2007 SOLID WASTE MANAGEMENT PLAN
COWLITZ COUNTY, WASHINGTON

Prepared for

Cowlitz County
Department of Public Works

December 21, 2007

Prepared by

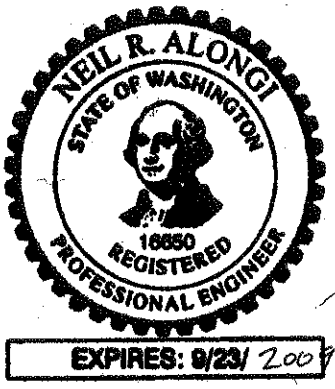
Maul Foster & Alongi, Inc.
7223 NE Hazel Dell Avenue, Suite B
Vancouver, Washington 98665

Project No. 9041.01.06

2007 Solid Waste Management Plan
Cowlitz County, Washington

The material and data in this report were prepared under the supervision and direction of the undersigned.

Maul Foster & Alongi, Inc.



Neil R. Alongi, P.E.
Principal Engineer

Erik Bakkom, P.E.
Project Engineer

CONTENTS

CONTENTS (Continued)

CONTENTS (Continued)

CONTENTS (Continued)

TABLES AND ILLUSTRATIONS

TABLES AND ILLUSTRATIONS (Continued)

ACRONYMS AND ABBREVIATIONS

Btu	British thermal units per pound
Building and Planning	Cowlitz County Department of Building and Planning
CCHD	Cowlitz County Health Department
CDL	construction, demolition, and land clearing
CDP	census-designated place
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFC	Chlorofluorocarbon
CLCP	community litter cleanup program
CMSWL	Criteria for Municipal Solid Waste Landfills
CPG	coordinated prevention grant
Ecology	Washington State Department of Ecology
EHU	Cowlitz County Department of Building and Planning Environmental Health Unit
ELF	Equipment, Land, and Facilities
HDPE	high-density polyethylene
HHW	household hazardous waste
LDPE	low-density polyethylene
MFS	minimum functional standards
MP	mixed waste paper
MRF	material recovery facility
MRW	moderate-risk waste
MSL	mean sea level
MSW	municipal solid waste
MTCA	Model Toxics Control Act
NIOSH	National Institute for Occupational Safety and Health
MSW	municipal solid waste
OFM	State of Washington Office of Financial Management
PCB	polychlorinated biphenyl
PET	polyethylene terephthalate
PME	Pacific Materials Exchange
Public Works	Cowlitz County Department of Public Works
RCRA	Resource Conservation and Recovery Act
RCW	Revised Code of Washington

RDF	refuse-derived fuel
SEPA	State Environmental Policy Act
SOQ	Statement of Qualifications
SQG	small-quantity generator
SWAC	Solid Waste Advisory Committee
SWHS	solid waste handling standards
SWMP	solid waste management plan
TDF	tire-derived fuel
UTC	Washington Utilities and Transportation Commission
WAC	Washington Administrative Code
Waste Control	Waste Control Recycling, Inc.
WGA	waste-generation area
WISHA	Washington State Department of Labor and Industries
WL	white ledger
WSDA	Washington State Department of Agriculture
WSESD	Washington State Employment Security Department

1 INTRODUCTION AND BACKGROUND

1.1 Introduction

1.1.1 Purpose and Need

The State of Washington has enacted legislation to establish comprehensive statewide programs for solid waste handling and solid waste recovery and/or recycling. The purpose of these requirements is to prevent land, air, and water pollution, and to conserve the natural, economic, and energy resources of the state. The statutory requirements to support these programs are contained in chapter 70.95 of the Revised Code of Washington (RCW).

Each county in the state is required by RCW 70.95.080 to prepare a comprehensive solid waste management plan (SWMP). According to Section 173-304-011 of the Washington Administrative Code (WAC), "the overall purpose of local comprehensive solid waste management planning is to determine the nature and extent of the various solid waste categories and to establish management concepts for their handling, utilization, and disposal consistent with the priorities established in RCW 70.95.010 for waste reduction, waste recycling, energy recovery and incineration, and landfill."

Cowlitz County (the County) previously satisfied the state requirements with a comprehensive SWMP dated July 1993. RCW 70.95.110 requires that each plan be reviewed and revised, if necessary, at least every five years. Changes in the solid waste field, developments in the county, changes in the regulatory guidance, and the need for updated plan information dictate that the County's 1993 SWMP be revised.

1.1.2 Reference Documents

As a revision of the County's 1993 SWMP, this document relies heavily on concepts, text, and information presented in the 1993 SWMP.

The 1993 SWMP was organized and written to follow guidelines published by the Washington State Department of Ecology (Ecology) in 1990 for the development of SWMPs. The 1990 guidelines were superseded by updated Ecology guidelines published

in 1999. The 1999 Ecology document, *Guidelines for the Development of Local Solid Waste Management Plans and Plan Revisions* (Ecology, 1999), are referred to throughout the County's revised SWMP as the "Ecology guidance document" or a variation thereof. WAC 173-304-011 states that these guidelines are to be followed by local governments, and the County's revised SWMP is organized and written to follow the latest Ecology guidance document.

Other documents and sources of information were used during the preparation of specific SWMP chapters or components. These documents or sources are noted in the associated SWMP chapter or component and included in a master reference list at the end of the SWMP.

1.2 County Solid Waste Policies

The County's solid waste policy mission statement, as adopted by the County Board of Commissioners on March 19, 2002, is as follows:

> *Provide the residents, businesses and cities of Cowlitz County with the most effective solid waste management possible considering economics, the environment, regulatory requirements, and the social and political environment of the community.*

The Board of Commissioners also adopted the following seven solid waste policies:

- Policy 1—Through collaborative effort, manage the disposal of solid waste in Cowlitz County utilizing the County landfill and/or through other disposal options.

- Policy 2—Cowlitz County shall preserve the capacity and value of the landfill for the benefit of Cowlitz County residents by managing imports of solid waste from outside the county.

- Policy 3—The Solid Waste Advisory Committee (SWAC) will assist and advise the Board of County Commissioners on solid waste issues.

- Policy 4—Pursue energy recovery at the landfill, in accordance with the goals of the State and the SWMP, by conducting a study to determine the economic feasibility of collecting and marketing landfill gases generated by the landfill.

- Policy 5—Fund county solid waste utility operations and capital improvements through user fees.

- Policy 6—Evaluate an economically sound source separation program in the urban, non-incorporated areas of the county.

- Policy 7—Continue to pursue and evaluate long-term solutions for the disposal of solid waste that consider both in-county and export alternatives.

1.3 SWMP Goals and Objectives

The goal of the SWMP is to provide information and present management concepts that can be used in support of the County's solid waste policies and mission statement. The following four general objectives are used throughout the SWMP development process:

- Verify that the County complies with applicable RCW and WAC solid waste planning requirements.
- Provide a mechanism for public participation in the County's solid waste planning process.
- Support statewide waste reduction and recycling goals by developing improved County strategies and management concepts.
- Employ sound and generally accepted cost analysis methods to determine economic effectiveness.

These general objectives are very similar to those contained in the 1993 SWMP. Specific objectives or action items were presented to the SWAC and discussed during the preparation of individual SWMP chapters.

1.4 Plan Participants

According to RCW 70.95.010(6c), "it is the responsibility of county and city governments to assume primary responsibility for solid waste management and to develop and implement aggressive and effective waste reduction and source separation strategies." The County is required by RCW 70.95.080 to develop the SWMP in cooperation with each city within the county. The cities have the option of preparing their own plans for integration into the County SWMP, preparing a joint city/county plan, or authorizing the County to prepare a plan for the city as part of the County SWMP.

The incorporated areas of the county are Castle Rock, Kalama, Kelso, Longview, and Woodland. The County's 1993 SWMP contains copies of resolutions from these cities authorizing the County to prepare a plan for each city's solid waste management for inclusion in the County's SWMP. The County's 1993 SWMP also contains copies of resolutions from each city adopting the SWMP prepared by the County.

Each city must authorize the County to prepare a plan for each city's solid waste management for inclusion in the County's SWMP. Following completion of a preliminary draft SWMP document, the County must enter into interlocal agreements with participating jurisdictions. Following Ecology's review of the preliminary draft SWMP, the County must request a resolution of SWMP adoption from each city. These resolutions of authorization and adoption and the interlocal agreements from each city are then included with the revised SWMP (Appendix A). The final draft SWMP also includes a resolution of adoption from the County and a letter of participation from the SWAC.

The County may request a courtesy review of the final draft SWMP by Ecology prior to adoption by the cities and the County. Following adoption by the cities and County, the final draft is submitted to Ecology for review and approval of the final plan.

1.5 Major Stakeholders

Major stakeholders in the SWMP and the SWMP development process include the County Department of Public Works (Public Works), the County Department of Building and Planning (Building and Planning), the SWAC, the Board of County Commissioners, city councils, citizens, industry, collection companies, and recycling organizations.

Agencies with responsibilities related to solid waste include Ecology, Public Works, Building and Planning, and individual city solid waste management departments. Ecology is generally responsible for review and oversight of solid waste activities in Washington, but many specific solid waste responsibilities have been assigned to local agencies. For example, Ecology is responsible for review and approval of the SWMP, while Building and Planning is responsible for solid waste permitting and enforcement activities. Public Works' responsibilities include management and operation of the existing landfill facility, including the public municipal solid waste (MSW), recycling, household hazardous waste drop-off areas, and administering disposal contracts. Each city is responsible for solid waste collection, recycling programs, and nuisance abatement programs within its jurisdiction.

Major stakeholders contribute throughout the SWMP development process by providing comments, data, and information, and by participating in discussions. Public Works, with its solid waste management responsibilities, and the SWAC, with its advisory responsibilities, play particularly important roles because they review draft chapters of the SWMP throughout the plan development process.

1.6 Public Participation

Formulating a procedure to ensure involvement of the general public at an early stage is an important part of the SWMP development process. The Ecology guidance document

states, “while the local SWAC will play a key role in plan development, considerations should be made for the general public.” The Ecology guidance document strongly encourages the local SWAC to actively seek public involvement throughout the planning process, and emphasizes that the SWAC should “educate the public on the committee’s work and the purpose for the planning” and “seek communication with the public to determine progress in plan implementation, evaluation, and improvement.” Collaborating with the public throughout the process, rather than just informing the public at the end of the process, is also consistent with the County’s mission statement.

The SWAC plays a key role in the SWMP development process. As required by RCW 70.95.165 the SWAC consists of a minimum of nine members representing a balance of interests including, but not limited to, citizens, public interest groups, business, the waste management industry, and local elected public officials. The SWAC meets periodically to assist in the development of solid waste programs and policies, as well as to review and comment on solid waste programs and policies prior to their adoption.

Ecology recommends that, before the preliminary draft SWMP is submitted to Ecology for preliminary review, there should be a 30-day public comment period as well as at least one public meeting or workshop to answer questions, collect testimony, and address issues raised during the comment period. Copies of the preliminary draft SWMP would then be sent to local planning, health, and public works departments; the public; and participating jurisdictions, and made available at local government offices and libraries.

Ecology also recommends that public hearings be included as part of the plan adoption process for each jurisdiction participating via an interlocal agreement, and that a public hearing be part of the County adoption process. Adequate public notice of meetings, hearings, workshops, and comment periods should be provided throughout the plan development process.

1.7 SWMP Requirements

RCW 70.95.090 requires each county and city comprehensive SWMP to include the following:

- A detailed inventory and description of all existing solid waste handling facilities, including an inventory of any deficiencies in meeting current solid waste handling needs.

- The estimated long-range needs for solid waste handling facilities projected 20 years into the future.

- A program for the orderly development of solid waste handling facilities in a manner consistent with the plans for the entire county that shall:

  - Meet the solid waste handling standards (SWHS) adopted by Public Works and all laws and regulations relating to air and water pollution, fire prevention, flood control, and protection of public health.

  - Take into account the comprehensive land use plan of each jurisdiction.

  - Contain a six-year construction and capital acquisition program for solid waste handling facilities.

  - Contain a plan for financing both capital costs and operational expenditures of the proposed solid waste management system.

- A program for surveillance and control.

- A current inventory and description of solid waste collection needs and operations within each respective jurisdiction that shall include:

  - Any certificate for solid waste collection granted by the Washington Utilities and Transportation Commission (UTC) in the respective jurisdictions.

  - Any city solid waste operation in the county and the boundaries of such operation.

  - The population density of each area serviced by a city operation or by a certificated operation within the respective jurisdictions.

  - The projected solid waste collection needs for the respective jurisdictions for the next six years.

- A comprehensive waste reduction and recycling element that provides waste reduction, source separation, and recycling programs and includes waste reduction, source separation, and recycling strategies. RCW 70.95.090(6) and (7) list detailed program and strategy requirements.

- An assessment of the plan's impact on the costs of solid waste collection. The assessment must conform to guidelines established by the UTC.

- A review of potential areas that meet the solid waste disposal facility siting criteria outlined in RCW 70.95.165.

1.8 SWMP Review and Approval Process

As previously mentioned, draft chapters of the SWMP should be reviewed by the SWAC and County personnel throughout the plan development process. Review comments are then incorporated into revised draft chapters, and the revised draft chapters are compiled into a draft of the complete document.

The complete document must be reviewed and approved or adopted by the County, the participating jurisdictions, and Ecology. The review and adoption or approval process for the complete document includes the following steps:

- Preliminary draft SWMP submitted for public review.
- Thirty-day public comment period with at least one public meeting or workshop.
- Revision of preliminary draft SWMP, as necessary, to address comments.
- Preliminary draft sent to Ecology for preliminary review.
- Meeting between Ecology and County personnel to discuss Ecology's review comments, followed by revision of preliminary draft SWMP, as necessary, to address Ecology's comments.
- Submit revised draft plan to Ecology for informal courtesy review.
- Public hearings and local adoption of the revised draft SWMP.
- Submit the adopted plan to Ecology for approval.

A State Environmental Policy Act (SEPA) checklist is prepared in conjunction with the SWMP. The submittals and meetings required for SEPA checklist review and approval are timed to facilitate the incorporation of the SEPA checklist into the final draft SWMP (Appendix B) to be submitted to Ecology.

1.9 SWMP Outline and Project Schedule

The SWMP document consists of 13 chapters and appendices containing authorization and adoption resolutions from the cities, an adoption resolution from the County, a participation letter from the SWAC, a SEPA checklist, and a UTC cost assessment (Appendix C).

Per the request of the SWAC, the chapters of the revised SWMP parallel those of the 1993 SWMP. However, in an effort to streamline the document and the document review

process, a number of the chapters that are no longer as pertinent (such as the chapter addressing solid waste processing technologies) have been condensed.

As previously discussed, draft chapters of the SWMP were reviewed by the SWAC and County personnel throughout the plan development process. The chapters and the timeline for their initial submission to the SWAC was as follows:

- Chapter 1: Introduction and Background—April 2002
- Chapter 2: Waste Stream Description—May 2002
- Chapter 3: Waste Reduction—August 2002
- Chapter 4: Recycling—August 2002
- Chapter 5: Solid Waste Processing Technologies—October 2002
- Chapter 6: Municipal Solid Waste Collection—October 2002
- Chapter 7: Solid Waste Transfer— February 2005
- Chapter 8: Municipal Solid Waste Disposal—February 2005
- Chapter 9: Solid Waste Import and Export— March 2005
- Chapter 10: Special and Industrial Wastes—March 2005
- Chapter 11: Administration and Enforcement—April 2005
- Chapter 12: Funding and Finance—April 2005
- Chapter 13: Plan Implementation—April 2005

Very early in the development of the SWMP revision, the Cowlitz County Board of County Commissioners issued a resolution stating that the County would not pursue siting a new landfill. The County also began negotiations with Waste Control, resulting in a Letter of Understanding, dated November 23, 2004, for Waste Control to provide comprehensive waste disposal services for the county after the closure of the County landfill. The County and Waste Control continued to negotiate and prepare a contract which was executed on November 14, 2006, and contained the details outlined in the Letter of Understanding. The contract expires December 31, 2035 with options for two-five year extensions. These services will be provided by Waste Control's proposed transfer station with final disposal of waste at an out-of-county regional landfill. The

schedule listed above was revised to reflect the delay in plan development caused by negotiations between the County and Waste Control.

A preliminary draft of the complete document was first available to the public in April 2007. Given the uncertainty associated with public comments, regulatory review, regulatory comments, and city adoption, the timing of final SWMP adoption and approval is only speculative. For example, Ecology has up to 120 days to complete its review of the preliminary draft document and up to 45 days to complete its review of the final SWMP. It is anticipated that the final revised SWMP will be adopted and approved sometime during the fall of 2007.

1.10 Solid Waste Management History

1.10.1 State Planning History

Much of the County's solid waste planning has been driven by actions taken at the state and federal levels. A brief look at the history of the State's solid waste planning will provide context for previous County planning activities, as well as give an indication of the potential future direction of solid waste management in Washington.

The Solid Waste Management Act was passed by the State legislature in 1969. This legislation established a statewide program for the comprehensive management of solid waste, required planning at the local level, and directed the closure of open burning dumps. In 1972, Ecology prepared the State's first SWMP and issued the first minimum functional standards (MFS) for the handling of wastes and the operation of landfills. In 1976, the Solid Waste Management Act was amended to deal separately with hazardous waste, to emphasize waste management rather than waste disposal, and to recognize resource conservation and recycling as important factors in the management of solid waste. Ecology produced the State's second SWMP in 1980. The Solid Waste Management Act was amended again in 1984. The 1984 amendment established management priorities, in descending order of importance, of waste reduction, waste recycling, energy recovery/incineration, and landfilling. A new set of MFS was introduced in 1985. The 1985 MFS established siting criteria, design standards, performance standards, and closure and post-closure requirements. The Solid Waste Management Act was amended in 1989 by the passage of the "Waste Not Washington Act." This amendment established waste reduction and recycling as the fundamental solid waste management strategies, set a statewide recycling goal of 50 percent by 1995, and established the following management hierarchy, in descending order of importance:

- Waste reduction
- Recycling, with source separation of recyclable materials
- Energy recovery, incineration, or landfilling of separated waste

- Energy recovery, incineration, or landfilling of mixed waste

Ecology produced the State's third SWMP in 1991. In 1993, the legislature passed WAC 173-351, Criteria for Municipal Solid Waste Landfills (CMSWL), in response to changes in the federal solid waste program. These revisions replaced much of the MFS. In 2003, additional rules were promulgated through WAC 173-350, Solid Waste Handling Standards, which deals with solid waste facilities other than landfills. The State revised the SWMP in 2004. A review of the document and published discussion documents indicates that the revised State plan maintains the waste management hierarchy established in 1995 and extends the timeline for achieving a 50 percent recycling rate to 2007, while more aggressively promoting waste reduction, recycling, and sustainability.

1.10.2 County Planning History

The Cowlitz-Wahkiakum Governmental Conference developed the first SWMP prepared for the County as a regional planning document in 1971.

Cowlitz and Wahkiakum SWMP, 1971—This plan focused on four problem categories: 1) indiscriminate littering and dumping, 2) open garbage dumps, 3) special and hazardous wastes, and 4) solid waste management technology. The most notable accomplishments of the 1971 plan are:

- Ordinances to prohibit illegal dumping, littering and illegal disposal, and abandoned automobiles
- Implementation of a one-year citizen education program in 1978
- Mandatory collection in the region's cities, except Castle Rock
- Implementation of a transfer station system in northern Cowlitz County
- Closure of all but two of the region's open dumps
- Development of the Central Cowlitz County Sanitary Landfill
- Improvements to the landfill operator training program

Amendments to the 1971 Cowlitz and Wahkiakum SWMP—In 1974, Cowlitz County completed a study that evaluated seven alternative methods of energy recovery. This study was adopted as an SWMP amendment in 1977. The amendment recommended the use of shredded solid waste for sale as a supplemental fuel in hogged fuel boilers.

A second amendment to the plan in 1978 recommended that Cowlitz County should implement a refuse-derived fuel system. However, the pilot project failed and it was later recommended that the next plan update look into a County-owned incinerator/boiler to provide steam to a nearby manufacturing company.

Cowlitz-Wahkiakum Regional SWMP, 1985—The 1985 plan recommendations were general in nature and did not include implementation of many new solid waste programs. The recommendations and status of recommended programs were tabulated in the 1993 SWMP.

Cowlitz County Comprehensive SWMP, 1993—The 1993 SWMP was written and organized to follow 1990 Ecology guidelines for the development of SWMPs. A summary of recommended implementation actions is included in the last chapter of the document. These 1993 action items and their current status will be discussed in the pertinent individual chapters of the revised SWMP.

1.10.3 Relationship to Other Plans

This section describes other city and County planning documents that are related to the SWMP. The text in the first four bullets describing the plan documents is taken directly from the 1993 SWMP.

- Cowlitz County Comprehensive Land-Use Plan and Zoning Regulations—The comprehensive land-use plan and zoning regulations manage growth in unincorporated Cowlitz County. The County Land-Use Plan goals and policies provide guidance to public agencies and private groups in making decisions about future county development. The County Land-Use Plan designates land for agricultural, residential, commercial, and industrial use. The County Land-Use Plan provides general guidance on the siting of utility structures and facilities.

- City Comprehensive Land-Use Plans and Zoning Regulations—The comprehensive land-use plans and zoning regulations of cities within Cowlitz County identify land use policies and regulations that affect the siting of solid waste facilities. Some of the plans do not specifically address solid waste issues; however, most plans identify the solid waste collection agency in each respective community and the party responsible for transfer and disposal of solid waste. It is expected that cities will update their comprehensive land-use plans to be consistent with the adopted Cowlitz County SWMP.

- Cowlitz-Wahkiakum Moderate Risk Hazardous Waste Management Plan—The State Hazardous Waste Management Act requires each local government to prepare a local hazardous waste plan to manage moderate risk wastes [RCW

70.105.220(1)]. The Cowlitz-Wahkiakum Moderate Risk Hazardous Waste Management Plan identifies management options that will help households and businesses practice proper hazardous waste management, thereby reducing the amount of hazardous waste disposed of in solid waste landfills and wastewater treatment systems. The plan encourages the reduction, recycling, treatment, and proper disposal of hazardous wastes. The current Moderate Risk Hazardous Waste Management Plan will be updated following Ecology's update to the respective guidance document. An update to the plan had been prepared to accompany this SWMP, however it was removed at the request of Ecology and will be submitted to Ecology separately.

- Toutle Drop Box Facility Operation and Closure Plan—This plan documents Toutle drop box operations and plans for closure in compliance with the SWHS.

- Cowlitz County Landfill Operations & Maintenance Manual—WAC 173-351-210 requires all landfill facilities to have a plan of operation that "shall describe the facilities' operation and shall convey to site operating personnel the concept of operation intended by the designer." Examples of specific items to be included in each plan of operation include inspection and monitoring protocols, corrective action programs, and safety procedures. The most recent revision to the operation plan for the County's MSW landfill occurred in February 2007.

- Cowlitz County Landfill Closure and Post-Closure Plans—The regulations also require landfill facilities to develop closure and post-closure plans. Closure and post-closure plans for the County landfill are included in the Operations & Maintenance Manual as chapters 9 and 10, respectively.

- Weyerhaeuser Regional Landfill Operations Plan—Required by WAC 173-350-400, the plan describes operational, inspection, safety, and corrective action procedures. The plan has been in place since 1993 and was last updated in November 2004.

1.11 Beyond Waste Plan

A review of Washington State's Beyond Waste Plan (Ecology, 2004) shows that most goals and objectives set by the plan apply to the state-government level and may not be applicable to the county-government level. However, there are several objectives that may be applicable and that are discussed below in terms of how the County may meet these objectives.

1.11.1 Moving Toward Beyond Waste with Industries

There are 14 actions and 13 milestones defined by Ecology, which are mainly focused on actions available at the state level. However, the County and cities provide assistance with two of these items. The first is to encourage waste handlers to become materials brokers. By focusing more attention at the landfill and other future waste facilities on the recovery of materials that have a beneficial value, and developing partnerships to collect and/or offer these materials for reuse or recycling, the County would be more in line with the definition provided in Beyond Waste. In addition, the addition of the WCI transfer station to the existing MRF could enable WCI to divert a larger percentage of materials by selectively targeting materials in the transfer station for sorting and recovery.

Additionally, the County and cities can address the milestone of government leading by example in generating significantly less waste and decreasing the use of toxic substances at the local level. By actively instituting waste-reduction and recycling programs throughout the County and city offices, the local governments will help to demonstrate support of Ecology's program. The programs can also be offered to businesses as demonstrations of effective waste-reduction and recycling measures that can be implemented.

