the issue with SWAC** and schedule their vote on the changes.

Plan revisions (such as those which undertake actions outside of the 5 or 20 Year Plans, or alter the goals of the Plan) and would go through a full approval process (all cities and towns, the Washington Department of Ecology, plus Council) and required a new or revised WUTC cost assessment.

End Chapter 1

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Chapter 2
ADMINISTRATION

The Solid Waste Management Plan has many different elements, and each is implemented through its own combination of public and private agencies, contracts and laws. The private sector operates practically all solid waste collection, transport, processing and disposal operations in Clark County, while public agencies have responsibility for ensuring their effectiveness and implementing public policies, as well as protecting the public health and welfare. Thus, the public-private relationships set forth in a variety of contracts and laws are vital to the economic health of solid waste management in the county. This chapter looks at the administrative roles of jurisdictions for solid waste management in the county. Chapter 16, Enforcement, reviews solid waste regulations which govern local government, the solid waste industry and solid waste generators. County background, demographic and economic information and data are available at www.gis.clark.wa.gov.

Regulations Governing Local Government - State law requires the county to prepare and update a 20-year solid waste management plan, including plans for solid waste handling facilities, programs to reduce the amount of waste generated, incentives for source separation, residential recycling collection, education and promotion on waste reduction and recycling and plans to manage moderate risk wastes. The Washington Department of Ecology enforces the planning requirement, in part, through distribution of grant funds for projects which help implement the plan. State law, RCW 36.58, RCW 35.21, RCW 81.77, regulates how cities and counties contract for solid waste services and how they generate revenues to fund solid waste management activities. Refer to Chapter 17, Funding and Financing, to review funding options.

Administrative Roles

Local governments, collection, disposal and processing companies, regulatory agencies and a variety of other businesses, agencies and organizations work together to manage solid waste in Clark County. Administration is a cooperative effort between city and county elected officials, county and municipal staff, and state agencies.

Clark County

Department of Environmental Services - Solid Waste and Environmental Education Division administers the Solid Waste Program. This includes managing the long term solid waste planning and facility development within the County. Through this authority, the County provides regional coordination, regional services, services to cities and other agencies and local services in the unincorporated areas of the county.

The County:

- Prepares and updates the County's 20-year Comprehensive Solid Waste Management Plan;
- Works with over 30 public and private agencies to coordinate solid waste management activities, including the County Solid Waste Advisory Commission (SWAC);
- Contracts for long-term disposal of waste generated throughout the county and for household hazardous waste collection and disposal;
- Supervises maintenance and monitoring of two closed landfills in the county;
- Provides contract administration services to cities and school districts;
- Promotes waste reduction through a variety of educational efforts throughout the county;
- Provides technical assistance on proper waste management and related environmental topics to businesses throughout the county;
- Contracts for recycling collection programs in the unincorporated areas, including residential curbside and multi-family recycling collection, yard debris collection and recycling collection at schools;
- Plans for potential recovery or disposal of disaster related debris.

Clark County Public Health - the designated enforcement agency for solid waste regulations in Clark County. Public Health administers the state's permit system for solid waste facilities, such as landfills and transfer stations, and enforces the State's Solid Waste Handling Standards, including handling of municipal and industrial sludges and petroleum-contaminated soils. Public Health enforces County code for regulations on solid waste, hazardous waste, and biomedical waste and responds to complaints regarding illegal dumping, burying and accumulations of waste on private property.

Clark County Solid Waste Advisory Commission

Clark County's Solid Waste Advisory Commission (SWAC) was originally formed in 1977 by Clark County Ordinance 1977-10-2, in accordance with the provisions of RCW 70.95. This ordinance, as modified over time, has been codified as Clark County Code (CCC) Chapter 24.16. Clark County's SWAC currently consists of nine members, appointed by the Clark County Board of Commissioners, and represents the following interests:

- Vancouver City Council
- Councils of remaining cities, towns
- Public interest groups
- Clark County business community
- Solid waste management industry
- Citizens of North Clark County
- Citizens of Southeast Clark County
- Citizens of Southwest Clark County
- Citizens of Clark County at large

The role of the SWAC is to advise the County Board of Commissioners on solid waste matters; to comment on rules, policies and ordinances; to assist in the development of plan updates; to serve as a means for citizens, industry or other bodies and individuals to participate in solid waste planning; and to advise on any other solid waste matters, as directed by the Board. The SWAC has reviewed and actively participated in the preparation of the Plan.

Cities within Clark County

State law assigns solid waste planning authority to individual local governments (RCW 70.95.08) and requires each county in the state to prepare a plan in cooperation with cities and towns within that county. Cities may choose from the following three options in order to meet their planning requirements:

- Prepare and deliver, to the county auditor, a plan for the city's own solid waste management to be integrated into the county's plan;
- Enter into an agreement with the county in which the city participates in preparing a joint city-county plan for solid waste management;
- Authorize the county to prepare a plan for the city's solid waste management to be included in the county's plan.

The local governments who participate in the preparation of this joint county-city *Solid Waste Management Plan*, by interlocal agreement with the County, are the Cities of Battle Ground, Camas, La Center, Ridgefield, Vancouver, Washougal, and the Town of Yacolt. The City of Woodland, a small portion of which lies in northwest Clark County and the remainder in Cowlitz County, is participating in *Cowlitz County's Comprehensive Solid Waste Management Plan*. After preparation of the Plan, participating jurisdictions will formally consider adoption of the Plan through local resolutions of adoption. Interlocal agreements with the participating cities are included in *Appendix D* and includes language on mandatory regional coordination to provide direction to the County concerning the Regional Solid Waste System.

A list of cities and their services are as follows:

City of Vancouver - Accounts for about 40% of the county's residents. City of Vancouver staff performs the following roles:

- Administers a recycling (both single and multi-family), yard debris and garbage collection contract for the city. This function includes serving as a liaison between the collection contractor and customers on billing and service issues, as well as developing rate structures and rate modeling;
- Operates an on-going neighborhood clean-up program and a leaf disposal program;
- Licenses haulers of commercially-generated recyclable materials;
- Coordinates with contractor to offer a base level of recycling for all commercial customers
- Participates in and coordinates with the educational programs offered by the County, the collection contractor, and other partners;
- Maintains data on city programs and produces informational materials and reports;
- Reviews and provides input into county solid waste program annual priorities, project work plans, publications and proposed annual budgets;
- Administers and enforces Vancouver solid waste ordinances and responds to complaints.

City of Camas - Provides garbage collection with city staff and vehicles and contracts for recycling collection, yard debris, and other services.

City of Washougal - Contracts for garbage, recycling and yard debris collection.

City of Ridgefield - Contracts for garbage, recycling and yard debris collection.

City of Battle Ground - Participates in Clark County's recycling collection contracts for single-family, multi-family and yard debris.

Yacolt and La Center - Receive recycling collection services through county-administered contracts.

Garbage collection in Battle Ground, Yacolt and La Center are administered through the Washington Utilities and Transportation Commission (WUTC). The cities conduct periodic clean-up events within their borders. La Center administers yard debris collection through the WUTC.

Cities review and provide input into county solid waste program annual priorities, project work plans, publications and proposed annual budgets.

The region's cities and town account for 52.5% of the population and 60.5% of the region's disposed waste stream.

Table 2-1 Percent of Waste Volumes by Population Center

Jurisdiction	% of Waste	% of Population
Battle Ground	3.5%	4.2%
Camas	4.5%	4.7%
Clark County	39.5%	47.5%
La Center	0.6%	0.7%
Ridgefield	1.7%	1.4%
Vancouver	45.1%	37.8%
Washougal	4.8%	3.4%
Yacolt	0.3%	0.4%
	100.0%	100.0%
Cities Combined	60.5%	52.5%

Source: Data Report (Plan Appendix J), an average of waste volumes for the last 5 years, population data was taken from the Washington Office of Financial Management.

Regional Solid Waste System Steering Committee

Agreements between the County and the cities and town includes language outlining the role of the Regional Solid Waste System Steering Committee (the "RSWSSC"). The role of the RSWSSC is to provide direction to the County concerning the development of the Regional Solid Waste System, and its infrastructure, and the implementation of the recommended priorities and programs set forth in the Comprehensive Solid Waste Management Plan. The RSWSSC provides recommendations to the County on matters such as: contracts; budgets; public education, outreach and marketing; resource sharing; system analysis and improvements. The RSWSSC reviews the priorities for waste reduction and waste recycling set forth in the Comprehensive Solid Waste Management Plan, to assure that these priorities are incorporated in the budget proposals and work programs of member organizations, to assess the results of programs and projects and to assure that future infrastructure needs are addressed through operational practices and procedures. The RSWSSC will maintain regular communication with the Clark County Solid Waste Advisory Commission and elected officials.

Southwest Washington Clean Air Agency

The Southwest Washington Clean Air Agency (SWCAA) is responsible for enforcing federal, state and local outdoor air quality standards and regulations in Clark, Skamania, Lewis, Wahkiakum and Cowlitz counties. The primary role of SWCAA, with respect to solid waste management, is regulation of emissions from incinerators and landfill gas control systems and implementation of the ban on outside burning in the non-attainment areas of the county. This burn ban is described in the chapter on *Enforcement*.

Washington Department of Ecology

The Washington Department of Ecology is the state agency responsible for oversight of solid waste management. Since passage of the first Solid Waste Management Act in 1969, the focus of solid waste laws and regulations in the state has evolved from the closing of open burning dumps to the current implementation of a comprehensive statewide management plan, Beyond Waste, that relies on sophisticated management strategies. The state retains authority for setting standards for solid waste handling systems, while operations and management responsibilities are generally delegated to local governments. The Washington Department of Ecology controls compliance with RCW 70.95, WAC 173-304, and WAC 173-350 through its review and approval of solid waste management plans and facility permits. Regulatory authority over solid waste facilities is delegated by the state to local jurisdictional health departments. Approval of permits by local health departments may be appealed by the Washington Department of Ecology to the Washington Pollution Control Hearings Board.

Compost Facility Operator Training

Source: WA Department of Ecology, D. Corum

Washington Utilities and Transportation Commission

The Washington Utilities and Transportation Commission (WUTC) regulates solid waste collection activities under RCW 81.77, through the issuance of certificates entitling private companies to provide solid waste collection services of a certain type — garbage, refuse and demolition waste — within specified geographic areas of the state. The authority of the WUTC, under RCW 81.77, is limited to collection of solid waste from generators and does not extend directly to the regulation of hauling solid waste from transfer stations.

Under RCW 81.77, the WUTC also regulates the collection of source-separated recyclable materials from residences, if the local government does not contract for that service. The state's solid waste statutes do not give the WUTC the authority to regulate the collection or transportation of recyclable materials from drop-boxes or buy-back centers; nor, do the statutes provide authority for regulating the collection of recyclables from commercial or industrial generators. Transportation of these materials is regulated under Chapter 81.80 or is taken on by the cities. Although the WUTC does have authority to regulate this transportation, this authority is not exclusive.

Administrative roles in solid waste collection are summarized in Table 2-1. Administrative roles for solid waste management in Clark County are summarized in Table 2-2.

Table 2-2 Waste Collection Administration in Clark County

Geographic Area	Administering Agency & Operator		
	Garbage	*Recyclables*	*Yard Debris*
Unincorporated Clark County	WUTC, WCW	County Contracts, WCW	County Contract WCW
Vancouver	City Contract WCW	City Contract WCW	City Contract WCW
Camas	City, WCW	City Contract WCW	City Contract WCW
Washougal	City Contract WCW	City contract WCW	City Contract WCW
Ridgefield	City Contract, WCW	City Contract WCW	City Contract WCW
Battle Ground	WUTC, WCW	County Contracts WCW	City Contract WCW
La Center	WUTC, WCW	County Contracts WCW	WUTC
Yacolt	WUTC, WCW	County Contracts WCW	N.A.

WUTC - Washington Utilities & Transportation Commission;
WCW - Waste Connections of Washington
N.A. - Not Available

Table 2-3: Solid Waste Management Administrative Roles in Clark County

Solid Waste Roles	Responsible Agencies	
Administration	***Primary***	***Secondary***
Regional Plan	Clark County	Cities, Ecology, WUTC, SWAC
Regional coordination	Clark County	SWAC, Cities, neighboring jurisdiction
Long-term safe disposal (includes transfer & transport)	Clark County	Ecology, SWAC, Cities
MRW collection & disposal	Clark County	
Monitor closed landfills	Clark County	Ecology
Coordinate regional waste reduction education & promotion	Clark County	Cities, neighboring jurisdictions
Regional MRW Education	Clark County	Cities
Local education & promotion	Clark County, Cities	
Environmental assistance to businesses	Clark County, Cities	
Garbage collection administration	WUTC, Cities	Clark County
Recycling collection administration	Clark County, Cities, WUTC	
Recyclables processing	Clark County	
Local clean-ups, seasonal collections	Cities, Clark County	
Solid Waste management data & reports	Clark County, Cities	Ecology
Development of new solid waste programs	Clark County, Cities	Ecology
Siting of solid waste handling facilities	Clark County, Cities	Ecology
Plans for potential recovery or disposal of disaster related debris	Clark County, Cities, neighboring jurisdictions (i.e. Metro, DEQ)	

Recommendations

1. **Maintain a Regional Solid Waste System Steering Committee (RSWSSC) through Interlocal Agreements** to formalize roles, make recommendations of such matters as: contracts; budgets; public education; outreach and marketing; resource sharing; system analysis and improvements. (2-3)

2. **Coordinate with other agencies for educational** and technical assistance programs. (2-3)

3. **Work with Portland Metro to advance proposals that would mutually benefit both regions**; provide for a reciprocal exchange of technical assistance and input for areas of mutual concern; enhance communication; and when appropriate use joint contracts. (1-3)

End of Chapter 2

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Chapter 3
Sustainable Materials Managment

Vision for the Future

The vision for this update of the *Clark County Solid Waste Management Plan* is to continue moving toward a more sustainable future. In that future, citizens will be generating less waste and handling the wastes they do generate differently. This will happen through tried and true methods such as waste reduction, increased recycling, and composting, as well as through new alternative and even innovative approaches such as product stewardship, life cycle analysis, design for recycling, packaging regulation, and recycling market development programs; in short, as a society and community we need to rethink how we think about "waste". This movement or shift will not happen overnight or replace the current solid waste system. New approaches to waste management and new technologies must respect and build upon the previous work and programs that have been put in place and that have served the county and its citizens well for decades. Ultimately, it is up to the individual to decide what and how to consume, and through our programs we will strive to provide a variety of environmentally and socially-responsible waste prevention, diversion and disposal options that further this plan's goals.

Background

All materials come from the Earth. The foundation that underlies the world economy, prosperity and a healthy environment rests largely on how people extract and use the full range of materials that come from and return to the Earth such as wood, minerals, fuels, chemicals, agricultural plants and animals, soil, and rock. How our society uses materials is fundamental to many aspects of our economic and environmental future. From the solid waste perspective, which is the focus of this plan, much of this activity happens "upstream" from where all of these materials end up as components of the "waste stream". If we want the U.S. to be competitive in the world economy, the sustainable use of materials throughout their life cycle must be addressed within our goal to plan for managing waste.

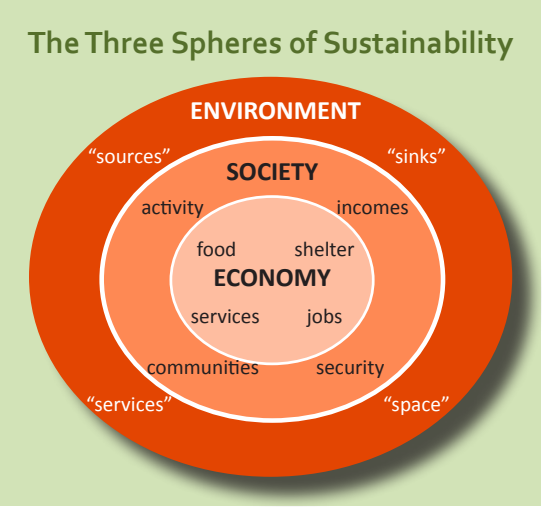


Figure 3-1

Considerations

Our increasing population places a higher demand on resources and ecosystem services. Our use of materials challenges the capacity of the Earth – air, water and land – and is the cause of many resulting environmental problems. This situation fundamentally affects many other aspects of our future, such as the economy, energy and climate. How do we fulfill our human needs and prosperity while using less material, reducing toxics and increasing recycling? This suggests that "business as usual" cannot continue, as depicted in Figure 3.2.

"The world at large and the United States in particular use vast amounts of materials and those amounts are rapidly increasing .[1]

- In the past 50 years, humans have consumed more resources than in all previous history.
- With less than 5% of the world's population, the U.S. was responsible for about one-third of the world's total material consumption.
- In 1900, 41% of the materials used in the U.S. were renewable (e.g., agricultural, fishery, and forestry products); by 1995, only 6% of materials consumed were renewable. The majority of materials now consumed in the U.S. are nonrenewable, including metals, minerals, and fossil-fuel derived products.
- Our reliance on minerals as fundamental ingredients in the manufactured products used in the U.S.—including cell phones, flat-screen monitors, paint, and toothpaste—requires the extraction of more than 25,000

pounds of new non-fuel minerals per capita each year.

- This rapid rise in material use has led to serious environmental effects such as habitat destruction, biodiversity loss, stressed fisheries, and desertification.
- The rate of deforestation in the tropics is approximately one acre per second.
- Half the world's tropical and temperate forests are now gone.
- 75% of marine fisheries are now overfished or fished to capacity.
- Freshwater withdrawals have doubled between 1960 and 2000; rivers including the Colorado, Yellow, Ganges, and Nile do not reach the ocean in dry seasons.

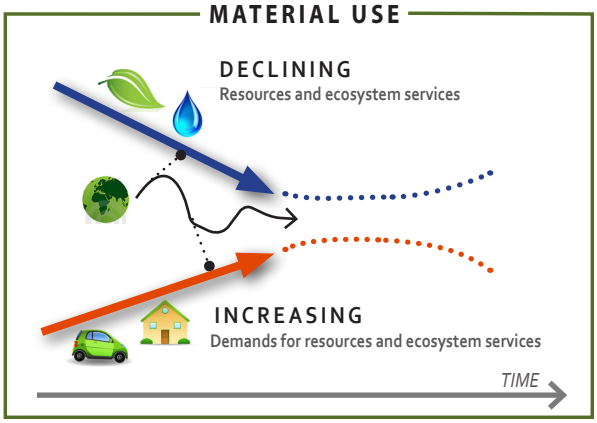


Figure 3-2

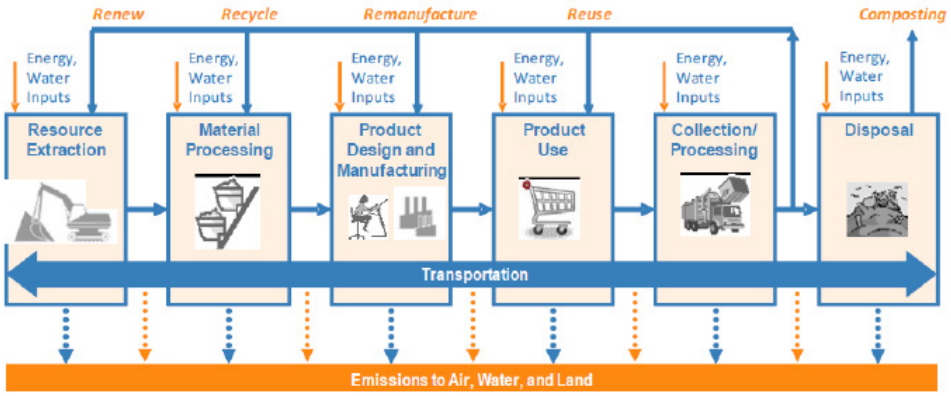
- Over half the agricultural land in drier regions suffers from some degree of deterioration and desertification.
- As available ore grades for some minerals decrease, the amounts of materials that have to be mined and processed to produce equivalent product increases, along with the environmental impacts.
- Persistent, bioaccumulative and toxic chemicals can now be found throughout the food chain."

Sustainable Materials Management

The magnitude of these environmental impacts is causing people to begin to look at all aspects of the material lifecycle that comprise our industrial practices and consumer habits. The material lifecycle begins with the extraction or harvesting of raw materials. Materials are then transported and processed to create the products and services that drive our society. They are distributed, consumed, reused or recycled, and ultimately disposed.

As Figure 3-3 depicts, each stage of this cycle requires energy and water as inputs and creates impacts on the environment. Because the stages are interrelated, it is important to rethink how we manage materials. If an item or product is disposed or even recycled without making the fullest and best use of it, all of the upstream inputs are also lost and the impacts multiplied. It is critical that both our consumption and waste generation choices are made with the best possible understanding and appreciation for what is upstream of the product being considered.

"If we want the U.S. to be competitive in the world economy, the sustainable use of materials must be our goal."
- United States Environmental Protection Agency



The Flow of Materials
Source: State/EPA 2020 Vision Workgroup

Figure 3-3

Why Use A Sustainable Materials Management Approach?

"The sustainable materials management approach focuses on waste prevention as a way to reduce environmental and health impacts of materials while strengthening the economy. This approach emphasizes the importance of looking at the full life cycle of materials: the design and manufacturing phase, the use phase, and the end-of-life phase when the material becomes waste. We need to identify more sustainable ways to design products that use less energy, water and toxics. The adverse environmental impacts of extraction, production and use can be far greater than those associated with disposal when the product becomes a waste.

A sustainable materials management approach is vital because available resources are declining worldwide, while demand for resources continues to grow. As people consume more resources in the form of products and materials, it causes more pollution, including greenhouse gases and other toxic releases, and limits the ability of all people to meet their basic needs, now and in the future. We are using resources faster than the planet can renew them.

The demand for finite resources will continue to increase, putting increased pressure on our environment. Since the industrial revolution, our society has been operating on the assumptions that resources are abundant, readily available and cheaply disposed. This is no longer the case. A linear use of resources where we extract materials, use them once, and then throw them away is unsustainable. Not only will we run out of key materials, but the throw-away economy continues to pollute our environment with waste and toxics. Instead, we can use our resources in a circular model, as illustrated by the sustainable materials management cycle., as depicted in Figure 3-5 (*WA State Solid and Hazardous Waste Plan (Beyond Waste) 2014 Update) .**

Table 3-1 How WA State Department of Ecology's Work Fits Into the Sustainable Materials Management Cycle *

Design and Production	Use and Reuse	End-of-Life Management
Compliance with Toxics in Packaging, Children's Safe Products Act, Better Brakes and other product laws	Pollution Prevention planning	Pollution Prevention planning
Food waste prevention	Environmentally preferred (green) purchasing	1-800-Recycle Hotline
Green chemistry	Technical assistance and information on safe use of chemicals and toxic products	E-Cycle and LightRecycle Stewardship Programs
Alternatives Assessment Guide	Support of re-use networks	Solid waste facility assistance
Comprehensive lean and engineering assistance to businesses	Local source control partnership	Hazardous waste compliance
		Permitting hazardous waste facilities
		Local source control partnership
		Most recycling (including organics) and moderate risk waste assistance
Currently, most of Ecology's work is on end-of-life management activities.		

**See Figure 3-4 for an illustration of the Sustainable Materials Management Cycle.*

Figure 3-4

From: US EPA Source Material Management. Adapted from "Design Guidelines for Sustainable Packaging," Sustainable Packaging Coalition, Green Blue, 2006.

Life Cycle

In order to minimize the amount of materials involved and all the associated environmental impacts, a new way of thinking is needed. Life cycle materials management is an approach to serving human needs by using/reusing resources most productively and sustainably throughout their life cycles and is dependent on the price system, regulatory framework, technical information and human mindsets all working together. The EPA's *Road Ahead* document provides additional information.

By considering system-wide impacts, life-cycle materials management casts a far broader net than traditional waste and chemicals management approaches and represents a change in how we think about sustainable choices.

Life Cycle Assessment (LCA) is a method used to track a product and its interactions with the environment from cradle to grave. *Life Cycle Assessment* provides a clearer understanding of a product's full cost, including costs to the environment, and benefit to the economy, and can identify ways to improve the sustainability of a product. There are many means by which life cycle materials management can be accomplished. For instance, careful industrial and product design that reduces virgin material use and reuses materials can reduce what is taken from the Earth and put back into the environment.

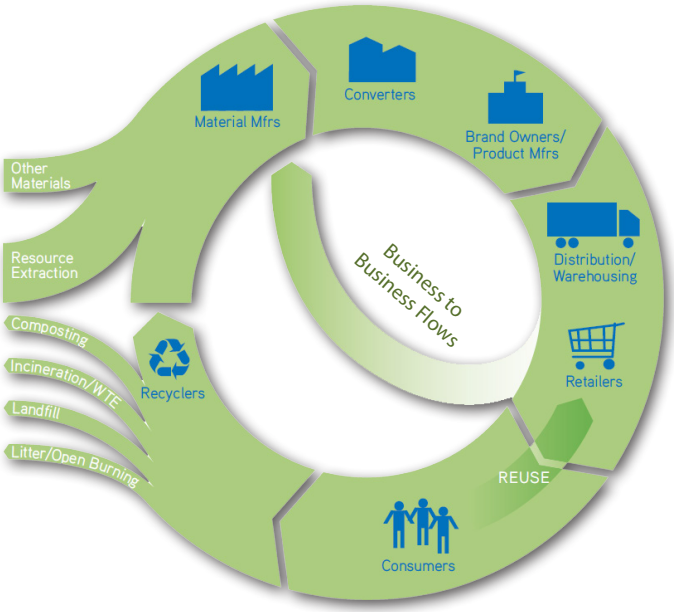


Figure 3-5

From: US EPA Source Material Management. Adapted from "Design Guidelines for Sustainable Packaging," Sustainable Packaging Coalition, Green Blue, 2006.

Product Stewardship

Product Stewardship (PS), as depicted in Figure 3-6 is an important tool to address environmental impacts from the perspectives of production, consumption and end-of-life management of products through design, development and product launch. In the late 1990s, a coalition of local and state government agencies in Washington and Oregon, in conjunction with EPA Region 10, formed the Northwest Product Stewardship Council (NWPSC) to research and promote product stewardship in the Northwest. By working together through the Council, the member agencies have been able to combine resources, expertise and efforts to maximize the effectiveness of each agency's efforts and to work cooperatively toward state, regional or national solutions. While the impacts of product and packaging waste are at the local level, the decisions and negotiations often happen at a national level. By working together through NWPSC, local governments have been able to work with national and multi-national corporations on pilot programs and policies, and participate in national dialogues on product stewardship approaches. This process helped establish producer responsibility legislation for electronic wastes (televisions, computers and monitors). The E-Cycle Washington program kept 238,366,228 pounds of electronic waste out of the landfill in its first 5 years.

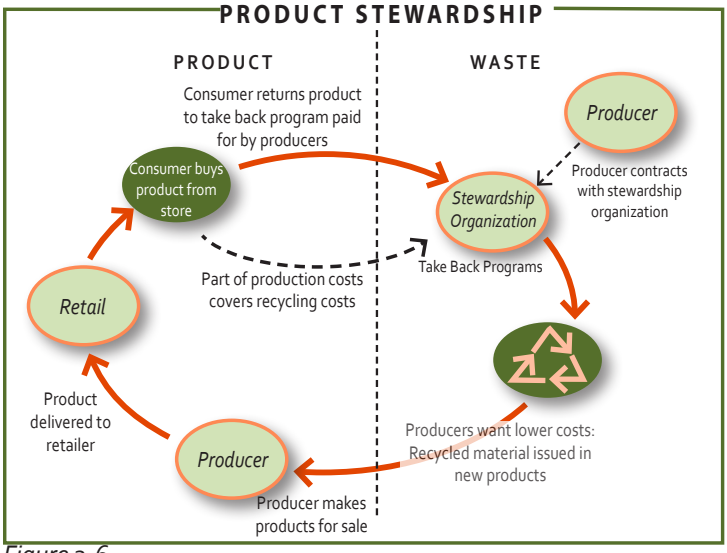


Figure 3-6

Conclusions

The path to a future of promise and prosperity provides many opportunities for shifting from the traditional waste management approach to a sustainable materials management approach to move beyond "end of pipe" controls by targeting interventions upstream. Opportunities include: sustainable use of materials/resources, management of chemical risks, and conservation of energy and water. The path requires a systems perspective that designs products with life cycle and environment in mind and uses more renewable and less toxic materials.

Recommendations

1. **Continue to pursue and develop product stewardship programs,** in coordination with other public and private entities.(3-5)

2. **Integrate the Solid Waste Program to include other environmental issus,** such as source control, that has an impact on, and is significantly affected by, solid waste. (3-3)

3. **Lobby state and federal governments to pass legislation** that requires waste prevention and product stewardship: including packaging reduction and improvements. (3-5)

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1 United States Environmental Protection Agency's Sustainable Materials Management: The Road Ahead, June 2009

End Chapter 3

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Chapter 4
Waste Prevention and Reduction

This chapter describes state and local waste prevention policies. Examples are given to illustrate the evolution of policies and practices aimed at reducing both the volume and toxicity of wastes. The rest of the chapter describes current waste prevention practices in Clark County and more opportunities to use waste prevention as a solid waste management strategy.

Background

Waste prevention is a strategy that involves altering manufacturing of products or consumer behavior in purchasing, using or reusing products. Waste prevention reduces waste at its source, thus eliminating the need for recycling, composting and disposal. The best approach to solid waste management is to eliminate waste in the first place. Waste prevention and waste reduction reduces the need to develop, finance and maintain collection, transfer, processing and/or disposal systems. These benefits make waste prevention the highest priority for management of solid waste in Clark County and Washington State.

Waste prevention is sometimes referred to as "source reduction," because it reduces or eliminates waste or pollution at the source. All waste generators have at least some opportunities to use waste prevention measures that reduce the generation of waste materials. Donating an unwanted computer to a charity is an example of waste prevention. So is photocopying on both sides of a sheet of paper. Altering material specifications so that fewer hazardous elements are used to make a product is another form of waste prevention.

Product stewardship, also known as producer responsibility, is a strategy designed to address the environmental impacts of products through their entire life cycle incorporating the concepts of waste prevention, extended life of a product, reuse, recycling and disposal. Under product stewardship, the entity that designs, produces, sells, or uses a product takes responsibility for minimizing the products' environmental impact throughout all stages of the product's life cycle.

Businesses and individuals can examine their purchasing of marginally needed or slightly used products as a way to save money and reduce waste. Consumers can exercise control and be thoughtful to help reduce waste, conserve resources, and save energy. Taking reusable bags to the store and carrying water in a reusable container are examples of simple strategies that would both reduce resources used.

Preventing the generation and disposal of waste involves increasing product life; decreasing the amount of material and natural resources used to make the product and/or its packaging; reducing the toxic ingredients in the product; reducing product use and consumption; and increasing the on-site management of some materials, such as organic wastes. Market forces often have the greatest influence on product life and packaging. When consumers change their buying habits, this can drive markets and influence how the commercial and industrial sector produces, ships and sells its goods. For example, consumers can tell manufacturers in writing, by phone or via the Internet when they are happy or displeased with a product or a particular type of packaging. If enough consumers stop buying a product because of its package, manufacturers are likely to notice and institute changes. Product design for disassembly and reuse has already become the standard in many European countries and is one of the goals of a product stewardship program.

The best approach to solid waste management is to eliminate waste in the first place.

The county and cities will continue to support and fund programs which provide a number of opportunities to educate students, educators and the community about waste prevention. The County and cities will also support non-governmental agencies willing to take the lead in business waste prevention assistance. Businesses may be more responsive to solid and hazardous waste management information and assistance delivered by a non-governmental agency, dedicated to business assistance and economic development. The Clark County Green Business program provides waste prevention assistance to businesses through waste audits and resource information.

Programs are coordinated with other local, regional and state campaigns in order to ensure uniform messages and maximized resources. The Portland Metro area, Seattle-King County area and State of Washington all provide opportunities for the County and cities to partner on waste prevention campaigns.

Assessment of Conditions

A number of waste prevention activities are occurring in Clark County. These activities can be discussed in two categories: residential and commercial/institutional. Although many waste prevention activities apply to both the residential and commercial/institutional sector, in general, in-home waste prevention behaviors are more difficult to instill, because individual preferences, personal convenience and income levels affect behavior more at home than at work.

Residential Waste Prevention

The Washington Department of Ecology provides local governments, including Clark County, with grants to promote waste prevention and recycling. These grants require local matching funds. The current grant program is referred to as the "*Coordinated Prevention Grant Program*." Although the primary focus of many county and city solid waste management education programs is recycling education, waste prevention is still a component; especially when it comes to residential yard debris management. The County uses the results of the *Waste Stream Analysis* to determine target generators and waste streams for waste prevention education. Waste prevention programs and campaigns that address residential waste are listed below. Many of the County programs (including statewide *Product Stewardship Programs*) are discussed in Education Promotion, Chapter 5.

- ***The three core program initiatives*** (Green Neighbors, Green Business and Green Schools) all have significant waste reduction and waste prevention components in their activities, information and assessments. The Green Neighbors website has an interactive house with information on how to reduce consumption, toxicity and waste generation;
- ***Leaf collection program***s are available in the cities and the unincorporated areas of the County as a method to promote the use of leaves as mulch and compost;
- ***The Master Composter/Recycler program*** trains outreach volunteers, offers workshops and provides backyard composting demonstration sites as a way to reduce yard debris and food waste from entering the waste stream;
- ***A Recycled Arts Festival*** provides education and information about reuse and waste reduction, as well as provides the opportunity to purchase art made from recovered or reused items;
- ***The Master Gardeners program*** provides information on working in the yard and garden without using chemicals that could be harmful to people, animals and the world around them. This is done through brochures, lectures, community workshops and informational displays;
- ***Residents learn about donating reusable items*** through outreach such as *Do It Yourself* Fairs, *Green Neighbors* website and web information for the location of non-profit agencies;

- ***2good2toss.com is a website*** for businesses and households. This website allows the opportunity to give away (or sell for up to $99) unwanted items that could be of use to someone else. Coordinated through the Washington Department of Ecology with other counties throughout the state, the site tracks the number of successful exchanges as well as provides an estimate of the weight of those items kept out of the landfill. The County continues to provide technical assistance consultations for businesses to improve their waste reduction, recycling and sustainable practices through its Clark County Green Business Program and specific requests for technical assistance;

- ***WasteBusters program*** is a waste reduction competition between families.

Despite all these valuable and popular programs, significant opportunities still exist for residential waste prevention. In comparing the 2012 Waste Stream Analysis to the 2008 study, there were some increases and decreases in the percentage amounts for some materials with an overall 5% decrease in the amount of recoverable materials in the waste as compared to 2003. The Paper category shows a decrease; Plastics, Metal, and Glass remain the same; Organics, Wood and C&D have increased. The amount of aluminum beverage cans remain unchanged. Food waste shows a significant increase. A more detailed discussion of the waste stream composition is in the Waste Stream Analysis is in Appendix I.

Residential Waste Prevention - Moderate Risk Waste

Clark County implemented its first residential waste prevention promotion and education campaign in 1991 - 1992, with the financial and technical support of the Washington Department of Ecology. Ecology has continued to provide local governments, including Clark County, with grants to help promote waste prevention and recycling. These grants require local matching funds. The current grant program is referred to as the "Coordinated Prevention Grant Program." Waste prevention programs and campaigns that address household hazardous waste and moderate risk waste include:

- **Waste reduction displays** are presented at fairs and events;
- **Interactive displays** were developed on the topics of Waste Reduction, Natural Gardening, Stormwater, Transportation and Wastewater Treatment; and,
- **The Naturally Beautiful Backyards program with the Master Gardeners** provides information on working in the yard and garden without using chemicals that could be harmful to people, animals and the world around them. This is done through brochures, lectures, community workshops and informational displays.

Other Public Information

A wide variety of educational media and outreach approaches have been used in Clark County to ensure ongoing education includes moderate risk waste programs and toxics reduction. The following are some examples of these education and promotional efforts.

RecyclingA-Z.com

Recycling A-Z is an on-line directory with a detail listing of places to take unwanted items. Through a contract between Recollect and the City of Vancouver, and working with input and support from all partner agencies and Waste Connections, Recollect manages the Recycling A-Z widget which can be placed on any partner website and the information can be easily updated on a regular basis. Access to the Recycling A-Z information has been expanded to include the use of a widget on the websites of any partner agency. The addition of a mobile app also makes the information more accessible and useful.

Web Site

The Clark County Solid Waste Program website has been updated and can answer questions about household hazardous waste and moderate risk waste. Many program brochures regarding the use and disposal of HHW are also available on-line. The County web site is www.clark.wa.gov/recycle.

Events and Promotion

County and city staff and its partners participate in community events and promotion efforts such as Earth Day, Clark Public Utilities Home and Garden Idea Fair, Sturgeon Festival, Watershed Festival, Clark County Fair, America Recycles Day, and Recycled Arts Festival.

Commercial/ Institutional Waste Prevention

According to the waste stream analysis conducted in 2012, approximately 51% of all disposed waste in the County came from non-residential generators. This includes commercial generators and self-haul loads to the transfer facilities. The waste stream analysis shows that recyclable paper, construction/demolition and wood wastes, food wastes, metals and yard and garden wastes are components of this waste stream that present additional opportunities for waste prevention and reduction.

Examples of commercial/institutional waste prevention activities that have been implemented in the county are as follows:

- ***A Green Business Program*** designed to assist business in six key environmental areas: waste reduction and recycling; toxics; stormwater; water and wastewater; energy and community engagement.
- ***Commercial waste reduction and recycling technical assistance program.***

In addition to the above activities, Clark County government and other local agencies have conducted in-house waste prevention programs including:

- ***A Green Purchasing policy***;
- ***Environmental Management System:*** EMS is a continual cycle of planning, implementing, reviewing and improving the processes and actions that an organization undertakes to meet its business and environmental goals. As a part of the EMS program, the County (Facilities and Public Works) and Waste Connections (Operations and all three transer stations) has been certified ISO 14001.

The County has also worked with institutions to encourage waste prevention. Activities include the following:

- ***SOS Program:*** a school cafeteria composting program;
- ***Classroom presentations, service learning projects and school environmental fairs*** have been introduced to further promote waste prevention activities. Staff has also worked with instructors at Clark College and Washington State University Vancouver to help integrate waste prevention concepts into different business, industrial, biology, natural resource management and economics classes.

Recommendations

1. **Provide regional waste prevention and reduction education** and promotion programs for residential, institutional and commercial generators of waste. (4-2)
2. **Provide yard debris and chemical reduction programs** such as natural gardening and home composting. (4-3)
3. **Utilize partnerships with other regulatory agencies and representatives of the business community** to increase the visibility and accessibility of commercial assistance programs and the Green Business program. (4-3)
4. **Place emphasis on commercial waste reduction** through the Green Business program. (4-3)
5. **Investigate the potential for providing financial incentives** to encourage waste reduction among ratepayers. (4-2)

End Chapter 4

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Chapter 5
Education and Outreach

This chapter describes the general solid waste management educational and outreach approaches being taken in support of solid waste management plan elements. Some specific educational programs are described in more detail within those chapters relating to the various subject matter topics. For example, education and outreach activities specific to waste reduction are detailed in the Chapter 4, Waste Prevention and Reduction discussion. Table 5-4 of this chapter lists the current education programs and activities being conducted for the overall solid waste system.

This chapter does not include a comprehensive public involvement and outreach plan, such a plan needs to be a living document capable of responding to changing needs and resources over the term of plan implementation. Instead, this chapter, sets the context for the development of a public involvement and outreach plan, as well as, appropriate marketing strategies to guide the County in achieving specific outcomes identified in the *Clark County Solid Waste and Moderate Waste Management Plan*.

Residents, businesses and organizations within Clark County each have a critical role in managing their solid wastes and it is essential that communications with them be well considered and coordinated so that the whole system functions properly. The County and its partners are regularly reaching out to engage, educate and inform the community in order to encourage and facilitate stewardship of our natural environment. This outreach provides core support to the regional solid waste system and provides important mechanisms for reaching the goals & objectives of this Plan.

Regulations Governing Local Governments

The County, through Interlocal agreements with the municipalities, and with the participation of private contractors and partners, is responsible for the planning and management of the regional solid waste system. This responsibility also includes developing and delivering education programs and outreach activities. Listed below are the RCWs which specifically relate to education and outreach activities.

Table 5-1 Mandates and Authorities

RCW 70.95.010(6)(c)	It is the responsibility of county and city governments to assume primary responsibility for solid waste management and develop and implement aggressive and effective waste reduction and source separation strategies.
RCW 70.95.010(15)	Comprehensive education should be conducted throughout the state so that people are informed of the need to reduce, source separate and recycle solid waste.
RCW 70.105.220(1)(b)	A plan or program to provide for on-going public involvement and public education in regard to the management of moderate-risk waste.
ORS 459A.010(2)(c) 1	An expanded education and promotion program conducted to carry out the policy set forth in ORS 459.015 to inform solid waste generators of the manner and benefits of reducing, reusing, recycling and composting material and to promote use of recycling services....
ORS 459.305(1)(a) 1	Includes a program for recycling that achieves the applicable recovery rate in ORS 459A.010....

Solid Waste System Objectives

The 5-year objectives for the regional solid waste system are (by 2020):

- Increase the recycling rate to 55% and the total diversion rate to 70%
- Reduce per person per day landfilled volumes (pounds) by 5%
- Reduce the amount of total waste generated per person per day by 5% (this includes what is landfilled, recycled and recovered)

Assessment of Conditions

The solid waste system has developed numerous programs to address waste prevention, recycling, reuse, reduced toxicity, and sustainability. As a regional system, it is important to maintain consistent outreach messages across all jurisdictions for these programs. This is of particular importance for the curbside collection program.

In addition to overall goals for the system, key education programs have established specific outcomes: public involvement and outreach plans; work plans (to allocate resources); and, marketing plans and performance measures to be used in conjunction with the budget process. Performance measures are established and tracked monthly as measuring tools in evaluating program performance towards reaching identified goals and outcomes. Table 5-4 summarizes the programs and outreach activities that support the regional solid waste system.

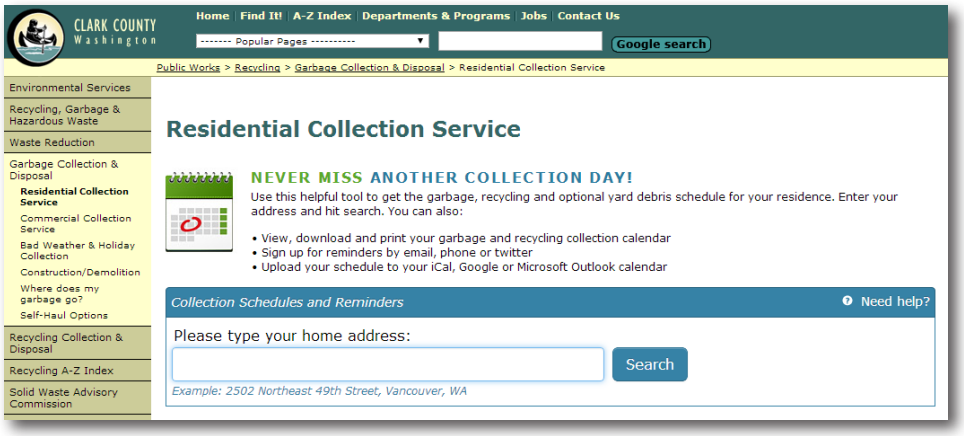
One of the strengths of the solid waste system is its partnerships with all of the municipalities. Through the Interlocal agreements, municipalities may choose to participate in the Regional Solid Waste System Steering Committee (RSWSSC). This group, generally comprised of Public Works Directors or their designees, provides input on a variety of matters that may include public education, and outreach and marketing efforts. This ability to provide input, allows the opportunity to "brand" and enhance the shared nature of our regional communications efforts.

To help clarify that regional partners are participating in outreach efforts and publications, and that regional funding supports these program, a statement has sometimes been utilized in our promotional messages:

"Solid Waste Planning and Programs are a cooperative effort of Battle Ground, Camas, Clark County, La Center, Ridgefield, Vancouver, Washougal and Yacolt."

As new outreach efforts are planned, this statement and other branding or theme elements that help create this shared identity in promotional messages will continue to be considered and updated. "Say Hello to Your New Best Friend", "Stay True to Blue" and "Recycling Done Right" are examples of promotional messaging used to encourage and/or recognize communities for being diligent about proper sorting of the items they place in their carts.

Waste stream analysis data can help in determining which specific generator groups and materials should be targeted for future education and outreach campaigns. A waste stream analysis was complete in 2012. Data and information from this study has been incorporated in this plan and the report is included in Appendix I.



Public Involvement and Outreach Plan

A public involvement and outreach plan is developed in conjunction with the County's biennial budget cycle. A public involvement and outreach plan should identify the goals, outcomes and measures for a particular program. The plan should also have a marketing strategy that includes these components: a situation analysis, an identification of target audiences, and a Strengths, Weakness, Opportunities and Threats (SWOT) analysis. The marketing strategy is used to create a positioning statement that can communicate the core value of the program while differentiating it from other programs. Goals, which are associated with clear measures and outcomes, are tied to appropriate tactics and identified promotional strategies. Details are fleshed out for implementation activities and linked to needed resources, task assignments and schedules. Finally it is important to plan for the regular evaluation of results and the adjustment of strategies as implementation proceeds. Many education programs use combinations of these approaches as part of planning the overall outreach process. A sample plan format/ outline is provided in Appendix H.

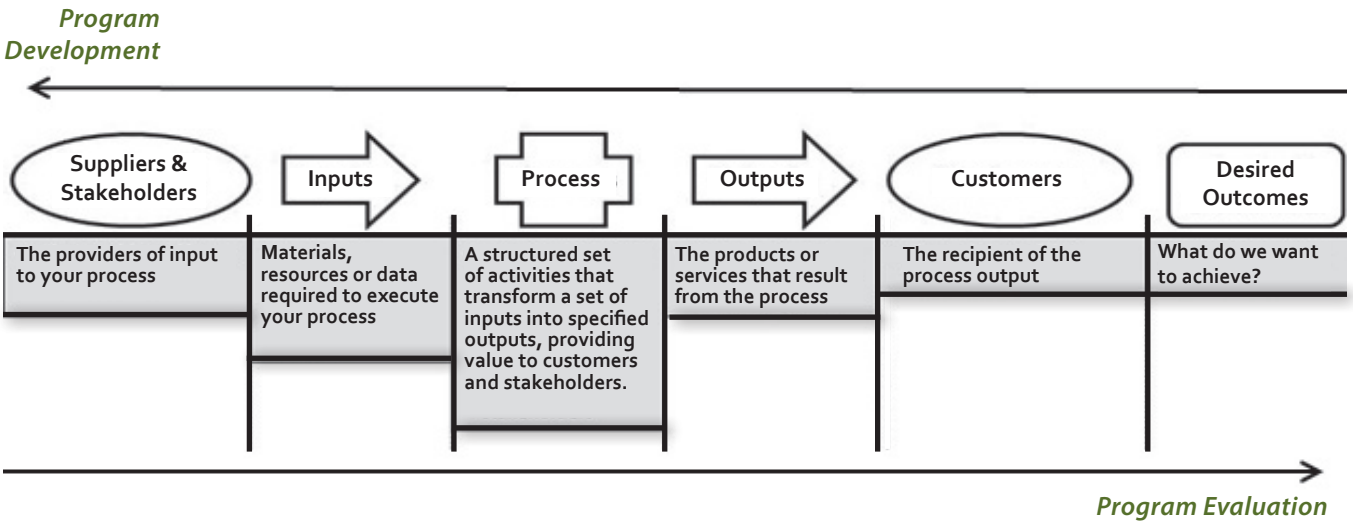
Who, What, When, Where, Why, How?

A public involvement and outreach plan should be filtered through the "five W's, and one H" review. This review, which provides short answers to these important questions, should be performed early enough in a project's development to effectively achieve desired outcomes.

Logic Models

For education programs, it is important to identify the ultimate desired outcomes. The County is currently implementing the Lean process in evaluating its programs and processes and this process offers some useful tools to identify efficiency in meeting desired outcomes. One such tool is the logic model; it can be useful in developing education programs and identifying outreach outcomes.

The primary approach of a logic model is to consider cause and effect – if this; then that. For example, if the resources are available for a program, then the activities can be implemented, if the activities are implemented successfully then certain outputs and outcomes can be expected. The logic model maps the connection between activities and high level outcomes and allows for performance measurement at each step. This tool is utilized to help "bridge the gap" between individual programs and connected activities to an ultimate goal, e.g. reducing waste generation. An example of the logic model, below:



The benefits of using a logic model are as follows:

- clear theory of cause and effect;
- communicates the relationship between "what we do" and results;
- increases understanding about the program or activity;
- connects what staff do to facilitate outcomes that citizens want;
- improves planning and management; and,
- improves communication to internal and external audiences.

A public involvement and outreach plan will be developed for key education and outreach programs under the implementation process for this *Solid Waste Management Plan*. This will include an analysis of the program strengths and opportunities. The analysis will also include a review of potential challenges and barriers. The public involvement plan will:

- identify stakeholders and targeted market segments;
- engage citizens in processes;
- develop consistent messages;
- strengthen relationships with regional partners, other governmental agencies, non-governmental organizations (including contracted service providers), and other organizations; and,
- foster communication with the public.

In evaluating program alternatives, the following will be reviewed:

- consistency with the objectives of this *Solid Waste Management Plan;*
- consistency with other regional plans;
- cost effectiveness;
- operational effectiveness; and,
- potential for awareness/behavior changes that address the intended outcomes.

Segmented and Targeted Marketing

Marketing is a key component of any education program and outreach activity. Public involvement plans for the solid waste system's education program and outreach activities are frequently grouped around user segments. For example, our general customer groups are: residents, businesses, and institutions (e.g. schools). Programs and activities can also be grouped by types of waste (e.g., recyclables, organics, construction & demolition debris, household hazardous waste); by desired behavior outcomes (e.g., waste prevention, recycling, reuse, reduced toxicity and sustainability); and, by different outreach venues (e.g., technical assistance, community events, workshops, etc.).

Education programs and outreach activities use many different marketing tools to reach the various segments of the community. In planning for our programs and outreach, the County utilizes the concepts of community-based social marketing and experiential education (discussed below). An increasing emphasis is placed on web based and social marketing tools, such as Facebook, yet other more traditional and varied methods of marketing are also available to reach certain segments. Our outreach activities utilize both electronic and print media, such as (Table 5-2):

Table 5-2 Media outlets

Electronic Media	Print Media
Internet websites	Advertisements
Facebook sites	Press Releases
Twitter	Fact Sheets
YouTube	Brochures
CVTV	Directories
Television Ads	Mailers/Flyers/Door Hangers
Radio Ads	Coupons
Online Surveys	Billing Inserts
Newsletters	Truck "Wraps"
E-Mail	Paper Surveys
Phone Surveys	Project Signage
Behavior Pledges	Newsletters

The marketing tools that are listed below in Table 5-3 are utilized by our education programs and outreach activities.

Table 5-3 Marketing tools

Workshops/Summits	Tours
Work & Learn Sessions	Training Volunteers
Technical Assistance	Pledges & Challenges
Collection Events	Competitions
Festivals/Fairs/Expos/Events (Department & community sponsored)	Demonstration Sites/Trailer
Presentations/Webinars	Open House
Project/program/neighborhood meetings	SWAC meetings and hearings
Online Surveys	Billing Inserts
Newsletters	Truck "Wraps"
E-Mail	Paper Surveys
Phone Surveys	Project Signage
Behavior Pledges	Newsletters

The following approaches to education and outreach are additional marketing "tools" that are available and may be appropriate for certain program activities identified through the logic model process. Each has unique advantages and disadvantages and none are intended to be used exclusively. Familiarity with them will help the reader understand and distinguish among them at a basic level as plans to utilize them are considered. We anticipate that many, but not necessarily all of them, will be incorporated into public involvement and outreach plans from time to time.

Community Based Social Marketing

Community based social marketing applies marketing principles and techniques in communicating with the public to influence behaviors that benefit the environment. The ultimate outcome of community based social marketing is to influence or change behavior. The five steps of community based social marketing are: 1) selecting behaviors; 2) identifying barriers and benefits; 3) developing strategies; 4) conducting a pilot; and 5) a broad-scale implementation.

Experiential Education

Experiential education is another method which directly engages the public through direct, hands-on experience in order to build knowledge, skills and values. That is to say, experiential education refers to learning-by-doing and then reflecting on one's own experiences from doing. Experiential education is most valuable because participants make their own discoveries by experiencing learning-by-doing , rather than relying on learning indirectly through what they have read or heard about from others' experiences. This reinforces their learning through reflecting on their direct experiences.

Source: Corwin Beverage - Green Business training waste stream analysis

Electronic Media

The use of electronic media, including social media, for education programs and outreach activities provides the capacity to communicate with the public through fast-changing internet and related technologies. These tools allow the public to communicate with and obtain information directly from the County and other implementation partners. Social media includes web-based venues such as blogs (which are generally interactive applications) and sites, including Facebook, Twitter, YouTube, and CVTV. Effective and appropriate use of social media can further the goals of the solid waste system as well as individual programs. Table 5-4 lists the current County and partner web sites and Facebook sites that support our solid waste system and inform our target segments.

A social media presence provides a means to:

- ***Disseminate time-sensitive or emergency information*** as quickly as possible to a broad audience. For example, inclement weather affecting garbage pick up
- ***Promote, announce and inform*** about solid waste programs and services available to the public
- ***Reach new audiences*** and provide the public with an additional means to receive information
- ***Grow a network*** and connect with friends of friends that recognizes and encourages actions and develops support for those activities that address our desired outcomes

The county has both policies and procedures in place for using electronic and social media which must be followed. These policies and procedures ensure that the county's use of electronic and social media comply with applicable federal, state, and county laws and regulations. This includes adherence to established laws regarding copyright infringement, records retention, Freedom of Information Act (FOIA), First Amendment rights, privacy laws and information security policies established by the county.

Print Communications

Production of informational materials through print media is an important component of any public information and outreach plan. Specific needs for informational materials will be identified at the education program and outreach activity level. Print media (as identified in Table 5-2) will be produced following guidelines and procedures.

Graphic design has much to do with how professional the print media looks and how effective it is at communicating content with target audiences. This is also the case for web design and other types of media. "Branding" of a program's name, terms, signs, symbols and designs and/or a combination of these features helps targeted audiences identify the source of the communications and ideally creates clarity, connections, credibility, motivation and loyalty among "customers" for your service or product and also helps to support long-term outcomes. These factors are considered in the development of print as well as other types of media.

As the solid waste system is regional, outreach and public involvement is strategically planned with regional partners. Outreach information may be tailored to meet the requirements and branding goals of the agency or regional partners involved in producing particular print, or other, communications. This may include unique logos or themes, such as the Green Business program flyer shown at right. Agencies producing printed, or other, communications may have unique requirements to follow, such as the County's accessibility statement required by the American with Disabilities Act (ADA). Similarly, Waste Connections has corporate guidelines related to the use of their logo. It is important that coordination and approvals be properly managed by the producer of each printed or electronic communication to assure effective collaboration.


Clark County Department of Environmental Services

Green Business Program

At a Glance

Clark County's Green Business Program offers assistance and RECOGNITION for our local green business leaders. Recognition is based on verification of established green business practices in the following program categories:

- Stormwater
- Waste and Recycling
- Water and Wastewater
- Toxics
- Energy
- Community

Getting Started

To be verified and recognized as a Clark County Green Business, applicants will:

1. Demonstrate "top down" support for the program
2. Establish an active Green Team
3. Complete assessments and inventories in all program categories
4. Comply with all applicable environmental regulations
5. Demonstrate the implementation of all minimum requirements in the six program categories through an onsite verification audit.
6. For more information about getting started, call Clark County Environmental Services (360) 397-2121 extension 4352

Collaborative projects

The County maintains partnerships and sponsorships with many agency, non-governmental organizations and businesses to deliver solid waste environmental messages and outreach activities. Use of such partnerships and sponsorships maximizes and extends outreach efforts and increases community support of education programs and outreach activities. Collaborative publications with partners and sponsors require planning for the use of graphics, logos, and various standards. County and partners place an emphasis on utilizing volunteers as a means of providing outreach information and education to the public.

Communicating with Diverse Audiences

The County is committed to increasing involvement and participation of ethnic, culturally and socially diverse populations in its education programs and outreach activities. This will facilitate outreach programs and activities that:

- Create, establish, and maintain an inclusive culture
- Embrace the diversity of our community
- Provide services to the public in a culturally competent manner

As a part of the public involvement and outreach plans, the County will develop communication strategies to address the range of diverse populations. This will include providing outreach with the use of native languages and using different communication methodologies to accommodate different learning styles (visual, auditory, and kinesthetic).


Clark County Green Business Program

HOME ABOUT PARTICIPATE RESOURCES DIRECTORY EVENTS

Green Businesses 2012

Featured Green Business

Waste Connections Eastridge

Garbage and recycling curbside service to businesses and residences throughout Clark County.

Phone 360-649-8393

12115 NE 99th St, Vancouver, WA 98682 - Map

Website

Become a Green Business

Find a Green Business

Upcoming Events

SAVE THE DATE! Electronics Recycling

Source:
Green Business home-page -
www.clarkgreenbiz.com

Outreach and Education Programs and Activities

Three core programs (Green Neighbors, Green Business and Green Schools) have been developed to connect with our primary customer groups (residents, businesses and students).These programs help shape and focus our outreach efforts through distinct "branding". Table 5-4 below summarizes the programs and outreach activities in these core programs that support the regional solid waste system.

Table 5-4 Programs and Outreach

Programs and Outreach – by customer sectors	
Green Neighbors	
	Green Neighbors website
	www.clarkgreenneighbors.org
	Green Neighbors E-newsletter
	Workshops
Green Businesses	
	Green Business website
	www.clarkgreenbiz.com
	Green Business Recognition Event
	Sponsorship Recruitment
	Work & Learn Sessions
	Technical Assistance
Washington Green Schools	
	Washington Green Schools website
	www.wagreenschools.org
	Technical Assistance
	Green Summit
	Teacher Workshops
	Watershed Festival
	Save Organic Scraps
	Save Organic Scraps website
	www.saveorganicscraps.com
	School Recycling
	Student Environmental Monitoring Program

Source:
Save our Scraps - Let's Compost Education Booklet

Programs and outreach – by waste category & desired behavior outcomes	
Waste Reduction	
	Recycled Arts Festival
	Recycled Arts Festival website - www.recycledartsfestival.com
	Recycled Arts Festival - Facebook
	Sponsorship/partner recruitment
	Volunteer recruitment
	On site education by DES & NGO's
	Do-It-Yourself Fair
	2 Good 2 Toss website - www.2good2toss.com (web exchange site)
	Grasscycling Tutorial
	Waste Busters competition
	Holiday Waste Reduction outreach
	Stop junk mail & phone books registry website - www.catalogchoice.org
Recycling	
	Recycling Curbside Information
	Waste Connections - www.wcnorthwest.com
	Transfer Station website - www.columbiaresourcecompany.com
	www.clark.wa.gov/recycle/recyclingA-Z.html
	Recycle Clark – Facebook
	Recyclingest Neighborhood
	Recollect app (find your recycling day), Recycling A-Z app, Recycle Right app
	Recycle Days Collection Events
	Technical Assistance
Organics	
	Master Composter/ Recyclers (partnered program – administered by Columbia Springs who is also responsible for outreach - www.columbiasprings.org)
	Christmas Tree Recycling outreach
	Leaf Disposal Coupons outreach
	Technical Assistance
Household Hazardous Waste (HHW) /Moderate Risk Waste	
	HHW Awareness Week
	HHW Fixed Facilities
	Satellite collection events
	Computer Reuse & Block Foam Collection
	Paint take back
	Home Collection
	Motor Oil Recycling
	Unwanted Medication Take Back
	Curbside collection – household batteries, oil and antifreeze
	Master Gardeners Natural Gardening (partnered program – administered by WSU Extension who is also responsible for outreach)
	Pacific Park Demo Garden & community gardens

	Brochures
	Technical Assistance - includes Green Business support workshops/ presentations
Sustainability	
	Environmentally Responsible Purchasing
	ISO 14001 Environmental Management System
	Planet Clark Emerald House

Programs and outreach – supporting all programs	
General Ongoing Outreach	
	www.clark.wa.gov/recycle
	www.cityofvancouver.us/solidwaste
	www.clark.wa.gov/public-health/waste
	www.volunteerclark.com
	Printed Information – Brochures & Fact Sheets
	Press Releases
	Targeting Neighborhood Associations (NA) & NGO's
	Presentations to NACCC and groups
	Office of Neighborhoods newsletters and weekly e-mails
	Community Events – Booths and/or Planet Clark Trailer
	Clark County Fair
	Home & Garden Idea Fair
	Farmers Markets
	Earth Day Eco Fair
	Many other community & neighborhood events

Recommendations

1. **Meet regulatory requirements by providing waste management education and outreach** programs with an emphasis on waste prevention. (5-1)
2. **Build partnerships with agency partners,** the service providers, businesses and non-government organizations on education and outreach activities. (5-7)
3. **Focus educational activities through using effective marketing strategies and public involvement** and outreach plans. Provide performance measures and regular evaluations that relate to desired outcomes for each program in achieving program goals and objectives in conjunction with County's budget cycle. (5-3 to 5-6)
4. **Promote and support the three core programs**: Green Schools, Green Business, and Green Neighbors. (5-8)
5. **Enhance presence on the internet** with web, Facebook and Twitter sites. (5-8)
6. **Implement residential educational programs and activities** to support proper curbside recycling and to increase participation and recovery. (5-1)
7. **Increase education and outreach information to be more accessible** to diverse populations. (5-7)

End of Chapter 5

Chapter 6
Waste Diversion

This chapter reviews waste diversion in Clark County. Waste diversion comprises all materials diverted from landfills through recycling or recovery operations. Waste diversion conserves and preserves both resources and energy. Waste diversion can reduce the production of greenhouse gases and the use of toxic chemicals in product manufacturing. Waste diversion conserves water, wildlife habitat and air quality, all of which contribute to public health, preservation of species, and may help to address climate change. All waste diversion programs are required to comply with Washington and Oregon state laws, as described in *Chapter 1*.

This chapter also reviews urban and rural residential recycling and organics collection programs as well as non-residential (institutional, commercial and industrial) programs, as well as, existing material recovery programs. The Washington Department of Ecology planning requirements for designating urban/rural service areas and residential recycling materials are also addressed in this chapter.

What are Clark County's Recycling & Diversion Rates? Clark County and its cities and towns are committed to achieving a minimum recycling rate of 50% of the waste stream through a combination of public and private recycling activities. The recycling rate is the percentage of all waste generated by residents and businesses that is recycled and manufactured into new products. In 2012, the most recent year for which County data is available, at least 359,169 tons of materials were recycled and 75,110 tons were diverted from a total waste stream of 665,766 tons. It represents only reported collection activities; it does not count internal recycling programs, in which retailers return recyclables to distribution centers outside of the County, material collected by non-reporting collectors, or individual efforts such as backyard composting.

The recycling rate was 53.9% and the diversion rate was 65.2%. This recycling rate excludes waste diversion methods that the EPA does not define as recycling. Examples of diversion, but not recycling, include using wood waste, used motor oil and tires for energy recovery or using glass as fill or drainage rock. A further discussion of the County's recycling rate/diversion rate and how the rates are calculated is provided in Chapter 15 on Waste Monitoring and Performance Measurement. Historical information on the County's recycling and diversion rates can be found in *Appendix J*.

Assessment of Conditions

The composition of the County's waste has undergone substantial change during the past decade. The change is the result of changes in the economy (recession or economic downturn) which affected the waste stream during the time period. Technology has also played a key part of the change in the waste stream. For example, more residents get news online rather than subscribing to a newspaper. Also, newspapers have become smaller. There has also been a shift by product manufacturers towards using more plastic containers and fewer glass or metal containers. The shift in waste composition both confirms the success of existing source-separation programs and identifies opportunities for additional recovery. Figure 6-1 illustrates the composition of the garbage disposed by County households and businesses, according to a 2012 waste stream analysis. Additional information on waste stream quantities is available in the chapter on Waste Monitoring and Performance Measurement. The 2012 Waste Stream Analysis can be found in *Appendix I*.

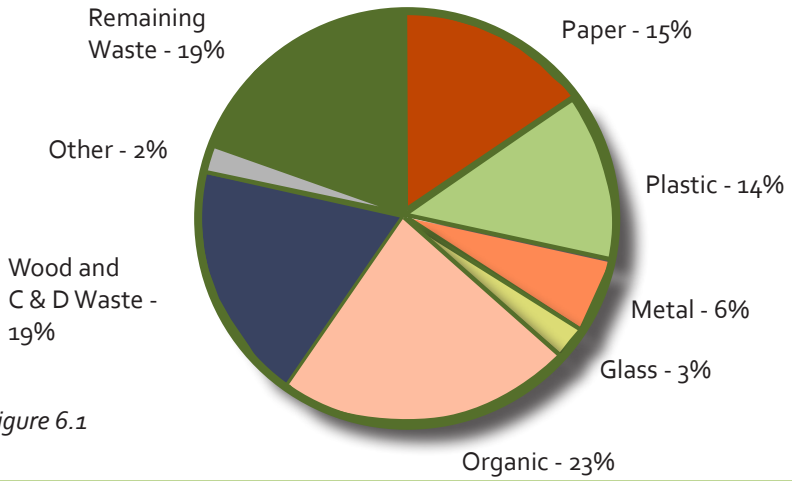


Figure 6.1

Diversion – Recycling

Recycling is the collecting of recyclable materials that would otherwise be considered waste, sorting and processing those materials, and then manufacturing them into new "recycled content" products.

Contracted Residential Recycling

Contracted curbside collection is the predominant recycling method for both single-family and multi-family residential recycling within the Clark County urban service area. Subscription-based curbside recycling service is available in the rural areas.

What Can Be Recycled?

Clark County's curbside recycling program includes a thorough list of materials that can be recycled. Evaluation of this list is on-going. Criteria include: the potential for waste diversion; collection efficiencies; processing requirements; market conditions; market volatility; local market availability; continuity with existing programs; and Oregon recycling certification requirements. All curbside recyclables in the county are delivered to the West Van Materials Recovery Center for sorting and processing.

Three major changes have occurred in the curbside recycling program since its inception in 1991. In 1995, the County and cities added all plastic bottles to the list; in 2002 antifreeze, household batteries, and aerosol cans were added. In 2009 plastic tubs and buckets were added, and the collection method was changed: from three stacking bins to a roll cart for commingled materials plus a bin for glass. Concurrently with the 2009 change, the contracted processor significantly upgraded the sort line at the West Van Materials Recovery Center, to expand capacity and accommodate the changed collection method.

Clark County recycling collection programs can now be considered mature, and the following materials will be considered "designated residential recyclables" for the purpose of meeting the Washington Department of Ecology planning guidelines:

- Aluminum cans and foil;
- Corrugated cardboard;
- Glass jars and bottles;
- Household batteries;
- Mixed paper;
- Motor oil and antifreeze (not included in the multi-family program);
- Newspapers;
- Plastic bottles, tubs, and buckets (excluding those contaminated by hazardous materials);
- Polycoated paper containers (e.g. milk cartons and drink boxes);
- Scrap metal;
- Steel cans (including spray cans); and,
- Yard Debris (Yard debris is separately collected from single-family residences, on a subscription basis).

In addition to the materials listed above as "designated residential recyclables", the following items are also recycled through on-going or seasonal programs and specially scheduled collection events within Clark County: chlorofluorocarbons, e-waste (predominately through the E-Cycle Washington program), fluorescent tubes, latex paint, lead acid batteries, mercury (including mercury containing products), oil filters, tires (limited recycling, based upon available markets), block foam, other plastics, and white goods (e.g. dryers, refrigerators, washers).
Additional materials will be considered on a case-by-case basis, as emerging markets become available. Potential additions include household food waste, business food

waste, textiles, ceramics and (non-container) glass. Concrete, asphalt and brick are currently recovered from construction and demolition projects. These materials might be currently recyclable, but are not necessarily appropriate to include as designated recyclables at this time. The County's recycling collection and processing contracts have provisions for adding materials to the residential curbside collection program. The County will also notify the Washington Utilities and Transportation Commission (WUTC) of such changes.

Recycling Collection Services

The county and cities have contracted with Waste Connections of Washington (WCW) to provide residential recycling collection services (single family, multifamily and yard debris). Refer to the table on page 1-7 for information on cities and county contracts for recycling services.

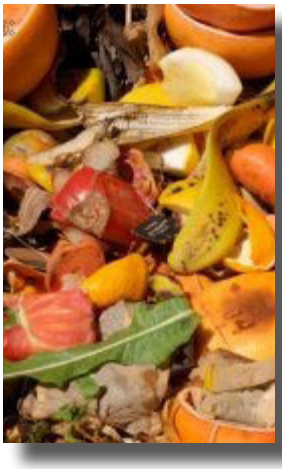
Urban Residential Organic Wastes

Organic waste (or "organics") is a broad term which includes yard debris, pre- and post-consumer food waste, and other potentially compostable source-separated materials. Organics are different from other recyclable materials in that they often can be managed and used at home by residents. The County actively promotes backyard composting (including vermicomposting) as a waste reduction method, as described in the chapter on *Waste Prevention and Reduction*. Backyard composting avoids the economic and environmental costs and risks of operating collection and transport systems and centralized processing facilities.

However, not all residents have the ability or desire to compost their yard debris and/or other organics at home. For those residents, collection services are important. All single-family residences within the County's defined Urban Growth Area and the Southwest Clean Air Agency's Burn Ban area have yard debris collection available on a subscription basis. There is more discussion of yard debris and other organic wastes in the chapter on *Organic Wastes*.

Residential Recycling Collection Service

In 2009, the County transitioned to a roll cart-based collection system for both single family and multi-family residences. The carts are for commingled paper, plastic, and metal recyclables; glass bottles are collected separately, in a bin next to the cart. For single family residences only, used motor oil, antifreeze and household batteries are also collected next to the cart. These items are not collected at multifamily complexes; otherwise, materials collected and sorting requirements are the same for all residents. The multi-family collection service program provides each complex with 60- or 90-gallon collection carts, signage for the central collection areas, and in-home containers for storing and transporting materials to the central collection areas. Multi-family collection schedules are set to meet the requirements of each complex.



Weekly collection services are provided for single family residents in Battle Ground, Camas, Ridgefield, Washougal and the unincorporated Urban Service Area. Every-other-week collection services are provided for single family residents in La Center, Vancouver, Yacolt and the unincorporated Rural Service Area.

Residents may also deliver their recyclable materials to public drop-off centers at transfer stations, private buy-back recyclers, or drop-off containers. Public drop off sites include:

- CRC's three public transfer stations
- Air, Water, Earth Recycling (buy-back)

Recycling collection events may be scheduled periodically throughout the year to collect special items. The County provides the online resources RecyclingA-Z.com to provide residents with current information on recycling a wide range of items, and 2good2toss.com as a mechanism to exchange and reuse items with other residents.

Non-residential (Commercial) Recycling

Under current law, all non-residential recycling and collection of yard waste for composting may occur in a competitive market place. Solid waste haulers, disposal companies, private recyclers, private composters and individual collectors are allowed to make collection arrangements with non-residential generators, adhering to the following jurisdictional licensing requirements.

Clark County has a competitive commercial recycling environment, with commercial recycling services provided by a variety of service providers. Some operators specialize in paper fibers such as office papers or corrugated cardboard, or in wood wastes, while others offer a full array of services for most commodities. The County actively supports commercial recycling through technical assistance programs and promotional educational materials. The degree of source separation required varies by vendor. Source-separated recyclables may be commingled (combined with other source-separated recyclables) to increase collection efficiencies.

Non-residential (Commercial) Organic Wastes

Under current law, all non-residential recycling and collection of yard waste for composting may occur in a competitive market place. Solid waste haulers, disposal companies, private recyclers, private composters and individual collectors are allowed to make collection arrangements with non-residential generators, adhering to jurisdictional licensing requirements.

The County is currently working with school districts, restaurants, and institutional entities in development of food waste collection programs. As a pilot, food waste is considered to be a part of the MSW waste stream. There is more discussion of these programs in the chapter on Organic Waste.

Source: Environmental Law Update

Processing and Recovery

The County contracts with Columbia Resource Company (CRC) for the processing of residentially collected recyclables, and all such recyclables in the county are delivered to the West Van Materials Recovery Center for processing. CRC also processes recyclables collected from other areas at this same facility. Recyclable materials received through the curbside and multi-family collection programs are marketed by CRC and a portion of the revenue generated from the sale of these materials is returned to the County, City of Vancouver, and contract hauler.

The cities of Camas, Ridgefield and Washougal have contracts in places that do not include provisions for recycling revenue share.

Recycling collection services are supported by County, city, and private collector promotion and education efforts, as described in the chapter on Education and Promotion.

CRC's transfer and disposal contract with the County requires the company to recover and recycle a minimum of 10% of the incoming disposal stream.

CRC meets its minimum annual recycling requirement by recovering materials from selected loads on the tipping floor. Most recovery is wood and metal, pulled from loose drop-box or self-haul loads. Very little is recovered from compacted loads of mixed waste, due to contamination and operational difficulties. Source-separated materials delivered to CRC drop-off recycling facilities by self-haulers is counted toward the minimum annual recycling requirement; however, materials recovered through CRC's source-separated recycling collection services and materials collected by County and city recycling collection contractors are not included.

Recommendations

1. **Periodically evaluate the range of recyclables** handled by the recycling collection program to determine whether materials should be added or dropped. (6-3)
2. **Encourage non-residential recycling** through incentives, technical assistance, pilot programs, and recognition programs. (6-4)

End of Chapter 6

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Chapter 7
Waste Collection

Background

This chapter describes Clark County's collection systems for municipal solid waste (MSW) including recyclable materials and yard waste. The collection of municipal refuse and garbage must be coordinated with the collection of recyclable materials and yard waste. Changes in the quantity and composition of one waste stream can affect the quantity and composition of the other streams. Also, the type and level of collection service provided for one stream may affect the type and service level required for the other.

Coordination of customer billing and collection practices, payment provisions, customer data sharing, and vehicle routing information can help the solid waste management system operate more effectively and efficiently. Rate setting for refuse and garbage collection and recyclable materials collection also needs to be structured to provide incentives to reduce and recycle wastes while fully recovering program costs to the extent allowed by regulatory agencies.

Refer to the other chapters within this Plan for more specific information regarding the type of materials to be collected. Many of the terms used herein are described in *Appendix A,* definitions.