1.11.2 Reducing Small-Volume Hazardous Materials and Wastes

Of the ten steps and nine milestones defined in Beyond Waste, the County and cities may address several categories. The County can continue to support e-waste initiatives and provide services in accordance with the e-waste efforts that are being implemented by Ecology. The County and cities can help to lead by example by implementing environmentally preferred purchasing policies with regard to vehicles, grounds maintenance, electronics, building materials, cleaning products, and flame retardants.

The County's MRW program is a very effective means in ensuring that locally generated hazardous materials are properly managed, and the program will need to adapt to evolving state regulations in the future. The County should also continue to update their local hazardous waste plan to make sure that it remains up to date, and to update their facilities as needed.

1.11.3 Increasing Recycling for Organic Materials

Ecology identifies six actions and ten milestones for addressing organics recycling, several of which are applicable at the local level. The County and cities have the opportunity to lead by example with regard to recycling of organic materials by maximizing the amount of recycled organic products that are used at government offices, by implementing on-site collection of organic wastes (including food wastes and soiled

paper) for recycling, and by advertising the success of their programs to the public. Food wastes generated within the county could be addressed at a future date, however the existing compost operation at the landfill is not equipped to manage this material stream. The addition of food waste management within the various jurisdictions in the county would need to rely on the identification of a compost operation capable of processing food waste. Currently these facilities include Silver Springs Organics in Thurston County or Cedar Grove Composting in King County. In addition to consideration of an out-of-county facility to provide this service, the County could encourage the private development of a food waste composting facility in the future. Once a program is in place local governments can also help to develop incentives for business and institutional participation in organics recycling, and advertise their successes. The County's current composting program is directly supportive of Ecology's goal. It is important that the cities develop their own or participate in the County's program to ensure its success. The County can also provide support to local agri-businesses in the proper management of organic wastes generated on farms, and promote land stewardship within the county.

1.11.4 Making Green Building Practices Mainstream

There are seven actions and 12 milestones identified by Ecology, most of which are applicable at the state level. However, local support can be developed in several areas. The County and cities can lead by example by adopting procurement processes and environmentally preferred purchasing policies to ensure that green building materials are purchased at the city and county level. The County can also help to provide better access to recycling and reuse opportunities to the local construction industry.

1.12 Background

A review of county characteristics and the county's solid waste history will help provide a framework for understanding current conditions and future solid waste planning options. A comprehensive review of county characteristics and the county's solid waste history was presented in the 1993 SWMP, and language in this section is in some cases based on, or taken directly from, the 1993 SWMP.

1.12.1 Natural Features

Cowlitz County is located in southwestern Washington and has a land area of 1,139 square miles. The lower Cowlitz River valley dominates the landscape, with the Columbia River to the south, the Willapa Hills to the west, and the Cascade Range to the east. A map of the county is presented in Figure 1-1.

Topography—Elevations in Cowlitz County are quite varied, from less than 10 feet above sea level along the Columbia River to elevations approaching 5,000 feet on the eastern edge of the county. Topography in the eastern two-thirds of the county is dominated by several major drainage basins that are separated by upland ridges radiating from the Cascade crest. The ridges and peaks of this part of the county are characterized by very rugged relief and steep slopes. The western one-third of the county contains the Willapa Hills, with elevations approaching 2,600 feet. The topography becomes level and open along the Cowlitz and Columbia rivers.

Site topography can have both negative and positive impacts on solid waste facilities. Steeply sloping land has a greater potential for slope instability and may exceed maximum grade constraints for truck and equipment access. However, a gentle grade can provide noise and visual buffers, and may lessen the need for excessive filling.

Geology and Soils—Geologic processes shaped the soils and topography of Cowlitz County through uplift, volcanism, glaciation, erosion, and sedimentation. The rock types of Cowlitz County consist chiefly of the Columbia River Basalt Group, the Cowlitz Formation, and alluvial deposits. The Columbia River Basalt Group is prevalent adjacent to the Columbia River and the western portion of the county and represents a great volcanic pile of flood lavas originating east of the Cascades. The Cowlitz Formation is prevalent in the eastern two-thirds of the county and is best described as uplifted marine and non-marine shale, sandstone, siltstone, and coral beds. Interbedded in this material are basalt flows, pyroclastic rocks, andesite, and breccia, overlain in some areas by alpine till. Large alluvial deposits are common throughout Cowlitz County near and adjacent to both the Cowlitz and Columbia rivers. The material is commonly associated with loosely consolidated silt, sand, mud, and gravel.

Geologic conditions have a direct impact on the siting and operation of landfill sites and other solid waste facilities. The geologic conditions of a landfill site determine the location and degree of natural protection of groundwater, and can either decrease or increase the potential for groundwater contamination. For other solid waste facilities, the geology of a site is important in determining foundation stabilities for roadways and structures.

The U.S. Department of Agriculture Natural Resources Conservation Service issued an update of the February 1974 version of the Cowlitz County soil survey in 2004. . A generalized soil map is presented in Figure 1-2.

Climate—Cowlitz County has a rainy climate in winter, marked by relatively mild temperatures and cloudy skies. Summers are pleasantly mild, with northwesterly winds and very little precipitation. Fall and spring are transitional in nature. Fog occurs frequently in fall and winter. At all times, incursions of marine air are a moderating

influence. Extremes in winter and summer come from the continental interior. Destructive winds are infrequent.

The average annual precipitation in the region varies widely, depending on elevation and aspect. The Longview-Kelso urban area has an annual rainfall of 45 inches per year as compared to slopes adjacent to Mt. St. Helens, which receive 140 inches per year (see Figure 1-3). The SWHS also require that solid waste handling facilities provide peak rate runoff control for the 25-year, 24-hour storm event.

The Cowlitz County area is generally immune to severe storms. The combination of climatic controls is not conducive to the formation of hurricanes, thunderstorms, or tornadoes. Extreme meteorological events in the Cowlitz County area are usually restricted to high winds and rain from mid-latitude cyclones, or high winds and very cold temperatures from the strong easterly flow of cold continental air through the Columbia Gorge. The latter, if combined with moist air from the west, sometimes results in a freezing rain event commonly termed a silver thaw.

Surface Water—Both the Cowlitz and the Columbia rivers pass through the county. Additionally, Cowlitz County contains four major river basins: the Toutle, Coweeman, Kalama, and Lewis. The major rivers in these basins originate in the Cascades, flow in a westerly direction, and empty into the Cowlitz or Columbia River. Sizable creeks flow out of the Willapa Hills, the largest being the Abernathy and the Arkansas. The three lakes of significant size in the county are Silver Lake and parts of Lake Merwin and Yale Lake. Major surface water features of Cowlitz County are shown on Figure 1-1.

The SWHS and CMSWL do not allow municipal or limited purpose landfills to be located within 200 feet of a stream, lake, pond, river, or salt water body [WAC 173-350-400(2)(c) and WAC 173-351-140(2)]. An inert waste landfill is not allowed to be located within 200 feet of a stream, lake, pond, river, or salt water body (WAC 173-350-410(2)(d)). Careful attention must be given to surface water management and leachate control at solid waste facilities, particularly landfill sites, to prevent water quality degradation. In addition, the CMSWL require that all municipal landfills located in a 100-year floodplain comply with local floodplain management ordinances, and that they be designed so as not to restrict the flow of the base flood, reduce the temporary water storage capacity of the floodplain, or result in a washout of solid waste [WAC 173-351-130(3)].

Groundwater—Groundwater is generally available throughout Cowlitz County. Most rural areas rely on groundwater as the principal source of potable water. Of all solid waste facilities, landfills have the greatest potential for groundwater impacts. The SWHS and CMSWL specify that an owner or operator of a landfill cannot contaminate the groundwater underlying the facility [WAC 173-304-460(2)(a) and WAC 173-351-400 through 450]. Furthermore, groundwater monitoring is required for all landfills, waste

piles, land-spreading disposal facilities, and surface impoundments [WAC 173-304-490, WAC 173-350-500, and WAC 173-351-400 through 450].

Most potential groundwater impacts associated with solid waste landfills can be mitigated during the siting process. In general, the position of a landfill site with respect to groundwater increases or decreases the potential for contamination. Ideally, a disposal site would be located as far as possible from existing, active drinking water wells; utilize geologic barriers to minimize the movement of contaminants; and have as much distance as possible between the lowest liner and the seasonal high level of groundwater.

Plants—In general, different habitat types give rise to different plant communities. In Cowlitz County, there are two major habitat types that support vegetation: forests and wetlands. Forest habitat dominates in Cowlitz County.

In the forests of Cowlitz County, three vegetation zones are prevalent: (1) the Western Hemlock Zone (lowland forests), which occurs at elevations up to 2,000 feet mean sea level (MSL); (2) the Pacific Silver Fir Zone (mid-montane forests), which occurs at elevations from 2,000 to 4,300 MSL; and (3) the Mountain Hemlock Zone (upper-montane forests), which occurs at elevations from 4,300 to 6,000 MSL.

The Western Hemlock Zone is the principal forest habitat in Cowlitz County, and is the habitat most likely to be disturbed by construction of solid waste facilities. The CMSWL prohibit the placement of a land disposal facility in areas designated as critical habitat for endangered or threatened species of plants [WAC 173-351-140].

Wetlands are common and widespread in Cowlitz County. Marshes, swamps, bogs, estuaries, and other saturated soil environments are among the most productive habitats. In addition to their habitat value, wetlands perform vital functions such as water storage and stream flow regulation of water basins, and protection of lakeshore and riverbank areas against severe storms. Wetlands also improve water quality by trapping and filtering sediments and pollutants. The SWHS and CMSWL prohibit the placement of a landfill's active area within a wetland [WAC 173-350-400(2)(c) and WAC 173-351-130(4)(a)].

Animals—Although human settlement and associated development have displaced animal life in Cowlitz County, significant areas still harbor a variety of wildlife species. Key animals in Cowlitz County include herbivores such as deer and elk; omnivores such as black bear, raccoons, and ravens; and carnivores such as cougar, fox, coyote, bobcat, owls, hawks, and eagles. The CMSWL prohibit the siting of a landfill within areas designated as critical habitat for endangered or threatened species of wildlife by the U.S. Fish and Wildlife Service or the Washington State Department of Wildlife [WAC 173-351-130 and WAC 173-351-140].

1.12.2 Land Use and Transportation

Land-Use Patterns—The topography of the county generally has dictated the settlement of the area as a transportation corridor between the lower Columbia River and the Puget Sound Basin. This pattern, begun in the late nineteenth century, is still prevalent today with all incorporated areas and most unincorporated development adjacent to the Interstate 5 (I-5) corridor. The most highly urbanized area of the county is in the Longview-Kelso area.

Transportation—The roadway transportation system in Cowlitz County includes an interstate freeway, state highways, regional arterials, and local collectors. The main travel route is the I-5 freeway that runs north and south through the county. The majority of county residents and businesses are very well served by I-5, allowing for quick travel between outlying areas and the population center of the county at Longview-Kelso. Most rural travel is accommodated on county and state roads and highways. Urban areas are well served by local arterial systems.

Although vehicle congestion is still relatively rare in most locations of the county, a number of trouble areas have been identified. At times these trouble areas experience failing, or near failing, levels of service. According to Ryan Lopossa of Public Works, the three areas of greatest concern, and a number of proposed long-term solutions, are as follows:

- ***S.R. 432/I-5***—This freeway interchange has become heavily congested in recent years and includes weaving areas that do not meet current design standards. It is anticipated that this area will experience failing level-of-service conditions by 2017. Proposed solutions include a complete reconstruction of the existing freeway interchange to address design standards and level-of-service conditions. Completion of an Added Access Decision Report for submittal to the Federal Highways Administration is currently under way (Cowlitz County Department of Public Works, 2000a).

- ***S.R. 432***—This heavily congested industrial corridor connects the Port of Longview and the cities of Longview and Kelso to I-5. Twenty-five percent of the traffic volume comes from truck traffic accessing the port and industrial areas along the corridor. The corridor includes multiple intersections operating at failing or near failing level-of-service conditions coupled with several at-grade rail crossings as well as numerous access points contributing to unmitigated turning movements. Proposed solutions include intersection modifications, signal re-timing, grade separated rail crossings, and a new limited access bypass route to expedite traffic between I-5 and the outermost industrial areas (Cowlitz County Department of Public Works, 2000a).

- ***S.R. 4 (Ocean Beach Highway)/S.R. 411***—This heavily congested corridor has become the focus of a statewide safety corridor designation, as well as the development of access management strategies in the Longview-Kelso urban area. The corridor is currently subject to traffic volumes in excess of 30,000 vehicles per day and is projected to see a 40 percent increase in these volumes by 2017. Proposed solutions include modification of the connection between SR-4 and the newly constructed Allen Street Bridge, as well as a combination of intersection improvements, signal re-timing, and access management techniques (Cowlitz County Department of Public Works, 2000b).

Because most solid waste transportation in Cowlitz County occurs on freeways and arterials, these roadways are an integral component of the solid waste management system. Any planning for expansion of solid waste facilities or construction of new facilities must consider existing and future traffic levels on haul routes, and the capacity of roadways to handle additional truck traffic. In some cases, it may be necessary to improve roadways, or adjust haul routes or schedules, to mitigate potential impacts.

In addition to roadways, the county is well served by other modes of transportation, most notably rail and barge. The main line of the Burlington Northern Santa Fe Railroad, shared by the Union Pacific Railroad, parallels I-5 through Cowlitz County. Numerous spur lines provide rail access from the county's industrial areas. Ports along the Columbia River are well developed, with river ports located at Longview and Kalama. There is also a land port in Woodland. A wide range of cargo shipments is transported year-round along the 465-mile Columbia/Snake river navigation system. Rail and barge will likely play an important role in transporting waste into the county or transport of in-county waste to an out-of-county facility.

1.12.3 Economic Factors

As of October 2007, according to information from the Washington State Employment Security Department (WSESD), approximately 38,500 people were employed in Cowlitz County (see Table 1-1). The four largest sectors of the local economy are manufacturing, the service industry, retail trade, and government.

For comparative purposes, 1991 data from the 1993 SWMP have also been included in the table. The data indicate a decrease in the percentage of jobs supplied by the manufacturing sector, and an increase in the percentage of jobs supplied by the services sectors. Retail trade sector jobs have shown an increase since 1991, as the subcategory, "Eating and Drinking Places" are reported as 8% of the total sector in 2007; however, this 8% includes accommodation.

Table 1-1
Employment Figures

Sector and Employee Groups	SIC Code[4]	October 2007		March 1991	
		Number of Employees	Percent of County Total	Number of Employees	Percent of County Total
Manufacturing, Total		7,000	18%	9,763	28%
Paper and Allied Products	26	2,700	7%	3,990	
Lumber and Wood Products	24	1,200	3%	2,875	
Primary Metal Industries	33	--[5]		1,258	
Other Durable Goods	none	1,800	5%		
Other Non-Durable Goods	none	1,300	3%		
Services				6,157	18%
Health Services	80	5,100[7]	13%	2,752	
Business Services	73	1,900	5%		
Retail Trade, Total		4,700	12%	6,086	17%
Eating and Drinking Places	58	*[6]		2,311	
Food Stores	54	900	2%	1,081	
General Merchandise Stores	53	1,100	3%		
Government, Total		5,600	16%		
Local	none	4,500	12%		
State	none	1,300	3%		
Natural Resources and Mining	none	3,800	10%		
Transportation and Warehousing	none	1,700	4%		
Wholesale Trade	none	1,400	4%		
Financial Activities	none	1,400	4%		

NOTES:

1. The March 1991 data are taken from the 1993 SWMP.
2. The WSESD lists many employer groups under each sector heading. However, only those groups with more than 1,000 employees or have data from 1991for comparison are included; therefore, the employer group numbers shown here do not add up to the sector total.
3. Percent of County total values is based on the following 1991and 2007 employment base values: 34,797 (1991), 38,500 (2007)
4. SIC Codes apply to 1991 employment data only.
5. Metal industries were not listed in 2007 data.
6. In 2007, eating and drinking places are included under the leisure and hospitality sector as accommodation and food services, which totaled 3,100, 8% in 2007.
7. This number also includes education services.

As shown in the table, local government, which includes primary and secondary education, employs 4,500 people, making it the single largest employer category of any sector in the county. Other notable sectors include the natural resources and mining sector (3,800 employees); the transportation and warehousing sector (1,700 employees); the wholesale trade sector (1,400 employees); and the financial, activities sector (1,400 employees).

It is estimated that in 2006 approximately 81 percent of the total solid waste disposed of in Cowlitz County came from the nonresidential sector (commercial; industrial; and construction, demolition, and land clearing [CDL] waste). Therefore, programs geared specifically to nonresidential waste generators must be an integral part of the County solid waste system. The distribution of jobs remains concentrated in the Longview-Kelso urban area. Therefore, programs geared specifically to nonresidential waste generators may be most effective in the Longview-Kelso urban area.

1.12.4 Population

1.12.4.1 Cowlitz County

The 2000 census data at the State of Washington Office of Financial Management (OFM) Web site list the total county population as 92,948 in 2000 (OFM, 2002). The population of the incorporated areas is 54,156, while the population of the unincorporated area is 38,792. Table 1-2 provides a more detailed breakdown of different areas in the county from the federal census data.

In unincorporated areas, the U.S. Census Bureau delineates boundaries for census-designated places (CDPs). CDPs are closely settled, named, unincorporated communities that generally contain a mixture of residential, commercial, and retail areas similar to those found in incorporated places of similar size. For the 2000 census, there are no minimum or maximum population criteria for recognition as a CDP.

A range of population densities for the county is illustrated in Figure 1-4. As can be seen on this figure, the county's population is concentrated along the I-5 corridor and the Columbia and Cowlitz rivers. Two pieces of legislation passed by the Washington State legislature in 1999 define rural counties as those with a population density of less than 100 persons per square mile. As can be seen in Figure 1-4, the majority of the county's land base has a population of fewer than 100 persons per square mile. Most of the low population density areas consist of private timber holdings or land owned by the federal government. The OFM Web site lists a county population density of approximately 82 people per square mile (OFM, 2002).

Table 1-2
Cowlitz County Population and Housing Units for 1990 and 2000
(1990 and 2000 Federal Census)

PLACE	1990 POPULATION	2000 POPULATION	1990 SF (1-2)[2]	2000 SF (1-2)[2]	1990 MF (3 & UP)[3]	2000 MF (3 & UP)[3]
Kelso	11,820	11,895	3,648	4,042	1,182	1,049
Longview	31,499	34,660	9,691	11,268	3,672	3,947
Longview Heights CDP (unincorporated)	3,310	3,513	1,015	1,264	193	130
West Longview CDP (unincorporated)	3,163	2,882	754	955	511	209
West Side Highway CDP (unincorporated)	3,641	4,565	950	1,598	419	90
Woodland[1]	- -[4]	3,688	- -[4]	1,207	- -[4]	276
Total Urban	**53,433**	**61,203**	**16,058**	**20,334**	**5,977**	**5,701**
Castle Rock	2,067	2,130	703	750	133	137
Kalama	1,210	1,783	401	688	84	154
Woodland	2,406	- -[4]	694	- -[4]	223	- -[4]
Total Incorporated Rural	**5,683**	**3,913**	**1,681**	**1,438**	**440**	**291**
Total Unincorporated Rural	**23,003**	**27,832**	**8,747**	**10,737**	**57**	**123**
County Total	**82,119**	**92,948**	**26,603**	**32,509**	**6,474**	**6,115**

NOTES:
CDP = census-designated place.
[1.] In addition to the Cowlitz County residents shown above, 2000 census data also indicate 92 Woodland residents live in Clark County.
[2.] Data from the mobile home census designation (12% of the county total) were included with the two units or fewer category.
[3.] Data from the boat, RV, van, etc. census designation (0.4% of the county total) were included with the three units or greater category.
[4.] Since the 1993 SWMP the population of Woodland has surpassed the 2,500 mark so that it is now considered urban for the purposes of the SWMP.

1.12.4.2 Wahkiakum County

Cowlitz County also offers Wahkiakum County residents the same public solid waste services as Cowlitz County residents. Wahkiakum County had a 2000 census population of 3,824 people. Although the exact number of Wahkiakum County residents utilizing Cowlitz County solid waste services is unknown, these Wahkiakum County residents comprise a relatively small percentage of the overall population contributing to the Cowlitz County waste stream.

1.12.4.3 Urban and Rural Designations

The provision of solid waste management services, particularly collection of waste and recyclables, is most efficient within a well-developed urban infrastructure. As a result, solid waste program design and implementation typically differ from urban areas to rural areas. The RCW rules and Ecology guidelines emphasize that rural and urban areas must be clearly designated for waste reduction and recycling planning purposes. RCW 70.95.092 states that when designating urban areas, "local governments shall consider the

planning guidelines adopted by the department, total population, population density, and any applicable land use or utility service plans."

The 1993 SWMP defined urban areas of the county as:

- Incorporated areas with populations of at least 2,500 inhabitants
- CDPs with populations of at least 2,500 inhabitants

All areas not classified as urban were considered rural by the 1993 SWMP. The County intends to use these same definitions of urban and rural in the current SWMP.

At the time of the 1993 SWMP, this definition of urban included Kelso, Longview, Longview Heights CDP, West Longview CDP, and West Side Highway CDP, while the rest of the county (including the incorporated areas of Castle Rock, Kalama, and Woodland) was considered rural. 2000 census data indicate that, with the exception of Woodland, these 1993 classifications are still valid. Since 1993 the population of Woodland has surpassed the 2,500 mark, and therefore Woodland is now considered urban for purposes of solid waste management planning.

These designated urban areas are shown on Figure 1-5. These urban areas include approximately 61,200 county residents, or approximately 66 percent of the county population.

Projections prepared by the Cowlitz-Wahkiakum Council of Governments predict that the population of Castle Rock will exceed 2,500 people between 2010 and 2015.

The urban or rural distinction is a required aspect of the Waste Reduction and Recycling components of the SWMP. Minimum urban and rural service levels within the context of the urban and rural designations will be discussed as part of the Waste Reduction and Recycling plan elements.

1.13 Chapter Highlights

- RCW 70.95.080 requires each county to prepare an SWMP, and RCW 70.95.110 requires that each plan be reviewed and revised, if necessary, at least every five years.
- Approximately 66 percent of the county population lives in the designated urban areas of the county.

- It is estimated that in 2006, approximately 81 percent of the total solid waste disposed of in Cowlitz County came from the nonresidential sector (commercial, industrial, and CDL).

2 WASTE STREAM DESCRIPTION

Identifying and characterizing the waste stream will provide the information needed to evaluate existing programs, develop new strategies, and implement new or revised planning measures.

2.1 Solid Waste Definitions

The following definitions describe general categories of waste discussed in this Plan:

Solid Waste—For the purposes of this Plan, the term "solid waste" encompasses the total waste stream, which is made up of municipal solid waste (MSW), special wastes, and industrial waste.

Municipal Solid Waste—The entire waste stream from residential, commercial, and institutional sources and a portion of the waste stream from industrial sources comprise MSW. MSW in Cowlitz County is limited to wastes that are managed by the principal MSW handling and disposal system, as represented by all waste delivered to the Cowlitz County Landfill or solid waste originating in Cowlitz County handled by the Waste Control material recovery facility (MRF).

Moderate-Risk Wastes—Moderate-risk waste (MRW) is comprised of chemical materials that are poisonous, toxic, flammable, reactive, or corrosive. These products include but are not limited to pesticides, herbicides, mercury and mercury thermometers, some types of batteries, gasoline, kerosene, motor oil, antifreeze, oil-based paint, paint thinner, turpentine, pool chemicals, and drain cleaners. MRW is divided into two categories: household hazardous waste and small-quantity generator hazardous waste.

Special Wastes—Special wastes include construction, demolition, and land-clearing (CDL) waste, agricultural waste, auto hulks, asbestos wastes, petroleum-contaminated soil, white goods, tires, sewage sludge, and biomedical waste. Special wastes are defined as wastes that require separate handling due to their bulk, water content, or dangerous constituents.

Industrial Waste—Industrial waste includes by-products from manufacturing operations, such as scraps, trimmings, packaging, boiler ash, wood-product residuals, and other discarded materials not otherwise designated as a dangerous waste under Chapter

173-303 WAC. The county's industrial waste is generated principally by the forest products industry, which includes companies such as Longview Fibre and Weyerhaeuser. Most of the forest products industrial waste is directed to private facilities, such as the Weyerhaeuser Landfill. Relatively small quantities of non-forest product industrial waste are handled by the Cowlitz County Landfill.

Recycling—Recycling is the separation of a given waste material from the waste stream and processing it so that it may be used again as a useful material for products that may or may not be similar to the original. The Washington Department of Ecology's (Ecology) definition of recyclable materials generally includes paper, metal, glass, plastic, and organics.

Diversion—Diversion represents materials that have been diverted from disposal for reuse, and are separate from recycled materials. Diverted materials include those which do not fit the definition of recycling as promulgated by Ecology, such as anti-freeze, concrete, ash and sand used in asphalt production, land clearing debris, and materials for energy recovery (wood, used oil, and tires).

2.2 Historical Waste Disposal and Recycling Data

Solid waste disposal in Cowlitz County occurs at the Cowlitz County Landfill and the Weyerhaeuser Landfill. The Weyerhaeuser facility opened in November 1993 to provide capacity for the disposal of forest product industrial waste generated by Weyerhaeuser. Previously, the company's waste was disposed of at the Mount Solo Landfill, a private facility that was closed in 1993.

Table 2-1 summarizes historical data collected at the Cowlitz County Landfill from 1976 to 2006. Yearly fluctuations can be linked to historical events such as the installation of scales in 1981 or the temporary closure of the Mount Solo Landfill, which resulted in the Cowlitz County Landfill accepting 7,993 tons of industrial waste from Weyerhaeuser on a temporary basis in January 1991. In 1992, the Waste Control MRF expanded and began operations related to curbside recycling. The City of Longview started curbside recycling in 1992. In 1997, Kelso started operation of recycling drop-off centers. Curbside recycling was started in Woodland in 1999. Recycling data in Table 2-1 are based on the annual Washington State Department of Ecology (Ecology) Recycling Survey. Yearly totals fluctuate dramatically due to variances in reporting related to the voluntary nature of the survey and misunderstandings about what is reportable. Also, the numbers reflect fluctuations in business activities, such as long-term stockpiling or operations going out of business.

Table 2-1
Solid Waste Historical Data
Cowlitz County Landfill

Year	Tons Landfilled	Annual Percent Change	Tons Recycled	Annual Percent Change in Tons Recycled
1976	48,500	—	n/a	n/a
1977	41,000	-15.46	n/a	n/a
1978	48,000	17.07	n/a	n/a
1979	47,000	-2.08	n/a	n/a
1980	47,000	0.00	n/a	n/a
1981	44,000	-6.38	n/a	n/a
1982	42,000	-4.55	n/a	n/a
1983	46,331	10.31	n/a	n/a
1984	51,128	10.35	n/a	n/a
1985	50,927	-0.39	n/a	n/a
1986	60,331	18.47	n/a	n/a
1987	64,589	7.06	n/a	n/a
1988	77,794	20.44	n/a	n/a
1989	85,696	10.16	n/a	n/a
1990	84,080	-1.89	21,522	—
1991	91,729	9.10	15,069	-29.98
1992	85,735	-6.53	88,411	486.71
1993	86,901	1.36	40,303	-54.41
1994	89,331	2.80	81,734	102.80
1995	95,518	6.93	47,115	-42.36
1996	82,952	-13.16	39,753	-15.63
1997	81,842	-1.34	61,021	53.50
1998	81,527	-0.38	38,229	-37.35
1999	81,770	0.30	33,621	-12.05
2000	81,669	-0.12	43,844	30.41
2001	78,406	-4.00	48,280	10.12
2002	82,806	5.61	57,515	19.13
2003	85,778	3.59	60,599	5.36
2004	92,151	7.43	69,194	14.18
2005	102,307	11.02	73,823	6.40
2006	106,885	4.47	-	-

NOTES:
Tons landfilled data for 1976–1990 are taken from the 1993 solid waste management plan (Cowlitz County Department of Public Works, and SCS Engineers, 1993).
Tons landfilled data for 1991–2006 are from County disposal records.
Recycled tons are taken from yearly Ecology Recycling Survey.
-: Not available at time of printing.

2.3 Current Solid Waste Disposal

The total amount of solid waste disposed of in Cowlitz County is represented by waste received at the Cowlitz County and Weyerhaeuser landfills and materials from Cowlitz County that is disposed of in other counties. Before 2005, the waste material from the Waste Control MRF was being sent to the Roosevelt Regional Landfill, but this material

is now being sent to the Cowlitz County Landfill. The discussion presented below is based mainly on data obtained from Cowlitz County, City of Longview, City of Kelso, Weyerhaeuser, and Waste Control. Additional information was obtained from the State of Washington's Fifteenth Annual Status Report on Solid Waste, which summarizes solid waste information collected by Ecology for the year 2005 (Ecology, 2006). Population estimates from the Washington Office of Financial Management for 2006 are used as a basis for the discussion below (OFM, 2007).

2.3.1 Residential Waste Disposal

Residential waste is defined as waste material generated at a residential dwelling unit, including single-family homes, apartments, and mobile homes. In 2006, 61,993 tons of residential waste was disposed of at the Cowlitz County Landfill, which was approximately 58 percent of the waste delivered to the Cowlitz County Landfill (Table 2-2). Less the Wahkiakum County waste of 1,914 tons, Cowlitz County residents account for 60,079 tons of the residential waste received at the landfill. These numbers do not include solid waste diverted for recycling. In 2006, Waste Control did not long-haul any waste to the Rabanco Solid Waste Facility in Roosevelt, Washington[1]. With an estimated population of 96,800 in 2006 (Office of Financial Management, 2007), Cowlitz County has a residential disposal rate of 1,241 pounds per person per year or 3.4 pounds per person per day. With approximately 37,238 occupied housing units in Cowlitz County[2], the rate per housing unit is approximately 3,227 pounds per housing unit per year or 8.8 pounds per housing unit per day.

2.3.2 Commercial Waste Disposal

Commercial waste is defined as waste materials originating in wholesale, retail, institutional, or service establishments such as office buildings, stores, markets, theaters, hotels, and warehouses.

In 2006, 34,203 tons of commercial waste was disposed of at the Cowlitz County Landfill (Table 2-2). This represents 707 pounds of commercial waste per person per year, or 1.9 pounds per person per day.

[1] In 2005, 7,477 tons were long-hauled to the Rabanco Solid Waste Facility in Roosevelt, Washington.
[2] Using 2005 data.

2.3.3 Construction, Demolition and Land-Clearing Waste Disposal

A subcategory of special waste, CDL waste, is made up of three separate waste streams that only rarely are mixed when they arrive at a disposal site. However, all three have common generation and composition characteristics.

Construction waste is defined as materials resulting from the construction, remodeling, and repair of buildings and other structures. Demolition waste is defined as solid, partially inert waste resulting from the demolition or razing of buildings, roads, and other manmade structures. Land-clearing waste is defined as organic waste, such as leaves, grass, prunings, or stumps resulting from land-clearing operations.

In 2006, 7,611 tons of CDL was disposed of at the Cowlitz County Landfill (Table 2-2). Approximately 14,600 tons of CDL was disposed of at the Weyerhaeuser Landfill in 2006 (3,300 in 2005) (Table 2-3). The total amount of CDL waste disposed of in Cowlitz County in 2006 was 22,211 tons. The per capita CDL waste disposal rate is approximately 459 pounds per person per year or 1.3 pounds per person per day.

2.3.4 Industrial Waste Disposal

Industrial waste in Cowlitz County consists primarily of forest product waste. In 2006, the Cowlitz County Landfill accepted 3,065 tons of industrial waste and 13 tons of asbestos (Table 2-2). The Weyerhaeuser Landfill accepted 201,200 tons of industrial waste (Table 2-3). In total, 204,265 tons of industrial waste generated in Cowlitz County was disposed of in the county in 2006. On a per capita basis, 4,220 pounds per person per year were disposed of in 2006, which is 11.6 pounds per person per day.

2.3.5 Total Solid Waste Disposal

The total amount of Cowlitz County MSW received by the Cowlitz County Landfill in 2006 is estimated to be 94,282 tons, not including Wahkiakum County MSW disposed at the landfill. At the Waste Control MRF, all residuals from processing Cowlitz County recyclables are sent to the Cowlitz County Landfill as a result of the Waste Control agreement (as of 2006). With a 2006 population of 96,800, Cowlitz County has a MSW disposal rate of 1,948 pounds per person per year or 5.3 pounds per person per day (Table 2-4).

Combined with the total amount of industrial waste received in 2006 by the Cowlitz County Landfill and the Weyerhaeuser Landfill (204,265 tons), and the CDL waste received by the facilities (22,211 tons), the total amount of solid waste disposed of in Cowlitz County in 2006 was 320,758 tons. With a 2006 population of 96,800, Cowlitz

County has a solid waste disposal rate of 6,627 pounds per person per year or 18.2 pounds per person per day (see Table 2-5).

Table 2-2
Waste Breakdown
Cowlitz County Landfill
(tons)

Year	Municipal Solid Waste	Demolition Waste	Industrial Waste	Inert Waste	Commercial Waste	Wood Waste	Asbestos	PCS	Tires	Medical	Other	Total Waste
1991	52,180	5,659	16,581*		17,309		535					91,729
1992	51,568	6,846	7,714		19,607		70					85,735
1993	50,848	4,301	4,817		26,668		267					86,901
1994	51,478	4,407	4,936		27,324		1,060		126			89,331
1995	53,554	6,849	7,918		26,983		99		115			95,518
1996	49,771	5,806	4,067		23,066		81		161			82,952
1997	47,305	4,012	4,623		25,586		154		161			81,842
1998	47,285	4,076	3,978		26,097		91					81,527
1999	47,707	2,807	6,726		24,471		59					81,770
2000	47,765	2,860	6,533		24,500		11					81,669
2001	45,475	3,882	4,704		24,305		16		24			78,406
2002	48,029	4,104	4,962		25,669		6					82,806
2003	49,751	5,141	2,565		28,307		7		7			85,778
2004	53,668	5,619	2,674		30,184		6					92,151
2005	58,928	7,164	3,062		33,146		7					102,307
2006	61,993	7,611	3,065		34,203		13					106,885

*1991 industrial waste includes 7,993 tons of Weyerhaeuser ash disposed of in January 1991 on an emergency basis.

Table 2-3
Waste Breakdown
Weyerhaeuser Landfill

Year	Tons Landfilled	Weyerhaeuser-Cowlitz County Waste (tons)	CDL-Cowlitz County Waste (tons)	Non-Weyerhaeuser Forest Products-Cowlitz County Waste (tons)	Total Cowlitz County Origin Waste (tons)	Other Out of County Weyerhaeuser Waste (tons)	Other Out of County Non-Weyerhaeuser Waste (tons)
1993	15,846	15,846	-	-	15,846	-	0
1994	177,900	157,300	-	-	157,300	20,600	-
1995	233,300	194,100	700	-	194,800	38,500	-
1996	283,872	243,743	648	-	244,391	40,065	-
1997	282,592	222,042	536	-	222,578	39,458	576
1998	269,687	230,348	3,183	11	233,542	34,719	1,427
1999	244,656	205,802	4,252	-	210,054	27,814	6,788
2000	257,606	218,545	3,483	5	222,033	30,309	5,264
2001	256,531	208,600	6,817	138	215,555	30,203	10,773
2002	261,200	203,200	6,700	700	210,600	27,300	23,300
2003	278,800	214,000	4,200	23,200	241,400	24,200	13,400
2004	255,000	196,000	2,900	17,100	216,000	23,400	15,600
2005	234,000	161,000	3,300	5,100	169,400	29,500	35,100
2006	297,900	198,000	14,600	3,200	215,700	31,800	50,300

Table 2-4
MSW and Solid Waste
Disposal Rates for 2006[A]

Source	Solid Waste Disposed Of Tons/Year	Solid Waste Disposed Of Lbs/Capita/Year	Solid Waste Disposed Of Lbs/Capita/Day
Residential	60,079	1,241	3.4
Commercial	34,203	707	1.9
TOTAL MSW	94,282	1,948	5.3
CDL	22,211	459	1.3
Industrial Waste (Primarily Forest Products)	204,265	4,220	11.6
TOTAL SOLID WASTE	320,758	6,627	18.2

NOTES:
[A]Information reported by Cowlitz County, Weyerhaeuser, Swanson Bark, and Waste Control.

2.3.6 Moderate-Risk Waste

The State of Washington's Fifteenth Annual Status Report on Solid Waste provides a summary of the statewide solid waste activities, including MRW activities (Ecology, 2006). The report states that Cowlitz County recovered 679,127 pounds of MRW in 2005, which includes household hazardous waste, small-quantity generator hazardous

waste, and used oil. MRW is disposed of in a variety of ways, but most is disposed of off site with the assistance of other companies and agencies. Pesticides and oil-based paints and fuels are shipped to licensed incinerators. Car batteries and NiCad batteries are scrapped for their metals. Most latex paint is shipped to Metro in Portland, Oregon, for recycling.

2.3.7 Waste Generation, Solid Waste Disposal and Recycling

Analysis of information in Table 2-5 provides a breakdown of Cowlitz County Landfill waste into rural and urban source categories. Table 2-5 illustrates that 56 percent of solid waste entering the Cowlitz County Landfill came from urban sources and 44 percent came from rural sources in 2006. Solid waste collected in Longview, Kelso, and the city of Woodland is considered urban, and everything else except self-haul is considered rural (includes urbanized areas outside city limits). Self-haul quantities were factored into urban and rural percentages, using information developed in Chapter 1.11.4. Table 2-5 also documents that the portion of Wahkiakum County waste that is disposed of in Cowlitz County equals approximately 1.8 percent of Cowlitz County's overall solid waste stream in 2006.

Recycling percentages generally increased annually from 1991 to 2004 as quantities of landfilled material at the Cowlitz County Landfill and the Weyerhaeuser Landfill have generally decreased or held steady. A slight increase in landfilled materials at the Cowlitz County Landfill is seen in 2005 and 2006. The increased landfill volume is a result of the agreement with Waste Control.

Based on the estimated 2006 Cowlitz County population of 96,800 and the 2006 disposal information for Cowlitz County, an average of 5.9 pounds of waste per Cowlitz County resident was disposed of in the Cowlitz County Landfill or sorted as garbage at the Waste Control MRF on a daily basis.

Table 2-6 shows the MSW-based residential recycling percentage for Cowlitz County to be 37.2 percent based on 2005 data. The recycling percentage, or recycling rate, is the percent of material that is recycled divided by the total amount generated (disposed plus recycled plus diverted). The residential recycling is based on collected amounts reported to Ecology for those materials from the MSW stream that have been collected as recyclable (aluminum, glass, cardboard, ferrous metals, auto hulks, plastic, paper, fluorescent lights, tin, tires, used oil, vehicle batteries, white goods, woodwaste, and yard waste). The residential recycling estimate does not include materials that Ecology classifies as diverted, which include antifreeze, carpet pad, oil filters, paint, and used oil that is used for energy recovery purposes. The county residential recycling number can be directly compared to the Statewide Recycling Goal of 50 percent. The State of Washington's Fifteenth Annual Status Report on Solid Waste reports that, in 2005, each resident of the state generated 7.86 pounds of solid waste per day (Ecology, 2006). Of the 7.86 pounds, 4.43 pounds were disposed of and 3.43 pounds were recycled, giving a

state-wide recycling rate of 44 percent. The statewide diversion rate for 2005 was 48 percent. The diversion rate is the percent of material that is diverted from the landfill divided by the amount disposed (recycling plus diversion divided by recycling plus diversion plus disposed).

Table 2-5
Tonnages by Source
Cowlitz County Landfill

Source	Service	2006	2005	2004	2003	2002	2001	2000	1999	1998	1997	1996	1995	1994
Longview	Residential	11,775	11,962	14,424	14,454	15,117	15,321	15,049	15,355	15,353	15,151	14,474	14,797	14,613
	Commercial	12,896	12,110	9,946	9,202	7,858	7,929	8,272	7,715	7,773	8,395	8,221	7,878	7,920
	Drop Box	5,051	4,620	5,417	4,596	4,726	4,811	5,254	4,765	3,674	3,336	3,434	3,278	3,279
Kelso	Residential	6,533	6,875	6,830	6,592	6,435	6,913	7,215	7,297	7,242	7,557	7,492	7,488	7,552
	Drop Box	1,829	1,825	1,840	1,951	2,230	2,028	2,069	2,009	1,400	1,357	1,424	1,565	1,560
Woodland (Waste Control as of 06/01)	City	5.475	5,472	5,466	4,472	4,466	4,475	– –	– –	– –	– –	– –	– –	– –
	Unincorporated	2,174	2,286	1,773	1,700	1,700	1,775	– –	– –	– –	– –	– –	– –	– –
Waste Control	Stan's	14,285	13,887	14,380	13,763	12,957	11,903	11,677	11,156	10,339	10,035	8,960	8,529	7,609
	Recycling	9,344	7,479	729	711	611	555	627	1,050	816	64	1,501	9,417	8,676
	Drop Box	9,853	9,108	5,279	6,415	5,021	4,782	6,041	5,040	3,795	3,390	3,517	8,608	5,036
Longview Fibre	Ash	40,342	32,061	6,057	– –	– –	– –	– –	– –	– –	– –	– –	– –	– –
Wahkiakum	Drop Box	521	532	540	558	527	563	562	574	592	598	601	611	658
	Stanley's	1,393	1,293	1,256	1,118	1,126	1,121	1,017	1,050	1,022	1,170	1,061	978	844
Ted's (ended 06/01)	Woodland	– –	– –	– –	– –	– –	– –	5,761	5,652	8,091	7,710	7,254	7,612	8,437
Toutle Drop-Box	Toutle Valley	1,198	1,159	1,141	1,094	1,067	1,039	1,061	1,124	1,195	1,287	1,226	1,335	1,269
Community Waste	Ryderwood	430	421	398	365	316	305	313	292	266	296	354	351	275
Self-Haul	Landfill	30,771	29,811	28,286	25,337	24,215	21,377	22,167	23,684	24,546	25,158	26,805	25,528	22,698
Recycling / Diversion	Landfill	(6,643)	(6,532)	(5,554)	(6,550)	(5,566)	(6,488)	(5,415)	(4,991)	(4,577)	(3,661)	(3,372)	(2,458)	(1,095)
Total		**106,885**	**102,307**	**98,208**	**85,778**	**82,805**	**78,406**	**81,669**	**81,771**	**81,527**	**81,843**	**82,952**	**95,517**	**89,331**
Wahkiakum County Total		1,914	1,824	1,796	1,676	1,654	1,683	1,579	1,623	1,614	1,768	1,662	1,796	1,676
Percent of Landfill Total		1.8%	1.8%	1.8%	2.0%	2.0%	2.1%	1.9%	2.0%	2.0%	2.2%	2.0%	1.8%	2.0%

Note: Longview Fibre Ash utilized for daily cover and not reported in MSW figures landfilled.

Table 2-6
Cowlitz County Residential Recycling Rate (2005)

County MSW Disposed Of[A]	97,727 tons
Recycled County MSW[B]	57,900 tons
TOTAL COUNTY MSW Generated	155,627 tons
RECYCLING RATE[C]	**37.2 percent**

NOTES:
[A]Does not include demolition waste, industrial waste, or asbestos.
[B]MSW recycling number derived from Ecology Recycling Survey, 2003. Includes aluminum, glass, cardboard, ferrous metals including auto hulks, plastic, paper, fluorescent lights, tin, tires, used oil, vehicle batteries, white goods, woodwaste, and yard waste. Does not include antifreeze, carpet pad, oil filters, paint, and used oil for energy recovery.
[C]This number is directly comparable to the Statewide Recycling Goal of 50 percent to be achieved by 2007. It is based on MSW numbers and does not include industrial waste, inert debris, asbestos, biosolids, contaminated soil, or CDL.

Table 2-7 shows the overall diversion rate for the entire county of 60.9 percent, which includes residential recycling, residential diversion, as well as industrial recycled waste and recycled CDL. Residential diversion is made up of those materials that are not considered to be part of the EPA defined waste stream but that have been handled through means other than disposal in a landfill (antifreeze, carpet pad, oil filters, paint, and used oil that is used for energy recovery purposes). Industrial waste and CDL recycling include activities at the Weyerhaeuser Landfill and at Swanson Bark, such as reuse of materials for hog fuel, as well as industrial and CDL waste recycling at the Cowlitz County Landfill and other facilities not included in the Ecology Recycling Survey for 2005.

Table 2-7
Total Tonnage of Waste Generation and Diversion in Cowlitz County (2005)

County MSW Disposed Of	97,727
Recycled County MSW	57,900
Diverted County MSW	15,741
Industrial and CDL Waste Disposed Of	226,476
Recycled Industrial and CDL Waste[A]	431,835
TOTAL COUNTY DIVERSION	505,476
TOTAL COUNTY WASTE GENERATION	829,676
OVERALL COUNTY DIVERSION RATE[B]	**60.9 percent**

NOTES:
[A]Includes recycled material reported by Weyerhaeuser and Swanson Bark. The number reported by Swanson Bark may be high, since they do not track source by county as the material is not a waste.
[B]Includes all waste, including industrial, generated in Cowlitz County.

2.4 Solid Waste Composition

This section presents waste composition estimates for Cowlitz County. Since no accurate solid waste composition studies have been conducted for the county, the composition estimates are based on Ecology composition surveys.

In 1987 and 1988, Ecology conducted a comprehensive statewide residential and commercial waste stream characterization analysis as part of its work in preparing the

"Best Management Practices Analysis for Solid Waste," (Ecology, 1988) as directed by the Washington State Legislature. For this analysis the state was divided into eight waste-generation areas (WGAs). Cowlitz County is included in the Southwest WGA, which also encompasses Clark, Lewis, Skamania, and Wahkiakum counties.

The objective of the Ecology study was to determine waste composition by generator type. Generator types included residential, commercial, manufacturing (industrial), and self-hauled sources. All waste that would potentially enter the municipal waste stream was considered in this analysis, including waste that is picked up by a public or private collector or self-hauled to landfills, transfer stations, or drop boxes. Ecology estimates of waste stream composition, by material, are shown in Table 2-8. These figures are adequate for planning purposes, but additional study should be conducted if a facility is being proposed that is highly dependent on waste composition.

2.5 Solid Waste Projections

Important factors in preparing solid waste projections include:

- Population
- Waste generation
- Waste diversion and recycling

2.5.1 Population Projections

Historically, based on census data from the State of Washington Office of Financial Management (OFM) Web site, the county experienced an average annual percent increase in population for the years 1960 to 2006 of 1.12 percent. For the 20 years from 1980 through 2000, the average annual percent increase was 0.79 percent, and for the decade from 1990 through 2000, the average annual percent increase was 1.25 percent (OFM, 2007).