Assessment of Conditions

Solid Waste Collection

As Table 7-3 depicts, the following agencies are responsible for the management of solid wastes within Clark County: Washington Utilities and Transportation Commission (WUTC), Clark County, and the cities of Battle Ground, Camas, La Center, Ridgefield, Vancouver, Washougal and the town of Yacolt (see the Administration and Enforcement Chapters). Clark County Public Health issues permits for solid waste storage, collection, transfer and disposal pursuant to RCW 70.95, WAC 173-350 and Clark County Code Chapter 24.12. Clark County Public Health also has jurisdiction over public health and safety with regard to solid waste collection in all of Clark County, including the cities and towns.

State law provides the following three categories under which solid waste collection services (excluding recyclable materials collection) are administratively authorized and controlled:

State-Certificated Collection

The Washington legislature decided in 1961 that garbage collection service should be available to all residents of the state at rates that were fair, just and reasonable. The legislature passed RCW 81.77, directing the WUTC to supervise and regulate private solid waste collection companies in the State of Washington. RCW 81.77 requires a company to obtain a certificate from the Commission declaring that public convenience and necessity require establishment and operation of a collection service in a specific area. These *Certificates of Public Convenience and Necessity* require proof that a company is fit, willing and able to provide service, and then specify categories of solid waste that can be collected and the geographic area in which a company can operate.

These certificated collection companies provide services under WUTC regulation. As part of its legislative mandate, the Commission audits these companies for fair rates, proof of adequate insurance, operational safety and requires annual reports. Any solid waste collection company, including certificated companies, may also provide service under contract with an incorporated city or town. In that case, the Commission does not regulate. The WUTC's authority covers private collection companies that operate in unincorporated areas of a county and in incorporated municipalities where the city chooses not to regulate through other means. City-contracted collection services are not subject to WUTC control. Collection systems directly operated by city crews and

equipment are also exempted from regulation by the WUTC.

The WUTC establishes collection fees (rates) for certificate holders on the basis of operating costs and revenues. Every certificated collection company is required to file a tariff with the WUTC, showing rates and charges applicable to the collection, transportation, and disposal of solid waste in its service area. The WUTC may approve or modify the requested rates. Certificated companies cannot alter their rates or charges without WUTC approval.

The WUTC requires certificated collection companies to "use rate structures and billing systems consistent with the solid waste management priorities set forth under RCW 70.95" and provide minimum levels of solid waste collection and recycling services pursuant to local solid waste management plans and municipal ordinances. The WUTC has no direct authority or rate-setting responsibility for solid waste transfer or disposal facilities.

Since the early 1900's, the Commission has regulated the transportation of property (including nonresidential recyclable materials) for hire over public roadways under the authority of RCW 81.80. The regulation was essentially the same as that of solid waste collection companies. Commercial recycling is regulated under RCW 81.80 because it has been designated as property, not solid waste. However, the passage of the *Federal Aviation Administration Authorization Act* (FAAAA) of 1994 pre-empted state or local regulation of transportation of property (including nonresidential recycling), in terms of where a company can operate, how much they can charge, and what kinds of property they can transport. At that time, the legislature moved the Commission's responsibility for safety inspection for common carriers to the Washington State Patrol. The Commission retains the responsibility to issue permits and verify insurance for common carriers. Common carrier permits provide companies with the authority to transport general commodities including nonresidential recyclable materials.

City-Controlled Collection

Cities have the authority to make collection mandatory in all or part of its incorporated boundaries. Mandatory collection means that all waste generators must subscribe to and pay a minimum fee for collection even if they do not use the service. The following options are available to cities for managing solid waste collection:

WUTC-Certificated Collection. A city can delegate management authority and responsibility to the WUTC. Under this option, collection services within the city are provided by a certificated private company supervised and regulated by the WUTC. WUTC certificates and operating requirements may be supplemented within cities by licenses (or "franchises"). Under a licensed collection system, collection rates charged by city-licensed but WUTC-certificated private companies are set by the WUTC, with any city-imposed licensing tax added on top of, or factored into, rates. It is the collection company's responsibility to collect fees for services rendered and to remit a licensing fee, franchise tax or fee based on gross receipts to the city. The license therefore benefits the city by generating revenues. However, the WUTC remains the regulatory authority for licensed collection.

Contracted Collection with a Private Service Provider. A city can contract with any private collection company for residential and nonresidential collection services within all or part of its incorporated area. Thus, a city can control collection activities without operating its own municipal collection utility. This is the only avenue for non-certificated private collection companies to become involved in collection services in the State of Washington. The service areas for these private collection companies would be limited

to the contracted municipal boundaries and would not be subject to regulation by the WUTC. Under a contracted collection system, management and regulation of the system are the responsibility of the city. The contract would regulate operating conditions, rates, and billing practices. Collection of fees for services could be the responsibility of either the city or the collection company. Typically, a city ordinance would set forth the level of collection service provided, rate structures to be used, and operating requirements.

Municipal Collection systems can also be operated by a city as a municipal service with its own equipment and personnel. A city with municipal collection generally determines its own rate structure, operating requirements and levels of service. In addition, the city is usually responsible for customer billing.

County-Controlled Collection

Statutory restrictions imposed upon counties by RCW 36.58A limit a county's authority with respect to solid waste collection. A county currently may provide collection services itself or through direct contract only if no qualified private company is willing or able to do so. In addition, a county may not provide service in an existing certificated area unless it acquires rights by purchase or condemnation. Except in the circumstances stated above, the county is prohibited from directly managing or operating solid waste collection systems. It is unlikely that such a combination of circumstances would ever occur within Clark County.

However, a county may exercise limited control of solid waste collection service in unincorporated areas through the adoption of service-level ordinances. Service-level ordinances can establish the types and levels of services to be provided to both residential and nonresidential customers. In addition, such ordinances can encourage rate structures that promote waste reduction and recycling activity.

A county may also exercise some control of collection activities within its unincorporated areas by establishing solid waste collection districts. Within such a district all solid waste generators could be required to subscribe to and pay for collection services; the private service provider and the collection rates would be regulated by the WUTC. Solid waste collection districts are generally limited to unincorporated areas of a county, although with consent from the legislative authority of a city or town, collection districts can include areas within the corporate limits of the city.

If a county were to form such a district, the WUTC would be required to investigate whether the existing certificated collection companies were willing and/or able to provide collection services. If the existing certificated collection company could not or would not provide the service, then the WUTC could issue a certificate to another collection company. A county can directly provide collection services within these districts only after notification by the WUTC that no qualified collection companies are able and/or willing to perform said service. If a collection district is established, a county may be asked to collect fees from delinquent customers should the private collection company be unable to do so.

Table 7-1 Summary of the differences in solid waste collection systems.

Solid Waste Collection System Characteristics

(Under State, City, and County Control)

System Type	State-Controlled	City-Controlled			County-Controlled
		State Authority	Contract	Municipal	Solid Waste Collection Dist.[a]
Collector	Private	Private	Private	Municipality	Private [b]
Operating conditions and Review authority	WUTC [c]	WUTC [c]	Municipality	Municipality	WUTC [c]
Rate approval authority	WUTC	WUTC [d]	Municipality	Municipality	WUTC
Subscription to collection service	Voluntary	Voluntary or mandatory	Voluntary or mandatory	Voluntary or mandatory	Voluntary
Billing responsibility	Collector	Collector	Municipality or collector	Municipality	Collector [e]

[a] Only in unincorporated areas, or in incorporated areas with consent of the legislative authority of the city or town.

[b] If no certificated hauler can provide service, the county may provide service.

[c] Although municipal governments can adopt service level ordinances, the Washington Utilities and Transportation Commission (WUTC) is the authority charged with enforcing compliance.

[d] City has authority to include licensing tax.

[e] County must collect fees if users are delinquent.

Current Collection Practices

Solid waste in Clark County is currently being collected by both private companies and municipal government agencies which are regulated and operating under the authorities previously described. Table 7-2 describes the collection entities in Clark County currently providing MSW collection services.

Table 7-2 MSW Collection Entities in Clark County

Service Provider	Parent Company	WUTC Certificate Number	Address
Waste Connections of Washington	WCW	G-253	9411 N.E. 94th Avenue Vancouver, Washington 98662
Waste Control Inc.	None	G-101	P.O. Box 148 Kelso, Washington 98626
City of Camas	None	None	616 N.E. 4th Avenue Camas, Washington 98607
Basin Disposal Inc. (inactive)	None	G-118	PO Box 3850 Pasco, Washington 99302-3850

Historical Process

Prior to August 1, 1996, most solid waste collection in Clark County was performed by the Clark County Disposal Group (CCDG) under a variety of municipal contracts and WUTC-certificates. On that date Browning-Ferris Industries of Washington, Inc. (BFI) purchased CCDG and subsequently consolidated its WUTC operating authorities under one certificate. In 1997 Waste Connections of Washington (WCW) purchased BFI's holdings in Clark County. WCW then purchased Evergreen Waste Systems in September 1998, and purchased Columbia Resource Company in March 1999. In August 2005, WCW acquired the municipal contracts, accounts, and operating equipment of Waste Management of Vancouver.

The various contracted or permitted collection service areas are described below.

- The City of Vancouver contracts with Waste Connections of Washington, (WCW) to provide collection services throughout the city.
- WCW provides collection services under WUTC authority in the unincorporated areas of Clark County and the Cities of Battle Ground, La Center, and Yacolt. WCW services the City of Ridgefield under municipal contract.
- WCW provides collection services in the northwest corner of Clark County and within the City of Woodland.
- The City of Washougal contracts with WCW to provide residential and nonresidential collection services within the city.
- The City of Camas collects residential and some nonresidential accounts with city equipment and crews. WCW currently provides collection service for other nonresidential accounts under contract with the City of Camas.
- Basin Disposal, Inc. has an inactive permitted service area in and near Camas.

Table 7-3 summarizes the current residential and non-residential Municipal Solid Waste (MSW) collection service characteristics in Clark County.

Table 7-3 MSW Collection Service Characteristics - Residential and Non-residential

Area and Jurisdiction	Regulatory Authority	Service Provider	Mandatory Collection?	Billing Responsibility
City of Vancouver	City-contracted	WCW	Yes	Service provider
City of Camas	City	City of Camas & WCW	Yes	City and service provider
City of Washougal	City-contracted	WCW	Yes	City
City of Ridgefield	City-contracted	WCW	Yes	Service provider
City of Battle Ground	WUTC	WCW	No	Service provider
City of LaCenter	WUTC	WCW	No	Service provider
Town of Yacolt	WUTC	WCW	No	Service provider
Unincorporated Clark County	WUTC	WCW	No	Service provider

Note: Waste Control Inc. (subcontractor)

The unincorporated areas of the County, as well as the cities of Battle Ground and La Center and the town of Yacolt, do not have mandatory collection. Waste generators have the choice of either subscribing to collection services provided by their WUTC-certificated company or self-hauling to a permitted disposal or transfer facility. In addition to the collection service providers described in Tables 7-3, generators can self-haul solid wastes to the CRC transfer stations, or to other processing and disposal facilities out of the region. Large self-haulers in Clark County include Vancouver School District and the Battle Ground School District.

Minimum Collection Service Levels

Minimum collection service level options include:

- Recycling for all garbage customers in Clark County unincorporated and rural areas.
- Garbage (and recycling) for all customers in urban growth areas.
- Commercial recycling would also make an impact on local jobs.

Requiring residential recycling for existing garbage customers would add an additional 5000 customers in the rural area which would equate to 1-2 new driver jobs. Based on the available data the additional 5,000 rural recycling customers would generate an addition 2000 tons of recycling. 1,000 tons of materials create a net 2.27 additional jobs versus landfilling the same 1,000 tons. This could lead to an additional 4 to 5 jobs (not all of these jobs would be in Clark County). If garbage were made mandatory along with recycling, additional customers would be added. For example, the City of Battle Ground has about 1500 customers that don't subscribe to garbage or recycling service. Note that some recycling would be offset by a reduction of self-hauled drop off recycling. There are about 3000 commercial Waste Connections customers that don't have recycling service (they may drop off or use another service provider).

Rate Structures

Rates or fees charged for garbage collection in Clark County vary by area and service provider. Because of the way the rates are structured, municipal rates (e.g. the City of Vancouver) often provide more incentive to reduce waste than WUTC service area rates.

Recyclable Material Collection

The collection of recyclable materials from residential and nonresidential generators is regulated somewhat differently than the collection of general solid wastes in the State of Washington. However the WUTC, Clark County, and cities in Clark County are still involved in the regulatory process. The self-hauling of recyclable materials by generators to recycling centers, transfer stations or other location is not regulated. (Additional information on waste recycling can be found in Chapter 6.)

Recycle bins - Photo source: City of Vancouver, WA

Residential Collection for Recycling

The collection and transportation of recyclable materials and yard waste from single-family and multifamily residences is regulated under RCW 81.77 and RCW 36.58. Under these statutes, counties have the authority to directly regulate the collection of source separated recyclable materials. Local government jurisdictions, including both counties and cities, have the option to either contract directly with a private collection company to provide residential recyclable materials collection services, or to delegate the responsibility to the WUTC. If the local government contracts directly with a collection company, then it thereby regulates collection activities and the WUTC is not involved. However, if the authority is delegated to the WUTC, then a WUTC-certificated collection company would provide the collection service, with WUTC regulating the activity as previously described in this chapter. In addition to these two options, cities have the option of providing recyclable collection services within their jurisdictional boundaries by using city personnel and equipment.

Currently WCW has contracted with the County and the cities of Battle Ground, La Center, and Yacolt to provide residential recycling collection services (both single family and multifamily) within those cities and also in all of the unincorporated areas of Clark County. The City of Vancouver contracts for residential recycling collection services (both single family and multifamily) with WCW. The cities of Camas, Ridgefield and Washougal have separate contracts with WCW to collect recyclable materials from both single-family and multifamily residences within their jurisdictions.

Since 2009 residential customers in all cities and unincorporated areas of the county are provided with the same style of curbside recycling collection equipment (a roll cart for commingled recyclable paper, metal, and plastic items, with a separate bin for glass bottles), which simplifies public information as well as collection. In Vancouver and in the rural unincorporated areas recycling is collected biweekly; in all other cities and in the urban unincorporated area it is collected weekly. Multifamily residences are provided with weekly or twice-weekly collection as appropriate. 65-gallon roll carts are provided to customers with weekly collection; 95-gallon roll carts are provided to customers with biweekly collection. Smaller roll carts are available to customers upon request. More detail about the residential recycling program is provided in Chapter 6, Waste Diversion, and in Chapter 8, Waste Transfer and Material Recovery.

Non-residential Collection for Recycling

The collection and transport of recyclable materials from nonresidential generators is regulated by the WUTC under RCW 81.80. Three types of authorities are established in RCW 81.80, including common carriage, contract carriage, and private carriage. Counties have no authority to regulate the collection and transportation of nonresidential recyclable materials. Cities may enter into non-exclusive contracts with providers of non-residential recycling services or may establish a regulatory framework to direct the nature of their activity and services within the jurisdiction. Local businesses, however, may choose to make other collection arrangements.

Common carriers are permitted by the WUTC and can collect a specific commodity (or commodities) within a designated geographic territory. Common carriers do not own the commodity being hauled; they are simply providing a transportation service for the owner. For example: a private company hauling cardboard from nonresidential generators to an independently operated recycling facility would be a common carrier. Common carriers are required to provide collection and transportation service to anyone requesting the service within the collection territory. Fees are negotiated between the carrier and the customer.

Contract carriers are permitted by the WUTC and can collect a specific commodity (or commodities) from a single nonresidential generator. For example: an independent company collecting cardboard from a single manufacturing company would be a contract carrier. Contract carriers negotiate the tariff or fee paid for the service with the waste generator without WUTC involvement.

Private carriers are not subject to regulation by the WUTC. Private carriage involves the collection and transportation of a commodity (or commodities) by either the commodity generator or the commodity user, if the collection and transport activity is incidental to the overall or primary business of the generator or user. For example: a large manufacturing facility that self-hauled small amounts of cardboard to a local recycler would be considered a private carrier. Recycling firms that collect their own materials for further processing and marketing are also considered private carriers.

As summarized in Chapter 6, the City of Vancouver has established a licensing program that pertains to common carriers collecting recyclable materials within the city limits. A key purpose of this requirement is to obtain data on recycling activities within the jurisdiction.

The City of Vancouver regulates commercial recycling haulers. All recycling collectors obtain from the City a license which is renewed annually. Licensed recyclers must comply with the code requirements, and are only to collect source-separated recyclables. An annual report on tons or cubic yards collected is required at the end of each year. Clark County will be developing a similar program for registering commercial recycling haulers.

Table 7-4 below summarizes all off the solid waste collection services all County jurisdictions.

Table 7-4 Summary of Solid Waste Collection Services

Municipal Solid Waste (MSW) Collection				
Area and Jurisdiction	**Regulatory Authority**	**Service Provider**	**Mandatory Collection**	**Contract Term**
City of Vancouver	City-contracted	WCW	Yes	January 31, 2020
City of Camas	City	City of Camas	Yes	n/a
City of Washougal	City-contracted	WCW	Yes	April 1, 2024
City of Ridgefield	City-contracted	WCW	Yes	December 31, 2019
City of Battle Ground	WUTC	WCW	No	n/a
City of La Center	WUTC	WCW	No	n/a
Town of Yacolt	WUTC	WCW	No	n/a
Unincorporated Clark County	WUTC	WCW; Waste Control Inc. (sub-contractor)	No	n/a

(Table continued on next page)

Recycling Collection				
City of Vancouver	City – contracted	WCW	Yes	January 31, 2020
City of Camas	City – contracted	WCW	Yes	December 31, 2019
City of Washougal	City – contracted	WCW	Yes	April 1, 2024
City of Ridgefield	City – contracted	WCW	Yes	December 31, 2019
City of Battle Ground	County – contracted	WCW	No	December 31, 2018
City of La Center	County – contracted	WCW	No	December 31, 2018
Town of Yacolt	County – contracted	WCW	No	December 31, 2018
Unincorporated Clark County	County - contracted	WCW; Waste Control Inc. (WCW sub-contractor)	No	December 31, 2018
Yard Waste Collection				
City of Vancouver	City – contracted	WCW	No	January 31, 2020
City of Camas	City – contracted	WCW	No	December 31, 2019
City of Washougal	City – contracted	WCW	No	April 1, 2024
City of Ridgefield	City - contracted	WCW	No	December 31, 2019
City of Battle Ground	County – contracted	WCW	No	July 31, 2023
City of La Center	County – contracted	WCW	No	July 31, 2023
Town of Yacolt	County – contracted	WCW	No	July 31, 2023
Unincorporated Clark County	County - contracted	WCW	No	July 31, 2023

Note: WCW's office is located at 12115 NE 99th St #1830, Vancouver, Washington and City of Camas office is located at 616 NE 4th Avenue, Camas, Washington; Basin Disposal, Inc. has an inactive permitted WUTC service area in and near Camas.

Waste collection systems are able to readily adapt to changes in customers served with additional equipment, manpower and periodic adjustments to route schedules. As most of the collection within the regional area is performed under contract, these contract rates take into consideration increases to the customer base. WUTC also has the ability to review rates for G-certificated hauler which also incorporates review of the customer base. All of the collection contracts have extension provisions. The County's residential recycling collection contract expires in December 31, 2018 and has one 1-year extension. The County will issue a Request For Proposals for this service when the current contract is due to expire.

Collection - Photo source: City of Vancouver, WA

Project Solid Waste Collection

Population projections for the County (by jurisdiction) are shown in Table 7-5 for the next twenty years.

Table 7-5 Projected Population

	2012 Estimated	2013 Projected	2014 Projected	2017 Projected	2020 Projected	2025 Projected
City of Vancouver	163,200	164,500	167,400	175,047	183,042	197,189
City of Camas	20,020	20,320	20,880	21,834	22,831	24,596
City of Washougal	14,340	14,580	14,910	15,591	16,303	17,563
City of Ridgefield	5,210	5,545	6,035	6,311	6,599	7,109
City of Battle Ground	17,920	18,130	18,680	19,533	20,426	22,004
City of La Center	2,985	3,015	3,050	3,189	3,335	3,593
Town of Yacolt	1,605	1,615	1,620	1,694	1,771	1,908
Unincorporated Clark County	205,885	207,795	210,225	219,828	229,869	247,634
Total	**431,165**	**435,500**	**442,800**	**463,026**	**484,177**	**521,596**

Note: 2013 estimated population from the US Census Bureau. State of Washington Office of Financial Management projections - 1.5% increase.

Yard Debris Collection

Separate collection of yard debris is offered by subscription on a bi-weekly, on-call or seasonal basis. It is available to residents of Battle Ground, Camas, La Center, Ridgefield, Vancouver, Washougal, Yacolt, and the southern unincorporated areas of the county which are subject to outdoor burning restrictions. More detail about collection and recovery of yard debris is available in Chapter 13, Organic Wastes.

Litter Collection

Littering is solid waste that is thrown, discarded or placed in any manner or amount on any public or private property; other than being placed in appropriate solid waste containers. This includes waste that is thrown by pedestrians and motorists; materials that are blown from vehicles; and large loads of waste that are illegally dumped onto public or private property.

The Washington Department of Ecology provides limited funding to Clark County through the *Community Litter Cleanup Program*. This program helps to cover the costs to local governments to clean up litter and illegal dumps. In Clark County, District Court Corrections administers the CLCP grant funding, using offender crews to perform the work. More information in provided in Chapter 16 Enforcement on these programs in the local jurisdictions.

Recommendations

1. **Adopt a county service level ordinance to provide**: a) minimum collection service levels for residential and nonresidential customers; b) access by the County and cities to collection system information; c) enhanced coordination between WUTC-certified collection companies and County and city contractors. (7-2)
2. **Support and investigate state legislative efforts** to provide counties with the same options for management of waste collection that cities have to gain greater local control of recycling strategies. (7-3)
3. **Develop a program for registering commercial recycling haulers and tracking tonnage data in the unincorporated areas.** (7-8)
4. **Identify strategies for working with the Washington Utilities and Transportation Commission** (WUTC) and WUTC-certificated haulers to develop rate structures that support and encourage waste reduction and recycling. (7-6)

End of Chapter 7

Chapter 8
Waste Transfer & Material Recovery System

Transfer stations serve as centralized collection points for solid wastes. Where disposal sites are long distances from waste sources, combining significant amounts of waste at a transfer station can minimize haul times and costs for certificated / contracted haulers, self-haulers and municipal collectors.

Transfer stations can also provide an opportunity to recover certain waste substreams before wastes are transferred to disposal, and can provide for the separate collection of source-separated recyclable materials (including those not collected by curbside programs), yard debris and other organic material, household hazardous waste (HHW), and other special wastes.

WAC 173-350, *Minimum Functional Standards* (MFS) *for Solid Waste Handling*, is the primary state regulation governing the design and operations of transfer stations in the State of Washington. Clark County Code Chapter 24.12, *Solid Waste Management*, is the primary local statute governing transfer stations.

Assessment of Conditions

Background

Leichner Landfill, which had previously received most of the municipal solid waste (MSW) in Clark County, was closed in December 1991. Anticipating the closure, the County and cities had planned, and implemented, a waste transfer and disposal system to provide long term handling of municipal solid waste (MSW). In 1988, after a long and unsuccessful landfill site selection process, the County and cities used a competitive selection process to find a provider for MSW recycling, transfer, transport and out-of-county disposal services. In April 1990, the County and the City of Vancouver entered into a long-term contract with Columbia Resource Company (CRC), now a wholly owned subsidiary of Waste Connections of Washington, with services which began in January 1992.

The contract with CRC was last amended and extended with a term that runs through 2021. The amended contract contains new terms and conditions including the installation of an upgraded recyclable processing line, providing improved and expanded processing capacity for construction and demolition material, and an opportunity for the County to purchase the transfer facilities in 2026. The Contractual options to extend the contract and eventually purchase the facilities must be committed to at the end of 2020. In addition to the above, the contract provides:

- Operating three or more privately owned transfer stations in Clark County;
- Annually diverting a minimum of 10% of the incoming waste stream from disposal;
- Transport and disposal of non-recycled and non-hazardous waste from the West Van Materials Recovery Center and the Central Transfer and Recycling Center, (primarily by containers transported on barges) to the Finley Buttes Landfill in Morrow County, Oregon;
- Transport and disposal of non-recycled and non-hazardous waste from the Washougal Transfer Station to Wasco County Landfill in Wasco County, Oregon;
- Processing and marketing of recyclable materials from the county/city curbside collection programs;

A map of the facilities are listed on *Page vi*

- Providing public drop-off facilities for source-separated recyclable materials;
- Operating Household Hazardous Waste (HHW) drop-off facilities at each transfer station;
- The contracted solid waste facilities are designated as essential public facilities and are an integral part of Clark County's regional solid waste management system.

Flow Control

The U.S. Supreme Court ruled in 1994 in Carbone that flow control - state or local laws that direct where waste should be processed or disposed - violates the "dormant" Commerce Clause. Since that decision, several exceptions to this general principle have developed. MSW in Clark County is directed to the County contracted, privately owned facilities through contractual agreements between the haulers and municipalities or interlocal agreements between the County and municipalities.

On April 30, 2007, the U.S. Supreme Court ruled in *United Haulers Association Inc. v. Oneida-Herkimer Solid Waste Management Authority* that local governments are permitted to engage in flow control to government-owned disposal facilities or government contracts in specific circumstances. The Court concluded that flow control laws that favor government-owned disposal facilities do not discriminate against interstate commerce, and are reviewed under a more lenient balancing test. The Court's decision narrows the impact of the Court's Carbone decision in 1994.

Within Clark County, the *Solid Waste Management Plan*, interlocal agreements with the cities and city collection contracts all direct MSW collected by the contracted hauler to be delivered to County designated transfer facilities operated by CRC under contract with Clark County. CRC is a wholly-owned subsidiary of Waste Connections. Waste Connections provides the majority of MSW collection services within the County either through contract or a franchise granted by the WUTC. The County contract with CRC requires Waste Connections to deliver MSW collection under the WUTC franchise or through contract to the designated County transfer system.

Central Transfer and Recycling Center

Central Transfer and Recycling Center (CTR) is located at 11034 N.E. 117th Avenue (State Route 503). Operations began at this site in 1985 as the R&R Transfer Station.

CRC purchased this facility in 1990 to use as one of the two transfer stations it was required to provide by contract with the County. Under CRC ownership the site has been substantially upgraded and improved to handle increased traffic and waste flows and to accept HHW. During the second half of 1991, CRC reconstructed and expanded the old R&R site to include a new 40,000-square-foot transfer building with a hydraulic compactor unit. The old transfer building was expanded to 13,000 square feet and converted for use as a drop-off area for HHW and source-separated recyclable materials. New entry and scalehouse facilities were also added. The new transfer station building began operating in January 1992.

In addition to MSW, CTR accepts commercial waste including construction and demolition wastes, source-separated recyclable materials, HHW and other special wastes. Special wastes such as asbestos, petroleum-contaminated soils, ash, certain sludges and bulky wastes can be delivered to CTR with advance notice and completion of a special waste application issued by CRC.

CTR recovers both source-separated and non-source-separated recyclable materials. Source-separated materials are delivered to a public drop site separate from the main CTR tipping floor. Non-source-separated recyclable materials are recovered by CRC staff from selected loads on the tipping floor. Most tipping floor recovery occurs from drop-box and self-haul loads including construction and demolition (C&D) sourced materials, not from compacted loads of mixed residential and commercial wastes. These recovered materials include corrugated cardboard, wood, metals and other materials deemed economically recoverable. Recycled materials accumulated at CTR are either delivered directly to secondary markets or transferred to CRC's West Van facility for further processing.

MSW delivered to CTR is either top-loaded into transfer trailers or end-loaded by hydraulic compactor units into shipping containers. Solid wastes that are top-loaded are less compacted and could be transported to the West Van facility for processing to divert additional recyclable materials. Solid wastes that are compacted into shipping containers are transported by truck directly to the barge-loading facility at Tidewater Barge Lines in the Port of Vancouver. They are then shipped upriver via barge for final transport to the Port of Morrow and ultimately the Finley Buttes Landfill. Tidewater Barge Lines is the contracted transport company that manages all segments of transportation from the transfer station all the way to the landfill (at times of the year when river locks are being serviced, the containers are delivered the entire distance by truck).

As required by contract, HHW is accepted from residential self-haulers in the receiving area of the recycling/HHW building on designated days each week. HHW is received, sorted and packaged prior to its removal from CTR by a licensed contractor and transported directly to a state-permitted treatment, storage and disposal facility. (Other hazardous materials accidentally or illegally disposed of with regular waste are also removed from MSW by CRC personnel when seen on the tipping floor. Load check spotters, equipment operators and other station personnel have been trained to identify and isolate unacceptable and/or unauthorized wastes for proper handling and disposal, separate from MSW.)

CTR does have challenges regarding ingress, egress and on-site traffic management. The State Department of Transportation also plans in the next few years to place a traffic barrier on N.E. 117th Avenue. This will prevent a left turn into the facility (traveling north on 117th Avenue) and a left turn out of the facility.

West Van Materials Recovery Center

The West Van Materials Recovery Center (West Van) facility is located at 6601 NW Old Lower River Road, on the west side of Vancouver. Most of the waste delivered to this facility is generated in West and North Vancouver. This facility functions as both a transfer station and a materials recovery center for residential curbside and multi-family as well as commercial recycling materials and receives:

- Regular garbage (MSW) from private waste collection companies and self-haulers;
- Source-separated recyclable materials delivered by the public, including scrap metal, appliances, sheetrock and other materials;
- Household Hazardous Waste;
- "Dry" loads of commercial materials that have a high potential for recyclable materials recovery;
- Construction and demolition wastes (C&D);

- Yard debris, land clearing debris and other wastes, requiring special handling or processing;
- Source-separated recyclable materials collected through county/city curbside and multi-family collection programs as well as the commercial commingled recycling collection programs (Vancouver Recycles and Clark County Recycles) and delivered by the contracted operator;
- In accordance with the operations plan, organics/food waste from commercial generators may be reloaded within the transfer station building for delivery to permitted composting sites or transfer facilities located beyond Clark County.

The West Van Facility includes an 82,000-square-foot main building, entry and exit scales, control facilities, a container and drop-box storage area, administration and employee buildings, recycling drop-off area, a glass processing and aggregate storage area, and a stormwater detention and treatment area. The facility also includes several operational components: a tipping floor/material recovery area; C&D processing area; a large sorting & processing area for recyclables; an HHW receiving and storage area; an appliance/scrap metal drop-off area, and a wood waste/yard debris storage. The tipping floor/material recovery area has separate bays for self-haulers and waste collection vehicles to unload MSW. Self-haulers unload on the east side of the facility, while certificated/contracted haulers unload on the northeast end of the facility. Loads with a high recycling potential are manually sorted to recover recyclable materials.

Residual wastes are pushed into a compactor for loading into shipping containers. The containers are then transferred to the Tidewater Barge Lines barge loading facility for shipment upriver for final transport to the Finley Buttes Landfill. Recyclable materials are trucked to end markets.

Washougal Transfer Station

The Washougal Transfer Station (WTS) facility is located at 4020 South Grant Street, on the southeast side of Washougal in the Port of Washougal area. Most of the waste delivered to this facility is generated in Camas, Washougal and east Vancouver/east Clark County, though some material is from Skamania County. This facility functions as a transfer station, public recycling drop-off facility, and HHW collection site (one day per month). Unlike the other transfer stations, this site operates for the public on a limited schedule but available of use by collection vehicles on all days that collection routes operate. The site provides the following functions:

- Accepting regular garbage (MSW) from private waste collection companies, the City of Camas and self-haulers;
- Accepting source-separated recyclable materials delivered by the public, including scrap metal, appliances and other materials; and,
- Accepting Household Hazardous Waste.

The 2000 Clark County Solid Waste Management Plan recommended that an east county transfer station be developed and included in the solid waste management system as an essential public facility. The County contract with CRC provided for the company to site, construct and operate a third transfer station east of I-205. A site in the Port of Camas and Washougal was selected through a feasibility study conducted by CRC, construction began in mid 2008 and the Washougal Transfer Station became operational at the beginning of 2009.

Waste received at this facility is transported via truck from the transfer station to the landfill in Wasco County, Oregon.

English Pit Transfer Station (Closed)

The former English Pit Transfer Station was located at 912 N.E. 192nd Avenue in Eastern Clark County. The facility is owned by Clark County and was operated as a transfer station from 1978 to March 1989. The facility consisted of a 6,000 square-foot transfer building, a pay booth and administration building. The Roads and Maintenance Division of the Clark County Department of Public Works is currently using the facility for equipment and material storage.

Future Transfer Station Needs and CTR Traffic

The existing system of the three transfer stations can be modified or upgraded, as needed and as possible, to maintain or improve existing levels of service. The existing contract with CRC provides the option to determine if a fourth transfer station is needed. If a fourth transfer station is to be developed, the contract provides for CRC to site, construct and operate this station for the County.

Funding options and timing of construction of a turn lane and any other potential improvements to CTR will be presented to SWAC and city representatives for review of alternatives and the potential funding mechanisms.

Existing interlocal agreements with the cities require any rate increase that may result from implementation of the recommended alternative be approved by the County only after notice to, and consultation with, the affected cities.

Waste Quantities

Both CTR and West Van have been designed to receive and transfer up to 1,000 tons per day of solid waste under the current operations schedule. The Washougal Transfer Station was designed to handle 50,000 tons of waste per year (about 160 tons per day). In 2013, a combined total of 248,640 tons of waste was received at all three facilities and of this 242,488 tons was sent to landfills. This volume is down significantly from the 282,508 tons that was sent to the landfill in 2006. Of the tonnages handled in 2013, West Van received 44,128 tons of waste, CTR received 181,385 tons of waste, and WTS received 23,127 tons of waste. The economic recession which began in 2008 has contributed to reduced waste being generated for both recycling and disposal. Waste reduction and slowed growth in the economy and the local population help to extend the capacity of the regional waste transfer and recyclables processing infrastructure.

- Influences on MSW quantities in the transfer and processing system may include:
- The rate of increase and the distribution of population and commercial growth in the County;
- The ability of the County and cities to direct the flow of waste generated within their jurisdictions;
- Unauthorized export of MSW out of the County disposal system;
- Mandatory collection in cities and in all or portions of the County;
- The effectiveness of waste reduction and recycling programs;
- Improvements in technology and capacity of recycling processing equipment;
- The strength of recovered material markets and prices;

- Changes in contractual and legal definitions of some components of the waste stream;
- Changes in waste composition resulting from upstream changes in goods production, product distribution markets or recovered material prices; and
- Import of waste to the Clark County system.

Table 8-1 projects waste tonnage over the next twenty-year period. Projected landfill tonnage for 2015 is comparable with 2006 tonnage levels.

Table 8-1

Projected Annual Tonnage			
Year	**Waste Stream**	**Landfill Tons**	**Residential Recycling Tons**
2012	665,765	231,487	35,144
2015	627,925	242,777	37,295
2020	662,770	262,831	41,176
2025	704,768	284,541	45,462
2030	750,820	308,044	50,194
2034	789,819	328,237	54,331

Note: Projections show an average 1.6% annual increase in landfilled tonnage; an average 1.3% increase in the total waste generated; an average 2% annual increase in residential recycling tons; a 49% average recovery rate; population projections based on estimates from the US Census Bureau and State of Washington Office of Financial Management.

Six-year Capital Projections and Financing Plan

As described in the sections above, the three system-transfer facilities currently have through-put design capacity. It should be noted that not all of the total waste stream tons shown above are coming to and being processed at the system transfer facilities. The generation rate for landfilled tons and the percent of waste recovered (and diverted from the landfill) have remained fairly consistent.

There is approximately a total capacity of 2,000 tons per day at the three facilities. Current tonnage levels reflect 39% of design capacity. Reaching full capacity would require increasing operating hours and redirecting scheduled routes from one facility to the other. It is possible to run second and third shifts at some of the transfer facilities. The region would reach 100% of designed capacity with projected tonnages during 2034. However, even with through-put capacity, greater limitations are associated with traffic flows and ingress/egress capabilities.

A feasibility study to determine if a fourth transfer station is needed in the northern part of the County combined with an evaluation of improvements to CTR will provide a solution from the two options. Planning for any improvements to the system (either a fourth transfer station or improvements to CTR) will be during the next five years.

Funding options for any capital improvements or acquisitions will be evaluated with any decision to move forward on a project. Funding options may include:

- extending the contract term with CRC to allow additional time to recoup capital and, if applicable, operating costs;

- system-wide increases to the tipping fees and/or transaction fees; and,
- facility specific increases to transaction fees.

Existing interlocal agreements with the cities require any rate increase be approved by the County only after notice to and consultation with the affected cities. This includes any increase that may result from planned capital improvements to the system. Tipping fee and/or transaction fee increases would also be reviewed by the WUTC as these would be pass through rates on collection services. Specific information will be available for review when alternatives have been reviewed, a decision as to the direction for capital improvements is made, and cost estimates of the project are established.

The MRF at West Van processes all of the recyclables coming from the region. The facility is also accepting out of region recyclables and processing this material by running a second shift. If regional capacity was needed, the out of region recyclables would be directed to another facility. The West Van MRF also has the capacity to run a third shift. In consideration of these operational alternatives, the facility has through-put capacity over the twenty-year period.

Recommendations

1. **Evaluate the future needs of the north county area.** This analysis should consider population and economic growth and the potential to increase the number of residents taking advantage of scheduled collection services as well as an evaluation for upgrading CTR to address near-term and future traffic concerns. Any future facility would be sited in accordance with the guidelines and criteria listed in Appendix M. (8-5 to 8-7)
2. **Explore the option to purchase the CRC waste transfer system facilities** by contract option date of 2020 with ownership in 2027. (8-1)
3. **Environmental Management Systems (EMS) program** should be required, when appropriate, in contracts. (4-5)

End of Chapter 8

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Chapter 9
Energy Recovery

This chapter describes how energy recovery from municipal solid waste (MSW) will be considered in the Plan. As noted in Chapter 1, Clark County's energy recovery for wood waste and other types of source-separated waste was a higher priority in solid waste management compared to Washington state, placing it below recycling and composting but above treatment and disposal. Incineration of the municipal waste stream is placed below treatment and disposal.

Energy recovery from the collection and utilization of landfill gas at landfills is discussed in *Chapter 10 Landfill Disposal*. Use of motor oil as an alternative fuel source is addressed in *Chapter 11 Moderate Risk Waste*. Energy recovery from the conversion of organics/food waste is described in *Chapter 13 Organic Wastes*. Energy recovery from the incineration of special wastes is described in *Chapter 14 Special Wastes*.

Assessment of Conditions

By using renewable energy sources culled from the waste stream, the County may be able to lower its costs, generate revenues for other programs, and reduce the volume of waste being landfilled. Wood waste burned as hog fuel and motor oil burned as bunker fuel are not included when calculating Clark County's recycling rate, but are included when calculating the recovery rate.

Currently, the County and cities do not have any operating Energy Recovery/Incineration (ER/I) facilities. Previous Plan updates have included a detailed evaluation of the potential for development and operation of an Energy Recovery (ER/I) facility in Clark County, but have not recommended it as a viable disposal option.

Source-separated wood waste recovery has increased significantly since the Plan was developed. Much of this recovered material is currently sold as hog fuel while lesser quantities are periodically marketed to particleboard and liner board manufacturers. Though market demand and prices for this commodity vary over time, no source-separated wood waste is currently being landfilled. The wood-waste recovery market in Clark County is very competitive; in-county and regional operators from the Portland area actively compete for material. In Clark County, Columbia Resource Company (CRC) sorts wood waste from incoming MSW in addition to collecting source-separated materials from larger generators. Other private wood-waste recycling operators, such as H&H Wood Recyclers, Inc., McFarlane's Bark, and Triangle Resources, also accept and process source-separated wood waste, land clearing debris and similar materials.

Over the last few years the County has evaluated the feasibility of biomass plants for forest byproducts in both urban and rural sites. Both projects faced siting difficulties and were not able to move forward. These projects focused on the utilization of forestry waste so they did not directly tie in with management of the municipal solid waste stream that is the focus of this plan. However, having facilities such as these either in or near our region would potentially offer an end use and energy recovery opportunity for urban wood or similar hog fuel products produced from solid waste generated in Clark County.

Source: National Renewable Energy Laboratory

Throughout Washington State — Past And Present

In the 1990's, the City of Tacoma operated the only refuse-derived fuel (RDF) facility in Washington. RDF is burnable MSW that has been shredded or pelletized into a uniform size and shape before it is burned. Separation of burnable and non-burnable MSW is done at the facility where RDF is made. At the Tacoma facility, processed RDF from the facility was burned at the City's power station, along with coal and wood, and the residual ash was landfilled. In 2000, the Washington Department of Ecology reclassified the plant as an "incinerator", requiring higher burning temperatures. For a time, segregated asphalt roofing materials from Clark County were transported to the Tacoma Steam Plant for energy recovery.

In 2001, Tacoma Public Works shut down the plant until permitting issues could be resolved. In 2004, State rules changed with regard to an emission standard. With this change, the City of Tacoma evaluated whether the steam plant could be refurbished into a state-of-the-art waste-to-energy plant. In December 2005, the Tacoma City Council voted to not proceed with the project. The incineration facility was returned to Tacoma Public Utilities who dismantled the plant. The City of Tacoma owns its own landfill which it uses for its waste disposal.

Several small MSW incinerators within Washington State have closed in the past years: The 178-tpd Skagit facility was closed in 1996 due to equipment failures and high operating costs. A smaller incinerator in Friday Harbor (San Juan County) was closed in 1995 because its environmental compliance costs exceeded its budget. A 100 ton-per-day facility in Ferndale (Whatcom County) was closed in December 1998 due to its inability to compete economically against other county waste export operations.

There is currently one operating MMSW energy recovery incinerator in Washington State: an 800 ton-per-day facility in Spokane. The facility is owned by the City of Spokane, managed by the Spokane Regional Solid Waste System and operated by Wheelabrator Spokane, Inc. This facility opened in 1991 with partial funding through a State-matching grant. The Spokane facility uses energy recovery equipment to generate electricity, which is then used for in-plant operations or sold to utility companies.

All incinerators in Washington State are subject to the "Special Incinerator Ash Standards" adopted by the Washington Department of Ecology in 1991 and update in 200 (WAC 173-306). These standards require ash be tested to determine whether it must be handled as a solid waste or as a "special waste." Currently, Spokane transports their ash to a dedicated ash cell at Allied Waste Services Regional landfill in Roosevelt, Washington. This type of facility typically produces ash equivalent to 30% by weight and 10% by volume of the incoming waste.

Source: Wheelabrator Spokane, Inc. spokanewastetoenergy.com

Energy Recovery Nationwide, Local Experience

During the 1980s and early 1990s, many communities turned to Energy Recovery/ Incineration (ER/I) facilities (both mass burning and RDF plants) as a way to extend the life of local landfills or minimize the size of replacement-ash landfills. Typically, communities used revenue bonds to finance capital costs; capital and operating costs were then funded through tipping fees and offset by energy sales. Because tipping fees at ER/I facilities were usually higher than neighboring landfills, communities adopted flow-control ordinances to ensure that the facilities received enough waste to remain economically viable. In addition to the Spokane incinerator, similar mass burn facilities continue to operate in Salem, Oregon and Burnaby, British Columbia.

The 1994 U.S. Supreme Court Carbone decision on flow control jeopardizes the ability of local governments to direct waste to ER/I facilities. The inability to control the flow of MSW, concerns over the disposal of hazardous ash and the emergence of lower-cost regional landfills have essentially stopped the construction of new ER/I facilities and severely hindered existing operations. In 2007, a Supreme Sourt reviewed United Haulers where the Court evaluated flow control ordinances enacted by the Counties of Oneida and Herkimer in New York State. On April 30, 2007, the U.S. Supreme Court ruled in United Haulers Association Inc. v. Oneida-Herkimer Solid Waste Management Authority that local governments are permitted to engage in flow control to government-owned disposal facilities in specific circumstances. The Court concluded that flow control laws that favor government-owned disposal facilities do not discriminate against interstate commerce, and are reviewed under a more lenient balancing test. The Court conferred a benefit on a public facility rather than a private one. These distinctions noted that government is vested with responsibility to protect the health, safety and welfare of its citizens and that laws favoring local government should therefore be evaluated for Commerce Clause deficiencies differently than laws favoring private industry. However, in October 2012, a federal district court in Texas issued a permanent injunction enjoining the City of Dallas from enforcing its flow control law. The court concluded Dallas' flow control law violated the Contracts Clause of the U.S. Constitution. This decision underscores that despite the Supreme Court's 2007 decision in the United Haulers case, there are constitutional limits to local governments' authority over solid waste management.

Through a long-term disposal contract and inter-local agreements Clark County's mixed municipal solid waste stream is contracted to be directed toward the transfer system and landfill facilities operated by Columbia Resource Company. This commitment which runs to 2021 (with one possible extension - 2026) has helped to reduce costs by spreading out the cost of the infrastructure. Directing this volume to an energy recovery facility, if one were to be proposed or developed within or near our region, would necessitate review of the economic feasibility and contractual obligations. As the contract term begins to expire over the next 10 to 20 years, consideration and analysis on the potential for an energy from waste project(s) would be appropriate.

Types of Energy Recovery

Municipal Waste Incineration

Energy Recovery / Incineration (ER/I) facilities may use either mass burning systems or prepared fuel systems. Mass burning systems involve feeding mixed municipal solid waste (MMSW) into a furnace or boiler without mechanically separating or preparing the waste in any way. These facilities can be either large field-erected furnace-boiler systems or smaller modular furnace-boiler systems.

In prepared fuel systems, MMSW is mechanically separated and processed to make refuse-derived fuel, either as a supplemental fuel for an existing furnace-boiler or to be used alone in a dedicated furnace-boiler.

Source: CP Manufacturing

Energy recovery is rarely associated with small incinerators; incinerators burning less than 250 tons per day do not produce cost-effective steam. Medium and large MMSW incinerators, however, can install larger boilers, which will generate steam more cost-effectively. This steam can then be used to generate electricity, power industrial processes, or provide heat.

Biomass Incineration

Biomass incineration involves the incineration of dry organic matter such as animal litter (for example, horse stall material and chicken litter), yard waste, discarded wood products (such as pallets or urban wood), and forest debris collected during forest thinning. The organic matter is reduced in size to burn more quickly, consistently and efficiently. The heat generated is used to create steam which is then used to generate electricity. The County has an abundant supply of organic materials that could potentially serve as fuel for a biomass incineration plant.

Biogas Production

Some of the less dry, less woody types of organic matter which are not as suitable for biomass incineration can be used to create biogas. There are a number of ways to generate biogas: anaerobic digestion, pyrolysis, and gasification. Once produced, the gas can be burned as a fuel for any purpose. Anaerobic digestion should be considered as a possibility for food waste handling.

Recommendations

1. **Continue the established energy recovery program for wood waste,** monitoring the volume being diverted from landfill disposal. (9-1)
2. **Stay informed about developments in the energy recovery field** and look into opportunities that meet regional needs. (9-4)

End of Chapter 9

Chapter 10
Landfill Disposal

This chapter describes the Clark County regional disposal system for municipal solid waste (MSW), including transportation to and landfill disposal at Finley Buttes and Wasco County Landfills in Eastern Oregon. The county's hierarchy of priorities for waste handling and disposal is discussed in Chapter 1. Construction and demolition waste disposal is discussed in Chapter 12, including a map of the facilities. Handling and disposal of special wastes is discussed in Chapter 14. Solid Waste Handling Facilities siting guidelines are described in the Appendix M; historical data on Clark County's landfills (Abandoned and Closed Landfills in Clark County) is in Appendix L; disposal tonnage is found in Appendix J: *The Solid Waste Data Report*, construction and demolition waste disposal is discussed in Chapter 12 Construction and Demolition Wastes.

The County and cities within the County (Cities) are committed to minimizing the amount of waste being disposed through the implementation and maintenance of aggressive waste reduction (Waste Prevention and Reduction Chapter) and waste recycling programs (Waste Recycling Chapter). After waste reduction, reuse, recycling, composting, and energy recovery, the remainder of Clark County's waste is landfilled.

Landfill disposal is an important element of the solid waste system. WAC 173-304 and WAC 173-350 define a landfill as "a disposal facility or part of a facility at which solid waste is permanently placed in or on land." A more descriptive definition of a landfill is "an engineered method of disposing of solid wastes on land in a manner that protects the environment, by spreading the waste in thin layers, compacting it to the smallest practical volume, and covering it with soil by the end of each working day."

The Guidelines for the Development of Local Solid Waste Management Plans and Plan Revisions (WDOE 10-07-005) defines "waste export" as the hauling of solid wastes generated within a planning area (Clark County) to processing and/or disposal sites outside of the planning area. As noted above, the landfill sites that receive Clark County wastes are both outside of Clark County at distances of between 90 and 180 miles from our community. Additionally, both of the sites are in the state of Oregon so there are unique factors related to differing landfill regulations between the two states.

State Legislation and Regulations

Revised Code of Washington 70.95 Solid Waste Management Reduction and Recycling Act

RCW 70.95 requires that solid waste management plans include a "review of potential areas that meet the siting criteria as outlined in RCW 70.95.165, WAC 173-304-130 and WAC 173-350-400(2)."

Washington Administrative Codes 173-304 and 173-350, Minimum Functional Standards for Solid Waste Handling

RCW 70.95 directs the Washington Department of Ecology to develop standards for solid waste handling facilities. These standards, found in WAC 173-304 and WAC 173-350, cover siting criteria, design and performance standards and closure and post-closure maintenance requirements for solid waste landfills and other handling facilities. For the most part, the standards meet Subtitle D of the *Resource Conservation and Recovery Act* (RCRA) and provide additional protection.

Oregon Revised Statute 459.055, Solid Waste Control

Chapter 459.055, *Landfills in Farm Use Area*; Waste Reduction Programs requires out-of-state local governments to implement waste reduction and recycling programs that are at least as effective as programs in similar Oregon jurisdictions, before exporting wastes into Oregon for landfill disposal.

Oregon Administrative Rule 340-93-97, Solid Waste Management in General

Oregon Administration Rule (OAR) 340-93-97 establishes permitting, closure, financial assurance and engineering requirements for landfills, incinerators, composting facilities, sludge land application sites and solid waste transfer stations. The standards are enforced by the Oregon DEQ.

Assessment of Conditions

This section describes Clark County's current MSW landfill disposal system. This system includes the transporting of MSW from the County's largest transfer stations [Central Transfer and Recycling Center (CTR) and West Vancouver Materials Recovery Center (West Van)] primarily through barging to the landfill at Finley Buttes, for disposal. The Washougal Transfer Station (WTS) is located in the Port of Camas/Washougal; MSW from WTS is transported by truck to the Wasco County Landfill. Since the MSW from all transfer stations is disposed in Oregon, ORS 459.055 (waste reduction and recycling) and OAR 340-93-97 (landfill standards) apply to the County. The State of Oregon, under ORS 459.055, requires local governments outside of Oregon who transport waste to Oregon landfills to implement waste reduction and recycling programs which must be at least as effective as Oregon programs in similar jurisdictions. The local governments must apply to the Oregon DEQ and be accepted before wastes can be exported to Oregon.

Waste Transport for Disposal

Clark County and the City of Vancouver have an ongoing contract with Columbia Resource Company (CRC) to receive and process MSW and to transport and dispose of non-recycled MSW generated in Clark County. The initial term of the contract was for 20 years ending on December 31, 2011. Clark County and the City of Vancouver had the option of extending the contract for up to two 5-year extensions. Waste Connections, Inc. purchased CRC and the Finley Buttes Landfill, as well as an additional landfill in Wasco County, Oregon, in 1999. Since then, CRC, Finley Buttes and Wasco County Landfill have been wholly owned subsidiaries of Waste Connections, Inc. Clark County and the City of Vancouver opted to exercise a five-year extension to the original contract, extending the term to December 31, 2016. The second 5-year extension takes the contract through December 31, 2021. The waste transfer and materials recovery elements of the CRC contracts are described in Chapter 8.

Some other MSW practices are known to exist in Clark County, including the following:

- Woodland area wastes are collected by Waste Control (the WUTC-certificated collection company for that area) and transported to the Cowlitz County Landfill.
- Some self-haul wastes generated in the eastern, northern and southern portions of the County are transported into Skamania County, Cowlitz Counties, and the Portland, Oregon area, respectively.
- Some amount of commercially generated waste and waste from franchised and/or WUTC certificated haulers in portions of Skamania County, Cowlitz County and the Portland metro area is transported to Clark County transfer facilities. This waste is a minor portion of the waste stream received at these facilities.

Transport System

CRC is responsible, by long-term contract, for the transportation of all "non-recycled" waste from Clark County to Finley Buttes Landfill in Morrow County, Oregon and Wasco County Landfill in Wasco County, Oregon.

Waste collected at the West Van Materials Recovery Center and Central Transfer and Recycling Center are transported consistent with the County's current long-term contract, which requires transport to the Finley Buttes Landfill by barge or by rail, allowing truck transport only if specifically authorized by the County under unusual circumstances or certain economic conditions.

The current process for transporting non-recycled MSW to final disposal at Finley Buttes Landfill is as follows:

- after the MSW is processed at the CTR and the West Van facilities to recover recyclable materials, the remaining non-recyclable MSW is compacted and then sealed into shipping containers;
- the sealed containers are then hauled directly to the Tidewater M-5 barge loading facility where they are placed on barges;
- Tidewater Barge Lines transports the barges 180 miles upriver to the Port of Morrow in Morrow County, Oregon;
- at the port, the sealed containers are unloaded from the barges for later transport by trucks approximately 12 miles to the Finley Buttes Landfill;
- at the landfill, the containers are tipped and the MSW is emptied into the active cell of the landfill;
- empty containers are then returned to the Port of Morrow for barge transport back to Clark County.

Each shipping container has an internal volume of approximately 90 cubic yards, and holds about 30 tons of MSW. The staging yard behind the dock has a storage capacity of approximately 500 containers. Two sizes of barge systems are used for transport: the smaller barges carry up to 36 containers; the larger carry up to 80 containers. Based on the tonnage of non-recycled waste exported to Finley Buttes Landfill, the average number of loaded shipping containers transported upriver and through the Port of Morrow was about 800 containers per month in 2013.

Boardman Port (Tidewater Barge)

The loading and unloading capacity of the existing crane at the Port of Morrow is approximately 15 containers per hour, or 330 containers per day during a three-shift work day. An excess number of shipping containers are required by the CRC contract to temporarily hold up to six days of waste in the event that waste transport services are interrupted. In addition, during the two weeks each year when the navigation locks on the Columbia River are closed for routine maintenance, or in the event of unanticipated locks closures, containers can be shipped by truck or train.

The CRC contract was amended to include the Wasco County Landfill as the primary disposal facility for waste received at the Washougal Transfer Station. In order to eliminate double-handling, the waste at this site is top-loaded into trucks, tarped, and transported directly to the Wasco County Landfill for disposal, as follows:

- The routing of trucks from the WTS to the Wasco County Landfill goes by State Highway 14 east to the Dalles Bridge, over the bridge to Oregon, and then south on Highway 197 to the Wasco County Landfill.
- The alternate truck route from the WTS to the Wasco County Landfill is by State Highway 14 west to Interstate 205 south to Interstate 84 east to the Dalles and then south on State Highway 197 to the Wasco County Landfill
- At the Wasco County Landfill, the wastes are unloaded directly at the landfill face.

The barging system serves as the alternative transport system for waste from the Washougal Transfer Station to Finley Buttes Landfill. An updated *Contingency and Emergency Plan* included in this Plan's appendices describes designated alternative disposal sites if either Finley Buttes Landfill or Wasco County Landfill ceases operations, either temporarily or permanently.

Landfill Disposal Sites

Finley Buttes Landfill

Finley Buttes Landfill is located approximately 180 miles east of Clark County in Morrow County, Oregon, at 73221 Bombing Range Road, Boardman, Oregon. The facility is privately owned and operated by Waste Connections, Inc. It is the primary designated disposal site for MSW generated within Clark County. The landfill is designed, constructed and operated to be in compliance with all requirements of the Oregon DEQ and EPA Subtitle D MSW landfill requirements.

Finley Buttes Landfill occupies a permitted 510-acre site. The projected life of the current permitted landfill is 300 years, which exceeds the 20-year period covered by this Plan. The estimated available fill capacity at the site, as currently permitted by the Oregon DEQ, is 131,859,000 tons of MSW. Currently the site receives around 500,000 tons of MSW each year, more than half of which is from Clark County.

The design of the landfill incorporates features to protect groundwater and surface water, prevent soil erosion, provide fire protection, allow ease of access and manage and control landfill gas and leachate. The site is designed to be compatible with the surrounding land use, both during the active life of the landfill and after the landfill closes. Special operating procedures are used to prevent nuisances and threats to human health and the environment by controlling litter, odors, birds and vectors.

Since the end of 2007, the Finley Buttes site has benefited from the development and operation, under contract to Finley BioEnergy, of a combined heat and power (CHP) system that collects and utilizes landfill gas (methane) to power 3 generators that combined produce 4.8 MW of "renewable" electrical power for the grid (enough to power 3,500 homes). In addition, much of the waste heat from the electrical generating plant is utilized by Cascade Specialties (a nearby onion and garlic dehydration plant) reducing their need to purchase natural gas.

Together, this utilization of the landfill gas resulting from Clark County and other communities' wastes disposed at the site results in approximately a 75 percent efficient utilization of the methane's energy value. This compares favorably to systems at other landfills, which typically exhibit only 35% to 45% recovery efficiency when power alone is produced. The gas collection system (a network that includes roughly 3 or 4 total miles of piping) also aids in controlling and greatly reducing methane emissions from the landfill (as required by regulations and the site's permit).

Wastes defined and regulated as "hazardous" under Oregon and federal laws are prohibited from being disposed at Finley Buttes. Personnel are trained to recognize and manage hazardous and other prohibited materials. Surveillance by landfill personnel and regulatory agencies, record-keeping and reporting activities and shipping documentation requirements lower the potential for the disposal of hazardous wastes into the landfill. The contract with CRC indemnifies the County against any pollution-related liabilities associated with waste disposal at Finley Buttes Landfill. There is no evidence of significant legal exposure to Clark County from using this site.

Wasco County Landfill

Wasco County Landfill is a Subtitle D Regional Landfill located about five miles southeast of The Dalles, Oregon near the intersection of Interstate 84 and U.S. Route 197. The landfill site comprises 337 acres, with 213 acres of the site permitted by the Oregon DEQ for active landfilling. The landfill operator estimates that there is approximately 73 years before reaching capacity. The landfill is privately owned and operated by Waste Connections, Inc., is the designated disposal site for MSW from the Washougal Transfer Station, and is a backup facility to the Finley Buttes Landfill.

The entire active landfill area is lined with a five-foot-thick composite liner system. The liner lies on compacted native soils and consists of an HDPE liner, a geotextile wrapped perforated pipe, drainage sand, a geotextile fabric, two feet of highly impermeable recompacted soil/bentonite, a 60-mil high-density polyethylene membrane, and another layer of geotextile fabric. A one-foot thick soil buffer serves to protect the entire liner system. This multi-layered liner system is designed to collect leachate so that it cannot enter the soil or contaminate groundwater. Leachate is pumped from the leachate collection and removal system and recirculated over the lined portions of the landfill. A network of groundwater monitoring wells surrounds the landfill. These wells are sampled semi-annually and the results are reported to Oregon DEQ.

The landfill has implemented waste screening procedures to exclude prohibited waste and manage acceptable wastes. Scale attendants visually inspect incoming loads to look for any hazardous or unacceptable materials. The field supervisor and equipment operators inspect each load as it is discharged and compacted into the landfill. Randomly selected waste loads are to be emptied in a separate area and thoroughly screened. Special wastes are subject to additional evaluation and approval, with periodic laboratory testing. The County long-term contract indemnifies the county against any pollution-related liabilities associated with the waste disposed at the Wasco County Landfill. There is no evidence of significant legal exposure to Clark County from using this site.

Disposal Sites in Clark County

Appendix L summarizes the known historic landfill/dumping sites in Clark County. The listing order of the sites in the table is not based on their relative liability or contamination.

Rufener Landfill (a.k.a. Boise Cascade Landfill, Portside Landfill, Fruit Valley Landfill)

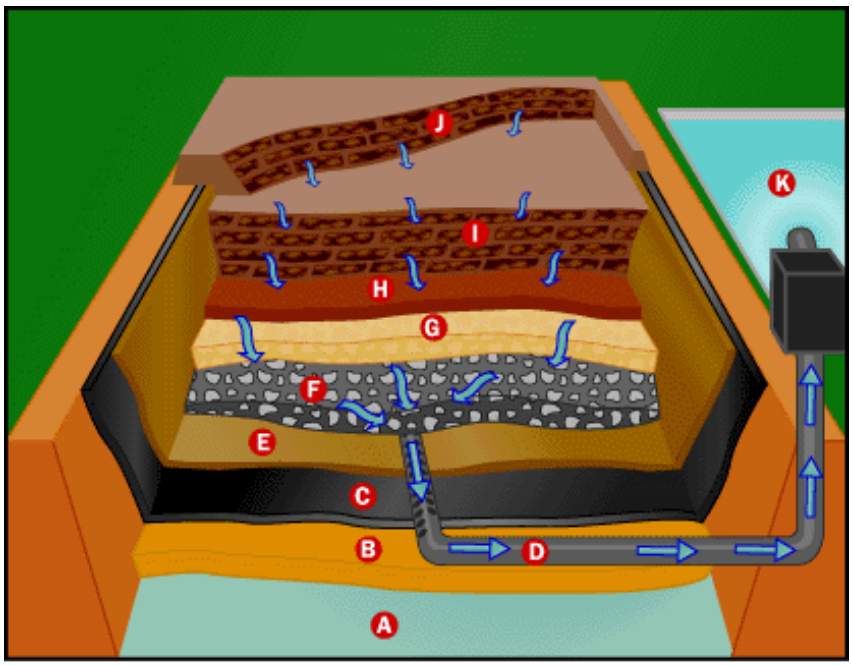
The limited-purpose Rufener Landfill on NW Lower River Road in Vancouver was owned by Boise Cascade, and received clarifier solids from the Boise Cascade paper-making plant until April of 1996. The site is decommissioned and will be put back to productive industrial use.

Leichner Landfill

The Leichner Landfill was the last MSW landfill that operated in Clark County; it accepted wastes from 1937 through 1991 at a site located in the south-central part of the County. Owned by Leichner Brothers Land Reclamation Company (LBLRC), it was permitted to operate as a sanitary landfill and to receive MSW and some CDL wastes. Under an order from the Washington Department of Ecology, the Leichner Landfill ceased operations on December 31, 1991.

Typical landfill construction system

- A Ground Water
- B Compacted Clay
- C Plastic Liner
- D Leachate Collection Pipe
- E Geotextile Mat
- F Gravel
- G Drainage Layer
- H Soil Layer
- I Old Cells
- J New Cells
- K Leachate Pond



Recommendations

1. **Utilize the existing contract for garbage export to Finley Buttes Landfill** located near Boardman, Oregon and Wasco County Landfill located near The Dalles, Oregon as the primary disposal sites for Clark County waste for the duration of the current disposal contract, but consider alternative disposal options when planning begins for the next contract (2020). (10-2)
2. **No new MSW landfills are to be sited in Clark County**. This limitation is due to the Sole Source Aquifer designation of the underlying Troutdale Aquifer. (M-2)
3. **Evaluate a regional approach to managing the transfer, transportation and disposal of MSW** including the formation of a Disposal District. (17-1)

End of Chapter 10

Chapter 11
Moderate Risk Waste Plan

Background

The first *Moderate Risk Waste Management Plan* for Clark County was developed in 1988 in response to RCW 70.105.220, requiring all local governments to implement moderate risk waste (MRW) plans. Moderate risk waste has been specifically defined by RCW 70.105.010 (13) to mean:

- Any waste that exhibits any of the properties of hazardous waste but is exempt from regulation under RCW 70.105, solely because the waste is generated in quantities below the threshold for regulation.
- Any household wastes that are generated from the disposal of substances identified by the department as hazardous household substances.

Moderate risk waste can be hazardous to human health, wildlife, or the environment, but it is conditionally (or categorically) exempt from the State's *Dangerous Waste Regulations*, Chapter 173-303 WAC. Moderate risk waste includes hazardous (toxic, corrosive, flammable, and reactive) wastes generated by households [referred to as household hazardous waste (HHW)] and by businesses which generate only limited quantities of hazardous waste (referred to as small quantity generators (SQGs). Common examples of MRW include paint, pesticides, solvents, antifreeze, cleaners, drain opener and hobby chemicals.

Since HHW and SQG hazardous wastes are conditionally exempt from the State's hazardous waste regulation, they are primarily regulated by local governments as a solid waste. However, in order to qualify as a SQG, a business must first determine if it meets the State's Quantity Exclusion Limit (QEL). The QEL identifies a business' regulatory status by measuring the amount of hazardous waste it generates. If the QEL is met, then a business is a Small Quanity Generator (SQG). SQGs are conditionally exempt from the State's hazardous waste regulations and are regulated by a set of reduced dangerous waste regulations. The QEL is 220 pounds total for all regulated wastes generated on site for one month or 2,200 pounds total for all regulated wastes (not more than 2.2 pounds of Extremely Hazardous Waste can be part of the 220 pound total).

The first MRW Plan designated the Southwest Washington Health District (now Clark County Public Health) as lead implementation agency for the MRW Plan. It was adopted by all jurisdictions within Clark and Skamania Counties and by the Health District's Board of Health; it was subsequently approved by the Washington Department of Ecology in 1989. As lead agency, the Health District had responsibility, until 1997, for the coordination and implementation of all elements of the first MRW Plan, except for the operation of the household hazardous waste collection facilities. In 1997, the MRW Plan was amended to have Clark and Skamania Counties assume the roles of lead agency for their respective counties.

Moderate risk waste programs in Clark County have taken a variety of forms since the 1989 MRW Plan was implemented. Some activities have been combined with solid waste information programs, such as general waste management publications and handouts. Other activities have specifically targeted moderate risk waste from households and small quantity generators. Collection programs include collection events in 1990-1993, HHW fixed facility operation since 1993, satellite HHW collection since 1998, used oil collection drop-off centers since 1992, curbside collection of used oil throughout the urban service area since 1992, Home HHW collections for eligible seniors and residents with disabilities since 2000, computer and other e-waste collection opportunities since 2003, and controlled substance collections since 2003.

The overall goal of the 1989 MRW Plan was to reduce the amount of hazardous waste in the County's solid waste stream and in wastewater treatment systems by reducing the amount of HHW and SQG hazardous waste being improperly disposed. MRW programs initially focused on disposal of hazardous waste in the solid waste stream.

Because of the County's reliance on ground water for drinking water, this focus evolved to address surface and ground water quality protection and non-point source pollution prevention.

Originally written as a 5-year regional plan, the MRW Plan was incorporated into the *Comprehensive Solid Waste and Moderate Risk Waste Management Plan* adopted the Moderate Risk Waste chapter which was prepared according to the *Guidelines for Development of Local Hazardous Waste Plans* (Washington Department of Ecology #10-07-006).

Legal Authority

Legal authority for the Program is based on Washington State statute and Clark County Code Title 24.12. Federal law exempts household hazardous waste (HHW) and small quantity generators (SQGs) from federal regulation.

The 1976 Resource Conservation and Recovery Act (RCRA) makes the management of hazardous waste a priority. While it addresses large generators of hazardous waste, RCRA exempts SQGs and HHW from regulation at the federal level. It also delegates the management of hazardous wastes to the states, at their request. In Washington State, the management of hazardous waste was delegated to the Washington State Department of Ecology (Ecology) by the United States Environmental Protection Agency (EPA) through the RCRA State Authorization rulemaking process.

Hazardous wastes in Washington State are primarily regulated under RCW 70.105, the Hazardous Waste Management Act of 1985, and as amended. In the case of our Program, RCW 70.105.220(1)(a) specifically directed local governments to develop plans to address moderate-risk wastes (MRW). It also required waste characterization studies to help develop a locally appropriate system of managing MRW that would ensure the protection of the environment and public health.

Requirements for the collection and disposal of MRW are set forth in WAC 173-350 Solid Waste Handling Standards. This regulation specified the minimum functional standards for the design and operation of MRW storage and processing facilities, including spill containment, employee training, emergency planning, control of toxic and flammable vapors, and container management. This section describes key provisions of the federal laws address hazardous materials and wastes.

Federal Regulations

Resource Conservation and Recovery Act

The 1976 Resource Conservation and Recovery Act (RCRA) provides a comprehensive framework for managing solid and hazardous waste so as to eliminate or minimize public health threats and environmental contamination. RCRA was modified by the Hazardous and Solid Waste Amendments (HSWA) in 1984. HSWA revised the minimum technical standards for the design and operation of solid waste facilities as a result of concerns about the disposal of unregulated quantities of hazardous waste at municipal landfills.

RCRA Subtitle C, the hazardous waste management program, and Subtitle D, the solid waste program, provide the primary sources of federal regulation associated with household and SQG hazardous waste. Subtitle C establishes a framework for managing hazardous waste by regulating generators who produce and accumulate hazardous waste in quantities above limits specified by EPA or state rules; waste transporters; and treatment, storage and disposal facilities (TSDs) handling the waste.

Hazardous waste generated or stored in quantities above the limits specified by EPA or state rules must be tracked by manifest from the point of generation to the ultimate disposal site, better known as "cradle-to-grave" tracking. Business and institutional

generators producing and storing hazardous wastes below the specified limits are not fully regulated provided that they comply with rules regarding the designation, management and reporting of wastes. HHW is categorically exempt from RCRA regulation.

The EPA implements and enforces RCRA, although Subtitle C administration and enforcement may be delegated to states that meet or exceed Subtitle C requirements. Washington State has been authorized to implement the RCRA Subtitle C program, and Ecology administers it. RCRA, Subtitle D, encourages state-governed solid waste management plans and sets out the minimum technical standards for construction and operation of solid waste disposal facilities. Subtitle D requires a permit program to ensure that landfills receiving HHW and SQG hazardous waste meet minimum standards to prevent the release of contaminants.

Universal Waste Rule

In 1995, the EPA adopted the Universal Waste Rule, 40 CFR Part 273, to allow generators of certain hazardous wastes to use alternative regulatory requirements for those wastes in place of the more complex hazardous waste requirements. Wastes covered by the Universal Waste Rule (UWR) are typically generated in small quantities by numerous businesses. They include batteries, mercury bearing thermostats and fluorescent lamps. UWR are intended to promote recycling as well as proper disposal, and they ease some of the regulatory requirements for storing, collecting, and transporting universal wastes.

Since states are free to adopt any portion of the UWR, there is flexibility in regulating the specific waste streams. States may also petition to allow additional wastes to be managed under the UWR at the state level, without having them added to the list of federal universal wastes. The easing of full RCRA Subtitle C regulations for certain universal wastes is intended to encourage more extensive collection and recycling programs for these wastes.

Comprehensive Environmental Response, Compensation, and Liability Act

The Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), more commonly known as the "Superfund" act, complements RCRA by providing for the cleanup of sites contaminated by hazardous waste. Many of the sites addressed under CERCLA are inactive or abandoned, having been contaminated before RCRA was enacted, when little was known about the effects of hazardous chemicals on human health and the environment. CERCLA provides EPA with the financial resources and authority to clean up contaminated sites. EPA, along with state regulatory agencies, may arrange for the cleanup of contaminated sites by entering into agreements with responsible parties, issuing orders to require cleanup, or directly performing the cleanup.

State Laws & Rules

Model Toxics Control Act

The Model Toxics Control Act, RCW 70.105D, provides for the identification and cleanup of contaminated sites in Washington State. The act assigns liability for damages to the environment and human health, provides enforcement authority to Ecology, and establishes penalties for failure to comply with Ecology orders. The state toxics control account, created by the statute, funds state hazardous and solid waste planning, enforcement and technical assistance, remedial actions, public education, and emergency response training. Local accounts created by the statute provide grants to local governments for remedial actions and local solid waste and hazardous waste programs.

Used Oil Recycling Act

The 1991 Used Oil Recycling Act, Chapter 70.95I RCW, required each local hazardous waste management plan to establish used oil collection sites based on local goals, enforce sign and container requirements, educate the public on used oil recycling, and create funding estimates for used oil collection. Local governments must also submit annual reports to Ecology describing the number of collection sites and amounts of used oil collected from households. Requirements for transport, treatment, recycling and disposal of used oil are also specified in the Used Oil Recycling Act.

Electronic Product Recycling Act

In 2006, the Washington legislature passed the Electronic Product Recycling Act, RCW 70.95N, requiring a convenient, safe and environmentally sound system for collecting and transporting covered electronic products. Covered electronics include televisions, computers, computer monitors and portable or laptop computers. Manufacturers must finance the collection, transportation and recycling system. Regulations set by Ecology in WAC 173-900 govern program implementation.

The E-Cycle Washington program, launched January 1, 2009, provides recycling for unwanted TVs, monitors, computers and laptops from residents, small businesses, charities, school districts, and small governments. The system is available at no charge at registered collection sites throughout Washington.

Assessment of Conditions

Clark County's Department of Environmental Services, through its Solid Waste and Environmental Education Division, has responsibility for long term moderate risk waste planning and facility development within the County. Through this authority the County provides regional coordination and services to cities, other agencies, and the unincorporated areas of the county. In addition to preparing and updating the *Moderate Risk Waste Plan*, the county contracts for household hazardous waste collection and disposal services, promotes waste reduction, provides a variety of educational efforts throughout the county, and contracts for residential recycling collection which includes management of used motor oil, antifreeze and household batteries.

Waste Characterization Studies

Waste characterization studies were conducted in 1993, 1996, 1999, 2003 and 2008 at the two in-county transfer stations; the waste characterization study for 2012 included the third transfer station located in Washougal). Information on the hazardous waste stream provided by the waste characterization study does not have the same level of statistical certainty due to the smaller quantities and greater variability of hazardous materials in the waste stream compared to non-hazardous materials. Although the

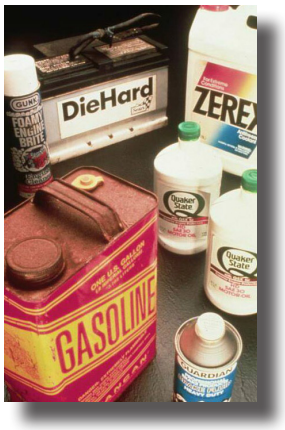


Table 11.1 Hazardous Waste Disposed (Tons)*

Generator Group	1993	1996	1999	2003	2008	2012
Residential Single Family	1,204	313	472	522	500	200
Residential Multi-Family	649	86	306	595	50	193
Residential Self Haul	345	273	894	360	180	115
Commercial Self Haul	883	93	211	0	70	23
Commercial	201	479	972	1,176	480	130
Commercial Compactors	**n/a**	**n/a**	**n/a**	**n/a**	**980**	**163**
TOTALS	**3,282**	**1,244**	**2,855**	**2,653**	**2,260**	**824**

** Does not include electronic waste*

relative percentage of HHW in the entire waste stream has always been relatively small, as Table 11-1 depicts, there has been a noticeable decline over the last fifteen years by all categories of residential generators. In order to improve programs, data must be accurately measured and used consistently.