Table 2-8
Estimated Disposed-Of Municipal Solid Waste Stream Composition
Cowlitz County

Materials	Residential 35 percent		Commercial 30 percent		Industrial 9 percent		CDL 27 percent		Total 100 percent	
	Tons	Percent	Tons	Percent	Tons	Percent	Tons	Percent	Tons	Percent
Glass										
Nonrefillable beer	454	1.2	220	0.7	76	0.8	3	0.01	754	0.7
Refillable beer	110	0.3	61	0.2	0	0.0	3	0.01	173	0.2
Nonrefillable pop	337	0.9	220	0.7	10	0.1	3	0.01	570	0.5
Container glass	1,737	4.6	380	1.2	38	0.4	6	0.02	2,161	2.0
Nonrecyclable glass	72	0.2	540	1.7	116	1.2	62	0.21	790	0.7
Subtotal	2,709	7.2	1,422	4.5	240	2.5	77	0.26	4,448	4.1
Metals										
Aluminum cans	299	0.8	125	0.4	29	0.3	0	0.00	453	0.4
Aluminum containers	72	0.2	61	0.2	8	0.1	74	0.25	214	0.2
Tin cans	942	2.5	284	0.9	19	0.2	0	0.00	1,246	1.1
Mixed metals	299	0.8	955	3.0	48	0.5	296	1.00	1,599	1.5
Ferrous metals	227	0.6	2,329	7.3	511	5.3	317	1.07	3,384	3.1
White goods	38	0.1	0	0.0	0	0.0	243	0.82	281	0.3
Nonferrous metals	38	0.1	64	0.2	57	0.6	80	0.27	239	0.2
Subtotal	1,915	5.1	3,818	12.0	672	7.0	1,010	3.41	7,415	6.8
Paper										
Newspaper	2,153	5.7	1,115	3.5	68	0.7	418	1.41	3,753	3.4
Corrugated paper	1,816	4.8	5,013	15.7	1,246	12.9	2,124	7.17	10,200	9.4
Computer paper	34	0.1	412	1.3	242	2.5	44	0.15	732	0.7
Office paper	114	0.3	604	1.9	387	4.0	92	0.31	1,196	1.1
Mixed scrap paper	5,297	14.0	3,514	11.0	1,615	16.7	142	0.48	10,569	9.7
Nonrecyclable paper	2,119	5.6	2,265	7.1	625	6.5	592	2.00	5,601	5.1
Subtotal	11,532	30.5	12,924	40.5	4,182	43.3	3,413	11.52	32,051	29.4
Plastic										
PET bottles	151	0.4	29	0.1	8	0.1	0	0.00	188	0.2
HDPE bottles	189	0.5	0	0.0	76	0.8	0	0.00	266	0.2
Plastic packaging	2,232	5.9	1,911	6.0	222	2.3	154	0.52	4,519	4.1
Other plastics	303	0.8	732	2.3	908	9.4	906	3.06	2,849	2.6
Expanded polystyrene	151	0.4	348	1.1	260	2.7	18	0.06	777	0.7
Subtotal	3,027	8.0	3,019	9.5	1,475	15.3	1,078	3.64	8,599	7.9

Materials	Residential 35 percent		Commercial 30 percent		Industrial 9 percent		CDL 27 percent		Total 100 percent	
	Tons	Percent	Tons	Percent	Tons	Percent	Tons	Percent	Tons	Percent
Organics										
Food	4,124	10.9	3,610	11.3	183	1.9	293	0.99	8,211	7.5
Yard and garden waste	8,437	22.3	863	2.7	57	0.6	3,780	12.76	13,137	12.0
Wood	454	1.2	2,396	7.5	868	9.0	8,416	28.41	12,135	11.1
Subtotal	13,016	34.4	6,869	21.5	1,108	11.5	12,489	42.16	33,482	30.7
Rubber										
Rubber products	114	0.3	831	2.6	95	1.0	1,401	4.73	2,440	2.2
Tires	189	0.5	639	2.0	0	0.0	296	1.00	1,124	1.0
Subtotal	303	0.8	1,470	4.6	95	1.0	1,697	5.73	3,565	3.3
Household Hazardous										
Batteries	38	0.1	32	0.1	0	0.0	0	0.00	70	0.1
Motor Oil	76	0.2	32	0.1	0	0.0	0	0.00	108	0.1
Other chemicals	38	0.1	64	0.2	211	2.2	0	0.00	313	0.3
Subtotal	151	0.4	128	0.4	211	2.2	0	0.00	490	0.4
Other										
Disposable diapers	1,211	3.2	32	0.1	0	0.0	154	0.52	1,397	1.3
Textiles	1,173	3.1	1,214	3.8	212	2.2	1,991	6.72	4,590	4.2
Leather	76	0.2	0	0.0	28	0.3	0	0.00	104	0.1
Inert materials	2,459	6.5	639	2.0	1,063	11.0	7,714	26.04	11,875	10.9
Ash	38	0.1	0	0.0	212	2.2	0	0.00	250	0.2
Construction debris	227	0.6	415	1.3	173	1.8	0	0.00	815	0.7
Subtotal	5,184	13.7	2,300	7.2	1,687	17.5	9,859	33.28	19,030	17.4
Totals	37,836	100	31,950	100	9,670	100	29,624	100	109,080	100

NOTES:

Source: Cowlitz County Comprehensive Solid Waste Management Plan, July 1993. (Cowlitz County Department of Public Works, and SCS Engineers, 1993)

Materials percent by weight based on measurements from sites in the Southwest WGA.

Disposed-of municipal waste includes 84,080 tons from the Cowlitz County Landfill and 25,000 tons of CDL from the Mt. Solo Landfill.

Some subtotals may appear to be slightly inaccurate because of rounding.

CDL percentages obtained from Portland (OR) Metro Waste Characterization Study, 1990.

HDPE = high-density polyethylene.

PET = polyethylene terephthalate

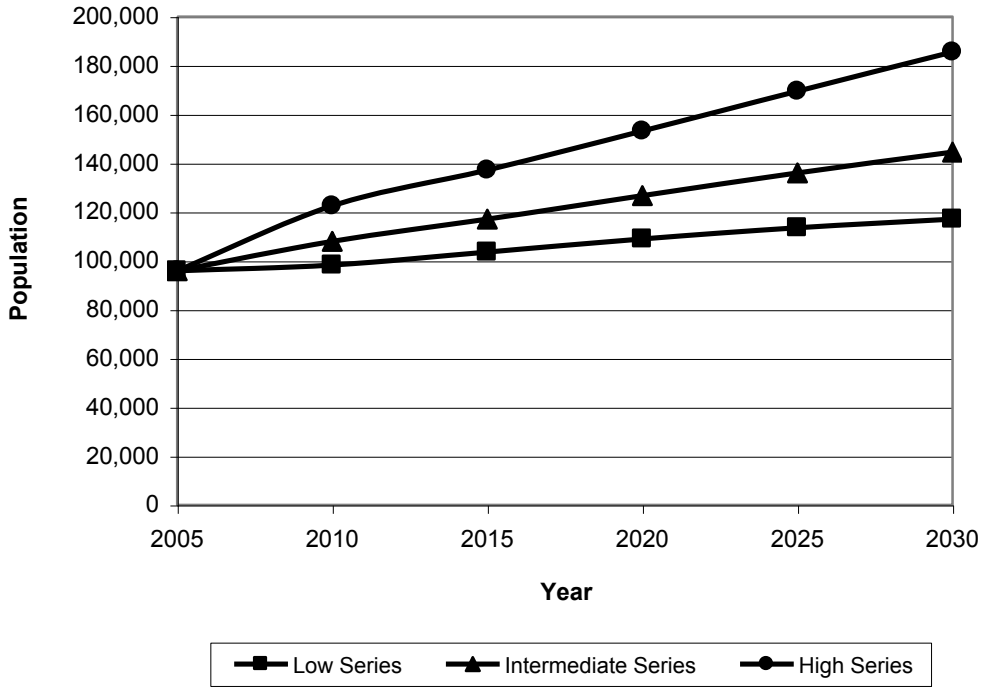
The OFM has prepared high, intermediate, and low series population projections for Washington counties through 2030 (see Table 2-9 and Figure 2-1). According to a 1995 amendment to RCW 43.62.035, counties may, for purposes of growth management planning, use values between the high and low projections. The intermediate series population projection predicts a county population of 107,974 in 2010, 117,053 in 2015, 126,676 in 2020, 135,987 in 2025, and 144,531 in 2030. These populations would be attained with an average annual growth rate of approximately 1.6 percent over this planning period. The OFM high and low series projections have average annual growth rates of approximately 2.6 percent and 0.8 percent, respectively.

Table 2-9
Washington State OFM Population Projections

Year	Low Series	Intermediate Series	High Series
2010	98,257	107,974	122,497
2015	103,592	117,053	137,157
2020	108,941	126,676	153,152
2025	113,549	135,987	169,474
2030	117,070	144,531	185,505
Average Annual Percent Growth	0.8 Percent	1.6 Percent	2.6 Percent

Note: All projections based on 2000 base year population of 92,948.

Figure 2-1
OFM Population Projections
Cowlitz County



Most of the population growth is expected to be in areas immediately adjacent to Longview and Kelso. Continued increases in population and households will result in increased solid waste generation, which will increase the need for continued emphasis on waste reduction and recycling.

Future per capita waste generation is expected to remain approximately the same due to a combination of factors such as increased tipping fees, slower population and economic growth, and the implementation of waste reduction and recycling programs.

2.5.2 Waste Generation Projections

Population and waste generation growth are usually parallel but change at different rates due to the impact of waste reduction and recycling efforts.

Waste diversion and recycling are expected to increase moderately in the next ten to 20 years, due mostly to increased awareness of environmental issues. At this time, no increases in recycling services are planned. Markets for diverted materials have stabilized, so no major shifts are expected. Residential waste streams are likely to get lighter, with an increased emphasis on plastic/paper mixes, and will likely contain less glass.

Between 1992 and 2006, the Cowlitz County Landfill experienced a growth rate of 1.6 percent for solid waste disposal. The waste generation and landfill capacity projection highlighted in Table 2-10 was prepared using existing Cowlitz County Landfill data from 1999 through 2006 and a range of growth rates of 0.5 percent, 1 percent, and 2 percent. The low-generation forecast, based on 0.5 percent growth, estimates waste disposal quantities under conditions of lower than expected population and economic activity, and very effective waste reduction and recycling program results. The high-generation forecast rate of 2 percent estimates quantities growing faster than expected due to stronger than expected economic activity. For planning purposes, Cowlitz County chose 1 percent as the baseline growth rate, a conservative figure that takes into account a very effective waste reduction and recycling program and normal growth and economic conditions.

2.6 Chapter Highlights

- Cowlitz County's recycling rate for MSW in 2005 was 37.2 percent. The number is directly comparable to the Statewide Recycling Goal of 50 percent.

- The overall diversion rate for Cowlitz County, including industrial and CDL waste, was approximately 60.9 percent.

Table 2-10
Waste Generation and Landfill Capacity Projection

Landfill Development Phase	Year	LOW GENERATION [1] Annual Tonnage	LOW GENERATION [1] Annual Volume (Cu.Yds.)	LOW GENERATION [1] Cumulative Volume (Cu.Yds.)	BASELINE GENERATION [2] Annual Tonnage	BASELINE GENERATION [2] Annual Volume (Cu.Yds.)	BASELINE GENERATION [2] Cumulative Volume (Cu.Yds.)	HIGH GENERATION [3] Annual Tonnage	HIGH GENERATION [3] Annual Volume (Cu.Yds.)	HIGH GENERATION [3] Cumulative Volume (Cu.Yds.)
Cells 1 & 2	1999[4]	6,250	10,417	10,417	6,250	10,417	10,417	6,250	10,417	10,417
Cell 3A[5]	2000	81,669	136,115	146,532	81,669	136,115	146,532	81,669	136,115	146,532
	2001	78,406	130,677	277,208	78,406	130,677	277,208	78,406	130,677	277,208
	2002	82,806	109,099	386,307	82,806	109,099	386,307	82,806	109,099	386,307
	2003	85,778	114,371	500,678	85,778	114,371	500,678	85,778	114,371	500,678
	2004	92,151	118,142	618,820	92,151	118,142	618,820	92,151	118,142	618,820
	2005	102,306	179,800	798,620	102,306	179,800	798,620	102,306	179,800	798,620
	2006	106,885	187,847	963,386	106,885	187,847	963,386	106,885	187,847	963,386
	2007	107,419	188,786	1,152,172	107,954	189,726	1,153,112	109,023	191,604	1,154,990
Cell 3A	2008	107,957	189,730	1,341,903	109,033	191,623	1,344,734	111,203	195,436	1,350,426
&	2009	108,496	190,679	1,532,582	110,124	193,539	1,538,273	113,427	199,345	1,549,771
3B[6]	2010	109,039	191,632	1,724,214	111,225	195,474	1,733,748	115,696	203,332	1,753,103
	2011	109,584	192,590	1,916,804	112,337	197,429	1,931,177	118,010	207,398	1,960,501
	2012	78,210	137,452	2,054,256	70,050	123,111	2,054,288	53,350	93,761	2,054,262

OVER CAPACITY @ 2,054,302 CUBIC YARDS

NOTES:

[1]0.5% Growth Rate

[2]1.0% Growth Rate

[3]2.0% Growth Rate

[4]Based on 1992-2003 actual growth rate just under 0.2%. Began waste placement in Cell 3A in Dec 1999.

[5]Cell 3A Access Limitation @ 650,000 cu yd

[6]Constructed Cell 3B in 2003, began placing waste in Aug 2004.

[7]2005 began taking 7,500 tons of MRF tailings and 40,608 tons of Longview Fibre Ash. Ash utilized for daily cover, accounting for .5912 tons per cu yd of refuse.

*1,095,800 cu yd of capacity remains as shown by 12/25/2006 survey.

- From 1990 to 2000, the county experienced an average annual population change of 1.25 percent.

- From 1990 to 2006, disposal quantities for the Cowlitz County Landfill were fairly stable, with increased population offset by increased recycling efforts.

2.7 Recommendations

1. Cowlitz County should continue to refine waste characterization information as information becomes available from Ecology or elsewhere and continue to increase detail of information on a jurisdictional basis, including categorizing waste streams on a rural and urban basis for waste reduction and recycling planning purposes.

2. Cowlitz County and Waste Control should cooperatively attempt to track quantities of all recycled MSW in order to easily develop and track numbers for county-wide recycling.

3. Cowlitz County should cooperatively track quantities of waste diverted and recycled by Weyerhaeuser in order to factor those quantities into numbers for county-wide recycling and waste reduction.

4. Cowlitz County should attempt to maintain a fairly constant disposal rate through effective recycling, despite increases in population.

3 WASTE REDUCTION

3.1 Introduction

The State of Washington identifies source reduction of waste as a fundamental strategy and top priority for solid waste management in Revised Code of Washington (RCW) 70.95. As a result, waste reduction must be a critical element of all local comprehensive solid waste management plans (SWMPs). Waste reduction is defined in RCW 70.95.030 as "reducing the amount or toxicity of waste generated or reusing materials." Recycling is defined in RCW 70.95.030 as "transforming or remanufacturing waste materials into usable or marketable materials for use other than landfill disposal or incineration." There are two reasons for promoting waste reduction. One is to reduce the risks associated with all solid waste management methods by reducing toxicity. Reducing the toxicity of solid waste makes all solid waste management methods safer and helps develop public confidence in waste management methods. The other reason is to reduce the quantity of discarded materials. This extends the useful life of existing and future facilities and conserves natural resources.

While waste reduction is to be emphasized, it is less understood and consequently less used than any other waste management strategy. The major problem associated with waste reduction is that it requires a change in personal habits and attitudes. Given these obstacles, it is uncertain just how much waste reduction can be achieved and to what extent a community can rely on waste reduction as an effective technique. Nonetheless, the objective of this chapter is to identify waste reduction actions that are reasonable for implementation in the county. Included are an inventory of existing conditions, an assessment of needs and opportunities, a discussion and evaluation of waste reduction options, an identification of recommended activities, and an implementation plan.

3.2 Existing Conditions

3.2.1 Private Sector Activities

Repair and reuse of durable products represent the most traditional forms of waste reduction and are well established in the county. Many charitable organizations, such as Goodwill Industries, the Salvation Army, churches, schools, and nonprofit organizations,

accept donations of used furniture, clothes, appliances, toys, books, and housewares. Weyerhaeuser, Longview Fibre, and Steelscape have all implemented a variety of waste reduction measures to save money and reduce environmental liability. For example, as a large-quantity generator of hazardous waste, Steelscape is obligated to have a pollution prevention plan in place and to produce annual progress reports. Several businesses in the county repair durable products, such as appliances, television sets, and furniture, for resale. Car dealers and wrecking yards sell used automobiles and parts. Rummage sales are year-round events staged throughout the county, providing an opportunity for citizens to resell items no longer needed.

3.2.2 Public Sector and Institutional Activities

Many local jurisdictions and institutions in the county have established waste-reduction policies as part of their daily activities. Examples include the use of double-sided copies and the use of routing slips for memoranda within offices to reduce the overall consumption of paper.

Both County and city recycling coordinators have begun education efforts by holding discussions on waste-reduction activities for local civic organizations, businesses, and schools. Most recently the City of Longview and Cowlitz County have sponsored a Too Good to Toss Web site that promotes reuse of durable goods. The site can be found at http://www.2good2toss.com. The Web site was developed by the Washington Department of Ecology to provide a forum in which jurisdictions within the state can sponsor and set up a materials exchange for reusable building materials and household items. Categories are available for items available (maximum price of $100), items wanted, free items, and events.

3.3 Needs and Opportunities

The State has identified a goal of complete citizen participation in waste reduction, with an eventual decrease in the annual per capita waste-generation rate. As identified in Chapter 2, the Cowlitz County per capita waste-generation rate is expected to increase annually at approximately 1 percent. Given the significant volumes of material that require disposal and the projections for continued growth in the per capita disposal rate, a need exists to develop a more formalized waste-reduction program in the county.

Waste reduction is the State's first waste management priority. The Planning Guidelines recommend that local jurisdictions such as Cowlitz County set specific waste-reduction goals and design programs to reduce waste. As a result, the County must develop waste-reduction programs and measure the results.

3.4 Waste Reduction Program Options

3.4.1 Public Awareness Education

Voluntary waste reduction can be achieved through public education and media campaigns that promote the necessity and purpose of waste reduction. Without an understanding of these basic elements, waste reduction efforts are not likely to succeed.

Public education and awareness efforts may include placement of news articles and public service announcements with local media, distribution of annual waste reduction awards, use of displays at county-wide events, and distribution of brochures and similar materials to businesses and households.

Waste-reduction opportunities for consumers are often emphasized at shopping centers by recommending the purchase of durable, long-lasting goods and buying in bulk. Some stores allow customers to bring their own containers to refill from bulk bins. Other stores pay customers for bringing their grocery bags back to the store for reuse. Another selective shopping technique includes learning to choose products that use recycled or less packaging. Product packaging is a significant portion of the residential waste stream.

3.4.2 School Curricula

Many jurisdictions around the country have developed materials and tools to educate students about responsible solid waste management, including waste reduction and recycling. Ecology has developed extensive K-12 school curricula. Some counties in Washington have effectively used special school presentations in classrooms or assemblies, including plays or skits, magic shows, and hands-on science exhibitions.

Field trips to local industries and agencies that practice waste reduction also help students learn responsible solid waste management techniques for home, school, and play. Field trips to local landfills and recycling facilities can emphasize the importance of and need to practice waste reduction and recycling.

3.4.3 Nonresidential Educational and Technical Assistance

The Washington SWMP recognizes the importance of involving nonresidential waste generators in waste-reduction activities. Specifically, nonresidential waste generators could prepare internal waste-reduction/recycling plans and conduct a waste audit. Programs that the County, cities, and other interested parties may implement to assist nonresidential waste generators include:

Material/Waste Exchange—There are several national and regional material/waste exchange programs that are available for industrial or commercial businesses. Similar to the local exchange program discussed in Section 3.2.2, these nonresidential exchanges have been developed to help businesses find a market for surplus materials, by-products, and wastes. These exchanges generally allow users to list available materials as well as wanted materials along with contact information. In general, waste exchanges tend to handle hazardous materials and industrial process waste while materials exchanges handle non-hazardous items. The County and cities could promote these waste exchange opportunities by informing local businesses of these services and encouraging them to participate. Because manufacture of new materials as well as disposal is avoided with the exchange of waste, it is a very effective form of waste reduction. The King County Hazardous Waste Management Program has set up a regional waste exchange for the Pacific Northwest called the Industrial Waste Exchange (www.govlink.org/hazwaste/business/imex/). Recycler's World (www.recycle.net) is a global trading site for information related to secondary or recyclable commodities, by-products, and used and surplus items or materials. The site includes links to many national and international specialty wastes and materials exchanges.

Technical Assistance Program—Educational and technical assistance can be provided to businesses and public agencies on an informal or formal basis. Informal education might include informational flyers, distribution of program "success" reports on the benefits of reducing waste, or telephone conversations on how to get started. Formal waste-reduction technical assistance often includes conducting an audit to determine sources of waste and coaching on possible uses for waste materials and ways to reduce the amount and toxicity of waste. Appropriate waste-reduction options are then selected based on technical and economic feasibility. Incentives for implementing a formal waste-reduction program include the potential for reduced disposal costs, development of a better public image, and the preservation of natural resources. A formal waste-reduction program should include measures to estimate or monitor quantities of waste reduced.

3.4.4 On-Site Composting

Home Composting—Residents can significantly reduce their waste through home composting. Two methods commonly employed include placing yard waste in back yard piles or bins and food waste in worm bins. Back yard composting is a low-technology, low-cost option that provides the advantages of citizen participation and waste reduction at its source. In a continuing program, 4,000 composting bins have been distributed by the cities and the County throughout Cowlitz County. Based on survey data that indicate a 77 percent participation rate for compost bin owners, the composting bin program likely results in over 700 tons of waste reduction per year. Cowlitz County has collaborated with the Washington State University Cooperative Extension to provide a Master Composter program every two years to assist with the distribution of information and

hands-on education about composting. The program currently has 52 active volunteers (Gray, 2002).

A common food waste composting technique is the use of a worm bin. Special worms are placed in a closed, chest-type box along with shredded newsprint. The worms are fed non-fatty household food scraps. Worms digest the food and produce worm castings, which are a rich soil amendment. Design sheets and brochures can be distributed to residents to provide instructions for building a compost pile or worm bin. Some jurisdictions are able to provide bins to their residents at a special rate as an incentive to reduce waste by composting.

Nonresidential Composting—Businesses that generate compostable waste may be able to practice on-site composting. Compostable waste materials generated by businesses include food wastes from restaurants and groceries, woodwaste from the timber industry, and agricultural waste from farmers and food processors. All materials can be composted on site, depending on space availability and specific permitting requirements.

3.4.5 In-House Government Programs

Before jurisdictions can effectively emphasize private sector and general public participation in waste-reduction programs, they should start with internal implementation of similar programs. For example, government departments can use double-sided copies instead of single-sided, and preventative maintenance of fleet vehicles.

The County and cities could set examples and promote local waste reduction efforts by publicizing their own efforts to reduce the amount of waste produced in all departments. The County and some cities have already established in-house recycling programs in some departments. These programs could be expanded to emphasize waste-reduction practices, include more departments, and include a wider range of materials. Quantities of reduced waste could be periodically estimated or monitored so results can be used for promotional purposes, economic analysis, and the County's quantification of waste-reduction efforts on an annual basis.

3.4.6 Incentive/Disincentive-Based Programs

Variable Rates—Waste reduction program incentives include financial and/or other types of rewards for achieving behavior that reduces waste generation or disposal. Variable rates can be implemented on a per-pound basis or through the use of variable-size containers. Kalama, Woodland, and Washington Utilities and Transportation Commission-regulated areas all have variable can rates in place. Variable rates encourage waste reduction because they reward customers who generate less waste. Incorporated

municipalities that regulate solid waste collection have the ability to implement variable rates.

Product Bans—Disincentive programs at the local level typically include bans on certain products. Local governments may consider the banning of materials, packaging, and products that significantly hinder efforts to meet waste-reduction goals. It is generally recognized, however, that product/container deposits and/or product/packaging prohibitions are not effective unless established on a state or national level.

3.4.7 Government and Business Procurement

Local government can be a leader in waste reduction by purchasing products with recycled content. Procurement standards can be developed that require a certain percentage of recycled content in widely used products and packages. For example, Cowlitz County currently procures office paper with 30-percent recycled content. The County could investigate the opportunity to purchase additional products that are made with recycled materials and that are durable, recyclable, and nontoxic. The Clean Washington Center's Department of Trade and Economic Development is an excellent source of information on available recycled products.

Businesses can also institute procurement procedures that encourage the use of recycled and recyclable materials. Using the information developed by agencies in implementing procurement standards, businesses can assist waste-reduction efforts without having to invest significant resources in experimenting with new products.

3.4.8 Methods of Tracking Waste-Reduction Activities

The concept of tracking waste reduction can and should be incorporated into future waste-reduction activities, including educational programs and technical assistance and demonstration projects. It is important to note that waste-reduction data are often developed through the use of estimates, because exact data are difficult to develop. For individual organizations, waste-reduction numbers can sometimes be calculated by looking at invoices or ledgers. Most organizations will find it beneficial to track waste-reduction activities in order to document cost savings.

Trends in county-wide waste-reduction efforts can be estimated over the long term by comparing disposal rates with population changes or through the use of surveys.

3.5 Evaluation of Options

The following criteria and conclusions were established by the Solid Waste Advisory Committee for the 1993 SWMP for each waste-reduction option:

- Waste-reduction options should be effective at a local level and given high priority. Options that qualify under this criterion include: public awareness education, school curricula, nonresidential education and technical assistance, on-site composting, in-house municipal waste reduction, and government and business procurement.

- Waste-reduction options that combine county and non-county resources should be given high priority. Options that qualify under this criterion include: public awareness education, school curricula, and nonresidential education and technical assistance.

- Waste-reduction options should be incentive-based rather than disincentive-based. The County and cities have concluded that educational and incentive-based programs such as modifications in fee structures should be implemented before disincentive-based programs such as product or packaging bans, product or container deposits, and product use/reuse standards.

3.6 Chapter Highlights

- Waste-reduction measures such as packaging modifications or product bans are most effectively implemented on a large scale, preferably state-wide or on a national level.

- Waste reduction is difficult to track.

- On a local level, waste reduction is most effectively achieved through education and public awareness. Waste reduction is most effectively regulated on a state or national level.

3.7 Recommendations

After evaluating the waste-reduction management options, the following recommendations were developed for Cowlitz County in order of priority:

1. Cowlitz County and the cities should coordinate their efforts whenever possible and work to develop public education and awareness programs aimed at

informing and motivating the community to practice waste-reduction and recycling techniques.

2. Cowlitz County and cities should continue to coordinate efforts and work with nonprofit and volunteer groups to implement home composting programs, and should continue to provide funding assistance to the local demonstration site.

3. Cowlitz County and cities should continue and expand group presentations and work to implement school curricula.

4. Cowlitz County and the City of Longview should continue to support the state developed reuse website, 2-Good-2-Toss (www.2good2toss.com). Other cities within the county should consider participation in the program.

5. All public agencies in Cowlitz County should continue to provide an example to the community in waste-reduction methods by implementing in-house waste-reduction programs, and should continue to work with local governments to implement waste-minimization programs that include purchasing and waste-reduction practices. Agencies should continue to encourage local industries to do the same.

6. Businesses in Cowlitz County should continue to be encouraged, through technical assistance provided by the County, to evaluate their processes and policies that affect waste generation.

7. Cowlitz County and cities should continue to track waste reduction, recycling, and disposal.

4 RECYCLING

4.1 Introduction

Recycling is defined in Chapter 70.95 Revised Code of Washington (RCW) as "transforming or remanufacturing waste materials into usable or marketable materials for use other than landfill or incineration." Recycling is a vitally important component of a solid waste management strategy, because it reduces costs and environmental impacts associated with solid waste disposal. Recycling also helps conserve energy and natural resources.

The Washington State Legislature established the goal of reaching a 50-percent recycling rate by 1995. This goal has not been met. The statewide recycling rate reached an all-time high of 39 percent in 1995; in 2000 the recycling rate was 35 percent. In order to meet the established goal, increased recycling activity by local governments, private companies, and households will be required. The target date for achieving the statewide recycling goal of 50 percent was revised to 2007 by the State legislature in 2002.

As discussed in Section 2.3.7, during 2005 Cowlitz County achieved a residential recycling rate of 37 percent (see Table 2-6) and an overall diversion rate of 61 percent (see Table 2-7). These can be compared to the state recycling rate of 44 percent and diversion rate of 48 percent.

Chapter 70.95 RCW identifies source separation as a fundamental strategy of solid waste management. Source separation is defined as the separation of different kinds of solid waste at the place where the waste originates (Chapter 70.95.030 RCW). However, the State also determined that recycling should be made at least as convenient and affordable as disposal. Commingled curbside recycling with post-collection centralized separation has been effectively employed in some areas of Cowlitz County since 1992.

The purpose of this chapter is to describe existing recycling activities in the county, identify recycling options, and evaluate options for implementation. The overall goals are for Cowlitz County's residential recycling rate to reach the state recycling goal of 50 percent and to make recycling and composting opportunities readily available to all residential and nonresidential waste generators in Cowlitz County.

4.2 Existing Conditions

The following section is an inventory of existing recycling conditions in Cowlitz County. Table 4-1 contains a listing of Cowlitz County recycling centers.

Table 4-1
Cowlitz County Recycling Centers

MUNICIPALITY	LOCATION	RECYCLABLES
CASTLE ROCK	Castle Rock Recycling Center Castle Rock Texaco Station Exit 49, I-5	Newspaper, PET, HDPE, Aluminum, Tin, Cardboard
	Wilcox & Flegel 110 Allen Avenue	Oil, Antifreeze
TOUTLE	Toutle Recycling Center Toutle Drop Box Facility 200 S. Toutle Road Wed: 9 am–5 pm; Fri: 9 am–5 pm	Newspaper, Aluminum, Tin, HDPE, PET, Oil, and Antifreeze; County supplies glass drop box.
	NAPA Auto Parts 105 Huntington Avenue S.	Oil, Antifreeze
KALAMA	Kalama Recycling Center City Shop 6315 Old Pacific Hwy S. 673-3706	Newspaper, PET, HDPE, Aluminum, Tin, Oil, Antifreeze
KELSO	Kelso Drop Center Super 8 Motel 250 Kelso Drive	Newspaper, PET, HDPE, Aluminum, Tin, Glass, Oil, Antifreeze, Cardboard, Mixed Paper
	Sears Automotive Center Three Rivers Mall—Kelso 577-4000 Mon–Fri: 8 am–9 pm; Sat: 9–6; Sun: 11–6	Auto Batteries, Oil, Tires
	Metro Metals, Inc. 1610 S. River Road—Kelso 425-5050 Mon–Fri: 8 am–4:30 pm Sat: 8 am–12 pm	Newspaper, Cardboard, Glass, Aluminum, Ferrous (iron), Nonferrous (copper, nickel, lead), Stripped Appliances
	Kelso Drop Center Huntington Junior High Red Path Street	Mixed Paper, PET, HDPE, Aluminum, Tin, Newspaper, Cardboard
	Kelso Drop Center Buy More MiniMart S. Pacific Avenue	Glass, Mixed Paper, PET, HDPE, Aluminum, Tin, Newspaper, Oil, Antifreeze, Cardboard
LONGVIEW	Waste Control Recycling Inc. 1150 3rd Ave—Longview 425-4302 Mon–Sat: 8 am–5 pm	Newspaper, Cardboard, High-Grade Paper, Mixed Paper, Poly-Coated Paper, HDPE, PET, Glass, Aluminum, Ferrous (iron), Nonferrous, Tin, Wood, Magazines, Auto Hulks

MUNICIPALITY	LOCATION	RECYCLABLES
LONGVIEW	Cowlitz County Recycling Drop Center Cowlitz County Landfill 85 Tennant Way—Longview 577-3126 7 days/week 7:30 am–5:30 pm	Newspaper, PET, Cardboard, HDPE, Glass, Aluminum, Ferrous (iron), Nonferrous, Tin, Antifreeze, Auto Batteries, Oil, Mixed Paper
	Goodwill Industries Donation Center 710 14th Ave—Longview 425-6929 Mon–Fri: 8 am–4:30 pm; Sat: 9 am–5 pm; Sun: 12–4:30 pm	Reusable Items
	Fred Meyer 3184 Ocean Beach Highway 636-1010	Newspaper
	Safeway 2930 Ocean Beach Highway 575-6240	Newspaper
	Safeway 1227 15th Avenue 360-575-6600	Newspaper
LEXINGTON	MiniMart West Side Highway	Cardboard, Tin, Aluminum, HDPE, PET, Mixed Paper, Newspaper
UNINCORPORATED COWLITZ COUNTY	Coal Creek Store Coal Creek Road	Newspaper
	Columbia Heights Baptist Church 6136 Columbia Heights Road	Newspaper, PET, HDPE, Mixed Paper, Aluminum, Tin
	Rose Valley Fire Station Rose Valley Road	Newspaper
LIONS CLUB	Multiple locations	Newspaper
Boy Scouts of America	Multiple locations	Newspaper
County-Wide	Thrift Stores Multiple Locations	Reusable Items
NOTES: HDPE = high-density polyethylene PET = polyethylene terephthalate		

4.2.1 Cowlitz County

Cowlitz County Recycling Drop-Off Center—Cowlitz County maintains a recycling drop-off center at the landfill for public use. Materials accepted include: newspaper, cardboard, foam carpet pad, glass, tin cans, aluminum cans and foil, plastic (polyethylene terephthalate [PET] and high-density polyethylene [HDPE]), mixed paper, metals, motor oil, antifreeze, household and automotive batteries, and computer parts. Most of the materials are processed before being shipped to market.

Individuals may use the landfill recycling facility free of charge. To promote recycling, the landfill will credit a $2.00 discount against the disposal fee if two or more types of properly prepared recyclables with a combined weight of 15 pounds or more are placed in the drop-off recycling bins. This practice has been in place since the early 1990s.

Appliances, scrap metal, brush, grass, leaves, and dimensional lumber are recycled for a fee.

In 2006, 6,643 tons of recyclables was recovered at the drop-off center, 7 percent of the commercial and residential waste stream being dropped off at the Landfill.

Cowlitz County Drop-Off Centers in Outlying Areas—Waste Control, Inc. (Waste Control) has set up drop-off centers in Toutle, Lexington, Rose Valley, Coal Creek, and Columbia Heights. These are areas that are not served by curbside recycling or recycling drop-off centers operated by the various cities.

Commercial and Institutional Recycling—Waste Control collects and processes office paper and cardboard from the Longview, Kelso, Kalama, and Woodland school districts. Waste Control also provides scheduled cardboard and office paper recycling to local businesses and government agencies within the city limits.

The County and city purchasing offices work to encourage the use of recycled products. The County currently purchases office paper with 30-percent recycled content. To the extent possible, opportunities should be provided for cities and other public agencies to make joint purchases of recycled products with the County in order to obtain lower prices.

Public Education/Publicity—Cowlitz County continues to receive monies for public education via the Coordinated Prevention Grant funded on a two-year basis by the Washington State Department of Ecology (Ecology). The Coordinated Prevention Grant is funded by the 0.7-percent tax on all hazardous substances generated in the state, which is filtered down to a county level. Funds from the grant were provided to the County and the cities of Longview and Kelso for the development of public educational materials related to household hazardous waste, waste reduction, and recycling. Materials are distributed at public speaking engagements, local schools, newspapers, and community events, and upon request. There are ongoing efforts to update county residents on new and existing recycling opportunities.

Christmas Tree Recycling Program—Kelso, Longview, and the County sponsor a Christmas tree recycling program that was first implemented in 1990. Tree collection sites are located at the County landfill and in the cities of Longview, Castle Rock, Kalama, and Woodland. In recent years, the trees have been chipped at the County landfill for use as feedstock in composting operations. The County also offers free leaf disposal at the landfill during fall and winter months.

4.2.2 City of Castle Rock

Waste Control maintains a recycling drop-off center for the City of Castle Rock at a vacant lot at the corner of Huntington and Front Street. There are several compartments for newspaper, cardboard, tin cans, aluminum, and PET and HDPE plastics. Glass and mixed paper are not accepted. Castle Rock also has receiving tanks for antifreeze and motor oil that are maintained by Cowlitz County (locations are listed in the Cowlitz County Moderate Risk Waste Plan). Castle Rock also participates in Cowlitz County's Christmas tree recycling program.

4.2.3 City of Kalama

Waste Control maintains a recycling drop-off center for the City of Kalama at the city shop. The drop box contains separate bins for PET, HDPE, tin, aluminum, and newspaper. The Kalama site also has receiving tanks for antifreeze and motor oil that are maintained by Cowlitz County (locations are listed in the Cowlitz County Moderate Risk Waste Plan).

4.2.4 City of Kelso

The City of Kelso has three unmanned recycling drop-off centers that are maintained under contract by Waste Control until 2009. Currently each residence is charged 50 cents per month for operation of the three drop-off centers; businesses are not charged. The City organizes an annual curbside collection of Christmas trees, which are recycled by Cowlitz County. Kelso also has two locations with receiving tanks for antifreeze and motor oil that are maintained by Cowlitz County.

In 2006, the use of drop-off centers recovered 622 tons of recyclables, 8.7 percent of the residential and commercial waste stream (see Table 4-2). However, there is an unknown number of non-Kelso residents who use the drop-off center, which may impact the recovered tonnage attributable to Kelso residents.

The recycling rates presented in Table 4-2 for Kelso, Longview, and Woodland should not be compared directly to the overall county residential recycling rate of 37 percent that is discussed in Section 2.3.7. The overall county rate includes many other recyclable items (see note B of Table 2-6) that are not included in the city recycling rates.

Table 4-2
City Disposal and Recycling Programs Summary
Tonnage by Source
Cowlitz County

Source	Service	2006	2005	2004	2003	2002	2001	2000	1999	1998	1997
Longview	Residential	11,775	11,962	14,424	14,454	15,117	15,321	15,049	15,355	15,353	15,151
	Commercial	12,896	12,110	9,946	9,202	7,858	7,929	8,272	7,715	7,773	8,395
	Drop Box	5,051	4,620	5,417	4,596	4,726	4,811	5,254	4,765	3,674	3,336
	Curbside Recycling	2,335	2,476	4,095	3,259	3,528	3,512	3,003	3,175	3,158	3,074
	Recycling Percentage Residential	16.5	17.1	22.1	18.4	18.9	18.6	16.6	17.1	17.1	16.9
	Recycling Percentage Residential/Commercial	9.5	10.2	14.3	12.1	13.3	13.1	11.4	12.1	12.0	11.5
Kelso	Residential/Commercial	6,533	6,875	6,830	6,592	6,435	6,913	7,215	7,297	7,242	7,557
	Drop Box	1,829	1,825	1,840	1,951	2,230	2,028	2,069	2,009	1,400	1,357
	Drop-Off Recycling	622	553	579	581	590	611	577	613	796	806
	Recycling Percentage Residential/Commercial	8.7	7.4	7.8	8.1	8.4	8.1	7.4	7.7	9.9	9.6
Woodland	Residential/Commercial	5,475	5,472	5,466	4,472	4,466	4,475	NA	NA		
	Curbside Recycling	634	439	473	458	382	429	445	355		
	Recycling Percentage Residential/Commercial	10.4	7.4	8.0	9.3	7.9	8 7	NA	NA		

NOTES:
NA = not available.
Drop Box collection is not included in the calculation of recycling rates.
Recycling percentage for cities is not directly comparable to the county recycling rate of 37 percent.

$$recycling\ percent = \frac{recycling}{residential\ disposal + recycling}$$

4.2.5 City of Longview

The City of Longview started commingled curbside recycling in 1992. Single-family, 90-gallon residential recycling bins are picked up once a week. Apartment buildings are equipped with 300-gallon containers. The mandatory curbside program is funded directly by fees, similar to garbage pickup. The City of Longview organizes an annual curbside collection of Christmas trees, which are recycled by Cowlitz County. Longview also has three locations with receiving tanks for antifreeze and motor oil that are maintained by Cowlitz County.

In 2006, the use of curbside recycling recovered 2,335 tons of recyclables, 16.5 percent of the residential waste stream (see Table 4-2).

The City of Longview recycles solids collected by the street sweeper; approximately 800 tons is collected and recycled annually. The solids are used as inert fill material at various City projects, including a BMX and skateboard park and the City industrial park.

4.2.6 City of Woodland

The City of Woodland started commingled curbside recycling in 1999. Single-family, 60-gallon residential recycling bins are picked up every two weeks. Multifamily residences are serviced with larger bins, also for commingled recyclables, in this program, which is funded directly by fees. Woodland also has receiving tanks for antifreeze and motor oil that are maintained by Cowlitz County.

In 2006, the use of curbside recycling recovered 634 tons of recyclables, 10.4 percent of the commercial and residential waste stream (see Table 4-2).

4.2.7 Institutional Recycling Programs

St. John Hospital, Lower Columbia College, and the Longview, Kelso, Kalama, and Woodland school districts all have significant institutional recycling programs.

4.2.8 Private Sector Recycling Activities

In 1974, Waste Control established a buy-back recycling center and a small-scale material recovery facility (MRF). In 1984, new equipment was installed to enable the facility to handle more material, and the facility was doubled in size in 1992. Since opening its doors in 1974, the facility has played an increasing role in reducing the amount of solid waste disposed of in the landfill. In 2003, Waste Control recycled approximately 28,632 tons of material from Cowlitz, Clark, Clatsop, and Multnomah counties. Of this, approximately 85 percent of the recyclables were generated in Cowlitz County.

Waste Control operates from two buildings on Third Avenue in Longview. One 44,600-square-foot building houses the equipment for the MRF. The MRF processes commingled recyclables, using a variety of equipment, including a high-density export baler, conveyor belts, a wood shredder, sorting conveyors, a pre-crush compactor, magnetic sorters, a high-velocity air-conveying system, a Lubo Star screen sorter, live-floor storage units, a dust collection system, and various computers to operate the equipment efficiently. The facility also has loaders, forklifts, excavators, and other small equipment, to handle the sorting and processing of recyclables. The other building is used to house the buy-back center. The firm has approximately 70 employees who work at the MRF and on collection routes.

Waste Control has commercial collection routes in the cities of Longview and Kelso for cardboard and office paper. In 2003, 356 tons of office paper and 2,020 tons of cardboard were collected. The company also maintains drop-off sites for recyclable materials throughout the county. Waste Control conducts an extensive recycling program for local industry, including Longview Fibre, Weyerhaeuser, and Norpac.

Other Private Recyclers—Table 4.1 identifies the recycling centers in Cowlitz County and the materials they accept.

Weyerhaeuser, Steelscape, and Longview Fibre all have major recycling operations in place.

4.3 Designation of Recyclable Materials

Ecology's *Guidelines for the Development of Local Solid Waste Management Plans* requires all local solid waste management plans (SWMPs) to develop a list that defines materials as recyclable. For purposes of this section, materials are defined as recyclable if they are marketable and result in waste-stream diversion. A marketable recycled material is defined as a material with established end-users who purchase recyclable materials, use them as raw materials, and transform them into new products. Waste-stream diversion potential is represented as the percent of a specific material in the county waste stream. The following discussion applies both criteria to specific materials to compile a list of recyclable materials for Cowlitz County.

4.3.1 Principal Markets for Recyclables

Western Washington generally has favorable market conditions for a wide variety of recyclable materials due to a large number of nearby manufacturers who buy and utilize the materials, and opportunities for export through Columbia River and Puget Sound ports. As a result, Cowlitz County is able to take advantage of relatively stable and responsive markets. Table 4-3 identifies the location of the principal markets for recyclables in southwest Washington and northwest Oregon.

Table 4-3
Southwestern Washington Markets for Recyclable Materials (2002)

MATERIAL	SELECTED MARKETS	LOCATION
Newsprint	Blue Heron Norpac Inland Empire S. P. Newsprint Export	Oregon City, OR Longview, WA Spokane, WA Newberg, OR Washington and Oregon
Corrugated Containers	Longview Fibre Simpson Tacoma Kraft Weyerhaeuser Weyerhaeuser Export	Longview, WA Tacoma, WA Springfield, OR Albany, OR Washington and Oregon
High Grade Paper	Georgia Pacific Export	Halsey, OR Washington and Oregon
Mixed Waste Paper	S. P. Newsprint Export	Newberg, OR Washington and Oregon
Container Glass	Owens-Brockway	Portland, OR
Container Glass—mixed colors	Not currently marketable	California, Washington and Oregon
Refillable Glass	Not currently marketable	Washington and Oregon
Aluminum Cans	Various	Washington and Oregon
Tin Cans	Schnitzer Metro Metals	Portland, OR Portland, OR
Ferrous Metals	Schnitzer Metro Metals	Portland, OR Portland, OR
White Goods	Schnitzer Metro Metals	Portland, OR Portland, OR
Nonferrous Metals	Various	Washington and Oregon
PET Bottles	Export	Washington and Oregon
HDPE Bottles	Export	Washington and Oregon
LDPE Packaging	Export	Washington and Oregon
Milk & Juice Cartons	Not currently marketable	Washington and Oregon
Tires	Waste Recovery	Portland, OR
Wood	Swanson Bark and Wood Various	Longview, WA Washington and Oregon
Oil	Various	Washington and Oregon
Car Batteries	United Battery Systems Inc.	Longview, WA
Construction debris (other than wood)	Lakeside Industries Storedahl & Sons Waste Control	Longview, WA Longview, WA Longview, WA
NOTES: HDPE = high-density polyethylene LDPE = low-density polyethylene PET = polyethylene terephthalate		

4.3.2 Prioritized Recyclable Materials

Table 4-4 presents the current list of prioritized recyclable materials for Cowlitz County. Prioritization is based on the marketability of the product and its potential for waste-stream diversion, as discussed above. The results of the ranking will be used as a guide to identify materials to be recovered and recycled and may be periodically modified by the SWAC according to market conditions (without update of this SWMP).

All high-priority materials have been incorporated into local curbside recycling programs. High-priority materials that are not collected at recycling drop boxes should be incorporated into these programs in the near future. Medium-priority materials should be considered on a case-by-case basis for inclusion in existing or future programs. Low-priority materials should probably not be included in County recycling programs unless significant change occurs.

4.3.3 Glass

Post-consumer glass consists of three types: container glass, refillable container glass, and noncontainer glass. Refillable container glass is not currently collected in Cowlitz County. Glass discards were estimated to be 4.1 percent of the disposed-of municipal solid waste (MSW) stream in Cowlitz County in 1990 (see Table 4-4). In 2005, 303 tons of glass was recovered for recycling in Cowlitz County.

As with all commodities, market prices of glass have fluctuated continuously in the past few years. Currently, glass prices are at a point where collection is becoming uneconomical (SWAC, 2002). Competition from plastics and aluminum has increased. Glass maintains its competitiveness with other container materials because of the high-quality image it imparts to a product, its microwaveability, and its recyclability. Prices for glass cullet are kept low to remain competitive with the low price of silica sand.

Most glass recycled in the United States is manufactured into new glass containers. Present end-users are able to consume all available domestic quantities of clear (flint) and brown (amber) glass. Problems have occurred with the oversupply of green glass resulting from its import from overseas. Mixed cullet, which is a mixture of clear, brown, and green glass, is not currently marketable. Experiments have been conducted in using mixed cullet in the manufacture of "eco-glass," fiberglass, and various construction uses, including "glassphalt" and sandblasting. It is expected that in the long term, markets will develop for both green glass and mixed cullet.

The City of Bainbridge Island approved the use of crushed glass for road bases and pipe bedding. Kitsap County Department of Public Works has also begun to experiment using crushed recycled glass for road projects. Projects such as this enhance the marketability of recycled glass enormously.

Glass is considered marketable in Cowlitz County, and does provide for moderate waste-stream diversion. Therefore, glass is considered a medium-priority recyclable material.

Table 4-4
Prioritized Recyclable Materials
Cowlitz County

MATERIALS	PERCENT OF DISPOSED-OF MUNICIPAL SOLID WASTE STREAM (1990[a])	TONS RECYCLED (2005[b])	PERCENT OF MUNICIPAL SOLID WASTE STREAM RECYCLED (2005)	LBS PER CAPITA PER YEAR RECYCLED (2005[c])
HIGH PRIORITY				
Ferrous Metal	3.1	4,739	2.89%	98.83
Tin Cans	2.5	10	0.01%	0.20
Aluminum Cans	0.6	223	0.14%	4.64
Newspaper	3.4	998	0.61%	20.82
Cardboard	9.4	8,073	4.93%	168.37
High-Grade Paper	1.8	6,628	4.04%	138.22
Mixed Paper	9.7	2,940	1.79%	61.31
PET	0.2	54	0.03%	1.12
HDPE	0.2	95	0.06%	1.97
MEDIUM PRIORITY				
Glass	4.1	303	0.18%	6.32
White Goods	0.3	98	0.06%	2.03
Nonferrous Metal	0.2	1,761	1.07%	36.73
Yard Waste	12	7,076	4.32%	147.57
Woodwaste	11.1	4,686	2.86%	97.72
Used Motor Oil	0.1	2,763	1.69%	57.62
LOW PRIORITY				
Tires	1	341	0.21%	7.12
Asphalt and Concrete	n/a	15,314	not appl. —industrial waste	319.38
Alternative Fuels	n/a	182	0.11%	3.80
Antifreeze	n/a	94	0.06%	1.97
#3, #4, #5, #6, #7, and LDPE Plastics	n/a	163	0.10%	3.40
Car Batteries	n/a	209	0.13%	4.37
Carpet Pad	n/a	46	0.03%	0.96
Computers/Electronics	n/a	65	0.04%	1.35
Fluorescent Light Bulbs	n/a	1	0.00%	0.02
Latex Paint	n/a	45	0.03%	0.94
Oil Filters	n/a	58	0.04%	1.21
Photographic Films	n/a	<1	0.00%	0.01
Textiles	n/a	21	0.01%	0.44
Food Waste	n/a	666	0.41%	13.89
Construction and Demolition Debris	n/a	0	n/a—industrial waste	--
Household Batteries	n/a	2	0.00%	0.04
Rendering	n/a	15,989	n/a—industrial waste	333.46

NOTES:
n/a = not applicable.
HDPE = high-density polyethylene.
LDPE = low-density polyethylene.
PET = polyethylene terephthalate.
[a]Source: Cowlitz County Solid Waste Management Plan, 1993.
[b]Source: Recycling Survey, Ecology, 2005.
[c]Based on 2005 population figure of 95,900.

4.3.4 Metals

Ferrous Metals—Ferrous metals, or steel, are iron-based and therefore magnetic. Most ferrous metal in MSW consists of steel packaging in the form of food and beverage cans. Other major sources are automobile hulks, large appliances, automobile parts, office equipment, and worn-out fixtures. Ferrous metals were estimated to be approximately 3.1 percent of the disposed-of MSW stream in Cowlitz County in 1990 (see Table 4-4). In 2005, approximately 4,739 tons of ferrous metal was diverted for recycling.

The market for scrap ferrous metal is strong and will remain healthy in the foreseeable future. In the Pacific Northwest there are several "minimills" utilizing electric arc furnace technology. Minimills use virtually 100 percent scrap to make steel at a cost significantly less than integrated steel producers using iron ore. Ferrous metal represents significant waste-stream diversion and is marketable in Cowlitz County; therefore, ferrous metal is considered a high-priority recyclable.