Waste Monitoring and Performance Measurement

The amounts of hazardous wastes collected at fixed collection facilities and satellite collection events are in *The Solid Waste Data Report* in *Appendix J*, listed by year, collection site, hazard class, material type and disposal option. All hazardous wastes amounts that are recycled or recovered are included in the diversion rate are also in *Appendix J*.

Household Hazardous Waste Collection Programs

Electronics Collection Program

Computer reuse and recycling began as a community partnership which included the City of Vancouver and Columbia Resource Company (CRC). The first two-day collection event was held in June 2001. The results of the initial collection event prompted a second collection event in January 2002. These events were designed to collect only reusable computers and monitors that could then be donated to community members who would benefit from their use. The second event was sponsored by the County, City of Vancouver and Columbia Resource Company with help from Hewlett-Packard, the Ridgefield Lions, La Center School District, Tuscarora, and Oregon StRUT. As a result of this event, almost 60 computers were refurbished and then distributed to the local community by the Salvation Army; Vancouver Rotary Club; Consumer Voices are Born; and, other organizations.

In 2002, Computer Reuse and Marketying (CREAM) was developed as a regional program sponsored by Clark County Department of Public Works, City of Vancouver Solid Waste Services, Clark Community College, Clark County Sheriff's Office Work Center, Clark County Salvation Army and Columbia Resource Company. Beginning in January 2003, CREAM established permanent collection sites within the county for e-waste and began several annual satellite collection events. Although CREAM's primary goal was to collect and refurbish computers for resale, it was anticipated that most of the material donated would not be suitable for reuse. CREAM took great care to ensure that those materials not suitable for reuse were recycled in a responsible manner.

From January 1, 2002 through December 31, 2008, CREAM provided 231 computer units to residents of Clark County; collected more than 17,000 computer components from approximately 24,000 residents; and diverted more than 4 million pounds of material from the landfill. Of the material diverted, 84% was recycled (almost 3.5 million pounds).

In 2006, The Washington Department of Ecology adopted 173-900 WAC requiring computer and television manufacturers to provide consumer-convenient recycling of their covered electronic products (CEPs) throughout the state. Covered electronic products, or CEPs, are computers, televisions, computer monitors, and portable or laptop computers used by households, small governments, small businesses, and charities.

On October 5, 2007 the Washington Department of Ecology adopted amendments to WAC 173-900 and to WAC 173-303 *Dangerous Waste Regulations*. These rules impact the sale and recycling of CEPs in Washington State. On January 1, 2009, Washington's *Electronic Product Recycling rule* (WAC 173-900) required manufacturers of CEPs sold in Washington State to establish a system that provided for the recycling of these products at no cost to households, small businesses, charities, school districts, and small governments. CEPs were originally computers, televisions, computer monitors, and portable or laptops; in 2011 electronic readers (E-readers) were added to the list of CEPs.

As a result of the implementation of the State E-Cycle Program, CREAM was incorporated as a non-profit in Washington State in June 2008. Although CREAM changed its name to Empower Up in 2010, the mission remains the same as the CREAM program and the organization continues to perform the community services; collecting and processing e-waste, and refurbishing usable computer systems. The organization expanded its operations to include a reuse store and a fixed drop off facility for unwanted computers, computer related material and other electronic items. All collected items are processed and then recycled and/or reused. Volunteers are a key component of this organization.

Materials that have been collected from disassembled computers are evaluated as to their reuse value; items that have no reuse value are recycled or disposed of as appropriate. All recycled materials are recycled through local vendors.

As part of the transition from a government funded program to a non-profit, Clark County Solid Waste agreed to contract with the non-profit to continue to provide collection, refurbishing and distribution services for 3 years. The contract expired on December 31, 2011.

Curbside Collection of HHW

Clark County has collected waste oil curbside since 1992; in 2003, used antifreeze and household batteries were added to the curbside collection program. Detail information on the amount of waste collected in this program is in *Appendix J Data Report*.

Home Collection Program

In 2001 Clark County signed an agreement with Curbside Incorporated to establish a pilot program for the collection and transportation of household hazardous waste from eligible seniors and residents with disabilities. In 2002, the pilot program was added to the County's HHW Satellite Collection Program with Philip Services Corporation. In 2009 a contract to operate a program to collect household hazardous waste (including home collections, satellite collections and paint transportation from participating paint stores) was signed with Philip Services Corporation.

Education

Brochures and other publications about managing household hazardous waste have been distributed to Clark County residents since 1990. Household hazardous waste educational presentations have been offered to Clark County residents since 1992. In addition, school presentations have been made to students from third grade through college level. Information is also distributed through the Columbia Springs Environmental Education Center, which has incorporated household hazardous waste information into its volunteer and public education programs. Local residents have also been informed about household hazardous waste through portable displays, available since 1992, and through presentations at community events such as the City of Vancouver's

"Recyclingist Neighborhood" trainings. Storm drain stenciling equipment has been made available to students, neighborhood associations, scout groups and other community groups since the MRW program was implemented. A brochure targeting lead in the environment (lead shot, sinkers, wheel weights, batteries, etc.) was developed in 2008. Refer to *Chapter 5 Education and Promotion* for more information about hazardous waste education. Information and brochures may also be reviewed online at www.clark.wa.gov/recycle.

Paint Take Back Program

In 2004, a Paint Take Back Program was established for residents to recycle unused and unwanted paint and paint-related products free of charge at local paint stores. Latex paint collected at the participating paint stores is either recycled as new paint or reused as a concrete additive; oil base paints and paint related products are reused as an alternative fuel.

On July 23, 2009, the State of Oregon launched the nation's first manufacturer-financed system for the end-of-life management of leftover architectural paint. Architectural paint includes both oil-based and latex paints used for the interior and exterior of buildings that is sold in containers of 5 gallons or less.

Medication Take Back Program

The disposal of unwanted medications by placing them in the garbage or flushing them down the toilet can pose a threat to human health and the environment. In 2003, Clark County Solid Waste with the support of the Washington State Pharmacy Board developed a Medications Take Back Program for controlled and non-controlled substances.

In Clark County, non-controlled substances are collected at participating pharmacies, HHW fixed facilities and HHW satellite collections; controlled substances are collected by local law enforcements agencies at Clark County Sheriff's Office West Precinct, Central Precinct, and Administrative Headquarters; Battle Ground Police Department (2007); Camas Police Department (2006), La Center Police Department (2006), Ridgefield Police Department (2007), and Vancouver Police Department (2009) and Washougal Police department (2007); in February 2010 the Vancouver Police Department withdrew from the program.
In September 2010 the first DEA sponsored drug take back event was held in Clark County; the collection event was conducted through a partnership between Clark County Sheriff, Clark County Environmental Services and PREVENTS Coalition of Clark County. Similar DEA sponsored collection events were held in 2011 and 2012; the DEA has indicated that there will be sponsoring two events annually.

In 2005 Clark County Solid Waste and the Clark County Sheriff's Department were honored with the Innovation Program Award by the North America Hazardous Materials Management Association in recognition of the County's pioneering Controlled Substance Collection Program. Efforts are underway at both the State and National levels to require and implement Medication Take Back programs and look to Clark County as a leader.

Satellite Collection Events

The first collection events were held prior to the opening of the fixed HHW collection facilities in 1993. These events educate on the need to properly dispose of HHW and provide collection opportunities for some more rural areas of the County.

Permanent Collection Sites

Two fixed household hazardous waste collection facilities opened in 1993 in Clark County; Central Transfer and Recycling opened in January, West Van Materials Recovery Center opened in March. Both facilities are owned by Columbia Resource Company and operate under contract to Clark County. Both were recently upgraded and both accept up to 220 pounds or 25 gallons of household hazardous waste per visit at no charge. In 2001 Clark County entered into a contract with Philip Services Corporation (PSC) to collect household hazardous waste at the PSC facility located at 625 S. 32nd Street in Washougal. In 2009, a household hazardous waste collection facility was opened at the new Washougal Transfer Station located at 4020 South Grant Street in Washougal. In conjunction with the new HHW facility opening at the Washougal Transfer Station, the collection site at Philip Services Corporation in Washougal stopped collecting HHW from county residents, except for special conditions (e.g., size of containers). Detail information on the amount of waste collected in this program is in *Appendix J* Data Report.

Re-Refined Oil

Clark County continually promotes the purchase of re-refined motor oil and developed a purchasing preference for all types of recycled products, including motor oil. City of Vancouver, Clark County, C-Tran, and some school districts use re-refined oil in their vehicles. Several automotive shops in the community currently market re-refined oil for retail sales and for use in on-site oil changes.

Used Oil Drop-Off Collections

Clark County residents can drop off used motor oil at various sites around the county, including private businesses (such O'Reilly Auto Parts); the three transfer stations in Vancouver; HHW satellite collections, and county-sponsored drop-off station in Yacolt.

Used Oil Ordinance

An ordinance requiring point-of-purchase signs and reusable oil containers at oil retailers was completed in 1994 when the Board of Health adopted Ordinance 94-01, the *Used Oil Recycling and Disposal Ordinance.* The ordinance establishes fines for the improper disposal of used oil and requires retailers to post oil-recycling information and provide reusable containers.

Light Recycle Washington

On January 1, 2015 the Washington State fluorescent light stewardship program will begin collecting mercury-containing lights from residents across the state. And as of January 1, 2013 it will be illegal, as mandated by RCW 70.275.010, to toss mercury-containing lights into the trash. The collection system established will create a network of collection sites throughout the state that could include retailers, utilities, solid waste haulers, charities, household hazardous waste (HHW) facilities, processing facilities and recyclers. Collected products will be transported to appropriate facilities for recycling.

Ecology has contracted with *Product Care USA* to work with stakeholders and implement this program. The program will accept end-of-life mercury-containing lights from "Covered Entities," defined as single-family and multi-family household generators and persons that deliver no more than fifteen mercury-containing lights to registered collectors during a ninety-day period. The system will reduce the improper disposal of spent mercury lighting which releases mercury that threatens human health and the environment.

Small Quantity Generators

Generators

Of the approximately 10,000 commercial properties and 16,000 businesses in Clark County (2014 estimates), it is possible that over one-third produce some quantity of hazardous wastes. Approximately 32 of these businesses are listed by the state as large quantity generators, 31 as medium quantity generators and 66 as small quantity generators.

- ***Large quantity generators*** (LQG) produce over 2,200 pounds of hazardous waste per month and/or more than 2.2 pounds of extremely hazardous waste per month; they are regulated under the Hazardous Waste Management Act (HWMA) and Resource Conservation and Recovery Act (RCRA).
- ***Medium quantity generators*** (MQG) product 220 to 2,200 pounds of hazardous waste per month and less than 2.2 pounds of extremely hazardous waste per month, they are also regulated under HWMA and RCRA.
- ***Small quantity generators*** produce less than 220 pounds per month and accumulate less than 2,200 pounds of hazardous waste at any time and generate less than 2.2 pounds of extremely hazardous waste per month; they are not regulated by HWMA when they meet the regulatory conditions of exemption.

According to the Washington Department of Ecology records there are about 188 businesses in Clark County that have obtained EPA/state hazardous waste generator identification numbers as of 2013. Compilations of the annual reports show that the businesses include fully-regulated hazardous waste generators, conditionally-exempt SQGs, as well as some entities who were a one-time hazardous waste generator or who report having produced no hazardous waste during the previous year. Some non-regulated businesses obtained their identification number in order to contract with a hazardous waste transportation/disposal company.

Information is only available regarding hazardous waste collected through SQG collection events or disposed of at solid waste facilities (disposal information regarding solid waste facilities is based on waste characterization data). Survey data is available from several sources outside of Clark County.

SQG hazardous waste is currently collected one day each month on a fee basis at Philip Services Corporation Facility in Washougal, WA and through a variety of Hazardous Collection and Disposal Contractors. Information about the treatment, recycling and disposal of SQG hazardous wastes that were collected by private hazardous waste service providers is not available.

Education

Small Quantity Generator business technical assistance activities are directed at minimizing the use of products that produce hazardous waste and encouraging proper management of hazardous wastes when they are generated. Business technical assistance programs have been offered in Clark County since 1990. Services are provided through various means to SQGs throughout the County, and some programs have been developed to target specific types or categories of businesses. For more information about hazardous waste education see *Chapter 5 - Waste Education and Promotion*.

Industry Fact Sheets

Industry-specific fact sheets, describing waste minimization measures and proper disposal methods, were developed by the Washington Department of Ecology and are distributed by Clark County staff to businesses involved in commercial pesticide application, metal fabrication, wood furniture making and many other industries.

Local Interagency Networking Cooperative (LINC)

LINC is an informal information network and task force comprised of agencies and jurisdictions within Clark County. LINC is committed to providing a more effective and efficient means to protect the environment and human health through the coordination of both regulatory and non-regulatory agencies.

SQG Handbook

A comprehensive SQG handbook, including a hazardous waste management services directory, was initially developed for the region in 1991; in 2012, updated links to Ecology's business hazardous waste pages were added to the County Environmental Services' web page.

Technical Assistance Visits

County staff conducts Source Control visits to provide information to businesses that will help them apply new technologies, comply with the dangerous waste regulations, and conduct their activities in a manner that protects human health and the environment. Visits are non-regulatory in nature and are available to all businesses in Clark County. In the Clark County's Green Business Program, participating businesses are required to complete an assessment on toxics in their business operations. Technical assistance from the county is available to these businesses in completing the program categories. More information on this program is available at www.clarkgreenbiz.com.

Source control visits depend on understanding what motivates businesses to manage operations responsibly and proactively reduce environmental impacts whenever possible including:

- Interpret dangerous waste regulations;
- Prepare and implement pollution prevention plans;
- Comply with reporting requirements;
- Reduce, recycle and properly manage their hazardous wastes and materials; and,
- Understand requirements of stormwater management and air pollution regulations.

Other local governments have water resources protection programs and ongoing water quality programs and are similarly involved in offering technical assistance to businesses. Funding for source control efforts using regional solid waste funding should benefit all regional partners.

Green Business site review

Compliance and Enforcement

Compliance Education

During implementation of the 1989 MRW Plan, emphasis was given to expanding collection opportunities as well as providing education and technical assistance to businesses in the County to improve moderate risk waste management. Education is the primary means of obtaining compliance; enforcement action is used only in the event of serious or imminent threats to public health or the environment or in cases of repeated offenses. Education and/or enforcement are conducted during complaint investigations or on-site visits to businesses. Since Clark County has no regulatory authority over dangerous wastes, cases requiring enforcement action are referred to the Washington Department of Ecology or other appropriate regulatory agencies; used oil disposal violations are enforced by Clark County Public Health (Refer to *Chapter 16 -Enforcement*).

Compliance Workshops

Dangerous Waste compliance workshops have been held annually by the Washington Department of Ecology since 1992. The purpose of the workshops is to provide assistance and information about hazardous waste regulations and disposal and management requirements. They can be beneficial to businesses wishing to retain or obtain SQG status.

Enforcement Regulation

Enforcement Regulation No. 96-01, adopted by Clark County Public Health in 1996, (currently Title 32 ENFORCEMENT of the Clark County Code) is a revised ordinance that applies to moderate risk waste enforcement activities. It provides enhanced enforcement capabilities for staff by establishing fines for the violations of public health regulations. Public Health's adoption of the regulation allowed the development of a "Notice and Order" to assist with enforcement and to help discourage illegal disposal of moderate risk waste.

Regulations Governing Solid Waste Handling Operations and Moderate Risk Waste Fixed Facilities

The County's moderate risk waste fixed facilities and operators are subject to the State's Solid Waste Handling Standards, 173-350 WAC, which are enforced by local Public Health agencies, through a solid waste handling facility permit system. Facility siting is regulated by both State siting standards and county or city land use ordinances, which may require conditional use permits for solid waste facilities. Disposal facilities are subject to additional regulations, including long term monitoring (173-350 & 351 WAC). The state solid waste regulations that the Washington Department of Ecology enforces result from state legislation, Chapter 70.95 RCW, and federal laws, such as the Resource Conservation and Recovery Act (RCRA), the Clean Water Act, the Clean Air Act and others.

Household hazardous waste collection is required to comply with all applicable federal, state, county, regional and local laws, statutes, rules, regulations and ordinances as regulated by Clark County Public Health with oversight by the Washington State Department of Ecology.

Regulations Governing Waste Generators

Public Health enforces regulations on infectious waste and moderate risk hazardous wastes (including waste oil) and other special wastes; and responds to complaints regarding illegal dumping, burying and accumulations of waste on private property. Current County (24.12.060) and cities' code allows for burial of wastes, which were generated on site. This includes solid waste resulting from residential or agricultural activities as well as non-putrescible commercial or industrial waste. On site burial of regulated waste such as hazardous waste, toxic waste, bio-medical waste, and certain types of special waste are prohibited. The ability to bury certain solid waste on site results in problems such as health and sanitation problems, contamination of soils and/or water, attraction of vectors, settling of land into depressions, discovery of unwanted buried and subsequent removal of wastes by new property owners. This plan recommends that the on site burial of solid waste be regulated and prohibited.

Program Funding

The County Solid Waste Fund is an enterprise fund. All solid waste revenues remain in the fund and no property tax fund dollars are used for solid waste programs. The revenue sources for the County solid waste fund include: County Administrative Fees paid under the disposal and collection contracts; state grants; sale of recyclable materials; and interest earned on the fund. A significant portion of the MRW program is funded through state grants. The County solid waste fund receives revenue from the Washington Department of Ecology's *Coordinated Prevention Grants* (CPG) program. This grant program is funded through the Local Toxics Control Account. To receive grant funding, MRW programs must be in compliance with the Moderate Risk Waste Plan. The CPG program funds are allocated every two years, based on a county allotment and a per capita allotment. Counties must submit satisfactory applications that meet eligibility requirements and priorities identified in their approved solid and moderate risk waste plans. In addition, local governments must provide matching funds.

Other Conditions

Federally Listed Sites

In accordance with the *Comprehensive Environmental Response, Compensation, and Liability Act* (CERCLA), the Environmental Protection Agency (EPA) maintains a database of potential or known hazardous waste sites. These sites are listed as priorities for response, based on their potential threat to public health or the environment. Superfund site response may be under the authority of EPA, the Washington Department of Ecology or shared.

As of the most recent update, there were 116 brownfields, oil, and RCRA corrective action superfund sites in Washington State. In Clark County there were 9 sites listed with 3 deletions and 1 removal, the remaining active sites on the National Priorities Lists sites are: Boomsnub/Airco, Vancouver; Dorothy Avenue Mercury Site, Vancouver; Vancouver Water Station #1, Vancouver; Vancouver Water Station #4, Vancouver; and, Camp Bonneville, Clark County. Current lists and information on the CERCLA sites, listed by EPA are available from the Region 10 office of EPA, 1200 Sixth Avenue, Seattle Washington, 98101. The National Priorities List of Superfund sites may be found on this EPA website.

State Listed Sites

The Washington Department of Ecology's *Toxics Cleanup Program* has prepared its "Hazardous Sites List." This list may be found at https://fortress.wa.gov/ecy/publications/publications/0909042.pdf

As of February 2012 there were 60 active and 75 inactive listed Confirmed and Suspected Contaminated Sites in Clark County. For general questions or to receive the report in another form, contact the Washington Department of Ecology at 1-800-826-7716. The "Confirmed and Suspected Contaminated Sites List" may also be reviewed or downloaded from the Ecology website.

Transfer, Storage, or Disposal Facilities

As of the most recent update there was one hazardous waste transfer, storage, or disposal facility (Bonneville Power Administration Ross Complex Federal Storage Facility, 5411 NE Hwy. 99, Vancouver, WA 98663) and one used oil facility (Emerald Recycling – Vancouver Commercial Used Oil Processing Facility 1300 West 12th Street Vancouver WA 98660) with EPA/state ID numbers in Clark County. A complete list of Active Hazardous Waste and Used Oil Facilities in Washington State can be found at the Ecology website at http://www.ecy.wa.gov/programs/hwtr/hwfacilities/.

Zone Designations

The State's *Hazardous Waste Management Act* distinguishes between two categories of hazardous waste management facilities and the process for siting these facilities. The Washington Department of Ecology is required to site "preempted facilities," that is, those sites with particular state-regulated hazardous waste management activities. These activities include landfilling, incineration, land treatment, surface impoundment and the use of waste piles. Local governments are required to establish land use zones or geographic areas for siting "designated zone facilities," such as hazardous waste recycling, storage and treatment facilities. These local zoning requirements must be consistent with the state's hazardous waste facility siting criteria and must allow hazardous waste processing or handling where hazardous substances (such as raw materials) are processed or handled. Local governments are not required under the HWMA to develop land-use zones for siting designated zone facilities if they can show that, within their jurisdictions (1) no regulated amounts of hazardous waste were generated over the previous two years, and (2) no geographic area meets the states siting criteria. Designated land-use zones or geographic areas, as well as requests for exemption from the zoning requirements, must be approved by the Washington Department of Ecology. They have the authority to establish zones for hazardous waste facilities or preempt local authority in communities that do not have approved land-use zones or geographic areas. All jurisdictions in Clark County have submitted a certificate of compliance verifying the amended zoning language.

CRC Sorting Facility - Photo Source: City of Vancouver

Recommendations

1. **Provide MRW Collections** (curbside collections, home collections, satellite collection events and at permanent collection facilities). (11-4 to 11-6)
2. **Promote and support diversion of prescription controlled and non-controlled substances** (e.g. prescription drugs whose possession and use are regulated by the Drug Enforcement Agency (DEA)). (11-5)
3. **Prohibit the disposal of all moderate risk waste through the municipal solid waste collection** and disposal system as an incentive to reduce waste at the source or to separate it from garbage for collection at a hazardous waste collection facility. In Clark County, household hazardous wastes are already prohibited from disposal at the transfer stations by CRC. Disposal of electronics (CTR's, televisions, CPUs) are prohibited to transfer to Oregon landfills. (11-2)
4. **Assess how local non-profit(s) (such as Empower Up) or business(es) focused on electronics or other moderate risk waste** (such as paint) materials, with a primary mission of reuse or recycling, might be supported by regional programs through competitive or directed grants to provide benefits to the community and support goals of the plan. (11-6)
5. **Provide education to businesses to reduce their use of hazardous or toxic materials** with a priority on education for Small Quantity Generators (SQGs). (11-9)
6. **Collaborate and partner with the service providers**, non-governmental agencies and organizations to develop and/or implement technical assistance, toxic reduction, education and promotion activities. (11-9)
7. **Develop and continue to provide programs that emphasize the waste hierarchy** (waste prevention/ruse/recycling/recovery) (e.g. e-waste, paint, new hazardous materials, batteries from electric vehicles and industrial waste exchange). (11-5; 11-7)
8. **Provide Source Control visits to provide information to businesses** that protects human health and the environment. (11-10)

End of Chapter 11

Chapter 12
Construction & Demolition Wastes to Resources

This chapter describes the management and disposal systems for construction and demolition (C&D) waste in Clark County. C&D wastes are solid wastes that require special handling and are collected, processed, recovered, recycled and/or disposed of. C&D includes materials regulated as MSW, as well as other wastes regulated in other ways. Some C & D materials are considered special wastes; see *Chapter 14 Special Wastes* for greater details.

Definitions

Construction and Demolition wastes are generally defined in the Clark County Code (CCC) Chapter 24.12 as "waste building materials and rubble, resulting from construction, remodeling, repair and demolition operations on houses, commercial buildings, pavements and other structures," and are generated primarily during residential and non-residential development, redevelopment and remodeling. The construction and demolition waste substream is made up of similar materials that come from two distinct but related activities. Remodeling and repair work generate both types of wastes, often mixed together. Both terms are more specifically defined in the Washington Administrative Code (see below). These definitions should be applied to the content and recommendations in this Plan.

Construction Waste

WAC 480-70-041 defines construction waste as "solid waste resulting from the building or renovation of buildings, roads and other man-made structures. Construction debris includes, but is not limited to, materials such as plasterboard, cement, dirt, wood and brush". For the purposes of this Plan, construction waste is defined as: Material that is generated as a direct result of building construction activity; such waste includes, but is not limited to, concrete, rubble, fiberglass, asphalt, bricks, plaster, wood, metal, caulking, paper and cardboard, roofing wastes, tar paper, plastic, plaster, paint, block foam wallboard and other similar materials.

Construction job site waste often includes components that make the combined mixed wastes equivalent to MSW. Paint cans, food packaging, floor sweepings, polystyrene foam and other MSW components are often put into construction site waste containers. The combined waste stream can require disposal of the load as MSW.

Demolition Waste

For purposes of this Plan, "Demolition waste" is defined in WAC 480-70-041 as "solid waste resulting from the demolition or razing of buildings, roads and other man-made structures. Demolition waste consists of, but is not limited to, concrete, brick, bituminous concrete, wood and masonry, composition roofing and roofing paper, steel, and minor amounts of other metals, such as copper. Plaster (i.e., drywall or plasterboard) or any other material, other than wood, that is likely to produce gases or a leachate during the decomposition process and asbestos wastes are not considered to be demolition waste for the purposes of this regulation." Contaminated or regulated waste is considered to be Special Waste.

Demolition job-site waste often includes components that make the combined mixed wastes equivalent to MSW. Paint cans, food packaging, floor sweepings, polystyrene foam and other MSW components are often put into construction site waste contain-

ers. The combined waste stream can require disposal of the load as MSW. It may also contain toxic materials and require that the waste be handled and disposed as regulated hazardous or dangerous waste.

Inert Waste

Inert waste is defined in WAC 173-350 as solid wastes that meet the criteria for inert waste in WAC 173-350-990 including cured concrete, brick and masonry, ceramic materials, glass, stainless steel and aluminum.

Inert wastes do not include contaminated soils removed from cleanup sites (see *Chapter 14 - Special Wastes*) or asphalt. Non-hazardous dusts, ashes and other residues produced by incinerators, industrial processes and air pollution control equipment may or may not be classified as inert wastes, depending on their specific characteristics. For the purposes of this Plan, these materials are not considered inert wastes, unless specifically designated by Clark County Public Health with agreement from the Washington Department of Ecology.

Inert waste may be treated or contaminated with toxic chemicals; or painted with lead based paint. In such situations, the waste may be required to be handled and disposed as regulated hazardous or dangerous waste.

Deconstruction

Deconstruction is a process of building disassembly in order to recover the maximum amount of materials for their highest and best reuse. The intent is to salvage and reuse any or all materials in new construction or remodel projects. Reuse is the preferred outcome because it requires less energy, raw materials, and generates less pollution than recycling does in order to continue the life of the material. As a consequence of deconstruction, there are also many opportunities for recycling other materials along the way. The US EPA estimates that 92% of building-related C&D waste is from renovation and demolition.

Green Building Standards and Practices

Green building standards are required by RCW 39.35D (High-performance public buildings) to be followed for new buildings and renovation projects that receive state funding. Increasingly, private projects and public projects (even those without state funding) in the region are also either formally, or informally incorporating green building practices that seek to reduce the environmental impacts of the built environment.

Alternative certification processes related to green building generally have mandatory and optional credits or points that a design team must meet or can choose from when planning the green features they want in their project. The Leadership in Energy and Environmental Design (LEED) rating system, developed by the U.S. Green Building Council (USGBC) is one example of such a rating system intended to provide building owners and operators with a concise framework for identifying and implementing practical and measurable green building design, construction, operations and maintenance solutions.

These standards, practices and rating systems, whether pursued voluntarily or as a mandated process, generally address waste reduction, reuse, recycling and disposal efforts undertaken in construction, demolition, and/or remodeling phases of a project and can offer an incentive to contractors and building owners to provide a focus on waste diversion and utilization of recycled content materials.

Relationships Between C&D Wastes

Although construction wastes are similar to demolition wastes, they are often cleaner because the waste materials usually have not been painted or mixed with other materials. Construction wastes are also generated in distinct stages as construction progresses. For example, framing and sheathing produces large quantities of wood waste; drywalling produces waste sheet rock; and plumbing and mechanical installations generate pallets, metal, plastics and cardboard. The sequential nature of construction allows targeted recovery of specific recyclable materials as a construction project proceeds. In remodeling projects, manual demolition provides the potential for a high degree of source separation, similar to that of construction.

Demolition waste is more difficult to source-separate than construction waste. Reusable items and certain recyclables are sometimes recovered before mechanical demolition begins. Manual demolition, also known as "deconstruction," can maximize the separation and recovery of recyclable materials, but is not always feasible. Mechanical demolition, done by bulldozer or excavator, tends to crush and combine materials, limiting source-separation, unless recovery facilities that sort mixed materials are available. Mechanically crushed materials are commonly landfilled, with limited attempts at recovery.

The construction and demolition waste substream can also include materials that are contaminated with asbestos, lead from paint or solder, mercury from fluorescent light bulbs, preservatives, such as pentachlorophenol and creosote, PCBs from light fixtures and other electrical equipment, and other organic and inorganic contaminants. These materials are more common in demolition waste, because current regulations restrict many of them from being utilized in new construction.

WAC 173-350 defines the landfill requirements for:

- Inert Waste Landfills
- Limited –Purpose Landfills

Assessment of Conditions

Construction Waste

Most construction waste in Clark County is delivered to the CRC transfer stations in Clark County, some also is exported out of the county to C&D landfills/dry waste recovery facilities or is recycled, reused or burned for energy recovery. Depending on the project, recovered materials may be source-separated at the job site (this includes some commingled collection), or may be pulled from mixed loads delivered to a transfer station or recovery facility. Some wastes are illegally dumped, buried, and burned on-site or at other un-permitted locations within the county.

The management of waste from construction sites is regulated. Solid waste collection service is regulated in the unincorporated County by the Washington Utilities and Transportation Commission (WUTC). Solid waste collection service in the cities is regulated through city ordinances, exclusive contracts or state franchises issued under the WUTC.

Waste Connections of Washington (WCW) has the exclusive right to collect and haul mixed solid waste throughout Clark County and its cities and should be used to haul solid waste from construction job sites. However, state statutes (WAC 480-70-011) do allow for some exemptions to using WCW as the hauler on your job site. These exemptions include:

Recycling Exemption – Other private hauling companies are allowed to place recy-

cling containers at a job site to collect source-separated recyclable materials. These materials must be delivered to a facility for recycling. The materials cannot be hauled directly to a disposal facility. The recyclable materials may be mixed/commingled (e.g. mixing wood, cardboard, and metal in one container) or separated on the site by the material type (e.g. wood in a separate container; cardboard in a separate container; and metal in a separate container). If the materials are mixed in a single container, they must be free of contamination (garbage) to qualify for this exemption. Under the recycling exemption, there must be a WCW container on the site for the collection of solid waste generated by the job or the waste must be self hauled as described below.

A sub-contractor hired by a general contractor to demolish a building on a job site may haul the material as this is incidental to the primary service of the demolition. Similarly, a contractor who is providing a service of roofing removal and replacement may haul the material as a self-haul providing their own driver and equipment are used (see Self-Haul Exemption below).

If the company hires a private hauling company at a job site to collect recyclable materials, generators of the waste need to make sure of the following:

- the hauler is registered as a Recyclable Materials Transporter with the Washington Department of Ecology
- the hauler is licensed by the City of Vancouver (if the job site is within the city jurisdiction); the County is planning to adopt a similar program of registering commercial recycling service providers.
- the materials are taken to a facility in which recycling occurs (i.e. the material is not placed in a landfill)

Self-Haul Exemption – A company generating waste on a construction job site is allowed to "self haul" materials for disposal or recycling if the company's employee hauls these materials to a disposal site utilizing the firm's company-owned vehicle. The "self haul" option does not allow hiring a sub-contractor to haul the material.

Occasional Transport Exemption – A company generating waste on a construction job site is allowed to haul occasional loads of waste to a disposal site using a dump truck that is performing other dump truck operations on the job site. The use of a dump truck is for occasional use only and cannot be the primary way of collecting and hauling waste generated on the job site.

Special Waste Exemption – A company that is contracted for the removal and abatement of asbestos or other dangerous waste may also be the hauler for that material as the hauling and disposal is incidental to their primary service. (See *Chapter 14 Special Wastes*.)

Demolition and Inert Waste

Demolition and inert wastes are currently delivered to the CRC transfer stations, exported to out-of-county disposal or processing locations, buried on site, dumped or burned illegally or recycled. Some inert and demolition wastes, such as concrete are being recycled into reusable base rock, feedstock, rip-rap and other building materials. In addition, some wood demolition wastes are being chipped into composite wood product feedstock and hog fuel. In some cases, demolished buildings are chipped and the screened wood materials are spread on-site. Yet, some demolition waste must be handled as MSW. The final demolition of structures that have been damaged by fire results in a mix of damaged household goods, clothes, food and charred wood and ash. Unless separated, this mix is considered MSW for regulatory purposes.

The hauling of demolition waste meets the same restrictions as construction wastes and in addition requires proper management of Special Wastes, Hazardous Wastes, Contaminated Soils, Fuel Storage Tanks, Septic Systems and Wells – Many structures being demolished may contain special wastes (e.g., asbestos) or hazardous waste (e.g., wood contaminated with lead paint). Mobile homes or trailers to be demolished are special cases that have unique requirements. The removal, abatement and disposal of special or hazardous wastes can require permits prior to demolition, specific procedures for removal/abatement, special handling and preparations for transportation, and designated sites for disposal. Soils contaminated with petroleum or petroleum products will also require special handling. In addition, fuel storage tanks, septic systems and water wells on a demolition site must be abandoned or permanently removed according to state and local codes.

Deconstruction

Deconstruction is a very viable and under-utilized alternative to demolition that helps support the salvage of building materials and fixtures for reuse in some situations. In addition to reducing the amount of waste going into the landfill, deconstruction preserves architectural history, reduces the use of our natural resources, often provides scarce materials and architectural features, and provides affordable materials to many home owners and professional project managers.

Clark County continues to grow and there will be a certain amount of "infill" within the urban growth boundaries during the next few years. As new buildings and developments are designed, the opportunity to deconstruct existing buildings will increase as well.

Salvage

If full deconstruction is not an option, particularly due to expense, and demolition is not preferred, salvage is encouraged. There are now businesses in Clark County willing to come in quickly and remove reusable items such as plumbing fixtures, cupboards, cabinets, stairways and architectural features such as solid wood doors, leaded or stained glass, hardwood floors and windows. These items can be sold for reuse in new construction projects or in remodels. This process provides materials for reuse at reasonable prices, reduces the amount of material going to landfills, and allows salvage businesses to employ workers and to generate funds for non-profits. One of these businesses is the Habitat Store. Using the permit lists issued by the Cities and County, they contact owners of structures to be demolished and request permission to salvage any reusable materials. These materials are then sold in the Habitat stores to raise money for construction of new Habitat homes in the area. Check the *Clark County Toolkit* for a listing of these businesses under "Salvaged and Used Building materials."

Construction and Demolition Recycling In Clark County

Clean wood wastes are accepted for recycling at various facilities in the County, including: Central Transfer and Recycling, H & H Wood Recyclers, McFarlane's, Triangle Resources, City Bark and West Van Materials Recovery Center. Combined construction site waste – all of a site's waste, combined in one drop-box and hauled by certificated or contracted garbage haulers – is accepted at CRC transfer stations as MSW. A special rate of has been established for delivery of C&D waste to West Van (lower than the drop box rate). The intent of this discounted tipping fee was to ensure that the local rate was competitive with rates charged at Metro area dry waste processing facilities while also considering market conditions for recoverable materials found in these loads. Construction waste in drop-boxes is charged a reduced per ton fee as the waste may be sorted more easily than compactor loads and, depending on the contents, some of the material may be recovered. Waste in

drop-boxes is charged a reduced per ton fee as the waste is sorted and some of the material may be recovered.

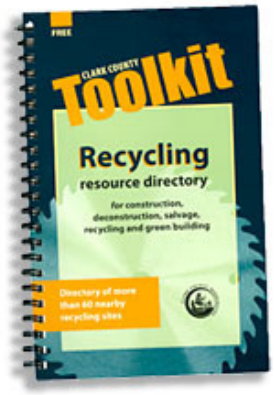
CRC currently uses manual tipping floor methods to recover some non-source-separated materials, as well as accepting source-separated materials for a further reduced tipping fee. Several existing recyclers/reusers accept presorted loads of materials for a fee. These are primarily metal recyclers and scrap dealers, wood processors, and paper and cardboard recyclers. Some small-scale salvage and restoration operators focus primarily on recovering reusable goods, building materials and fixtures. At some construction and demolition sites, "free wood" and other material bins have been placed out for salvage by the public. In addition, inert materials such as clean soils, rock and crushed concrete and bricks may be used as general grading fill material.

Currently, no specialized recycling facilities in the County are designed to process mixed loads of construction and demolition wastes. However, a sort line at the West Van Materials Recovery Center has been installed and includes a reduced fee for C&D waste.

Construction and Demolition Recycling In The Metro Area

In August 2007, the Metro Council passed legislation intended to increase the amount of materials recycled or recovered from construction and demolition projects in the region. Known as the Enhanced Dry Waste Recovery Program (EDWRP), the ordinance requires dry waste from construction and demolition to be processed through a dry waste recovery facility to pull out recyclables before the waste is dumped into a landfill. The program became effective on January 1, 2009. Previously, all of Metro's recycling programs (with the exception of business recycling in the city of Portland) were voluntary. More than half of the construction and demolition debris generated in 2005-06 was disposed of in landfills. For the first full calendar year after the program's implementation, recovery of dry waste tonnage delivered to solid waste facilities increased by nearly 20,000 tons. During that same period, total incoming dry waste tonnage decreased 22 percent, primarily due to the reduction of building projects in the Metro area.

Education Programs



Many construction contractors and subcontractors, as well as demolition companies that operate within Clark County and the cities also work in other cities and counties throughout the greater Vancouver/Portland area and the Northwest. Regulations about hauling and disposal vary from jurisdiction to jurisdiction. Recycling and reuse opportunities also vary from area to area. There is limited distribution of information about waste prevention practices, recycling and reuse options, and county hauling and disposal regulations. Waste Connections, City of Vancouver and the Clark County Solid Waste Program provides education, in many cases through coordination with the building or permit departments, about how to do job site recycling, as well as information about licensed or authorized haulers to ensure that generators who want to recycle have fewer barriers. Education programs should promote green building opportunities and encourage construction meeting Green Building standards or High Performance school standards per RCW 39.35D.

Recycling Facilities

Since 1992, Clark County's non-recycled MSW, including some C&D wastes, has been exported out of the county to the Finley Buttes Landfill in Eastern Oregon, through the CRC transfer station system. When the CRC MSW recycling and exporting system was developed, it was not necessarily intended to become the principal method of handling the C&D waste stream.

In addition to the Finley Buttes Landfill, a portion of the county's C&D waste is being disposed in Oregon landfills, including the Coffin Butte Sanitary Landfill, Columbia Ridge Landfill & Recycling Center, Hillsboro Landfill, Tualatin Valley Waste Recovery, and Wasco County Landfill, as depicted in Figure 12-1.

No new landfill should be sited in Clark County for C&D wastes; however, options may exist for the development of C&D material recovery facilities that sort out recyclable materials and then send the residue to one of the County designated landfills.. Such options for another C&D material recovery facility could include but are not limited to:

- ***County Contracted Facility*** **-** Development of C&D processing and recycling capabilities at the County's contracted transfer station(s) through coordination with the Contracted Owner-Operator of these facilities. CRC installed a processing system at West Van. In addition, CRC has implemented some on floor sorting activities at both West Van and CTR that is diverting a significant portion of the delivered C&D material.
- ***Other Independent Private Sector Involvement*** - The county and cities could allow the private sector to proceed with the siting and development of one or more in-county material recovery facilities to process C&D wastes and have sufficient capacity to handle the volume of waste generated within the county, as well as the anticipated volume of imported out-of-county waste over the next 20 years. This approach reflects the county's present situation. It encourages the private sector to provide for C&D management without county participation, other than through permitting and its general oversight role in solid waste matters The economic climate and C&D volumes also need to improve before this would be an attractive option for a third party.
- ***Private Sector Involvement through County-Controlled Procurement*** - Calls for the county to initiate procurement process to select and contract with a vendor, or vendors, for C&D management services. The county would develop a competitive process for periodically evaluating proposals for C&D material recovery facilities and awarding contracts for the operation pursuant to RCW

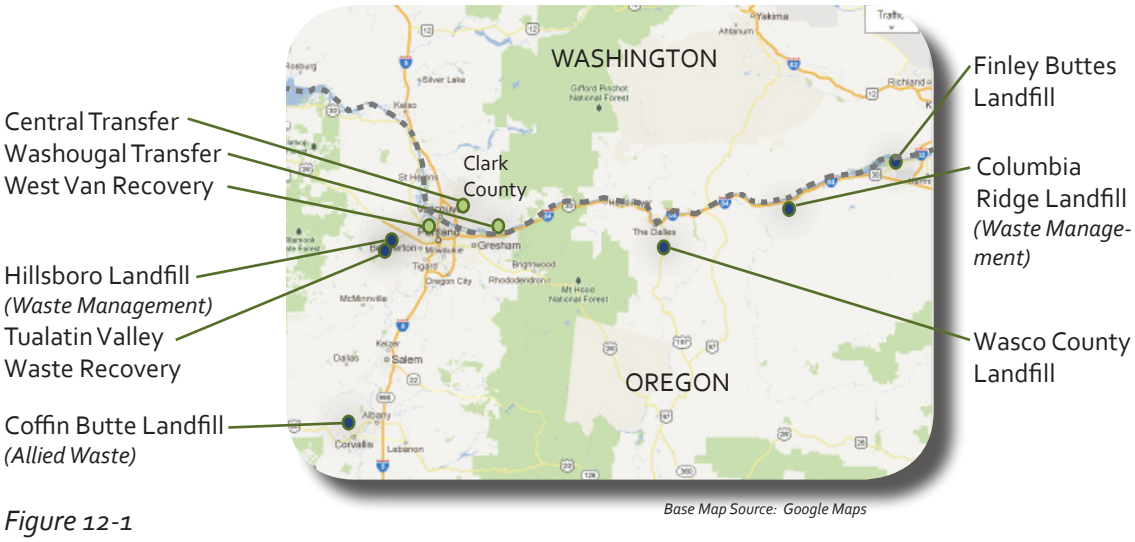


Figure 12-1

36.58. Prior to the final approval of a solid waste conditional permit, private C&D facilities within the county would be required to enter into an operating (franchise) agreement with the county.

- ***Private Sector Involvement with County in Selecting a Reserve Site*** - Calls for the county to begin a reserve site selection and development process for a C&D material recovery facility if the private sector is unwilling or unable to provide for management of the C&D waste stream. Under this alternative, the county would take over the responsibility for providing for C&D management or allow the private sector to continue its siting activity, while selecting a reserve site. Initially the reserve site selection process could encourage the private sector to provide a facility, while providing insurance against failure by the private sector in being able to develop a functioning site.

Clark County Code Chapter 9.32.020 County transfer stations designation states the following: "The county transfer stations are hereby designated as the initial disposal site for, and the referenced collection companies or recycling facilities are hereby directed to utilize said transfer stations, residual waste remaining from a recycling facility." This provision is intended to ensure that material requiring disposal in a landfill actually ends up there, whether an intermediate step for diversion and recovery is provided at a designated transfer station or at a separate site.

Recommendations

1. **Continue public and private sector education programs** designed to encourage C&D waste reduction and recycling. (12-6)
2. **Expand C&D waste recycling and reuse opportunities** at West Van and other sites as demand allows. (12-7)
3. **Use the (building and demolition) permitting process to promote recycling opportunities,** deconstruction, and proper disposal options. (12-5)
4. **Continue regular dialogue to facilitate new recycling opportunities for the C&D waste** stream within the County to ensure convenient and cost-effective disposal alternatives. (12-7 to 12-8)
5. **Rely on recycling and the export of residual wastes to a county designated facility** to handle C&D generated in the County; in recognition that Clark County's Troutdale Aquifer is designated as a sole source aquifer; no new C&D landfills should be sited in the County. (12-7)
6. **Continue to provide both source-separated and post-collection recycling opportunities** for C&D wastes at the CRC transfer stations. (12-6)
7. **Provide clear information to the public on regulations** for hauling C&D waste. (12-4)
8. **Partner with the public and private sectors to develop materials** for diverted / recovered materials from the C & D stream. (12-7)

End of Chapter 12

Chapter 13
Organic Materials

Capitalizing on organics waste reduction and recycling opportunities will help reduce overall waste landfilled per capita and will increase the total quantity of material recycled and the potential for generating local jobs.

OBJECTIVE: Increase opportunities for organics waste reduction and recycling.

- *"Beyond Waste Plan"*

Reducing the amount of organics in the waste stream is addressed in the State of Washington's *Beyond Waste Plan*. Separation of organic wastes from the waste stream destined to landfill also helps to reduce the generation of methane which is a potent greenhouse gas. Chapter 10 of this plan, Landfill Disposal, notes that Finley Buttes Landfill has a fairly effective system for the collection and utilization of landfill gas; however, it is still appropriate to reduce organics locally as efficiency of recovery of the gas' energy value at the landfill is in the range of about 75 percent.

Assessment of Conditions

In Clark County, organic materials comprise one of the single largest recyclable components of the disposed waste stream. "Organic materials" means any solid waste that is a biological substance of plant or animal origin capable of microbial degradation.

Organic materials include, but are not limited to:

- Manure
- Yard debris
- Food waste
- Food processing wastes
- Wood waste (See Chapter 12 *Construction & Demolition*)
- Garden wastes

Compost, mulches and other organic products improve the environmental functioning of soils and landscapes, and for erosion control. Soils and landscapes with a higher organic content show reduced need for pesticides and herbicides, capture toxics before they enter water systems, and assist with storm water management.

Not all compost is of the same quality and the US Composting Council's Seal of Testing Assurance Program ('STA') is one tool that provides labeling and information disclosure designed to give customers the information needed to get the maximum benefit from the use of compost.

In Washington State, jurisdictional health departments are responsible for permitting compost facilities under Chapter 173-350 WAC, Solid Waste Handling. Additional regulations are listed in Table 13-1, next page.

State Regulations Applicable To Organics Compost Facilities	
State Regulation	**Who Enforces The Regulation**
Chapter 173-350 WAC, Minimum Functional Standards for Solid Waste Handling (MFS)	Clark County Public Health; Department of Ecology
Chapter 173-216 WAC, State Waste Discharge Permit Program	Department of Ecology – Water Quality Program
Chapter 173-220 WAC, National Pollutant Discharge Elimination System Permit Program	Department of Ecology – Water Quality Program
Chapter 173-240 WAC, Submission of Plans and Reports for Construction of Water Facilities	Department of Ecology – Water Quality Program
Chapter 173-400 WAC, General Regulations for Air Pollution Sources	Southwest Clean Air Agency
Chapter 173-308 WAC, Biosolids Management	Department of Ecology
Chapter 197-11 WAC, State Environmental Policy Act	Lead agency responsible for SEPA compliance

Currently two organic waste composting facilities are permitted in Clark County:

1. The West Van Materials Recovery Center is permitted to compost up to 50,000 cubic yards of organic material annually. This facility has historically composted source separated leaves; due to a change in economic factors, the facility is not actively composting material at the facility, but reserves the right to do so. The majority of yard debris collected at this facility is transported to another location for composting. West Van can be used as a food-waste transfer site. The transfer site allows residential and commercial collection vehicles to off-load their collected material in a central location, where it is then reloaded into larger-capacity transfer trucks for delivery to the composting facility. Organics could be compacted and then hauled similar to how garbage is aggregated for transporting. For this to occur economics and volumes are required.

2. H&H Wood Recyclers is permitted to compost up to 30,000 cubic yards of organic material annually; composting on site is limited to less than 10,000 cubic yards of material at any one time. This facility composts source separated leaves annually. The majority of yard debris collected at this facility is incorporated with dry woody waste and utilized as hog fuel and/or transported to another location for composting.

Organic Materials Disposed

Based on a *2012 Waste Stream Analysis*, organic materials account for almost thirty percent of what is thrown away by Clark County businesses and residents (20.4% food scraps, 3.6% fuel wood, 2.9% clean wood, 2.3% yard waste – percentages by weight). Table 13-2 shows an estimated breakdown by material type of how much is discarded each year.

Table 13-2

Clark County Organic Materials Disposal Estimates*	
Organic Material	Amount Disposed
Food scraps	49,680 tons
Fuel wood	8,700 tons
Clean wood	6,940 tons
Yard debris	5,670 tons
* Allocation of tons based on 2012 Clark County, WA – waste stream analysis.	

Note: Some wood waste is pulled out of the trash at the transfer stations for processing into hog fuel. This is due to lower costs compared to landfilling.

Yard Debris

Yard debris is different from other recyclable materials in that it can be managed and used at home by residents. The County actively promotes home composting and grass-cycling as a waste reduction method as described in the chapter on *Waste Prevention and Reduction*. Home composting avoids the economic and environmental costs of operating collection systems and centralized processing facilities. However, not all residents have the ability or desire to compost their yard debris and/or other organic wastes at home. For those residents, collection services may play a role. Yard debris is a well-defined component of the waste stream and is easily handled by existing collection equipment. Yard debris collected in Clark County is currently either composted in relatively low cost open windrows at one of several yard debris composters in the Clark County/Portland Metro area or used as a source of fuel in industrial burners.

Curbside yard debris is an optional or subscription program that is available to single family residences, multi-family complexes and commercial businesses in Clark County. Yard debris service is provided every other week, except in Ridgefield where service is weekly. All single-family residences within the County's defined Urban Growth Area and the Southwest Clean Air Agency's Burn Ban area have yard debris collection available on a voluntary subscription basis. Yard debris is collected in wheeled carts, with extra quantities handled in bags or marked containers.

Self-haul options for yard debris include the following sites:

- Central Transfer & Recycling Center
- City Bark
- Curbside Yard Debris
- H&H Wood Recyclers
- McFarlane's Bark
- Triangle Resources
- West Van Materials Recovery Center (C&D)

Free, to the public, leaf drop-off is offered October through December to encourage residents to collect leaves and take them to a permitted facility to be turned into compost. The intent of the program is to keep leaves from clogging storm drains and catch basins, in order to avoid flooding and associated labor costs to unplug drains and basins. This regional program is currently managed by the City of Vancouver. The county contribution is derived from road fund. Coordination keeps down costs and demonstrates government efficiency by working together. A coupon must be presented to qualify for free drop-off.

The Boy Scouts of America coordinate a one-day, large community project involving 50 scout troops, 1500 scout and adult volunteers, and 20 businesses and public agencies. The Boy Scouts collect approximately 20,000 trees each holiday season. Generally the event is held the first or second Saturday following Christmas. Christmas trees can also be set out for collection by those subscribing to yard debris collection or self-hauled to an organics facility.

During 2013, Approximately 55,000 residences or 50% of the eligible single-family residences subscribed to yard debris collection generating 29,000 tons of yard debris, equal to 90 pounds per subscriber per month.

The City of Vancouver offers residents free yard debris disposal coupons each spring (April through June) to encourage them to self-haul yard debris to an approved facility. Organized neighborhoods are also provided opportunities throughout the year to participate in Saturday yard debris collection opportunities or chipping events. As well, drop boxes are placed in especially "leafy" neighborhoods in the fall. There has been discussion about utilizing Coordinated Prevention Grants (CPG) resources to offer similar green-waste clean-up assistance County-wide.

A significant quantity of yard debris and wood waste continues to be disposed as solid waste. The County could develop a plan for increasing diversion of yard debris and

wood waste from disposal by increasing efforts to divert wood at its transfer facilities, by requiring separation of wood waste from other materials brought to the stations, by yard debris and wood waste disposal bans, or other means. Increased diversion of yard debris and wood waste may be particularly important in the future if demand and prices paid for biomass increase.

Food Waste

Some homes compost food scraps in their backyard using worm bins, compost bins or incorporating the food waste directly into trenches in their gardens. Through the Master Composter/Recycler Program at the Columbia Springs Environmental Education Center (CSEEC), the County actively promotes worm bin composting of food scraps as a waste reduction method. Backyard composting reduces the economic and environmental costs of operating collection systems and centralized processing facilities. The Master Composter/Recycler Program also sells backyard composters to the public.

The SOS program kept 900 tons of organic materials out of the landfill in 2012.

Save Organic Scraps (SOS), Clark County's school cafeteria and kitchen composting program has grown to over one hundred schools. Food waste is kept separate by students when sorting their meal waste in the cafeteria. Student monitors are highly encouraged at each school to help peers keep the food cart clean. The food waste is picked up by Waste Connections, and is hauled to Metro Central in Portland, Oregon or Dirt Huggers in the Dalles, Oregon. The program goal is for 100% of schools composting (100 schools).

Waste Connections, Inc. offers businesses food waste service on a limited basis in Vancouver and some other areas of the community. Commercial food wastes is handled similar to schools; to third party site beyond the immediate region (with an average distance of more than 160 miles away, ranging from Junction City, Oregon to Royal City, Washington). Eighty Clark County businesses are actively separating and working with Waste Connection to collect their food waste. Increase business composting by 100% (160 businesses) as an on-going task.

The We Compost program kept 600 tons of organic materials out of the landfill in 2012.

Nonperishable and unspoiled perishable food can be donated to food banks, soup kitchens, shelters, and other charitable organizations. A great deal of food is wasted that is still edible and could be provided to those who need it. The County could explore methods to assist these programs to prevent the waste of edible food and divert food to those in need.

We all spend significant portions of our income on purchasing food and too much of this food spoils before it can be eaten by people or animals, so changing food purchasing, preparation, serving, storage and related practices so less waste is produced. EPA has worked with a number of communities including many in the northwest to develop an off-the-shelf outreach program that can be implemented with a modest local investment. It is called the "Food: Too Good To Waste" program and offers resources that can be adapted on the web or through outreach materials to encourage approaches that fit into some residents lifestyles.

End-use site(s) for organic food wastes needs to be determined when costs are stable and a location for the material is secured. It is anticipated that the growing demand and volumes of commercially collected food waste will result in some new regional (including Portland area) facilities to handle this material. One such

project, Columbia Biogas, has been in the planning process with a focus on energy recovery rather than the production of compost. There have been some discussions in the past about locating a food waste/organics processing/composting facility in Clark County and that could provide an economic development opportunity. However, experience in other communities has shown that appropriate siting and communications with neighbors and local land use authorities throughout any process is essential.

State legislation (RCW 70.95.010 (10) establishes a goal of eliminating yard debris from landfills in those areas that have disposal alternatives available. A ban or other approach would require extensive public education about the alternatives for properly handling yard debris and follow steps outlined in Chapter 5 Education and Outreach Options for yard debris should be publicized and should include mulching lawnmowers, backyard composting and composting facilities. Residents and businesses would need information as to why this change is necessary and convenient alternative handling options for the yard debris.(See chapter 18 for discussion on building a food waste and organics processing facility in Clark County)

Additional options include:

- Larger retailers and grocers in our community self-haul their own food scraps.
- Onsite composting of food wastes has been successfully implemented at Larch Corrections Facility since late 2004.

The composting facility currently receiving Clark County's yard waste (McFarlane's) is not permitted to manage food waste in addition to yard debris. Several jurisdictions in Washington have successfully implemented food-waste composting by allowing residents to deposit food waste in the yard-waste collection containers; however, the tipping fee for mixed yard waste and food waste is often higher than for just food waste. We are monitoring the experience in neighboring jurisdictions, such as Portland, to assess whether this sort of approach is appropriate for our community. The yard debris contract with Waste Connections allows for a commingled food and yard waste pilot project collection program.

Organics Processing

Organics Processing Capacity Yard debris collection service is offered to residents in the Urban Services Area of the county and in the cities. As noted above, residents also have the option to deliver these materials to a number of local sites that accept these materials for a fee. Separate food waste collection is offered to schools throughout the county and to businesses in the urban area. Collection of organic material is managed through contracts with a private hauler, Waste Connections of Washington (WCW). WCW is responsible for selecting a processing facility or facilities for the collected organic material which is acceptable to the County and or cities and contracts may dictate where material is delivered and/or whether tipping costs are passed on to customer rates. Composting is the preferred processing option for the majority of organic material collected by the existing system. Processing of woody debris into hog fuel for energy recovery is allowed. In addition anaerobic digestion within the region and/or in coordination with the management of other feedstocks should be considered as a future possibility for food waste handling (see Chapter 9).

The County curbside yard debris service area includes the Urban Services Area of unincorporated Clark County and the cities of Battle Ground, La Center, and the Town of Yacolt. The Cities of Ridgefield, Camas, Washougal, and Vancouver have separate collection contracts with WCW. The regional system currently generates about 30,000 tons of yard debris and 600 tons of food waste annually. The majority of the material is

generated in the County contract service area and the City of Vancouver. The regional system serves about 55,000 households. Source-separated food waste (food only, no paper or service ware) is currently being collected from 100 schools and 80 businesses.

Clark County has relied on the processors serving the Metro Area since the implementation of yard debris collection programs in 1994. The majority of yard debris collected curbside in Clark County is currently being reloaded at WCW West Van Transfer Station or at H & H Wood Recyclers and is transported by truck to the Beaver Bark Composting facility located in Scappoose, Oregon. Until March of 2013, curbside yard debris was also delivered to McFarlane's Bark Vancouver, Washington facility and reloaded for delivery to their compost facility located in Clackamas County, Oregon. In 2013, McFarlane's notified WCW that the company was no longer able to accept commercial loads of yard debris during peak growth months due to capacity and odor issues at their composting facility. Other local sites, listed previously as available for yard debris self-haul, do not generally process material within the County and the majority is reloaded and taken elsewhere for composting or energy recovery.

Food waste collected in Clark County is either reloaded at West Van Materials Recovery Center, or delivered to Metro's Central Transfer Station for reload to various processors approved by Metro; at least one of these is an anaerobic digester (Junction City, OR). Some food waste is also combined with yard debris at West Van and delivered to a processor near The Dalles, OR which produces compost. Due to the growth of organics materials collection programs in the Willamette Valley, local processing facilities that have been accessible in the Portland area are now at or nearing capacity. The Metro Regional Government has a study underway to evaluate organic material processing capacity for the Oregon counties and cities served by Metro. It is appropriate for Clark County to undertake our own similar assessment of the feasibility for developing new processing capacity with convenient access to our locally generated organics streams.

Recommendations

1. **As processing capacity allows, expand and maintain food waste collection program** at schools and businesses; assist with setup and on-going training and education needs.(13-4)
2. **Conduct a study to determine the feasibility of a residential mixed organics** collection program. (13-3)
3. **Work with partner agencies to increase food donations**. (13-4)
4. **Focused outreach to residents and businesses on practices to reduce the volumes** of food waste generated. (13-4)
5. **Evaluate existing organic materials processing capacity** and determine if sufficient capacity exists to process organic materials generated in Clark County over the 20 year planning horizon. (13-5)
6. **Consider a landfill ban on yard waste and/or food waste** conditional on processing capacity and/or failure to reach diversion goal.

End of Chapter 13

Chapter 14
Special Wastes

This chapter describes the management and disposal systems for special wastes in Clark County. Special wastes are solid wastes that require special handling and generally are collected, processed recycled and/or disposed of separately from other wastes. Special wastes addressed in this chapter include but are not limited to:

- Biomedical wastes;
- Paper and mill wastes;
- Agriculture wastes;
- White goods;
- Bulky wastes;
- Vehicle wastes: hulks and auto fluff;
- Tires;
- Industrial process waste or sludge.
- Contaminated soils;
- Ash;
- Asbestos;
- Dredge spoils;
- Street sweeping / vactor waste (municipal only);
- Animal carcasses; and,
- Disaster debris.

Clark County has worked with local jurisdictions and the franchised hauler to develop a *Special Waste Management Plan*. The *Special Waste Management Plan* is included as an addendum to the Plan and can be found in *Appendix K*. Also included in *Appendix K* is a Decision Tree for Assessing SWMP Applicability of Special Waste handling and collection.

Biomedical Wastes

Definitions

Biomedical waste (also referred to as "red bag", infectious, or biohazardous wastes) is generally defined as "infectious and injurious waste originating from a hospital, medical office, veterinary or hospice care facility."

Regulations

There are federal and Washington State regulations directed specifically at the storage, transport and disposal of biomedical wastes. The State of Washington's RCW 70.95K.010 establishes a uniform statewide definition for medical waste. The Washington Utilities and Transportation Commission (WUTC) regulates the hauling of medical wastes under its "G-certificates," issued under RCW 81.77 authority. Rules relating to the safe transportation of biohazardous or biomedical waste are found in WAC 480-70. The United States Department of Transportation also regulates the transportation of regulated medical waste over the highways in jurisdictions that fall beyond the WUTC in Title 49, Code of Federal Regulation, Parts 170-189. Incinerator burn requirements are found in RCW 70.95D and RCW 70.95.710.

The Oregon medical waste requirements must be observed by Washington State communities exporting waste to Oregon landfills. Oregon requirements apply to medical waste generated from medical facilities and residences. State of Oregon regulations ORS 459.386 through 459.405 and OAR 340-93 establish general rules pertaining to the management of infectious wastes in Oregon.

Clark County Solid Waste Code (Chapter 24.12) contains infectious waste segregation requirements for generators, requirements and standards for transporters, requirements and standards for storage/treatment facilities and biomedical waste disposal requirements.

Requirements for Generators

The most significant medical waste management issue is the safety of solid waste facility operators, haulers and medical waste facility personnel. There is a growing amount of medical waste in the residential waste stream. Currently, there are pharmacies within Clark County which are accepting used containerized syringes back from their customers. Residents may also take used containerized syringes to the transfer stations. Medical (infectious) waste-certificated haulers provide collection services to larger generators of medical waste, such as hospitals, clinics, labs, veterinarians etc.

Collection

Most medical waste generated by large generators in Clark County is collected by Stericycle. Stericycle collects untreated biomedical wastes that have been properly packaged from large and small biomedical waste generators in the county. Some generators self-haul their biomedical waste to permitted disposal facilities in accordance with federal and state regulations. Stericycle has been authorized under UTC to collect statewide. Waste Connections has authority to collect in Clark and Skamania counties. The CRC transfer facilities provide drop off collection locations for syringes only at each facility. Syringes are also sometimes inadvertently delivered to the West Van Transfer Station through the residential recycling collection system and these pose a serious issue for worker safety as sorters might be accidentally stuck. When these are discovered, procedures are in place for the syringes to be carefully removed from the recyclables picking line when the materials are sorted. The collector has implemented special communications to caution the public about proper handling of household syringes/sharps.

Disposal

Biomedical wastes are transported to solid waste facilities permitted to accept biomedical waste. These facilities include MSW or specialized medical waste incinerators and macrowave or autoclave units that sterilize biomedical wastes. Clark County's pathological and chemotherapy waste is incinerated (at the Covanta Marion Incinerator in Brooks, OR) as required by law. All other medical waste is processed at the Stericyle facility located in Morton (Lewis County), Washington and is rendered sterile through a heat (macrowaves) process also called "electrothermal deactivation". Treated waste is then ground up and shipped to a MSW landfill (Roosevelt Regional).

The CRC transfer facilities and Finley Buttes Landfill process and dispose of syringes delivered to the facilities through a special waste permit issued by Oregon Department of Environmental Quality (DEQ). The syringes are containerized in drums at the facilities then transported to the landfill for disposal. The syringes are not required to be sterilized prior to disposal. The DEQ permit requires the landfill to have a special waste management plan in place prior to accepting the waste.

Quantities

The amount of biomedical waste generated annually in Clark County is estimated to be several hundred tons. This volume is expected to increase in the future due to continued population growth, as well as increased biomedical waste segregation by smaller generators. Some smaller generators may still be disposing biomedical waste with their general solid waste. However, an increased level of awareness, liability and the availability of collection services for smaller generators has likely reduced illegal and improper disposal.

Community Education Programs

Currently, many large- and small-quantity medical waste generators in Clark County appear to be properly informed and knowledgeable about proper biomedical wastes practices. Clark County provides education about correct management practices for residential generators. The community education program targets residential generators who produce small quantities of sharps. Residential sharps generators are provided education about correct containers and the collection opportunities afforded them by pharmacies, transfer facilities and their solid waste collector.

Paper and Mill Wastes

Definitions

This section specifically addresses only the manufacturing by-products of the County's paper mills, as well as other mills. (Wood waste recycling, including the management of wood waste at industrial facilities, is addressed in the chapters on Construction and Demolition Wastes and Organic Wastes.) These wastes include, but are not limited to waste water treatment sludges, calcium carbonate and mud waste.

Assessment of Conditions

Georgia-Pacific operates Lady Island Landfill, a private landfill, adjacent to its Camas mill. This facility is permitted as a limited-purpose landfill, which may accept both wood waste and dried wastewater sludge. The mill generates only incidental amounts of wood waste due to modification in the milling process (i.e. greater combustion of primary solids and the facility no longer receives whole logs). The mill does generate ash from their boiler that is powered by a combination of hog fuel and fossil fuel for energy recovery. Ash generated from boiler operations is either placed in their limited-purpose landfill or hauled to a regional landfill.

Rufener Landfill, a private landfill, on N.W. Lower River Road in Vancouver was permitted as a limited-purpose landfill to accept primary clarifier fiber solids from the former Boise Cascade paper mill. Boise ceased generating clarifier solids in April of 1996. The site is decommissioned as discussed in the Landfill Disposal Chapter.

Quantities

Based on Georgia-Pacific waste generation rates of the last several years, the capacity of the Lady Island Landfill exceeds the 20-year period covered by this Plan.

Agriculture Wastes

Definitions

Agricultural wastes are "wastes resulting from the production of agricultural products, including, but not limited to, manures and carcasses of dead animals weighing each or collectively in excess of fifteen pounds." Agriculture wastes consist of three general types of wastes: crop wastes; livestock wastes; and agricultural chemicals. Crop wastes include residues from grain, hay, vegetables, seed crop production and trimmings from fruit trees. Livestock wastes include manure and animal carcasses. Agricultural chemical wastes are composed primarily of empty agricultural chemical containers and banned or unused agricultural chemicals. The management of animal carcasses is addressed separately later in this chapter.

Photo: USDA

Assessment of Conditions

Agricultural wastes are regulated in Washington under WAC 173-350. In Oregon, agricultural wastes are regulated under OAR 394-94-040.
Most agriculture waste generated in Clark County never enters the MSW stream. Instead, this waste is most often disposed on-site. The three principal methods for disposing of agricultural wastes on-site are:

- Land application or composting (manure and crop residue);
- Burning (trimmings and crop residue); or,
- Use as animal feed (crop residue).

The agricultural wastes that typically enter the MSW stream are non-regulated agricultural chemical containers, small animal carcasses, and some minor amounts of crop residue and tree trimmings. These wastes are typically landfilled or composted. Most agricultural chemical containers can be returned to the manufacturer or supplier for reuse or disposal. These containers, if not properly rinsed, are generally regulated in Washington under WAC 173-303.

Quantities

The amount of agricultural waste generated in Clark County is difficult to determine because most agricultural wastes are currently disposed on-site. Information on the specific types and quantities of livestock that produce wastes or on the farm acreage and crops being cultivated in the county and cities is available through the WSU Cooperative Extension.

The Washington Department of Agriculture has held pesticide collection events throughout the state. The intent is to collect and properly dispose of banned, "out-of-specification" and expired pesticides that cannot be applied to crops.

White Goods

Definitions

Large household appliances, also known as "white goods," are defined as appliances, such as washing machines, water heaters, clothes dryers, stoves, refrigerators and freezers. White goods are easily recycled for their metal value after an appliance has been stripped of insulation, plastic, glass, non-ferrous metals, lubricants, refrigerants, and other contaminants. Most of the materials in white goods are recyclable, but environmentally threatening components, such as PCB-contaminated capacitors in older appliances, mercury-containing switches and oil-filled compressors, or refrigerants in refrigerators, freezers or air conditioners can cause environmental contamination when damaged.

Photo: Mother Earth News

Assessment of Conditions

White goods can be picked up curbside by the contracted or franchised haulers and are also collected or accepted by several private companies in Clark County. Some appliance companies accept self-hauled white goods or remove used white goods as part of the pick-up or delivery service for new appliances. The following companies accept self-haul white goods or provide curbside collection:

- Metro Metals NW/Pacific Coast Shredding
- Certificated and contracted solid waste haulers
- Columbia Resources Company (transfer station)
- Licensed recyclers operating within the City of Vancouver

- Appliance repair, reuse, and/or retail businesses operating within the region
- Clark Public Utilities Program

These companies may charge a handling or stripping fee for appliances that are self-hauled to their drop-off facilities or may also offer a payment or donation receipt based on an appliance's scrap value. WUTC-certificated and city-contracted haulers also provide curbside pickup of white goods upon request, generally for a fee. Most white goods, after stripping, are recycled through Metro Metals NW/Pacific Coast Shredding, Inc. in Vancouver. Additional metal recycling firms operate in Portland, Oregon and surrounding communities.

The City of Vancouver, in coordination with its contracted collector, offers each residential waste customer a single free curbside pick up of a major appliance during the year, when scheduled in advance through the hauler. Some City of Vancouver neighborhood associations also allow white goods to be dropped off during their annual neighborhood clean up.

Refrigerants

State and federal regulations to control the release of refrigerants into the atmosphere have significantly affected white goods handling. Refrigerants, such as Freon, are almost universally used in refrigerators, freezers and air-conditioning systems. In response to both the federal and state Clean Air Acts, no refrigerants may be released from refrigeration, commercial or industrial appliances. As a result, venting refrigerants during white goods processing or disposal is not permitted. White goods processors must recover refrigerants from appliances.

The Washington Department of Ecology has adopted WAC 173-303-506, for the management of used or "spent" refrigerants. The rule also conditionally exempts spent refrigerants from WAC 173-303, Dangerous Waste Regulations, when they are reclaimed or recycled.

CRC Transfer Stations

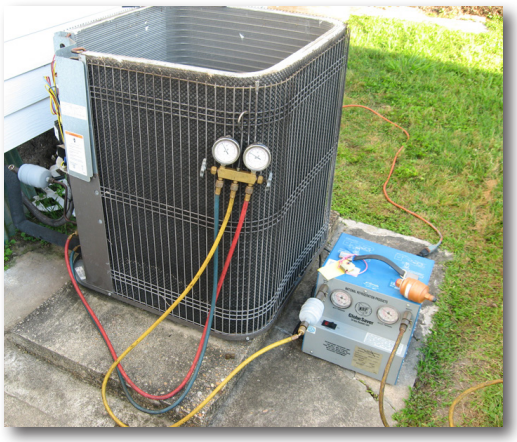
The CRC transfer stations provide central locations for the collection of white goods and bulky wastes. The transfer stations also assist in the distribution of public education materials concerning:

- Recycling opportunities for oversized wastes;
- Current handling requirements for white goods.

Bulky Wastes

Definitions

Bulky wastes are large items of refuse such as furniture and other oversized wastes,that would typically not fit into residential disposal containers. For the purposes of this Plan, bulky wastes do not include white goods, such as washing machines, water heaters, clothes dryers, stoves, refrigerators and freezers.



Refrigerant Recycling Photo: Enro

Assessment of Conditions

Currently, residential bulky wastes are not collected on regular routes by the WUTC certificated collection company, Waste Connections, Inc. Waste Connections will provide on-call services for bulky wastes; there is an additional fee for this service. A number of small private collection operators informally advertise as "clean-up" services, to collect and dispose of these oversized wastes from residential generators. The hauling of bulky waste by a clean up service provider is typically considered incidental to the service, and is not regulated by the WUTC.

In the cities of Vancouver and Camas, bulky wastes are collected at the curb on certain days of the week by reservation only. In the City of Vancouver, this service is provided by the contracted hauler Waste Connections, Inc. In the City of Camas, the service is provided by the City Solid Waste Division. Common items such as chairs, sofas, and mattresses have set collection rates.

The City of Vancouver sponsors annual neighborhood cleanup events for bulky wastes in active and recognized City neighborhoods.

Some bulky wastes from larger non-residential generators are collected by Waste Connections, Inc., often via drop box service and some bulky wastes are self-hauled by both residential and non-residential generators to CRC transfer stations.

Vehicle Wastes: Hulks and Auto Fluff

Definitions

Vehicle hulks are not specifically defined in WAC 173-350. For the purposes of this Plan, "vehicle hulks" are defined as abandoned or discarded vehicle bodies. ORS 459.247 prohibits the disposal of vehicle hulks in landfills.

Auto fluff is generally defined as the light weight material left over after vehicles are shredded and the majority of all metals are removed. Metal is magnetically separated from auto fluff in the shredding process. The material is not recyclable, but may be used as cover material at a landfill.

Travel trailers and camper shells are considered MSW and bulky wastes, not vehicle hulks. Recreational vehicles are considered vehicles. Mobile Homes are not considered hulk vehicles for the purposes of this chapter. However, the transportation, demolition and disposal of mobile homes involve a number of regulatory challenges similar to hulk vehicles. Clark County has collaborated with the various agencies having jurisdiction over the transportation, demolition and disposal of mobile homes to develop information to assist residents and contractors with the process. Clark County has created a brochure on demolition and disposal of mobile homes.

Assessment of Conditions

Code enforcement officers in the cities and Clark County, along with local law enforcement agencies (including the Clark County Sheriff's Department and the State Patrol) jointly administer the abandoned vehicle hulk management program in Clark County.
When an abandoned vehicle is determined to be a public nuisance, one of these agencies contacts the property owner and requests that the vehicle be removed or stored out of sight. If the registered owner of the vehicle cannot be located or is not responsible, the affected property owner can be authorized by the local law enforcement agency to have the vehicle towed and scrapped. Noncompliance with the request will result in the agency getting a licensed hulk hauler to remove the vehicle. Sometimes the vehicles are filled with garbage, which creates additional costs.

Photo: WA Dept. Ecology

Local wrecking yards and metal recyclers also accept vehicles for disposal when accompanied by a title certificate proving ownership. Auto hulks have fluids, refrigerants, air bags and tires removed, and then they are crushed and transported to the auto shredder operation at Pacific Coast Shredding LLC in Vancouver or Schnitzer Steel Products Company in Portland.

Hulk vehicles delivered to the shredding facilities may contain fluids such as gasoline, oils, brake fluid and antifreeze. Clark County encourages the proper management of these fluids by residents or hulk haulers. Residents may set antifreeze and oil at the curb for recycling if they are a curbside recycling customer and follow the specific preparation requirements. Residents can also take antifreeze and oil to the transfer stations for recycling. Hulk vehicles may contain mercury switches. Clark County recommends the removal of mercury switches prior to shredding. The Washington Department of Ecology's Mercury Switch Program assists wrecking yards with the cost of removing these devices prior to recycling. Pacific Coast Shredding has participated in the Ecology program since 2007.