Tin Cans—The major source of post-consumer scrap steel is tin cans. Tin cans are made of steel and have a light tin coating to prevent rusting. Tin is considered an undesirable contaminant in steelmaking, so these cans must be detinned. In the detinning process, the tin is removed and recovered, leaving behind a clean, high-value steel scrap. Market prices for tin cans have remained fairly constant over the last several years. This is partially tied to the value of steel and tin on world markets. An estimated 2.5 percent of the disposed-of MSW stream in Cowlitz County is composed of tin cans (see Table 4-4). In 2005, approximately 10 tons of tin cans was diverted for recycling in Cowlitz County. It should be noted that it is possible that some quantity of tin was reported as ferrous metal to Ecology in 2005 and therefore not reflected in the 10-ton total shown here. Tin cans are considered a high-priority recyclable.

White Goods—Markets for white goods are at times marginal due to high transportation and processing costs created by the need to remove hazardous components (e.g., polychlorinated biphenyls contained in the electrical components of older appliances and Freon® from refrigerators). Although white goods do not represent significant waste-stream diversion at 0.3 percent of the disposed-of MSW stream in Cowlitz County, the potential for illegal disposal and the hazards they represent make white goods a medium-priority recyclable. In 2005, approximately 98 tons of white goods was diverted for recycling in the county.

Nonferrous Metals—Recoverable nonferrous metals include copper, brass, lead, zinc, nonbeverage can aluminum, and other metals. Nonferrous metal generally has a higher value than ferrous metal. Markets for nonferrous metal continue to be strong, although they are prone to dramatic price fluctuations in reaction to general economic conditions and prices for virgin feedstock. Brokers and processors can handle much higher volumes of recycled nonferrous metals than they currently do. Nonferrous metals represented

approximately 0.2 percent of the disposed-of MSW stream in Cowlitz County in 1990 (see Table 4-4). In 2005, approximately 1,761 tons of nonferrous metals was diverted for recycling. The processing of nonferrous metal is typically labor-intensive due to its bulky nature and multiple components. Nonferrous metals are therefore a medium-priority recyclable.

Aluminum Cans—Aluminum cans are the most prevalent nonferrous metal at 0.6 percent of the disposed-of MSW stream in 1990 (see Table 4-4). In 2005, approximately 222 tons of aluminum cans was diverted in Cowlitz County for recycling. Although aluminum comprises a small portion of the waste stream, its relatively high economic value makes it an important component of a recycling program. Therefore, aluminum is considered a high-priority recyclable.

4.3.5 Paper

Paper products account for a larger fraction of the Cowlitz County waste stream than any other category. In 1990, paper represented approximately 29.4 percent of the total waste stream (see Table 4-4). Since every paper product exhibits different market characteristics, the major grades are discussed separately below.

Old Newspapers—Old newspaper (ONP) represented approximately 3.4 percent of the disposed-of MSW stream in 1990. In 2005, approximately 998 tons of newspaper was diverted in Cowlitz County. Newspaper is easily identified, prepared, and handled, making it a common material collected by recycling programs such as the Lions Club and the Boy Scouts. Newspaper collected by nonprofit organizations such as these is not accounted for in this plan. Due to its high volume and market stability, newspaper is considered a high-priority recyclable.

Cardboard and Kraft Paper—The recycling industry designates cardboard and kraft paper as old corrugated containers (OCC). Unbleached kraft paperboard is used to manufacture a wide variety of corrugated containers that are the most widely used shipping container. Because box makers continue to prefer virgin products for guaranteed strength and durability, cardboard is a valued paper product as an input to other recycling processes. Demand for cardboard has remained strong and is expected to continue.

Kraft paper is a relatively coarse paper with high-strength characteristics. Unbleached grades are used primarily for packaging and wrapping. Kraft paper is in demand for use in the production of corrugated boxes; however, demand has weakened in the manufacture of kraft paper grocery bags, with larger shares of the market being lost to plastic.

Cardboard and kraft paper represented approximately 9.4 percent of the disposed-of MSW stream in 1990 (see Table 4-4). In 2005, approximately 8,073 tons was diverted in

Cowlitz County. The relatively high volume and value of cardboard and kraft paper make them high-priority recyclables.

High-Grade Office Paper (white ledger, colored ledger, and computer printout)—Office paper is composed of high-quality printing and writing paper. Office paper is generally marketed into three categories: white ledger (WL), colored ledger, and computer printout (CPO). Most office paper is made from virgin fiber, giving it a high value among recyclers. Because of consumer demand, increasing amounts of office paper are being manufactured using postconsumer paper. Office paper is easily identified and prepared for recycling by offices and schools. The high quality of the commodity and its strong demand in export markets results in a relatively high price. Domestic markets are limited by technological constraints in the de-inking process.

Office paper and computer paper represented approximately 1.8 percent of the disposed-of MSW stream in 1990 (Table 4-4). In 2005, approximately 6,628 tons of high grade paper was diverted in Cowlitz County. As the paper commodity of highest value and with strong source separation potential, office paper is considered a high-priority recyclable.

Mixed Paper—Mixed waste paper (MP) is a broad category of paper products typically of lower quality and value. MP is easy to identify, but handling may be difficult because it tends to be bulky and come in a variety of shapes and sizes. MP is generally consumed by the export market to countries where cheap labor is utilized to remove contaminants. In the past decade the export market has stabilized, increasing demand and prices.

MP was the largest paper category in 1990, representing 9.7 percent of the disposed-of MSW stream (Table 4-4). In 2005, approximately 2,940 tons was diverted from the MSW stream. Due to its high volume and market stability, mixed paper is considered a high-priority recyclable.

4.3.6 Plastics

Plastics comprised an estimated 7.9 percent by weight of the disposed-of MSW stream in 1990 (Table 4-4). The use of plastics for packaging materials has increased since then and is expected to increase further, replacing more traditional materials such as paper, glass, and steel. Consequently, plastics show potential for significant waste-stream diversion.

In 2005, approximately 342 tons of recyclable plastic was diverted in Cowlitz County.

Markets for PET and HDPE plastic are currently strong, and a good recycling infrastructure is in place; therefore, they are considered high-priority recyclable materials. The remaining types of plastics, Types 3, 4, 5, 6, 7, and LDPE, are considered low-priority due to low volumes and lack of market value.

4.3.7 Yard Waste

An estimated 12 percent of the disposed-of MSW stream in Cowlitz County in 1990 was yard waste. As yard waste is one of the largest waste streams in the county, the potential for waste stream diversion is quite high. A number of different collection systems have been developed for yard waste, many of which utilize existing waste collection equipment. Keeping yard waste separate from mixed waste is usually not difficult, at either residential dwellings or commercial offices. In 2003, approximately 2,192 tons of yard waste was diverted at the landfill. In the spring of 2002, a burn ban was instituted for the urban areas of Longview and Kelso. The burn ban may increase the amount of yard waste disposed of at the Cowlitz County Landfill, as would any future expansions of the burn-ban area. In 2005, 7,076 tons of yard waste was reported as diverted from the landfills, a threefold increase due to increased reporting burn ban restrictions.

The market potential for yard-waste compost is difficult to identify. In general, yard-waste compost is of consistently high quality as compared to compost from food wastes or mixed MSW. As a result, yard-waste compost is able to compete effectively with more traditional forms of compost (i.e., peat products, sawdust, and fish processing wastes) in food production and horticultural uses. Yard waste can also compete with lower quality compost for reclamation, revegetation, and closure cover applications. The County has sufficient capacity to process yard waste at the landfill and has developed uses for it, such as the production of topsoil used for landfill closures. Yard waste is considered to be a medium-priority recyclable.

4.3.8 Used Motor Oil

Used motor oil represented approximately 0.1 percent of the disposed-of MSW stream in Cowlitz County in 1990. Waste motor oil does not represent a significant waste-stream diversion but does represent a serious negative environmental impact if disposed of improperly. Most waste oil recovered in the United States is burned as fuel. An alternative to burning oil is to re-refine it for use as a lubricant. Due to the serious negative impacts associated with improper disposal and the stable outlets for collected material, used motor oil should be considered a medium-priority recyclable. In 2005, approximately 2,763 tons of used oil was diverted from the municipal waste stream.

4.3.9 Woodwaste

In 1990, woodwaste represented approximately 11 percent of the disposed-of MSW stream in Cowlitz County (see Table 4-4). Hog fuel offers the largest potential market for wood from demolition, construction, and land-clearing activities. Hog fuel is wood reduced to 3 inches or smaller and burned in boilers to produce steam and electricity. There is an established local demand for hog fuel from pulp and paper mills. Woodwaste

is easily stockpiled, ground, and used for hog fuel by local industries. In 2005, approximately 4,686 tons of woodwaste was diverted from the municipal waste stream. Due to the local demand and relative availability of woodwaste, it is considered a medium-priority recyclable.

4.3.10 Asphalt

Recycled asphalt is used primarily for repairing roads, driveways, and paved lots. It is also used to surface road shoulders. In recent years there has been increasing use of "cold" systems that chew up, remix, and lay asphalt as they move slowly up the road. The asphalt market of concern is for asphalt removed from its original site of placement, recycled, and applied to new sites. The recycling process involves heating and the addition of small quantities of new asphalt and emulsifiers. City, county, and state road departments provide the primary market for this material. It is estimated that recycled asphalt costs about one-third as much as new material. Due to the specialized nature of asphalt recovery, the material is considered to be a low-priority recyclable.

4.3.11 Concrete, Rubble, and Inert Material

It is difficult to determine the amount of inert material disposed of throughout Cowlitz County. Most inert material is disposed of at the nearest and cheapest disposal site available. Rarely is material moved more than 5 or 10 miles. In order to be used as inert fill, material must be free of organics, oil, and other contaminants, and must meet applicable regulatory requirements. Generally, it must be broken into 2-foot-diameter pieces or smaller. Due to the specialized nature of inert waste recovery, the material is considered to be of low priority.

4.3.12 Tires

In 1990, it was estimated that tires accounted for approximately 1.0 percent of the disposed-of MSW stream. The market for tires is fragmented, since it is still in its growth stage. The markets for granulated rubber, buffings, stampings, retread casings, and tire chips (for tire-derived fuel and other applications) are all growing but are still small compared to available supplies. Problems are still associated with the cost of transporting tires to processing facilities; as a result, tires are considered to be a low priority. In 2005, approximately 341 tons of tires was diverted from within Cowlitz County.

4.4 Designation of Urban and Rural Areas

The designation of urban and rural determines the minimum levels of service for recycling in Cowlitz County, as required by State law. Urban areas in the county are defined as census-designated places with a population exceeding 2,500. As discussed in Section 1.11.5, the urban and rural designations for Cowlitz County have remained the same since the 1993 SWMP, with the exception of the City of Woodland, which is now considered urban. Projections prepared by the Council of Governments predict that the population of Castle Rock will grow so that it fits into the urban category by 2010 or 2015.

4.5 Residential Recycling

This discussion of current residential recycling practices and their potential future builds on the base of information developed for the 1993 SWMP. What follows is a brief discussion of general issues associated with curbside collection, drop-off centers, and multifamily-dwelling collection.

4.5.1 Residential Curbside Collection

Curbside collection is defined as the collection of recyclable materials at the curb, often from special containers. Curbside collection is commonly considered to be the most convenient method of residential recycling and, therefore, the most effective way to collect recyclables from single-family households. It is best suited for urban areas. Waste Control performs curbside pickup in Longview and Woodland using two specially designed recycling trucks able to quickly empty curbside recycling bins of commingled recyclables. With a strong promotional campaign, containers, and collection on the same day as trash collection, most curbside programs can expect participation rates to exceed 50 percent. Many cities in the Pacific Northwest have reported participation rates near 75 to 80 percent. In 2004, curbside and multifamily-dwelling recycling in the city of Longview cost approximately $195 per ton of material recycled.

4.5.2 Recycling Drop-Off Centers

The drop-off center is the simplest form of recycling operation, to which area residents bring separated materials and deposit them in appropriate containers. Drop-off centers are typically viewed as the first phase of a comprehensive community recycling program. They enable local haulers and processors to become familiar with material-handling techniques and market arrangements on a small scale before embarking on more complex curbside collection programs. Drop-off centers are also effective in less densely populated areas unable to support full-scale curbside programs.

A successful drop-off center must be located at a site with high visibility and easy public access. Studies have shown that residents will frequent a center within 3 to 5 miles of their homes, combining the recycling trip with other errands. Larger communities may encourage the operation of several neighborhood drop-off centers, with a larger central site to process aggregated materials. Public participation rates are strongly dependent on the convenience of the location, site cleanliness and security, and the effort devoted to promotion and education. Typical drop-off programs may achieve participation rates up to 20 percent and divert 1 to 7 percent of the total waste stream.

In 2001, the cost of recycling using drop-off centers for collection in Kelso was approximately $50 per ton.

4.5.3 Multifamily-Dwelling Recycling

Multifamily recycling is the collection of recyclables from multifamily dwellings where residents place recyclables in bins or dumpsters in a common area rather than in separate containers issued to each unit. Multifamily households are defined as residential structures designed to accommodate two or more families in separate dwelling units.

A successful program must have the support of the owner or management agency. If it does not, the program will become reliant on the rising and falling level of commitment of resident managers. Since many apartments experience a high turnover of resident managers, the program could suffer from lack of consistency.

The hauler should have the appropriate equipment for servicing apartments and must be willing to provide ongoing promotion and education as new residents move in who are unfamiliar with the program.

Participation rates vary widely across the country and are typically less successful than single-family curbside programs. Nonetheless, programs implemented in the Puget Sound region have experienced participation levels equal to 25 to 30 pounds per unit per month. Multifamily recycling systems have proven to be successful when conveniently located, user-friendly, and supported by an involved manager. Successful case studies have resulted in 80-percent participation with a 30-percent reduction in the waste stream.

In 2004, curbside and multifamily-dwelling recycling in the city of Longview cost approximately $195 per ton of material recycled.

4.5.4 Residential Recycling Recommendations

1. Residential curbside recycling for single-family households is the minimum recycling service level recommended for implementation in the designated

urban areas of Cowlitz County. Alternative programs/methods that are as effective as curbside collection may be implemented if acceptable to Ecology and consistent with the criteria identified in RCW 70.95.090 (7)(b)(i). Designated urban areas include the cities of Longview, Kelso, and Woodland and the adjacent unincorporated urban areas of Longview Heights, West Side Highway, and West Longview.

2. Residential curbside recycling for single-family households for unincorporated urban areas is recommended as a long-term goal in Cowlitz County. This goal received support from the county commissioners on March 19, 2002, when a policy was adopted to "evaluate an economically sound source separation program in the urban non-incorporated areas of the County.

3. Recycling drop-off centers should be provided for the rural areas of Cowlitz County. Remote areas of the county should be investigated for possible sites and local support for recycling drop-off centers. Areas include the southwestern part of the county near the community of Stella and the extreme northwestern corner of the county near the retirement community of Ryderwood. All recycling drop-off centers should collect all high-priority recyclables, except where safety might be an issue. For example, glass is not collected at Huntington Junior High in Kelso.

4. Multifamily units outside the urban service boundary should be encouraged to use recycling drop-off centers.

4.6 Nonresidential Recycling

The combined solid waste stream disposed of in 2006 was comprised of residential waste (19 percent); commercial waste (11 percent); industrial waste (64 percent); and construction, demolition, and land-clearing waste (7 percent). Combined non-residential waste represents a total of 81 percent, or 260,679 tons, disposed of in 2006.

State law does not require a jurisdiction to establish nonresidential recycling programs. However, it does require monitoring of the nonresidential waste stream, with a focus on wastes handled or disposed of by the County solid waste system. Ecology planning guidelines recommend that nonresidential waste recycling be encouraged. This is all the more important for Cowlitz County, given that over 50 percent of its waste stream is generated by the nonresidential sector. Nonresidential recycling becomes feasible when the economics of separating and marketing specific materials is favorable. Businesses that generate a waste stream containing a large amount of homogenous recyclable material, such as corrugated containers, ledger paper, computer paper, glass, plastic, and wood, are typically good candidates for recycling.

Five nonresidential recycling programs are discussed below. To the extent possible, programs are discussed within the context of local conditions in Cowlitz County. For both urban and rural areas, the following programs will be evaluated:

- Targeted commercial recycling
- Technical assistance
- Waste exchange
- Nonresidential waste stream monitoring
- In-house government recycling

4.6.1 Targeted Commercial Recycling

Description—Certain types of commercial businesses generate large amounts of recyclable material on a regular basis. Recyclable materials include corrugated containers, office paper, newspaper, and glass and aluminum containers. By targeting high-volume generators, the County can contribute significantly to the overall recycling rate. Recyclable materials and commonly associated business generators include:

Corrugated Containers—supermarkets, department and discount stores, wholesalers, clothing and furniture retailers, light manufacturing industries.

High-Grade Office Paper—business offices, government buildings, high schools, colleges, hospital/clinics, print shops.

Newspaper—newspaper publishers, restaurants, hotels, transit terminals.

Glass, Tin, and Aluminum Containers—bars/taverns, restaurants, cafeterias (hospitals, schools, factories).

A variety of methods are available to collect recyclables from nonresidential waste generators. The easiest method is to establish a separate container or bin for a recyclable material at the source. For example, large users of corrugated containers, such as grocery stores, arrange with a waste hauler to have a dedicated collection container put in place.

Haulers can set up a route designed to pick up only one type of recyclable material and, as a result, will obtain clean, high-grade loads. Grouping businesses that generate similar materials can result in substantial savings to the hauler, because the hauler can continue to charge for the collection service and avoid the tipping fee by recycling the material. However, materials collected will often still contain a small amount of contamination, requiring the load to be minimally processed. For small businesses, 90-gallon toters work well, since they can be easily moved within the office and are fully compatible with an existing automated refuse-collection system.

Office paper collection requires a more intensive system with a greater commitment and involvement on the part of the company. Typical office paper collection programs provide a small collection container at every desk to collect WL, colored ledger, and computer paper. The individual boxes are emptied into a larger bin kept in a central location. The centralized bin(s) are emptied and delivered to an MRF for upgrading and baling or are shipped loose to the paper buyer in drop boxes or gaylords. Specific program attributes are as follows:

Business Management—A recycling program should have the full support of business managers if it is to achieve the desired results. In almost every case, management must be convinced that engaging in recycling activities will result in some form of savings or will generate revenue.

Containers—Various types of containers are required for a successful nonresidential recycling program. These will range from desktop containers for office-paper recycling to the larger central containers for corrugated cardboard or other recyclables. Most nonresidential recycling containers are either furnished by the service provider or purchased by the waste generator.

Contract with Hauler—The best hauler for this program is one who can provide collection for a number of businesses. The hauler must have the appropriate equipment and provide ongoing feedback.

Effectiveness—A greater quantity of high-quality material can be extracted from the waste stream at a lower cost than at any other point in the waste stream by targeting commercial and retail business areas. The lack of progress in this area is the result of a lack of information about available systems, techniques, and markets. As the information void is filled, participation will increase.

4.6.2 Technical Assistance to Nonresidential Waste Generators

Description—Technical assistance, which could include waste audits, is a specific form of assistance to nonresidential generators of waste. Activities that could be provided include the following:

Information Clearinghouse—An information database providing access to literature sources, contacts, and case studies on waste-reduction techniques for specific industries or waste streams. Information could be made available through customized computer literature searches.

Specific Information Packages—SWMP stakeholders on the county, city, or hauler level could prepare specific waste-reduction and recycling reports for a

company's waste stream. This information would identify cost-effective waste-recycling options.

On-Site Waste Audits—County, city, or hauler staff could provide comprehensive waste audits through on-site visits. During such visits, detailed process and waste-stream information is collected. The information is analyzed, and waste-reduction and recycling options are identified. A report is prepared that details these options and includes literature, contacts, case studies, and vendor information.

Outreach—County, city, or hauler staff could give presentations on waste prevention to industries, trade associations, professional organizations, and citizen groups. Depending on the audience, these programs could range from an overview of state regulations to in-depth discussions of technologies for specific programs.

4.6.3 Waste Exchange

Description—A waste or material exchange operates as a clearinghouse to facilitate the reuse and recycling of industrial materials that otherwise would be landfilled. The materials may be either the by-products of a manufacturing process or surplus materials, and they may even involve hazardous materials. Common materials generated in Cowlitz County that may be traded within a waste exchange include woodwaste, ash, industrial sludge, and foundry sand.

As part of a waste-exchange program, a catalog is typically published every two to three months that lists materials available and materials wanted. Catalogs are standardized by organizing materials into 11 categories: acids, alkalis, other inorganic chemicals, solvents, other organic chemicals, oils and waxes, plastics and rubber, textiles and leather, wood and paper, metals and metal sludges, and miscellaneous. Some waste-exchange catalogs include regulatory updates and pertinent environmental information. Depending on the exchange, catalogs may be free or may have a subscription fee.

The major waste exchanges operating in the United States serve multistate regions rather than a single state or county. Regional exchanges tend to function better than state exchanges because of the larger, more diverse pool of companies available to advertise in the catalog. Currently, there are several waste-exchange operations in the Pacific Northwest, e.g., Industrial Materials Exchange in Seattle, Reusable Building Materials Exchange in Seattle, and Pacific Materials Exchange in Spokane. Cowlitz County could generate interest by providing industrial-waste generators with a free one-year subscription (cost to the County would be approximately $40 per subscription per year), expecting that the generator would choose to continue receiving the publication in subsequent years. A waste-exchange program could be facilitated through a waste audit or an education and promotion program.

4.6.4 In-House Government Recycling

To demonstrate the effectiveness of these programs, jurisdictions should have in-house recycling policies and programs to complement the programs that they recommend for nonresidential entities. Many departments have components of the following: paper-recycling receptacles at each desk and in common areas, and container-recycling receptacles in common areas. These programs represent a minimal effort to implement and show the jurisdictions' commitment to the programs that they recommend.

The County and cities could set examples and promote local waste-recycling efforts by publicizing their own efforts to reduce the amount of waste produced in all departments. In combination with waste-reduction efforts, existing recycling programs should be expanded to include all departments as well as a wider range of materials. Quantities of recycled waste could be periodically monitored so that results can be used for promotional purposes, economic analysis, and the jurisdiction's quantification of waste-recycling efforts on an annual basis.

4.6.5 Nonresidential Waste-Stream Monitoring

Description—Haulers of nonresidential waste need to become better informed about who the generators are, available recovery systems, and collection and recovery techniques. As part of a nonresidential waste-recycling program, the county, city, or hauler could establish a database that identifies nonresidential generators, the waste generated, and the amount of recyclables available. Such a program would be instrumental in conducting waste audits, program promotion, and implementation.

4.6.6 Nonresidential Recycling Recommendations

1. The existing commercial recycling collection route in Cowlitz County should continue to be made available to all commercial business in the designated urban service area. The route may be expanded at the discretion of the local hauler/recycler. Commercial generators in outlying areas of the county should be encouraged to utilize multi-material drop-off centers when possible. Drop-off centers should be designed to accept materials from nonresidential generators.

2. The County, cities, and haulers should provide technical assistance to businesses and institutions in the county to encourage the development of in-house recycling programs. Technical assistance, which may include waste audits, would provide recycling/broker lists, market information, waste-exchange catalogs, and model procurement policies. The County should work closely with Ecology in making the best use of existing expertise and relevant

publications. Initially, the SWMP stakeholders should focus only on those businesses that demonstrate a strong interest and have high potential for waste-stream diversion.

3. The County, in conjunction with waste haulers, recyclers, and business, should work to monitor nonresidential recycling activities and build a comprehensive list of generators in the county. The purpose is to facilitate evaluation of program success and plan for program modifications and expansion. In addition, commercial recycling statistics will be useful to apply toward the State's recycling goal.

4. Public agencies should continue to lead by example in the implementation of department-wide recycling programs. Jurisdictions should establish, maintain, or expand recycling programs and monitor results for promotional purposes.

4.7 Yard-Waste Collection Systems

This section examines the alternative methods for collecting source-separated yard waste and identifies potential end users of composted material. For each alternative, the operational elements, waste stream diversion, and program economics are discussed. Backyard composting eliminates the need for collection systems and is discussed in Section 4.8.5. The following collection methods were evaluated:

- Mobile drop-off sites
- Fixed drop-off sites
- Household (curbside) collection, urban areas

It is estimated that yard waste and woodwaste accounted for approximately 23 percent of the waste stream in Cowlitz County in 1990, which represents the largest component of the County's MSW stream. In 2005, approximately 11,762 tons of yard debris and woodwaste was diverted in the county. Yard waste is defined as leaves, brush, tree trimmings, grass clippings, weeds, shrubs, waste from vegetable gardens, and other compostable organic materials resulting from the landscape maintenance activities at residences or from businesses such as lawn and garden nurseries or landscaping services. Woodwaste includes uncontaminated, clean, woody material from residential, commercial, or industrial sources (excluding forest-products-industry waste).