Tires

Definitions

RCW 70.95 defines "waste tires" as "tires that are no longer suitable for their original intended purpose because of wear, damage or defect." It defines "storage" or "storing of tires" as "the placing of more than 800 waste tires in a manner that does not constitute final disposal of the waste tires." It defines "transportation" or "transporting" as "picking up or transporting waste tires for the purpose of storage or final disposal."

Regulations

RCW 70.95.500 requires that only authorized sites be used for tire storage or disposal of vehicle tires. Other disposal on land or in water is illegal and is punishable by a civil penalty, which shall not be less than $200, and not more than $2,000 for each offense. Beginning in July of 2005, the state legislature enacted WAC 458-20-272 reinstating a $1 per tire charge. The legislature limited the use of funds generated by the fee to clean up of unauthorized tire piles and measures to prevent future accumulation of unauthorized tire piles.

WAC 173-350-420 establishes general facility standards for temporary storage of piles of used vehicle tires. In Oregon, waste tires are regulated under ORS 459.705, ORS 459.790, and OAR 340-93-040. ORS 459.247 prohibits the disposal of whole passenger vehicle tires in landfills. Off-road and chipped tires are allowed in landfills.

Assessment of Conditions

Photo: Ehow.com

Currently, waste tires are accepted from self-haul residential and non-residential generators at the CRC transfer stations. The waste tires are segregated by tires on rims and tires not on a rim then placed in trailers for shipment Tires on the rim are transported to Finley Buttes Landfill where they are removed from the rim, shredded and landfilled. Tires that are off the rim are transported to RB Tire Recycling located in Portland, OR. RB processes the tires into a crumb rubber product that is utilized in a variety of products including rubber mats. Waste tires are also collected by retail tire outlets and stored for later transport to processing facilities. Large retail outlets transport their waste tires to various operations. Currently, most waste tires generated within the County are shredded and then recycled.

Illegal dumping of tires is an ongoing concern. Tires collected within the County right of way are temporarily stored at county maintenance facilities before transport to processing facilities. As part of the City of Vancouver's Spring Clean-up program, each gar-

bage customer receives a coupon redeemable for recycling/disposal of up to four passenger tires . Only City residents are eligible to participate. The City pays for the Spring Clean-Up program utilizing franchise fees collected from garbage customers.

Industrial Process Waste or Sludge

Definitions

Sludge is generally defined as "a semi-solid substance consisting of settled sewage solids, combined with varying amounts of water and dissolved materials generated from a wastewater treatment plant or other industrial source." Industrial process waste includes materials that have similar physical properties to sewage sludge, but may contain inorganic chemicals that result from a specific industrial process.

Regulations

Ecology regulates industrial process waste or sludge as solid waste in Clark County. Wastewater treatment by-products that qualify as Class A or Class B biosolids are subject to WAC 173-308.

Testing requirements regarding dangerous waste designation of industrial process waste may be subject to management requirements of WAC 173-303. Waste designated as "dangerous" is outside the scope of this plan. Refer to *Appendix K Special Waste Management Plan* for additional guidance. In Oregon, sludge disposal is regulated by DEQ under OAR 340-94-040.

Assessment of Conditions

Permitting and regulation of biosolids (wastewater treatment solids) is subject to WAC 173-308, with oversight provided by the Washington Department of Ecology and local Health Departments with delegated authority.

The amount of industrial process waste or sludge generated in Clark County is largely unknown because there are no requirements to report. Industrial process waste is generally managed as described in the Special Waste Management Plan for Clark County found in *Appendix K*.

Contaminated Soils

Definitions

Contaminated soils are considered a problem waste as described in WAC 173-304. Problem wastes are defined as "...soils removed during the cleanup of a remedial action site, or a dangerous waste site closure or other cleanup efforts and actions and which contain harmful substances but are not designated dangerous wastes." WAC 173-303 should be reviewed for possible applicability to particular materials or sources.

Regulations

The Washington Department of Ecology has established guidance for the handling and disposal of contaminated soils in Washington. Petroleum-contaminated soils are regulated in *Guidance for Remediation of Petroleum Contaminated Sites* (WA Ecology No. 10-09-057). In Oregon, contaminated soils are regulated under OAR 340-93-170.

Current Practices

Finley Buttes and Wasco County landfills are permitted to dispose of petroleum-contaminated soils. Other landfills permitted to dispose of petroleum contaminated soils are the Roosevelt Regional Landfill in Klickitat County, Washington; and the Columbia Ridge Landfill in Gilliam County, Oregon. Petroleum-contaminated soils can also be delivered to the CRC transfer stations, with advance notice.

Appropriate Treatment

These soils must be handled in accordance with WAC 173-303 (Dangerous Wastes). Guidance should be obtained from the Washington Department of Ecology on this issue. Some petroleum-contaminated soils can be treated on-site to lower their contamination levels.

Ash

Definitions

Ash is generally defined as "residue including any air pollution flue dusts from combustion or incineration of material including solid wastes, biomass and fuels."

Regulations

Ash from MSW incineration is regulated under RCW 70.138 and WAC 173-306 in Washington. Ash from other forms of incineration, such as sludge or wood waste incineration, is regulated under WAC 173-303 or 173-350, depending on the characteristics of the ash. In Oregon, MSW ash is regulated by DEQ under OAR 340-93-190.

Quantities

The City of Vancouver Westside Wastewater Treatment Plant currently incinerates its de-watered sewage sludge. Solids from the Marine Park Wastewater Treatment Plant are also handled at the Westside Plant. The incinerator ash and grit is transported to Finley Buttes Landfill through the West Van transfer station. The City is investigating options to utilize the ash as an additive to construction or building materials.

The Georgia-Pacific mill located in Camas generates ash from burning hog fuel to power the boiler. The mill indicates that the annual amount of hog fuel boiler ash it has generated and landfilled has varied considerably from year to year.

Asbestos

Definitions

Asbestos is defined in 40 CFR Part 61, SWAPCA 476 and WAC 296-65. Asbestos is the commercial term for a group of highly fibrous minerals that readily separate into long thin microscopic fibers. The fibers are heat resistant and chemically inert and possess a high electric thermal insulation quality. As a result, asbestos was used when a non-combustible, non-conducting or chemically resistant material was required. However, the fibers are considered a carcinogenic air pollutant, when inhaled and the use was widely restricted by the U.S. EPA in the late-1980's.

On July 12, 1989, EPA issued a final rule banning most asbestos-containing products. In 1991, this regulation was overturned by the Fifth Circuit Court of Appeals in New Orleans. As a result of the Court's decision, the following specific asbestos-containing products remain banned: flooring felt, rollboard, and corrugated, commercial, or specialty paper. In addition, the regulation continues to ban the use of asbestos in products that have not historically contained asbestos, otherwise referred to as "new uses" of asbestos.

Regulations

EPA issued new National Emission Standards for Hazardous Air Pollutants (NESHAP) regulations in 1990 that place additional reporting and operation requirements on landfill operators who accept asbestos-containing waste.

Friable asbestos is regulated in Washington under WAC 173-350; in Clark County by the Southwest Clean Air Agency under SWCAA 476 and Labor & Industries under WAC 296-65. SWCAA issues permits for asbestos removal and demolition. In Oregon, asbestos is regulated by DEQ under OAR 340-25.

Current Practices

Currently, most self-hauled and commercially collected asbestos waste in the County appears to be disposed of at regional landfills in Washington or Oregon and through the CRC transfer station system.

Asbestos processing at the CRC transfer station facilities is conducted by trained personnel who oversee the unloading and processing of the waste. The asbestos waste hauler is responsible for providing trained asbestos handling personnel to unload bagged asbestos waste by hand and place the wastes in the designated area. Asbestos must be properly bagged and sealed before the facility will accept it. Asbestos is placed in lockable containers for storage at the facility for up to 45 days. Asbestos containers are transported first to Washougal Transfer where the material is consolidated in a trailer. The trailers are transported to Wasco Landfill for final disposal. The landfill identifies the area where the asbestos is disposed in the landfill utilizing GPS technology. A record of the disposal location is maintained by the landfill.

Landfills permitted to dispose of asbestos include Roosevelt Regional Landfill in Klickitat County, Washington; Wasco County Landfill in Wasco County, Oregon; Finley Buttes Landfill in Morrow County, Oregon; Columbia Ridge Landfill in Gilliam County, Oregon; and Hillsboro Landfill in Washington County, Oregon.

Dredge Spoils

Definitions

Dredge spoils consist of soils and other organic materials generated by dredging operations. Dredge spoils are often used as upland fill and generally do not enter the MSW handling and disposal system unless testing reveals contaminants. If contaminants are found, the spoils would be classified as a Solid or Dangerous Waste and require special disposal.

Assessment of Conditions

Dredge spoils are subject to the same waste designation rules as contaminated soils. Independent testing and the CCPH's approval is required before dredge spoils will be accepted for landfilling. In addition, dredge spoils must be dewatered before they are accepted for disposal. Wasco County Landfill operates a dredge spoils dewatering facility in The Dalles, OR to process dredge spoils prior to disposal in the landfill. Dewatered and dried dredge spoils are acceptable cover material at Finley Buttes, Wasco County and other landfills in Washington and Oregon. If testing reveals the contamination is below certain levels, spoils can be used as fill with certain conditions.

Photo: NOAA

Street Sweepings and Vactor Wastes

Definitions

Vactor wastes or catch basin wastes are collected through private collection contractors and local municipal jurisdictions. Street sweeping wastes are collected primarily through local municipal jurisdictions. The material consists of soils, gravel, vegetative matter and various solid wastes such as cigarette butts, paper and beverage containers. The soils and vegetative matter are generally contaminated by hydrocarbons.

This section addresses only those wastes collected and managed by local jurisdictions. These wastes are typically considered "Solid Waste" as defined by RCW 70.95, and are managed in accordance with applicable federal, state and local regulations.

Assessment of Conditions – Street Sweepings

Clark County Public Works collects and stores street sweeping material at a permitted processing site located at Whatley Pit. The Cities of Vancouver, Camas, Washougal and Battle Ground and the Washington State Department of Transportation also deliver to Whatley Pit and participate in funding of the facility. Facility use is guided by an interlocal agreement.

When a large enough pile is accumulated a large trommel screen is brought on site to remove the solid waste debris. The screened organic material is utilized as fill. If testing reveals the contamination is below certain levels the material may be used as a soil amendment.

Assessment of Conditions – Vactor Waste (Catch basin cleanout waste)

Clark County Public Works operates a decant facility to process vactor waste generated in the County. The facility is located at Whatley Pit. The Cities of Vancouver and Battle Ground as well as the Washington State Department of Transportation also utilize the decant facility at Whatley Pit for waste collected in vactor trucks.

The City of Camas operates a decant facility at the Camas Public Works Operation Center. Other local jurisdictions manage these materials through similar means.

The material collected at the Whatley Pit decant facility is dewatered and screened to remove the excess liquids and debris. The remaining organic material may be used soil amendment if testing reveals contamination is below acceptable levels.

Animal Carcasses

Animal carcasses in excess of 15 pounds are considered agricultural wastes. Chapter 246-203-121 WAC and Chapter 16.68 RCW "Disposal of Dead Animals" address the minimum requirements for this special waste. While these rules allow for burial of animal carcasses with a minimum of three feet of cover and 100' from any well or surface water, this Plan recommends against this practice unless an emergency or disease outbreak occurs, whereby disposal by means of burial is deemed essential to prevent the spread of disease and authorized by the Health Officer. In these rare instances, the minimum requirement of three feet of cover and 100' distance from any well or surface water would apply. This Plan recommends the following acceptable practices for disposal of dead animals in Clark County. All carcasses must be transported to the disposal site within 24 hours.

- Rendering by a licensed rendering company;
- Incineration at a permitted facility suited for this waste type;
- Composting utilizing "Best Management Practices" found in Mortality Composting Management Guidelines developed by the department of Agriculture.
- Disposal at a CRC Transfer Facility

Animal feeding operations should incorporate best management practices for managing animal carcasses generated from on-going operations.

Disaster Debris

The Regional Solid Waste Management System is responsible for the handling of debris resulting from a disaster, both natural and man-made. There is a need for the development of a comprehensive plan to establish responsibilities for the management of debris accumulated as a result of an emergency or major disaster. This disaster debris plan should describe the policies and procedures in managing debris on a regional basis; specify goals, recommend practices and implementation strategies; provide tools and reference information to facilitate debris management and recovery; and address dissemination of information to the public. The plan is needed to ensure that the disaster debris efforts are coordinated, efficient, effective, and environmentally sound. The plan will be based on the following:

- Disaster debris will be managed according to the following hierarchy – Reduce, Reuse, Recycle, Recover, and Landfill
- Debris will be removed from the right-of way
- Debris clean-up areas will be prioritized to remove first from public roads and streets and to allow access to emergency operations facilities and essential public facilities
- Eliminate debris-related threat to public health and safety
- Debris removal from private property is the responsibility of the property owner
- Disaster debris that is to be placed in a landfill will be taken to a regional solid waste system facility
- Normal garbage service will be restored as quickly as possible

Recommendations

1. **Support the legal private sector haulers** to be the primary provider of services for the collection, processing and recycling of white goods, bulky wastes, vehicle hulks, tires, petroleum-contaminated soils, ash and other special waste as defined by the Special Waste Management Plan in Appendix K.
2. **Utilize the process described in the Special Waste Management Plan** to determine if materials should be handled as special waste or not. (14-1)
3. **Develop a system plan** for handling disaster debris.(14-12)
4. **Work with state regulatory agencies to develop a waste management plan** for proper disposal of animal carcasses in the event of disease outbreak or disaster. (14-11)
5. **No new Special Waste landfills** are to be located in the County (due to the sole source aquifer) – rely on recycling and out-of-county disposal. (M-2)
6. **As viable regional technologies and markets evolve for recovery** of tires or other special wastes, review and evaluate local policies that would support economic recovery over landfill disposal. (14-7)

End of Chapter 14

Chapter 15
Waste Monitoring and Performance Measurement

This chapter explores what data is needed to measure the effectiveness of the County's waste reduction, recycling and waste diversion programs.

Primary reasons to monitor recycling and waste generation data:

- Assisting with planning and decision-making;
- Setting waste reduction, recycling or diversion, objectives and targets;
- Identifying waste generation and recycling trends;
- Determining the viability and capacity of existing solid waste recycling and disposal facilities;
- Evaluating economic impacts (current and future years) of the solid waste management system.

In order to improve programs, performance data must be accurately measured and used consistently. Targets are intended to measure progress towards the end result. For example, the end results of an effective solid waste reduction program are to reduce the amount of materials generated, landfilled, and to reduce toxicity. Table 15-1 shows the county's targets.

Table 15-1 Clark County Solid Waste Program 5-Year Targets

Increase the recycling rate to 55 % and the diversion rate to 70% by 2020:
- Reducing per person per day landfilled volumes (pounds) by 5%
- Reducing per person per day amounts of waste generation by 5 pounds

Note: 2012 Baseline.

The following types of data are tracked to measure a program's effectiveness:

- Waste recycling and diversion rates;
- Waste generation;
- Pounds per household per month collected through residential curbside recycling programs; and,
- Waste Stream Analysis Data.

Assessment of Conditions

In 1989, the statewide recycling rate was 27% and Washington State's legislature originally established a statewide recycling goal of 50 percent which was updated in 2002 as a goal to be reach in 2007. The state recycling rate reached 49% in 2010 and for 2011, the 50% goal was finally reached. The statewide diversion rate for 2012 is 50.1%. For the County during 2012, the 50% recycling goal was achieved.

Why should we be concerned about waste composition?
To reduce and manage waste effectively, we need to know what is in the waste stream. This changes over time as the economy changes, new products and packaging are created, and societal behavior changes. It is essential that we have current data on the waste stream so that we can make good waste management decisions, lowering our environmental and economic costs.

- Washington Department of Ecology

Waste Recycling and Diversion Rates

The recycling rate is the percentage of all waste generated by residents and businesses that is re-manufactured and made into new products. Calculating the recycling rate is complicated. It involves collecting garbage and recycling data from a variety of measurable sources. Only those materials re-manufactured into new products are considered to be recycled, according to guidelines established by the Environmental Protection Agency (EPA). The following section shows the calculation of the Clark County waste recycling rate.

Equation For Calculating the Waste Recycling Rate	
MSW Recycling Rate =	Total MSW Recycled / Total MSW Generated

Note:
Total MSW Generated = Total tons Recycled + Total tons Recovered + Total tons Disposed
MSW = Municipal Solid Waste (does not include industrial, special and demolition wastes)

$$\textbf{Recycling Rate (2012) 53.9\%} = \frac{359{,}169 \text{ tons}}{359{,}169 \text{ tons} + 75{,}110 \text{ tons} + 231{,}487 \text{ tons}}$$

The diversion rate is the percentage of all waste generated by residents and businesses that is recycled and recovered (not made into new products). Examples of waste recovery include: wood and yard wastes, motor oil and hazardous wastes and tires that are burned for fuel, concrete, asphalt and rubble that are crushed and used as aggregate rock substitute; and rendering.

Equation For Calculating the Waste Diversion Rate	
MSW Diversion Rate =	Total MSW Recycled + Total MSW Recovered / Total MSW Generated

Note:
Total MSW Generated = Total tons Recycled + Total tons Recovered + Total tons Disposed
MSW = Municipal Solid Waste (does not include industrial, special and demolition wastes)
Some on-site or home diversion practices have not been included in the diversion calculation (i.e. backyard composting, grasscycling, vermicomposting).

$$\textbf{Diversion Rate (2012) 65.2\%} = \frac{359{,}169 \text{ tons} + 75{,}110 \text{ tons}}{359{,}169 \text{ tons} + 75{,}110 \text{ tons} + 231{,}487 \text{ tons}}$$

Table 15-2 Annual Recycling and Waste Diversion Rates

Year	Recycling Rate[1]	Waste Diversion Rate[2]
2000	31%	52%
2001	30%	43%
2002	30%	43%
2003	36%	48%
2004	37%	52%
2005	38%	55%
2006	36%	56%
2007	41%	56%
2008	44%	53%
2009	46%	56%
2010	49%	57%
2011	50%	64%
2012	54%	65%

Source: Clark County Solid Waste Program

1 Recycling Rate is percentage of waste generated that is re-manufactured into new products.

2 Diversion Rate is percentage of waste generated that is remanufactured into new products and recovered (not made into new products).

Tracking non-residential tonnage (one component included in the above calculations) is challenging, and the following issues must be considered when working with the data:

- non-residential programs are not subject to contractual reporting requirements;
- non-residential waste diversion and recycling is driven by the competitive free market and data is considered proprietary information; and,
- commercial tonnages are often under-reported; some recyclables are transported out of the county and some recycling merely goes unreported, as in the case of retail/wholesale corrugated shipments that go directly back to distributors and unknown recyclers.

The City of Vancouver's Recycling Ordinance, VMC Chapter 5.62, establishes licensing procedures for all commercial recyclers operating within the City of Vancouver through which collectors report annual tons collected both in the City and outside the city within Clark County. County solid waste staff work with Vancouver solid waste staff and access state data to determine commercial recycling tonnage estimates within the City of Vancouver and Clark County.

Wastebusters 2012 Challenge

Waste Generation

While Washingtonians and Clark County residents are recycling more, we are also generating more waste. We live in a throwaway society but we can, as stated by Washington State's *Beyond Waste Plan*, "transition to a society that views wastes as inefficient uses of resources and believes that most wastes can be eliminated. Eliminating wastes will contribute to environmental, economic and social vitality."

Table 15-3 shows Clark County's pounds of waste per capita generated per day.

Table 15-3 Waste Generation in Clark County

Year	Tons Landfilled	Tons Recycled	Tons Recovered	Population	Pounds Per Capita Disposed Per Day	Pounds Per Capita Recycled Per Day	Pounds Per Capita	Pounds Per Capita Generated Per Day
2003	235,176	161,295	57,192	379,577	3.39	2.33	0.83	6.55
2004	251,275	195,451	81,049	383,300	3.59	2.79	1.16	7.54
2005	265,691	224,099	95,487	391,500	3.72	3.14	1.34	8.19
2006	277,529	225,930	126,560	403,500	3.77	3.07	1.72	8.56
2007	273,619	256,105	89,300	415,000	3.61	3.38	1.18	8.17
2008	254,467	234,245	47,941	424,200	3.29	2.87	1.02	7.17
2009	231,759	241,814	52,322	432,999	2.93	3.06	0.66	6.66
2010	227,868	261,052	42,599	425,363	2.88	3.44	0.41	6.74
2011	228,718	315,918	84.166	428,000	2.93	4.04	1.06	8.05
2012	231,487	359,169	75,110	431,250	2.94	4.56	0.95	8.46

Pounds Recycled Per Household Per Month

The County measures residential curbside recycling programs by tracking the number of pounds of curbside recyclables collected per household per month. Table 15-4 shows pounds per household per month of recyclables collected in Clark County and the cities who contract separately with Waste Connections for curbside recycling services.

Table 15-4 Pounds of Materials Recycled Per Single Family Household Per Month

Year	Urban County	Rural County	Vancouver	Camas	Washougal	Ridgefield
2003	65	77	56	58	60	n/a
2004	68	73	66	60	60	n/a
2005	65	73	59	55	53	n/a
2006	59	70	56	54	49	66
2007	56	66	53	55	49	57
2008	53	64	51	55	47	49
2009	56	63	44	53	47	47
2010	58	65	51	53	60	45
2011	58	64	51	54	60	44
2012	58	59	51	63	61	39
2013	55	58	50	53	58	33

Waste Stream Analysis Data

Clark County regularly conducts a waste stream analysis to determine the make-up of the waste that is delivered to the transfer stations for disposal. The most recent waste composition study was done during 2012 (Appendix I). Table 15-5 shows that the county's waste stream still contains significant amounts of potentially recyclable products including: paper, food waste, construction/demolition waste, plastics and metals.

When considered together, yard debris, food wastes and wood waste represent the largest quantity of potentially divertable material – 32.5 percent – still being disposed in the county's waste stream. At 8.4 percent, recyclable paper is second. The volume of wood and other construction waste is another large component of the waste stream. Due to the proximity to Portland, additional amounts of construction demolition wastes are taken outside of the Clark County Solid Waste System for disposal and/or recovery. This information is difficult to track.

It is important to also note that although the percentage of hazardous/special waste in the overall waste stream is small (0.22%), the environmental impact of improper disposal of over a million pounds of this material is great. A detailed analysis of hazardous waste is presented in Chapter 11 on Moderate Risk Waste.

One objective of the waste stream analysis is to provide reliable baseline data that will assist the County in evaluating the effectiveness of existing and future waste reduction, recycling and recovery programs. In addition, monitoring helps determine the actual recycling and waste reduction rate in Clark County. Waste stream analyses have been conducted for 1993, 1996, 1999,2003,2008 and 2012.

Table 15-5 Waste Stream Analysis Data (What's Still Being Thrown Away) *(Note: most recent data on left)*

Category	2012	2008	2003	1999	1995	1993
Paper	**14.6%**	**18.3%**	**19.2%**	**21.8%**	**23.3 %**	**26.1 %**
Newspaper	0.6%	1.0%	1.6%	2.1%	2.0%	1.8%
Cardboard	3.1%	4.7%	4.0%	4.7%	5.3%	4.7%
Mixed Waste Paper	4.5%	6.1%	7.0%	6.4%	8.0%	8.8%
All Other Paper	6.4%	6.5%	6.6%	8.6%	8.0%	10.8%
Plastic	**13.7%**	**13.2%**	**11.5%**	**12.9%**	**11.6%**	**10.4%**
Metal	**6.0%**	**6.8%**	**7.1%**	**7.2%**	**6.6%**	**6.1%**
Aluminum Cans	0.3%	0.3%	0.3%	0.4%	0.4%	0.4%
Ferrous Materials	1.4%	2.8%	3.1%	2.1%	2.4%	2.1%
Non-Ferrous Metals	0.5%	0.3%	0.2%	0.2%	0.3%	0.2%
All Other Metals	3.8%	3.4%	3.5%	4.5%	3.5%	3.4%
Organic	**22.7%**	**17.7%**	**19.1%**	**17.8%**	**16.0%**	**17.9%**
Food Scraps	20.4%	16.3%	15.3%	14.5%	11.9%	12.1%
Yard Debris	2.3%	1.5%	3.8%	3.3%	4.1%	5.8%
Glass	**2.5%**	**2.8%**	**3.2%**	**3.2%**	**2.7%**	**2.7%**
Clear Bottles	0.9%	1.1%	1.5%	1.5%	1.4%	1.4%
Brown Bottles	0.5%	0.5%	0.7%	0.7%	0.4%	0.4%
Green Bottles	0.4%	0.3%	0.4%	0.4%	0.4%	0.3%
Non-Recyclable Glass	0.8%	0.9%	0.5%	0.5%	0.5%	0.6%
Wood, CD	**19.2%**	**15.1%**	**18.2%**	**15.9%**	**18.3%**	**18.9%**
Wood	9.8%	9.7%	10.4%	8.5%	9.4%	10.5%
Construction/Demolition	9.4%	5.4%	7.8%	7.4%	8.9%	8.4%
Remaining Waste	**21.3%**	**26.1%**	**21.7%**	**21.2%**	**21.5%**	**17.9%**

Recommendations

1. **Track program data for goals and objectives** to measure against established baselines to evaluate performance. (15-4 to 15-5)
2. **Work with Columbia Resource Company and Waste Connections Inc.** to improve garbage and recycling data management and tracking. (15-4)
3. **Conduct waste characterization studies at the transfer stations** to monitor the impact of waste reduction and recycling programs and to identify potential changes to the solid waste program, and to gather self-haul data. (15-5)
4. **Maintain and regularly update** a master electronic Solid Waste data report. (See Appendix J).

End of Chapter 15

Chapter 16
ENFORCEMENT

Enforcement activities support the implementation of policies developed and documented in the solid waste management plan. This chapter reviews solid waste regulations, which govern local government programs, the solid waste industry and solid waste generators in Clark County.

The enforcement goals of Clark County's solid waste programs are:

- ***To assure Clark County continues to be a healthy, clean and livable community*** by promoting proper storage, transfer and disposal of solid waste by both public and private sectors through education and, if necessary, enforcement.
- ***To maintain an institutional framework*** that delineates the roles and responsibilities of the various enforcement agencies and ensures that the framework facilitates inter-jurisdictional cooperation, communication and the orderly, cost-effective and environmentally sound management of the solid waste system.
- ***To ensure agencies with the authority to implement solid waste rules*** and regulations function in a responsible and efficient manner.
- ***To ensure adequate monitoring and proper handling procedures*** are in place for managing various types of solid waste materials generated in Clark County.
- ***To ensure agencies charged with implementing and enforcing solid waste rules and regulations are adequately staffed***, funded and managed in a cost effective manner.

Assessment of Conditions

A number of different entities are responsible for enforcing solid waste management requirements within Clark County: Clark County (Public Health, Code Enforcement and Environmental Services), the cities and towns of Clark County, Southwest Clean Air Agency (SWCAA), Washington State Department of Ecology and Washington Utilities and Transportation Commission (WUTC).

The following sections present, the authorities of the regulating agencies and the regulations which apply. Summary chart 16-1 lists the regulating agencies, regulated parties, and references the related regulations. Cities and counties must set local requirements that are at least as strict as state standards but which may be stricter.

Regulating Agencies - Clark County

Environmental Services/Solid Waste

Under RCW 70.95, the Clark County Regional Solid Waste Program is responsible for the implementation of the *Solid Waste Management Plan* and coordination with other enforcement agencies. Garbage collection in unincorporated areas is administered and collection regulations are enforced through the WUTC. Clark County's Code Enforcement staff is responsible for a variety of solid waste enforcement functions in unincorporated areas of the County including monitoring and controlling illegal dumping, littering, and solid waste-attractive related nuisances.

Solid waste facilities siting and operating permits must conform to the *Clark County Solid Waste Management Plan*, as well as the State's *Solid Waste Handling Standards* (WAC 173-350) and *Criteria for Municipal Solid Waste Landfills* (WAC 173-351).

Public Health/ Environmental Health Division

The Environmental Public Health Division within Clark County Public Health (CCPH) carries the responsibility for enforcing many solid waste regulations and programs within Clark County. CCPH is mandated to assure compliance with certain State and local regulations such as WAC 173-304, 350, & 351 and certain regulations and codes of the County and municipalities.

Public Health's enforcement responsibilities extend to the following areas of solid waste management:

- ***Illegal Dumping.*** Public Health receives and investigates public health-related complaints resulting from illegal dumping, burying waste, and waste accumulations, improper storage and littering. They have the authority to issue clean-up orders in the appropriate jurisdiction.
- ***Solid Waste Facilities.*** Public Health issues, renews, and when necessary suspends or revokes permits and makes routine inspections of solid waste handling and disposal facilities. Inspections ensure that facilities meet permit requirements and do not create public health problems, nuisances, or environmental contamination. Schedules for corrective or remediation actions are established by Public Health for those facilities which are not in compliance. All permits must conform to the Clark County Solid Waste Management Plan and the State's Solid Waste Handling Standards (WAC 173-304 and 173-350).
- ***Landfills.*** Public Health's responsibilities for processing and evaluating permits for solid waste disposal facilities are defined in RCW 70.95.185. These state regulations require jurisdictional health departments to evaluate solid waste permit application for their compliance with all existing laws and regulations and their conformance with the Solid Waste Management Plan and all zoning requirements. Washington State Department of Ecology's review and appeal process for a permit issued by the Public Health is explained in RCW 70.95.185. Public Health inspects all (active and closed) landfills and dumpsites in Clark County at least twice a year for compliance with State (WAC 173-304, WAC 173-350), local and County regulations.
- ***Special Wastes.*** Public Health assures compliance with State, local and County regulations on handling, storage, transport and disposal of Biomedical Wastes, Moderate Risk Waste (including waste oil), and other special wastes such as asbestos.

Regulating Agencies - Cities and Towns

City of Vancouver

The City contracts for garbage collection. Within the City of Vancouver, the Solid Waste Division is responsible for enforcing compliance with its garbage collection regulations by all-residential and commercial collectors operating within the city local ordinance (VMC 6.12). The city contracts for all residential recycling and yard debris collection. Garbage collection service is mandatory for residences in the City of Vancouver. Vancouver also maintains a recycling licensing program for vendors that provide recycling services to business and industry within the city (VMC 5.62). There is mandatory garbage and recycling ordinance requiring all residences to participate in solid waste collection services or to at least pay for the services. The Division conducts special clean up activities within neighborhoods. The City's Code Enforcement staff enforces against litter, illegal dumping and nuisance violations.

City of Battle Ground

Garbage collection in Battle Ground is administered and collection regulations are enforced through the WUTC. Battle Ground provides for recycling and yard waste collection under the County's contract. All waste services are through subscription. The City's Code Enforcement office enforces against litter, illegal dumping and nuisance violations.

City of Camas

Camas provides municipal curbside and container garbage collection and contracts for recycling, yard debris and drop box collection services. There is a mandatory garbage ordinance requiring all residences to participate in solid waste collection services or to at least pay for the services. The city conducts periodic clean-up events within its borders. The City's Code Enforcement offices enforce against litter, illegal dumping and nuisance violations.

City of La Center

Garbage, recycling and yard waste collection in La Center is administered and collection regulations are enforced through the WUTC. These services are provided through subscription. The city conducts periodic clean-up events within its borders. The City's Police or Public Works Department enforces against litter, illegal dumping and nuisance violations.

City of Ridgefield

The City contracts for garbage, recycling and yard waste collection. The City is responsible for enforcing compliance with its collection regulations by all residential and commercial collectors operating within the city. There is a mandatory garbage ordinance requiring all residences to participate in solid waste collection services or to at least pay for the services. The city conducts periodic clean-up events within its borders. The City's Code Enforcement staff enforces against litter, illegal dumping and nuisance violations.

City of Washougal

The City contracts for residential, commercial/industrial and drop box garbage collection services as well as recycling and yard debris collection. The City is responsible for enforcing compliance with its collection regulations by all residential and commercial collectors operating within the city. There is a mandatory garbage ordinance requiring all residences to participate in solid waste collection services or to at least pay for the services. The city conducts periodic clean-up events within its borders. The City's Code Enforcement staff enforces against litter, illegal dumping and nuisance violations.

Town of Yacolt

Garbage and recycling collection in Yacolt is administered and collection regulations are enforced through the WUTC. The town conducts periodic clean-up events within its borders. The Town's Code Enforcement staff enforces against litter, illegal dumping and nuisance violations.

Special Purpose Districts

Southwest Clean Air Agency (SWCAA)

SWCAA has the responsibility of monitoring the emission of air contaminants from sources in Clark County. In terms of solid waste management, this agency monitors emissions from landfills (including some closed landfills), recycling/transfer facilities, composting sites and contaminated soils sites. SWCAA also regulates friable asbestos handling and open burning in the County.

Washington State Department of Ecology

RCW 70.95 gives Washington State Department of Ecology the authority to promulgate solid waste regulations; review and appeal facility permits, and approve solid waste management plans. Facility permitting regulations are set forth in WAC 173-350 and are called the Solid Waste Handling Standards. MSW regulations are found in WAC 173-351. Jurisdictional health agencies have the authority to permit solid waste handling facilities that are designated in county solid waste management plans.

Washington Utilities and Transportation Commission (WUTC)

The WUTC regulates the collection of solid waste in all unincorporated areas throughout the state and within incorporated areas which do not assume jurisdiction for regulation of solid waste. Certificates are issued by the WUTC allowing private collection companies to operate in a specified area, at a set rate or tariff for various services, and under certain service conditions. The WUTC's enforcement mechanisms include fines and the revoking of a private collector's right to collect solid waste. The WUTC also enforces against companies which illegally provide solid waste collection service without a certificate. Solid waste collection is regulated under RCW Chapter 81.77.

Regulated Parties and Activities

Regulations governing solid waste management in Clark County apply to the solid waste industry and individual generators. This section briefly summarizes the regulations pertaining to each of these segments and notes which agencies are currently enforcing the regulations. Additional information on many of the following regulations may be found in the Plan chapter which addresses the topic.

Regulations Governing the Solid Waste Collection Industry

The WUTC (RCW 81.77 and WAC 480-70) regulates solid waste collection. There are two exceptions to WUTC regulation: within those cities that have assumed jurisdictions for regulation of solid waste (Vancouver, Camas, Washougal and Ridgefield), and, within counties or cities that have assumed jurisdiction for regulation of residential recycling collection. Clark County has assumed jurisdiction for such regulation and contracts with Waste Connections, Inc. for residential recycling and yard waste collection. The State regulates rates, services and reporting. Haulers that collect within the cities of Vancouver, Washougal and Ridgefield are regulated through collection contracts and ordinances maintained by those cities. City and county contracts address similar issues as well as how and where to deliver the collected waste. Camas is the only city providing municipal collection services. The City of Vancouver licenses commercial recycling services providers.

Designated Disposal Sites. The County is authorized by RCW 36.58 to designate disposal sites for all solid waste collected in the unincorporated area of the County. Chapter 9.32 of the Clark County code recognizes this authority and the Plan designates the three transfer stations in the County as disposal sites, with the Finley Buttes Landfill and Wasco Landfill (on a limited basis) being the final disposal sites. The County's recycling, transfer, transport and out-of-county disposal contract with Columbia Resource

Company, a wholly owned subsidiary of Waste Connections Inc., states that waste collected by Waste Connections or an affiliate within Clark County will be delivered to the designated facilities.

The County has also entered into interlocal agreements with the Cities which include provisions that waste will be delivered to the designated facilities.

The only exception to this is the wastes collected by Waste Control, Inc. in northwest Clark County. County solid waste regulations recognize that self-hauled wastes, recyclable materials, and non-residential generated recyclable materials are exempt from being directed to the designated disposal site (exempted by RCW 81.77).

Illegal Hauling. Solid waste hauling is regulated by either the WUTC or by the cities that have assumed jurisdiction. Enforcement of these hauling regulations is performed by the respective entities. Solid Waste within our solid waste system should be hauled by Waste Connections, Inc. and should be taken to a county designated transfer facilities. Exemptions to these regulations are loads that are self-hauled or classified as an occasional/incidental transport. Recovered or recycled materials can be hauled by a registered recycling hauler and must be taken to a facility where the materials are recovered.

Regulations Governing Solid Waste Handling Operations and Facilities

These facilities and operators are subject to the *State's Solid Waste Handling Standards*, WAC 173-350, which are enforced by local Public Health agencies, through a solid waste handling facility permit system. Facility siting is regulated by both State siting standards and county or city land use ordinances, which may require conditional use permits for solid waste facilities. Disposal facilities are subject to additional regulations, including long term monitoring (WAC 173-350 & 351). The state solid waste regulations that the Washington State Department of Ecology enforces result from state legislation, RCW 70.95, and federal laws, such as the *Resource Conservation and Recovery Act* (RCRA), the *Clean Water Act*, the *Clean Air Act* and others.

Photos source: Waste Connections

Regulations Governing Waste Generators

County, cities and town conduct illegal dumping enforcement and abatement activities within their boundaries, including cleaning up dump sites, identifying offenders and enforcing municipal codes on illegal dumping and private accumulations of materials. Illegal dump sites on public property are generally managed by the agency owning the property. Illegal dump sites on private property (including forestland) are the responsibility of the owner. Litter clean-up activities are conducted by the Clark County Corrections Department and municipalities, the Washington State Department of Ecology's Youth Corps program, and volunteer groups.

Public Health assures compliance with County regulations on infectious waste and moderate risk hazardous wastes (including waste oil) and other special wastes; and responds to complaints regarding illegal dumping, burying and accumulations of waste on private property. Current County (24.12.060) and cities' code allows for burial of wastes, which were generated on site. This includes solid waste resulting from residential or agricultural activities as well as non-putrescible commercial or industrial waste. On-site burial of regulated waste such as hazardous waste, toxic waste, biomedical waste, and certain types of special waste are prohibited. The ability to bury certain solid waste on site results in problems such as health and sanitation problems, contamination of soils and/or water, attraction of vectors, settling of land into depressions, discovery of unwanted buried material and subsequent removal of wastes by new property owners. This plan recommends that the on-site burial of solid waste be regulated and prohibited.

The County also regulates discharges of moderate and hazardous risk wastes through the National Pollutant Discharge Elimination System (NPDES) permit administered through the County's Clean Water Program. The water quality ordinance Chapter 13.26A prohibits the discharge of contaminants to storm drains, surface water and ground water. Prohibited discharges include spills of waste materials. The water quality ordinance also includes requirements for businesses and government agencies to use source control practices to prevent and control spills. Vancouver also has a water resources protection ordinance that regulates land use and operations (some waste related) that could impact surface or ground water).

To prevent littering, Clark County requires all waste haulers, individuals, and businesses to cover waste being transported to county solid waste facilities. The facility operators assist the county in enforcing Chapter 9.32 of the County Code (the "uncovered load" regulation) by issuing informational brochures and warnings; selling tarps (an option offered in lieu of a fine) and notifying the County of repeat offenders. This plan recommends expanding the County's regulation for unsecured loads of transported waste to include enforcement through the Clark County Sheriff's Office.

Photo source: EPA

Several cities, including the City of Vancouver, have ordinances that require residential generators to have garbage and recycling service, and all generators must comply with city codes (e.g., applicable Vancouver codes are VMC 6.12 and 5.62). This allows the city to resolve hauling compliance issues by enforcing requirements for hauling garbage and/or recyclables or on the generator who is contracting with the hauler. While not often utilized, it is an additional tool for the city. Open burning is permanently banned within areas of Clark County (see Chapter 13). Permits are required for open burning of natural vegetation on property outside of the no burn area.

Table 16-1 Solid Waste Enforcement Roles in Clark County

Regulated Parties	Regulations	Enforcement Agencies
Solid Waste Industry		
Collection	RCW 81.77, WAC 480-70 City & County Contracts & Ordinances	WUTC County, Vancouver, Camas, Washougal, Ridgefield
Handling Operations & Facilities (disposal/transport)	County & City land use regulations WAC 173-350, WAC 173-351	County & Cities Ecology
Waste Generators		
	City "mandatory solid waste" and recycling ordinances;	Cities
	County & Cities ordinances;	County, Cities
	Burn ban	SWCAA
	Hazardous material handling	Ecology
	Industrial waste regulations	Ecology
	Infectious Waste regulations	Ecology
	RCRA Subtitle D	EPA

Recommendations

1. **Support the WUTC in active enforcement of its garbage hauling franchises**; one option is through the WUTC delegating some authority to local authorities. (16-4)
2. **Participate in the Washington Department of Ecology processes** that update state regulations. (16-4)
3. **Develop educational strategies for the building and business communities,** as well as the general public, which explain recycling; franchise hauling rights; and self-hauling regulations. A list of authorized haulers and recyclers should be developed in conjunction with the County's proposed registration program of recycling haulers. (16-4, 16-5)
4. **County and cities should develop and implement ordinances to allow enforcement of existing** city, county and state regulations through progressive enforcement mechanisms. (16-6)
5. **Develop and distribute educational information that describes the role of the various agencies** regarding enforcement activities, roles and contacts in Clark County and cities. (16-3; 16-4)
6. **The County and cities should update their ordinances to regulate on-site burial of Solid Waste**; including: residential, commercial, industrial and agricultural waste. (16-6)
7. **Adopt an ordinance expanding enforcement provisions for unsecured loads** of transported waste through the Clark County Sheriff's Office. (16-6)
8. **Update the County's ordinances regarding directing waste** to designated disposal sites in the County's regional solid waste management system. (16-4)

End of Chapter 16

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Chapter 17
Funding & Financing

As described in Chapter 2, Administration, Clark County's solid waste system involves a combination of public and private companies and agencies. Private industry owns and operates the county's solid waste transfer and disposal facilities and many of the collection operations in the county. Clark County's role is to plan and manage the regional system, including implementing programs for waste recycling, waste prevention, toxicity reduction and management of household hazardous waste in accordance with state statutes. The County also oversees post-closure and cleanup activities at former disposal sites. The six cities and one town have various roles, related primarily to waste collection within their boundaries.

In Clark County, as well as other areas of the state, solid waste funding has often supported local litter abatement, recycling programs, pollution prevention programs, resource conservation, sustainability efforts and related environmental awareness efforts. As noted in Chapter 6, Waste Diversion, many of these programs and efforts are required by Washington law, while others are required by Oregon law (which also applies, because the County's solid waste is disposed in Oregon). This chapter describes funding and financing mechanisms supporting solid waste management programs in the county. It does not attempt to describe the finances of the private companies involved in the regional solid waste system.

Legislation

The following are Washington and Oregon statutes that regulate managing solid waste management systems. The current county system does not include solid waste disposal and collection districts; these are planning options which are available to the county in the future.

Rates – Counties

Under RCW 36.58.040, counties have full jurisdiction to construct, purchase or contract for the development of solid waste handling systems or facilities, and to establish the rates and charges. Counties may also award contracts for solid waste handling that include collection of county fees.

Under RCW 36.58.045, counties may levy fees on the collection of solid waste in unincorporated areas of the county, to fund administration and planning expenses.

Under RCW 36.58.100-150, counties may establish solid waste disposal districts, which are independent taxing authorities, and may collect disposal fees based on weight or volume of materials received. The district may issue general obligation bonds for capital purposes and may issue revenue bonds for other activities. The district may fund its operation through excise taxes. The disposal district may not include a city or town without the consent of the city council.

Under RCW 36.58A, Solid Waste Collection Districts, counties may establish a district within the county in which solid waste collection service is mandatory. A collection district may not include a city or town without the consent of the city council.

Rates – Cities

Under RCW 35.21.130, Cities may require property owners and occupants to use the solid waste collection and disposal system (including recycling systems) and may set rates.

Under RCW 35.21.152, cities have full jurisdiction to construct or purchase or contract for the development of solid waste handling systems or facilities, and to establish the rates and charges.

Rates – State

Under RCW 81.77.030, The Washington Utilities and Transportation Commission (WUTC) sets collection rates for haulers who are certificated by the WUTC. WUTC is to set rate structures consistent with the state's solid waste management priorities in RCW 70.95, and also consistent with minimum levels of collection and recycling services established pursuant to county solid waste management plans.

Under RCW 81.77.080 and 110, solid waste collection companies certificated by the WUTC must pay an annual fee of 1% of their gross operating revenue to the WUTC to pay for its costs of regulating them. This is approximately $76,000 from Clark County.

Taxes – State

Under RCW 82.18, the state Department of Revenue collects a 3.6% tax on the collection of solid waste. These monies are directed to the state's Public Works Trust Fund established under RCW 43.155, and are not in any way allocated or reserved for solid waste projects. In 2012, the Department of Revenue collected $34,281,000 statewide from the solid waste collection tax.

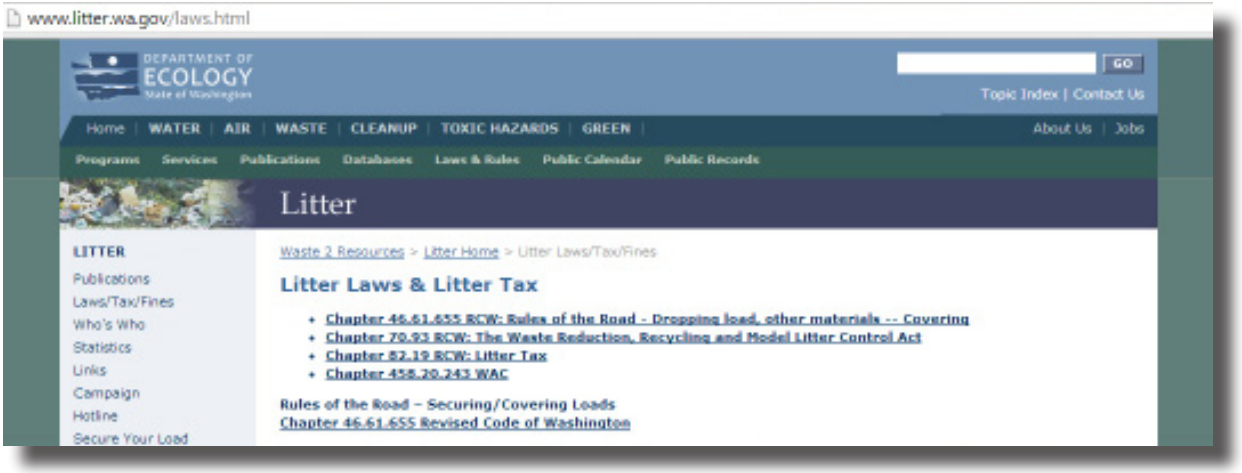
Taxes – State Solid Waste Facility Permit Fees

RCW 70.95.180 grants the Clark County Public Health Department the authority to collect permit fees on solid waste facility permits.

Grants

RCW 82.21.030 imposes a tax ("Toxics Tax") on petroleum products, pesticides and certain chemicals. RCW 70.105D, the *Model Toxics Control Act* (MTCA), directs a portion of the revenues from this tax into the *Local Toxics Control Account* (LTCA). MTCA directs the funds to be allocated consistent with state priorities including those in RCW 70.95, the Waste Not Washington Act. The LTCA is to be used for grants to local governments for remedial actions, solid and hazardous waste planning and plan implementation. In recent years the Legislature has on occasion directed that LTCA funds be used for certain other non-solid waste related purposes, potentially reducing or eliminating the funds available from this source for CPG grants to local governments.

RCW 70.93, the *Waste Reduction, Recycling and Model Litter Control Act*, authorizes the Washington Department of Ecology to promote and stimulate recycling, encourage litter abatement, and provide employment in litter cleanup and related activities for the state's youth. Funding generated from a tax (the "Litter Tax") on products such as fast-food containers supports these activities, and also a grant program for litter clean-up in and by local communities.



Assessment of Conditions

Clark County Solid Waste Program Funding

The County Solid Waste Fund is an enterprise fund: all solid waste revenues remain in the fund. The revenue sources for the County Solid Waste Fund include: County administrative fees paid by the contractor under the disposal and collection contracts; state grants; a share of revenue from sales of recyclable materials; interest income; and sponsorships and partnerships with businesses and organizations in the community. The Solid Waste Fund Policy identifies that the fund is to be used for regional waste reduction, recycling programs, and other solid waste related programs. The 2015-16 Clark County biennium budget allocates $6.2M in appropriations for the solid waste program (Fund 4014), as depicted in figure 17-1.

On the following pages, Table 17-1 outlines the funding sources for various solid waste activities in the county. Table 17-2 shows solid waste revenue sources and program areas for local and government agencies. As these tables show, no property taxes or County General Fund monies are used to fund solid waste programs in Clark County.

1. Disposal Contract Administrative Fees

Users of the transfer stations pay a per-ton tipping fee to dispose waste. Beginning in 1999 (when Waste Connections Inc. purchased CRC and assumed its contract) the county moved from a per-ton tip fee surcharge to a monthly administrative fee paid by the transfer station owner/operator to the county to generate revenue for regional solid waste programs. This funding structure is in place until the contract for Solid Waste Recycling, Transfer, Transport and Out-of-County Disposal (disposal contract) expires.

Upon execution of the 2006 contract extension and the completion of the third transfer facility, the administrative fee was increased. In addition, the disposal contractor now covers the cost for disposal of household hazardous waste received at the three County-contracted transfer stations.

The disposal contract includes provisions for Consumer Price Index - based adjustments to the administrative fee. The County will receive a per-ton increase on incremental tons if the transfer stations receive more than a specified number of tons each year. Also, host fees are now being paid to the City of Vancouver for the West Vancouver Materials Recovery Center and to the City of Washougal for the Washougal Transfer Station. The anticipated 2015-16 county budget for the disposal contract administrative fees is estimated at $3.55 million.

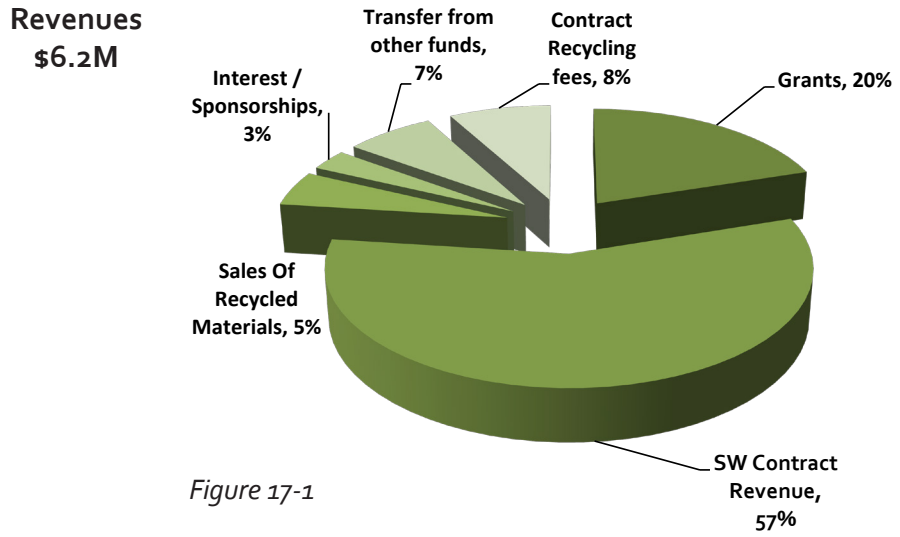


Figure 17-1

2. Recycling and Yard Waste Collection Contracts Administ. Fees

The County assesses a recycling and yard waste contract administrative fee on recycling and/or yard waste collection service. The fees are collected monthly by the recycling and yard waste collection contractors as part of the collection rate and are submitted to the County. These fees cover the county's costs of administering the contracts. The anticipated 2015-16 County budget for contract administrative fees is estimated at $500,000.

3. Grants

The County and cities may apply for grants from the Washington Department of Ecology's Coordinated Prevention Grants (CPG) program to partially fund mandates from the state for solid waste management activities. The CPG grant program is funded from the state's Local Toxics Control Account (see Legislation, above). Grant-funded programs must be in compliance with the County's Comprehensive Solid Waste Management Plan. A 25% local match is required, and activities and expenditures must be approved by Ecology staff. The CPG grants are usually offered by Ecology on a biennial cycle. During 2013, Ecology awarded Clark County with a 2-year CPG in the amount of $1,281,820 to support the Solid Waste programs.

WAC 173-312-060(4) indicates that in applying for the allocated CPG funds noted above, there must be agreement among the County (the designated lead implementation agency), the local health department, and any other grant eligible entities (all cities covered by the plan) on the implementation assistance funding requests for those waste reduction and recycling projects that have been included in the most recently approved and adopted plan and selected for inclusion in the regular or off-cycle CPG funding request (hence the name – "coordinated" prevention grants). As noted in WAC 173-312-080(3)(c) the submittal of an application that has been purposefully "coordinated" by regional partners makes the application eligible for a 10 percent incentive. Under the current Ecology CPG guidelines (pages 15-16), the 10 percent incentive is already built into the base level of funding (noted above) for each jurisdiction, in anticipation that most eligible applicants will fulfill the coordination requirements. However, if an application is submitted without meeting the coordination and agreement tests, then Ecology may reduce the amount of the award by 10 percent. Having regional partners sign-off on these grant applications prior to submittal is therefore a pro-active safe-guard in the process that would protect about $60,000 per year in regional grant funding.

The County and cities may also receive Community Litter Cleanup Program grants which are funded from the Waste Reduction, Recycling and Model Litter Fund (see Legislation, above). These small grants help to pay for litter and illegal dump cleanup programs in the County and cities.

Other grants from other public and private sources may occasionally become available. In the past, grants from other sources have been used to purchase street banners, survey recycling setouts, remove hazardous materials from school science labs, and purchase event recycling containers. These other grants are utilized when available, but are not relied upon to fund core program services.

4. Interest

The Solid Waste Program Fund 4014 is an enterprise fund. Interest is earned on this fund and these earnings remain with the fund. During the past few years, the amount of interest earned by the fund has not been a material amount. The anticipated 2015-16 County budget for interest earned is estimated at $32,000.

5. Sale of Recyclable Materials

Under contract agreements with Columbia Resource Company, the recyclable materials received through the County and City of Vancouver single-family and multi-family curbside recycling collection programs are marketed. A portion of the revenue generated by

marketing the recyclable materials is forwarded to the County and City of Vancouver, based on the number of tons collected in each jurisdiction and the value of the materials that are marketed. The anticipated 2015-16 County portion for sale of recyclable materials is estimated at $322,000.

6. Sponsorships and Partnerships

The County has placed a priority on developing sponsorships and partnerships with community businesses and organizations in sharing the costs of solid waste programs and outreach events for the purpose of business development. This is provided through direct funding, in-kind contributions or direct purchase of goods or services. The County has developed agreements which are entered into defining the contribution, the roles and responsibilities of each party. The anticipated 2015-16 County budget for sponsorships and partnerships is estimated at $60,000.

Table 17-1

Funding Sources For Solid Waste Activities in Clark County			
Activity	**Funding**	**Source**	**Oversight**
Collection of mixed municipal solid waste	Collection fees (garbage bills)	Collection customers	WUTC, Cities
Transfer, transport & disposal; Material recovery from MSW; HHW facility operation	Tip fees	Included in collection fees; collected at transfer station from self-haulers	County/City of Vancouver contract
Processing of recyclable materials	Processor (CRC)	Sale of materials	County/CoV contract
Collection of recyclables, yard debris	Collection fees (recycling bills, yard debris bills)	Collection customers	County & cities
HHW collection events	County Solid Waste Fund	(Regional) County Admin Fees & state CPG grants (LTCA*)	County
Technical assistance and outreach; program development for waste & MRW reduction, prevention, handling	County Solid Waste Fund	(Regional) County Admin Fees & state CPG grants (LTCA*)	County; cities participate through SWMP and interlocal agreements
Regional solid waste planning, coordination and system administration	County Solid Waste Fund	(Regional) County Admin Fees & state CPG grants (LTCA*)	County; cities participate through SWMP and interlocal agreements
Special wastes handling	Private handlers	(Regional) User fees	Public Health
Litter clean-up	Ecology; Cities, businesses and organizations	WRR&MLC ** City & County funds	County contract Local arrangements
Local clean-up events	City funds	City contract fees, other sources	Cities

(table continued on next page)

SW Handling facility siting, permitting, monitoring	Permit fees	(Regional) facility operators or proponent	Public Health
Leichner Landfill post-closure maintenance & monitoring	FARF, a trust fund***	Fee on disposal at Leichner Landfill, 1990-91	Leichner Landfill Oversight Committee

**LTCA=Local Toxics Control Account, funded from a state tax on production of hazardous materials – Coordinated Prevention Grant (CPG) Program*
***WRR&MLC = Waste Reduction, Recycling and Model Litter Control Fund, from a state tax on fast-food containers, etc.*
**** FARF = Financial Assurance Reserve Fund*

Table 17-2

Solid Waste Revenue Sources Per Agency	
Agency	Funding
Clark County, WA (Solid Waste Program)	Administrative fees on garbage, recycling and yard waste collection; sale of recyclable materials; state CPG grants fund regional programs; sponsorships and partnerships with community businesses and organizations.
Clark County, WA (Health Department)	Solid waste handling permit fees; Solid Waste Fund transfers; and state CPG grants fund facility inspections, complaint response, and enforcement activities.
City of Battle Ground	A tax on garbage collection supports the city's general fund.
City of Camas	Residential garbage collection fees pay for collection services, billing and clean-ups. Franchise fee on commercial garbage collection goes to city general fund.
City of La Center	No solid waste revenues. Clean-ups are funded from Reserve Fund.
City of Ridgefield	Garbage collection franchise fee of 10% is built into contractor costs, is paid quarterly, and supports the city's general fund.
City of Vancouver	City fee on garbage collection; sale of recyclable materials; and host fee on transfer station funds solid waste administration, education, clean-ups, leaf collection and other related services; a utility tax of 20% on garbage collection fees goes to general fund.
City of Washougal	Tax on garbage collection, which funds solid waste billing, administration, and spring clean-ups, through the city's general fund.
Town of Yacolt	No solid waste revenues. Clean-ups are funded by general fund.
WA Department of Revenue	A 3.6% tax on garbage collection provides roughly a half-million dollars annually to the state's public works trust fund, which finances capital projects throughout Washington. The tax is not a funding source for any of the solid waste programs in the county.
WA Utilities & Transportation Commission	Franchise fee on garbage collection in unincorporated County, Battle Ground, La Center & Yacolt funds WUTC administration.

Leichner Landfill Financial Assurance Reserve Fund (FARF)

Clark County has a continuing financial responsibility for monitoring and maintaining the closed Leichner landfill. Through various agreements with the County, the City of Vancouver, Leichner Landfill, and the Washington Department of Ecology, the County manages and administers the financial affairs associated with closure and post-closure cost of the Leichner Landfill. Maintenance activities are performed by the County and private consultants approved by the County. The funding comes from monies contributed by ratepayers on the disposal fees when the landfill was in operation and interest that is earned on the fund balance. Sufficient funds are provided in the FARF to support these activities through the 25-year post closure care term.

City Revenues and Expenditures

Vancouver's City Council sets collection rates for garbage, residential recycling and yard debris within the City. The rate formulas include collection costs, disposal fees and City fees, as well as a utility tax, which the garbage collection contractor pays on a monthly basis. Recycling collection is funded through the customer fees plus a portion of revenues received from the sale of recyclable materials.

The City fee is used for the Solid Waste Services Program, which provides for staff, contract management, regulatory and enforcement activities, solid waste and recycling education, public information, neighborhood clean-up programs, leaf collection, the neighborhood recycling education program, and solid waste program administration. Vancouver's Solid Waste Utility Tax supports the City's general fund programs including Public Safety.

Camas is the only Clark County City which operates its own residential garbage collection service; and receives user fees for the service. Both Camas and Washougal handle solid waste billing, and in both of these cities, the solid waste fund is an enterprise fund. The general funds for Battle Ground, Camas, Ridgefield and Washougal all receive revenues from their respective taxes or franchise fees on garbage collection (see Table 17-2). Yacolt and La Center have no solid waste revenues.

Public Health Solid Waste Revenues and Expenditures

Clark County Public Health receives annual permit fees from permitted facilities in Clark County, including the three County-contracted transfer stations. These fees fund inspections, permit request reviews, and related activities. Public Health also receives Coordinated Prevention Grant (CPG) funds from the Washington Department of Ecology and a transfer from the Clark County Solid Waste Fund for solid waste enforcement activities (See Chapter 16 Enforcement).

State Agency Solid Waste Revenues and Expenditures

The WUTC collects a franchise fee which is included on garbage collection rates in unincorporated Clark County and the cities with WUTC haulers. The franchise fee revenues help support WUTC administration, including a customer service telephone line, rate review and occasional enforcement activities related to non-licensed garbage hauling.

The Washington Department of Revenue collects a tax from residents and businesses throughout Clark County on garbage disposal. Revenue from this tax goes to the state's Public Works Trust Fund, which makes loans to fund capital projects such as roads, bridges, and sewer systems. The garbage tax is not a source of funding for Clark County's Solid Waste program.

Recommendations

1. **Continue to fund its existing programs from funding currently in place** for regional system support, including the Coordinated Prevention Grant from the Department of Ecology. (17-2)
2. **Continue to rely on the private sector to fund and finance large capital** improvement projects for the regional solid waste system. (17-1)
3. **Investigate and pursue federal and state grants** that are appropriate to plan goals and desired outcomes. (17-4)
4. **Evaluate funding options to ensure that funding of required solid waste, waste prevention and recycling roles continue** such as collection and disposal districts, new revenue, generating authorities, and contract revisions for disposal and collection services. (17-1)
5. **Clark County is designated as the lead agency for regional CPG planning and implementation grant** applications and will provide appropriate documentation with each application confirming full partner support. (17-4)
6. **Establish and implement an ongoing process, involving the Regional Solid Waste System Steering Committee** to provide regional partners with a role in relation to regional program funding and expenditure decisions. (2-6)

End of Chapter 17

Chapter 18
Wastes to Wealth: Economic Development

Background

The 21st Century economy is rich with opportunities for Clark County. The Solid Waste Advisory Committee has chosen to capitalize on these opportunities with a new chapter that builds on the strong economic contributions of our existing solid waste companies, while paving the way for new solid waste related businesses. To this end, we are working to help existing businesses to remain competitive, nurturing a conservation culture through the Clark County Green Business program, and laying the groundwork to recruit new companies to strengthen and further diversify the county's waste sector. This chapter calls for Clark County to drive strategic initiatives that strengthen the regional and global competitiveness of Clark County's waste industries and maintains a supportive business environment through public policy.

When collected with skill and care, and upgraded with quality in mind, discarded materials are a resource that can contribute to local revenue, job creation, business expansion, and the local economic base. On a per-ton basis, sorting and processing recyclables alone sustain 10 times more jobs than landfilling or incineration (per the Institute for Self-Reliance). Making new products from the old offers the largest economic pay-off in the recycling loop. New recycling-based manufacturers employ even more people and at higher wages than does sorting recyclables. Additionally reuse, recycling and composting can reduce significant amounts of resources and energy used in the manufacture, distribution, and sale of products to consumers.

- **Waste prevention/efficiency**, which is the ability to free up dollars historically spent on products that are later discarded or reused, for other investments.
- **Reuse**, which is sometimes an option for packaging (such as cardboard boxes) but is more often an option for products (such as equipment, clothing and other goods).
- **Recycling**, which often is a more practical solution for handling packaging (such as bottles and cans) than reuse, and is also a good option for many products (such as newspapers, metal appliances, batteries and wood).
- **Composting**, similar to recycling in the sense that it is the next best option for organic materials that cannot be reused.

This chapter outlines different initiatives that could potentially add to the local economy, create new jobs and shape Clark County's future waste management decisions. The decisions on which initiatives to undertake may be dependent on public-private partnerships or related local entrepreneurial ventures mining the urban waste stream.

Assessment of Conditions

Recycling Market Value of Landfilled Materials

As Table 18-1 shows, the market value for the recyclable materials still being trashed is over $6 million annually. The net present value of $6 million annually over a 10 or 20 year period is significant and could provide the impetus to make an investment to recover a greater value of resources. Another approach might be to pick the two or three most valuable materials and lay out a way to get more of that material recovered.

Table 18-1 Landfilled Amounts of Recyclable Materials

Curbside Recyclable Materials	Landfilled Amount (annual tons, 2012)	Market Value (2013)	
		Market Price (per ton)	Total Market Value
Newspaper	1,580	$75-85	$126,400
Cardboard	7,090*	$100-120	$780,000
Mixed Waste Paper	10,880	$70-80	$816,000
Milk Cartons, Other	440	$0	$0
PET Bottles	1,810	$300-400	$633,500
HDPE Bottles	1,090	$300-400	$385,000
Bottles 3-7	140	$0	$0
Tubs	530	$0	$0
Aluminum Cans	760	$1,250-1,400	$1,007,000
Tin Cans	1,380	$150-200	$241,500
Scrap Metal	10,500*	$200	$2,100,000
Glass Bottles	4,290	$(-20)-0	$-42,900
Total Curbside Materials	**40,500**		**$6,044,490**

Note: The disposed amounts of cardboard and scrap metals have been adjusted for floor sorting by Waste Connections in 2012. Disposed amounts are annual tonnages for 2012.

Sources: Disposed amounts are from the 2012 Waste Stream Analysis for Clark County. Market prices were gathered from a variety of sources and are generally current as of late 2013.

It is important to note that Waste Connections, Inc. the contracted operator of the County's transfer stations is meeting its contractual requirements for recovering recyclables from the trash and that the value of commodities already removed from the generated waste stream are not included in the above listing. Changing behavior to keep recyclables out of trash cans and dumpsters is another key component to recovering some of the $6 million in potential market value.

Current Solid Waste System Employment Levels

Less than 26% of county residents hold a 4-year degree (a widely used proxy variable for skill in the labor force). The waste sector offers benefits with respect to average compensation rates (over $18 per hour) and required skill levels.

One of the challenges in the recovering economy concerns a mismatch in the available skill level of the labor force to the available employment opportunities. Much of this is a structural change, so many of the jobs lost will not return. There is then a substantial need among workers to secure stable employment that provides a pathway from part-time minimum wage jobs to full-time middle wage jobs with benefits. The waste and recycling sector could be an area where such jobs are generated, providing incremental skill level increase without the necessity of additional educational attainment.

As Table 18-2 shows, a significant number of Clark County jobs are already dependent on the solid waste system. Those 1,727 jobs contribute:

- $190 million worth of economic activity for solid waste/recycling/waste prevention (reuse, repair and rental, but excluding car and home repairs) businesses.
- Companies involved in some aspect of the solid waste system in Clark County paid over $52 million in wages in 2012. The average annual wage for the jobs in solid waste and recycling is $38,266 or just 16% less than the county average wage of $44,446.

Table 18-2 Economic Activity for the Current Solid Waste System

Activity	Number of Firms	Percent	Sales	Percent	Number of Employees	Percent
Reuse	92	23%	$16,777	9%	388	22%
Rental	72	18%	$29,935	16%	268	16%
Repair	193	49%	$39,187	21%	537	31%
Manufacturing and Wholesale	14	4%	$14,274	8%	119	7%
Collection	16	4%	$59,281	31%	203	12%
Processing and Disposal	6	2%	$30,558*	16%	212	12%
Totals	**393**		**$190,012**		**1,727**	

Note: * This includes an estimated $9.6 million in recovered commodity revenue from existing recovery programs. The Ecology data for 2012 recycling puts the County wide recovery figure (recycled – not including diverted materials) at 119,497 tons and we assumed an average $80/ton amount for typical market value.

Sources: Dun & Bradstreet, November 2013, supplemented with data from the cities of Camas and Vancouver, Clark County and the WA Utilities Transportation Commission (WUTC).

Alternatives for Additional Employment

There are a number of available options for increasing the economic benefits that can be derived from the solid waste system. These job creating initiatives are reviewed in the pages that follow.

Expanded and New Markets for Recyclable Materials

The markets for recyclable materials are constantly undergoing changes in response to financial conditions, competition with other end-users, consumer demand, and other factors. A few highlights of planned and potential changes that could affect markets for Clark County recyclables include:

- Demand for recycled plastic could be increased by new approaches such as a bottle-to-bottle plant in Texas. Recycling plastic bottles back to bottles could help ensure supply and demand matches up better, but this has been a difficult process to implement to date. The new plant in Texas will consume about 1.6 billion bottles (40,000 tons) per year and will employ about 100 people. The plant will cost about $40 million to construct.
- The recent opening of Glass to Glass, a new plant in Portland, Oregon, may help with glass recycling in the area. This plant is a joint venture of Owens-Illinois and eCullet.

Advances in technology could create benefits for local economies if properly applied. Some of these innovations could include:

- Small-scale machines that convert waste plastics into oil;
- Biochar production using wood or other organic wastes, which could sequester carbon (thus reducing greenhouse gases) and also serve as a beneficial additive to compost and soils;
- Converting recycled plastics into a material that could be used in 3D printers, for local production of a variety of products with zero wastes produced; and,
- Conditionally exempt vermicomposting operations to handle food scraps locally.

Diversion of Reusables at Transfer Stations

Reuse, which preserves the greatest value for the objects being handled, typically does "pay for itself," although often by relying on participants to absorb at least part of the collection or drop-off costs (such as by having them bring the materials to a central collection point). A Clark County waste stream analysis estimates that up to 2.5 percent of the waste stream is reusable materials or approximately 5,000 tons per year.

This initiative builds on an educational exhibit called "Tossed and Found" which offers a glimpse into what people are disposing at the transfer station by displaying recovered items for the public to view at the popular Recycled Arts Festival. The exhibit has demonstrated the opportunity to divert high-value materials in the delivered waste stream to a better end use. "Rich" reuse loads will be identified and re-directed for sorting at a separate location with the transfer station site. A trained "reuse crew" will separate out qualifying reusables (items you find in a thrift store e.g. textiles, household goods, furniture, etc.) based on their potential for reuse and recovery of embedded economic value (tip fees will have been already paid on the materials processed in this area, so exclusively those items whose value exceed the costs of removal will be pulled).

Reusables will be weighed and transported to an end market e.g. SAVERS warehouse, Goodwill, St. Vincent DePaul, etc. Discussions are underway to run a pilot program to determine a reusable commodity rate to develop a business case by comparing revenue (savings from avoided landfill costs + reusable commodity sales) versus costs (labor and transport). By recovering reusables on a full time basis rather than just a sampling for the Recycled Arts Fair event, jobs could be created. A five percent recovery rate of reusables at the transfer stations would equate to 250 tons of material diverted from the landfill and marketed for reuse.

Recovery of Construction Materials at Transfer Stations

Diverting construction materials for reuse or recycling could be accomplished using Waste Connections staff, with the diverted goods then sold to a reuse store, or diversion could be created by allowing an employee of a private company to pull materials from the incoming waste stream. Either method should support at least three to four additional jobs in Clark County, these would be at a different site than the transfer station and would focus on processing, repairing, and/or marketing of these materials for reuse or recycling. A C&D sort line at West Van will increase capacity for this recovery. The degree to which the new line and modification to practices support increased recovery is likely related to the number of local jobs that could be created.

House deconstruct materials
Source: City of Vancouver

Carbon Fiber Recycling

Carbon fiber is in everything from desktops, chairs, automobiles to airplanes. The prevelant use of carbon fiber is a direct result of its increased stability and lower density over aluminum and steel. The issue is that recycled carbon fiber does not retain the material integrity of the original product. However as carbon fiber becomes the industry standard. Recycling these advanced composite materials at the point of manufacturing use (industrial scrap) and at the end of the product life is essential to both these companies and to many other manufactures working hard to employ these technologies.

Washington State former Governor Christine Gregoire was instrumental in securing a location for the BMW plant in Washington State and promoted a partnership between Boeing and the BMW Group. As part of its SGL Automotive Carbon Fibers LLC joint venture, the BMW Group has built a new, state-of-the-art carbon fiber plant in Moses Lake, Washington, together with the SGL Group.

Clark County could become a major player in research work, product design and manufacturing automation for recycling these advanced carbon fiber materials and creating sustainable production solutions. Working with CREDC, local business leaders like Christensen Shipyards and higher educational institutions like WSU-Vancouver and Clark College, Clark County could set forth a plan to pave the way for carbon fiber future development and jobs. Vancouver based 30 year-old yacht manufacturer Christensen Shipyards' has a new venture to diversify fiberglass composite materials beyond the marine industry. Renewable Energy Composite Solutions, (R.E.C.S.) was the resulting spin-off, focusing on small scale vertical-axis wind turbines, hydro power, and other highly-engineered applications.

The immediate question is how to recycle carbon fibers that are surplused during production, from material that isn't used or parts that are imperfect. The challenge is substantial, because the airline industry now recycles more than 90,000 tons of aircraft aluminum a year, and composites will gradually replace much of this aluminum in years to come. Researchers are just beginning to figure out how to separate carbon fibers from the resin matrix, and then align them well enough to make an efficient finished product. The West Coast is in a position to compete for hosting some of the start-up composites recycling companies as our region is closer to the center of manufacturing. A key will be to identify end products and even new industries that can be based on utilization of the reclaimed carbon fiber feedstocks that will eventually be produced. A Boeing goal has been set to reach 90 percent recycling by 2016.

Compost Facility

Building a compost facility in Clark County with an estimated 100,000 ton capacity could create 10 green jobs and supply a large volume of compost for local use. The number one determining factor in the success or failure of any composting facility is the location in relation to both feedstocks and demand for end product. A potential location is the Chelatchie Prairie rural center, as there is property there already zoned for industrial uses including a 152-acre former sawmill site which is located on the county's railroad.

There is a need in the Portland/Vancouver region for local processing for food waste. Currently 1,000 tons of food waste is collected in Clark County each year. An additional 20,000 tons of yard debris is collected by Clark County and the City of Vancouver although most of the material is reloaded to be composted outside the county. A local site could also allow Clark County to co-mingle food waste and yard

waste in existing yard waste carts a system that is currently being used or tested in other counties and cities througut Washington State.

Compost is a valuable product that is currently being manufactured in Oregon from our local supplies. By keeping this product local many environmental benefits result including:

- Reduced need for fertilizers and less nitrogen run-off;
- Improved stormwater treatment; and,
- Increased food production.

Leichner Landfill Campus

Clark County owns the closed Leichner Landfill, and the Leichner Campus an adjacent parcel, formally known as the Koski property. The Leichner Campus is a 35-acre parcel which is relatively flat, contains no buried garbage, and is zoned for light-industrial development.

The Countyis developing a master plan to guide future redevelopment of the closed landfill an adjacent parcels. The County has also been awarded an Integrated Planning Grant (IPG) from the WDOE to evaluate another adjacent property currently owned by the Fleischer family.

The 9.5 acre Fleisher property is a vacant parcel that was previously used for agriculture and fertilizer processing. The site is known to be contaminated with polychlorinated biphenyl, or PCB. The IPG will allow the County and the owner to assess the extent of contamination, develop a cleanup action plan, and determine the cost to remediate the site.. The IPG will also evaluate grant funding sources available to the County through WDOE for remediating the site. If it appears to be economically feasible, the County will evaluate the potential to acquire the property and utilize WDOE grants to remediate the site.

The near-term master planning effort focuses on redevelopment of the Leichner Campus and the potential for job creation. If the remediation of the Fleischer property is economically feasible, the IPG provides funding to include the Fleischer property in the overall Leichner Master Plan area. The long-term planning effort will examine the potential to redevelop the closed landfill for recreational uses and or a park.

Installation of a permanent compressed natural gas (CNG) fueling station for local government fleets and Waste Connections hauling company fleet. Waste Connections currently has a Clean Energy Mobile CNG station capable of fueling 12-15 vehicles (out of 106 vehicles in their fleet). With this sort of consolidation, a permanent CNG station could be justified to expand capacity to fuel Waste Connections, Public Works fleets and the general public.

Future Processing and Disposal Options

In Clark County, the current employment in the waste sector includes local management representatives of two landfills (Finley Buttes and Wasco County), employees of three transfer stations, and the jobs created by recycling companies whose primary activity is processing. Most of the jobs associated with landfilling waste are at the landfill, which in Clark County's case are not in the county. Plus landfilling creates relatively few jobs compared to recycling and other processing methods for waste, so any form of future waste processing in Clark County that results in less material going to the landfills would both create more jobs and could create jobs that are in the county. There are a number of interesting developments in this area that could potentially provide opportunities for managing our waste differently in a decade or two when technologies and economics make such approaches more feasible and disposal contracts are being reviewed, including:

Conversion technologies

The term "conversion technologies" is currently applied in several approaches to waste recovery, but in general is used to refer to thermal, biological and chemical processes that convert solid wastes into energy and other byproducts.

Mechanical/biological treatment (MBT) or Material Recovery and Biological Treatment (MRBT)

Mechanical/biological treatment (MBT) or Material Recovery and Biological Treatment (MRBT) are two different systems that employ a series of steps to process solid wastes, removing recyclables and composting organics. Both systems employ proven technologies that are arranged in a system that attempts to maximize the amount of materials that can be recovered or processed. In both systems, however, the resulting compost is not sold as a marketable material, but the composting is done to stabilize wastes prior to landfilling. This creates an additional expense which many would claim is unnecessary for landfills equipped with gas recovery. On the other hand, both systems would yield additional amounts of recyclable materials.

Biorefineries

Several initiatives are moving forward that would convert municipal solid waste (MSW) to liquid fuel or useful industrial chemicals. Enerkem, a Canadian company, has built a biorefinery in collaboration with the City of Edmonton. When fully operational, it will have an annual production capacity of 10 million gallons, made from 100,000 tons of the city's waste that the city would promise to provide for the next 25 years. These waste-digesting biorefineries are fundamentally different from standard trash-fired power plants, which have been the target of a number of lawsuits. Concerns center on particulate emissions and a combustion process that creates new nasty pollutants, such as dioxins. But in the case of the Enerkem model, the garbage is heated at low temperature in sealed vessels to gasify it, breaking down the molecules into carbon monoxide and hydrogen gas, which are then reassembled into other compounds using metal catalysts. The biorefinery process has attracted attention for its positive environmental features. The California Air Resources Board conducted a life-cycle assessment that showed that MSW-derived cellulosic ethanol is potentially carbon neutral. What's more, the same thermochemical process could be used not only to produce ethanol, but also to yield substitutes for petrochemicals used in manufacturing.

Like any emerging industry there will be breakthroughs and dead-ends. Although somewhat promising, many of these processes are still highly experimental and not ready for large-scale applications. It would not be prudent for Clark County to invest in these technologies anytime soon, but this field should be monitored for possible implementation at a future date and implications for jobs and regional economic are important factors for consideration.

Policy Tools

As increasing the amount of materials recycled creates more jobs and market revenues, Clark County and other agencies could take a number of steps to encourage various waste diversion activities and recycling operations in our local, regional or statewide areas. Steps that will promote the viability of the County's manufacturing and industrial base may include:

Tax Incentives

Tax incentives could include the suspension or reduction of property or other taxes, initially or over a longer term for those selected investors or operators who pursue waste and recyclables businesses that afford local economic benefits. This approach was a contributing factor for the Cascades mill expansion in St. Helens. Oregon offered tax abatement for five years because Cascades agreed to pay their new workers' wages and benefits that are at least 50% over the median wage in Columbia County.

Grants

Grants can encourage specific activities or offer targeted support to reduce specific types of expenses.

Zoning and Special Zones

Zoning can be used to allow manufacturing in specific areas of the county, or at least to avoid barring specific operations from areas that might work well for a company. Special zones, such as "innovation zones," "enterprise zones," or other zones, can be established to clearly identify areas where tax breaks or other incentives are provided.

Materials Mandates

As increasing the amount of materials recycled creates more jobs and market revenues, Clark County and other agencies could take a number of steps to encourage waste diversion activities and recycling operations, including:

Container Deposits

Container deposits, or bottle bills, are generally enacted on a statewide scale, not countywide, but Clark County's proximity to Oregon which has one of these laws raises an interesting possibility for the county to enact a law similar to Oregon. If nothing else, this would increase the county's apparent recycling rate by eliminating the "leakage" that occurs now as people take deposit containers from Clark County to Portland area redemption locations.

Procurement Mandates

Procurement requirements could increase the demand for recycled products produced locally or regionally and hence the value of recyclables, potentially leading to increased collections and jobs.

Recycle Content Requirements

As with procurement mandates, requirements that specific products contain a minimum amount of recycled materials could lead to increased demand and jobs.

Disposal Bans

Disposal bans could be another method for increasing the amount of recyclables collected. Some municipalities have banned plastic grocery sacs which could include a revenue stream from the purchase of alternative bags e.g. paper or reusables.

Product Stewardship

Product stewardship programs can be implemented in such a way to create a separate collection, processing and marketing system for products that are currently handled through disposal, thus creating a range of new jobs. As with some of the above options, however, product stewardship programs are generally not enacted on a county level, but more typically on a statewide level.

Recommendations

All recommendations in this chapter are designed to enhance the recovery of waste from being landfilled. The Chapter documents that the "business" of recovering waste generates more jobs than landfilling waste.

1. **Convene a task group with other government departments and other regional agencies** to focus on developing green manufacturing jobs; and eco-business parks related to the solid waste industry. This will include various planning incentives such as enterprise zones. SWAC will play an active role in this planning, review and implementation. (18-5; 18-6)
2. **Conduct feasibility study(s), including a cost/benefit analysis, for a local organic processing facility** to allow recovery of food waste (in addition to yard debris) from the waste stream. If feasible, continue with planning and implementation. (18-5)
3. **Prepare a master plan** focusing on redevelopment and potential job creation potential of the Leichner Landfill Campus. (18-6)
4. **Evaluate the Fleischer property** to determine if it is economically feasible to remediate the property and include it in the overall Leichner Master Plan Area. (18-6)
5. **Develop a funding and financing plan** to determine if it is economically feasible for the County to acquire and remediate the Fleischer property utilizing County funds and WDOE grants. (18-6)
6. **Implement a pilot program at a transfer station** that will recover "household" reusable items. Explore partnerships with non-profit organizations. (18-4)
7. **Track expanded and new** market opportunities. (18-8)

End of Chapter 18

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Chapter 19
IMPLEMENTATION

Table 19-1 below identifies the timeframes for implementing the recommendations from the Chapters in this Plan. Work on many of the recommendations is on an "on-going" basis; some of the work is identified for specific years; and some work is on-going with an emphasis during specific years.

Table 19-1 Proposed Implementation Schedule

Chapter Recommendations	Implementation Timeframe					
* Key: (2-5) *Simlar language from plan* ✓ *Identical language from plan*	Continuing from previous plans *	New Recommendations	2015 - 16	2017 - 18	2019 - 20	Out years 2021 - 35
Chapter 2 – Administration						
1. Maintain a Regional Solid Waste System through Interlocal Agreements to formalize roles, make recommendations of such matters as: contracts; budgets; public education; outreach and marketing; resource sharing; system analysis and improvements. (2-2)	(2-5)		X	X	X	X
2. Coordinate with other agencies for educational and technical assistance programs. (2-3)	(2-10)		X	X	X	
3. Work with Portland Metro to advance proposals that would mutually benefit both regions; provide for a reciprocal exchange of technical assistance and input for areas of mutual concern; enhance communication; and when appropriate use joint contracts. (1-3)	(2-11)		X	X	X	
Chapter 3 - Sustainable Materials Management						
1. Continue to pursue and develop product stewardship programs, in coordination with other public and private entities. (3-5)		★	X	X	X	
2. Integrate the Solid Waste Program to include other environmental issues, such as source control, that has an impact on, and is significantly affected by, solid waste. (3-3)	(2-8)		X	X	X	
3. Lobby state and federal governments to pass legislation that requires waste prevention and product stewardship: including packaging reduction and improvements. (3-5)	(3-6)		X	X	X	
Chapter 4 - Waste Prevention and Reduction						
1. Provide regional waste prevention and reduction education and promotion programs for residential, institutional and commercial generators of waste.(4-2)	(4-1)		X	X	X	
2. Provide yard debris and chemical reduction programs such as natural gardening and home composting. (4-3)	4-4 ✓		X	X	X	
3. Utilize partnerships with other regulatory agencies and representatives of the business community to increase the visibility and accessibility of commercial assistance programs and the Green Business program. (4-3)	(4-11)		X	X	X	
4. Place emphasis on commercial waste reduction through the Green Business program. (4-3)	(4-12)		X	X	X	
5. Investigate the potential for providing financial incentives to encourage waste reduction among ratepayers. (4-2)	4-13 ✓			X		

(Continues next page)

Chapter Recommendations	Implementation Timeframe					
* Key: (oval) *Simlar language from plan* ✓ *Identical language from plan*	Continuing from previous plans *	New Recommendations	2015 - 16	2017 - 18	2019 - 20	Out years 2021 - 35
Chapter 5 - Education & Promotion						
1. Meet regulatory requirements by providing waste management education and outreach programs with an emphasis on waste prevention. (5-1)		★	X	X	X	
2. Build partnerships with agency partners, the service providers, businesses and non-government organizations on education and outreach activities. (5-7)		★	X	X	X	
3. Focus educational activities through using effective marketing strategies and public involvement and outreach plans. Provide performance measures and regular evaluations that relate to desired outcomes for each program in achieving program goals and objectives in conjunction with County's budget cycle. (5-3 to 5-6)		★	X	X	X	
4. Promote and support the three core programs: Green Schools, Green Business, and Green Neighbors. (5-8)		★	X	X	X	
5. Enhance presence on the internet with web, Facebook and Twitter sites. (5-8)		★	X	X	X	
6. Implement residential educational programs and activities to support proper curbside recycling and to increase participation and recovery. (5-1)		★	X	X	X	
7. Increase education and outreach information to be more accessible to diverse populations. (5-7)		★	X	X	X	
Chapter 6 - Waste Diversion						
1. Periodically evaluate the range of recyclables handled by the recycling collection program to determine whether materials should be added or dropped. (6-3)	6-2 ✓				X	
2. Encourage non-residential recycling through incentives, technical assistance, pilot programs, and recognition programs. (6-4)		★		X		
Chapter 7 - Waste Collection						
1. Adopt a county service level ordinance to provide: a) minimum collection service levels for residential and nonresidential customers; b) access by the County and cities to collection system information; c) enhanced coordination between WUTC-certified collection companies and County and city contractors. (7-2)	7-2 ✓				X	
2. Support and investigate state legislative efforts to provide counties with the same options for management of waste collection that cities have to gain greater local control of recycling strategies. (7-3)	(7-3)				X	
3. Develop a program for registering commercial recycling haulers and tracking tonnage data in the unincorporated areas. (7-8)	7-4 ✓			X		
4. Identify strategies for working with the Washington Utilities and Transportation Commission (WUTC) and WUTC-certificated haulers to develop rate structures that support and encourage waste reduction and recycling. (7-6)	(7-1)				X	

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Chapter Recommendations	Implementation Timeframe					
* Key: (oval) *Simlar language from plan* ✓ *Identical language from plan*	Continuing from previous plans *	New Recommendations	2015 - 16	2017 - 18	2019 - 20	Out years 2021 - 35
Chapter 8 – Waste Transfer and Material Recovery System						
1. Evaluate the future needs of the north county area. This analysis should consider population and economic growth and the potential to increase the number of residents taking advantage of scheduled collection services as well as an evaluation for upgrading CTR to address near-term and future traffic concerns. Any future facility would be sited in accordance with the guidelines and criteria listed in Appendix M. (8-5 to 8-7)	8-1		X			
2. Explore the option to purchase the CRC waste transfer system facilities by contract option date of 2020 with ownership in 2027. (8-1)	8-2			X	X	
3. Environmental Management Systems (EMS) program should be required, when appropriate, in contracts (also applies to collection contracts) (4-5)	7-4					X
Chapter 9 - Energy Recovery and Incineration						
1. Continue the established energy recovery program for wood waste, monitoring the volume being diverted from landfill disposal. (9-1)	9-1		X	X	X	
2. Stay informed about developments in the energy recovery field and look into opportunities that meet regional needs. (9-4)		★				X
Chapter 10 - Landfill Disposal						
1. Utilize the existing contract for garbage export to Finley Buttes Landfill located near Boardman, Oregon and Wasco County Landfill located near The Dalles, Oregon as the primary disposal sites for Clark County waste for the duration of the current disposal contract, but consider alternative disposal options when planning begins for the next contract (2020). (10-2)	10-1 ✓		X	X	X	X
2. No new MSW landfills are to be sited in Clark County. This limitation is due to the Sole Source Aquifer designation of the underlying Troutdale Aquifer. (M-2)	10-2		X	X	X	X
3. Evaluate a regional approach to managing the transfer, transportation and disposal of MSW including the formation of a Disposal District. (17-1)	10-3✓				X	
Chapter 11 - Moderate Risk Waste Plan						
1. Provide MRW Collections (curbside collections, home collections, satellite collection events and at permanent collection facilities). (11-4 to 11-6)	11-1 ✓		X	X	X	
2. Promote and support diversion of prescription controlled and non-controlled substances (e.g. prescription drugs whose possession and use are regulated by the Drug Enforcement Agency (DEA)). (11-5)		★	X	X	X	
3. Prohibit the disposal of all moderate risk waste through the municipal solid waste collection and disposal system as an incentive to reduce waste at the source or to separate it from garbage for collection at a hazardous waste collection facility. In Clark County, household hazardous wastes are already prohibited from disposal at the transfer stations by CRC. Disposal of electronics (CTR's, televisions, CPUs) are prohibited to transfer to Oregon landfills. (11-2)	11-2				X	

(Continues next page)

Chapter Recommendations	Implementation Timeframe					
* Key: (Simlar language from plan) ✓ Identical language from plan	Continuing from previous plans	New Recommendations	2015 - 16	2017 - 18	2019 - 20	Out years 2021 - 35
Chapter 11 - Moderate Risk Waste Plan *(continued)*						
4. Provide education to businesses to reduce their use of hazardous or toxic materials with a priority on education for Small Quantity Generators (SQGs). (11-9)	11-2		X	X	X	
5. Collaborate and partner with the service providers, non-governmental agencies and organizations to develop and/or implement technical assistance, toxic reduction, education and promotion activities. (11-9)	11-2		X	X	X	
6. Develop and continue to provide programs that emphasize the waste hierarchy (waste prevention/ruse/recycling/recovery) (e.g. e-waste, paint, new hazardous materials, batteries from electric vehicles and industrial waste exchange). (11-5; 11-7)	11-2		X	X	X	
7. Source Control visits to provide information to businesses that protects human health and the environment. (11-10)		★	X	X	X	
Chapter 12 - Construction & Demolition - Wastes to Resources						
1. Continue public and private sector education programs designed to encourage C&D waste reduction and recycling. (12-6)	12-1 ✓		X	X	X	
2. Expand C&D waste recycling and reuse opportunities at West Van and other sites as demand allows. (12-7)	12-2 ✓		X	X	X	X
3. Use the (building and demolition) permitting process to promote recycling opportunities , deconstruction, and proper disposal options. (12-5)	12-3 ✓		X	X	X	
4. Continue regular dialogue to facilitate new recycling opportunities for the C&D waste stream within the County to ensure convenient and cost-effective disposal alternatives. (12-7 to 12-8)	12-4				X	X
5. Rely on recycling and the export of residual wastes to a county designated facility to handle C&D generated in the County; in recognition that Clark County's Troutdale Aquifer is designated as a sole source aquifer; no new C&D landfills should be sited in the County. (12-7)		★	X	X	X	
6. Continue to provide both source-separated and post-collection recycling opportunities for C&D wastes at the CRC transfer stations. (12-6)	12-6		X	X	X	X
7. Provide clear information to the public on regulations for hauling C&D waste. (12-4)		★		X		
8. Partner with the public and private sectors to develop materials for diverted / recovered materials from the C & D stream. (12-7)		★		X		

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Chapter Recommendations	Implementation Timeframe					
* Key: ◯ *Simlar language from plan* ✓ *Identical language from plan*	Continuing from previous plans	New Recommendations	2015 - 16	2017 - 18	2019 - 20	Out years 2021 - 35
Chapter 13 - Organic Wastes						
1. As processing capacity allows, expand and maintain food waste collection program at schools and businesses; assist with setup and on-going training and education needs.(13-4)		★	X	X	X	
2. Conduct a study to determine the feasibility of a residential mixed organics collection program. (13-3)		★		X		
3. Work with partner agencies to increase food donations. (13-4)		★		X		
4. Focused outreach to residents and businesses on practices to reduce the volumes of food waste generated. (13-4)		★	X	X		
5. Evaluate existing organic materials processing capacity and determine if sufficient capacity exists to process organic materials generated in Clark County over the 20 year planning horizon. (13-5)		★	X	X	X	
6. Consider a landfill ban on yard waste and/or food waste conditional on processing capacity and/or failure to reach diversion goal. (13-5)		★			X	
Chapter 14 - Special Wastes	✓					
1. Support the legal private sector haulers to be the primary provider of services for the collection, processing and recycling of white goods, bulky wastes, vehicle hulks, tires, petroleum-contaminated soils, ash and other special waste as defined by the Special Waste Management Plan in Appendix K.	14-2 ✓		X	X	X	
2. Utilize the process described in the Special Waste Management Plan to determine if materials should be handled as special waste or not. (14-1)	✓ 14-3		X	X	X	
3. Develop a system plan for handling disaster debris.(14-12)	✓ 14-4				X	X
4. Work with state regulatory agencies to develop a waste management plan for proper disposal of animal carcasses in the event of disease outbreak or disaster. (14-11)	14-5 ✓				X	
5. No new Special Waste landfills are to be located in the County (due to the sole source aquifer) – rely on recycling and out-of-county disposal. (M-2)	◯ ~~14-7~~		X	X	X	X
6. As viable regional technologies and markets evolve for recovery of tires or other special wastes, review and evaluate local policies that would support economic recovery over landfill disposal. (14-7)	14-8	★		X		
Chapter 15 - Waste Monitoring and Performance Management						
1. Track program data for goals and objectives to measure against established baselines to evaluate performance. (15-4; 15-5)	✓		X	X	X	
2. Work with Columbia Resource Company and Waste Connections Inc. to improve garbage and recycling data management and tracking. (15-4)	15-2 ✓		X	X	X	
3. Conduct waste characterization studies at the transfer stations to monitor the impact of waste reduction and recycling programs and to identify potential changes to the solid waste program, and to gather self-haul data. (15-5)	15-3 ✓		X		X	
4. Maintain and regularly update a master electronic Solid Waste data report. (See Appendix J).	15-4		X	X	X	

(Continues next page)

Chapter Recommendations	Implementation Timeframe					
* Key: (Simlar language from plan) ✓ Identical language from plan	Continuing from previous plans	New Recommendations	2015 - 16	2017 - 18	2019 - 20	Out years 2021 - 35
Chapter 16 - Enforcement						
1. Support the WUTC in active enforcement of its garbage hauling franchises; one option is through the WUTC delegating some authority to local authorities. (16-4)	**16-1** ✓				X	
2. Participate in the Washington Department of Ecology processes that update state regulations. (16-4)	**16-2** ✓		X	X	X	
3. Develop educational strategies for the building and business communities, as well as the general public, which explain recycling; franchise hauling rights; and self-hauling regulations. A list of authorized haulers and recyclers should be developed in conjunction with the County's proposed registration program of recycling haulers. (16-4, 16-5)	**16-3** ✓			X		
4. County and cities should develop and implement ordinances to allow enforcement of existing city, county and state regulations through progressive enforcement mechanisms. (16-6)	**16-4**				X	
5. Develop and distribute educational information that describes the role of the various agencies regarding enforcement activities, roles and contacts in Clark County and cities. (16-3; 16-4)	**16-5** ✓			X		
6. The County and cities should update their ordinances to regulate on site burial of Solid Waste, including residential, commerical, industrial and agricultural waste. (16-6)	**16-7** ✓		X			
7. Adopt an ordinance expanding enforcement provisions for unsecured loads of transported waste through the Clark County Sheriff's Office. (16-6)	**16-8**				X	
8. Update the County's ordinances regarding directing waste to designated disposal sites in the County's regional solid waste management system. (16-4)	**16-10** ✓		X			
Chapter 17 - Funding and Financing						
1. Continue to fund its existing programs from funding currently in place for regional system support, including the Coordinated Prevention Grant from the Department of Ecology. (17-2)		★	X	X	X	
2. Continue to rely on the private sector to fund and finance large capital improvement projects for the regional solid waste system. (17-1)	**17-2**			X	X	X
3. Investigate and pursue federal and state grants that are appropriate to plan goals and desired outcomes. (17-4)	**17-3**		X	X	X	
4. Evaluate funding options to ensure that funding of required solid waste, waste prevention and recycling roles continue such as collection and disposal districts, new revenue, generating authorities, and contract revisions for disposal and collection services. (17-1)	**17-4**				X	X
5. Clark County is designated as the lead agency for regional CPG planning and implementation grant applications and will provide appropriate documentation with each application confirming full partner support. (17-4)		★	X	X	X	X
6. Establish and implement an ongoing process, involving the Regional Solid Waste System Steering Committee to provide regional partners with a role in relation to regional program funding and expenditure decisions. (2-6)		★	X	X	X	X

(Continues next page)

Chapter Recommendations	Implementation Timeframe					
* Key: Simlar language from plan ✓ Identical language from plan	Continuing from previous plans	New Recommendations	2015 - 16	2017 - 18	2019 - 20	Out years 2021 - 35
Chapter 18 - Waste to Wealth: Economic Development *(continued)*						
1. Convene a task group with other government departments and other regional agencies to focus on developing green manufacturing jobs; and eco-business parks related to the solid waste industry. This will include various planning incentives such as enterprise zones. SWAC will play an active role in this planning, review and implementation. (18-5; 18-6)		★	X			
2. Conduct feasibility study(s), including a cost/benefit analysis, for a County compost facility to allow recovery of food waste (in addition to yard debris) from the waste stream. If feasible, continue with planning and implementation. (18-5)		★	X			
3. Prepare a master plan focusing on redevelopment and potential job creation potential of the Leichner Landfill Campus. (18-6)		★	X			
4. Evaluate the Fleischer property to determine if it is economically feasible to remediate the property and include it in the overall Leichner Master Plan Area. (18-6)		★	X			
5. Develop a funding and financing plan to determine if it is economically feasible for the County to acquire and remediate the Fleischer property utilizing County funds and WDOE grants. (18-6)		★	X	X		
6. Implement a pilot program at a transfer station that will recover "household" reusable items. Explore partnership with non-profit organizations. (18-4)		★	X			
7. Track expanded and new market opportunities. (18-8)		★	X	X	X	

End of Chapter 19

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Appendix A
Acronyms and Definitions

Acronym	Term	Definition
ADC	Alternative Daily Cover	Approved cover material (other than earthen material) placed on the surface of the active face of a municipal solid waste landfill at the end of each operating day to control vectors, fires, odors, blowing litter, and scavenging.
	Anaerobic digestion	Involves the breaking down of organic matter using bacteria in the absence of air to produce a biogas and a high nutrient residue that can be used as a soil amendment. Often allows for either fuel or energy production
BMP, BMPs	Best Management Practices	BMPs are effective, practical, structural or nonstructural methods which prevent or reduce the movement of sediment, nutrients, pesticides and other pollutants from the land to surface or ground water, or which otherwise protect water quality from potential adverse effects of land use activities.
BOCC	Board of County Commissioners	The three elected officials that govern Clark County. Each commissioner is elected to a four-year term.
CCC	Clark County Code	Codified ordinances and regulations adopted by the Clark County Board of County Commissioners that govern how the county government works. [1]
CCPH	Clark County Public Health	The Clark County Health Department. It provides various health-related services and has authority (delegated by the state of Washington) to enforce state solid waste rules and regulations. [2]
	Collecting agency / Collection service provider	Any agency, business, or service operated by a person for the collecting of solid waste. (WAC 173-304)

Acronym	Term	Definition
	Common carrier	Any person who undertakes to transport solid waste, recyclables or other commodities for the collection and/or disposal thereof, by motor vehicle for compensation, whether over regular or irregular routes, or regular or irregular schedules. (RCW 81.77)
CDL or C&D	Construction, Demolition and Land-clearing debris	Waste that is generated from construction related activities and may include organic and non-organic materials, some of which may be reclaimed, reused or recycled.
CFL	Compact Fluorescent Bulb/ Lamp	Both compact fluorescent bulbs and fluorescent tubes contain significant amounts of mercury that can be inhaled or absorbed through the skin.
	Compost	The controlled biological decomposition of organic material or the product resulting from such a process.
	Contract carrier	All garbage and refuse transporters not included under the terms "common carrier" and "private carrier," as herein defined, and further, shall include any person who under special and individual contracts or agreements transports solid waste by motor vehicle for compensation. (RCW 81.77)
CPI	Consumer Price Index	A measure of the average change over time in the prices paid by urban consumers for a market basket of consumer goods and services. [3]
CRC	Columbia Resource Company	Owner and operator of the three transfer stations in Clark County (CTR, West Van, and Washougal) and designated processor of recyclables. CRC is a wholly owned subsidiary of Waste Connections, Inc.
CREDC	Columbia River Economic Development Council	Local economic development agency. [4]
CTR, CTRC	Central Transfer and Recycling Center	The transfer station north of Vancouver on NE 117th Avenue, between Orchards and Brush Prairie.
DEQ	Oregon Department of Environmental Quality	A department of the State of Oregon, with essentially the same role as Washington's Department of Ecology.

Acronym	Term	Definition
	Diversion Rate	Includes the Recycling Rate along with the percentage of generated wastes that are productively utilized but not made into new products (this includes wood, yard waste, used oil and other products that are burned for fuel and some glass, concrete, asphalt and rubble which may be crushed and used as aggregate as well as rendering.
Ecology, DOE	The Washington State Department of Ecology	A department in the State of Washington that is tasked to protect, preserve and enhance Washington's environment, and promote the wise management of (the) air, land and water for the benefit of current and future generations. [5]
EIS	Environmental Impact Statement	A document required by the National Environmental Policy Act (NEPA) (for certain actions "significantly affecting the quality of the human environment" that describes positive and negative effects of a proposed action. [6]
ER/I	Energy recovery / incineration	The recovery of energy in a usable 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." This class of options in the arsenal of integrated solid waste management practices has been variously referred to as "Waste-to-Energy" (WTE) and "Energy-from-Waste" (EFW) technologies.
EPA	Environmental Protection Agency	A United States agency whose mission is to protect human health and the environment. [7]
EPR	Extended Producer Responsibility	A type of stewardship which emphasizes end-of-life or post-consumer management of products and/or packaging. EPR approaches are intended to provide incentives for producers to incorporate environmental considerations into the design of their products and packaging.

Acronym	Term	Definition
	Gasification	Involves the breaking down of hydrocarbons using the controlled application of heat and finely tuned amounts of oxygen for energy recovery.
HHW	Household Hazardous Waste	Household hazardous waste (HHW) is waste generated from the use of a household product containing a material that, if misused or improperly disposed of, could pose a threat to human health or the environment.
	Hog fuel	Biomass fuel, usually consisting of wood waste that has been prepared by processing through a "hog" (mechanical grinder or shredder) for easier feeding into a boiler.
ILA	Interlocal Agreement; also Interagency Agreement	A contract between government agencies that work to provide services to the public. The agreements permit agencies to share budgets to reach a common goal or requirement.
	Incineration	Reducing the volume of solid wastes by use of an enclosed device, using controlled-flame combustion. May or may not be used for energy recovery.
LEED	Leadership in Energy and Environmental Design	A program of the United States Green Building Council (USGBC) that provides building owners and operators a framework for identifying and implementing measurable green building design solutions. [8]
Metro	Metro, Oregon (includes Portland and several other cities and 3 counties in northwest OR)	A regional governmental agency that supports regional services, including solid waste planning, waste reduction and disposal. [9]
MRF	Material Recovery Facility	A specialized solid waste facility that receives, separates and prepares recyclable materials for marketing to end-user manufacturers.
MRW	Moderate Risk Waste	Hazardous waste incidentally generated in small quantities, by households or businesses.
MSW / MMSW	Municipal Solid Waste / Mixed Municipal Solid Waste	Regular garbage, as distinguished from special classes of wastes that may have different disposal requirements.

Acronym	Term	Definition
NPDES	National Pollutant Discharge Elimination System	A permit program controls water pollution by regulating point sources that discharge pollutants to waters of the United States. [10]
	Organics	Yard debris, land clearing and food waste material.
ORS	Oregon Revised Statutes	The compilation of all permanent Oregon state laws now in force.
	Private carrier	A person who, in his own vehicle, transports solid waste purely as an incidental adjunct to some other established private business owned or operated by him in good faith: Provided, that a person who transports solid waste from residential sources in a vehicle designed or used primarily for the transport of solid waste shall not constitute a private carrier. (RCW 81.77)
	Product stewardship	A policy which ensures that all those involved in the lifecycle of a product share responsibility for reducing its health and environmental impacts, with producers bearing the primary financial responsibility
	Pyrolysis	The process in which solid wastes are heated in an enclosed device in the absence of oxygen to vaporization, producing a hydrocarbon-rich gas capable of being burned for recovery of energy.
RCW	Revised Code of Washington	The compilation of all permanent Washington state laws now in force. [11]
	Recovery rate	The percent of total solid waste generated that is recovered from the municipal solid waste stream. Includes both recycled material and material burned for energy recovery.
	Recyclable material	Any material or group of materials that can be collected and sold for recycling at a net cost equal to or less than the cost of collection and disposal of the same material. Those solid wastes that are separated for recycling or reuse, such as papers, metals, and glass, that are identified a recyclable material pursuant to a local comprehensive solid waste management plan. (RCW 70.95)

Acronym	Term	Definition
	Recycling	Transforming or remanufacturing waste materials into usable or marketable materials for use other than landfill disposal or incineration. (RCW 70.95)
	Recycling rate	The percentage of all wastes generated by residents and businesses that are recovered and made into new products.
	Regional Solid Waste System	All sites designated by the County for the receipt or disposal of solid waste as well as the supporting practices and programs being operated within the region for waste collection, waste diversion and program promotion and administration.
	Residence	The regular dwelling place of an individual or individuals. (RCW 70.95)
	Reuse	The return of a commodity into the economic stream for use in the same kind of application as before without a change to its identity.
SEPA	State Environmental Policy Act	A state policy that requires state and local agencies to consider the likely environmental consequences of a proposal before approving or denying a proposal. [12]
	Solid waste	All putrescible and nonputrescible solid and semi-solid wastes, including, but not limited to, garbage, rubbish, ashes, industrial wastes, swill, demolition and construction wastes, abandoned vehicles or parts thereof, and recyclable materials. (RCW 70.95)
	Solid waste collection company	Every person or his lessees, receivers, or trustees, owning, controlling, operating or managing vehicles used in the business of transporting solid waste for collection and/or disposal for compensation, except septic tank pumpers, over any public highway in this state whether as a "common carrier" thereof or as a "contract carrier" thereof." (RCW 81.77)
SWAC	Solid Waste Advisory Commission	A Clark County appointed advisory group comprising nine volunteer members to review information and policy related to solid waste issues that provides feedback to staff and recommendations to the BOCC. [13]

Acronym	Term	Definition
	Source separation	The separation of different kinds of solid waste at the place where the waste originates. (RCW 70.95)
SWCAA	Southwest Clean Air Agency	The Southwest Clean Air Agency is responsible for enforcing federal, state and local outdoor air quality standards and regulations in Clark, Cowlitz, Lewis, Skamania and Wahkiakum counties of southwest Washington state. [14]
SWMP	Solid Waste Management Plan	A County document that identifies goals and policies for implementing, evaluating and modifying existing and future solid waste management programs as required by Washington State Public Health and Safety RCW 70.95. [15]
SMM	Sustainable Materials Manaagement	Serving needs by using and reusing resources most efficiently and sustainably throughout their lifecycles by minimizing materials used and all associated environmental impacts.
USGBC	United States Green Building Council	National organization that oversees the Leadership in Energy and Environmental Design program that fosters sustainable design and construction techniques. [16]
WAC	Washington Administrative Codes	Administratively adopted, formally codified rules which define how state agencies will implement the requirements of state laws (the "RCW"s)
WTS	Washougal Transfer Station	A transfer station facility that serves the southeast area of Clark County, located at 4020 South Grant St. in the Port of Camas-Washougal.
WCI	Waste Connections, Inc.	A publicly-traded waste-handling company which performs the vast majority of waste-related services in Clark County.
West Van	West Vancouver Material Recovery Center	A transfer station and material recovery facility located west of Vancouver on Old Lower River Road.
WUTC	Washington Utilities and Transportation Commission	Regulates the rates and services of private or investor-owned utility and transportation companies (including garbage haulers, which hold "G" certificates giving them exclusive rights within defined areas of service). [17]

Footnotes

[1] Clark County website: http://www.codepublishing.com/wa/clarkcounty.html
[2] Clark County website: http://www.clark.wa.gov/public-health/index.asp
[3] As per the U.S. Bureau of Labor Statistics
[4] CREDC website: http://www.credc.org/index.php
[5] Washington State website: http://www.ecy.wa.gov/about.html
[6] National Environmental Policy Act of 1969; 42 U.S.C. § 4321 et seq.; Public Law 94-52, Jly 3, 1975, Public Law 94-83, Aug 9, 1975 and Public Law 97-258, section 4(b), Sep 13, 1982
[7] United States EPA website: http://www.epa.gov/
[8] USGBC website: http://www.usgbc.org/DisplayPage.aspx?CategoryID=19
[9] Metro, Oregon: http://www.oregonmetro.gov/
[10] United States EPA website: http://cfpub.epa.gov/npdes/
[11] Washington State Legislature website: http://apps.leg.wa.gov/rcw/
[12] Washington State website: http://www.ecy.wa.gov/programs/sea/sepa/e-review.html
[13] Clark County Solid Waste Advisory Commission: http://www.clark.wa.gov/recycle/SWAC.html
[14] SWCAA website: http://www.swcleanair.org/
[15] Washington State website: http://apps.leg.wa.gov/rcw/default.aspx?cite=70.95
[16] US Green Building Council: http://www.usgbc.org/DisplayPage.aspx?CMSPageID=1988
[17] WUTC website: http://www.utc.wa.gov/Pages/default.aspx

Appendix B

Determination of NONSIGNIFICANCE

PROJECT:
2015-2020 Clark County Solid Waste Management Plan (SWMP)

Publish Date: December 16, 2014

Please find enclosed an environmental Determination of Non Significance (DNS) issued pursuant to State Environmental Policy Act (SEPA) Rules (Chapter 197-11, Washington Administrative Code). The enclosed review comments reflect evaluation of the environmental checklist by the lead agency as required by WAS 197-11-330(1)(a)(i).Written comments may be submitted on this determination within fifteen (15) days of its issuance, after which the DNS will be reconsidered in light of the comments received.

Please address all correspondence to:

Clark County Dept. of Environmental Services
Peter DuBois
Acting Division Manager Solid Waste and Environmental Education Division
Clark County, WA
PO Box 9810
Vancouver, WA 98666-9810

DISTRIBUTION

Federal Agencies
US Army Corps of Engineers
US EPA
US Soil Conservation Services
Bonneville Power Administration

Federal Emergency Management Agency
US Fish & Wildlife

Regional Agencies:
Fort Vancouver Regional Library
Regional Transportation Council
Southwest Clean Air Agency
Southwest Washington Health District
Camas Public Library

Special Purpose Districts:
Vancouver Parks & Recreation
Clark County Fire District No. 5
Clark County Fire District No. 6
Clark County Fire District No. 9
Clark Public Utilities Electrical
Clark Public Utilities Water
Clark Regional Wastewater District
CenturyLink
C-Tran
Evergreen School District
Camas School District
Hockinson School District
Port of Vancouver
Port of Camas-Washougal
Conservation District of Clark County

Washington State Agencies:
Department of Natural Resources
Department of Fish & Wildlife
Department of Transportation
Department of Archaeology & Historic Preservation
Department of Ecology

Local Agencies:
City of Vancouver
Clark County Department of Public Works
- Administration:
- Transportation
- Parks & Recreation
- Development Engineering

Clark County Dept. of Community Development
- Development Services
- Fire Marshall

Clark County Environmental Services
Clark County Sheriff's Office
City of Washougal
City of Camas
Clark County Board of Commissioners
Vancouver Audubon Society
Clark County Water Quality Resource Council
Chinook Indian Tribe
Friends of Curtin Creek (post card only)
Cowlitz Indian Tribe
Confederated Tribes of Grand Ronde
Clark County Natural Resources Council
Clark County Home Builders Assoc.
Columbia River Economic Development Council

Environmental Checklist

A. Background

1. **Name of proposed project, if applicable:**

   Clark County Solid Waste Management Plan (SWMP)

2. **Name of applicant:**

   Clark County Environmental Services, Solid Waste Program

3. **Address and phone number of applicant and contact person:**

   Peter DuBois
   Acting Division Manager
   Solid Waste and Environmental Education Division
   Clark County, WA
   PO Box 9810, Vancouver, WA 98660
   360-397-2121 ext. 4961

4. **Date checklist prepared:**

   December 4, 2014

5. **Agency requesting checklist:**

   Clark County Department of Environmental Services

6. **Proposed timing or schedule (including phasing, if applicable):**

   Adoption of the Plan will be in the spring of 2015. The Clark County SWMP recommends continuation of the solid waste management system and programs; recommends new solid waste management programs to be developed and implemented over the next five years.

7. **Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain.**

   State law requires the Clark County SWMP to be reviewed every five years and updated if necessary.

8. **List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.**

   Projects currently in design or under construction have environmental documentation on file

or in progress. Projects not yet underway will undergo complete environmental review during the design process.

9. **Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain.**

There are no applications/proposals pending which would affect adoption of the Clark County SWMP.

10. **List any governmental approvals or permits that will be needed for your proposal, if known.**

The Clark County SWMP has been developed with the assistance of the County's Solid Waste Advisory Commission. The SWMP will be adopted by the cities of Battle Ground, Camas, La Center, Ridgefield, Washougal, Vancouver, the Town of Yacolt, and the Board of Clark County Commissioners.

11. **Give brief, complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page. (Lead agencies may modify this form to include additional specific information on project description.)**

The proposal is a non-project action. It represents the current status of the solid waste systems in Clark County, along with goals and recommendations for improving those systems. The Clark County SWMP discusses all aspects of solid waste management within the county and incorporated areas, including waste reduction, recycling, composting, energy recovery, collection, transfer, waste disposal and sustainability. Specific recommendations are made for all of the elements in the plan. These recommendations represent systems, programs and policy refinements that do not have an adverse environmental impact.

12. **Location of the proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and section, township, and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity map, and topographic map, if reasonably available. While you should submit any plans required by the agency, you are not required to duplicate maps or detailed plans submitted with any permit applications related to this checklist.**

The jurisdiction of the Clark County SWMP includes all incorporated and unincorporated areas within Clark County.

SECTION B **Environmental Elements**

1. **Earth**

   a. **General description of the site (circle one): Flat, rolling, hilly, steep slopes, mountainous, other.**

Clark County is located in southwestern Washington, just north of and adjacent to the Columbia River and Portland, Oregon. The county's 420,288 acre area contains various topographic features from mountainous cascade areas in the east to rolling farmland and lowlands in the west.

b. **What is the steepest slope on the site (approximate percent slope)?**

Does not apply.

c. **What general types of soils are found on the site (clay, sand, gravel, peat or muck)? If you know the classification of agricultural soils, specify them and note any prime farmland.**

Does not apply.

d. **Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe.**

Does not apply.

e. **Describe the purpose, type, and approximate quantities of any filling or grading proposed. Indicate source of fill.**

Does not apply.

f. **Could erosion occur as a result of clearing, construction, or use? If so, generally describe.**

Does not apply.

g. **About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?**

Does not apply.

h. **Proposed measures to reduce or control erosion, or other impacts to the earth, if any:**

Does not apply.

2. **Air**

a. **What types of emissions to the air would result from the proposal (i.e., dust, automobile, odors, industrial wood smoke) during construction and when the project is completed? If any, generally describe and give approximate quantities if known.**

The Clark County SWMP is a non-project action. No significant amounts of emissions are anticipated as a result of any of the recommends made in the SMWP.

b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe.

Does not apply.

c. Proposed measures to reduce or control emissions or other impacts to air, if any:

Specific improvements will have to meet federal, state, and regional air quality standards before completion of design phase.

3. Water

a. Surface:

1) Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into.

Does not apply.

2) Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans.

Does not apply.

3) Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material.

Does not apply.

4) Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities if known.

No.

5) Does the proposal lie within a 100-year floodplain? If so, note location on the site plan.

While 100-year floodplains do lie within the planning boundaries of the county, the Clark County SWMP is a non-project action.

6) Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge.

No.

b. **Ground:**

1) **Will ground water be withdrawn, or will water be discharged to ground water? Give general description, purpose, and approximate quantities if known.**

No.

2) **Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (for example:Domestic sewage; industrial, containing the following chemicals; agricultural; etc.). Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve.**

Does not apply.

c. **Water runoff (including stormwater):**

1) **Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe.**

Does not apply.

2) **Could waste materials enter ground or surface waters? If so, generally describe.**

Does not apply.

d. **Proposed measures to reduce or control surface, ground, and runoff water impacts, if any:**

Does not apply.

4. **Plants**

a. **Check or circle types of vegetation found on the site:**

____deciduous tree: alder, maple, aspen, other
____evergreen tree: fir, cedar, pine, other
____shrubs
____grass
____pasture
____crop or grain
____wet soil plants: cattail, buttercup, bullrush, skunk cabbage, other
____water plants: water lily, eelgrass, milfoil, other
____other types of vegetation

Does not apply.

b. **What kind and amount of vegetation will be removed or altered?**

Does not apply.

c. **List threatened or endangered species known to be on or near the site.**

Does not apply.

d. **Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any:**

Does not apply.

5. **Animals**

a. **Circle any birds and animals which have been observed on or near the site or are known to be on or near the site:**

Birds: hawk, heron, eagle, songbirds, other:
Mammals: deer, bear, elk, beaver, other:
Fish: bass, salmon, trout, herring, shellfish, other:

Does not apply.

b. **List any threatened or endangered species known to be on or near the site.**

Does not apply.

c. **Is the site part of a migration route? If so, explain.**

Does not apply.

d. **Proposed measures to preserve or enhance wildlife, if any:**

Implementation of the Clark County SWMP may contribute to the protection of existing wildlife and their habitats by addressing proper management and disposal methods for solid wastes in order to reduce such problems as contamination of ground and surface water.

6. **Energy and natural resources**

a. **What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc.**

Does not apply.

b. **Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe.**

Does not apply.

c. **What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any:**

Does not apply.

7. **Environmental health**

a. **Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste, that could occur as a result of this proposal? If so, describe.**

No.

1) **Describe special emergency services that might be required.**

Does not apply.

2) **Proposed measures to reduce or control environmental health hazards, if any:**

Does not apply.

b. **Noise**

1) **What types of noise exist in the area which may affect your project (for example: traffic, equipment, operation, other)?**

Does not apply.

2) **What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other)? Indicate what hours noise would come from the site.**

Does not apply.

3) **Proposed measures to reduce or control noise impacts, if any:**

Does not apply.

8. **Land and shoreline use**

a. **What is the current use of the site and adjacent properties?**

Does not apply.

b. **Has the site been used for agriculture? If so, describe.**

Does not apply.

c. **Describe any structures on the site.**

Does not apply.

d. **Will any structures be demolished? If so, what?**

Does not apply.

e. **What is the current zoning classification of the site?**

Does not apply.

f. **What is the current comprehensive plan designation of the site?**

Does not apply.

g. **If applicable, what is the current shoreline master program designation of the site?**

Does not apply.

h. **Has any part of the site been classified as an "environmentally sensitive" area? If so, specify.**

Does not apply

i. **Approximately how many people would reside or work in the completed project?**

None

j. **Approximately how many people would the completed project displace?**

None.

k. **Proposed measures to avoid or reduce displacement impacts, if any:**

Does not apply.

l. **Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any:**

Does not apply.

9. **Housing**

a. **Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing.**

None.

b. **Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing.**

None.

c. **Proposed measures to reduce or control housing impacts, if any:**

Does not apply.

10. **Aesthetics**

a. **What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed?**

Does not apply.

b. **What views in the immediate vicinity would be altered or obstructed?**

Does not apply.

c. **Proposed measures to reduce or control aesthetic impacts, if any:**

Does not apply.

11. **Light and glare**

a. **What type of light or glare will the proposal produce? What time of day would it mainly occur?**

Does not apply.

b. **Could light or glare from the finished project be a safety hazard or interfere with views?**

Does not apply.

c. **What existing off-site sources of light or glare may affect your proposal?**

Does not apply.

d. **Proposed measures to reduce or control light and glare impacts, if any:**

Does not apply.

12. **Recreation**

a. **What designated and informal recreational opportunities are in the immediate vicinity?**

Clark County has a variety of county, city, state, and federal recreational opportunities including sports facilities, neighborhood, community and regional parks, open space, and wildlife habitat areas. Some of these recreational opportunities are formally designated, while others are informally used without designation or authorization.

b. **Would the proposed project displace any existing recreational uses? If so, describe.**

No

c. **Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any:**

Does not apply.

13. **Historic and cultural preservation**

a. **Are there any places or objects listed on, or proposed for, national, state, or local preservation registers known to be on or next to the site? If so, generally describe.**

Does not apply.

b. **Generally describe any landmarks or evidence of historic, archaeological, scientific, or cultural importance known to be on or next to the site.**

Does not apply.

c. **Proposed measures to reduce or control impacts, if any:**

Does not apply.

14. **Transportation**

a. **Identify public streets and highways serving the site, and describe proposed access to the existing street system. Show on site plans, if any.**

Does not apply.

b. **Is site currently served by public transit? If not, what is the approximate distance to the nearest transit stop?**

Does not apply.

c. **How many parking spaces would the completed project have? How many would the project eliminate?**

Does not apply.

d. **Will the proposal require any new roads or streets, or improvements to existing roads or streets, not including driveways? If so, generally describe (indicate whether public or private).**

Does not apply.

e. **Will the project use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe.**

Does not apply.

f. **How many vehicular trips per day would be generated by the completed project? If known, indicate when peak volumes would occur.**

Does not apply.

g. **Proposed measures to reduce or control transportation impacts, if any:**

Does not apply.

15. **Public services**

a. **Would the project result in an increased need for public services (for example: fire protection, police protection, health care, schools, other)? If so, generally describe.**

Does not apply.

b. **Proposed measures to reduce or control direct impacts on public services, if any.**

Does not apply.

16. **Utilities**

a. **Circle utilities currently available at the site: electricity, natural gas, water, refuse service, telephone, sanitary sewer, septic system, other.**

Does not apply.

b. **Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity which might be needed.**

Does not apply.

SECTION C

Signature

The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

Signature: 

Printed Name: Pete DuBois, Clark County Solid Waste Manager

Date Submitted: December 16 ,2014

SECTION D **Supplemental Sheet for Nonproiect Actions**

1. **How would the proposal be likely to increase discharge to water; emissions to air; production, storage, or release of toxic or hazardous substances; or production of noise?**

The Clark County SWMP will not have an adverse impact to water or air; will not increase the production, storage or release of toxic or hazardous substances or the production of noise. The continued implementation of the overall plan will result in decreased discharges to the environment as a result of management strategies developed to prevent problems caused by solid waste. The SWMP provides for the continued designation of solid waste from the entire County (incorporated and unincorporated areas). This system provides for the proper disposal of solid waste, programs for recycling, reuse, and waste reduction.

Proposed measures to avoid or reduce such increases are:

Does not apply.

2. **How would the proposal be likely to affect plants, animals, fish, or marine life?**

Continued implementation of the Clark County SWMP will result in improved quality of habitat for plant and animal species in the county by reducing pollution to lakes and streams and contamination of groundwater through proper management, source reductions and recycling, and disposal method for solid waste. Continued implementation of the SWMP will decrease pollution problems in surface and groundwater, which will result in improved environmental quality for plants, animals, fish, and marine life. This system provides for the proper disposal of solid waste, programs for recycling, reuse, and waste reduction.

Proposed measures to protect or conserve plants, animals, fish, or marine life are:

Does not apply.

3. **How would the proposal be likely to deplete energy or natural resources?**

Promoting Washington State's waste management priorities of recycling, waste reduction, energy recovery, and waste minimization will result in conservation of energy and natural resources through recycling and reuse of products, such as used glass, paper, aluminum, metals, and plastics. Such programs will lessen energy use and use of natural resources.

Proposed measures to protect or conserve energy and natural resources are:

Waste reduction and recycling measure to achieve a 55% recycling rate and 70% diversion rate.

4. **How would the proposal be likely to use or affect environmentally sensitive areas or**

areas designated (or eligible or under study) for governmental protection; such as parks, wilderness, wild and scenic rivers, threatened or endangered species habitat, historic or cultural sites, wetlands, floodplains, or prime farmlands?

Continued implementation of the Clark County SWMP will enhance these areas by providing education to the public who use these areas to properly manage and dispose of solid and hazardous waste. This system provides for the proper disposal of solid waste, programs for recycling, reuse, and waste reduction.

Proposed measures to protect such resources or to avoid or reduce impacts are:

Does not apply.

5. **How would the proposal be likely to affect land and shoreline use, including whether it would allow or encourage land or shoreline uses incompatible with existing plans?**

The Clark County SWMP does not result in land and shoreline use that would be incompatible with existing plans.

Proposed measures to avoid or reduce shoreline and land use impacts are:

Does not apply.

6. **How would the proposal be likely to increase demands on transportation or public services and utilities?**

The Clark County SWMP will not increase demands on transportation or public services or utilities.

Proposed measures to reduce or respond to such demand(s) are:

Does not apply.

7. **Identify, if possible, whether the proposal may conflict with local, state, or federal laws or requirements for the protection of the environment.**

The Clark County SWMP conforms to all applicable local, state, and federal regulations. All future solid waste handling facilities will conform will all applicable local, state, and federal regulations, as well as, SEPA review.

SEPA Checklist Exhibits

Exhibit A: 2014 Clark County Comprehensive Solid Waste Management Plan

DETERMINATION OF NONSIGNIFICANCE

Description of Proposal:
The Clark County Department of Environmental Services has issued a determination of non-significance (DNS) under the State Environmental Policy Act Rules (Chapter 192-11 WAC) to adopt and update changes in the Solid Waste Management Plan for the years 2015 through 2020, as a non-project SEPA review required by law (RCW 36.81.121 and WAC 136.16.010).

Proponent: **Clark County Department of Environmental Services**

Location of proposal, including street address, if any:

Clark County, Washington

Lead Agency: **Department of Environmental Services, Clark County, Washington**

The lead agency for this proposal has determined that it does not have a probable significant adverse impact on the environment. An environmental impact statement (EIS) is not required under RCW 43.21C.030(2)(c). This decision was made after review of a completed environmental checklist and other information on file with the lead agency. This information is available to the public on request.

The lead agency has determined that the requirements for environmental analysis, protection, and mitigation measures have been adequately addressed in the development regulations and comprehensive plan adopted under chapter 36.70A RCW, and in other applicable local, state, or federal laws or rules, as provided by RCW 43.21C.240 and WAC 197-11-158.

This DNS is issued under WAC 197-11-340(2); the lead agency will not act on this proposal for 15 days from the date below.

Comments must be submitted by: December,31, 2014

Responsible Official: **Don Benton**
Position/Title **Director, Clark County Department of Environmental Services**

Contact Person: **Peter DuBois**
Acting Solid Waste Manager
Pete.dubois@clark.wa.gov

Address: **1300 Franklin Street, PO Box 9810, Vancouver, WA 98666-9810**

Date: 12/10/14

Signature: 

NOTICE OF
DETERMINATION OF NONSIGNIFICANCE
(DNS)

The Clark County Department of Environmental Services has issued a determination of non-significance (DNS) under the State Environmental Policy Act Rules (Chapter 192-11 WAC) to adopt and update changes in the Solid Waste Management Plan for the years 2015 through 2020, as a non-project SEPA review required by law (RCW 36.81.121 and WAC 136.16.010).

After review of a completed environmental checklist and other supporting information on file with the agency, Clark County Department of Environmental Services has determined that this proposal will not have a probable significant impact on the environment. Project specific environmental impacts shall be evaluated during individual project design processes.

The DNS is available electronically at http://www.clark.wa.gov/recycle/documents.html . Copies are also available at no charge from Peter DuBois, Solid Waste Manager, (360) 397-2121, extension 4961. The public is invited to submit written comment on this DNS no later than December 31, 2014 to pete.dubois@clark.wa.gov. Written comments may be submitted to Peter DuBois, Clark County Department of Environmental Services, 1300 Franklin Street, PO Box 9810, Vancouver, WA 98666-9810.

Appendix C

COST ASSESSMENT QUESTIONNAIRE

FOR

CLARK COUNTY COMPREHENSIVE SOLID WASTE MANAGEMENT AND MODERATE RISK WASTE MANAGEMENT PLAN

December 31, 2014

PLAN PREPARED FOR THE COUNTY OF: Clark

PLAN PREPARED FOR THE CITY OF:

PREPARED BY: Peter DuBois

CONTACT TELEPHONE: 360-397-6118 ext. 4961 **DATE:** 12/2014

DEFINITIONS

Please provide these definitions as used in the Solid Waste Management Plan and the Cost Assessment Questionnaire.

Throughout this document:

YR.1 shall refer to 2012.
YR.3 shall refer to 2014.
YR.6 shall refer to 2017.

Year refers to (circle one) **calendar** (Jan 01 - Dec 31)

fiscal (Jul 01 - Jun 30)

1. **DEMOGRAPHICS:** To assess the generation, recycling and disposal rates of an area, it is necessary to have population data. This information is available from many sources (e.g., the State Data Book, County Business Patterns, or the State Office of Finance and Management).

1.1 Population

1.1.1 What is the **total** population of your County/City?

YR.1 __431,165__ YR.3 ___442,800_ YR.6 ___463,026_

1.1.2 For counties, what is the population of the area **under your jurisdiction?** (Exclude cities choosing to develop their own solid waste management system.)

YR.1 __431,165__ YR.3 ___442,800_ YR.6 ___463,026_

1.2 References and Assumptions

a. Population projections based on *Washington State, Office of Financial Management, July 2012; US Census Bureau.* 2014 & 2017 estimated based on 1.5% annual increase.
b. Chapter 7 Old SWMP-UP 2012 file.

2. WASTE STREAM GENERATION: The following questions ask for total tons recycled and total tons disposed. Total tons disposed are those tons disposed of at a landfill, incinerator, transfer station or any other form of disposal you may be using. If other please identify.

2.1 Tonnage Recycled

2.1.1 Please provide the total tonnage **recycled** in the base year, and projections for years three and six.

YR.1 _359,169__ YR.3 _370,754_ _ YR.6 _388,837_ _

2.2 Tonnage Disposed

2.2.1 Please provide the total tonnage **disposed** in the base year, and projections for years three and six.

YR.1 _231,487__ YR.3 _,238,954__ YR.6 _250,608__

2.3 References and Assumptions

a. *The Solid Waste Data Report – Clark County, WA,* for 2012 tonnages; projected tonnages recycled/disposed increased annually by 1.6%

3. SYSTEM COMPONENT COSTS: This section asks questions specifically related to the types of programs currently in use and those recommended to be started. For each component (i.e., waste reduction, landfill, composting, etc.) please describe the anticipated costs of the program(s), the assumptions used in estimating the costs and the funding mechanisms to be used to pay for it. The heart of deriving a rate impact is to know what programs will be passed through to the collection rates, as opposed to being paid for through grants, bonds, taxes and the like.

3.1 Waste Reduction Programs & 3.2 Recycling Programs

3.1.1 & 3.2.1 Please list the solid waste programs and recycling programs which have been implemented and those programs which are proposed. If these programs are defined in the SWM plan please provide the page number. (Attach additional sheets as necessary.)

IMPLEMENTED

- ✓ Provide yard debris and chemical reduction programs ch.4 p.3
- ✓ Long-term management options for waste transfer and disposal, beyond the existing agreement that runs through 2016
- ✓ Encourage green building
- ✓ Participate in climate protection programs
- ✓ Continue to fund Master Composter/Recycler
- ✓ Develop a Green Schools Program
- ✓ Enhance web use with on-line recycling A-Z Directory
- ✓ Encourage contracted service providers to maintain ISO 14001 certification
- ✓ Conduct a feasibility study to expand the system to include a fourth transfer station
- ✓ Investigate a biomass plant
- ✓ Add collection sites for controlled substances
- ✓ Construct and operate a permanent HHW collection facility at the Washougal transfer station
- ✓ Expand implementation of the school and commercial food waste recovery programs
- ✓ Expand C&D recycling and reuse at transfer stations
- ✓ Improvements to current (private) transfer facilities

PROPOSED

Proposed changes in the draft *Clark County Comprehensive Solid Waste and Moderate Risk Waste Management Plan:*

- ➢ Establish a regional solid waste steering committee ch.2
- ➢ Product stewardship ch.3
- ➢ Increase the visibility of the Green Business Program and commercial assistance programs ch.4
- ➢ Financial incentives to encourage waste reduction among ratepayers ch.4
- ➢ Marketing strategies and public involvement and outreach plans ch.5
- ➢ Promote three core programs: Green Schools, Green Business; Green Neighbors ch.5
- ➢ Enhance presence on the internet ch.5
- ➢ Adopt a county service level ordinance ch.7
- ➢ Registering recycling haulers ch.7
- ➢ Develop rate structures that encourage waste reduction and recycling ch7.
- ➢ Improvements to Central Transfer Station (private) transfer facility to address traffic concerns ch.8
- ➢ Explore the option to purchase the transfer station ch.8
- ➢ Evaluate formation of a disposal district ch.17
- ➢ Prohibit the disposal of all moderate risk waste through the municipal solid waste collection and disposal system ch.11
- ➢ Evaluation of organics processing capacity ch.13
- ➢ Consider a landfill ban on yard debris ch.13
- ➢ Develop a system plan for handling disaster debris ch. 14
- ➢ Plan for proper disposal of animal carcasses ch. 14

3.1.2 & 3.2.1 What are the costs, capital costs and operating costs for waste reduction programs implemented and proposed?

Combined Message Programs
Green Neighbors
Master Composter/Recyclers
In house Waste Reduction/Recycling
School Education
Organics Recycling
Community and Event based Education
School Grants
Save Organic Scraps (School Food Waste Recycling)
WA Green Schools
Construction & Demolition Debris
Business Recognition Program
Recycled Arts Festival
Public Information Recycling Programs
Single Family Recycling Collection
Multi-family Recycling Collection
Yard Waste Collection
Moderate Risk Waste
Recycle Day Collection Events
Special Collection Events

Waste Reduction Programs
Pacific Park Demo Sites
DIY Fair
Waste Busters

The Solid Waste and Environmental Education Division operates with an estimated $3M annual budget. It is anticipated that the Division will operate with the same budget through year six (2017) with adjustments for inflation (CPI).

Note: None of the proposed programs will have a significant impact to the County's costs of the solid waste system.

3.1.3 & 3.2.1 Please describe the funding mechanism(s) that will pay the cost of the programs in 3.1.2 and 3.2.1.

IMPLEMENTED

Funding for Waste Reduction and Recycling Programs comes from several sources. The County currently contracts with Columbia Resources Company (CRC) for transfer, transport and disposal of solid waste and for recycling processing and marketing. This contract provides the County with an annual administrative fee. The amount of the fee is set by contract (in lieu of a per ton rate) and increases annually by 82% of the CPI. CRC performs processing of recyclable materials under this same contract. CRC pays the County, the City of Vancouver and the municipal recycling haulers a portion of the revenue received from marketing curbside recyclable materials. The recycling collection and yard debris collection service is performed by Waste Connections of Washington (WCW) under contract with Clark County. Each of these collection contracts provides the County with a per-household fee. The County receives grant funds from the Department of Ecology's Coordinated Prevention Grants. The County also receives interest earned on the solid waste fund.

None of the proposed programs will have a significant impact to the County's customer's rates.

- The current recycling curbside collection contract expires December 31, 2018 and will be competitively bid; any changes to the recycling program will undergo a cost/benefit analysis as part of this procurement process.
- Transfer facility improvements and/or construction of a new transfer facility will be studied in 2015/2016. Funding options will be examined during this process including: incorporating costs into a contract extension with Waste Connections, transfer facility tipping or transaction fees, and Solid Waste Enterprise Fund.
- Remaining proposed programs will have minimal cost impact to the County's budget for solid waste programs.

3.3 Solid Waste Collection Programs

3.3.1 Regulated Solid Waste Collection Programs

Fill in the table below for each **WUTC regulated** solid waste collection entity in your jurisdiction. (Make additional copies of this section as necessary to record all such entities in your jurisdiction.)

WUTC Regulated Hauler Name Waste Connections of Washington (WCW)
G-permit # 253

	YR. 1	YR. 3	YR. 6
RESIDENTIAL			
# of Customers	59,599	62,616	67,431
Tonnage Collected	44,844	48,503	54,560
COMMERCIAL			
# of Customers	3,823	4,017	4,325
Tonnage Collected	34,717	37,550	42,239

a. YR. 1 information provided by Waste Connections, Inc. YR 3 & YR 6 estimated with a 2.5% annual increase in customers and a 4% annual increase in tonnages.

WUTC Regulated Hauler Name ____Basin Disposal_____
G-permit #__118_____

Valid certificate but no operations at this time.

	YR. 1	YR. 3	YR. 6
RESIDENTIAL			
# of Customers	n/a	n/a	n/a
Tonnage Collected	n/a	n/a	n/a
COMMERCIAL			
# of Customers	n/a	n/a	n/a
Tonnage Collected	n/a	n/a	n/a

3.3.2 Other (non-regulated) Solid Waste Collection Programs Fill in the table below for other solid waste collection entities in your jurisdiction. (Make additional copies of this section as necessary to record all such entities in your jurisdiction.)

Hauler Name ___Waste Connections of Washington (WCW)_

	YR. 1	YR. 3	YR. 6
RESIDENTIAL			
# of Customers	53,410	56,114	60,429
Tonnage Collected	31,119	33,658	37,861
COMMERCIAL			
# of Customers	2,803	2,945	3,171
Tonnage Collected	72,044	77,923	87,653

a. YR. 1 information provided by WCW YR 3 & YR 6 estimated with a 2.5% annual increase in customers and a 4% annual increase in tonnages.

3.4 Energy Recovery & Incineration (ER&I) Programs
(If you have more than one facility of this type, please copy this section to report them.)

3.4.1 Complete the following for each facility:

Name: n/a
Location: n/a
Owner: n/a
Operator: n/a

3.4.2 What is the permitted capacity (tons/day) for the facility? n/a

3.4.3 If the facility is not operating at capacity, what is the average daily throughput?

YR.1 n/a YR.3 n/a YR.6 n/a

3.4.4 What quantity is estimated to be land filled which is either ash or cannot be processed.

YR.1 n/a YR.3 n/a YR.6 n/a

3.4.5 What are the expected capital costs and operating costs, for ER&I programs (not including ash disposal expense)?

YR.1 n/a YR.3 n/a YR.6 n/a

3.4.6 What are the expected costs of ash disposal?

YR.1 n/a YR.3 n/a YR.6 n/a

3.4.7 Is ash disposal to be:
n/a on-site?
n/a in county?
n/a long-haul?

3.4.8 Please describe the funding mechanism(s) that will fund the costs of this component.

3.5 Land Disposal Program
(If you have more than one facility of this type, please copy this section to report them.)

3.5.1 Provide the following information for each **land disposal facility** in your jurisdiction which receives garbage or refuse generated in the county.
Landfill Name: n/a
Owner: n/a
Operator: n/a

3.5.2 Estimate the **approximate tonnage** disposed at the landfill by **WUTC regulated haulers.** If you do not have a scale and are unable to estimate tonnages, estimate using cubic yards, and indicate whether they are compacted or loose.[1]

YR.1 ____n/a_____ YR.3 ____n/a_____ YR.6 ____n/a_____

3.5.3 Using the same conversion factors applied in 3.5.2, please estimate the **approximate tonnage** disposed at the landfill by other contributors.

YR.1 ____n/a_____ YR.3 ____n/a_____ YR.6 ____n/a_____

3.5.4 Provide the cost of operating (including capital acquisitions) each landfill in your jurisdiction. For any facility that is privately owned and operated, skip these questions.

YR.1 ____n/a_____ YR.3 ____n/a_____ YR.6 ____n/a_____

3.5.5 Please describe the funding mechanism(s) that will defray the cost of this component.

3.6 Administration Program

3.6.1 What is the budgeted cost for administering the solid waste and recycling programs and what are the major funding sources.

Budgeted Cost

The estimated budgeted cost for administering the solid waste and recycling programs is an estimated ten percent. It is anticipated that the Division will operate with the same budget through year six (2017) with adjustments for inflation (CPA).

Funding Source

Funding for all solid waste system costs (including Administration Costs) comes from several sources as detailed in 3.1.3.

3.6.2 Which cost components are included in these estimates?

All Administration Costs (direct costs in the Solid Waste Program and indirect costs in Clark County Government) are captured in the Clark County Solid Waste Enterprise Fund.

3.6.3 Please describe the funding mechanism(s) that will recover the cost of each component.

Funding for all solid waste system costs (including Administration Costs) comes from several sources as detailed in 3.1.3.

3.7 Other Programs

For each program in effect or planned which does not readily fall into one of the previously described categories please answer the following questions. (Make additional copies of this section as necessary.)

3.7.1 Describe the program, or provide a page number reference to the plan.
n/a

3.7.2 Owner/Operator: _____
n/a

3.7.3 Is WUTC Regulation Involved? If so, please explain the extent of involvement in section 3.8.
n/a

3.7.4 Please estimate the anticipated costs for this program, including capital and operating expenses.

YR.1 ___n/a_____ YR.3 ___n/a_____ YR.6 __n/a_____

3.7.5 Please describe the funding mechanism(s) that will recover the cost of this component.
n/a

3.8 References and Assumptions (attach additional sheets as necessary)
n/a

4. FUNDING MECHANISMS: This section relates specifically to the funding mechanisms currently in use and the ones which will be implemented to incorporate the recommended programs in the draft plan. Because the way a program is funded directly relates to the costs a resident or commercial customer will have to pay, this section is crucial to the cost assessment process. Please fill in each of the following tables as completely as possible.

Proposed changes in the draft *Clark County Comprehensive Solid Waste and Moderate Risk Waste Management Plan:*

- Improvements to Central Transfer Station (private) transfer facility to address traffic concerns
- Transfer facility ban on accepting moderate risk waste
- Policy limiting construction of landfills in Clark County
- Evaluate formation of a disposal district

Table 4.1.1 Facility Inventory

Facility Name	Type of Facility	Tip Fee per Ton	Transfer Cost**	Transfer Station Location	Final Disposal Location	Total Tons Disposed	Total Revenue Generated (Tip Fee x Tons)
All transfer stations and the materials recovery facility are privately owned and operated by Waste Connections (d/b/a Columbia Resource Company) under a long-term transfer, transport and disposal contract with Clark County. Tipping fees are paid by the users of the facilities. Tipping fees are set contractually (see table 4.1.4). Tipping fees increase or decrease annually at 82% of the CPI. MRF fees are paid by the county and cities (users of the facility) – these fees are set contractually and increase or decrease at 82% of the CPI.							

Table 4.1.2 Tip Fee Components

Tip Fee by Facility	Surcharge	City Tax	County Tax	Transportation Cost	Operational Cost	Administration Cost	Closure Costs
Transfer facilities are privately owned and operated – tipping fees are set contractually and are not identified by components.							

Table 4.1.3 Funding Mechanism

Name of Program Funding Mechanism will defray costs	Bond Name	Total Bond Debt	Bond Rate	Bond Due Date	Grant Name	Grant Amount	Tip Fee	Taxes	Other	Surcharge

Proposed changes in the draft *Clark County Comprehensive Solid Waste and Moderate Risk Waste Management Plan:*

- Improvements to Central Transfer Station (private) transfer facility to address traffic concerns – cost impact for any capital improvements or acquisitions will be evaluated with any decision to move forward on a project. Funding options may include: Extending the contract term with CRC to allow additional time to recoup capital and, if applicable, operating costs; System-wide increases to the tipping fees and/or transaction fees; Facility specific increases to transaction fees

- Transfer facility ban on accepting moderate risk waste - cost impact of implementing this policy will be incremental to the County and these costs will be absorbed in the current County Solid Waste budget; small quantity generators who are currently using the transfer facilities to dispose of their hazardous waste will incur additional cost for hazardous waste disposal

- Policy limiting construction of landfills in Clark County - cost impact of implementing this policy will be incremental and any associated costs will be absorbed in the current County Solid Waste budget

- Evaluate formation of a disposal district – cost impact of implementing this will be incremental and any associated costs will be absorbed in the current County Solid Waste budget

Table 4.1.4 Tip Fee Forecast

Tip Fee per Ton by Facility	Year One	Year Two	Year Three	Year Four	Year Five	Year Six
Non-Drop Box Loads	$82.78	$84.28	$85.61	$87.32	$89.07	$90.85
Drop Box Loads	$73.29	$74.62	$75.81	$77.33	$78.87	$80.45
Transaction Fee	$10.00	$10.00	$10.00	$10.00	$10.00	$10.00
Assumption: 2% increase in tipping fees per year; transaction fee remains unchanged						

4.2 **Funding Mechanisms** summary by percentage: In the following tables, please summarize the way programs will be funded in the key years. For each component, provide the expected percentage of the total cost met by each funding mechanism. (E.g. Waste Reduction may rely on tip fees, grants, and collection rates for funding). You would provide the estimated responsibility in the table as follows: Tip fees=10%; Grants=50%; Collection Rates=40%. The mechanisms must total 100%. If components can be classified as "other," please note the programs and their appropriate mechanisms. Provide attachments as necessary.

Table 4.2.1 Funding Mechanism by Percentage

Year One

Component	Interest %	Misc Rev %	Miscellaneous Revenue %	Grant %	Grant %	Program Rev %	Reserve %	Program Revenue %	Total	Reserve %	Total	Total
WR/Recycling (Combined)					5%					95%		100%
Recycling					100%							100%
Waste Reduction					100%							100%
Solid Waste System						100%						100%
Enforcement						100%						100%
Planning						100%						100%
Administration						100%						100%
Other Capital Transfer	34%		7%			5%				54%		100%

Table 4.2.2 Funding Mechanism by Percentage

Year Three

Component	Interest %	Misc Rev %	Miscellaneous Revenue %	Grant %	Grant %	Program Rev %	Reserve %	Program Revenue %	Total	Reserve %	Total	Total
WR/Recycling (Combined)					14%	86%		0%				100%
Recycling	0%		0%		75%	25%						100%
Waste Reduction					100%	0%						100%
Solid Waste System	0%					100%						100%
Enforcement						100%						100%
Planning						100%						100%
Administration	59%		12%			29%						100%

Table 4.2.3 Funding Mechanism by Percentage

Year Six

Component	Interest %	Misc Rev %	Miscellaneous Revenue %	Grant %	Grant %	Program Rev %	Reserve %	Program Revenue %	Total	Reserve %	Total	Total
WR/Recycling (Combined)					9%	91%						100%
Recycling					84%	16%						100%
Waste Reduction					100%	0%						100%
Solid Waste System						100%						100%
Enforcement						100%						100%
Planning						100%						100%
Administration	59%		12%			29%						100%

4.3 References and Assumptions

Please provide any support for the information you have provided. An annual budget or similar document would be helpful.
Data Report
Budget Report for 2015/16

4.4 Surplus Funds

Please provide information about any surplus or saved funds that may support your operations.

Carry forward in the solid waste fund may be appropriated through the next budget cycle for capital and one time project expenses. In the event of a “disaster” or “event” such funds may be used to help fund debris cleanup operations.

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Appendix F

Regulations Applicable to the Clark County Regional Solid Waste Management System

This table lists revalent regulations applicable to the Clark County Regional Solid Waste Management Systems. These are arranged in Federal, State & Local regulations.