4.7.1 Mobile Drop-Off Sites

Description—This approach involves the operation of temporary drop-off sites. Sites can be arranged at advertised locations on a regular basis throughout the year or for special events such as spring and fall cleanups. It is best if the sites are staffed to help minimize

contamination by bags, large woodwastes, noncompostable wastes, etc. A form of the mobile drop-off concept has already been implemented in the county with the Christmas tree recycling project.

An example of an inexpensive mobile drop-off program for yard waste is the use of a garbage-collection truck parked in a centralized location. The site must be a well-known location, preferably a site used as a multi-material drop-off or at a solid waste facility. The site would be open two weekends each month between March 1 and November 30 for a total of 18 collection days. User fees and hauler contracts would finance the system.

Effectiveness—The effectiveness of this approach is limited by the degree of convenience that can be provided. To achieve significant participation, drop-off sites should be operated frequently in different locations to avoid excessive travel distances or lengthy waits between collections.

This approach does not serve large generators of yard waste and land-clearing debris very well. Demolition companies, land developers, lumber mills, and other large generators need to be able to deliver their wastes directly to a processing site rather than at a site that transfers the waste to another container.

The results of similar programs implemented in western Washington have shown that mobile drop-off for yard waste will be utilized by three percent of all households per event, and each participating household will drop off approximately 100 pounds of material. Applying the estimated performance of a mobile drop-off for yard waste to Cowlitz County would require the placement of mobile drop-off sites in each incorporated area in Cowlitz County. Assuming a capacity of 18 cubic yards per rear loader, or 3.5 tons of compacted yard waste per site, each collection vehicle could serve approximately 70 participants.

A mobile drop-off program designed around existing drop-off sites would result in seven yard-waste sites: two for the City of Longview, one for Kelso, one for Woodland, one for Kalama, one for Castle Rock, and one for Toutle. Assuming 18 collection events per year, the program would annually divert 5 percent of the total amount of yard waste disposed of.

Cost—The estimated cost for a mobile drop-off yard waste collection system is $280/ton.

4.7.2 Fixed Drop-Off Sites

Description—Fixed drop-off sites are used to collect yard waste and small quantities of woodwaste and land-clearing debris. Fixed drop-off sites can be located at a variety of places, but the best locations are generally at existing disposal sites such as landfills and

transfer stations, sites that already are devoted to the handling of similar materials (primarily private facilities), and recycling drop-off sites.

At the fixed site, a separate container would be provided for the deposit of yard waste. Typically, 40-cubic-yard roll-off containers are used. When the container is full, it is hauled directly to the processing facility.

Effectiveness—This method can be very effective for yard waste. Because the site is fixed and open on a reliable schedule, it is far more likely to receive material from a larger share of households than a mobile drop-off facility. The site can serve larger generators than a mobile site and can collect larger-sized material, including heavy brush, sticks, and small stumps. Similar programs implemented in the Pacific Northwest have shown a collection rate of 10 to 15 percent of the total amount of yard waste disposed of. For Cowlitz County this would be 980 to 1,200 tons of material per year.

Cost—The estimated cost for a fixed yard waste drop-off system located at an existing solid waste facility is about $50 to $60/ton.

4.7.3 Curbside Collection, Urban Areas

Description—Curbside collection in urban areas can pick up a substantial amount of the yard waste generated by the residential sector in urban areas. Curbside collection is generally not a suitable collection method for commercially generated yard waste. Brush can be included in curbside programs, generally with restrictions on size (under 3 or 4 feet in length and 2 to 4 inches in diameter) with a requirement that it be bundled.

In designing a curbside collection program, a number of options must be considered, including collection frequency, containers used, collection method, and incentives provided. The frequency of most existing programs is every other week. Participation rates increase when these collections are conducted on the same day as garbage collection. Since yard waste is generated in definite seasonal patterns, consideration is often given to the operation of curbside programs for only part of the year, typically March 1 until November 30. However, yard waste is still generated in significant amounts during the winter months due to storm-related deadfall and winter prunings, and variable collection schedules may be confusing to the public. In an effort to provide year-round service, many haulers offer yard-waste collection with weekly or bi-weekly collections from March through November and monthly collection during the three winter months.

Containers used by participants will be determined in part by the collection and processing method. Most programs use carts or cans rather than plastic bags. Plastic bags are difficult to remove and pieces will remain in the finished product, diminishing its marketability. Containers typically provided for yard waste collection are 90-gallon toters that allow for automated collection, are easily moved by homeowners, and hold adequate

volumes of bulky material. If automated equipment were unavailable, it would be necessary to use smaller containers that could be easily lifted when full. In all cases, providing containers will increase participation. Collection of yard waste is generally accomplished with existing garbage-collection vehicles. This approach avoids the need to purchase new or specialized equipment.

Effectiveness—The results of a curbside yard-waste collection program will depend on the convenience of the program, the extent of public education, and the incentives provided. A considerable amount of public education should be provided at the start of a new program.

In urban areas of the Pacific Northwest, initial results of a new curbside collection program for yard waste indicate that 30 to 40 percent of the eligible households can be expected to participate. For Cowlitz County, it is expected that approximately 2,000 tons per year would be collected.

Cost—The yard-waste collection program in the city of Olympia is estimated to cost approximately $170 per ton (Jones, 2002). A significant factor in determining the cost of a program is whether containers are provided to all eligible households or whether they are provided by request only.

4.7.4 Yard-Waste Collection Recommendations

It is recommended that Cowlitz County continue to utilize the 3-acre compost pad developed at the landfill in 1995. As volumes increase, the County should move away from passive windrow operation to increased mechanized turning, moisture conditioning, and aeration to expedite the composting process.

City and county collection companies should evaluate pay-as-you-throw waste programs, which have been known to reduce waste streams entering landfills by almost 20 percent (Skumatz, 2002).

Public agencies should evaluate their contracting policies, which could be revised to encourage or require contractors to segregate land-clearing waste.

4.8 Yard-Waste Processing Systems

This section examines the alternative methods for processing source-separated yard and woodwaste. For each alternative, the operational elements, effectiveness, and cost are discussed.

4.8.1 Processing Using Passive Piles

Description—This processing option requires the least investment in new equipment but demands the greatest amount of space per ton of material handled. Yard waste is simply piled and allowed to compost until a usable product is formed. The piles should be turned occasionally to provide mixing and aeration. The actual length of time required for composting will depend on the raw materials included and the requirements of the available markets for the end product. In the Pacific Northwest, this type of composting typically requires one to three years. A longer period is necessary if wood chips or other woody material is included or if the market demands a highly finished and stabilized product. Screening may be required before the end product can be marketed. The equipment necessary consists primarily of a front-end loader and screening equipment. A number of facilities in and around the Puget Sound region are currently using this type of system. All have discovered that managing the piles more intensively through frequent turning and mixing results in a better-quality end product.

Effectiveness—With sufficient equipment and facilities, this option can handle all yard waste currently being landfilled in Cowlitz County.

Cost—The cost of using passive piles would most likely be approximately $20 to $25 per ton, more expensive than land application and slightly less expensive than processing requiring specialized equipment.

4.8.2 Processing Using Specialized Equipment

Description—Processing yard waste using specialized equipment, or intermediate-level technology composting, is characterized by the use of equipment for chipping, turning windrows, and screening of the final product. The process requires significantly more labor and capital equipment but requires much less land than the other options. Large mechanical reduction equipment is used to reduce the size of the material to greatly accelerate the decomposition process. The shredded material is put into small windrows, which are long piles of composting material typically 6 feet high, 12 feet wide, and of variable length. The windrows are turned about once per month. The use of smaller windrows with more frequent turning allows the center of each pile to remain aerobic, which significantly accelerates the composting process. The entire composting process takes from 12 to 18 months to complete.

Effectiveness—This method can be very effective in handling yard waste. This processing option can also provide an effective method for handling other types of organic wastes, such as sludges, food wastes, woodwaste, and land-clearing debris, due to the greater control of composting conditions and enhanced processing abilities provided by the specialized equipment. It is expected that this method would be able to handle all

9,357 tons of yard waste disposed of in Cowlitz County as well as approximately 3,700 tons of woodwaste.

Cost—Initial capital costs are substantially higher than the processing options discussed previously, and they result in an increase in total costs. The current cost to process yard waste at the Cowlitz County Landfill is approximately $28 per ton.

4.8.3 High-Tech Composting

Description—This approach, which employs the highest degree of technology, combines two separate composting processes. The first resembles the specialized-equipment approach described above, but the decomposition process is accelerated with a controlled aeration system using blowers and daily turning of windrows. The addition of water and/or nitrogen-containing substances such as sewage sludge or fertilizer is sometimes necessary. The second process uses a reactor vessel of some type that is designed to improve the rate of mechanical size reduction, thus accelerating the composting process. Both methods use sophisticated process-control systems that continuously monitor the composting process.

This approach generates high-quality compost in a short period of time, between two weeks and two months. Typically, the material is cured for a period of a few months before the final product is marketed.

Effectiveness—This approach is very effective in generating a high-quality compost product in a relatively short period of time. However, it is assumed that the higher capital costs and levels of operational sophistication required by the aerated static pile and mechanical reactor methods will preclude its use in Cowlitz County. Additionally, unlike the intermediate-level technology, it is not recommended that different waste streams be processed by this method, since it is virtually impossible to keep them separate through the entire process.

Cost—The cost of this approach is very high due to the large amount of capital outlay and maintenance required for the processing plant. At this time, the cost per ton would be prohibitive.

4.8.4 Back-Yard Composting

Description—Composting at home can take place in composting bins, open compost piles, by mixing in with soil, or by worm composting. Composting at home by individual homeowners saves transportation and disposal costs and provides an environmentally sound way to manage wastes. Potential benefits to households include lower waste-disposal costs, a convenient way to handle wastes, and a free soil amendment that will

increase the health, productivity, and beauty of the landscape. Back-yard composting is an important part of every solid waste solution. The process takes from 12 to 18 months to complete. Since 1995, Cowlitz County and the City of Longview have made nearly 4,000 composting units available at a subsidized price to area residents.

Effectiveness—Portland Metro studies indicate that 230 pounds per person of yard debris and 100 pounds per person of organic food waste can annually be diverted through use of back-yard composting. Given the large size of urban lots in Cowlitz County, this method has proven to be very feasible. A recent survey showed County-distributed composting bins to be effective in that 93 percent of the respondents were using the bins a year after acquisition and 77 percent were composting food scraps. Thirty percent of the respondents had not been composting before acquisition of the composting bins.

Cost—The cost of composting in Cowlitz County is approximately $22 per ton; however, if subsidies from the State's Coordinated Prevention Grant Program are factored in, the cost falls to approximately $10 per ton (Olson, 2002).

4.8.5 Yard-Waste Processing Recommendation

It is recommended that the County continue to utilize the 3-acre, state-of-the-art composting pad, developed at the landfill in 1995, for yard waste brought into the landfill. Currently 40 percent of the pad is used annually to compost 5,000 tons of biosolids generated by the regional sewage-treatment plant. The other 60 percent provides adequate room to conduct intermediate-level windrow composting of grass, leaves, and chipped-brush waste. The composted material will be stockpiled until 85,000 yards is accumulated for future projects. Closed Site A will be covered with 35,000 cubic yards, and 50,000 cubic yards will be used as vegetative soil for future landfill closure projects.

The County, in conjunction with the cities and using Coordinated Prevention Grant money, should continue to make subsidized compost bins available to area residents.

The County should encourage the development of private composting facilities in-county which may provide the ability to compost food and other organic wastes not currently accepted at the County compost facility.

4.9 Yard-Waste Compost Markets

A number of materials produced from yard waste can be used by a variety of groups. End products must be designed to meet the specifications of available markets and their capacities. For the type of products typical of these waste streams, the most viable markets generally are located within 50 miles of the composting facility for bulk deliveries. For a composting facility located in the Longview-Kelso urban region, a

50-mile radius would extend as far as Chehalis to the north and Vancouver to the south. This range can be extended for bagged material or specialty products. Hog fuel is a specialty market that would extend beyond this 50-mile range.

4.9.1 Yard-Waste Compost Products

The following products can potentially be derived from the compostable wastes examined in this study:

Mulch—Woody material may be marketed as a mulch material in bulk quantities and/or bagged for retail sales. Wood chips can be produced from chipping branches or stumps, replacing the bark products traditionally used for landscaping and soil stabilization. Uses include application to park trails, temporary roads, and farmyards. If demand for mulch is strong, or if mulch with high organic content is desired, yard waste and brush can be shredded and sold without composting. This type of product may be useful where both erosion control and in-place amendment of the topsoil is necessary.

Compost—Composted yard waste of high, medium, or low quality can be sold in bulk or bagged as a soil amendment. Low-quality compost could be used for agricultural purposes, erosion control, and other applications where aesthetics are not a major concern. Landscapers and homeowners would use medium- or high-quality composts. Screening and/or intensive composting processes can produce medium- and high-quality composts.

Topsoil—Topsoil (bulk) or potting soil (bagged) can be produced using compost as part of the blend. For markets that use topsoil mixtures or compost for growing plants, the compost must be highly stabilized before use, or a nitrogen-containing fertilizer must be added in sufficient quantities to ensure that some free nitrogen is available for plant growth. Blending soil with compost must be done carefully to avoid an explosion of bacteria. Mixtures should be monitored for one to two weeks after blending to check for the generation of heat as an indication of bacterial activity.

Hog Fuel—Woodwastes and woody material from land clearing can be ground or shredded to produce a hog fuel. Hog fuel is defined as wood reduced to 3 inches or smaller and is burned in boilers to produce steam and electricity. There is an established demand for hog fuel by Northwest industries, particularly pulp and paper mills. Currently, the market for hog fuel is a strong captive market; that is, the users are almost all in the wood industry and thus have the advantage of owning the material. Additionally, there is only sporadic demand for hog fuel derived from slashings and other waste wood.

Specialty Products—These products include animal bedding, coarse mulch for erosion control, landfill cover, organic material for remedial action at contamination sites, and soil amendment for land reclamation sites. These are considered to be specialty products

because they satisfy a specific need. As such, they may require significant market development efforts if they are to absorb substantial quantities of yard-waste material.

4.9.2 Yard-Waste Compost End Users

A variety of different businesses, institutions, and individuals may provide markets for yard-waste compost and other products. Depending on the group, their needs may be met by a wide range of products, or they may be interested only in a specific type of material. The following groups may act as end users of yard-waste products:

Public Agencies and Government Contractors—Procurement policies and practices for public agencies and their contractors could be revised to encourage the use of compost and related products.

Nurseries and Orchards—Nurseries and orchards could use compost as a soil amendment and wood chips as a road surface. The compost could be applied to prepare an area prior to planting, as a top dressing to conserve moisture and reduce weeds, and as part of a mix to be used for potting small trees for sale.

Soil Dealers and Distributors—Garden centers and related outlets, such as grocery and hardware stores, sell bulk and bagged wood chips, compost, and topsoil mixtures. These outlets typically serve the general public and therefore demand high-quality products. Soil and bark dealers and distributors handle a variety of products. As dealers of bulk materials, they may be able to handle low-grade products.

Farmers—Farmers can provide a market for compost, and they may be willing to use low-grade materials such as coarsely shredded or partially finished composts. They typically are not interested in using composts that contain plastic and other nondegradable contaminants.

Foresters—Commercial and recreational forestlands can provide markets for compost. Commercial forest applications for compost include soil preparation and top dressing; recreational settings can use wood chips as mulch or as a substitute for bark on trails.

County Residents—County residents can use compost in gardens and lawns. Wood chips can be used for a mulch material around shrubs and trees. For these purposes, the cost of the compost or wood chips must be competitive with similar products and must be conveniently available.

Landscapers—Landscapers use products similarly to residential users but may be able and willing to use a wider range in quality of wood chips and composts, because they may be more aware of the possible applications for different grades of products.

Industry—Industrial markets include the use of wood chips as hog fuel and some of the specialty applications mentioned above, in addition to being a consumer of compost and mulch materials.

4.9.3 Yard-Waste Compost Markets Recommendations

1. Cowlitz County should conduct a compost-market evaluation. The study would identify end users from the list developed above.

2. To the extent possible, the County should develop long-term agreements with end users to serve as a reliable market for processed material.

3. Cowlitz County should continue to work toward accumulating 85,000 cubic yards of composted soil for site closure cover of Cells 3A and B, and reapplication over closed Site A. At this time, it is estimated that it will take seven more years to accumulate the cover material.

4.10 Education/Promotion Programs

Local education and information are critical for the success of any waste-reduction and/or recycling program. This section of the plan presents education programs for Cowlitz County to supplement existing and planned programs. The importance of citizen education, targeting both adults and children, cannot be understated. Education is generally considered to be reasonably cost-effective, with excellent long-term environmental benefits.

The objective of educating the public is to increase awareness of the environmental consequences of solid waste disposal and so increase understanding of the need for waste reduction and recycling management alternatives. As public comprehension of environmental problems broadens, public education, public participation and public acceptance of MSW management alternatives increase.

4.10.1 Education/Promotion Options

A variety of options exist for public education and promotion. The cost and effectiveness of the programs vary widely. Many of the techniques have little cost for services or materials. However, all require a level of commitment from the County or cities to coordinate activities, target appropriate audiences, and evaluate effectiveness. The following is a list of potential techniques that could be used for a county-wide program:

Recycling Theme—A theme, which is the overall appearance and tone of a public education campaign, should be chosen prior to developing materials for an extensive

public education program. Choosing and following a theme increases the effectiveness of recycling-education programs by increasing the public's ability to identify program elements.

Facility Pamphlets—Facility pamphlets can be used to instruct residents of the full range of recycling services provided in the county. Information may include the types of recyclables accepted, how to prepare recyclables for drop off/collection, locations for the recycling of nonpriority recyclables, and locations for the drop-off of household hazardous waste. All solid waste facilities should distribute information about methods and locations for waste reduction and recycling.

Direct Mailings—Direct mailings are a flexible form of public information, encompassing everything from newsletters to single-page flyers. While mass mailings may be expensive and limited in effectiveness, mailings to specific target groups may increase the effectiveness and reduce costs. Information inserts in utility or garbage-collection bills provide a more direct form of public information than mass mailings.

Information presented in mailings could cover a series of topics more broadly than facility pamphlets and could include purchasing habits to support waste reduction, backyard composting, public "feedback," and recycling-program progress.

Active Advertisements—In newspapers or on radio, information can be distributed to a large area. Typically these types of programs are very expensive and are not audience-specific. Since Cowlitz County has a relatively small population and does not have extensive opportunities for mass communication, paid advertisements are more problematic than other types of advertising.

Passive Advertisements—Advertisements promoting recycling activity can be placed on grocery bags, phone book covers, posters, billboards, banners, and point-of-purchase displays.

Displays—A portable display can be used in public settings to promote awareness and to distribute written information. A portable display could be used at fairs or other community gatherings. A permanent exhibit could be set up at public buildings in the form of a demonstration project. A permanent exhibit could also carry a tally of quantities collected for recycling and be displayed in a sign or billboard at multi-material drop-off sites.

Speakers—Speakers are very useful in communicating a variety of issues and topics to various groups such as the Chamber of Commerce, Rotary Club, church groups, PTA, and neighborhood organizations.

School Programs—A variety of curricula and presentations have been produced by Ecology and others for use in schools. The "A-Way with Waste" program can be obtained

free from Ecology. However, the program will require effort to initiate, coordinate, and maintain.

Slide Show and Videotapes—Audio-visual materials can be developed for use at public events, schools, and fairs in conjunction with an information booth. It is important that the quality of the audio-visual materials be highly professional.

Telephone Hotlines—Telephone hotlines have proven to be an excellent way to disburse information as needed to a wide variety of people. A local hotline can provide detailed information about specific programs to homeowners and businesses alike and maintain a detailed database regarding recycling businesses and services offered in the county.

Web Sites—Web sites are a good way to cost-effectively publish information and make it readily available to people who are looking for it. The County maintains a solid waste Web site (www.co.cowlitz.wa.us/publicworks/sw/) that presents information related to the use of the County landfill, hazardous-waste disposal, and links to the State's recycling Web page.

4.10.2 Education/Promotion Recommendations

Public information and education efforts should be continued in Cowlitz County. Given the large degree of overlap between jurisdictions and the activities of the County, it is recommended that the County take a lead in conducting recycling education and promotion. This would ensure a consistent message county-wide. Using resources provided by Ecology and those generated locally, the following activities should be conducted yearly:

- Cowlitz County should develop and distribute a brochure or packet of materials dedicated to recycling opportunities in the county. The information should be distributed to residents in the county and made available in public areas such as libraries and government offices.

- Cowlitz County should develop a waste-reduction and recycling theme and a portable display for use at County events. Materials should be developed for both adults and children.

- The County should work cooperatively with cities, educators, haulers, and private, nonprofit organizations that are participating in recycling education and promotion activities through schools and civic activities.

- Evaluation of the education programs should be a routine part of the public information and education program. Evaluation should consist of public feedback and measurement of program performance.

4.11 Chapter Highlights

- The overall goals are to reach the state residential recycling goal of 50 percent and to make recycling and composting opportunities readily available to all residential and nonresidential waste generators in Cowlitz County.

- During 2005 Cowlitz County achieved a recycling rate of 37 percent, which is slightly lower than the state rate of 44 percent. The county's diversion rate was 61 percent, which is higher than the state rate of 48 percent.

- Curbside recycling has been successfully implemented in Longview and Woodland. Additionally, more than ten recycling drop-off centers are also in place around the county.

- Yard waste represents the largest component of the MSW stream at Cowlitz County Landfill.

- Currently, there is a very limited market for mixed glass collected in Cowlitz County.

5 SOLID WASTE PROCESSING TECHNOLOGIES

5.1 Introduction

The Washington State Solid Waste Management Plan establishes the goal of removing all reusable, recyclable, and compostable material before disposal. This chapter investigates the potential for further waste diversion through three methods of solid waste processing. Options considered are as follows:

- Solid waste sorting
- Solid waste composting
- Energy recovery/incineration

This chapter includes an inventory of existing conditions, an identification and evaluation of the three mixed-waste-processing options, and recommended alternatives for the County solid waste management system.

5.2 Solid-Waste Sorting

Solid waste sorting often precedes both incineration and composting, but follows source-separation activities. Solid waste sorting facilities receive either mixed solid waste or commingled recyclables and, through various mechanical and manual processes, remove recyclable materials for market or composting; leaving remaining solid waste that may be incinerated or landfilled. Waste-sorting activities range from a minimal sort to a comprehensive sort. With a minimal sort, hazardous and/or bulky materials are removed to prevent explosive hazards (in the case of incineration) or the contamination of water, air, or end products, whether the end product is ash or compost. With a comprehensive sort all marketable recyclables, compostable materials, and combustibles are removed from the waste stream.

5.2.1 Overview of Mixed Solid Waste Sorting Facilities

Sorting of mixed waste is accomplished either by a "dump and pick" operation where waste is dumped on a tipping floor and targeted materials are pulled out; by manual picking from a "sorting conveyor"; or by various other mechanized or controlled dumping

methods. The dump and pick method is the simplest and least expensive. More sophisticated sorting operations include both manual and mechanized sorting to achieve the best separation. A typical mixed-waste-processing facility that employs all of these sorting methods is described below.

Sorting recyclables from mixed waste is a much more complicated and expensive undertaking because of the large amount of material in the waste stream that is not recoverable but that must still be run through the system. The waste volumes are greater, thus wear and tear on equipment is greater, and the equipment requires more extensive and more frequent cleaning, maintenance, and replacement. The presence of nonrecyclable materials in the waste stream also hinders the separation process so that a lower percentage of the recyclables ultimately are recovered.

The Cowlitz County Landfill operates a cost-effective, low-technology, controlled waste stream sorting program. Incoming loads are screened for hazardous waste, bulky items, and recyclables. Over 6,500 tons or 5 percent of the landfill disposal tonnage was recovered for recycling in 2003 by directing facility patrons to place waste in designated recovery areas.