Subject Area	Regulatory Agency(s)	Regulation	Summary	Electronic Link
Federal Regulations				
Clean Air	U.S. EPA	Clean Air Act	Regulates air pollutant emmissions; establishing emissions standards for solid waste landfills.	http://www.epa.gov/oar/caa/
Clean Water	U.S. EPA	Clean Water Act	Regulates discharges to waters through: (a) the NPDES permit program and (b) pretreatment standards that regulate discharge to publicly owned waste water treatment facilities	http://www.epa.gov/lawsregs/laws/cwa.html
Clean Water	U.S. EPA	Safe Drinking Water Act	Sets maximum contaminant levels for drinking water supplies, including surface and groundwater sources	http://www.epa.gov/safewater/sdwa/index.html
Hazardous Waste	U.S. EPA	Universal Waste Rule	Streamlines regulation of certain hazardous wastes.	http://www.epa.gov/osw/laws-regs/regs-haz.htm
Hazardous Waste	U.S. Dept. of Labor	Hazardous Materials Transportation Act	Regulates the transportation of hazardous materials.	http://www.osha.gov/SLTC/trucking_industry/transportinghazardousmaterials.html
Hazardous Waste Management Act	U.S. EPA	Resource Conservation and Recovery Act	The primary federal legislation addressing solid wast and hazardous waste management.	http://www.epa.gov/rcraonline/
Industrial Plant Sludge	U.S. EPA	40 CFR Part 503	Regulations and establishes classifications of sewage sludges	http://www.epa.gov/region6/water/npdes/biosolids/index.htm
Pesticides	U.S. EPA	Federal Insecticide, Fungicide and Rodenticide Act (FIFRA)	Regulates the manufacture, use, application and disposal of pesticides	http://www.epa.gov/agriculture/lfra.html
Superfund Amendments	U.S. EPA	Superfund Amendments and Reauthorization Act (SARA)	Establishes requirements related to emergency planning notification, emergency release notification and reporting of chemical releases by industry for community right to know information.	http://www.epa.gov/superfund/policy/sara.htm
Superfund Cleanup Sites	U.S. EPA	Comprehensive Environmental Response, Compensation & Liability Act (CERCLA)	Also known as Superfund, provides for the cleanup of sites conaminated by hazardous waste.	http://www.epa.gov/superfund/policy/cercla.htm

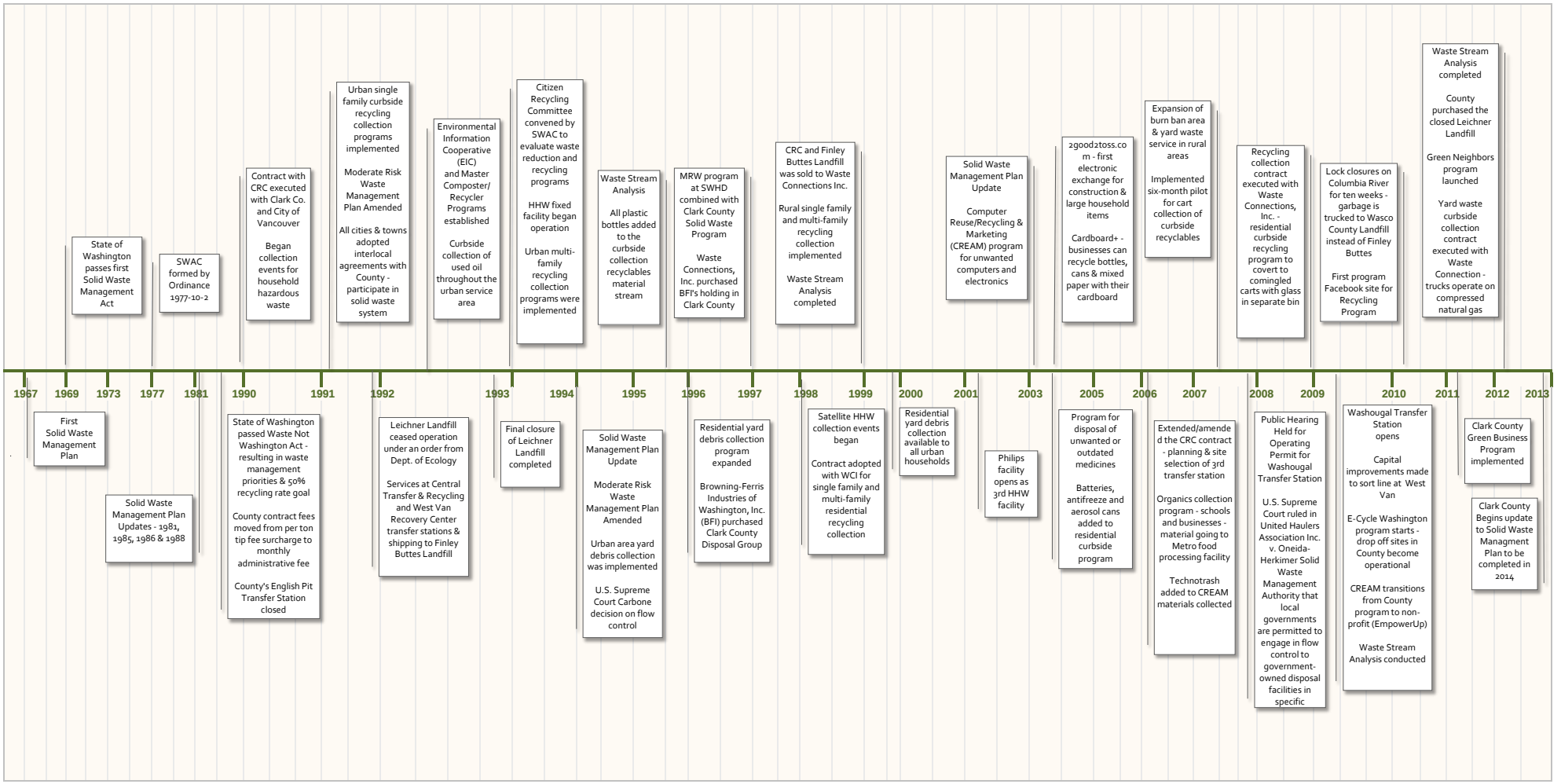
Subject Area	Regulatory Agency(s)	Regulation	Summary	Electronic Link
Superfund sites	U.S. EPA	--	List of Superfund sites	http://cfpub.epa.gov/supercpad/cursites/srchsites.cfm
Toxic Substances	U.S. EPA	Toxic Substances Control Act (TSCA)	Regulates the manufacture, distribution, use, processing and disposal of chemical substances	http://www.epa.gov/agriculture/lsca.html
State Regulations				
Ash from MSW incineration	Dept. of Ecology	RCW 70.138	Regulates ash from MSW incineration	http://apps.leg.wa.gov/RCW/default.aspx?cite=70.138
Fees on solid waste collection	Dept. of Ecology	RCW 36.58; 36.58A	Authority to counties to generate revenue on solid waste collection	http://apps.leg.wa.gov/rcw/default.aspx?cite=36.58
Hazardous & Dangerous Waste	Dept. of Ecology	WAC 173.303	Regulates the transportation, treatment, storage and disposal of hazardous and dangerous waste.	http://apps.leg.wa.gov/WAC/default.aspx?cite=173-303
Hazardous Waste	Dept. of Ecology	RCW 70.105.220	Hazardous Waste Management Act requires local governments to prepare and implement local hazardous waste management plans & establish programs to manage moderate risk waste	http://apps.leg.wa.gov/RCW/default.aspx?cite=70.105
Hazrdous Waste	Dept. of Ecology	RCW 70.105D	Model Toxics Control Act (MTCA) provides for the identification and cleanup of hazardous sites in Washington State.	http://apps.leg.wa.gov/RCW/default.aspx?cite=70.105D
Small Quantity Generators	Dept. of Ecology	n/a	Searchable database for several different type of hazarous waste handling facilities located in Clark County	http://www.ecy.wa.gov/programs/hwtr/hwfacilities/
Solid Waste Handling Facilities	Dept. of Ecology	WAC 173.304	Regulations for solid waste handling facilities that were existing prior to 2/10/03	http://apps.leg.wa.gov/WAC/default.aspx?cite=173-304
Municipal Solid Waste Landfills	Dept. of Ecology	WAC 173-351	Criteris for municipal solid waste landfills	http://apps.leg.wa.gov/WAC/default.aspx?cite=173-351
Solid Waste Handling Facilities	Dept. of Ecology	WAC 173.350	Regulations for solid waste handling facilities permitted after 2/10/03	http://apps.leg.wa.gov/WAC/default.aspx?cite=173-350
Solid Waste Management Plan	Dept. of Ecology	RCW 70.95	Washington Solid Waste Management, Reduction and Recycling Act requires counties to prepare and review (at least every five years) a Comprehensive Solid Waste Management Plan	http://apps.leg.wa.gov/RCW/default.aspx?cite=70.95
Solid Waste Management Plan	Dept. of Ecology	Ecology's Guidelines for the Development of Local Solid Waste Management Plans and Plan Revisions	Guidelines for the preparation of local solid waste management plans	https://fortress.wa.gov/ecy/publications/publications/1007005.pdf
State's Solid Waste Management Plan	Dept. of Ecology	Beyond Waste Plan	State of Washington's Solid Waste Management Plan	http://www.ecy.wa.gov/beyondwaste/
Used Oil	Dept. of Ecology	Used Oil Recycling Act	Requires local hazardous waste management plans to include a used oil recycling element.	http://apps.leg.wa.gov/RCW/default.aspx?cite=70.95I

Subject Area	Regulatory Agency(s)	Regulation	Summary	Electronic Link
Wa. State Recycling Goal	Dept. of Ecology	RCW 70.95.010	State's goal of a statewide recycling rate of 50%	http://apps.leg.wa.gov/RCW/default.aspx?cite=70.95.010
Washington Contaminated Sites List	Dept. of Ecology	--	List of "Confirmed and Suspected Contaminated Sites List" in Washington State	http://www.ecy.wa.gov/programs/tcp/sites_brochure/SiteLists_CSCSinstr.htm
Water Quality from solid waste facilities	Dept. of Ecology	WAC 173.216; 173.220; 173.240	State waste discharge permit program;NPDES permit program; plans for construction of water facilities	http://apps.leg.wa.gov/wac/default.aspx?cite=173
Contracting for solid waste services	Dept. of Ecology & WUTC	RCW 36.58; 35.21; 35A.21; 81.77	Regulates how cities and counties contract for solid waste services and how they generate revenues to fund solid waste management activities	http://apps.leg.wa.gov/rcw/
Annexation of franchised areas	WUTC	RCW 35.02.160	Provides fro the orderly cancellation or acquisition of franchises in territories that have been annexed into cities	http://apps.leg.wa.gov/RCW/default.aspx?cite=35.02.160
Collection & transport of recyclable materials	WUTC	RCW 81.80	Collection and transport of recyclable materials from nonresidential generators is regulated by WUTC	http://apps.leg.wa.gov/RCW/default.aspx?cite=81.80
Solid waste collection activities	WUTC	RCW 81.77	Washington Utilities & Tranportation Commission regulates the collection of solid waste and the source separated recyclables from residences if the local government does not contract for this service	http://apps.leg.wa.gov/RCW/default.aspx?cite=81.77
Solid waste collection activities	WUTC	WAC 480.70	Washington Utilities & Tranportation Commission regulates the collection of solid waste	http://apps.leg.wa.gov/WAC/default.aspx?cite=480-70
Oregon's Recycling Requirements	OR Dept. of Environmental Quality	ORS 459A	As Clark County uses a solid waste disposal facility located in Oregon, we must meet the applicable Oregon recycling requirements	http://www.deq.state.or.us/regulations/statutes.htm
Oregon's Solid Waste Management	OR Dept. of Environmental Quality	OAR 340-93	Regulates solid waste in the State of Oregon	http://arcweb.sos.state.or.us/pages/rules/oars_300/oar_340/340_093.html
Air Pollution	Southwest Clean Air Agency	WAC 173.400	General regulations for air pollution sources	http://apps.leg.wa.gov/WAC/default.aspx?cite=173-400
Outdoor burning	Southwest Clean Air Agency	WAC 173.425	Prohibits outdoor burning in certain areas	http://apps.leg.wa.gov/WAC/default.aspx?cite=173-425
Asbestos Disposal	Southwest Clean Air Agency	RCW 49.26	Regulates the handling and disposal of asbestos	http://apps.leg.wa.gov/RCW/default.aspx?cite=49.26&full=true
Poisons	Washington Poison Center	n/a	Information on poisons and prevention	http://www.wapc.org/

Subject Area	Regulatory Agency(s)	Regulation	Summary	Electronic Link
Local Regulations				
Solid Waste Advisory Commission	Clark County	Chapter 24.16	Clark County Ordinance forming the Clark County's Solid Waste Advisory Commission (SWAC)	http://www.codepublishing.com/wa/clarkcounty.html
Solid Waste Disposal	Clark County	Chapter 9.32	Regulation for County designated transfer stations; removal of recyclables from containers & litter control	http://www.codepublishing.com/wa/clarkcounty.html
Solid Waste Management	Clark County	Chapter 24.12	Regulates and control solid waste management within Clark County	http://www.codepublishing.com/wa/clarkcounty.html
Solid Waste Zoning Permits	Clark County	Chapter 40.260.200	Regulates premises utilized for solid waste handling and/or disposal facilities.	http://www.codepublishing.com/wa/clarkcounty.html
Shoreline Master Program	Clark County	Chapter 40.460	Governs activities on and near lakes, streams, and rivers	http://www.cityofvancouver.us/ced/page/environmental-planning-0
Refuse dumping	City of Battle Ground	Title 8.04	Prohibits dumping of refuse in the City of Battle Ground.	http://www.mrsc.org/mc/battleground/battlgr08/battlgr0804.html
Refuse Collection and Disposal	City of Camas	Chapter 13 Division III	Regulates garbage collection and disposal in the City of Camas.	http://library.municode.com/index.aspx?clientId=16241
Solid Waste Plan	City of La Center	Chapter 8.35	Provides for the adoption of the solid waste management plan.	http://www.codepublishing.com/wa/lacenter/
Litter Control	City of La Center	Chapter 8.40	Adopts by reference the State's Waste Reduction, Recycling and Model Litter Control Act	http://www.codepublishing.com/wa/lacenter/
Solid Waste & Recycling	City of Ridgefield	Chapter 8	Regulates debris, garbage collection, recyclables collection & litter in the City of Ridgefield.	http://library.municode.com/index.aspx?clientId=16582
Recyclable Materials	City of Vancouver	Chapter 5.62	Regulates the collection of recyclable materials.	http://www.cityofvancouver.us/MunicipalCode.asp?menuid=10462&submenuID=10478&title=title_5&chapter=62&VMC=index.html
Garbage Disposal	City of Vancouver	Chapter 6.12	Regulates garbage disposal in the City of Vancouver.	http://www.cityofvancouver.us/MunicipalCode.asp?menuid=10462&submenuID=10478&title=title_6&chapter=12&VMC=index.html
Zoning of Solid Waste Facilities	City of Washougal	Title 18	Regulates premises utilized for solid waste handling and/or disposal facilities.	http://www.mrsc.org/wa/washougal/index_dtsearch.html
Regulated Waste	City of Washougal	Title 16	Regulates the handling of hazardous and danagerous waste.	http://www.mrsc.org/wa/washougal/index_dtsearch.html
Health & Sanitation	City of Washougal	Title 7	Regulates garbage and recycling collection.	http://www.mrsc.org/wa/washougal/index_dtsearch.html

Appendix G

Milestones for Clark County Solid Waste Management



Appendix H
Public Involvement and Outreach Plan
Sample Outline

1. Background
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    a. Measuring
    b. Monitoring
    c. Timeline
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        vii. Partnership Development
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d. Status
e. Date Completed

11. Evaluation of Results

Appendix I

2012 Waste Stream Analysis

for Clark County, Washington

December 2012

GREEN SOLUTIONS

ENVIRONMENTAL CONSULTING

GREEN SOLUTIONS
ENVIRONMENTAL CONSULTING

2012 WASTE STREAM ANALYSIS

Prepared for:

Clark County
Department of Environmental Services,
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with assistance from:

Environmental Practices, LLC
Portland, OR
(503) 230-9513

December 2012

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Cover photos, clockwise from upper left:

1) Sample waiting to be sorted (another sample can be seen in the background, contained in the gray trash cans), May 22, 2012;
2) Sorting crew at CTR, May 22, 2012; and
3) Load from the compactor that serves a group of Clark County buildings, waiting to be sampled at West Van, May 25, 2012.

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EXECUTIVE SUMMARY

INTRODUCTION

This study examined the quantity and composition of solid waste (garbage) disposed by homes and businesses in Clark County in 2012. The goals of this study were to:

- provide data for evaluating current waste diversion programs and for planning future programs.
- provide data that can be used to evaluate the performance of waste diversion activities at the transfer stations.
- satisfy the County's contractual obligation to periodically conduct a comprehensive analysis of the municipal solid waste stream.

This waste composition study was conducted by the environmental consulting firms of Green Solutions and Environmental Practices, LLC. Waste Connections provided substantial assistance by surveying self-haul customers, arranging loads, pulling samples from loads, and providing waste quantity data. County solid waste staff and others also assisted with this project.

RESULTS

Waste Quantities

The quantity (tonnage) of solid waste disposed by different types of customers and sources ("waste generators") was determined through existing transaction records and additional data provided by Waste Connections, the City of Camas, and others. Table E-1 shows the results of the waste quantity analysis.

Waste Composition

The composition of the County's solid waste stream was determined by randomly selecting and sorting samples of waste from loads delivered to the three transfer stations in Clark County. The waste composition results are illustrated in Figure E-1. The results shown in Figure E-1 are a weighted annual average for all sources.

Figure E-1 shows all of the categories measured in this study. Some types of materials were not measured in this study, including materials such as clothing, diapers and cosmetics, and these materials are included in the broad category called "remainder."

TABLE E-1
ANNUAL QUANTITIES OF DISPOSED WASTES

Type of Waste Generator	Annual Amounts	
	Tons	Percent
Residential Self-Haul	29,280	12.0
Non-Residential Self-Haul	32,520	13.3
Self-Haul Subtotal	**61,810**	**25.4**
Single-Family	77,530	31.8
Multi-Family	12,800	5.2
Commercial	45,390	18.6
Commercial Compactors	46,240	18.6
Garbage Truck Subtotal	**181,960**	**74.6**
Total	**243,770**	**100.0**

Note: Quantities shown are for the period November 1, 2011 through October 31, 2012.

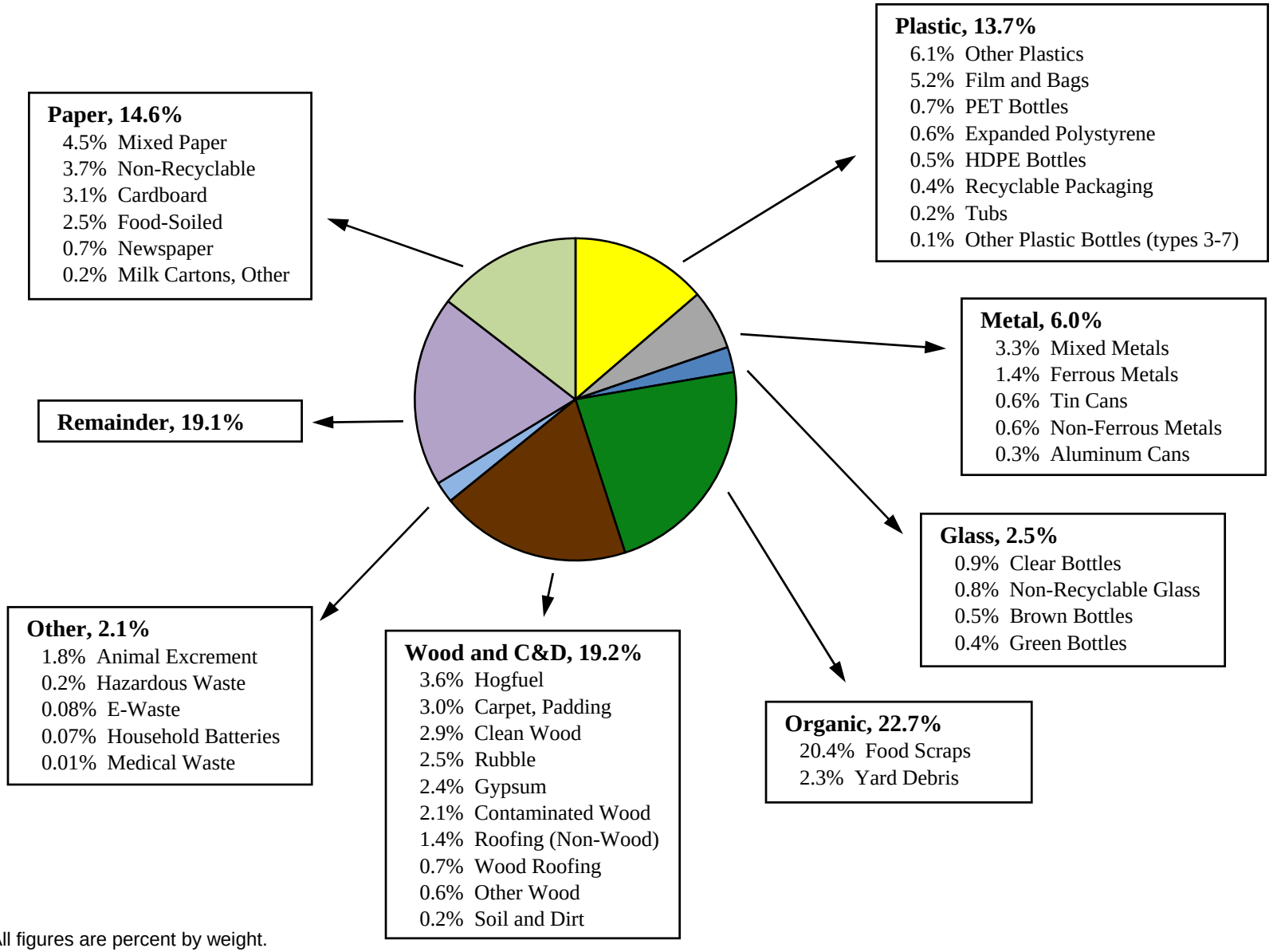
CONCLUSIONS

Waste Quantities

A number of observations and conclusions can be made by examining the waste quantity data:

- **Residential Self-Haul:** the Residential Self-Haul waste stream is made up of numerous small loads delivered to the transfer stations in cars, pickup trucks and similar vehicles. It is an important service to allow people to haul their own waste to the transfer stations, but this is also the least efficient method of garbage collection. While this source contributes only 12.0% of the County's total waste stream, this type of generator is responsible for 74% of the traffic at the transfer stations. Self-haul loads average 436 pounds per vehicle, compared to 9,000 to 14,000 pounds per load for municipal and private garbage trucks, but frequently take as long or longer to unload as garbage trucks.
- **Non-Residential Self-Haul:** this type of generator brings in slightly more waste (13.3%) than Residential Self-Haul generators, and it does so with fewer trips and larger loads. Based on transaction records for the period of this study, Non-

FIGURE E-1
WASTE COMPOSITION RESULTS
CLARK COUNTY WASTE STREAM ANALYSIS



Note: All figures are percent by weight.

Residential Self-Haul loads represent 10.6% of the vehicle trips through the transfer stations and deliver an average of 1,242 pounds per vehicle.

- **Single-Family:** Single-Family wastes contribute almost one-third (31.8%) of the total tonnage of the County's waste stream. This figure does not include Residential Self-Haul quantities, which are also almost entirely from single-family homes.
- **Multi-Family:** this study shows that 12,800 tons per year, or 5.2%, of Clark County's waste stream is from Multi-Family units. This is consistent with the amount found in the previous study (14,160 tons, or 5.0%, of the waste stream in 2008).
- **Commercial and Commercial Compactors:** the Commercial and Commercial Compactor waste streams together make up 37.2% of the County's waste stream, with nearly equal amounts collected by garbage trucks servicing dumpsters (45,390 tons per year) versus single-source roll-off's and compactors (46,240 tons). Both of these figures are significantly lower than in the previous study, when these two sources together contributed almost half of the County's waste stream (123,850 tons in 2008, or 45.0% of the total).

Waste Composition

There are distinct differences in the waste streams disposed by the different types of waste generators, as can be seen in several of the tables and figures in this report. For each of the generators, a few noteworthy conclusions can be drawn:

- **Single-Family:** the largest material in this waste stream is food scraps (29.4% by weight), which is disposed at four times the quantity as the next largest material (plastic film and bags, at 7.2%). There are significant quantities of various grades of paper (mixed waste paper, at 4.6%; non-recyclable paper, at 4.0%; and food-soiled paper, at 3.9%). There are also substantial amounts of other plastics, at 4.1%, and animal excrement ("kitty litter)," at 3.8%.

  The Single-Family waste stream contains only 15.6% of the materials collected through the curbside recycling program (including glass and yard debris). This is down from the 20.9% that was found in the study four years ago.
- **Multi-Family:** the Multi-Family waste stream also contains a high amount of food scraps (22.6%), with mixed waste paper (7.7%) and animal excrement (5.5%) being the next two highest materials. There are also significant quantities of film and bags (5.0%), other plastics (4.3%), and various grades of paper.

  The Multi -Family waste stream contains 28.4% recyclable materials (including the materials collected through the curbside program and yard debris).

- **Residential Self-Haul:** self-haul loads from residential sources have more wood, construction debris and metal than other residential sources, and less "regular" household trash (paper, plastic and food scraps), reflecting the activities such as remodeling and other special projects that are often the source of self-haul waste. Other plastics is the material present in the single largest quantity, at 10.5%, followed by mixed metals (10.5%), wood (hogfuel, 9.4%), food scraps (7.8%), and carpeting (6.8%).

  The Residential Self-Haul waste stream contains the highest amount of recyclable materials, with 30.6% of this waste consisting of those materials that are collected through the curbside recycling program (including glass and yard debris). Half of this amount consists of various grades of metal and one-third consists of various grades of paper.

- **Non-Residential Self-Haul:** like self-haul waste from residential sources, Non-Residential Self-Haul loads are often the result of construction activities or other special projects. The large amount of wood (26.3% for all grades taken together) and construction and demolition (C&D) waste (36.6%) clearly shows the influence of construction activities on this waste stream. Although this waste generator contributes only 13.3% of the County's total waste stream, Non-Residential Self-Haul customers are disposing of 36% of the wood and 52% of the C&D materials.

  The Non-Residential Self-Haul waste stream contains 22.6% recyclable materials (for the materials collected through the curbside program and yard debris).

- **Commercial:** waste from this source also contains a large amount of food scraps (33.1%), followed by plastic film and bags (8.3%), mixed waste paper (6.7%), and non-recyclable paper (5.2%). The Commercial waste stream contains 20.3% recyclable materials (for the materials collected through the curbside program and yard debris).

- **Commercial Compactors:** waste from this source contains less food scraps (11.6%) than the other commercial category, but it is still the largest single category, followed closely by other plastics (10.5%). Wood is the largest category overall (19.3%), followed by non-recyclable paper (4.6%), mixed metals (4.4%), cardboard (4.2%), and plastic film and bags (3.9%).

  The Commercial Compactor waste stream contains 20.3% recyclable materials (for the materials collected through the curbside program and yard debris).

General Conclusions

Additional conclusions that resulted from this study include:

- Plastic film is present in most of the waste streams in significant amounts, especially given the fact that the individual pieces of this material are very light. In other

words, it takes a lot of this material to add up to the amounts shown in the results. Likewise for expanded polystyrene ("Styrofoam"). Although the amounts of expanded polystyrene are not that high on a weight basis, these figures represent a large volume of material.

- "Other plastics" also contribute a significant amount to the County's waste stream, and probably bear additional scrutiny for possible recycling or waste reduction programs.

SECTION ONE
INTRODUCTION

A. SCOPE AND OBJECTIVES

This study examined the quantity and composition of solid waste (garbage) disposed by homes and businesses in Clark County in 2012 at the three in-county transfer stations. The goals of this study were to:

- provide data for evaluating current waste diversion programs and for planning future programs.
- provide data that can be used to evaluate the performance of waste diversion activities at the transfer stations.
- satisfy the County's contractual obligation to periodically conduct a comprehensive analysis of the municipal solid waste stream.

This waste composition study was conducted by the environmental consulting firm of Green Solutions, with assistance from Environmental Practices, LLC. Waste Connections provided substantial assistance by surveying self-haul customers, arranging loads, pulling samples from loads, and providing waste quantity data. County solid waste staff and others also assisted with this project.

B. BACKGROUND

There are three transfer stations in Clark County, all of which are operated by Waste Connections: the Central Transfer and Recycling Center, the Washougal Transfer Station, and the West Van Materials Recovery Center. Each of these facilities includes:

- a waste transfer operation, where waste is compacted into transfer trailers and later transported by barge to the Finley Buttes landfill in Oregon;
- an extensive recycling drop-off center;
- a household hazardous waste collection facility.

In addition, West Van offers a buy-back opportunity for some recyclables, yard debris collection, and a processing line for recyclable materials from residential and commercial sources. This study examined only the solid wastes brought to the transfer stations for disposal purposes, although the customer survey conducted as part of this

project also included customers that were only bringing in recyclables or household hazardous wastes.

SECTION TWO
RESULTS

A. OVERVIEW

This study examined mixed municipal solid waste brought for disposal to the West Van Materials Recovery Center (West Van), the Washougal Transfer Station (WTS), and the Central Transfer and Recycling Center (CTR). "Mixed municipal solid waste" is the term commonly used for general residential and commercial wastes, including the waste collected by garbage haulers and the waste delivered to transfer or disposal sites by the waste generators themselves ("self-haul").

Types of Waste Generators

The design of the sampling and data collection procedures for this study allowed information to be provided on the quantity and composition of waste disposed by different sources ("waste generators") as well as the County's overall waste stream. For this purpose, the County's waste stream was divided into six groups according to the source and method of delivery. The six groups are:

- **Residential Self-Haul**: this is waste that is brought in by homeowners and renters who generated the load of waste, although in some cases they may be assisting a family member, neighbor or acquaintance who actually generated the waste. This category also includes landlords hauling their tenants' waste. This type of waste is typically transported to the disposal site using a car or pickup truck, and there is a distinct pattern in the timing of such deliveries. Most of the Residential Self-Haul waste is brought to the disposal site on weekends or in the evenings (i.e., at times other than regular daytime work hours).

- **Non-Residential Self-Haul**: this waste is from businesses or contractors, and is typically brought in by an employee of that business. The pattern in the delivery of this waste tends to be the opposite of Residential Self-Haul wastes, occurring primarily during regular work hours, and is typically brought in with larger vehicles (dump trucks, pickup trucks with trailers, and other trucks). A substantial amount of this waste stream consists of loads of construction and demolition wastes brought in by construction contractors.

- **Single-Family**: by definition, this waste is brought in by garbage haulers (including municipal collectors), and is collected from single-family homes. This waste is typically bagged before collection, relatively heterogeneous (consisting of small pieces of many different types of materials), and is delivered to the disposal site most often between mid-morning and mid-afternoon Monday through Friday.

- **Multi-Family:** by definition, this waste is brought in by garbage haulers or municipal collectors from apartment buildings. This waste is often bagged before collection, relatively heterogeneous (consisting of small pieces of many different types of materials), and is delivered to the disposal site most often between early morning and mid-afternoon Monday through Friday. Most Multi-Family waste is mixed with Commercial waste when collected because both types of customers use dumpsters for garbage collection and are collected on routes served by front-loading garbage trucks. Larger multi-family sites often use a compactor for their wastes, in which case these loads are separately brought to the disposal sites using the same equipment that services Commercial Compactors.

- **Commercial**: for this study, "commercial" waste is defined to include wastes from businesses (commercial and industrial) and institutions (schools, hospitals, government offices, etc.). These wastes are typically collected using front-loading garbage trucks that empty dumpsters and are usually delivered early morning through mid-afternoon Monday through Friday.

- **Commercial Compactors**: this is waste that is brought to one of the transfer stations from businesses, industries or institutions, delivered by a municipal collection crew or private garbage hauler in a stationary compactor or roll-off container (dropbox). Since these wastes are in large containers that are brought directly to one of the transfer stations to be emptied, the waste is only from the one business or institution where the compactor or roll-off was located (unless other types of wastes are thrown in at the point of generation, which sometimes occurs).

Construction and demolition (C&D) wastes and other special wastes are included in the above categories as appropriate for the source and delivery method. C&D waste is often delivered by employees of a construction company and so is included with Non-Residential Self-Haul waste, but C&D waste is also delivered by homeowners and landlords (i.e., Residential Self-Haul waste), or by waste haulers from construction sites (Commercial waste), or even by waste haulers delivering roll-off containers from do-it-yourself home remodeling projects (Single-Family waste).

B. WASTE QUANTITIES

The quantity (tonnage) of solid waste disposed by each type of generator was determined through existing transaction records and additional data provided by Waste Connections and others. The additional data provided by Waste Connections included:

- a survey of self-haul customers by scalehouse personnel. Data collected by this survey determined the breakdown of cash customers into residential and non-residential sources, and also determined how much waste was delivered by sources from the City of Vancouver versus the rest of Clark County.

- data from their customer records as to how much Single-Family, Multi-Family, and Commercial wastes were included in deliveries by their collection trucks to the transfer stations.

The City of Camas provided the information needed to allocate their waste deliveries into Single-Family, Multi-Family, and Commercial categories. Annual tonnage data for charge accounts (provided by Waste Connections) was analyzed by the consultants to allocate those tonnages between Residential Self-Haul and Non-Residential Self-Haul. Thus, tonnages for the four major types of customers (cash, charge accounts, private hauler, and municipal hauler) were allocated to the six generator types used in this study. The data used for this study was either for a one-year period coinciding with the period of this study (November 1, 2011 through October 31, 2012), or was weekly and monthly data coinciding with the timing of the waste sorting fieldwork. Table 1 shows the results of the waste quantity analysis.

One way to look at the waste quantity data is in terms of waste generation rates. Comparing Clark County's waste tonnages for the study period (243,770 tons) to recent population estimates (431,250 people in 2012 according to the Washington Office of Financial Management), leads to a per capita waste generation rate of 0.57 tons per person per year (down from 0.68 tons per person in 2008), or 3.10 pounds per person per day.

Waste quantity data can also be applied separately to residential and non-residential generators. For Clark County's estimated 2012 population (431,250 people) and the residential waste quantities (118,610 tons per year), the residential waste generation rate is 0.28 tons per person per year or 1.51 pounds per person per day. For non-residential waste quantities (125,160 tons per year) and an estimated 130,800 workers (from the Washington Employment Security Department for October 2012), the non-residential waste generation rate is 0.96 tons per employee per year or 5.24 pounds per employee per day (or 7.33 pounds per employee per day on the basis of a five-day work week).

The self-haul survey conducted by scalehouse personnel collected data on the geographic source of the waste (for customers from the City of Vancouver versus the rest of the County) in addition to determining whether it was from residential or non-residential sources. This data shows that:

- 40% of the cash customers in 2012 were residential self-haul customers from the City of Vancouver,
- 32% were residential self-haul customers from the rest of Clark County,
- 18% were non-residential self-haul customers from the City of Vancouver, and
- 11% were non-residential self-haul customers from the rest of the Clark County.

TABLE 1
QUANTITIES OF DISPOSED WASTES

Type of Waste Generator	March 2012		May 2012		August 2012		October 2012		Annual Amounts	
	Tons	Percent	Tons	Percent	Tons	Percent	Tons	Percent	Tons	Percent
Residential Self-Haul	2,280	11.8	2,740	12.8	3,120	13.3	2,250	10.4	28,280	12.0
Non-Residential Self-Haul	2,280	11.8	2,730	12.7	4,080	17.4	3,260	15.1	32,520	13.3
Self-Haul Subtotal	4,560	23.6	5,470	25.5	7,200	30.6	5,510	25.5	61,810	25.4
Single-Family	6,180	31.9	6,830	31.8	6,950	29.6	6,700	30.9	77,530	31.8
Multi-Family	1,050	5.4	1,130	5.3	1,150	4.9	1,150	5.3	12,800	5.2
Commercial	3,880	20.0	3,970	18.5	3,820	16.2	4,050	18.7	45,390	18.6
Commercial Compactor	3,680	19.0	4,070	19.0	4,390	18.7	4,230	19.5	46,240	19.0
Garbage Truck Subtotal	14,780	76.4	16,000	74.5	16,310	69.4	16,130	74.5	181,960	74.6
Totals	19,340	100.0	21,480	100.0	23,510	100.0	21,640	100.0	243,770	100.0

C. WASTE COMPOSITION

The composition of the County's solid waste stream was determined by randomly selecting and sorting samples of waste from loads delivered to West Van, WTS and CTR. Sampling was conducted Tuesday through Saturday for three quarters (March, May, and August 2012), and Sunday through Thursday in one quarter (October 2012). Each sample was sorted into 42 distinct categories of materials. Notes were also recorded on the field data form as to the specific source of the loads for Commercial Compactors and Non-Residential Self-Haul. The Glossary provides additional detail on the definitions used for this study for the types of generators and material categories. Appendix A shows the statistical certainty of the results.

Sampling Methods

The composition of the County's mixed municipal waste stream was determined by randomly selecting and sorting a total of 227 samples of waste. These samples were allocated between the types of generators based on the need to examine certain types in greater detail. A greater number of samples were taken for the waste streams that are considered inherently more variable (the two self-haul waste streams, Commercial wastes and Commercial Compactor wastes), and fewer of the samples were allocated to the waste streams that are typically less variable (Single-Family and Multi-Family). An additional 12 samples were taken from the compactor used by Clark County office buildings and the courthouse, and a separate report was provided for those results. The number of samples taken each quarter is shown in Table 2.

TABLE 2
NUMBER OF SAMPLES BY TYPE OF GENERATOR

Type of Waste Generator	March 2012	May 2012	August 2012	October 2012	Totals	
					Number	Percent
Residential Self-Haul	11	11	11	11	44	18%
Non-Residential Self-Haul	11	11	11	12	45	19%
Single-Family	8	8	8	7	31	13%
Multi-Family	6	6	6	7	25	11%
Commercial	10	10	10	8	38	16%
Commercial Compactors	11	10	10	13	44	18%
County Buildings	3	3	3	3	12	5%
Totals	60	59	59	61	239	100%

Waste Composition Results

Table 3 shows the annual average waste composition figures for each generator and for the entire County. The results for the entire County are also illustrated in Figure 1. The waste composition results for each generator are shown in Figures 2 through 7.

As can be seen in Table 3, there are substantial differences in the composition of wastes from the different sources. These differences can be explained by the different activities that created the wastes. Single-Family waste, for instance, is influenced by the activities associated with living in and maintaining a home. Residential Self-Haul waste contains typical household garbage but also contains some construction debris and other materials from the special projects that often motivate people to make a special trip to disposal facilities.

The Commercial waste stream in Clark County is dominated by various manufacturing and administrative activities, while the Non-Residential Self-Haul waste stream is dominated by construction activities. A business or institution will sometimes choose to haul their own waste, in which case the waste will not differ greatly from the waste that would have been collected by garbage haulers (Commercial waste), but Non-Residential Self-Haul wastes in many cases are from construction projects. Ample evidence of the contribution of construction activities to this waste stream is provided by the fact that over half of the Non-Residential Self-Haul waste stream is comprised of various grades of wood (26.3%) and C&D waste (36.6%).

Additional Data Collected

In addition to the results shown in the following tables and figures, a few other pieces of information were collected in the course of the fieldwork conducted for this project:

- **reusable materials**: samples containing reusable items or reusable amounts of wood and construction/demolition wastes were noted during the sorting process, but not very many samples were found to contain reusable materials. Only eight samples were found to contain reusables, which were primarily wood objects or materials and also a few items that fell in the "rubble" category (a toilet and a bag of clay-based aggregate for hydroponics). Five of the eight samples were from Residential Self-Haul generators, two were from Commercial Compactors, and one sample that contained reusables was from an apartment building (Multi-Family). For all of the samples taken together, the average amount of reusable materials in the County's entire waste stream is estimated to be 0.5% based on these results.

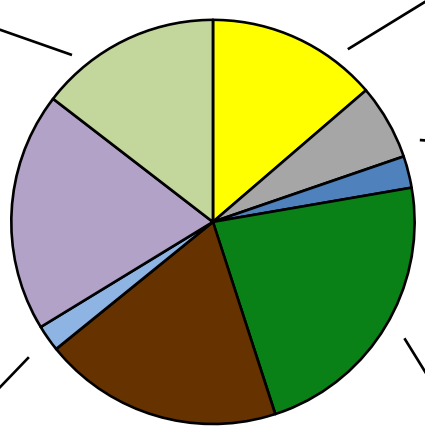
- **customer survey**: self-haul customers were surveyed at the three transfer stations on Saturday, August 11 to gather information about the frequency of their visits, the services used, the source of the loads, whether reusable materials were in their load, and other data. The results of this survey are shown in Appendix B.

TABLE 3
WASTE COMPOSITION RESULTS
CLARK COUNTY WASTE STREAM ANALYSIS

		Single-Family	Multi-Family	Residential Self-Haul	Non-Res. Self-Haul	Commercial	Commercial Compactors	Average for Entire County
PAPER	Newspaper	0.55%	2.35%	0.51%	0.00%	1.04%	0.50%	0.65%
	Cardboard	0.87%	3.22%	4.64%	4.84%	3.33%	4.20%	3.07%
	Mixed Waste Paper	4.60%	7.67%	4.71%	1.11%	6.73%	3.32%	4.46%
	Milk Cartons, Other	0.19%	0.34%	0.10%	0.06%	0.28%	0.14%	0.18%
	Food-Soiled Paper	3.86%	2.35%	1.04%	0.33%	3.88%	1.35%	2.50%
	Non-Recyclable Paper	3.97%	3.50%	1.68%	1.70%	5.20%	4.61%	3.72%
	Paper Subtotal	**14.05%**	**19.44%**	**12.68%**	**8.04%**	**20.46%**	**14.12%**	**14.57%**
PLASTIC	PET Bottles	0.83%	1.93%	0.49%	0.18%	1.06%	0.52%	0.74%
	HDPE Bottles	0.48%	1.01%	0.22%	0.01%	0.87%	0.30%	0.45%
	Bottles 3-7	0.06%	0.11%	0.04%	0.03%	0.06%	0.06%	0.06%
	Tubs	0.40%	0.30%	0.06%	0.04%	0.25%	0.07%	0.22%
	Film and Bags	7.16%	5.00%	2.10%	1.05%	8.27%	3.85%	5.20%
	Recyclable Packaging	0.60%	0.44%	0.19%	0.04%	0.37%	0.24%	0.36%
	Other Plastics	4.06%	4.28%	10.50%	3.36%	4.54%	10.51%	6.06%
	Expanded Polystyrene	0.58%	0.49%	0.63%	0.28%	0.38%	1.20%	0.62%
	Plastic Subtotal	**14.16%**	**13.56%**	**14.23%**	**4.99%**	**15.81%**	**16.76%**	**13.72%**
METAL	Aluminum Cans	0.33%	0.86%	0.19%	0.04%	0.50%	0.22%	0.31%
	Tin Cans	0.76%	1.20%	0.37%	0.20%	0.94%	0.10%	0.57%
	Ferrous Metals	0.79%	0.41%	2.75%	0.49%	0.59%	3.05%	1.36%
	Non-Ferrous Metals	0.47%	0.43%	1.22%	0.81%	0.17%	0.46%	0.55%
	Mixed Metals	1.46%	2.39%	10.45%	2.71%	1.07%	4.43%	3.25%
	Metal Subtotal	**3.80%**	**5.29%**	**14.98%**	**4.24%**	**3.26%**	**8.26%**	**6.03%**
ORGANIC	Food Scraps	29.41%	22.56%	7.81%	3.94%	33.14%	11.64%	20.38%
	Yard Debris	1.60%	1.46%	3.29%	3.05%	2.84%	2.15%	2.32%
	Organic Subtotal	**31.01%**	**24.02%**	**11.10%**	**6.99%**	**35.97%**	**13.79%**	**22.70%**
GLASS	Clear Bottles	1.13%	2.78%	0.62%	0.05%	1.23%	0.34%	0.88%
	Brown Bottles	0.61%	1.32%	0.50%	0.00%	0.82%	0.27%	0.53%
	Green Bottles	0.31%	0.52%	0.41%	0.03%	0.78%	0.15%	0.35%
	Non-Recyclable Glass	0.34%	0.51%	1.68%	2.73%	0.25%	0.18%	0.78%
	Glass Subtotal	**2.39%**	**5.13%**	**3.21%**	**2.81%**	**3.08%**	**0.94%**	**2.54%**
WOOD	Clean Wood	0.47%	0.28%	1.46%	7.79%	0.63%	7.13%	2.85%
	Hogfuel	0.46%	0.57%	9.44%	8.21%	0.45%	5.70%	3.57%
	Natural Wood	0.00%	0.00%	0.00%	0.03%	0.00%	0.00%	0.004%
	Roofing, Wood	0.00%	0.00%	0.00%	4.88%	0.00%	0.05%	0.66%
	Contaminated	0.56%	0.10%	2.65%	5.34%	0.18%	4.72%	2.14%
	Other Wood	0.05%	0.94%	1.33%	0.04%	0.06%	1.75%	0.57%
	Wood Subtotal	**1.54%**	**1.88%**	**14.89%**	**26.30%**	**1.32%**	**19.34%**	**9.80%**
CONST. & DEMO.	Gypsum	0.07%	0.00%	4.59%	8.11%	0.00%	3.73%	2.36%
	Rubble	0.44%	1.71%	3.75%	9.72%	0.01%	2.45%	2.45%
	Roofing	0.00%	0.01%	2.84%	6.27%	0.01%	0.90%	1.35%
	Carpet, Padding	0.26%	0.22%	6.79%	12.36%	0.53%	1.73%	2.99%
	Soil, Dirt	0.10%	0.04%	1.44%	0.11%	0.00%	0.08%	0.24%
	C&D Subtotal	**0.88%**	**1.99%**	**19.41%**	**36.56%**	**0.55%**	**8.89%**	**9.38%**
OTHER	Hazardous Wastes	0.06%	0.29%	0.31%	0.07%	0.18%	0.33%	0.18%
	Medical Wastes	0.01%	0.02%	0.00%	0.00%	0.02%	0.01%	0.01%
	Animal Excrement	3.76%	5.48%	0.96%	0.00%	0.67%	0.33%	1.79%
	Household Batteries	0.14%	0.07%	0.06%	0.01%	0.07%	0.01%	0.07%
	E-Waste	0.04%	1.13%	0.02%	0.00%	0.03%	0.00%	0.08%
	Other Subtotal	**4.01%**	**6.98%**	**1.35%**	**0.08%**	**0.98%**	**0.68%**	**2.12%**
REMAINDER	**Garbage**	**28.15%**	**21.70%**	**8.15%**	**9.99%**	**18.57%**	**17.23%**	**19.13%**
	TOTAL	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**
	Pounds of Samples Sorted:	7,357	4,978	6,568	5,355	8,024	6,485	38,766
	Number of Samples Sorted:	31	25	44	45	38	44	227

Note: All figures are percent by weight (except for the bottom two rows).

FIGURE 1
WASTE COMPOSITION RESULTS
CLARK COUNTY WASTE STREAM ANALYSIS



Plastic, 13.7%
- 6.1% Other Plastics
- 5.2% Film and Bags
- 0.7% PET Bottles
- 0.6% Expanded Polystyrene
- 0.5% HDPE Bottles
- 0.4% Recyclable Packaging
- 0.2% Tubs
- 0.1% Other Plastic Bottles (types 3-7)

Paper, 14.6%
- 4.5% Mixed Paper
- 3.7% Non-Recyclable
- 3.1% Cardboard
- 2.5% Food-Soiled
- 0.7% Newspaper
- 0.2% Milk Cartons, Other

Metal, 6.0%
- 3.3% Mixed Metals
- 1.4% Ferrous Metals
- 0.6% Tin Cans
- 0.6% Non-Ferrous Metals
- 0.3% Aluminum Cans

Remainder, 19.1%

Glass, 2.5%
- 0.9% Clear Bottles
- 0.8% Non-Recyclable Glass
- 0.5% Brown Bottles
- 0.4% Green Bottles

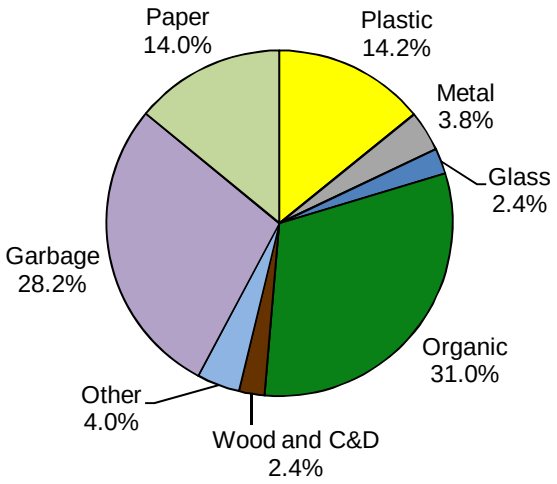
Other, 2.1%
- 1.8% Animal Excrement
- 0.2% Hazardous Waste
- 0.08% E-Waste
- 0.07% Household Batteries
- 0.01% Medical Waste

Wood and C&D, 19.2%
- 3.6% Hogfuel
- 3.0% Carpet, Padding
- 2.9% Clean Wood
- 2.5% Rubble
- 2.4% Gypsum
- 2.1% Contaminated Wood
- 1.4% Roofing (Non-Wood)
- 0.7% Wood Roofing
- 0.6% Other Wood
- 0.2% Soil and Dirt

Organic, 22.7%
- 20.4% Food Scraps
- 2.3% Yard Debris

Note: All figures are percent by weight.

FIGURE 2
SINGLE - FAMILY WASTE
CLARK COUNTY WASTE STREAM ANALYSIS



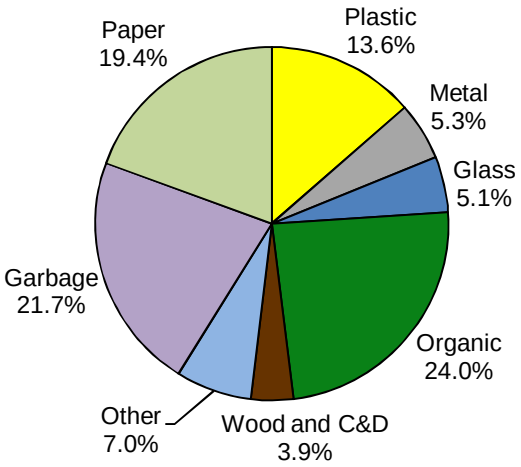
SUMMARY OF WASTE COMPOSITION RESULTS:

PAPER	Newspaper	0.6%
	Cardboard	0.9%
	Mixed Waste Paper	4.6%
	Milk Cartons, Other	0.2%
	Food-Soiled Paper	3.9%
	Non-Recyclable Paper	4.0%
	Paper Subtotal	**14.0%**
PLASTIC	PET Bottles	0.8%
	HDPE Bottles	0.5%
	Bottles 3-7	0.1%
	Tubs	0.4%
	Film and Bags	7.2%
	Recyclable Packaging	0.6%
	Other Plastics	4.1%
	Expanded Polystyrene	0.6%
	Plastic Subtotal	**14.2%**
METAL	Aluminum Cans	0.3%
	Tin Cans	0.8%
	Ferrous Metals	0.8%
	Non-Ferrous Metals	0.5%
	Mixed Metals	1.5%
	Metal Subtotal	**3.8%**

ORGANIC	Food Scraps	29.4%
	Yard Debris	1.6%
	Organic Subtotal	**31.0%**
GLASS	Clear Bottles	1.1%
	Brown Bottles	0.6%
	Green Bottles	0.3%
	Non-Recyclable Glass	0.3%
	Glass Subtotal	**2.4%**
WOOD C&D	Clean Wood	0.5%
	Hogfuel	0.5%
	Wood Roofing	0.0%
	Gypsum	0.1%
	Rubble	0.4%
	Roofing	0.0%
	Carpet and Padding	0.3%
	Other Wood, C&D	0.7%
	Wood, C&D Subtotal	**2.4%**
OTHER	Hazardous and Medical	0.1%
	Animal Excrement	3.8%
	Household Batteries	0.1%
	E-Waste	0.04%
	Other Subtotal	**4.0%**
	Remainder (Garbage)	**28.2%**

Note: All figures are percent by weight.

FIGURE 3
MULTI - FAMILY WASTE
CLARK COUNTY WASTE STREAM ANALYSIS

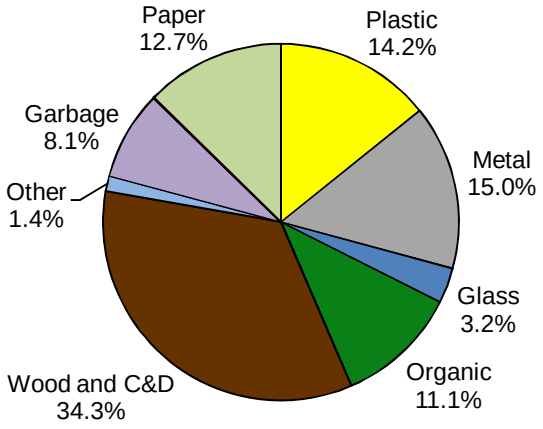


SUMMARY OF WASTE COMPOSITION RESULTS:

PAPER	Newspaper	2.4%
	Cardboard	3.2%
	Mixed Waste Paper	7.7%
	Milk Cartons, Other	0.3%
	Food-Soiled Paper	2.3%
	Non-Recyclable Paper	3.5%
	Paper Subtotal	**19.4%**
PLASTIC	PET Bottles	1.9%
	HDPE Bottles	1.0%
	Bottles 3-7	0.1%
	Tubs	0.3%
	Film and Bags	5.0%
	Recyclable Packaging	0.4%
	Other Plastics	4.3%
	Expanded Polystyrene	0.5%
	Plastic Subtotal	**13.6%**
METAL	Aluminum Cans	0.9%
	Tin Cans	1.2%
	Ferrous Metals	0.4%
	Non-Ferrous Metals	0.4%
	Mixed Metals	2.4%
	Metal Subtotal	**5.3%**
ORGANIC	Food Scraps	22.6%
	Yard Debris	1.5%
	Organic Subtotal	**24.0%**
GLASS	Clear Bottles	2.8%
	Brown Bottles	1.3%
	Green Bottles	0.5%
	Non-Recyclable Glass	0.5%
	Glass Subtotal	**5.1%**
WOOD C&D	Clean Wood	0.3%
	Hogfuel	0.6%
	Wood Roofing	0.0%
	Gypsum	0.0%
	Rubble	1.7%
	Roofing	0.01%
	Carpet and Padding	0.2%
	Other Wood, C&D	1.1%
	Wood, C&D Subtotal	**3.9%**
OTHER	Hazardous and Medical	0.3%
	Animal Excrement	5.5%
	Household Batteries	0.1%
	E-Waste	1.1%
	Other Subtotal	**7.0%**
	Remainder (Garbage)	**21.7%**

Notes: All figures are percent by weight.

FIGURE 4
RESIDENTIAL SELF - HAUL WASTE
CLARK COUNTY WASTE STREAM ANALYSIS

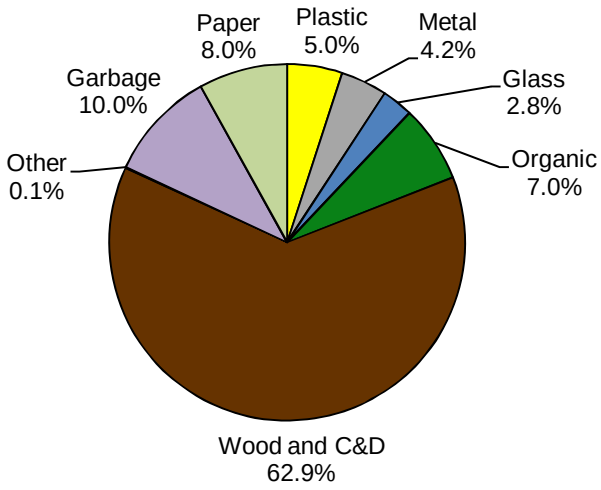


SUMMARY OF WASTE COMPOSITION RESULTS:

PAPER	Newspaper	0.5%
	Cardboard	4.6%
	Mixed Waste Paper	4.7%
	Milk Cartons, Other	0.1%
	Food-Soiled Paper	1.0%
	Non-Recyclable Paper	1.7%
	Paper Subtotal	**12.7%**
PLASTIC	PET Bottles	0.5%
	HDPE Bottles	0.2%
	Bottles 3-7	0.04%
	Tubs	0.1%
	Film and Bags	2.1%
	Recyclable Packaging	0.2%
	Other Plastics	10.5%
	Expanded Polystyrene	0.6%
	Plastic Subtotal	**14.2%**
METAL	Aluminum Cans	0.2%
	Tin Cans	0.4%
	Ferrous Metals	2.8%
	Non-Ferrous Metals	1.2%
	Mixed Metals	10.4%
	Metal Subtotal	**15.0%**
ORGANIC	Food Scraps	7.8%
	Yard Debris	3.3%
	Organic Subtotal	**11.1%**
GLASS	Clear Bottles	0.6%
	Brown Bottles	0.5%
	Green Bottles	0.4%
	Non-Recyclable Glass	1.7%
	Glass Subtotal	**3.2%**
WOOD C&D	Clean Wood	1.5%
	Hogfuel	9.4%
	Wood Roofing	0.0%
	Gypsum	4.6%
	Rubble	3.8%
	Roofing	2.8%
	Carpet and Padding	6.8%
	Other Wood, C&D	5.4%
	Wood, C&D Subtotal	**34.3%**
OTHER	Hazardous and Medical	0.3%
	Animal Excrement	1.0%
	Household Batteries	0.1%
	E-Waste	0.02%
	Other Subtotal	**1.4%**
	Remainder (Garbage)	**8.1%**

Note: All figures are percent by weight.

FIGURE 5
NON - RESIDENTIAL SELF - HAUL WASTE
CLARK COUNTY WASTE STREAM ANALYSIS

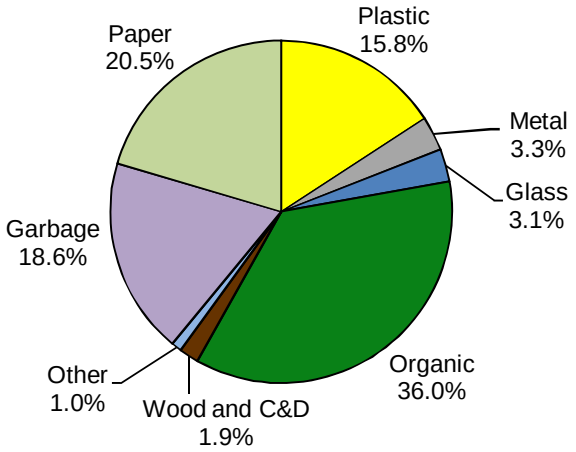


SUMMARY OF WASTE COMPOSITION RESULTS:

PAPER	Newspaper	0.0%
	Cardboard	4.8%
	Mixed Waste Paper	1.1%
	Milk Cartons, Other	0.1%
	Food-Soiled Paper	0.3%
	Non-Recyclable Paper	1.7%
	Paper Subtotal	**8.0%**
PLASTIC	PET Bottles	0.2%
	HDPE Bottles	0.01%
	Bottles 3-7	0.03%
	Tubs	0.04%
	Film and Bags	1.0%
	Recyclable Packaging	0.04%
	Other Plastics	3.4%
	Expanded Polystyrene	0.3%
	Plastic Subtotal	**5.0%**
METAL	Aluminum Cans	0.04%
	Tin Cans	0.2%
	Ferrous Metals	0.5%
	Non-Ferrous Metals	0.8%
	Mixed Metals	2.7%
	Metal Subtotal	**4.2%**
ORGANIC	Food Scraps	3.9%
	Yard Debris	3.1%
	Organic Subtotal	**7.0%**
GLASS	Clear Bottles	0.1%
	Brown Bottles	0.0%
	Green Bottles	0.03%
	Non-Recyclable Glass	2.7%
	Glass Subtotal	**2.8%**
WOOD C&D	Clean Wood	7.8%
	Hogfuel	8.2%
	Wood Roofing	4.9%
	Gypsum	8.1%
	Rubble	9.7%
	Roofing	6.3%
	Carpet and Padding	12.4%
	Other Wood, C&D	5.5%
	Wood, C&D Subtotal	**62.9%**
OTHER	Hazardous and Medical	0.1%
	Animal Excrement	0.0%
	Household Batteries	0.01%
	E-Waste	0.0%
	Other Subtotal	**0.1%**
	Remainder (Garbage)	**10.0%**

Note: All figures are percent by weight.

FIGURE 6
COMMERCIAL WASTE
CLARK COUNTY WASTE STREAM ANALYSIS



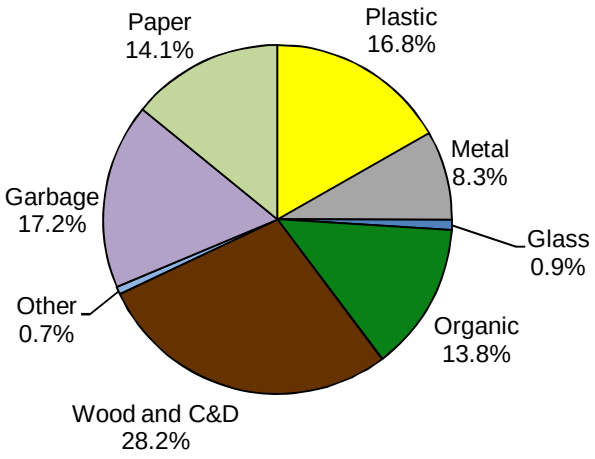
SUMMARY OF WASTE COMPOSITION RESULTS:

PAPER	Newspaper	1.0%
	Cardboard	3.3%
	Mixed Waste Paper	6.7%
	Milk Cartons, Other	0.3%
	Food-Soiled Paper	3.9%
	Non-Recyclable Paper	5.2%
	Paper Subtotal	**20.5%**
PLASTIC	PET Bottles	1.1%
	HDPE Bottles	0.9%
	Bottles 3-7	0.1%
	Tubs	0.3%
	Film and Bags	8.3%
	Recyclable Packaging	0.4%
	Other Plastics	4.5%
	Expanded Polystyrene	0.4%
	Plastic Subtotal	**15.8%**
METAL	Aluminum Cans	0.5%
	Tin Cans	0.9%
	Ferrous Metals	0.6%
	Non-Ferrous Metals	0.2%
	Mixed Metals	1.1%
	Metal Subtotal	**3.3%**

ORGANIC	Food Scraps	33.1%
	Yard Debris	2.8%
	Organic Subtotal	**36.0%**
GLASS	Clear Bottles	1.2%
	Brown Bottles	0.8%
	Green Bottles	0.8%
	Non-Recyclable Glass	0.3%
	Glass Subtotal	**3.1%**
WOOD C&D	Clean Wood	0.6%
	Hogfuel	0.4%
	Wood Roofing	0.0%
	Gypsum	0.0%
	Rubble	0.01%
	Roofing	0.01%
	Carpet and Padding	0.5%
	Other Wood, C&D	0.2%
	Wood, C&D Subtotal	**1.9%**
OTHER	Hazardous and Medical	0.2%
	Animal Excrement	0.7%
	Household Batteries	0.1%
	E-Waste	0.03%
	Other Subtotal	**1.0%**
	Remainder (Garbage)	**18.6%**

Note: All figures are percent by weight.

FIGURE 7
COMMERCIAL COMPACTOR WASTE
CLARK COUNTY WASTE STREAM ANALYSIS



SUMMARY OF WASTE COMPOSITION RESULTS:

PAPER	Newspaper	0.5%
	Cardboard	4.2%
	Mixed Waste Paper	3.3%
	Milk Cartons, Other	0.1%
	Food-Soiled Paper	1.4%
	Non-Recyclable Paper	4.6%
	Paper Subtotal	**14.1%**
PLASTIC	PET Bottles	0.5%
	HDPE Bottles	0.3%
	Bottles 3-7	0.1%
	Tubs	0.1%
	Film and Bags	3.9%
	Recyclable Packaging	0.2%
	Other Plastics	10.5%
	Expanded Polystyrene	1.2%
	Plastic Subtotal	**16.8%**
METAL	Aluminum Cans	0.2%
	Tin Cans	0.1%
	Ferrous Metals	3.1%
	Non-Ferrous Metals	0.5%
	Mixed Metals	4.4%
	Metal Subtotal	**8.3%**
ORGANIC	Food Scraps	11.6%
	Yard Debris	2.1%
	Organic Subtotal	**13.8%**
GLASS	Clear Bottles	0.3%
	Brown Bottles	0.3%
	Green Bottles	0.2%
	Non-Recyclable Glass	0.2%
	Glass Subtotal	**0.9%**
WOOD C&D	Clean Wood	7.1%
	Hogfuel	5.7%
	Wood Roofing	0.1%
	Gypsum	3.7%
	Rubble	2.5%
	Roofing	0.9%
	Carpet and Padding	1.7%
	Other Wood, C&D	6.5%
	Wood, C&D Subtotal	**28.2%**
OTHER	Hazardous and Medical	0.3%
	Animal Excrement	0.3%
	Household Batteries	0.01%
	E-Waste	0.0%
	Other Subtotal	**0.7%**
	Remainder (Garbage)	**17.2%**

Note: All figures are percent by weight.

- **types of hazardous wastes**: of the 239 samples that were sorted during the course of this project, 26 samples (11% of the total) were found to contain "hazardous wastes" of various types. Four of these samples contained only latex paint, however, which is not actually classified as hazardous. One additional sample contained latex paint along with other materials that were hazardous (mouse poison, solvent and spray cleaner). Florescent bulbs were the most commonly found item, occurring in 11 of the samples. The number of samples in which each type of material was found is:

  florescent bulbs – 11
  latex paint – 5
  oil filters – 3
  yard and garden chemicals – 3
  solvents – 2
  adhesives – 2
  thermometers with mercury – 2
  oil paint – 1
  other items - 5

  Hazardous wastes were found in 16% of the samples from Single-Family, Multi-Family and Commercial generators, and in lower numbers of samples from the two self-haul streams and Commercial Compactors.

- **number of syringes**: in addition to recording the weight of medical wastes, the number of syringes found in the samples was noted. A total of 45 syringes were found during the four quarters of fieldwork. This is the equivalent of 2.2 syringes per ton of waste. Most of the syringes were found in samples from the Commercial (17 syringes), Single-Family (15), and Multi-Family (10) waste streams.

SECTION THREE
CONCLUSIONS

A. INTRODUCTION

This section examines trends and provides conclusions based on the data collected by this study.

B. WEIGHT OF MATERIALS DISPOSED

The waste quantity and composition results can be combined to show the total weight of disposed materials. Table 4 shows this information for each waste generator, combining the composition data for these generators with their annual waste quantities to calculate the tons of each material that are disposed each year.

C. TRENDS

Data from this study can be compared to previous studies to see how the waste stream has changed in the past 20 years (see Table 5). Since the list of materials examined by the various studies are different, some modifications were necessary in order to compare the results. These modifications include:

- several paper categories needed to be combined, either as "mixed waste paper" or as "all other paper."
- all categories of plastics had to be combined into one category called "all plastics" because the categories used in the 2003 study were limited and significantly different from the other studies.
- several categories for metals had to be combined into a category called "all other metals."
- categories for wood, C&D and other wastes needed to be combined into broad categories for each of these types of materials.

The bottom row of Table 5 shows the total amount of waste disposed in each year that a waste composition study was performed. For all but the current study and the previous study, the figures shown are tons per year for the calendar year corresponding to the date of the study. For 2008, the figure shown (281,900 tons) is a mid-year to mid-year figure corresponding to the period of that study (May 1, 2007 through April 30, 2008). For the current study, the figures shown correspond to a one-year period from November 1, 2011 through October 31, 2012. As can be seen, the amount of waste

TABLE 4
WEIGHT OF DISPOSED MATERIALS (TONS PER YEAR)
CLARK COUNTY WASTE STREAM ANALYSIS

		Single-Family	Multi-Family	Residential Self-Haul	Non-Res. Self-Haul	Commercial	Commercial Compactors	Totals for Entire County
PAPER	Newspaper	430	300	150	0	470	230	1,580
	Cardboard	680	410	1,360	1,570	1,510	1,940	7,470
	Mixed Waste Paper	3,570	980	1,380	360	3,050	1,540	10,880
	Milk Cartons, Other	150	40	30	20	130	70	430
	Food-Soiled Paper	2,990	300	310	110	1,760	630	6,090
	Non-Recyclable Paper	3,080	450	490	550	2,360	2,130	9,070
PLASTIC	**Paper Subtotal**	**10,890**	**2,490**	**3,710**	**2,620**	**9,290**	**6,530**	**35,530**
	PET Bottles	640	250	140	60	480	240	1,810
	HDPE Bottles	370	130	60	4	390	140	1,100
	Bottles 3-7	50	10	10	10	30	30	140
	Tubs	310	40	20	10	120	30	530
	Film and Bags	5,550	640	610	340	3,760	1,780	12,690
	Recyclable Packaging	460	60	60	10	170	110	870
	Other Plastics	3,150	550	3,070	1,090	2,060	4,860	14,780
	Expanded Polystyrene	450	60	180	90	170	560	1,510
METAL	**Plastic Subtotal**	**10,980**	**1,740**	**4,170**	**1,620**	**7,180**	**7,750**	**33,430**
	Aluminum Cans	250	110	60	10	230	100	760
	Tin Cans	590	150	110	60	430	40	1,380
	Ferrous Metals	610	50	810	160	270	1,410	3,310
	Non-Ferrous Metals	360	60	360	260	80	210	1,330
	Mixed Metals	1,130	310	3,060	880	490	2,050	7,910
ORGANIC	**Metal Subtotal**	**2,950**	**680**	**4,390**	**1,380**	**1,480**	**3,820**	**14,690**
	Food Scraps	22,800	2,890	2,290	1,280	15,040	5,380	49,680
	Yard Debris	1,240	190	960	990	1,290	990	5,670
	Organic Subtotal	**24,050**	**3,070**	**3,250**	**2,270**	**16,330**	**6,380**	**55,350**
GLASS	Clear Bottles	870	360	180	20	560	160	2,140
	Brown Bottles	470	170	150	0	370	120	1,290
	Green Bottles	240	70	120	10	350	70	860
	Non-Recyclable Glass	260	70	490	890	110	80	1,900
	Glass Subtotal	**1,850**	**660**	**940**	**910**	**1,400**	**430**	**6,200**
WOOD	Clean Wood	360	40	430	2,530	290	3,300	6,940
	Hogfuel	360	70	2,770	2,670	200	2,630	8,700
	Natural Wood	0	0	0	10	0	0	10
	Roofing, Wood	0	0	0	1,590	0	20	1,610
	Contaminated	430	10	780	1,740	80	2,180	5,220
	Other Wood	40	120	390	10	30	810	1,390
	Wood Subtotal	**1,190**	**240**	**4,360**	**8,550**	**600**	**8,940**	**23,880**
CONST.	Gypsum	50	0	1,340	2,640	0	1,720	5,760
& DEMO.	Rubble	340	220	1,100	3,160	4	1,130	5,960
	Roofing	0	1	830	2,040	3	420	3,290
	Carpet, Padding	210	30	1,990	4,020	240	800	7,280
	Soil, Dirt	**80**	**10**	**420**	**40**	**0**	**40**	**580**
	C&D Subtotal	**680**	**250**	**5,680**	**11,890**	**250**	**4,110**	**22,870**
OTHER	Hazardous Wastes	50	40	90	20	80	150	430
WASTES	Medical Wastes	10	3	0	0	10	3	20
	Animal Excrement	2,920	700	280	0	300	150	4,360
	Household Batteries	110	10	20	3	30	10	180
	E-Waste	30	140	5	0	10	0	190
	Other Subtotal	**3,110**	**890**	**400**	**30**	**440**	**310**	**5,180**
REMAINDER	**Garbage**	**21,830**	**2,780**	**2,390**	**3,250**	**8,430**	**7,970**	**46,630**
	TOTAL	**77,530**	**12,800**	**29,290**	**32,520**	**45,400**	**46,240**	**243,760**

Note: All figures are tons per year.

TABLE 5
COMPARISON OF RESULTS TO PREVIOUS STUDIES
CLARK COUNTY WASTE STREAM ANALYSIS

		Previous Studies					Current Study,
		1993	**1995**	**1999**	**2003**	**2008**	**2012**
PAPER	Newspaper	1.8%	2.0%	2.1%	1.6%	1.0%	0.6%
	Cardboard	4.7%	5.3%	4.7%	4.0%	4.7%	3.1%
	Mixed Waste Paper	8.8%	8.0%	6.4%	7.0%	6.1%	4.5%
	All Other Paper	10.8%	8.0%	8.6%	6.6%	6.5%	6.4%
	Paper Subtotal	**26.1%**	**23.3%**	**21.8%**	**19.2%**	**18.3%**	**14.6%**
PLASTIC	**All Plastics**	**10.4%**	**11.6%**	**12.9%**	**11.5%**	**13.2%**	**13.7%**
METAL	Aluminum Cans	0.4%	0.4%	0.4%	0.3%	0.3%	0.3%
	Ferrous Metals	2.1%	2.4%	2.1%	3.1%	2.8%	1.4%
	Non-Ferrous Metals	0.2%	0.3%	0.2%	0.2%	0.3%	0.5%
	All Other Metals	3.4%	3.5%	4.5%	3.5%	3.4%	3.8%
	Metal Subtotal	**6.1%**	**6.6%**	**7.2%**	**7.1%**	**6.8%**	**6.0%**
ORGANIC	Food Scraps	12.1%	11.9%	14.5%	15.3%	16.3%	20.4%
	Yard Debris	5.8%	4.1%	3.3%	3.8%	1.5%	2.3%
	Organic Subtotal	**17.9%**	**16.0%**	**17.8%**	**19.1%**	**17.7%**	**22.7%**
GLASS	Clear Bottles	1.4%	1.4%	1.5%	1.5%	1.1%	0.9%
	Brown Bottles	0.4%	0.4%	0.7%	0.7%	0.5%	0.5%
	Green Bottles	0.3%	0.4%	0.4%	0.4%	0.3%	0.4%
	Non-Recyclable Glass	0.6%	0.5%	0.5%	0.5%	0.9%	0.8%
	Glass Subtotal	**2.7%**	**2.7%**	**3.2%**	**3.2%**	**2.8%**	**2.5%**
WOOD,	Wood	10.5%	9.4%	8.5%	10.4%	9.7%	9.8%
C&D	Construction & Demolition	8.4%	8.9%	7.4%	7.8%	5.4%	9.4%
	Wood, C&D Subtotal	**18.9%**	**18.3%**	**15.9%**	**18.2%**	**15.1%**	**19.2%**
REMAINDER	**All Other Wastes**	**17.9%**	**21.5%**	**21.2%**	**21.7%**	**26.1%**	**21.3%**
	TOTAL	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**
TONS PER YEAR DISPOSED		**183,210**	**197,446**	**227,259**	**254,019**	**281,900**	**243,770**

Note: All figures are percentages by weight, except the figures for tons per year shown in the bottom row.

increased by almost 100,000 tons per year (a 54% increase) in the period from 1993 to 2008. All or most of this increase can probably be directly correlated to increased numbers of residents and employees, but part of the increase may also be the result of increasing generation rates on a per capita and/or per employee basis. The annual amount of garbage in the latest study is significantly less, however, and has dropped to levels similar to about ten years ago. This decrease is similar to the drop in waste tonnages that has been seen throughout the rest of Washington State and the nation, and is widely attributed to the recession.

D. CONCLUSIONS

Waste Quantities

A number of observations and conclusions can be made by examining the waste quantity data:

- **Residential Self-Haul:** the Residential Self-Haul waste stream is made up of numerous small loads delivered to the transfer stations in cars, pickup trucks and similar vehicles. It is an important service to allow people to haul their own waste to the transfer stations, but this is also the least efficient method of garbage collection. While this source contributes only 12.0% of the county's total waste stream, this type of generator is responsible for 74% of the traffic at the transfer stations. Self-haul loads average 436 pounds per vehicle, compared to 9,000 to 14,000 pounds per load for municipal and private garbage trucks, but frequently take as long or longer to unload as garbage trucks.
- **Non-Residential Self-Haul:** this type of generator brings in slightly more waste (13.3%) than Residential Self-Haul generators, and it does so with fewer trips and larger loads. Based on transaction records for the period of this study, Non-Residential Self-Haul loads represent 10.6% of the vehicle trips through the transfer stations and deliver an average of 1,242 pounds per vehicle.
- **Single-Family:** Single-Family wastes contribute almost one-third (31.8%) of the total tonnage of the County's waste stream. This figure does not include Residential Self-Haul quantities, which are also almost entirely from single-family homes.
- **Multi-Family:** this study shows that 12,800 tons per year, or 5.2%, of Clark County's waste stream is from Multi-Family units. This is consistent with the amount found in the previous study (14,160 tons, or 5.0%, of the waste stream in 2008).
- **Commercial and Commercial Compactors:** the Commercial and Commercial Compactor waste streams together make up 37.2% of the County's waste stream, with nearly equal amounts collected by garbage trucks servicing dumpsters (45,390 tons per year) versus single-source roll-off's and compactors (46,240 tons). Both of

these figures are significantly lower than in the previous study, when these two sources together contributed almost half of the County's waste stream (123,850 tons in 2008, or 45.0% of the total).

Waste Composition

There are distinct differences in the waste streams disposed by the different types of waste generators, as can be seen in several of the tables and figures in this report. For each of the generators, a few noteworthy conclusions can be drawn:

- **Single-Family:** the largest material in this waste stream is food scraps (29.4% by weight), which is disposed at four times the quantity as the next largest material (plastic film and bags, at 7.2%). There are significant quantities of various grades of paper (mixed waste paper, at 4.6%; non-recyclable paper, at 4.0%; and food-soiled paper, at 3.9%). There are also substantial amounts of other plastics, at 4.1%, and animal excrement ("kitty litter)," at 3.8%.

  The Single-Family waste stream contains only 15.6% of the materials collected through the curbside recycling program (including glass and yard debris). This is down from the 20.9% that was found in the study four years ago.

- **Multi-Family:** the Multi-Family waste stream also contains a high amount of food scraps (22.6%), with mixed waste paper (7.7%) and animal excrement (5.5%) being the next two highest materials. There are also significant quantities of film and bags (5.0%), other plastics (4.3%), and various grades of paper.

  The Multi -Family waste stream contains 28.4% recyclable materials (including the materials collected through the curbside program and yard debris).

- **Residential Self-Haul:** self-haul loads from residential sources have more wood, construction debris and metal than other residential sources, and less "regular" household trash (paper, plastic and food scraps), reflecting the activities such as remodeling and other special projects that are often the source of self-haul waste. Other plastics is the material present in the single largest quantity, at 10.5%, followed by mixed metals (10.5%), wood (hogfuel, 9.4%), food scraps (7.8%), and carpeting (6.8%).

  The Residential Self-Haul waste stream contains the highest amount of recyclable materials, with 30.6% of this waste consisting of those materials that are collected through the curbside recycling program (including glass and yard debris). Half of this amount consists of various grades of metal and one-third consists of various grades of paper.

- **Non-Residential Self-Haul:** like self-haul waste from residential sources, Non-Residential Self-Haul loads are often the result of construction activities or other special projects. The large amount of wood (26.3% for all grades taken together) and construction and demolition (C&D) waste (36.6%) clearly shows the influence

of construction activities on this waste stream. Although this waste generator contributes only 13.3% of the County's total waste stream, Non-Residential Self-Haul customers are disposing of 36% of the wood and 52% of the C&D materials.

The Non-Residential Self-Haul waste stream contains 22.6% recyclable materials (for the materials collected through the curbside program and yard debris).

- **Commercial:** waste from this source also contains a large amount of food scraps (33.1%), followed by plastic film and bags (8.3%), mixed waste paper (6.7%), and non-recyclable paper (5.2%). The Commercial waste stream contains 20.3% recyclable materials (for the materials collected through the curbside program and yard debris).
- **Commercial Compactors:** waste from this source contains less food scraps (11.6%) than the other commercial category, but it is still the largest single category, followed closely by other plastics (10.5%). Wood is the largest category overall (19.3%), followed by non-recyclable paper (4.6%), mixed metals (4.4%), cardboard (4.2%), and plastic film and bags (3.9%).

  The Commercial Compactor waste stream contains 20.3% recyclable materials (for the materials collected through the curbside program and yard debris).

General Conclusions

Additional conclusions that resulted from this study include:

- Plastic film is present in most of the waste streams in significant amounts, especially given the fact that the individual pieces of this material are very light. In other words, it takes a lot of this material to add up to the amounts shown in the results. Likewise for expanded polystyrene ("Styrofoam"). Although the amounts of expanded polystyrene are not that high on a weight basis, these figures represent a large volume of material.
- "Other plastics" also contribute a significant amount to the County's waste stream, and probably bear additional scrutiny for possible recycling or waste reduction programs.

GLOSSARY

GLOSSARY

INTRODUCTION

This glossary shows the definitions for the types of generators and waste sorting categories used for the 2012 Clark County Waste Stream Analysis.

A. GENERATOR CATEGORIES

Single-Family Homes: waste originating from single-family homes and mobile home parks. To be counted in this category, the waste must have been delivered to the transfer station by a municipal collection crew, private garbage hauler, or manager/owner of a mobile home park.

Multi-Family: wastes collected from apartment buildings. To be counted in this category, the waste must have been delivered to the transfer station by a municipal collection crew, private garbage hauler, or manager/owner of a mobile home park.

Residential Self-Haul: residential waste delivered to the transfer station by a homeowner, renter or landlord, typically using cars, vans, jeeps, pick-up trucks, rented trucks and trailers.

Non-Residential Self-Haul: non-residential waste delivered to the transfer station by the same company that generated the waste, including construction and demolition waste brought in by contractors.

General Commercial: waste from businesses, industries and institutions, delivered by a municipal collection crew or private garbage hauler, generally in a front-loading truck but not including single-source containers such as roll-off's.

Commercial Compactors: waste from businesses, industries and institutions, delivered by a municipal collection crew or private garbage hauler in a roll-off.

B. WASTE SORTING CATEGORIES

PAPER

Newspaper: printed groundwood newsprint, including glossy ads and Sunday edition magazines delivered with the newspaper.

Cardboard: unwaxed kraft paper corrugated containers and boxes, unless waxed or laminated, and including brown paper bags. Brown paper bags that have been used for holding food scraps and all pizza boxes are defined as "Food-Soiled Paper."

Mixed Waste Paper (MWP): low and high grades of paper, including office/computer paper and magazines. Also including colored papers, notebook or other lined paper,

envelopes with plastic windows, non-corrugated paperboard, carbonless copy paper, egg cartons, paperback books, other groundwood products, and junk mail.

Milk Cartons and Other Aseptic Containers: milk cartons and similar gable-top containers (such as orange juice cartons), and juice drink boxes.

Food-Soiled Paper: all paper napkins and pizza boxes, whether food-soiled or not, plus newspaper and brown bags that were used for holding food scraps.

Non-Recyclable Paper: contaminated papers and non-recyclable types of papers such as carbon paper, tissues, paper plates, waxed papers, frozen food containers, paper packaging with metal or plastic parts, and hardcover books.

PLASTIC

PET Bottles: polyethylene terephthalate (PET) bottles, including soda, oil, liquor and other types of bottles. The SPI code for PET is 1.

HDPE Bottles: clear and colored high density polyethylene (HDPE) milk, juice, detergent, and other bottles. This category did not include motor oil bottles, which are defined as "Other Plastics." The SPI code for HDPE is 2.

Bottles Types 3 - 7: all bottles that are not PET or HDPE, where the neck of the container is narrower than the body. Includes SPI codes 3 - 7.

Tubs: plastic containers of all resin types that are as wide as or wider at the top than at the bottom.

Film and Bags: all plastic packaging films and bags. To be counted in this category, the material must have been flexible (i.e., could be bent without making a noise) and relatively clean (recoverable).

Recyclable Packaging: rigid plastic packaging that is potentially recyclable, such as trays and clamshells.

Other Plastics: finished plastic products such as toys, toothbrushes, vinyl hose and shower curtains, and non-recyclable plastic packaging, such as shipping materials and other plastic items which are not finished consumer products. Also includes HDPE motor oil bottles.

Expanded Polystyrene: packaging and finished products made of expanded polystyrene. The SPI code for polystyrene (PS) is 6.

METAL

Aluminum Cans: aluminum beverage cans.

Tin Cans: tin-coated steel food containers. This category includes bi-metal beverage cans, but not paint cans or other types of cans.

Ferrous Metals: products and pieces made from metal to which a magnet adheres (but including stainless steel), and which are not significantly contaminated with other

metals or materials (in the latter case, the item should be included instead under "mixed metals/materials"). This category includes paint cans, aerosol cans (empty cans only, partially-full cans will be characterized by the contents), and other non-food cans.

Non-Ferrous Metals: metallic products and pieces not derived from iron (i.e., to which a magnet does not adhere) and which were not significantly contaminated with other metals or materials. Includes aluminum foil and pans, and aluminum cat food and other cans.

Mixed Metals/Materials: small appliances, motors, insulated wire and finished products containing a mixture of metals and/or other materials, but which are greater than 50% metal.

ORGANICS

Food Scraps: food waste and scraps, including bones, rinds, etc., and including the container when the container weight was not appreciable compared to the food inside.

Yard and Garden Wastes: grass clippings, leaves and weeds, and prunings four inches or less in diameter.

GLASS

Clear, Green and Brown Glass Containers: these are three separate categories for bottles and jars that were clear, green or brown in color. Blue glass containers were included with non-recyclable glass.

Non-Recyclable Glass: window glass, light bulbs, glassware, mirrors, and other glass which is not recyclable. Does not include ceramics.

WOOD

Clean Wood: unfinished, clean wood that could be included in a composting program, such as dimension lumber and clean pallets.

Hog Fuel: wood that was not clean enough for a composting system but that could be burned for heat recovery, including plywood and treated wood.

Natural Wood: stumps of trees and shrubs, with the adhering soil (if any), and other natural woods, such as logs and branches in excess of four inches in diameter.

Roofing: wood products commonly used for roofing, such as cedar shingles or shakes, which are often contaminated with bits of tar paper, nails and other materials.

Contaminated Wood: wood that was contaminated with other wastes in such a way that the materials could not easily be separated, but consisting primarily (over 50%) of wood. Examples include wood with sheetrock nailed to it or with tiles glued to it.

Other Wood Waste: other types of wood that did not fit into the above categories, including sawdust.

C&D WASTES

Gypsum Board: used or new gypsum wallboard, sheetrock or drywall present in recoverable amounts or pieces (generally any piece larger than two inches square was recovered from the sample).

Rubble: rock, gravel, cement, concrete blocks, bricks, ceramics, porcelain, and similar materials.

Roofing Waste: asphalt and fiberglass shingles, tar paper, and similar wastes from demolition or installation of roofs. Did not include cedar shingle or shakes (see wood roofing subcategory).

Carpet and Padding: pieces of carpet and foam rubber and other materials used as padding under carpets.

Soil, Dirt, and Non-Distinct Fines: this category includes soil, sand, dirt and similar materials, where these could be recovered separately from the sample.

OTHER WASTES

Hazardous Wastes: hazardous wastes of all types.

Medical Waste: medical wastes containing or contaminated with bodily fluids. The presence and number of syringes was also noted.

Animal Excrement: kitty litter and other animal wastes.

Household Batteries: household batteries (Ni-Cd and other special batteries were noted if found).

E-Wastes: electronic wastes as defined by Washington's State rules, including computers (base units and monitors), televisions, laptops, e-readers and tablets. This study also included loose circuit boards and keyboards in this category.

REMAINDER

Garbage and Other: all other wastes that did not fit into the above categories, including clothing, diapers, rubber products, cosmetics, etc.

REUSE CRITERIA

For the Wood and C&D categories only, the amounts of reusable materials were noted. Reuse criteria were applied on a case-by-case basis, but examples include pieces of dimension lumber in good condition and over 4 feet in length, sheet goods that were half of a sheet or more, unopened bags of concrete and other materials, and functional ceramic products (toilets and sinks).

APPENDIX A
STATISTICAL CERTAINTY OF RESULTS

APPENDIX A
STATISTICAL CERTAINTY OF RESULTS

A. INTRODUCTION

There is a quantifiable degree of error associated with the waste composition results shown in this report, and this error can be expressed as confidence intervals. This appendix shows the confidence intervals associated with the waste composition results.

B. METHODOLOGY

This waste composition study was designed to provide accurate data on the amount and composition of wastes from several sources. As with all sampling projects and surveys, however, there is a definable amount of potential error in the results. The amount of error, or "uncertainty," associated with the results can be calculated based on the sample results.

For this type of study, the statistical certainty of the results can be expressed using confidence intervals. Confidence intervals are the range of values for which one can be confident (to a given degree, such as 90% confident) that the true value falls within. The confidence limits are also sometimes shown as a "plus or minus value." For example, this study shows that the potential amount of newspaper in the Single-Family waste stream is 0.55% +/- 0.27%. This is based on a confidence interval of 90%, so that in this example one can be 90% confident that the true value for newspaper falls between 0.29% and 0.82%.

The calculation of confidence intervals for this study is complicated slightly by the use of weighted averages. The calculation of confidence intervals for weighted averages begins with calculating standard deviations for each material for each generator and for each quarter. Dividing the standard deviations by the square root of the number of samples converts these to the standard error of the mean (SEM). The SEM's can be applied using weighted averages as appropriate for the data being combined. The final SEM's can be multiplied by a factor of 1.64 and then added or subtracted from the average composition values to derive the upper and lower confidence limits, respectively. The factor of 1.64 is based on the choice of a 90% confidence interval.

C. RESULTS

Table A-1 shows the confidence limits associated with the composition results for each generator and for the entire County.

TABLE A - 1
CONFIDENCE LIMITS BY TYPE OF GENERATOR
CLARK COUNTY WASTE STREAM ANALYSIS

		Single-Family			Multi-Family			Residential Self-Haul		
		Average	LCL	UCL	Average	LCL	UCL	Average	LCL	UCL
PAPER	Newspaper	0.55%	0.29%	0.82%	2.35%	1.16%	3.55%	0.51%	0.03%	0.98%
	Cardboard	0.87%	0.53%	1.21%	3.22%	1.76%	4.69%	4.64%	0.24%	9.05%
	Mixed Waste Paper	4.60%	3.71%	5.49%	7.67%	5.72%	9.63%	4.71%	0.75%	8.67%
	Milk Cartons, Other	0.19%	0.12%	0.27%	0.34%	0.24%	0.44%	0.10%	0.00%	0.23%
	Food-Soiled Paper	3.86%	3.04%	4.67%	2.35%	1.87%	2.82%	1.04%	0.10%	1.99%
	Non-Recyclable Paper	3.97%	3.46%	4.49%	3.50%	2.64%	4.37%	1.68%	0.41%	2.95%
	Paper Subtotal	**14.05%**	**12.34%**	**15.76%**	**19.44%**	**14.92%**	**23.96%**	**12.68%**	**4.61%**	**20.75%**
PLASTIC	PET Bottles	0.83%	0.63%	1.04%	1.93%	1.48%	2.38%	0.49%	0.12%	0.85%
	HDPE Bottles	0.48%	0.35%	0.61%	1.01%	0.78%	1.24%	0.22%	0.03%	0.41%
	Bottles 3-7	0.06%	0.02%	0.11%	0.11%	0.04%	0.19%	0.04%	0.00%	0.08%
	Tubs	0.40%	0.31%	0.49%	0.30%	0.22%	0.38%	0.06%	0.01%	0.12%
	Film and Bags	7.16%	6.29%	8.03%	5.00%	4.38%	5.63%	2.10%	0.78%	3.41%
	Recyclable Packaging	0.60%	0.46%	0.73%	0.44%	0.31%	0.56%	0.19%	0.05%	0.34%
	Other Plastics	4.06%	3.06%	5.05%	4.28%	3.19%	5.37%	10.50%	1.13%	19.86%
	Expanded Polystyrene	0.58%	0.42%	0.73%	0.49%	0.29%	0.69%	0.63%	0.00%	1.32%
	Plastic Subtotal	**14.16%**	**12.59%**	**15.74%**	**13.56%**	**11.69%**	**15.43%**	**14.23%**	**4.59%**	**23.86%**
METAL	Aluminum Cans	0.33%	0.22%	0.43%	0.86%	0.52%	1.20%	0.19%	0.02%	0.37%
	Tin Cans	0.76%	0.52%	0.99%	1.20%	0.86%	1.53%	0.37%	0.03%	0.71%
	Ferrous Metals	0.79%	0.45%	1.13%	0.41%	0.21%	0.61%	2.75%	0.51%	4.99%
	Non-Ferrous Metals	0.47%	0.28%	0.66%	0.43%	0.08%	0.78%	1.22%	0.15%	2.30%
	Mixed Metals	1.46%	0.83%	2.10%	2.39%	0.45%	4.34%	10.45%	2.58%	18.31%
	Metal Subtotal	**3.80%**	**2.95%**	**4.66%**	**5.29%**	**3.50%**	**7.08%**	**14.98%**	**6.12%**	**23.85%**
ORGANIC	Food Scraps	29.41%	25.79%	33.04%	22.56%	18.66%	26.46%	7.81%	0.92%	14.69%
	Yard Debris	1.60%	0.08%	3.13%	1.46%	0.16%	2.76%	3.29%	0.00%	6.80%
	Organic Subtotal	**31.01%**	**27.41%**	**34.62%**	**24.02%**	**19.96%**	**28.08%**	**11.10%**	**2.38%**	**19.81%**
GLASS	Clear Bottles	1.13%	0.64%	1.61%	2.78%	1.62%	3.94%	0.62%	0.07%	1.16%
	Brown Bottles	0.61%	0.00%	1.26%	1.32%	0.71%	1.94%	0.50%	0.00%	1.05%
	Green Bottles	0.31%	0.00%	0.68%	0.52%	0.15%	0.88%	0.41%	0.00%	0.95%
	Non-Recyclable Glass	0.34%	0.10%	0.58%	0.51%	0.07%	0.96%	1.68%	0.00%	3.49%
	Glass Subtotal	**2.39%**	**1.37%**	**3.41%**	**5.13%**	**3.43%**	**6.83%**	**3.21%**	**0.14%**	**6.28%**
WOOD	Clean Wood	0.47%	0.00%	1.15%	0.28%	0.00%	0.70%	1.46%	0.17%	2.74%
	Hogfuel	0.46%	0.00%	1.05%	0.57%	0.00%	1.18%	9.44%	0.00%	19.83%
	Natural Wood	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
	Roofing, Wood	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
	Contaminated	0.56%	0.00%	1.35%	0.10%	0.00%	0.24%	2.65%	0.00%	5.74%
	Other Wood	0.05%	0.01%	0.08%	0.94%	0.00%	2.26%	1.33%	0.11%	2.56%
	Wood Subtotal	**1.54%**	**0.11%**	**2.96%**	**1.88%**	**0.00%**	**3.88%**	**14.89%**	**3.48%**	**26.30%**
CONST.	Gypsum	0.07%	0.00%	0.16%	0.00%	0.00%	0.01%	4.59%	0.00%	10.74%
& DEMO.	Rubble	0.44%	0.00%	0.93%	1.71%	0.00%	4.28%	3.75%	0.00%	9.32%
	Roofing	0.00%	0.00%	0.01%	0.01%	0.00%	0.02%	2.84%	0.00%	6.71%
	Carpet, Padding	0.26%	0.00%	0.66%	0.22%	0.00%	0.54%	6.79%	0.00%	14.19%
	Soil, Dirt	0.10%	0.00%	0.24%	0.04%	0.00%	0.10%	1.44%	0.00%	3.05%
	C&D Subtotal	**0.88%**	**0.17%**	**1.59%**	**1.99%**	**0.00%**	**4.86%**	**19.41%**	**5.26%**	**33.56%**
OTHER	Hazardous Wastes	0.06%	0.00%	0.15%	0.29%	0.00%	0.68%	0.31%	0.00%	0.73%
WASTES	Medical Wastes	0.01%	0.00%	0.01%	0.02%	0.00%	0.06%	0.00%	0.00%	0.00%
	Animal Excrement	3.76%	2.12%	5.41%	5.48%	2.08%	8.88%	0.96%	0.00%	2.10%
	Household Batteries	0.14%	0.06%	0.22%	0.07%	0.01%	0.13%	0.06%	0.00%	0.12%
	E-Waste	0.04%	0.00%	0.10%	1.13%	0.00%	2.77%	0.02%	0.00%	0.04%
	Other Subtotal	**4.01%**	**2.29%**	**5.73%**	**6.98%**	**3.23%**	**10.74%**	**1.35%**	**0.00%**	**2.85%**
REMAINDER	**Garbage**	**28.15%**	**25.10%**	**31.21%**	**21.70%**	**17.91%**	**25.48%**	**8.15%**	**2.97%**	**13.33%**

Notes:
LCL = Lower Confidence Limit for 90% confidence interval.
UCL = Upper Confidence Limit for 90% confidence interval.
All figures are percentages by weight.

TABLE A-1, continued
CONFIDENCE LIMITS BY TYPE OF GENERATOR
CLARK COUNTY WASTE STREAM ANALYSIS

		Non-Residential Self-Haul			Commercial			Commercial Compactor		
		Average	LCL	UCL	Average	LCL	UCL	Average	LCL	UCL
PAPER	Newspaper	0.00%	0.00%	0.01%	1.04%	0.49%	1.59%	0.50%	0.04%	0.97%
	Cardboard	4.84%	1.16%	8.52%	3.33%	2.09%	4.57%	4.20%	2.17%	6.23%
	Mixed Waste Paper	1.11%	0.11%	2.11%	6.73%	4.96%	8.50%	3.32%	1.19%	5.45%
	Milk Cartons, Other	0.06%	0.00%	0.15%	0.28%	0.14%	0.42%	0.14%	0.00%	0.28%
	Food-Soiled Paper	0.33%	0.00%	0.84%	3.88%	2.61%	5.15%	1.35%	0.15%	2.56%
	Non-Recyclable Paper	1.70%	0.01%	3.40%	5.20%	3.92%	6.48%	4.61%	2.32%	6.89%
	Paper Subtotal	**8.04%**	**2.53%**	**13.55%**	**20.46%**	**17.59%**	**23.33%**	**14.12%**	**8.70%**	**19.55%**
PLASTIC	PET Bottles	0.18%	0.00%	0.44%	1.06%	0.77%	1.35%	0.52%	0.07%	0.96%
	HDPE Bottles	0.01%	0.00%	0.03%	0.87%	0.53%	1.20%	0.30%	0.04%	0.56%
	Bottles 3-7	0.03%	0.00%	0.08%	0.06%	0.02%	0.10%	0.06%	0.00%	0.14%
	Tubs	0.04%	0.00%	0.09%	0.25%	0.13%	0.37%	0.07%	0.01%	0.13%
	Film and Bags	1.05%	0.34%	1.76%	8.27%	6.97%	9.57%	3.85%	2.00%	5.70%
	Recyclable Packaging	0.04%	0.00%	0.09%	0.37%	0.23%	0.50%	0.24%	0.01%	0.47%
	Other Plastics	3.36%	1.20%	5.52%	4.54%	2.08%	7.00%	10.51%	2.46%	18.56%
	Expanded Polystyrene	0.28%	0.00%	0.60%	0.38%	0.26%	0.50%	1.20%	0.00%	2.67%
	Plastic Subtotal	**4.99%**	**2.04%**	**7.94%**	**15.81%**	**12.87%**	**18.75%**	**16.76%**	**8.92%**	**24.61%**
METAL	Aluminum Cans	0.04%	0.00%	0.08%	0.50%	0.31%	0.69%	0.22%	0.05%	0.40%
	Tin Cans	0.20%	0.00%	0.50%	0.94%	0.52%	1.36%	0.10%	0.00%	0.20%
	Ferrous Metals	0.49%	0.00%	0.99%	0.59%	0.15%	1.03%	3.05%	0.00%	6.62%
	Non-Ferrous Metals	0.81%	0.00%	1.68%	0.17%	0.05%	0.28%	0.46%	0.00%	1.06%
	Mixed Metals	2.71%	0.05%	5.36%	1.07%	0.21%	1.93%	4.43%	0.12%	8.73%
ORGANIC	**Metal Subtotal**	**4.24%**	**1.04%**	**7.45%**	**3.26%**	**2.15%**	**4.38%**	**8.26%**	**2.14%**	**14.37%**
	Food Scraps	3.94%	0.00%	9.78%	33.14%	24.59%	41.69%	11.64%	3.24%	20.04%
	Yard Debris	3.05%	0.00%	6.74%	2.84%	0.00%	5.68%	2.15%	0.00%	4.43%
	Organic Subtotal	**6.99%**	**0.00%**	**14.87%**	**35.97%**	**27.82%**	**44.12%**	**13.79%**	**4.89%**	**22.68%**
GLASS	Clear Bottles	0.05%	0.00%	0.11%	1.23%	0.51%	1.95%	0.34%	0.00%	0.69%
	Brown Bottles	0.00%	0.00%	0.01%	0.82%	0.28%	1.36%	0.27%	0.00%	0.64%
	Green Bottles	0.03%	0.00%	0.07%	0.78%	0.11%	1.44%	0.15%	0.00%	0.37%
	Non-Recyclable Glass	2.73%	0.00%	6.42%	0.25%	0.05%	0.45%	0.18%	0.00%	0.41%
	Glass Subtotal	**2.81%**	**0.00%**	**6.53%**	**3.08%**	**1.64%**	**4.53%**	**0.94%**	**0.00%**	**1.88%**
WOOD	Clean Wood	7.79%	0.00%	16.36%	0.63%	0.00%	1.37%	7.13%	1.10%	13.15%
	Hogfuel	8.21%	2.20%	14.22%	0.45%	0.00%	0.94%	5.70%	0.00%	12.06%
	Natural Wood	0.03%	0.00%	0.09%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
	Roofing, Wood	4.88%	0.00%	12.52%	0.00%	0.00%	0.00%	0.05%	0.00%	0.14%
	Contaminated	5.34%	0.66%	10.02%	0.18%	0.00%	0.36%	4.72%	0.00%	10.10%
	Other Wood	0.04%	0.00%	0.11%	0.06%	0.01%	0.10%	1.75%	0.00%	3.98%
	Wood Subtotal	**26.30%**	**11.82%**	**40.78%**	**1.32%**	**0.26%**	**2.37%**	**19.34%**	**6.38%**	**32.29%**
CONST.	Gypsum	8.11%	0.00%	18.85%	0.00%	0.00%	0.00%	3.73%	0.00%	8.86%
& DEMO.	Rubble	9.72%	1.02%	18.42%	0.01%	0.00%	0.02%	2.45%	0.00%	5.54%
	Roofing	6.27%	0.09%	12.44%	0.01%	0.00%	0.02%	0.90%	0.00%	2.31%
	Carpet, Padding	12.36%	0.55%	24.16%	0.53%	0.00%	1.36%	1.73%	0.00%	4.30%
	Soil, Dirt	0.11%	0.00%	0.28%	0.00%	0.00%	0.00%	0.08%	0.00%	0.18%
	C&D Subtotal	**36.56%**	**20.87%**	**52.25%**	**0.55%**	**0.00%**	**1.39%**	**8.89%**	**0.00%**	**18.39%**
OTHER	Hazardous Wastes	0.07%	0.00%	0.18%	0.18%	0.00%	0.44%	0.33%	0.00%	0.84%
WASTES	Medical Wastes	0.00%	0.00%	0.00%	0.02%	0.00%	0.05%	0.01%	0.00%	0.01%
	Animal Excrement	0.00%	0.00%	0.00%	0.67%	0.00%	1.50%	0.33%	0.00%	0.84%
	Household Batteries	0.01%	0.00%	0.02%	0.07%	0.01%	0.14%	0.01%	0.00%	0.03%
	E-Waste	0.00%	0.00%	0.00%	0.03%	0.00%	0.07%	0.00%	0.00%	0.00%
	Other Subtotal	**0.08%**	**0.00%**	**0.19%**	**0.98%**	**0.11%**	**1.84%**	**0.68%**	**0.00%**	**1.71%**
REMAINDER	**Garbage**	**9.99%**	**2.09%**	**17.88%**	**18.57%**	**13.44%**	**23.69%**	**17.23%**	**8.56%**	**25.89%**

Notes:
LCL = Lower Confidence Limit for 90% confidence interval.
UCL = Upper Confidence Limit for 90% confidence interval.
All figures are percentages by weight.

TABLE A-1, continued
CONFIDENCE LIMITS BY TYPE OF GENERATOR
CLARK COUNTY WASTE STREAM ANALYSIS

		Annual Average for Entire County		
		Average	LCL	UCL
PAPER	Newspaper	0.65%	0.25%	1.05%
	Cardboard	3.07%	1.25%	4.89%
	Mixed Waste Paper	4.46%	2.73%	6.19%
	Milk Cartons, Other	0.18%	0.07%	0.29%
	Food-Soiled Paper	2.50%	1.57%	3.43%
	Non-Recyclable Paper	3.72%	2.46%	4.98%
	Paper Subtotal	**14.57%**	**10.53%**	**18.62%**
PLASTIC	PET Bottles	0.74%	0.44%	1.05%
	HDPE Bottles	0.45%	0.26%	0.64%
	Bottles 3-7	0.06%	0.01%	0.11%
	Tubs	0.22%	0.14%	0.30%
	Film and Bags	5.20%	4.05%	6.36%
	Recyclable Packaging	0.36%	0.21%	0.50%
	Other Plastics	6.06%	2.29%	9.84%
	Expanded Polystyrene	0.62%	0.13%	1.11%
	Plastic Subtotal	**13.72%**	**9.53%**	**17.90%**
METAL	Aluminum Cans	0.31%	0.17%	0.46%
	Tin Cans	0.57%	0.29%	0.84%
	Ferrous Metals	1.36%	0.14%	2.57%
	Non-Ferrous Metals	0.55%	0.09%	1.00%
	Mixed Metals	3.25%	0.67%	5.82%
ORGANIC	**Metal Subtotal**	**6.03%**	**2.80%**	**9.26%**
	Food Scraps	20.38%	14.23%	26.53%
	Yard Debris	2.32%	0.00%	4.75%
	Organic Subtotal	**22.70%**	**16.04%**	**29.37%**
GLASS	Clear Bottles	0.88%	0.39%	1.37%
	Brown Bottles	0.53%	0.05%	1.01%
	Green Bottles	0.35%	0.00%	0.73%
	Non-Recyclable Glass	0.78%	0.00%	1.67%
	Glass Subtotal	**2.54%**	**0.81%**	**4.27%**
WOOD	Clean Wood	2.85%	0.03%	5.66%
	Hogfuel	3.57%	0.00%	7.14%
	Natural Wood	0.00%	0.00%	0.01%
	Roofing, Wood	0.66%	0.00%	1.70%
	Contaminated	2.14%	0.00%	4.45%
	Other Wood	0.57%	0.00%	1.24%
	Wood Subtotal	**9.80%**	**3.28%**	**16.31%**
CONST.	Gypsum	2.36%	0.00%	5.54%
& DEMO.	Rubble	2.45%	0.00%	5.15%
	Roofing	1.35%	0.00%	2.91%
	Carpet, Padding	2.99%	0.00%	6.24%
	Soil, Dirt	0.24%	0.00%	0.52%
	C&D Subtotal	**9.38%**	**3.26%**	**15.51%**
OTHER	Hazardous Wastes	0.18%	0.00%	0.44%
WASTES	Medical Wastes	0.01%	0.00%	0.02%
	Animal Excrement	1.79%	0.70%	2.88%
	Household Batteries	0.07%	0.02%	0.12%
	E-Waste	0.08%	0.00%	0.20%
	Other Subtotal	**2.12%**	**0.83%**	**3.42%**
REMAINDER	**Garbage**	**19.13%**	**13.69%**	**24.57%**

Notes:
LCL = Lower Confidence Limit for 90% confidence interval.
UCL = Upper Confidence Limit for 90% confidence interval.
All figures are percentages by weight.

APPENDIX B
CUSTOMER SURVEY RESULTS

G R E E N S O L U T I O N S

M E M O R A N D U M

DATE: September 13, 2012

TO: Mike Davis

FROM: Rick Hlavka

RE: Survey Results

Surveys were conducted at the three Clark County transfer stations on Saturday, August 11, 2012. The primary target group for the surveys were self-haul customers, hence the reason for conducting the survey on the weekend. Questions about the source of the loads, frequency of visits to the transfer stations, and services used were just some of the information gathered that day

The number of surveys conducted at Washougal Transfer Station (WTS) and West Van Material Recovery Facility (West Van) represents almost every customer that went to those stations during the survey period (which was from when the station opened that day until noon or 1:00). At Central Transfer and Recycling Station (CTR), the customers surveyed were only a portion of the total customers that day. Not every customer was surveyed due to the need to avoid creating traffic problems, the separation of the recycling area from the garbage disposal queue, and the need to pull samples for the waste sorting crew. A total of 212 surveys were conducted at the three stations. It should be noted that in any case the number of surveys conducted is relatively small and since the survey was only conducted for one day, the results may not be statistically meaningful.

The attached table summarizes the responses collected from surveyed customers. Two sets of data are shown for CTR because the layout of that facility required surveys to be conducted separately for customers that were only going to the recycling/MRW area. For age and gender, the collected information was generally based on a visual observation of the driver, although in one or two cases it was the passenger who was clearly in charge at the time and so it was their age and gender that was noted. Note that the percentages for the services used that day add up to more than 100% because some people used more than one service.

On the reuse question, our goal was to ask this question for about 50% of the (garbage) customers, but at CTR we actually asked significantly fewer customers this question because we did not want to create traffic delays there. At West Van, we asked exactly 50% of the surveyed customers this question, and at WTS almost 100% of the surveyed customers were asked this question. While the majority of customers said they did not have reusables in their load, the yes/no responses to this question are probably less interesting than the comments and anecdotal information gathered by asking this question (see attached list of comments received). At WTS, for instance, the surveyor was in a better position to be able to determine the accuracy of the customer's response by viewing the load after being dropped on the tipping floor, and it was observed that people often had reusables in their load even though they said they didn't.

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In addition to the set of questions that were asked at each station, additional questions were asked at WTS and at West Van. At WTS, the additional questions asked were a series of questions about what other transfer stations are used and what additional days of the week that WTS should be open. Slightly more than half of the customers said they do not go to another station when WTS is closed. Of the 44% who said they do go to another station, 55% of them said they go to CTR, 35% said they go to Skamania County's transfer station, 10% go to West Van, and 5% said they go to Oregon. As for their preferences on the additional open days of the week, 6 people (50% of the respondents) said Friday or included a range of days that included Friday, 5 people (42%) said Sunday, 3 people (25%) said Monday, and 1 person said Monday through Friday.

The extra question asked at West Van was simply whether people used other transfer stations on Sunday (when West Van is closed). Of the 51 people that answered this question, 28% of the people said yes and 72% said they do not use other stations on Sunday (see attached comments from West Van for more details on the responses received).

By sorting the survey responses according to age or other characteristics (cross-tabulations), a few interesting observations can be extracted from the results:

- Many of the customers who stated that they go to the transfer stations weekly or more often were businesses, and of course it's no surprise that contractors visit the transfer stations that often, but several residential customers also fell into this usage category. A total of 8 commercial self-haul customers were surveyed that said they visit the transfer stations that often, versus 6 residential customers (but bear in mind that we were more likely to find residential customers on the weekend, when this survey was conducted, and that 2 to 3 customers at CTR were not fully surveyed because they were talking on their cell phones at the time and these appeared to be business customers that may also visit the transfer stations fairly often).

  For the 6 residential customers that visit the transfer stations weekly or more often, three were found at CTR and all three of these did not subscribe to garbage collection. One of these three customers was also dropping off recyclables that day but the other two were only dropping off garbage. No residential customers were found at WTS that visit the transfer stations that often. Three residential customers were found at West Van that visit the transfer stations weekly or more often, and all three of these customers said they also subscribe to garbage collection at home. One was only dropping off yard debris, one was only dropping off recyclables and one was dropping both recyclables and garbage that day.

- The majority of services used that day were garbage disposal (except for the customers surveyed at the CTR recycling and MRW area). The second highest percentile for using the transfer station was for recycling. Yard debris and household hazardous waste services ranked third and fourth (excepting CTR Recycling as noted above).

- For combined trips, the average age of the customer that was using two or more services (recycling, yard debris, HHW or garbage disposal) that day was somewhat higher at all three stations than the average age of the customers who were only using one service. Where 2 = people from ages 31 to 54, and 3 = ages 55 and up, the average age for people who were combining trips at CTR, WTS and West Van was 2.4, 2.4 and 2.3, respectively, versus 2.0, 2.2 and 2.1 for customers that were on single-purpose visits.

Other cross-tabulations might be possible, so do not hesitate to let me know if you have specific questions along those lines. I would say, however, that there were too few female customers surveyed to be able to say anything about gender differences, so unfortunately we cannot do meaningful cross-tabulations based on gender.

Survey Results
Transfer Station Surveys conducted on August 11, 2012
(all results are percentages of the total except where noted)

Factor	CTR	CTR Recycling	Washougal	West Van
Number of Surveys	95	14	46	57
Age group for driver (or person in charge), percent breakdown;				
18 to 30	18	0	15	14
31 to 54	62	57	46	61
55 and over	21	43	39	25
Gender for driver (or person in charge), percent breakdown;				
Female	13	43	2	19
Male	87	57	98	81
Source of load, percent breakdown;				
Home	89	93	83	95
Apartment	2	0	2	0
Business	7	7	13	4
Home and Business	1	0	2	2
Do they have garbage collection at home (or at their business if the load is from a business), percent breakdown:				
Yes	73	69	65	89
No	27	31	35	11
Frequency of visits to transfer stations, percent breakdown;				
Rarely	9	15	20	4
1-2 times per year	34	15	17	30
3-4	19	23	15	13
5-6	8	23	9	24
12	15	15	24	19
24	8	0	11	4
52	4	8	4	4
More than 52 times/yr	3	0	0	4
Average (median) number of annual visits	2-3 times/yr	4-5 times/yr	4-5 times/yr	4-5 times/yr
Services used that day, percent of customers using that service;				
Recycling	13	38	35	29
Yard debris	2	0	0	16
HHW	1	62	4	14
Garbage	99	23	87	61
More than one	16	23	26	14
Do they have reusable materials in load, percent breakdown;				
Yes	15	NA	7	11
No	85	NA	93	89

Note: All figures are percentages, except the number of samples in the top row and the average number of visits per year.

Comments from CTR Survey, August 11, 2012
(survey conducted by Rick Hlavka)

General

In the course of doing the survey, at least 2 to 3 people at CTR mentioned each of the following reasons for coming to the transfer station:

- Remodeling their home.
- Missed garbage pickup.
- Recently bought a house, still cleaning up after previous owners.
- Emptying a storage unit (because they were moving into an RV or simply reducing their storage needs).

There were also 2-3 customers that I didn't survey because they were talking on their cell phones at the time, and all of these appeared to be contractors (business customers).

Reusables

One of the two people that actually said "yes" to having reusables in their load had 1-2 boxes in the back of the truck that they were going to take to Goodwill next.

One of the people that said "no" to having reusables stated that they already gave everything like that to Salvation Army.

In the load of one of the people that said "no" to having reusables, there were large plastic flowerpots clearly visible and that appeared to be in good shape (and even reasonably clean).

One of the people that said "no" to having reusables stated that they were cleaning out the garage, so I went to look at their load after they dropped it off but could not see anything I would consider reusable.

One of the people that said "no" to having reusables stated that their load was stuff that didn't sell at a garage sale so they assumed Goodwill wouldn't want it either. I looked at their load after they dropped it off but could not see anything I would consider reusable.

Comments from Washougal Survey, August 11, 2012
(survey conducted by Betty Patton)

Comments received during survey:

Because he travels for work, it would be convenient to have the facility open on another day, but not a necessity.
Brings things here that aren't collected curbside (larger items) and comes 2/yr.
Load contained lots of useable toys, car seat, etc. but responded negatively to the question regarding reusables.
Cleaning out house for neighbor. Happy to have facility here. Don't need to have it open more; it would just increase the cost.
Material from 5 construction sites. Plans his transfer station visits around the Wed & Sat schedule.
Just bought a house and is cleaning it out. Has not initiated garbage service yet.
Cleaning out Aunt's house. Brought in a tv and didn't know it was recyclable.
Mattress only.
Manages 2 mobile home parks. Has an account at CTR.
Had a lot of yard debris, but didn't separate it.
Another case of emptying aunt's house. Majority of his transfer station needs are for yard debris.

2 customers dropped off lots of recyclable material as garbage – aluminum cans, glass bottles, cardboard boxes.

Many customers (maybe 6 – 8) were moving elderly people out of houses and into assisted living.

Additional Open Days of Week:

Sunday - 5
Friday - 2
Monday and/or Friday – 2
Monday through Friday – 1
Friday – 1
Any day – 2

Ignoring the "any day" responses, the total number of times each day was mentioned was:
Sunday – 5, Monday – 3, Tuesday – 1, Thursday – 1, Friday – 5.

Note from Rick: when we were at WTS for the waste sorting, Jeff mentioned that he thinks Monday would be a good day to add.

Comments from West Van Survey, August 11, 2012
(survey conducted by Sharon Hlavka)

Reusables:

Takes reusables to church.
Goodwill and garage sales.
Had reusable wood in garbage load, but he said it was commingled.
Garbage load contained dimensional lumber, driver answered no to having reusables.
Had metal muffler, that is the closest to a reusable (?).

Use other transfer stations on Sundays?

H & H
CRC off 500, 509?
Central
Would be here on Sunday if it was open.
No, goes to church on Sunday.
Used to go to 117th, but more expensive.
Goes to H & H with construction materials and HHW at other times.
Heard about 117th
117th, but thought they didn't' take microwaves.
Where else, where are they?
117th
Orchards.
117th
This is the closest (heard quite often, though did not count the number of times).
117th
Eastside, 117th
117th
CRC.
Takes yard waste elsewhere.
Others in the area.

Additional comments

Citizens should know that the HHW and reusables collection is free.
Scale house staff is great with customer service.
I've been coming for three years, and I'm happy.
My recyclables didn't get picked up at 4701 Sheridan Place (I asked if he called it in, he said no).
Just moved from Reno.
"Already did survey" said no.
Should open up earlier.

Appendix J

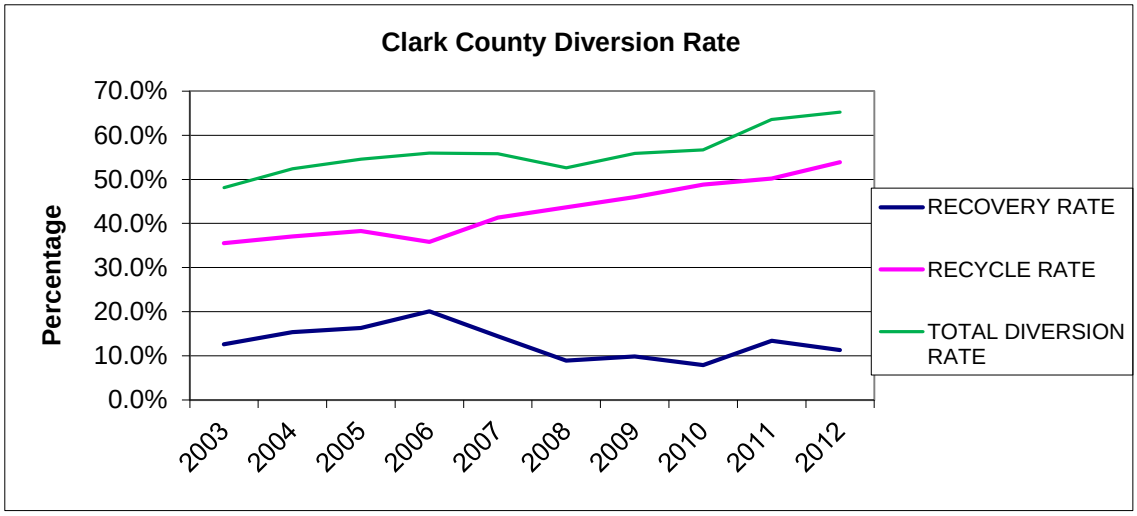
The Solid Waste Data Report

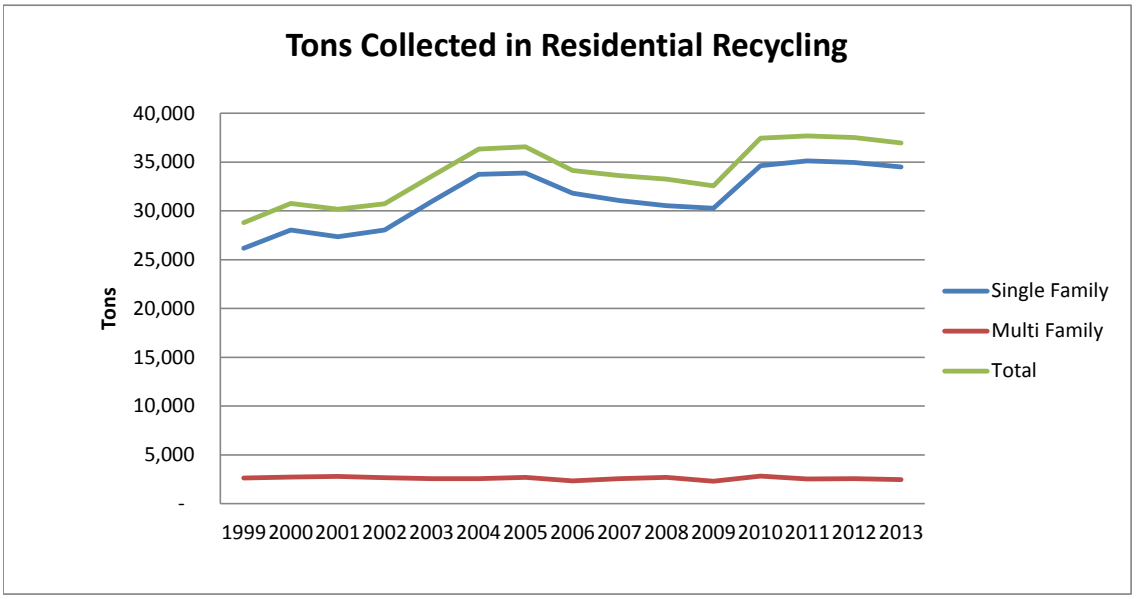
Clark County, WA

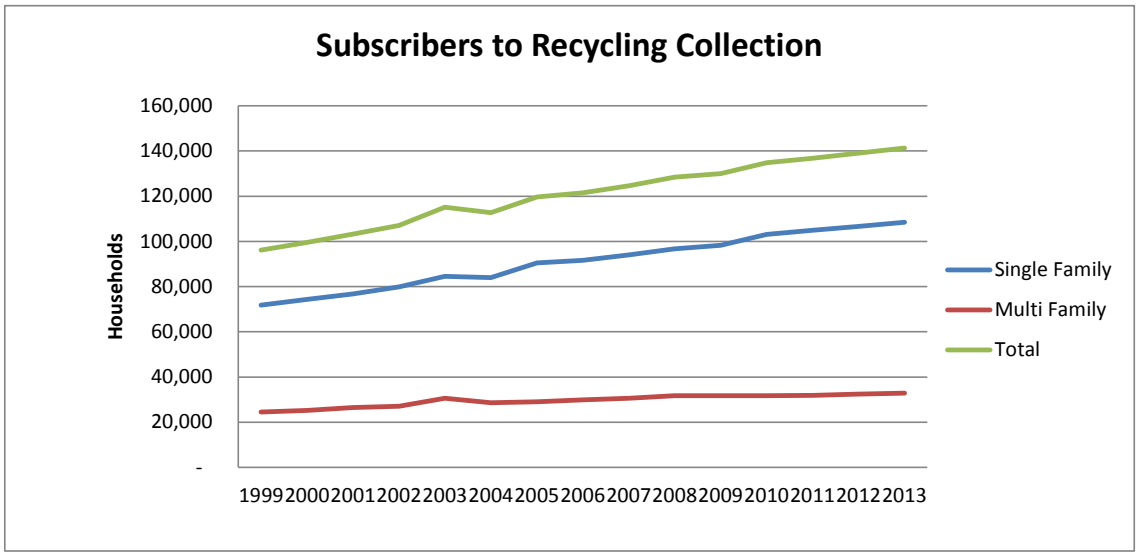
Department of Environmental Services
Solid Waste and Environmental Education Division

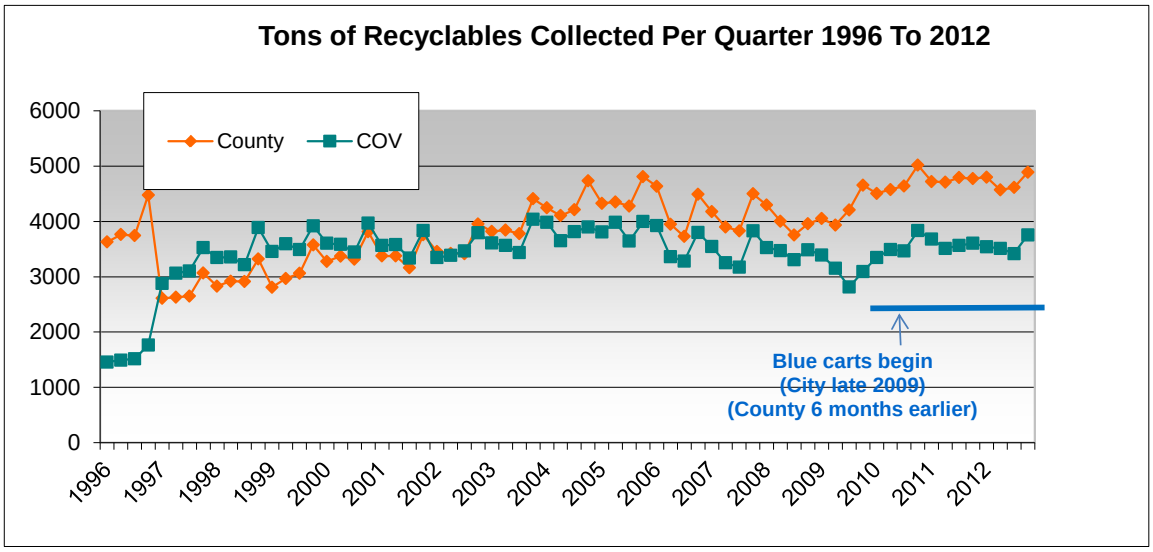
10/15/2014

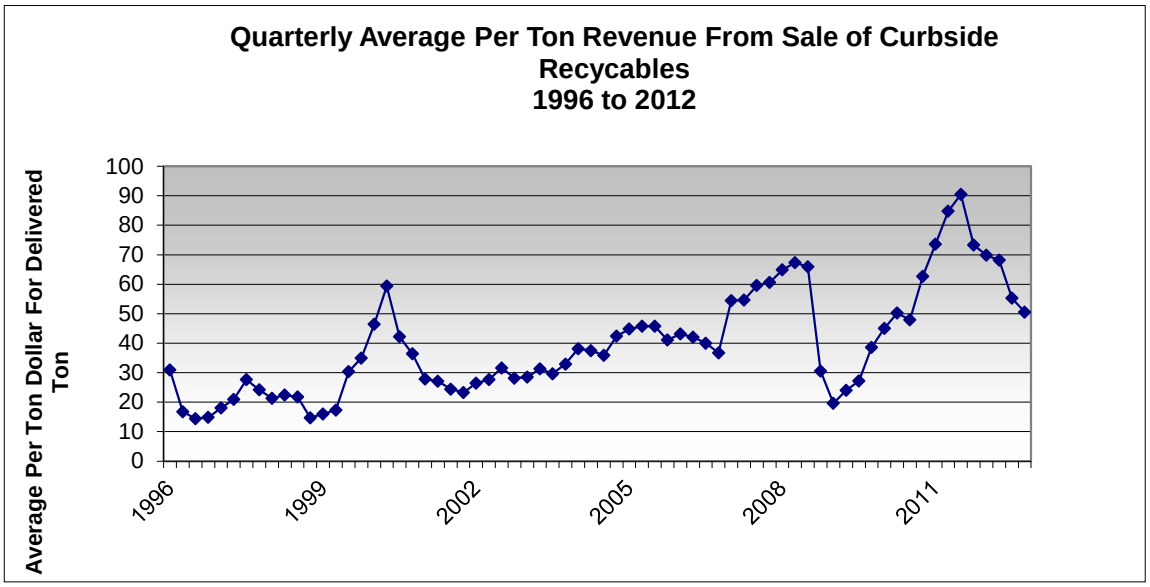
Executive Summary

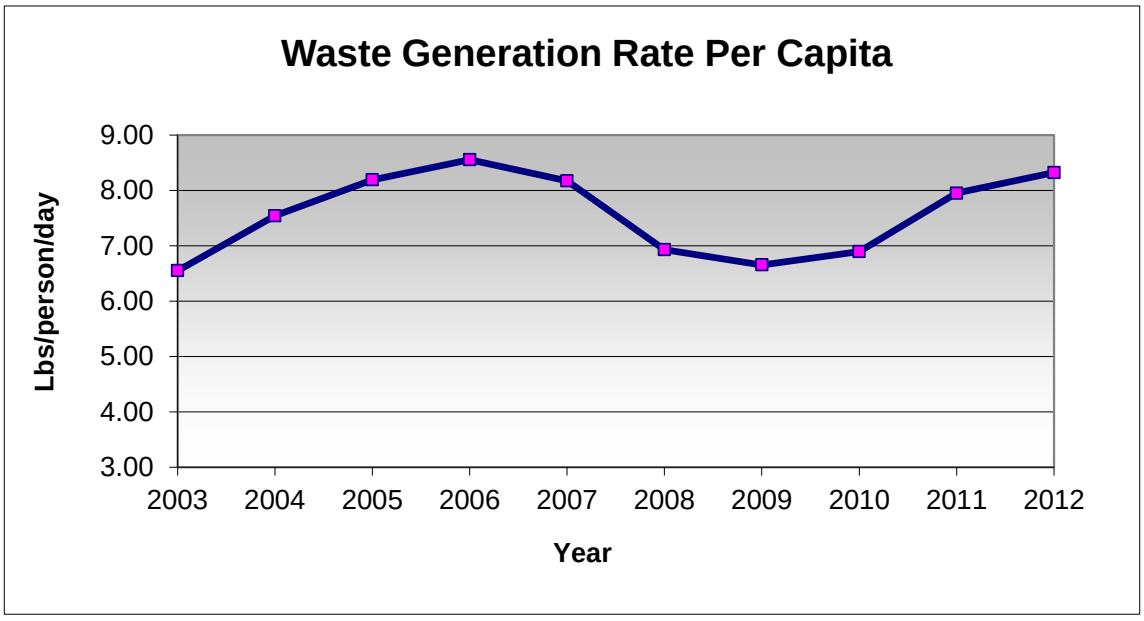


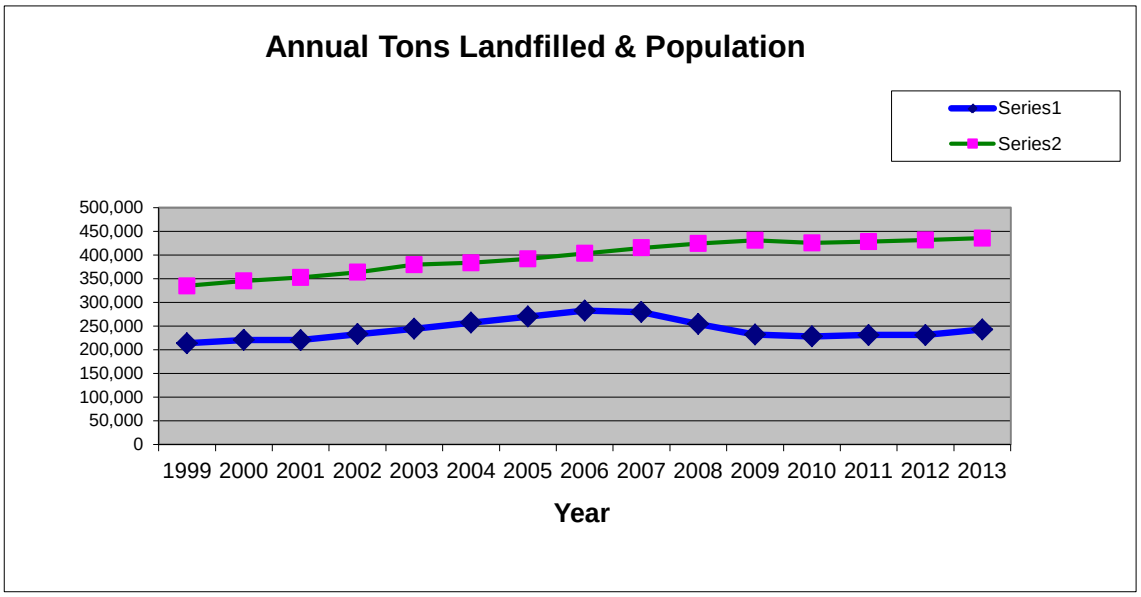


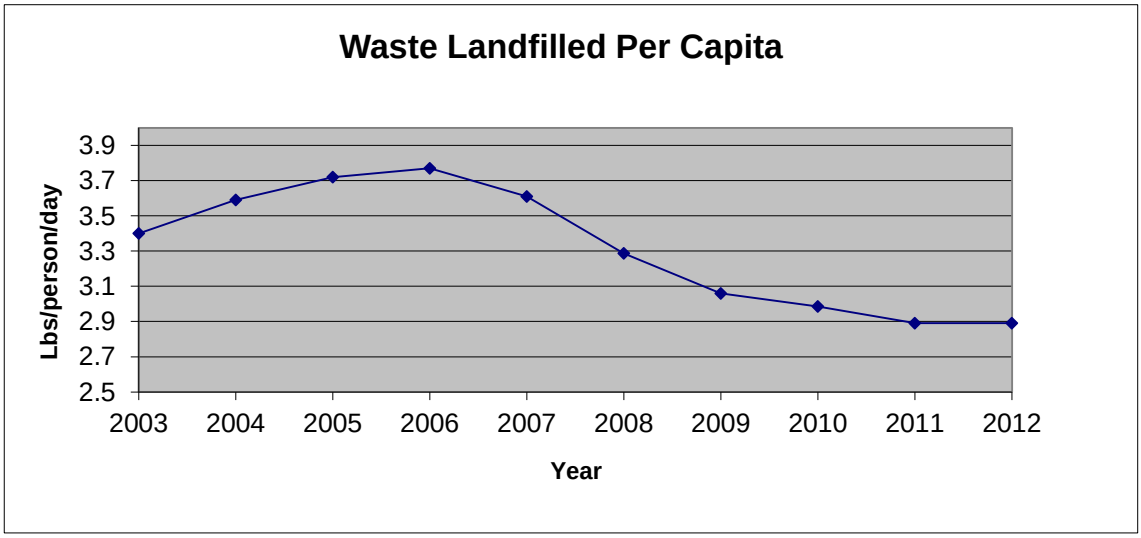


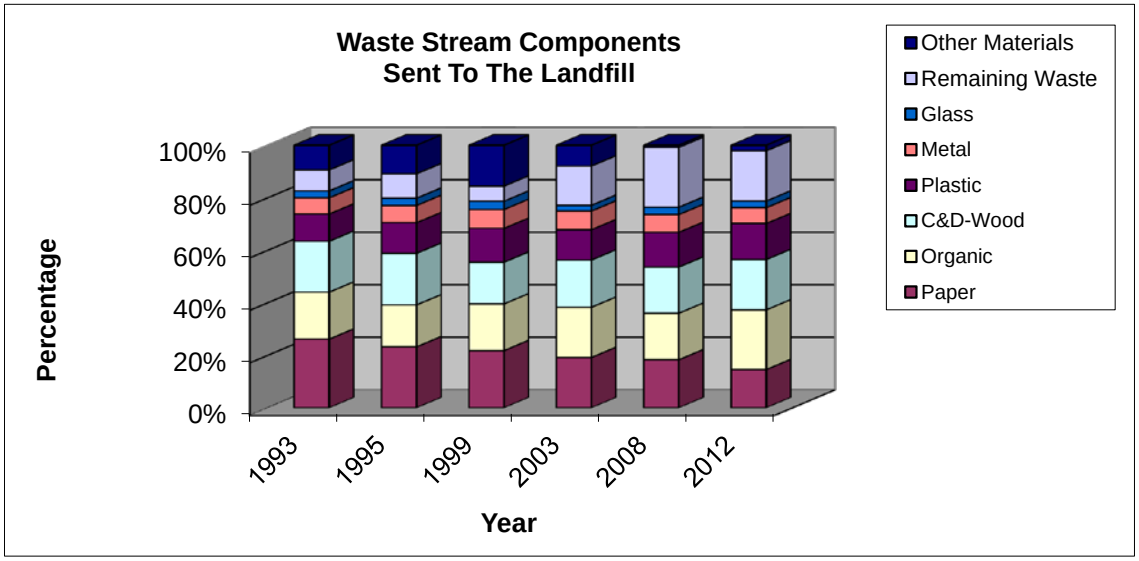

Tons of Recyclables Collected Per Quarter 1996 To 2012
County
COV
6000
5000
4000
3000
2000
1000
0
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
Blue carts begin
(City late 2009)
(County 6 months earlier)

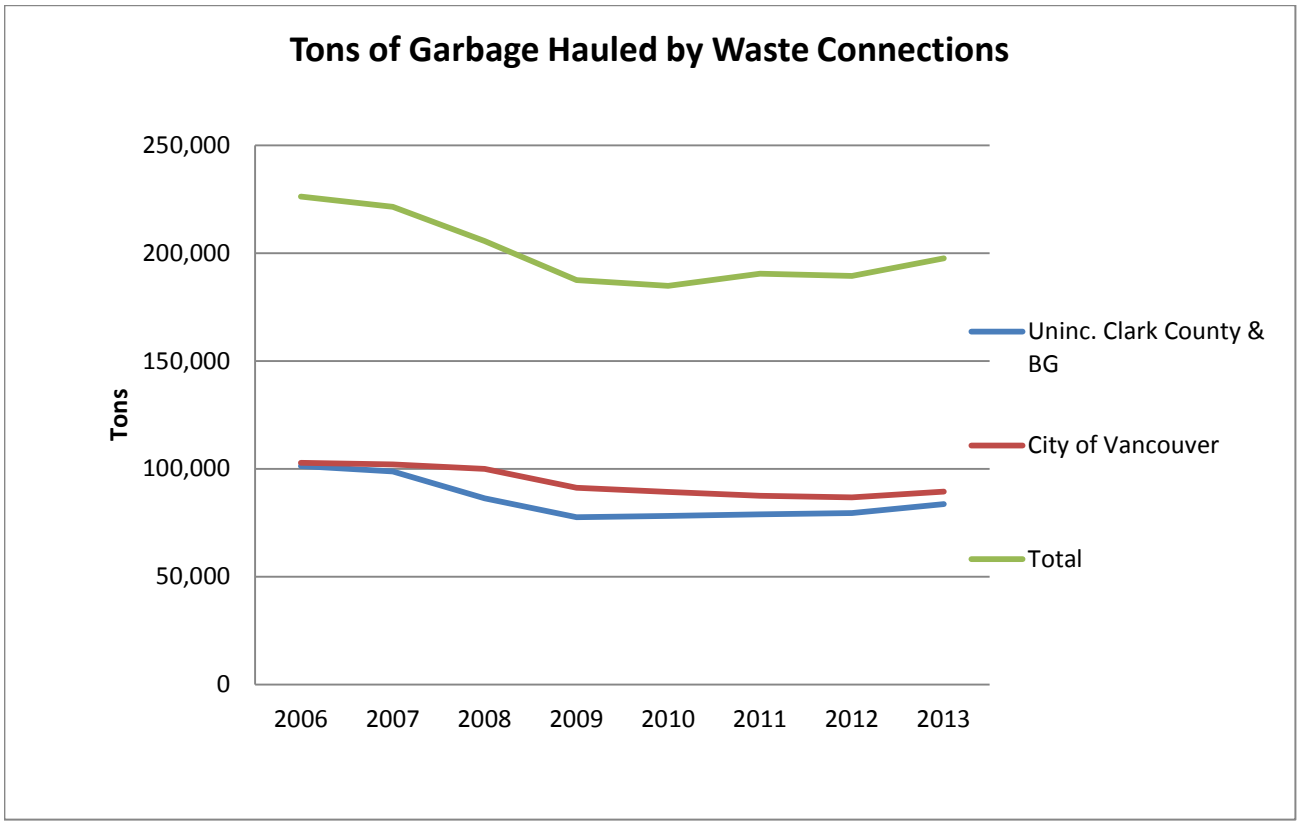

Quarterly Average Per Ton Revenue From Sale of Curbside Recycables
1996 to 2012
Average Per Ton Dollar For Delivered Ton
100
90
80
70
60
50
40
30
20
10
0
1996
1999
2002
2005
2008
2011


Waste Generation Rate Per Capita
Lbs/person/day
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
Year


Annual Tons Landfilled & Population
Series1
Series2
500,000
450,000
400,000
350,000
300,000
250,000
200,000
150,000
100,000
50,000
0
1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013
Year


Waste Landfilled Per Capita
Lbs/person/day
3.9
3.7
3.5
3.3
3.1
2.9
2.7
2.5
2003 2004 2005 2006 2007 2008 2009 2010 2011 2012
Year


Waste Stream Components
Sent To The Landfill
Other Materials
Remaining Waste
Glass
Metal
Plastic
C&D-Wood
Organic
Paper
Percentage
100%
80%
60%
40%
20%
0%
1993 1995 1999 2003 2008 2012
Year


Tons of Garbage Hauled by Waste Connections
250,000
200,000
150,000
100,000
50,000
0
Tons
2006
2007
2008
2009
2010
2011
2012
2013
Uninc. Clark County & BG
City of Vancouver
Total

# of Single Family Households												
Year	**Total HH**	**% change**	County UGA	County Rural	Battle Ground	Camas	La Center	Ridgefield	Vancouver	Washougal	Woodland	Yacolt
1999	**102,303**		34,643	19,241	2,646	4,194	545	717	37,251	2,696	42	328
2000	**105,413**	**3.04%**	35,905	19,596	2,861	4,406	581	725	38,188	2,776	43	332
2001	**107,846**	**2.31%**	36,960	19,877	3,048	4,583	601	730	38,790	2,867	43	347
2002	**112,057**	**3.90%**	38,631	20,432	3,494	5,060	640	738	39,577	3,086	43	356
2003	**114,545**	**2.22%**	39,479	20,795	3,865	5,225	670	745	40,124	3,242	43	357
2004	**118,875**	**3.78%**	41,276	21,268	4,390	5,434	730	911	40,894	3,561	45	366
2005	**122,024**	**2.65%**	42,436	21,737	4,526	5,745	797	1,057	41,413	3,886	45	382
2006	**125,119**	**2.54%**	43,810	22,058	4,623	5,788	847	1,351	41,929	4,226	45	442
2007	**127,565**	**1.95%**	45,797	21,056	4,750	5,930	862	1,496	42,781	4,393	46	454
2008	**128,246**	**0.53%**	46,048	21,081	4,929	6,033	890	1,491	42,747	4,514	46	467
2009	**129,156**	**0.71%**	46,426	21,054	5,006	6,175	896	1,512	43,013	4,559	46	469
2010	**129,808**	**0.50%**	46,616	21,046	5,079	6,314	962	1,595	43,050	4,627	46	473
2011	**130,292**	**0.37%**	46,761	21,176	5,093	6,369	973	1,628	43,107	4,666	46	473
2012	**131,084**	**0.61%**	46,956	21,242	5,133	6,422	976	1,717	43,420	4,696	45	477
2013	**132,209**	**0.86%**	47,397	21,292	5,219	6,509	988	1,880	43,648	4,755	44	477
Notes: single family housing units are based on property type codes: 10 -19 for single family and 70-79 for mobile homes.												

Single Family Curbside Recycling (in tons – includes reject)									
Year	Urban County*	Rural County**	Vancouver	**Subtotal**	Camas	Washougal	Ridgefield	La Center	Totals
1999	10,802	871	12,542	24,215	1135	813			26,163
2000	11,579	1,449	12,636	25,664	1334	945	99		28,042
2001	11,321	1,485	12,184	24,990	1321	936	103		27,350
2002	10,942	2,568	12,091	25,601	1364	965	119		28,049
2003	13,147	1,976	12,815	27,938	1700	1,202	125		30,965
2004	14,509	2,036	13,882	30,427	1850	1,311	164		33,752
2005	14,630	2,305	13,686	30,621	1756	1,244	238		33,859
2006	13,705	2,364	12,471	28,540	1,768	1,252	247		31,807
2007	13,322	2,413	11,908	27,643	1,831	1,297	282		31,053
2008	12,977	2,347	11,768	27,092	1,859	1,318	271		30,540
2009	14,010	2,287	10,578	26,875	1,840	1,278	270		30,263
2010	15,331	2,828	12,236	30,395	2,341	1,567	324		34,627
2011	15,451	2,983	12,418	30,853	2,374	1,583	319	200	35,129
2012	15,216	3,041	12,271	30,529	2,468	1,645	302	200	34,944
2013	14,860	2,861	12,324	30,044	2,353	1,569	279	254	34,498

* Includes City of Battle Ground – 2002 expands to burn ban area

**The rural curbside collection program began March 1, 1999 (includes La Center, Yacolt)

*** tare weight adjustment April 2005

Notes: volume of recycling bins = 33.6 gallons (11.2 gallons per bin); WM and WCI swapped yard debris and recycling customers 2003; WCI assumes WM customers Sept. 2005; First full year for Blue Carts -2010 (rolled out spring & fall of 2009)

Source: Contractor Monthly Reports

Single Family Curbside Recycling (Average Households Served)									
Year	Urban County	Rural County	Vancouver	**Subtotal**	Camas	Washougal	Ridgefield	La Center	Totals
1999	26,981	2208	35,070	64,259	4430	3087			71,776
2000	27,895	2,926	35,807	66,628	4547	3,107			74,282
2001	29,372	3,323	36,463	69,158	4531	3,096			76,785
2002	29,776	4,845	37,391	72,012	4684	3,189			79,885
2003	33,586	4,302	38,418	76,306	4896	3,359			84,561
2004	35,792	4,661	34,842	75,295	5119	3,614			84,028
2005	37,632	5,232	38,444	81,308	5317	3,921			90,546
2006	38,716	5,630	37,022	81,368	5,425	4,232	625		91,650
2007	39,453	6,090	37,620	83,163	5,525	4,449	822		93,959
2008	40,453	6,110	38,836	85,399	5,652	4,665	930		96,646
2009	41,622	6,000	39,225	86,847	5,835	4,574	958		98,214
2010	43,826	7,200	39,996	91,022	6,435	4,356	1,210		103,023
2011	44,784	7,778	40,387	92,949	6,386	4,425	1,210	832	104,970
2012	45,406	8,197	40,733	94,336	6,487	4,500	1,303	832	106,626
2013	45,436	8,279	41,190	94,905	6,802	4,561	1,424	832	108,524

Source: Contractor Monthly Reports

Pounds of SF Materials Recycled Per Household Per Month

Year	Urban County	Rural County	Vancouver	Camas	Washougal	Ridgefield	La Center
1999	67	66	60	43	44		
2000	69	83	59	49	51		
2001	64	74	56	49	50		
2002	61	88	54	49	50		
2003	65	77	56	58	60		
2004	68	73	66	60	60		
2005	65	73	59	55	53		
2006	59	70	56	54	49	66	
2007	56	66	53	55	49	57	
2008	53	64	51	55	47	49	
2009	56	63	44	53	47	47	
2010	58	65	51	53	60	45	
2011	58	64	51	54	60	44	40
2012	58	59	51	63	61	39	40
2013	55	58	50	53	58	33	51

Multifamily Recycling (in tons – includes reject)

Year	Urban County*	Vancouver	Cardboard Cage*	**Subtotal**	Camas	Washougal	Ridgefield	Totals
1999	715	1,919		2,634				2,634
2000	752	1,966		2,718				2,718
2001	769	2,040		2,809				2,809
2002	740	1,922		2,662				2,662
2003	732	1,849		2,581				2,581
2004	761	1,814		2,575				2,575
2005	832	1,876		2,708				2,708
2006	712	1,441	185	2,338				2,338
2007	669.61	1,898		2,568				2,568
2008	670.18	2,025		2,695				2,695
2009	525.07	1,781		2,306				2,306
2010	581.71	1,905	347	2,487				2,487
2011	593.05	1,945	354	2,538				2,538
2012	609.27	1,955	358	2,564				2,564
2013	554.31	1,911	344	2,465				2,465

Source: Contractor Monthly Reports; cardboard incl. in county/city tonnage

Multifamily Recycling (Average Units Served)

Year	Urban County	Vancouver	**Subtotal**	Camas	Washougal	Ridgefield	Totals
1999	6,563	17,870	24,433				24,433
2000	6,756	18,456	25,212				25,212
2001	6,953	19,505	26,458				26,458
2002	7,251	19,861	27,112				27,112
2003	7,342	23,256	30,598				30,598
2004	7,455	21,220	28,675				28,675
2005	7,645	21,410	29,055				29,055
2006	7,884	21,926	29,810				29,810
2007	8,136	22,512	30,648				30,648
2008	8,550	23,213	31,763				31,763
2009	8,441	23,297	31,738				31,738
2010	8,346	23,409	31,755				31,755
2011	8,344	23,484	31,828				31,828
2012	8,614	23,745	32,359				32,359
2013	8,649	24,166	32,815				32,815

Source: Contractor Monthly Reports

Pounds of MF Materials Recycled Per Unit Per Month

Year	Urban County	Vancouver	Camas	Washougal	Ridgefield
1999	18	18			
2000	19	18			
2001	18	17			
2002	17	16			
2003	17	13			
2004	17	14			
2005	17	15			
2006	18	11			
2007	15	14			
2008	13	15			
2009	13	13			
2010	12	14			
2011	12	14			
2012	12	13			
2013	12	13			

Yard Debris Recycling (in tons)								
Year	Urban County*	Vancouver	**Subtotal**	Camas*	Washougal*	Ridgefield	La Center	Totals
1999	8,453	9835	18,288					18,288
2000	9,174	10,339	19,513	715	250			20,478
2001	8,505	9,308	17,813	829	297			18,939
2002	9,784	9,710	19,494	987	334			20,815
2003	9,972	10,297	20,269	976	316			21,561
2004	10,908	12,546	23,454	1,244	374			25,071
2005	9,732	12,750	22,482	1,463	763			24,708
2006	9,499	11,548	21,047	1,690	949	121	164	23,971
2007	10,351	10,717	21,068	1,765	1,126	201	219	24,379
2008	10,550	10,386	20,936	2,066	1,178	167	377	24,723
2009	12,090	11,005	23,095	2,042	1,193	285	274	26,888
2010	12,137	11,059	23,196	2,013	1,213	254	243	26,919
2011	11,284	11,597	22,881	1,871	1,179	340	351	26,622
2012	12,182	12,367	24,549	2,019	861	585	253	28,267
2013	14,000	12,005	26,005	1,621	1,045	338	308	29,317

** Waste Connections reports in cubic yards used City of Vancouver/County conversion of 750 pounds per compacted cubic yard.*

** Includes City of Battle Ground, La Center, Yacolt – 2002 expands to burn ban area. WM and WCI swapped yard debris and recycling customers 2003; WCI assumes WM customers Sept. 2005.*

Source: Contractor Monthly Reports

Yard Debris Recycling (Average Households Served)								
Year	Urban County*	Vancouver*	**Subtotal**	Camas	Washougal	Ridgefield	La Center	Totals
1999	8,928	11156	20,084					20,084
2000	9,629	12,575	22,204	1,414	462			24,080
2001	12,020	13,596	25,616	1,315	408			27,339
2002	13,664	14,173	27,837	1,460	441			29,738
2003	13,937	16,141	30,078	1,647	463			32,188
2004	15,224	16,325	31,549	1,844	548			33,941
2005	16,918	17,202	34,120	2,041	780			36,941
2006	18,171	17,911	36,082	2,166	980	221	282	39,731
2007	19,344	18,928	38,272	2,261	1,104	320	456	42,413
2008	20,469	19,666	40,135	2,358	1,202	358	365	44,418
2009	21,475	20,107	41,582	2,450	1,349	410	398	46,189
2010	22,747	19,656	42,403	2,532	1,591	458	438	47,422
2011	23,892	20,556	44,448	2,612	1,745	519	488	49,812
2012	25,073	17,255	42,328	2,696	1,855	602	513	47,994
2013	26,054	23,133	49,187	2,816	2,188	714	537	55,442

*Source: Contractor Monthly Reports; * includes on call customers*

Pounds of YD Recycled Per Household Per Month

Year	Urban County	Vancouver	Camas	Washougal	Ridgefield	La Center
1999	158	147				
2000	159	137	84	90		
2001	118	114	105	121		
2002	119	114	113	126		
2003	119	106	99	114		
2004	119	128	112	114		
2005	96	124	119	163		
2006	87	107	130	161	91	97
2007	89	94	130	170	105	80
2008	86	88	146	163	78	172
2009	94	91	139	147	116	115
2010	89	94	133	127	92	92
2011	79	94	119	113	109	120
2012	81	119	125	77	162	82
2013	90	86	96	80	79	96

Garbage						
Year	County Inbound Tons	% increase over previous year	County Outbound Tons	% increase over previous year	Population	% increase over previous year
1993	183,210		173,092		269,500	
1994	196,385	7.2%	182,537	5.5%	280,800	4.2%
1995	197,446	0.5%	185,690	1.7%	291,000	3.6%
1996	216,420	9.6%	202,981	9.3%	303,500	4.3%
1997	223,906	3.5%	209,960	3.4%	319,000	5.1%
1998	223,280	-0.3%	211,487	0.7%	328,000	2.8%
1999	227,259	1.8%	213,696	1.0%	334,651	2.0%
2000	233,113	2.6%	220,459	3.2%	345,238	3.2%
2001	232,499	-0.3%	220,277	-0.1%	352,600	2.1%
2002	242,554	4.3%	232,769	5.7%	363,400	3.1%
2003	254,019	4.7%	244,021	4.8%	379,577	4.5%
2004	266,993	5.1%	256,899	5.3%	383,300	1.0%
2005	281,566	5.5%	270,016	5.1%	391,500	2.1%
2006	291,362	3.5%	282,508	4.6%	403,500	3.1%
2007	286,230	-1.8%	279,414	-1.1%	415,000	2.9%
2008	263,236	-8.0%	254,468	-8.9%	424,200	2.2%
2009	237,548	-9.8%	231,759	-8.9%	431,200	1.7%
2010	236,488	-0.4%	227,868	-1.7%	425,363	-1.4%
2011	232,866	-1.5%	231,030	1.4%	428,000	0.6%
2012	240,325	1.6%	230,956	1.36%	431,250	1.4%
2013	248,640	6.8%	242,588	5.00%	435,500	1.8%

Note: Tons sent to landfill (OUTBOUND) includes special waste (Industrial Waste, Contaminated Soils, Asbestos, Wastewater Treatment Plant Ash). Source: CRC monthly reports; 2011 population US Census Bureau estimate; 2012 population to be update when data is available

Tons of Garbage - City of Vancouver							
Year	Hauler	Residential	Commercial	Multifamily	Dropbox	Subtotals	Total
1999	WMV	10,115	21,388		25,159	56,661	
	WCI	12,089	5,113	1,802	13,110	32,114	88,775
2000	WMV	10,933	21,550		26,132	58,615	
	WCI	11,857	8,604	4,064	5,885	30,410	89,026
2001	WMV	10,669	21,358		25,032	57,059	
	WCI	12,345	8,614	4,728	5,372	31,059	88,118
2002	WMV	11,230	20,790		22,261	54,281	
	WCI	12,370	8,800	4,330	6,923	32,423	86,704
2003	WMV	11,264	21,115		18,832	51,211	
	WCI	13,335	9,727	4,522	8,313	35,897	87,108
2004	WMV	11,796	21,765		19,543	53,104	
	WCI	14,581	9,904	4,551	8,481	37,517	90,621
2005	WMV	7,950	11,698		15,162	34,809	
	WCI	18,834	18,662	5,804	15,923	59,223	94,033
2006	WCI	27,576	34,155	8,988	32,077		102,795
2007	WCI	28,005	34,053	9,058	30,948		102,063
2008	WCI	27,504	32,156	8,991	31,309		99,960
2009	WCI	27,542	29,046	8,677	26,056		91,322
2010	WCI	26,400	29,143	8,821	24,966		89,330
2011	WCI	26,001	28,004	8,486	25,004		87,495
2012	WCI	26,331	28,119	8,155	24,204		86,809
2013	WCI	26,019	29,016	8,926	25,461		89,422
Source: Contractor reports to City of Vancouver							

Tons of Garbage - WUTC (Unincorporated Clark County + Battle Ground)						
Year	Hauler	Residential	Commercial	Multifamily	Dropbox	Total
2006	WCI	49,801	21,008	1,106	29,503	101,418
2007	WCI	49,577	22,386	1,178	25,644	98,785
2008	WCI	47,247	16,109	1,028	22,028	86,412
2009	WCI	44,537	14,219	908	17,897	77,561
2010	WCI	44,675	14,830	947	17,741	78,193
2011	WCI	43,931	16,879	1,077	17,069	78,956
2012	WCI	44,844	17,346	1,107	16,264	79,561
2013	WCI	46,204	20,371	1,300	15,827	83,702
Source: WCI; Note: Unincorporated Clark County includes La Center and Yacolt						

SFGarbage Customer Census
(City of Vancouver)

	Weekly				Every Other Week		Monthly	Other	Total Residential Garbage Customers
	20 Gal.	32 Gal.	64 Gal.	96 Gal.	20 Gal.	32 Gal.	32 Gal.		
1999	5%	68%	9%	1%	2%	9%	5%	1%	37,389
2000	5%	69%	9%	0.60%	2%	9%	4%	0.4%	35,085
2001	5%	67%	9%	0.64%	1%	9%	4%	4%	35,793
2002	4%	68%	9%	0.68%	1%	9%	5%	3%	36,234
2003	4%	68%	8%	0.67%	1%	9.18%	5%	4%	37,081
2004	5%	67%	9%	1%	1%	9%	4%	4%	37,463
2005	4%	68%	12%	1%	1%	8%	4%	2%	38,989
2006	4%	66%	13%	1%	1%	8%	4%	3%	39,272
2007	4%	67%	14%	1%	1%	8%	3%	2%	39,916
2008	4%	65%	15%	1%	1%	9%	4%	1%	40,144
2009	4%	65%	15%	1%	1%	9%	4%	1%	40,181
2010	4%	64%	13%	1%	1%	11%	4%	2%	40,500
2011	4%	66%	12%	1%	1%	12%	4%	0%	40,785
2012	4%	65%	12%	1%	1%	12%	4%	1%	41,238
2013	4%	63%	12%	1%	1%	13%	4%	3%	41,771

SF Garbage Customer Census
(WUTC - Clark County)

	Weekly				Every Other Week		Monthly	Total Residential Garbage Customers
	20 Gal.	32 Gal.	(2) 32 Gal.	(3-5) 32 Gal.	20 Gal.	32 Gal.	32 Gal.	
1999	2.70%	71.90%	13.90%	0.70%	0.80%	6.00%	3.90%	**52,874**
2006	1.48%	64.19%	22.29%	1.74%	0.47%	7.79%	2.05%	**52,609**
2007	1.31%	63.93%	22.05%	1.95%	0.39%	8.56%	1.81%	**55,579**
2008	1.27%	64.51%	21.65%	1.86%	0.38%	8.90%	1.43%	**56,224**
2009	1.21%	66.47%	19.74%	1.45%	0.40%	10.74%	0.00%	**55,064**
2010	1.13%	66.95%	18.19%	1.29%	0.48%	11.96%	0.00%	**55,933**
2011	1.10%	65.64%	17.03%	1.00%	0.42%	12.48%	2.33%	**57,818**
2012	1.09%	65.37%	16.36%	0.98%	0.42%	13.38%	2.40%	**58,632**
2013	1.10%	65.60%	15.80%	1.00%	0.40%	13.60%	2.40%	**59,763**

Tons of Garbage - City of Washougal

Year	Hauler	Residential	Commercial	Multifamily	Dropbox	Total	Customers
2006	**WCI**	3,263	2,171	148	3,004	**8,586**	5,108
2007	**WCI**	3,522	1,607	103	3,020	**8,252**	5,795
2008	**WCI**	3,309	1,762	112	2,722	**7,905**	6,141
2009	**WCI**	4,086	1,784	107	1,684	**7,661**	4,696
2010	**WCI**	2,863	1,589	101.42	1,616	**6,169**	4,717
2011	**WCI**	4,616	1,753	194.70	6,147	**12,710**	4,738
2012	**WCI**	3,745	1,723	191.40	5,393	**11,052**	4,817
2013	**WCI**	3,445	1,734	218.00	5,698	**11,095**	4,573

Source: WCI

Tons of Garbage - City of Camas

Year	Hauler	Residential	Commercial	Multifamily	Dropbox	Subtotals	Total
2006	**CAMAS**					7,172	
	WCI				2,790	2,790	**9,962**
2007	**CAMAS**					7,114	
	WCI				1,912	1,912	**9,026**
2008	**CAMAS**					6,854	
	WCI				1,965	1,965	**8,819**
2009	**CAMAS**					6,560	
	WCI				1,690	1,690	**8,250**
2010	**CAMAS**					6,723	
	WCI	0	11		1,860	1,860	**8,583**
2011	**CAMAS**					6,739	
	WCI				1,711	1,711	**8,450**
2012	**CAMAS**					6,787	
	WCI				1,888	1,888	**8,675**
2013	**CAMAS**					6,668	
	WCI				2,068	2,068	**8,736**

Source: WCI; City of Camas

Tons of Garbage - City of Ridgefield

Year	Hauler	Residential	Commercial	Multifamily	Dropbox	Total	Customers
2006	**WCI**	799	588	0	2,071	**3,458**	1,046
2007	**WCI**	1,047	763	0	1,663	**3,473**	1,299
2008	**WCI**	938	525	0	1,145	**2,608**	1,362
2009	**WCI**	1,202	540	0	975	**2,717**	1,414
2010	**WCI**	1,050	578	0	1,030	**2,657**	1,463
2011	**WCI**	1,005	523	0	1,451	**2,979**	1,547
2012	**WCI**	1,043	356	0	2,015	**3,414**	1,674
2013	**WCI**	1,148	433	0	3,134	**4,715**	1,369

Source: WCI

HOUSEHOLD HAZARDOUS WASTE										
	POUNDS COLLECTED					DISPOSAL OPTION-POUNDS INCINERATED				
YEAR	Mobile	CRC Fixed	Curbside	Other Sites*	TOTAL	PESTICIDES (liquid, solid and aerosol)	REACTIVES (dangerous when wet, oxidizers, peroxides)	FLAMMABLE SOLIDS	TOTAL	
1999	17,705	889,545	512,260	115,480	1,534,990	35,718	2,514	615	38,847	
2000	26,587	679,348	438,380	298,227	1,442,542	31,220	2,295	400	33,915	
2001	49,667	738,077	463,240	375,632	1,626,616	41,092	3,285	357	44,734	
2002	35,698	787,051	385,020	451,484	1,659,253	47,141	2,925	543	50,609	
2003	112,592	915,372	366,800	484,510	1,879,274	67,110	2,713	87	69,910	
2004	109,177	1,248,557	476,400	266,977	2,101,111	63,191	4,443	412	68,046	
2005	114,476	1,462,579	636,960	205,440	2,419,455	64,746	5,359	150	70,255	
2006	256,761	1,712,845	436,324	150,560	2,556,490	76,213	4,426	40	80,679	
2007	213,763	1,736,080	407,940	133,620	2,491,403	54,995	4,983	61	60,039	
2008	248,559	1,813,819	420,352	139,000	2,621,730	69,307	5,721	653	75,681	
2009	125,291	1,543,532	441,200	127,536	2,237,559	61,574	3,048	291	64,913	
2010	154,552	1,595,778	734,861	118,820	2,604,011	100,059	3,453	87	103,599	
2011	106,358	2,297,559	574,204	135,132	3,113,253	117,864	5,215	86	123,165	
2012	136,764	2,103,604	481,075	113,860	2,835,303	126,546	6,036	437	133,019	
2013	91,925	2,264,961	553,620	144,193	3,054,699	122,801	4,943	294	128,038	
TOTAL	1,799,875	21,788,707	7,328,636	3,260,471	34,177,689	1,079,577	61,359	4,513	884,392	

	DISPOSAL OPTION-POUNDS RECYCLED								
YEAR	ANTIFREEZE	MIXED BATTERIES	VEHICLE BATTERIES	BLOCK FOAM	FLUORESCENT TUBES	E-WASTE	LATEX PAINT	MERCURY BEARING WASTE	OIL FILTERS	TOTAL
1999	21,230	3,671	176,050	0	0	0	115,539	16	0	316,506
2000	23,110	3,712	180,550	0	0	0	172,585	0	0	379,957
2001	28,725	5,404	183,870	0	50	0	207,076	5	0	425,130
2002	28,063	5,509	201,955	0	7,144	0	196,426	70	0	439,167
2003	37,720	9,231	213,140	0	6,249	123,176	243,797	28	0	633,341
2004	40,210	14,449	232,460	555	3,283	190,080	204,563	9	925	686,534
2005	34,913	13,697	214,152	0	12,518	214,952	181,155	87	0	671,474
2006	38,390	20,333	194,960	2,990	22,540	431,798	164,514	168	450	876,143
2007	28,510	14,250	189,680	17,670	8,873	540,809	200,576	565	250	1,001,183
2008	31,920	26,309	143,270	14,580	13,717	415,123	311,186	120	670	956,895
2009	165,500	30,843	133,730	14,645	9,962	141,924	111,304	24	180	608,112
2010	45,043	50,314	128,563	16,670	13,283	282,218	529,345	53	365	1,065,854
2011	48,816	54,640	83,820	10,861	14,346	797,651	517,690	268	0	1,528,092
2012	49,580	60,391	77,205	19,536	10,832	746,989	573,000	103	0	1,537,636
2013	55,340	81,175	63,395	54,245	21,936	711,196	622,640	104	400	1,610,431
TOTAL	677,070	393,928	2,416,800	151,752	144,733	4,595,916	4,351,396	1,620	3,240	9,588,388

	DISPOSAL OPTION-POUNDS ALTERNATIVE FUELS					DISPOSAL OPTION-POUNDS LANDFILLED				
YEAR	AEROSOLS (paint, propanes, etc)	MOTOR OIL	PAINT RELATED MATERIALS	FLAMMABLE LIQUIDS	TOTAL	PCB BALLASTS	LATEX PAINT	E-WASTE	SHARPS	TOTAL
1999	16,030	840,280	129,598	109,060	1,094,968	0	76,205	0	0	76,205
2000	12,355	721,360	160,968	83,380	978,063	600	40,212	0	0	40,812
2001	8,340	772,480	166,154	134,448	1,081,422	850	68,927	0	0	69,777
2002	15,642	708,140	168,316	150,173	1,042,271	800	116,050	0	0	116,850
2003	10,900	700,960	179,959	148,543	1,040,362	634	81,460	29,024	0	111,118
2004	8,186	809,640	187,485	172,973	1,178,284	684	124,792	16,005	1,372	142,853
2005	10,583	1,078,720	192,942	169,003	1,451,248	1,053	159,056	37,933	4,020	202,062
2006	16,774	803,380	253,434	214,355	1,287,943	672	225,566	51,695	4,240	282,173
2007	16,005	721,480	207,466	152,962	1,097,913	1,284	229,656	75,725	980	307,645
2008	15,890	707,260	250,645	134,250	1,108,045	2,029	392,964	42,820	11,960	449,773
2009	17,784	710,596	222,258	75,205	1,025,843	110	491,067	7,033	11,840	510,050
2010	24,591	952,108	264,295	72,620	1,313,614	3,940	42,760	9,420	17,880	74,000
2011	23,212	915,160	271,500	65,290	1,275,162	953	12,900	91,131	18,640	123,624
2012	23,113	679,500	289,840	78,695	1,071,148	1,921	0	7,140	21,500	30,561
2013	29,651	726,925	270,567	73,890	1,101,033	2,083	0	125,502	26,560	154,145
TOTAL	249,056	11,847,989	3,215,427	1,834,847	14,975,138	17,613	2,061,615	493,428	118,992	1,349,495

	DISPOSAL OPTION-POUNDS TREATED			DISPOSAL OPTIONS BY PER CENT OF TOTALS					
YEAR	ACIDS	BASES	TOTAL	Recycle	Incinerated	Alternative Fuel	Treatment	Landfill	TOTAL
1999	4,475	3,989	8,464	21%	3%	71%	1%	5%	100%
2000	4,215	5,580	9,795	26%	2%	68%	1%	3%	100%
2001	912	4,641	5,553	26%	3%	66%	0%	4%	100%
2002	5,266	5,090	10,356	26%	3%	63%	1%	7%	100%
2003	10,451	14,092	24,543	34%	4%	55%	1%	6%	100%
2004	9,852	15,542	25,394	33%	3%	56%	1%	7%	100%
2005	9,900	14,516	24,416	28%	3%	60%	1%	8%	100%
2006	11,355	18,197	29,552	34%	3%	50%	1%	11%	100%
2007	10,328	14,295	24,623	40%	2%	44%	1%	12%	100%
2008	11,546	19,790	31,336	36%	3%	42%	1%	17%	100%
2009	10,824	17,817	28,641	27%	3%	46%	1%	23%	100%
2010	14,100	32,844	46,944	41%	4%	50%	2%	3%	100%
2011	16,253	46,957	63,210	49%	4%	41%	2%	4%	100%
2012	18,835	44,104	62,939	55%	5%	37%	2%	1%	100%
2013	18,867	42,185	61,052	53%	4%	36%	2%	5%	100%
TOTAL	157,179	299,639	332,827	28%	3%	44%	1%	4%	100%

	PARTICIPANTS									
		CRC								
YEAR	MOBILE	FIRM FIXED HHW FACILITY #s	ESTIMATED (cell phones, curbside antifreeze, curbside household batteries, curbside oil, e-waste, pharmacy medications, pharmacy thermometers, vehicle batteries and other oil collection sites)	JAIL WORK CENTER/ EMPOWER UP	PHILIP SERVICES	PAINT TAKE BACK	HOME COLLECTION	CONTROLLED SUBSTANCES	TOTAL PARTICIPANTS	TOTAL POUNDS ALL DISPOSAL OPTIONS	POUNDS PER PARTICIPANT
1999	159	4,366	29,732	0	0	0	0	0	34,257	1,534,990	45
2000	369	3,402	27,553	0	0	0	0	0	31,324	1,442,542	46
2001	522	3,130	34,470	0	0	0	0	0	38,122	1,626,616	43
2002	408	2,793	30,241	0	183	0	34	0	33,659	1,659,253	49
2003	877	3,476	33,746	734	285	0	16	0	39,134	1,879,274	48
2004	1,599	4,335	38,578	1,351	317	0	5	36	46,221	2,101,111	45
2005	1,465	8,515	39,532	1,468	389	147	6	149	51,671	2,419,455	47
2006	3,284	9,598	36,039	2,440	474	223	12	209	52,279	2,556,490	49
2007	2,536	11,448	35,678	2,532	611	212	3	301	53,321	2,491,403	47
2008	4,553	9,296	33,416	3,216	761	198	7	470	51,917	2,621,730	50
2009	3,135	6,316	33,592	1,750	515	721	4	789	46,822	2,237,559	48
2010	5,783	8,202	42,315	2,846	2	807	5	964	60,924	2,604,011	43
2011	1,273	9,611	37,821	5,008	4	858	4	1,380	55,959	3,113,253	56
2012	2,070	10,844	36,693	4,400	1	1,104	3	1,878	56,993	2,835,303	50
2013	1,083	11,445	58,843	4,014	3	1,238	3	1,418	78,047	3,054,699	39

HHW SUMMARY BY COLLECTION VENUE						
YEAR	CURBSIDE RECYCLING	FIXED FACILITIES*	MOBILE EVENTS**	METRO LATEX	OTHER EVENTS***	TOTAL
1993	464,920	699,892	0	0	23,260	**1,188,072**
1994	332,816	435,401	0	0	54,880	**823,097**
1995	400,280	581,925	0	0	53,960	**1,036,165**
1996	422,020	872,470	0	0	64,880	**1,359,370**
1997	501,820	745,923	0	0	91,240	**1,338,983**
1998	536,780	746,630	12,322	0	100,560	**1,396,292**
1999	512,260	889,545	17,705	0	115,480	**1,534,990**
2000	438,380	477,101	26,587	202,247	298,227	**1,442,542**
2001	463,240	485,187	49,667	252,890	375,632	**1,626,616**
2002	385,020	482,175	35,698	304,876	451,484	**1,659,253**
2003	366,800	608,415	112,592	306,957	484,510	**1,879,274**
2004	476,400	937,502	109,177	311,055	266,977	**2,101,111**
2005	636,960	1,135,417	114,476	327,162	205,440	**2,419,455**
2006	436,324	1,374,665	256,761	338,180	150,560	**2,556,490**
2007	407,940	1,339,548	213,763	396,532	133,620	**2,491,403**
2008	420,352	1,143,069	248,559	670,750	139,000	**2,621,730**
2009	441,200	1,101,064	125,291	442,468	127,536	**2,237,559**
2010	734,861	1,595,778	154,552	0	118,820	**2,604,011**
2011	574,204	1,787,519	106,358	510,040	135,132	**3,113,253**
2012	481,075	2,103,604	136,764	0	113,860	**2,835,303**
2013	553,620	2,264,961	91,925	0	144,193	**3,054,699**
TOTAL	**9,987,272**	**19,542,830**	**1,720,272**	**4,063,157**	**3,505,058**	**41,319,668**
Yearly Average	**665,818**	**1,302,855**	**114,685**	**270,877**	**233,671**	**2,754,645**

***INCLUDES CENTRAL TRANSFER AND RECYCLING CENTER, WEST VAN MATERIALS RECOVERY CENTER, PHILIP SERVICES CORPORATION, JAIL WORK CENTER, SHERIFF'S WEST PRECINCT, AND HOME COLLECTION PROGRAM**

****INCLUDES PAINT TAKE BACK PROGRAM**

**** PUBLIC DROP-OFF SITES FOR USED OIL**

								Diversion		
Year	**Tons Landfilled***	**Tons Recycled**	**Tons Recovered****	**Recycling Rate**	**Diversion Rate**	**Population**	**Pounds Per Capita Landfilled Per Day**	**Pounds Per Capita Recycled Per Day**	**Pounds Per Capita Recovered Per Day**	**Pounds Per Capita Generated Per Day**
2003	235,284	161,295	57,192	35.5%	48.1%	379,577	3.40	2.33	0.83	6.55
2004	251,171	195,451	81,049	41.0%	55.4%	383,300	3.59	2.79	1.16	7.54
2005	265,690	224,099	95,487	38.3%	54.6%	391,500	3.72	3.14	1.34	8.19
2006	277,529	225,930	126,560	35.9%	55.9%	403,500	3.77	3.07	1.72	8.56
2007	273,619	256,105	89,300	41.4%	55.8%	415,000	3.61	3.38	1.18	8.17
2008	254,468	221,821	79,020	43.6%	52.6%	424,200	3.29	2.87	1.02	7.17
2009	231,759	241,814	52,322	46.0%	55.9%	432,999	2.93	3.06	0.66	6.66
2010	227,868	271,789	32,599	49.1%	8.0%	432,999	2.88	3.44	0.41	6.74
2011	228,719	315,918	84,166	50.2%	13.4%	428,000	2.93	4.04	1.08	8.05
2012	231,487	359,169	75,110	53.9%	11.3%	431,250	2.94	4.56	0.95	8.46

** MARR total adjusted outbound (no Metro, no Special Waste)*

DRAFT

2012	
RECYCLE RATE	53.9%
RECOVERY RATE	11.3%
TOTAL DIVERSION RATE	65.2%

GARBAGE	231487
RECYCLED Items	
Sheetrock	7
Yard Debris Inbound	63,132
Yard Debris (CY)	110
Food Waste	2,241
OCC / Cores	24,465
MCDB	5,493
Newsprint	19,412
Paper	15,092
Glass	9,871
Glass Cullet	-2,495
Appliances	91
Alum	480
Other Non-Ferrous	2,615
Tin Cans	1,138
Ferrous	40,785
Plastic - PET	1,089
Plastic - HDPE Nat	855
Plastic - HDPE Col	468
Plastic - LDPE	2,066
Plastic - Other	1,700
Foam Padding	17
Wood Recy	796
Commingled	77
Batteries (Car)	845
Batteries (HH)	6
Latex Paint	81
Flourescent Lights	0
Antifreeze	317
Toner Cartridges	0
Electronics	1,832
Rubble	164,767
Other	1,813
TOTAL	359,169

DIVERSION items (No Auto Hulks)	
C&D	3
Wood Energy Rec	67,703
Oil	3,887
Oil Filters	121
Tires	948
HHW Fuel	0
Rendering	922
Rubble * (non Rinker/Schmid)	
Roofing	1,375
Vactor/Sweepings/Brush	0
latex paint	151
TOTAL	75,110

665766

2011	
RECYCLE RATE	50.2%
RECOVERY RATE	13.4%
TOTAL DIVERSION RATE	63.6%

GARBAGE	228,718	Change from PY
RECYCLED Items		
Sheetrock	290	68
Yard Debris Inbound	61,668	-1891
Yard Debris (CY)	519	-499
Food Waste	2,444	-450
OCC / Cores	26,356	848
MCDB	71	-6555
Newsprint	19,564	14247
Paper	18,099	-12050
Glass	6,412	5015
Glass Cullet	1,519	649
Appliances	85	84
Alum	984	567
Other Non-Ferrous	2,142	-1268
Tin Cans	1,162	21
Ferrous	23,044	-72919
Plastic - PET	1,210	817
Plastic - HDPE Nat	785	-906
Plastic - HDPE Col	438	360
Plastic - LDPE	-	0
Plastic - Other	132,490	126911
Foam Padding	282	-57
Wood Recy	11,988	11978
Commingled	21	21
Batteries (Car)	705	70
Batteries (HH)	18	-54
Latex Paint	81	81
Flourescent Lights	-	0
Antifreeze	345	93
Toner Cartridges	-	0
Electronics	2,170	196
Other	1,025	-10514
TOTAL	315,918	54865

DIVERSION items (No Auto Hulks)		
C&D	1,194	1194
Wood Energy Rec	63,182	29498
Oil	4,185	-519
Oil Filters	119	-9
Tires	1,789	393
HHW Fuel	-	0
Rendering	890	890
Rubble * (non Rinker/Schmid)	1,691	567
Roofing	10,758	9553
Vactor/Sweepings/Brush	-	0
latex paint	358	0
TOTAL	84,166	41567

628802

2010	
RECYCLE RATE	49.1%
RECOVERY RATE	8.0%
TOTAL DIVERSION RATE	57.1%

GARBAGE	227,868
RECYCLED Items	
Sheetrock	222
Yard Debris Inbound	63559
Yard Debris (CY)	1018
Food Waste	2895
OCC / Cores	25508
MCDB	6626
Newsprint	5317
Paper	30149
Glass	1397
Glass Cullet	870
Appliances	1
Alum	417
Other Non-Ferrous	3410
Tin Cans	1141
Ferrous	95963
Plastic - PET	393
Plastic - HDPE Nat	1691
Plastic - HDPE Col	78
Plastic - LDPE	
Plastic - Other	5579
Foam Padding	339
Wood Recy	10
Commingled	0
Batteries (Car)	635
Batteries (HH)	72
Latex Paint	0
Fluorescent Lights	0
Antifreeze	252
Toner Cartridges	0
Electronics	1974
Other	11539
TOTAL	261052

RECOVERY items (No Auto Hulks)	
C&D	0
Wood Energy Rec	33684
Oil	4704
Oil Filters	128
Tires	1396
HHW Fuel	0
Rendering	0
Rubble	1124
Roofing	1205
Vactor/Sweepings/Brush	0
Latex Paint	358
TOTAL	42599

531519

Avoided Greenhouse Gas Emissions -
(MTCO2E - Million Tons Carbon Dioxide Equivalent)

Commodity	MTCO2E Saved
	2012
Aluminum Cans	(6,802)
Steel Cans	(2,569)
Glass	(1,449)
HDPE	(1,009)
PET	(2,114)
Corrugated Containers	(19,373)
Newspaper	(2,563)
Food Scraps	(33,535)
Yard Trimmings	539
Branches	(33,209)
Mixed Paper (general)	(31,902)
Mixed Plastics	
Tires	
Asphalt Shingles	(496)
Drywall	(669)

	2012
Total Change in GHG Emissions: MTCO2E	(135,151)
This is equivalent to… Removing Passenger Cars from the Roadway Each Year*	**28,453**

Solid Waste & Recycling Contractor Services

	Single-family Recycling	Multifamily Recycling	Yard Debris	Garbage
Ridgefield	Contractor: WCI Expires: December 31, 2019 Option to extend for 2 – 5 year periods			
Camas*	Contractor for recycling & yard waste: WCI Expires: December 31, 2019 Option to extend for 4 – 5 year periods			
	Contractor for roll off service: WCI Extended through December 31, 2018 Option to extend for 1 more 5 year period			
Washougal	Contractor: WCI Expires: April 1, 2024 Option to extend for 4 – 5 year periods			
Vancouver	Contractor: WCI Expires: January 31, 2020			
County-Urban (includes City of Battle Ground, La Center)	Contractor: WCI Expires: December 31, 2018; one 1-year extension.		Contractor: WCI; 7/31/23 with two 1-year extensions	WUTC
County-Rural (includes City of La Center, Town of Yacolt)				WUTC
Couty Contract with Columbia Resource Company - December 31, 2021; one additional 5-year extension; option for purchase				
*** Camas hauls residential**				
WCI = Waste Connections, Inc. (www.wasteconnections.com); www.wcnorthwest.com/				
WCI holds contract for School Recycling (Battle Ground, Camas, Evergreen, Hockinson, La Center, Ridgefield, Vancouver, and Washougal school districts). Expires September 3, 2018. Option to extend for one 2-year period				
Philip Services Corp: Mobile Collection & Door-to-Door. Contract expires December 31, 2015 RFP to be issued June 2015				
EmpowerUp - contract expires 12/31/14				

Solid Waste Disposal "Tip" Fee				
	Tipping Fee	Drop Loads (per ton)	Percent Change	Transaction Fee
1998	$74.50	n/a	-	n/a
1999	$66.85	$59.40	-	$10.00 per load
1999 (July 1)	$65.10	$57.65	-	$10.00 per load
2000	$65.10	$57.65	-	$10.00 per load
2001	$67.56	$59.83	3.8%	$10.00 per load
2002	$69.04	$61.14	2.2%	$10.00 per load
2003	$69.78	$61.79	1.1%	$10.00 per load
2004	$70.73	$62.64	1.4%	$10.00 per load
2005	$71.75	$63.53	1.4%	$10.00 per load
2006	$73.18	$64.80	2.0%	$10.00 per load
2007	$74.72	$66.16	2.1%	$10.00 per load
2008	$76.77	$67.98	2.8%	$10.00 per load
2009	$79.35	$70.26	3.4%	$10.00 per load
2010	$79.35	$70.26	0.0%	$10.00 per load
2011	$80.96	$71.68	2.0%	$10.00 per load
2012	$82.78	$73.29	2.2%	$10.00 per load
2013	$84.28	$74.62	1.8%	$10.00 per load
2014	$85.61	$75.81	1.6%	$10.00 per load

*Fourth Amendment: Tip fee for MSW reduced from $66.85 to $65.10, and Tip Fee for Drop Box reduced from $59.40 to $57.65 on July 1, 1999
http://data.bls.gov

Waste Stream Analysis						
Category	1993	1995	1999	2003	2008	2012
Paper	**26.2%**	**23.3%**	**21.8%**	**19.2%**	**18.3%**	**14.6%**
Newspaper	1.8%	2.0%	2.1%	1.6%	1.0%	0.7%
Cardboard	4.7%	5.3%	4.7%	4.0%	4.7%	3.1%
Office and Computer	0.9%	0.9%	0.9%			
Mixed Waste Paper	7.7%	6.7%	4.2%	7.0%	5.8%	4.5%
Magazines			1.1%			
Milk Cartons, Other			0.2%		0.2%	0.2%
Non-Recyclable Paper	11.1%	8.4%	8.5%	6.5%	6.5%	3.7%
Plastic	**10.4%**	**11.6%**	**12.9%**	**11.5%**	**13.2%**	**13.7%**
PET Bottles	0.2%	0.4%	0.4%	2.2%	0.8%	0.74%
HDPE Bottles	0.6%	0.7%	0.5%		0.6%	0.45%
Bottles 3-7			0.1%		0.1%	0.06%
Tubs						0.22%
Film and Bags						5.20%
Plastic Packaging	3.9%	6.9%	6.8%	7.7%	7.4%	0.36
Other Plastic Products	5.4%	3.0%	4.3%	1.7%	3.7%	6.06%
Expanded Polystyrene	0.3%	0.6%	0.8%		0.6%	0.62%
Metal	**6.2%**	**6.6%**	**7.2%**	**7.1%**	**6.8%**	**6.0%**
Aluminum Cans	0.4%	0.4%	0.4%	0.3%	0.3%	0.3%
Aluminum Containers	0.1%	0.1%	0.1%			
Tin Cans	0.9%	1.1%	0.9%		0.9%	0.6%
Mixed Metals/Materials	2.2%	1.5%	2.9%	3.3%	2.4%	3.3%
Ferrous Metals	2.1%	2.5%	2.1%	3.1%	2.8%	1.4%
White Goods	0.3%	0.6%	0.2%			
Non-Ferrous Metals	0.2%	0.3%	0.3%	0.2%	0.3%	0.6%
Aerosol Cans		0.1%	0.2%	0.1%		
Glass	**2.7%**	**2.7%**	**3.2%**	**2.2%**	**2.8%**	**2.5%**
Clear Bottles	1.4%	1.4%	1.5%	1.0%	1.0%	0.9%
Brown Bottles	0.4%	0.4%	0.7%	0.5%	0.5%	0.5%
Green Bottles	0.3%	0.4%	0.4%	0.3%	0.3%	0.4%
Non-Recyclable Glass	0.6%	0.5%	0.5%	0.5%	0.9%	0.8%
Organic	**28.9%**	**26.8%**	**26.3%**	**29.5%**	**17.7%**	**22.7%**
Food Wastes	12.1%	11.9%	14.5%	15.3%	16.3%	20.4%
Yard Debris	5.8%	4.1%	3.3%	3.8%	1.5%	2.3%
Recoverable Wood	11.0%	10.8%	8.5%	10.4%	9.7%	9.8%
Other Materials	**17.8%**	**19.8%**	**23.0%**	**15.5%**	**19.7%**	**21.2%**
Construction/Demolition	8.4%	8.9%	7.4%	7.6%	6.0%	9.4%
Tires	0.1%	0.3%	0.3%			
Rubber Products	0.6%	0.2%	0.3%			
Disposable Diapers	2.1%	2.8%	3.1%			
Textiles	4.6%	5.7%	3.5%			
Carpet			2.8%	4.5%	1.9%	3.0%
Leather	0.0%	0.1%	0.1%			
Hazardous Waste	1.8%	1.5%	2.4%	1.2%	2.1%	0.2%
Medical Waste						0.0%
Animal Excrement						1.8%
Household Batteries						0.1%
E-Waste						0.1%
Fines			2.8%			
Ash	0.2%	0.3%	0.3%			
Reusable Products				2.2%		
Remaining Waste	**8.0%**	**9.3%**	**5.7%**	**15.0%**	**21.6%**	**19.1%**
	100.0%	100.0%	100.0%	100.0%	100.0%	99.9%

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Appendix K
Decision Tree for Assessing SWMP Applicability and Enforcement Status
In Relation to Special Waste Collection and Disposal

Are wastes regulated under state & federal hauling & disposal laws (e.g. hazardous waste, dangerous waste, biomedical waste, contaminated soil, etc.? *(testing & other documentation may be required by the local jurisdiction)*

No — Yes → Hauling and/or disposal must comply with applicable federal and state laws

Are wastes being self-hauled?

No — Yes → Waste may be delivered to a facility/market "outside" the County's solid waste management system

Are wastes source separated and will be reused, recycled, composted or used for energy recovery, including beneficial use and soil amendment? *(testing &other documentation may be required by the local jurisdiction)*

No — Yes → Commercial Recycler or Dropbox operator may collect and deliver waste to a facility for reuse, recycling, composting, or energy recovery. Every operator needs to comply with local jurisdictions registering and/or licensing regulations

Are wastes of a large volume or have special physical attributes? (*such volume or attributes could not be handling at County contracted transfer stations?*

No — Yes → Staff documents situation and makes recommendation to Public Works Directors

↓

Final determination made by the jurisdiction's and County's Public Works Directors

↓

Material may be hauled by any licensed common carrier and taken directly to a permitted disposal facility

← Exclusive garbage collection contracts (City) or WUTC permits (County) dictate who collects; the rates and services provided; and where material is disposed.

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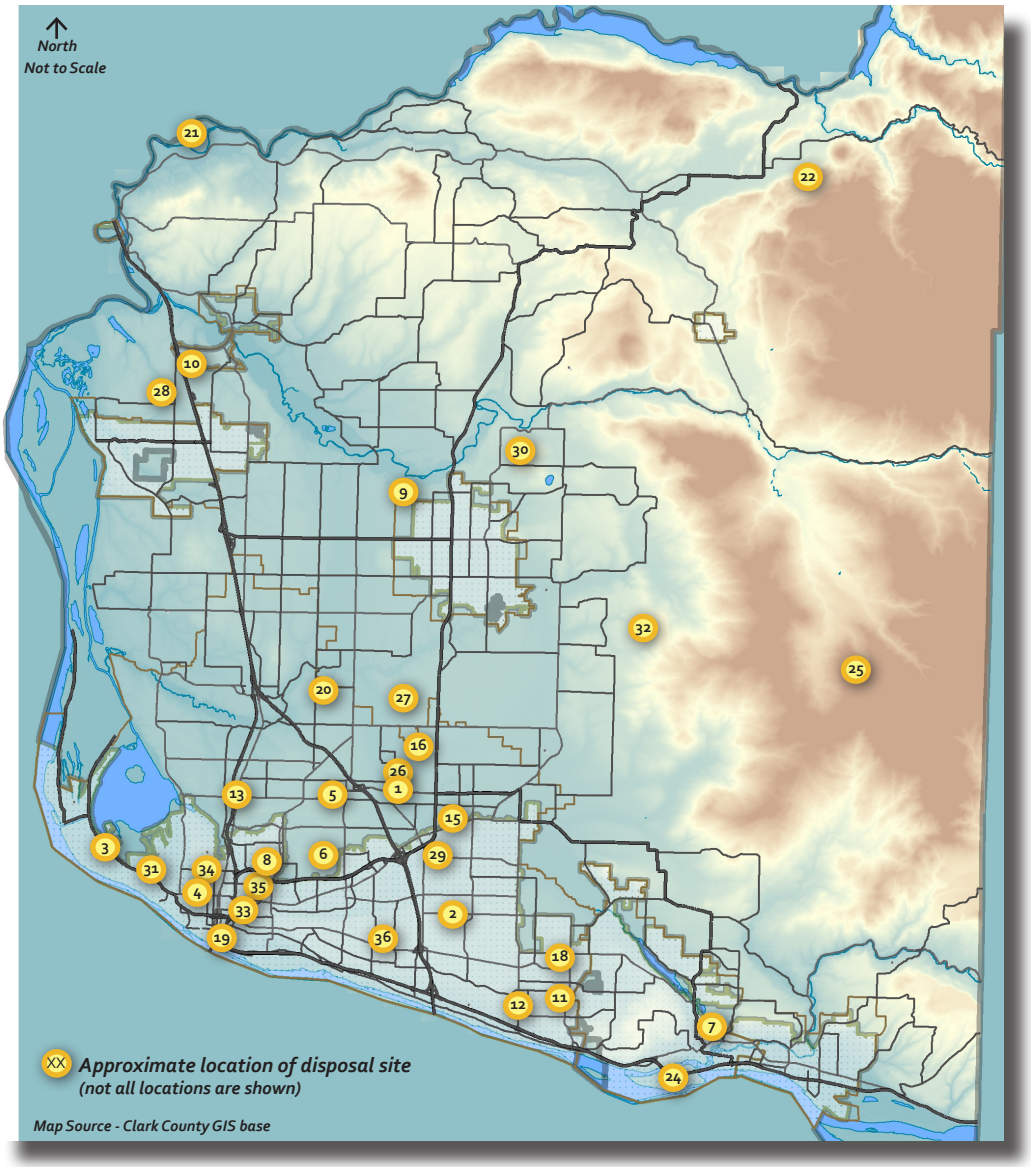
APPENDIX L
Disposal Sites In Clark County
Operating, Non-Operating, Abandoned and Closed

	Landfill Name	Operations	Location	Comments
1	79th Street Landfill	to 1989	78th St. east of 94th Ave.	Clarifier solids (Boise Cascade) and CDL - including tires
2	Al Angelo's Landfill	late 1960s	N.E. 18th St., near Evergreen High School	None
3	Alcoa-Vancouver	Unknown	5701 N.W. Lower River Road	Confirmed hazardous substances site; on National Priorities List (NPL) with Ecology (state). Lead cleanup in progress
4	Allied Chemical Corporation	Unknown	West 26th St.	No further action
5	Bill Fleming site	Unknown	5600 N.E. 78th St.	None
6	Bridges Dump site	Unknown	4200 N.E. 62nd Ave.	None
7	Camas Landfill	1920s to 1950s	Near Camas High School	Residential and industrial waste
8	Carl L. Meyer site	Unknown	2818 N.E. Cherry Road	None
9	Cherry Grove Landfill	1963 to 1975	N.E. 249th St. near N.E. 92nd Ave.	Originally closed in 1970 by order of Southwest Washington Health District
10	Circle "C" Landfill	to 1990	31313 NWParadise Park Road, Ridgefield	Closed multiple purpose landfills. Gas collection and groundwater monitoring
11	Clark County Landfill I	1920s to 1940s	N.E. 192nd Ave. near S.E. 11th St.	Filled old gravel pit
12	Clark County Landfills II and III	mid 1970s	S.E. 15th St. & S.E. 164th Ave.	Filled two gravel pits
13	Columbia Pest Control Dump	Unknown	8405 Calef Road	Site reported to Ecology as potential hazardous substances site
14	County Dump site	Unknown	Hazel Dell Road	Waste dumped in a large pit
15	Dewils Industries Dump	Unknown	6307 N.E. 127th Ave.	None
16	Dietrich Demolition Pit	1950s to 1992	11034 N.E. 117th Ave.	Operator ceased accepting waste in March 1992. Closed CDL Landfill
17	Doyle Gravel Pit	Unknown	N.E. 142nd Ave.	None

	Landfill Name	Operations	Location	Comments
18	English Pit Landfill	1940 to 1979	192 N.E 92nd Ave.	MSW Landfill site has received "engineered" final cover. Gas and groundwater monitoring program established in 2002
19	Fort Vancouver site	1845 to 1930	Covered by intersection of Highway 14 and I-5	Probably the first landfill in Clark County
20	George Sellinger Landfill	Unknown	25212 NE 77th Ave.	None
21	Hillside (Nieme) Landfill	mid-1970s	Nieme Road	None
22	International Paper Landfill	1954 to 1979	Healy Road, Amboy, Washington	Site ranked by Ecology as "Contaminated"
23	Kelly Road Landfill	Unknown	N.E. Kelly Road	Filled old gravel pit
24	Lady Island (James River Wood Waste Landfill)	1987 to currently open and operating	Lady Island Camas, Washington	Fiber Mill wastes
25	Larch Mountain site	Unknown	15314 N.E. Dole Valley Yacolt, Washington	Site ranked by Ecology as part of toxics cleanup program, due to confirmed presence of hazardous substances
26	Leichner Landfill	1937 to 1991	9411 N.E 94th Ave.	Currently under post closure permit through SWWHD. Gas collection and groundwater monitoring; purchased by Clark Co. in 2010; Master Planning is currently taking place.
27	Leonard Ek	Early '90's	15800 NE 99th Avenue	5-acre gravel mine filled w/unknown demolition waste
28	Pacific Wood Treating	1979 to 1983	3700 N.W. 289th St. Ridgefield	Site ranked by Ecology as "Contaminated" before cleanup was completed
29	Plew's Disposal	1960s to 1974		Also known as Turnbull Landfill
30	Roy Elmer Landfill	1930s to 1970s	27000 N.E. 269th St.	Ravine filled with waste
31	Rufener Landfill (a.k.a. Boise Cascade Landfill, Fruit Valley Landfill, Portside Landfill)		N.W. Lower River Road, Vancouver	Landfill was transferred to Laframbois Properties, LLC; solid waste handling permit and financial assurance expired; property sold to 2600 LLC in Aug. 2013; all parties entered into a Consent Decree; landfill is being decommissioned.

	Landfill Name	Operations	Location	Comments
32	Toftdahl Drum site	Unknown	22033 N.E. 189th St. Brush Prairie, Washington	Site off list. No further action.
33	Vancouver Barracks and Veterans Hospital site	Unknown	under I- 5	Wastes from the Vancouver Barracks and Veterans Hospital
34	Vancouver City Landfill 1	1951 to 1953	North of 4th Plain & west of Clark County Building	Student housing built over and/or in the area
35	Vancouver City Landfills 2 and 3	1934 to 1937	North of 39th St. near "S" St.	None
36	Walz Demolition	to 1988	N.E. 6th St. near Garrison Square	Filled old gravel pit - closed CDL Landfill gas monitoring

Operating, Non-Operating, Abandoned and Closed Disposal Sites in Clark County



APPENDIX M
Siting Guidelines For Solid Waste Handling Facilities

Introduction

The *Siting Guidelines for Solid Waste Handling Facilities* contained in this appendix and incorporated into the plan update consists of the following four sections. The section on Facility Categories establishes standard definitions and categories for handling facilities that may be sited in Clark County in the future. The definitions also identify types of handling facilities that are not recommended by this plan or are recommended only as an essential public facility. The General Locational Considerations section establishes the potential physical, environmental, and institutional impact areas that must be considered and specifically addressed in the siting process for each type of facility. The third section on Generic Siting Process establishes a standard sequence of activities for investigating and selecting a solid waste handling facility site. The last section on Public Information and Involvement Program establishes recommended guidelines for communicating with and involving the general public and the affected local community in the site investigation and selection process.

In order to carry out their solid waste management planning responsibilities, the County and the participating cities in this Plan must provide for the proper and uniform development of handling facilities to meet future solid waste management needs. The selection and community approval of a site is often the most public, controversial, and difficult step in the overall development process.

The siting guidelines described in this appendix are applicable to potential facilities that are being either publicly or privately developed. The siting guidelines include, by reference, any locational criteria or location related design requirements established by the federal Resource Conservation and Recovery Act (RCRA—Subtitle D), the state Solid Waste Management— Recovery and Recycling Act (RCW 70.95), state for Solid Waste Handling Standards (WAC 173-350), and Criteria for Municipal Solid Waste Landfills (WAC 173-351).

These siting guidelines are intended to promote a proper and uniform siting process that can be consistently applied throughout all participating local government jurisdictions in Clark County. These guidelines will provide resource and environmental agencies and the general public with the assurances that the siting process will consider all relevant factors and site selections will be made from an objective basis. In addition, the guidelines will identify how the general public, the local community, potentially impacted parties, and others can provide input into the siting process.

The siting process covered in these guidelines includes both the initial site investigations leading up to the selection of a specific site and the public involvement and education activities associated with these initial investigation activities. Land use permitting (with the local government jurisdiction), solid waste facility permitting (with the jurisdictional health department) and other permitting activities, are not directly covered by these guidelines.

Planning for and siting a solid waste facility is an integrated part of the County's waste management strategy and this Plan. Planning for future facilities incorporates and utilizes the County programs for waste prevention, recycling and recovery of waste; capacity at existing contracted solid waste facilities; and capacity at private waste and recovery facilities.

Facility Categories

This section defines and establishes standard categories for solid waste handling facilities. These definitions and categories are listed below. Note that no facility category or definition has been established for recyclable materials receiving centers that accept only source-separated materials. This plan recommends that no privately owned and operated inert waste landfills or limited purpose landfills be sited in the County. Any municipal solid waste landfills to be sited in the County will be a part of the regional solid waste management system, specifically recommended by the SWMP, and designated as an essential public facility. Such a landfill could be opened to assist in response to a disaster or major event. In 2006, EPA designated the Troutdale Aquifer (which underlies much of Clark County) as a Sole Source Aquifer. This designation greatly inhibits the likelihood that any landfill will be sited in the county for any purpose.

A. ***Conditionally exempt small quantity generator collection facility***. A facility that receives, sorts, temporarily stores, and processes for safe transport extremely hazardous waste and dangerous waste from conditionally exempt small quantity generators.

B. ***Household hazardous waste collection facility***. A facility for receiving, sorting, temporarily storing, and processing (for safe transport) household hazardous waste from residential generators.

C. ***Inert waste landfill***. A land disposal site for receiving and disposing of inert materials only as defined in WAC 173-3350.

D. ***Limited purpose landfill***. A land disposal site for the receiving, sorting and disposing of limited types of solid wastes (other than unseparated municipal solid wastes) including, but not limited to, asbestos, treated and untreated petroleum contaminated soils, construction, demolition, and land clearing (CDL) wastes, wood wastes, treated sludges from municipal and industrial processes, and other special waste materials as defined in WAC 173-350.

E. ***Mixed construction, demolition, and land clearing (CDL) waste recycling facility***. A facility that receives, temporarily stores, processes, and recovers recyclable materials from mixed CDL wastes for reuse, sale, or further processing.

F. ***Mixed municipal solid waste landfill***. A land disposal site for the receiving, sorting, and disposing unseparated municipal solid wastes.

G. ***Municipal solid waste storage facility***. A facility, not open to the general public, where sealed containers are received, stored up to 72 hours, staged, and/or transferred from one transportation mode to another.

H. ***Petroleum-contaminated soil processing facility***. A facility that receives and processes petroleum contaminated soils to remove contaminates through chemical, biological, or other treatment methods.

I. ***Resource recovery facility***. A facility for receiving, temporarily storing, and processing solid wastes to obtain useful material or energy.

J. ***Small-scale specialized incinerator***. A relatively small-scale facility that receives, processes, temporarily stores, and burns a separated special solid waste material, including, but not limited to, incinerators for disposal of infectious wastes, municipal and industrial sludges, and other special wastes.

K. ***Solid waste composting facility***. A facility that receives, temporarily stores, and processes solid waste by decomposing the organic portions of the waste by controlled biological means to produce useful products, including, but not limited to, compost, mulch and soil amendments.

L. ***Solid waste transfer station***. A facility that receives, processes, temporarily stores, and prepares solid wastes for transport to a final disposal site, with or without materials recovery before transfer.

M. ***Wood waste recycling facility***. A facility that receives, temporarily stores, and processes untreated wood, scrap lumber, timbers, and natural wood debris (e.g., logs, limbs, and tree trunks) into products such as hog fuel, fuel pellets, chips, or fireplace logs.

N. ***Yard debris collection facility***. A facility that receives yard debris for temporary storage, awaiting transport to a composting or processing facility.

O. ***Yard debris processing facility***. A facility that receives, temporarily stores, and processes yard debris into a soil amendment, mulch or other useful product through a chipping, screening, or grinding process other than biological decomposition (composting).

General Considerations

Consideration must be given to the physical, environmental, and institutional impact areas that need to be specifically addressed for each category of handling facility. No specific locational standards or requirements are established as part of these guidelines except those federal, state, and local siting restrictions already in existence. Instead, these guidelines establish potential impact areas for each type of handling facility that must be specifically considered and evaluated as part of the siting process.

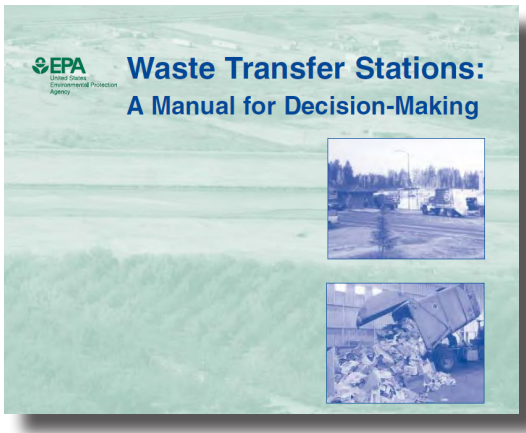
An integral part of a siting process is public input and involvement. Public involvement takes places during the entire process. Guidance for ensuring public participation is discussed in the Public Information and Involvement Program section below. The U.S. Environmental Protection Agency (EPA) has many resources and documents to help with siting and public involvement of solid waste facilities. These resources are available online; a few are listed below:

- ***Waste Transfer Stations: Involved Citizens Make the Difference*** (EPA530—01-003)
  http://www.epa.gov/osw/nonhaz/municipal/pubs/wtsguide.pdf

- ***Sites for our Solid Waste: A Guidebook for Effective Public Involvement*** (EPA530-SW-90-019)
  http://www.epa.gov/epawaste/nonhaz/municipal/pubs/sites/toc.pdf

- ***Waste Transfer Stations: A Manual for Decision-Making*** (EPA530-R-02-002)
  http://www.epa.gov/epawaste/nonhaz/municipal/pubs/r02002.pdf

- ***Criteria for Solid Waste Disposal Facilities A Guide for Owners/Operators*** (EPA530-SW-91-089)
  http://www.epa.gov/osw/nonhaz/municipal/landfill/criteria/landbig.pdf



General Siting Process

The primary goal of the solid waste handling facility siting process described in this appendix is to provide decision makers with a choice of sites that maintain solid waste service levels, are environmentally acceptable, are feasible from an engineering and cost perspective, and are acceptable to the local community and general public. This generic approach has been developed with uniform procedures that will result in an efficient and streamlined process and will provide for the proper comparisons of alternative sites.

The process begins with the development of "facility-specific" site screening criteria, as outlined in Step 1. Possible sites are then identified and screened with clearly unsuitable sites dropped from further consideration. This leads to preliminary feasibility and environmental evaluations on the reduced number of candidate sites. For publicly developed facilities, the evaluations may produce a preferred set of alternatives for the jurisdictional local government to pursue for development. For privately developed facilities, that same process should be followed with the lead permitting agency for the jurisdictional local government coordinating the development of the site screening criteria and assisting in the selection process.

No facility siting process should proceed unless a demonstrated need or recommendation exists in the most recently adopted solid waste management plan update. If the need or recommendation is not in the current solid waste management plan, the need must be demonstrated and recommended by the jurisdictional local government to be included in the *Solid Waste Management Plan*. A plan amendment must be adopted before proceeding further in the siting process.

There are eight steps in the generic siting process:

- **Step 1** — Submit a Notice of Intent to Site Solid Waste Handling Facility
- **Step 2** — Development of site screening criteria
- **Step 3** — Candidate site identification
- **Step 4** — Broad site screening
- **Step 5** — Focused site screening
- **Step 6** — Comparative site evaluations
- **Step 7** — Developer and local government decision-making
- **Step 8** — Environmental review process

Step 1—Submit a Notice of Intent to Site Solid Waste Handling Facility

Before beginning the siting process, the developer should formally notify the local government jurisdiction, Clark County Environmental Services, the Solid Waste Advisory Commission (SWAC), and Clark County Public Health of their intent to begin the siting process. This notification will provide the local government with the lead time required to properly respond to the needs and effects of the siting process and trigger the public involvement process of the affected local governments.

Step 2—Development of Site Screening Criteria

The facility developer and the jurisdictional local government should establish a set of site screening criteria to eliminate candidate sites with "fatal flaws" and rank sites with the highest potential for successful development. These criteria should be specific to the facility category being sited and should consider those impact areas identified in Figure E-l. The criteria should also reflect the standards established in Resource Conservation and Recovery Act (RCRA)—Subtitle D, Revised Code of Washington (RCW) 70.95, Washington Administrative Code (WAC) 173-350 and 173-351, and any other applicable federal, state, or local laws and regulations. Site screening criteria is discussed in more detail below.

Step 3—Candidate Site Identification

The level of effort expended by the developer in identifying possible sites should depend upon the size and type of facility being sited as well as the nature of the service area. However, a considerable effort should be made county-wide to inform citizens and businesses that a facility siting effort is under way and that the developer will

be accepting nominations for possible sites. These nominations will allow sites that have other ongoing or temporary uses (that might not otherwise be considered) to be included as candidate sites.

Large landholders (such as the County, cities, federal and state agencies, major commercial enterprises, and institutions) with potential land parcels appropriate in size and zoning for the intended facility can be contacted directly or through letters of inquiry. Also, real estate firms dealing in appropriate land parcels can be sent a letter of inquiry and a site selection criteria report. Advertisements can be placed in local newspapers and through other media. Other sources for identifying candidate sites include previous siting studies; use of former and present waste handling sites; aerial surveys and inventories; and county-wide listings of land parcels with GIS programs.

Step 4—Broad Site Screening

During this initial screening step, the strategy should be to quickly evaluate candidate sites using both the siting criteria and preliminary descriptions of each of the sites. Site-screening criteria may include regulatory, environmental, physical, land use, and other locational factors. The outcome of Step 4 is a prioritized list of candidate sites. In addition, Step 4 will also identify those sites with clear fatal flaws that should be eliminated from further consideration. Depending on the number of higher ranked sites, a decision may be made to drop the lower-rated sites from subsequent (Step 5) evaluations

Step 5—Focused Site Screening

Step 5 will further evaluate and re-rank, as necessary, the remaining candidate sites. These evaluations may require additional field investigations, conceptual facility planning, and environmental studies. As in Step 4, the intent is to examine sites for characteristics which would preclude them from further consideration before in-depth site evaluations are performed. SWAC will review and recommend the highest ranked sites and the number that should be carried forward to the detailed comparative evaluations in Step 6.

Step 6—Comparative Site Evaluations

Step 6 further evaluates and directly compares the remaining candidate sites based on their ability to satisfy facility-specific siting criteria, community-specific criteria, operational requirements, and potential impacts on the surrounding environment. Step 6 is somewhat more qualitative than Steps 4 and 5, with the highest-ranked sites re-examined from environmental, constructability, operational, cost, land use, and public policy perspectives in a final feasibility appraisal. In this and later steps, the screening criteria should not be exclusively utilized. Instead, all site related characteristics and impacts should be considered and assessed. SWAC will be involved in this evaluative process.

Step 7—Developer and Local Government Decision Making

The potential developer of the facility and the local government jurisdiction should then select a preferred site for consideration for permitting by the governing body of the local jurisdiction. If the preferred site is acceptable, the local government should support the permitting process, if necessary.

Step 8—Environmental Review & Permitting Process

As a part of the handling facility siting permit process, an environmental review must be done as a part of the SEPA process. A SEPA determination is to be made by the permitting jurisdiction. This environmental review process will be used to establish the potential environmental impacts of the candidate site. This may require the preparation of an Environmental Impact Statement (EIS) depending on the level of determination issued by the reviewing jurisdiction and whether the project will generate significant adverse environmental impacts.

Acquisition of necessary state, local, and federal permits must be completed once a specific site is selected. Potential problems in permit acquisition should be identified and resolved as early as possible in the siting process. However, if a permit is deemed unobtainable at any point in the process, the second or third ranked sites can be pursued for development.

Public Information and Involvement Program

A sound public information and community involvement program is vitally important to successful solid waste facility siting efforts. Such a program must be tailored to fit the particular size and category of facility and the intended service area. A siting process includes continuous public participation to integrate community needs, concerns and influence the decision-making process. Addressing public concerns is also essential to building integrity and instituting good communications with the community. The community should be informed as to why a solid waste facility is needed. Technical information and assistance in understanding the information should be provided. Information should be relayed in various formats and should consider language barriers, literacy levels and preferred types of communications. The public needs to know why a facility is needed and what the consequences will be if no facility is sited. The public needs information about the alternatives to choose between and need to know the facts about a proposed decision to decide whether or not they support it.

Steps for public involvement include:

Step 1 - Identify who and why
Different groups and interests will participate at different stages in the siting process, with different levels of interest and intensity of involvement. For each stage of the process, staff should identify the public involvement objectives. Objectives will be determined by deciding what is to be accomplished with the public during this step in the siting process.

Step 2 - Determine the information needed
Each step of the siting process will have different information needs. An exchange of information includes what information the public needs to participate and what the County needs to ask to solicit information about the process.

Step 3 - Identify the interest groups and organizations with whom the information must be exchanged
Interest groups and organizations for each stage of the siting process must be defined. Reviewing the kind of information needed from the public at each step will help define who should be involved.

Step 4 - Describe any special circumstances that could affect selection of public involvement techniques
Special circumstances may change during the course of the process. A periodically review of the public involvement strategy is necessary and the strategy may adapt to changing circumstances. Example of special circumstances may include: the site may be in an area a short distance from a school or dust may be of concern for communities that believe they experience unusually high asthma rates.

Step 5 - Identify appropriate techniques and their sequence to accomplish the information exchange
The preceding steps provide the information to complete this step. Some of the major techniques for communicating with the public include briefings, feature stories, news conferences, newsletters, newspaper inserts, news releases, paid advertisements, presentations to civic and technical groups, press kits and public service announcements. Forums though which the public can express feelings, thoughts or concerns include advisory groups/task forces, focus groups, hotlines, interviews, hearing, meetings, workshops and polls.

Depending on the specifics of the siting process, the following elements should be used in the public involvement process:

- ***Early Notification.*** The general public and local communities, including affected advisory committees and business groups, should be notified as soon as the intention for siting a facility has been reviewed and determined by policy makers. The public and community should be informed

of the goals, procedures, and timeliness of the process as well as when the facility would be constructed and become operational.

- ***Appoint a Project Contact Person.*** A single, designated contact person affiliated with the project should be appointed and made known to the public. This individual will ensure that consistent, correct information is given out and that the public and media know the sources of accurate information.

- ***Update the Public.*** Meetings, newsletters, press releases, and other information mechanisms should be used to provide status updates to the public on a regular basis. It is unlikely that too much information about a potential project will cause problems. However, too little information can often cause surprises that lead to problems.

- ***Provide Opportunity for Public Interaction and Input.*** During development of the siting criteria, identification of sites, and candidate site screening activities, the general public and local community should be given opportunities to provide input. These opportunities include providing comment on siting criteria; allowing the public to nominate potential sites; and providing information about potential and screened sites, including those features which the public views to be unfavorable.

- ***In spite of extensive public information efforts, public response and participation may be initially low.*** However, as the siting process continues and candidate sites are further evaluated and the number of sites is reduced, citizens may respond that they were not informed of the siting effort or given opportunity to participate in the process. Public information and involvement activities will not eliminate these types of complaints but reasonable efforts will keep these responses to a minimum.

- ***Utilize Appropriate Facilities and Materials.*** Public meetings should be staffed with persons knowledgeable about the siting process. Meeting facilities should be of a size and layout that all persons attending can see and hear speakers. It is better to overestimate the number of attendees rather than underestimate the number that will attend an informational meeting in order to provide adequate seating. In addition, attendees may be unhappy with the siting process, so materials and speakers should be provided that are even-tempered, objective, and conciliatory.

- ***Acknowledge Site- and Program-Specific Concerns.*** Site- and program-specific concerns will emerge as the siting process unfolds. Programmatic concerns that relate to broad questions of the efficiency and appropriateness of the handing technology to be used and management priorities will predominate in the early phases of siting process. Local community groups that form in and around individual candidate sites will articulate the concerns of many individuals through a few leaders and form an important part of the public information and involvement effort. As the process continues, local groups with site-specific focuses will be joined by individuals and organizations with more programmatic interests and focuses. It is important to acknowledge the different types of concerns so that presentation materials can be developed in response to both types of concerns.

Siting Criteria

Criteria should be developed for identifying and evaluating potential sites. Three categories of criteria are applied during various stages of the siting process. These are exclusionary, technical and community-specific criteria. It is important to note that no site may meet all the criteria, in which case, each criterion's relative weight and importance should be considered.

Exclusionary siting criteria

Exclusionary criteria are often defined by federal, state or local laws or regulations and might include such areas as:

- Wetlands and floodplains
- Endangered and protected flora and fauna habitats
- Protected sites of historical, archeological or cultural significance
- Prime agricultural land
- Parks and preserves
- Proximity to airports

Technical criteria

Technical criteria are used to ensure that sites selected for evaluation meet required engineering, operational and transportation needs. These criteria address the following issues:

- Central location to collection routes
- Access to major transportation routes
- Site size requirements
- Sufficient space for on-site roadways, queuing and parking
- Truck and traffic compatibility
- Ability for expansion
- Space for recycling, composting and public education
- Buffer space
- Gently sloping topography
- Access to utilities
- Zoning designations and requirements

Community-specific criteria

Community-specific criteria address impacts that the facility may have on the surrounding community. These criteria are typically less technical in nature and incorporate local, social and cultural factors. Examples of these criteria include:

- Environmental justice considerations
- Impact on air quality
- Impact on the local infrastructure
- Adjacent land uses
- Proximity to schools, churches, recreation sites and residences
- Prevailing winds
- Number of residences impacted
- Presence of natural buffers
- Impacts on existing businesses
- Expansion capability
- Buffer zones and screening measures
- Traffic compatibility
- Impact on historic or cultural features
- Impact on neighborhood character

First, exclusionary criteria are applied to potential sites. Once unsuitable areas are eliminated, the technical criteria and community-specific criteria are applied to all remaining options. Information for each potential site should be developed so the sites can be ranked. Based on the ranking, the top two to four sites should undergo more rigorous analysis to determine technical feasibility and compliance with the environmental and community objectives.

End of Appendix M

APPENDIX N
Leichner Landfill
History & Present Activities

The Leichner Landfill, 9411 NE 94th Ave., was Clark County's primary disposal site for solid waste for more than 50 years, from 1935 to the end of 1991. Until 1962, garbage primarily was burned at the site and the residue was buried. Then garbage was buried for almost 30 more years until the landfill closed. The 74-acre landfill lacks a bottom membrane liner and a collection system for leachate.

Groundwater contamination was first detected at the Leichner Landfill during the early 1980s. Under a consent order from the Washington State Department of Ecology, the landfill was closed at the end of 1991. Waste disposal areas were capped with a top membrane liner, soil and native grasses. A gas collection system was installed to capture and burn methane gas from the decomposing waste.

In December 1988, three years before the landfill's closure, Clark County and the city of Vancouver entered into an agreement with the landfill's owner, the Leichner Brothers Land Reclamation Corp., that gave the county and the city a significant role in overseeing the closure and groundwater monitoring-treatment at the site.

The county, city, Leichners and Washington Utilities and Transportation Commission agreed to raise disposal rates to pay for the landfill's closure. The agreement also gave the county an option to purchase the landfill and adjacent properties once Clark County Public Health and the Ecology Department determine the landfill has "stabilized" and no longer requires post-closure monitoring and maintenance for gas emissions and groundwater contamination.

After the Leichner Landfill closed, a final cover system was constructed above the previous waste disposal areas and related environmental control systems were installed. Final closure activity at the site was completed in September 1992. On-going post-closure activities of the site include groundwater monitoring, storm water monitoring and management of the landfill gas collection system. Post-closure monitoring and maintenance of the site is performed by an engineering consulting firm under contract with the parties to the agreement.

On December 15, 2009, Clark County signed a letter of intent to purchase the closed Leichner Landfill. The County and LBLRC then entered into a purchase and sale agreement for the entire 120 acre landfill site in May of 2010 for $1,500,000. An appraisal of the properties was conducted and set the value somewhere between $4.5 and $5.4 million.

A Leichner Property Fatal Flaw Analysis of Potential Reuses was completed in June of 2012. This was conducted in part as the due diligence documentation for the purchase of the site. The Fatal Flaw Analysis was also considered Phase One of the master planning process for end use of the site.

The property was acquired on December 28, 2012. The property acquisition included approximately 70 acres of closed landfill, 33 acres of clean property that is zoned light industrial (commonly referred to as the Koski property), 9 acres were acquired for the extension of 99th street, and 8 acres of seasonally wet land was donated by LBLRC to the County for use in storm water management. Funding for the acquisition was primarily from the Leichner Landfill Financial Assurance Reserve Fund ("FARF"). The

County Road Fund funded the acquisition of right of way for extension of the 99th Street.

In order to complete the transaction, the County was required to amend existing agreements with LBLRC, City of Vancouver, the Washington State Department of Ecology and Washington Utilities and Transportation Commission. Following the sale, the oversight committee consists of representatives from City of Vancouver, Clark County Department of Environmental Services and Clark County Public Health. LBLRC will continue to serve on the oversight committee in an advisory role. The County has assigned a project manager to administer and oversee the on-going post-closure activities at the site and to implement the master planning process.

In November 2013, the County entered into a contract with Maul Foster Alongi for master planning process for the 120-acre purchase area, which includes the 74-acre landfill and adjacent properties to the north and south. Any reuses cannot interfere with the landfill's post-closure maintenance and monitoring. In December 2013, the County applied for an Integrated Planning Grant offered by the Washington Department of Ecology to evaluate the economic viability to remediate the Fleischer property which is adjacent to the Leichner Landfill site. This grant was awarded to the County in April 2013. This evaluation will be included int he Maul Foster Alongi contract. Funding for Master Planning will come exclusively from the Leichner Landfill FARF.

Clark County
Solid Waste Advisory Commission
Regular Meeting
Thursday, December 4, 2014

Clark County Auto License Office
1408 Franklin Street
Vancouver, WA

SWAC Members Present: Don Ebbeson, Allan Jeska, Rem Wilson, Richard Baker, Simone Auger, Steven Willis, and Bill Turlay

SWAC Members Excused: Brandon Vick

Staff Present: Peter DuBois and Cynthia Kiehl

Others Present: Rich McConaghy, City of Vancouver

I. Roll Call, Approval of Minutes
Meeting was called to order by Don Ebbeson. Commission members and staff introduced themselves. Allan Jeska made a motion to approve the November 6, 2014 minutes as written, Bill Turlay seconded the motion. Rem Wilson, Simone Auger, Steven Willis, and Richard Baker abstained. Motion passed.

Bill Turlay moved to nominate Don Ebbeson as chair. Allan Jeska seconded the motion. All commission members were in favor. Motion passed.

Bill Turlay moved to nominate Allan Jeska as vice chair. Don Ebbeson seconded the motion. All commission members were in favor. Motion passed.

II. Updates

County Environmental Services – Peter DuBois
Pete reported that Environmental Services is in the process of planning Green Neighbors' Recycling Day events for 2015 and gave an overview of the Clean Cart Campaign. Pete reported that the Solid Waste budget has been approved.

City of Vancouver – Rich McConaghy
Rich reported on the progress of the Recollect widget and the Recycle Right app.

III. Paint Presentation – Peter DuBois
Pete gave some background on paint disposal in Clark County. The cost of paint that is collected at the Green Neighbors' Recycling Day events is incurred by the County while Waste Connections incurs the cost of paint that is collected at the fixed facilities. Pete presented a PowerPoint presentation on disposing of paint and paint products in Clark County.

Public Comment: This paint should be handled locally and disposal should not be paid for with County funds.

Pete reported that an individual contacted the County and is interested in accepting latex paint and repurposing it as a business venture. Pete will invite the individual to present to SWAC in 2015. A subcommittee will be formed to discuss and work on the possibilities of recycling latex paint locally.

IV. Update - Preliminary Draft of Solid Waste Management Plan:
Public comment / Next steps – Peter DuBois

Pete reported that no public comments have been received at this time. The public comment period ends on 12/7/2014. If any comments are received, they will be incorporated and presented to SWAC via email. The draft plan will then be sent to the Department of Ecology for review.

V. Recommendation RE: Coordinated Prevention Grant (CPG) – Peter DuBois

Pete presented an excel spreadsheet that depicted a breakdown of the plan to expend the $1.28 million that the County receives from the CPG grant through the Department of Ecology. Commission members asked that the spreadsheet be emailed and their comments be added to the agenda for the February meeting.

VI. Other Business

Don Ebbeson asked for an update on the restructuring of Central Transfer and Recycling. Pete reported on the possibility of repurposing the Fleischer Property and will invite Mike Davis to present more in depth to SWAC in 2015.

Don Ebbeson asked to have a representative from Ecology present at SWAC meetings at least quarterly.

Allan Jeska recognized Waste Connections in their funding of events through the Battle Ground School District and their community involvement.

Pete invited SWAC to a joint gathering with Waste Connections and the City of Vancouver.

VII. Comments from the Public on Non-Agenda Items

No comments

The meeting was adjourned at 7:25 PM.