5.2.2 Overview of Material Recovery Facilities

A material recovery facility (MRF) is defined as a facility where some portion of the incoming, commingled solid waste stream is separated and processed into recyclable commodities (WAC 173-350-100). Typically, an MRF operator also actively markets prepared recyclables to brokers or end users. In contrast to buy-back and drop-off centers, an MRF is a processing facility, often serving an entire region, to which commingled solid waste is brought for separation. At one extreme, MRFs can have complex machinery that assists in separating various elements of the waste stream, or they can rely on human labor to sort incoming materials. Typical functions of MRFs include the following:

- Consolidation or processing of recyclable material collected in curbside or drop-off programs

- Separation and intermediate processing of white goods, woodwaste, yard waste, tires, construction/demolition debris, or other easily segregated components of the waste stream

The most commonly processed materials in MRFs include the following: tin cans, container glass, aluminum cans, newspapers, corrugated cardboard, high-grade paper, mixed waste paper, and plastic bottles (HDPE and PET). On average, about 10 percent of an MRF's daily tonnage ends up as nonrecyclable residue requiring disposal.

5.2.3 Existing Conditions

Waste Control operates an MRF that processes commingled recyclables collected in Cowlitz, Clark, Clatsop, and Multnomah counties. Approximately 85 percent of the recyclables originate in Cowlitz County from residential curbside recycling and drop boxes as well as industrial and commercial accounts. The facility also processes recyclables collected at the buy-back center located on site. It also is used to process some solid waste collected from commercial/industrial sources for recyclables before shipment to the County landfill.

Weyerhaeuser operates an MRF at its Longview facility. The MRF is used as a staging area for waste to be transported to the headquarters landfill by the rail line that connects the two facilities. Approximately 85 percent of the waste processed at the MRF is generated at the Longview facility. Very little active sorting occurs at the MRF because waste created at the Longview facility is typically sorted immediately following generation.

The Weyerhaeuser MRF is used primarily for temporary storage and as a transfer point for materials to be disposed of or recycled. Hog fuel is created from woodwaste at the Weyerhaeuser MRF. The MRF is also used as a loading-out point for recycled metal and as a holding area for excessive construction, demolition and landclearing waste. A pad at the MRF is used as an area to dewater boiler ash. As part of the dewatering process, stockpiled de-ink rejects are mixed into the boiler ash at the MRF.

The Longview Fibre recycling yard occasionally operates as an MRF, but its primary function is as a transfer station for recyclables that are source-separated throughout the plant.

5.2.4 Needs and Opportunities

Cowlitz County has identified source separation as the preferred method to separate recyclables from the waste stream. Therefore, at this time, there is only limited need for mixed-waste-processing capability.

Waste Control's MRF has the required capacity to meet present recycling needs in Cowlitz County. Future capacity needs will be assessed if significant modifications are proposed for current recycling programs.

5.2.5 Solid Waste Sorting Options

Status Quo—Waste-processing services are conducted primarily by Waste Control and Cowlitz County. It is envisioned that Waste Control will continue to provide MRF

capability for processing commingled recyclables and high-grade commercial loads. If necessary, other haulers operating in the county could develop MRF capability to meet local demand in other areas of the county, or containerize and ship recyclables to the Waste Control MRF for further processing. Controlled waste screening efforts will continue at the Cowlitz County Landfill in an effort to maximize recovery of hazardous waste and recyclables at the point of entry of the facility.

Develop a Central County MRF—This alternative would provide for the development of an MRF, centrally sited in the county, implemented by the County. Implementation of this system would call for a County procurement process to select and contract with a vendor for MRF services. Actual operation of the facilities would continue to be provided by the private sector via contracts between vendors and the County.

5.2.6 Solid Waste Sorting Recommendations

The Status Quo alternative is recommended as the desired strategy for ensuring MRF capability in Cowlitz County. This alternative is most likely to result in the continuation of necessary, adequate MRF services with minimal additional investment. In selecting this option, the County identifies private haulers operating in the county as responsible for supplying needed MRF capability to process recyclables. It would be mutually beneficial to Cowlitz County and Waste Control to continue to develop enhanced capabilities to handle additional components of the waste stream, such as electronic waste and sheet rock.

5.3 Solid-Waste Composting

5.3.1 Introduction

Composting is the controlled decomposition of complex organic materials by microorganisms, such as fungi and bacteria, to produce a soil amendment. Although decomposition occurs naturally, composting facilities are designed to accelerate this process by managing moisture content, oxygen, temperature, and the ratio of carbon to nitrogen. The decomposition rate depends on many factors, including the types of waste that are deposited in the compost pile. Typical organic waste streams that are targeted for composting include woodwaste, yard waste, food waste, paper waste, land-clearing debris, sewage sludge, and septage. The average decomposition completion time for most composting facilities is one to six months.

Nationwide, the rising costs of landfilling and incineration, coupled with increasing community opposition to new facility siting, have led to public support for municipal solid waste (MSW) composting. Composting generally receives strong support from

environmental and citizen associations during site selection. One potential drawback of composting is odor problems. Several composting facilities in the U.S. have closed due to technical problems associated with permitting difficulties as a result of odor (U.S. Environmental Protection Agency [USEPA], 1999).

For MSW composting, the compostable portion of the waste stream consists of paper, food scraps, woodwaste, and yard waste. The number of MSW composting facilities in the U.S. has decreased, after some initial experimentation in the 1990s. Many of the facilities closed because of odor problems; others closed because of problems associated with sorting out non-compostable portions of the waste stream or difficulties in producing non-hazardous compost. At this time, MSW composting is not considered a viable option for Cowlitz County. Similarly, the use of anaerobic digestion to produce methane gas from composting processes is still in the experimental phase and is not considered an option for Cowlitz County at this point.

5.3.2 Centralized Yard-Waste Composting

The most widespread and best established composting strategy is yard-waste composting. Yard waste consists of leaves, brush, tree trimmings, grass, garden waste, shrubs, and materials generated by nurseries, landscapers, utility- and public-facility maintenance operations, and individual citizens.

The most costly portion of yard-waste-composting programs is the collection of the waste, which can range from extensive curbside collection programs to simple drop-off programs. Of the two general methods of curbside collection, bulk and bag, bulk-collection programs require more equipment and thus more personnel to collect the waste. Therefore, bag collection is the preferred curbside collection system; however, the bagged yard waste takes somewhat more time to compost if no grinding equipment is used to preprocess the waste. Drop-off systems are the least labor-intensive collection programs, but have lower participation rates due to the fact that they are not as convenient.

Yard-waste-composting facilities range from low-technology operations, where piles of leaves are turned periodically with a front-end loader, to high-technology operations, where extensive preprocessing, screening equipment, and windrow turners are utilized. Preprocessing consists of reducing the size of the yard waste by grinding and shredding, which accelerates the decomposition of the yard waste.

Following preprocessing, the waste is composted in windrows, static aerated piles, dynamic bins, or in-vessel reactors, or by the use of vermicomposting. Windrows, long piles of compost, are the most commonly used of the four composting methods. The compost is usually piled over aeration trenches that force air into the piles, while large windrow machines or front-end loaders keep the windrows porous by periodically turning

the composting material. Static aerated piles operate much like windrows but without the mechanical component. In dynamic bin systems, the compost is placed in containers and turned mechanically. In-vessel reactors are also enclosed systems, but no agitation occurs, although some vessels do rotate. Moisture and temperature levels must be closely monitored with in-vessel reactors; therefore, they are very complex and costly to construct, operate, and maintain. An alternative method for composting is the use of worms to achieve controlled decomposition of organic wastes, or vermicomposting. Some commercial-scale facilities in other states have started to use vermicomposting.

Once the yard waste is thoroughly decomposed, the material is "cured" for 30 to 90 days to stabilize the product. Further refining of the product through screening or grinding is often employed to reach the quality specified by the intended end use of the product.

5.3.3 Existing Conditions

The yard-waste-composting program currently in place at the Cowlitz County Landfill uses intermediate-level windrow-processing technology. Due to County and city efforts, there is a significant quantity of residential back-yard composting in Cowlitz County. Back-yard composting is the preferred method because of the elimination of collection, transportation, and handling needs. Please see Chapter 4 for more details.

5.3.3.1 Performance Risk

There is minimal technical risk associated with centralized yard-waste composting. There is always risk associated with waste collection. Cowlitz County has minimized risk by avoiding distribution of compost to areas outside the landfill. The herbicide clopyralid has been permanently banned by the Washington State Department of Agriculture (WSDA) for residential and commercial lawns and turf, so it is not expected to have a negative effect on composting in Cowlitz County in the future (WSDA, 2002).

5.3.3.2 Reliability of Markets

Markets for compost are fairly limited in Cowlitz County at the present time. The compost product that is currently being generated at the Cowlitz County site is being used as material for landfill-closure-related projects. Cowlitz County has simplified marketing and distribution efforts and avoided some environmental issues by using all the produced compost exclusively for landfill projects.

5.3.3.3 Environmental Impacts

Odor can be a problem at yard-waste-composting facilities. Factors that contribute to the generation of odor include the types of materials collected, siting, management issues, and climatic conditions. Grass clippings are a large contributor to odor problems, being quick to emit odors due to their high moisture and nitrogen content. Leaves and mixed waste also contribute to the odor problem.

Stormwater management as well as windborne debris issues are also of concern and must be planned for accordingly (USEPA, 1999).

5.3.3.4 Cost

Composting facilities vary in cost due to the degree of complexity of the collection and processing programs. Yard-waste-composting costs are approximately $66.00 per ton diverted, which breaks down into $44.37 per ton for collection and $21.65 per ton for composting (USEPA, 1999). Composting at the Cowlitz County Landfill costs approximately $28 per ton.

5.3.4 Yard-Waste-Composting Recommendations

Cowlitz County should continue to utilize their current yard-waste-composting system. In order to increase participation in the yard-waste-composting program, creating a curbside collection program might prove to be beneficial and would extend the life of the landfill. The County, through the use of an incentive program such as a fee reduction, should promote efforts to encourage separation of yard waste from solid waste coming into the disposal facility. The County should provide subsidized bins to encourage back-yard composting. The County should encourage the development of private compost facilities with the capacity to process other organic wastes, such as food waste and soiled paper.

5.4 Energy Recovery/Incineration

Efforts by Cowlitz County to recover energy from MSW date back to planning for the development of the current sanitary landfill operation in 1973. In June 1974, a preliminary technical and economic feasibility analysis of four alternative energy-recovery technologies recommended that the County process MSW for sale to private industry as a supplemental fuel in hog-fuel boilers. In 1977, Longview Fibre formally expressed an interest in using refuse-derived fuel (RDF) in two existing hog-fuel boilers. A second study was conducted to evaluate the feasibility of an RDF energy-recovery system incorporating the existing Cowlitz County solid waste processing facility and the Longview Fibre boilers. However, several problems were identified in the test burn, and Longview Fibre decided not to purchase RDF from Cowlitz County.

Cowlitz County continued its marketing efforts during 1982 through contact with Weyerhaeuser Corporation, which also operates pulp, paper, and lumber mills in the Longview area. An effort was made to sell RDF, or unprocessed MSW, to Weyerhaeuser for a proposed fluidized bed boiler system that was under consideration. Weyerhaeuser analysis determined that both the economics and the small amount of waste material available, in comparison with the company's total demand for fuel, would not justify entering into an agreement with Cowlitz County.

In 1988, Combustion Engineering proposed locating a $100 million incinerator in Longview that would burn 1,200 tons of garbage a day, 90 percent of which would come from the Portland area. The project was shelved in 1988 when it became apparent that Industrial Development Bonds would not be available for the project. Also, at the time, there was considerable public opposition to siting an incinerator in Cowlitz County (Combustion Engineering, 1988).

On July 30, 2002, the Cowlitz County Commissioners approved a resolution that established that the County would not pursue siting an incinerator in the county.

Cowlitz County has investigated the construction of a pipeline that would supply landfill gas to nearby industries, so that the energy content of this landfill byproduct could be recovered. The County will continue to look for opportunities to partner with businesses interested in this product.

5.5 Chapter Highlights

- The Waste Control MRF currently meets the needs of Cowlitz County.
- Cowlitz County operates an effective yard-waste-composting system.
- The Cowlitz County Commissioners approved a resolution in 2002 that established that the County would not pursue an incinerator in the county.
- The County has been studying and will continue to pursue the possibility of supplying landfill gas to local industries.

6 SOLID-WASTE COLLECTION

6.1 Introduction

Solid waste collection refers to the activities of certified and contract haulers who collect mixed solid waste and recyclables from residences, businesses, and institutions. This chapter describes the current solid waste collection system in Cowlitz County, including legal authority, collection practices, and the interrelationship between solid waste collection and waste-reduction/recycling activities.

6.2 Existing Conditions

6.2.1 Legal Authority

Legal authority for solid waste collection in Cowlitz County is shared among a number of public agencies. These agencies are the Washington State Department of Ecology (Ecology), the Washington Utilities and Transportation Commission (UTC), the County, and the cities.

Ecology—Ecology evaluates solid waste management plans (SWMPs) for compliance with State guidelines. SWMPs are required to address the issues of solid waste collection and, specifically, the relationship of solid waste collection to recyclables collection.

UTC—Under RCW 81.77 the Washington Utilities and Transportation Commission (UTC) regulates the collection and transportation of solid waste and residential recycling in unincorporated areas of the state, and within cities and towns that do not contract for or provide solid waste collection services themselves. The UTC regulates entry, rates, safety and consumer protection.

County Authority—Counties may operate solid waste collection systems as authorized by Chapter 36.58A RCW. Chapter 36.58A authorizes counties, under certain conditions, to establish solid waste collection districts in unincorporated areas for the mandatory collection of solid waste. Solid waste collection districts may include incorporated areas, as long as the affected municipalities give consent. A county must demonstrate that mandatory collection is necessary for the preservation of public health. The UTC is

required to investigate and make a finding as to the ability and willingness of the existing solid waste collection companies servicing the area to provide the required service. If the UTC finds that the companies are unable or unwilling to provide the required service, the UTC will issue a certificate of public convenience and necessity to any qualified person or corporation in accordance with RCW 81.77. Should no qualified individual or corporation step forward, the County may provide the collection service, but only after the UTC completes its investigation.

Following the adoption of a comprehensive SWMP pursuant to Chapter 70.95 RCW, a county may adopt regulations and ordinances governing the storage, collection, transportation, treatment, utilization, and processing of solid waste.

Cities and Towns—Under State law RCW 35.21.120, cities and towns have the following options for managing solid waste collection:

- A city or town that provides solid waste collection itself or contracts for solid waste service is exempt from UTC regulations (RCW 81.77.020). However, if a city gives notice to an existing solid waste collection company of its intent to provide service itself, the city must provide the hauler not less than seven years notice. During that time, the UTC regulates the solid waste collection company.

- Cities have the option of issuing licenses to a solid waste collection company. Licensing does not allow cities or towns regulatory control over collection services or fees. Rather, licensing serves as the process through which cities may impose local utility taxes on a solid waste collection company operating under UTC regulation.

- Municipalities may operate their own solid waste collection system for residential, commercial, and recyclables collection. In this case, the city has sole responsibility over all aspects of solid waste collection. A city or town can also require mandatory collection. Under mandatory collection, a city or town may require that all residents and businesses subscribe to designated refuse-collection services.

6.2.2 Solid Waste Collection Companies

This section describes the various collection systems currently operating in Cowlitz County. Solid waste collection services are provided throughout the county by private certificated haulers and private franchised operators. Collection certificate areas are shown in Figure 6-1. The certificated collection companies in Cowlitz County are identified below, in Table 6-1.

Table 6-1
Cowlitz County Certified Solid Waste Collection Companies

NAME	ADDRESS	UTC CERTIFICATE NO.
Waste Control, Inc.	PO Box 148 Kelso, WA 98626 (360) 425-4302	G-101
Waste Connections of Washington, Inc.	9411 NE 9th Avenue Vancouver, WA 98662 (360) 892-5370	G-253
Jeffery K. Cummings d/b/a/ Community Waste & Recycling	182-53 Hillcrest Drive Chehalis, WA 98532 (360) 748-7387	G-219

6.2.2.1 UTC-Certified Collection Companies

UTC regulates solid waste collection companies by issuing a certificate of public convenience. The following companies provide service within Cowlitz County (rates listed below are as of May 2006):

Waste Control, Inc.—Waste Control, Inc. (Waste Control) currently provides collection services for the area covered by UTC Certificate G-101. Most of the permit area is in Cowlitz County, with the remaining portion in Clark County and Skamania County. The area in Cowlitz County covers approximately 880 square miles, or over 75 percent of the total area of the county. Approximately 33,117 people live in this collection area, which has a population density of about 38 persons per square mile. Included in this collection area are the cities of Castle Rock, Kalama, and Woodland, and the unincorporated communities of Toutle; Ostrander; Woodbrook; Beacon Hill; Lexington; Rose Valley; the "Woodland Bottoms," a 14-mile-long corridor up the Lewis River Highway adjacent to Woodland; and Coldwater Ridge in Skamania County.

Waste Control provides weekly collection to residential customers in the G-101 collection area. Customers are charged $13.85 per month for the weekly pickup of a 32-gallon container, $17.30 per month for the weekly pickup of a 60-gallon container, and $20.15 per month for a 90-gallon container. Larger containers and biweekly pickups are also available. According to Waste Control's records, there were approximately 8,021 residential customers and 373 commercial customers in the G-101 area in 2004.

The G-101 collection area includes the area serviced by the UTC Certificate G-049 as referenced in the 1993 SWMP. Waste Control purchased this certified area in June 2001 from Ted's Sanitary Service, and it was incorporated into the G-101 certificate in 2002.

In 2000, Waste Control provided service to approximately two-thirds of potential customers in the G-101 collection area (Willis, 2002). The remaining residences either dispose of waste on their own property or haul directly to a disposal facility.

Approximately half of the waste collected and not recycled by Waste Control in the entire G-101 certificate area is comprised of commercial and industrial waste from Cowlitz County. Most of this waste is transported to the Cowlitz County Landfill for disposal. The other half of the waste from the area is residential waste from Cowlitz and Clark counties. Most of the residential waste collected in the G-101 area is taken to the Cowlitz County Landfill.

Waste Control and Cowlitz County have executed a Letter of Understanding, dated November 23, 2004, under which Cowlitz County has expressed its intent to utilize a transfer station to be built by Waste Control. In return, Waste Control will use the County landfill for the disposal of municipal solid waste (MSW) collected by Waste Control and for material-recovery-facility residuals. The Letter describes the terms under which waste flow will be directed to the transfer station from the landfill in a phased process, and establishes a fee schedule for services. Upon the closure of the landfill, Waste Control will long-haul waste generated in the county to the Rabanco Regional Landfill, in Roosevelt, Washington. The County and Waste Control executed a formal contract on November 14, 2006, containing the details outlined in the Letter of Understanding. This contract will include all of the waste collected under Waste Control's G-101 collection area. Waste Control does not currently offer curbside recycling to areas outside of Longview and Woodland.

Equipment owned by Waste Control includes four 28-cubic-yard, automated, side load packer trucks; one 40-cubic yard commercial front loader; and three drop-box trucks. They also own at least 120 drop boxes with varying capacities. The firm employs a total of 70 persons, 17 of whom are involved in the collection of the G-101 area (Willis, 2002).

Jeffery K. Cummings d/b/a Community Waste & Recycling—The remote retirement community of Ryderwood in northern Cowlitz County is served by Jeffery K. Cummings d/b/a Community Waste & Recycling, a UTC-certified hauler. Jeffrey K. Cummins of Chehalis, Washington, owns and operates the firm that collects waste from the 328-person community. One fee is charged for the entire community. The estimated population density is 196 people per square mile. Waste collected is hauled to the Cowlitz County Landfill, using one rear-loader compactor truck. Community Waste & Recycling serves approximately 283 residential customers and ten commercial customers and collects approximately 420 tons of waste per year.

Waste Connections of Washington, Inc.—This firm, based in Vancouver, Washington, serves the extreme southeast corner of Cowlitz County. Included in the certificated collection area is the upper end of Yale Lake on the Lewis River and the small, tourist-

oriented rural community of Cougar. Because of its proximity to Mt. St. Helens, Cougar experiences heavy tourist activity primarily during the summer months. A single collection vehicle provides weekly service. Residential customers are charged $9.00 a month for weekly pickup of a 20-gallon container, $11.05 for a 32-gallon container, $15.24 for two 32 gallon containers, $21.72 for three 32 gallon containers, $25.73 a month for four 32 gallon containers, and $30.21 for five 32 gallon containers. Larger containers and every-other-week pickups are also available. All rates are subject to a 3.6% State of Washington tax. There are approximately 195 customers in the service area.

The estimated population of the approximately 36-square-mile area is 616, most of whom are located in the Cougar area. The district's estimated population density is 17 persons per square mile. The majority of the accounts are within 1 mile of the Lewis River. Approximately 373 tons of Cowlitz County waste is collected annually by Waste Connections and is combined with Clark County waste for transport to the Finley Buttes Landfill in Boardman, Oregon.

6.2.2.2 City Contract Collection

City contract collection operations involve private companies contracted by a municipality to collect and haul MSW. The municipality collects service charges for services provided by the hauler. Usually the contracts are awarded on a competitive basis to the lowest bidder. Haulers typically must furnish suitable performance bonds. Currently, Longview, Kelso, Woodland, and Kalama have issued city contracts to private haulers for collection services. Collection practices by jurisdiction are described below. All rates and account information contained in this section are for 2004 and are subject to change. Population information is derived from the 2000 census.

City of Longview—The city of Longview is the largest city in Cowlitz County and has a population of 34,660. There were approximately 14,788 residential and commercial / industrial accounts in 2004. With a total area of 14.1 square miles, the population density is estimated to be 2,530 people per square mile. A City of Longview ordinance restricts residents from hauling their own waste. In April 1989, Waste Control took over the collection of solid waste for the city of Longview. The contract is renewable every five years for five-year periods and allows the City to specify where the waste is disposed of. Currently the City specifies that all waste go to the Cowlitz County Landfill.

Waste Control contracts with the City to handle all residential and commercial customers, using fully automated collection equipment. An estimated 86 percent of commercial customers use the 300-gallon, plastic, solid waste tubs that are picked up with a fully automated collection vehicle; an estimated 11 percent use 90-gallon containers; and the remaining commercial customers (2 percent) use frontload containers. Approximately half of the residential customers are serviced weekly with 300-gallon, plastic tubs located in alleyways shared by two to four residential customers. Each time a single 300-gallon

tub is picked up, an average of three customers have been serviced, resulting in a highly efficient collection system. Residential customers not on alley service have a 90-gallon roll-cart that is picked up weekly at the curb. Single-family residences pay $11.95 per month for garbage pickup and $2.88 a month for recycling. Multifamily units pay $8.69 per month per unit for garbage pickup and $2.10 per month per unit for recycling.

The solid waste collection equipment used for all of the residential and commercial accounts in the city of Longview includes six automated packer trucks, one 40-cubic-yard front load packer truck, two drop-box trucks, a pickup, and approximately 100 drop-boxes with capacities ranging between 20 and 40 cubic yards. Purchased equipment includes approximately 5,000 roll-carts (90-gallon), and 3,100 of the tubs (300-gallon). Six employees collect waste for Longview.

The City of Longview waste collection contract grants Waste Control the option of providing curbside recycling to city residents. If Waste Control were to elect not to provide the service, the City would seek recycling services through the open bidding process. Waste Control has provided a residential curbside program in Longview since August 1, 1992.

City of Kelso—As the county's second largest city, the city of Kelso has a population of 11,895. There were approximately 4,447 residential and commercial/industrial accounts in 2004. With a total area of 8.37 square miles, the population density of the city is estimated to be 1,472 people per square mile. Collection is mandatory. The City Public Works Department operated its own garbage collection system until the City made the decision to award a city contract to a private hauler. In March 1989, Superior Refuse Removal, Inc. of Centralia was awarded the waste-collection contract; it began providing service in July 1989. On May 27, 1991, Superior Refuse Removal, Inc. sold its contract to Waste Control of Longview. The current contract between the City and Waste Control started on January 1, 2000, and goes through December 31, 2009. The contract gives Kelso the right to specify where waste is disposed of; currently all waste is hauled to the Cowlitz County Landfill.

Waste Control currently uses the same automated collection system as described above for Longview to collect the garbage generated in Kelso. Most commercial/industrial accounts are located in and around the downtown business district, near the I-5/Allen Street interchange, in West Kelso, and in the South Kelso industrial area. Residential customers are located throughout Kelso.

In servicing Kelso, Waste Control uses two automated packer trucks and a drop-box truck. The City of Kelso uses 90-gallon roll-out carts for residential accounts, and 300-gallon, plastic tubs for commercial/industrial accounts. A small percentage of commercial customers use the 90-gallon carts. Residences are charged $10.30 per month for weekly

garbage pickup and $0.50 per month for recycling facilities, and services are billed bimonthly.

City of Kalama—The city of Kalama has a population of approximately 1,783, with a land area of 2.31 square miles; the population density is estimated to be 783 people per square mile. Kalama has granted Waste Control a city contract to collect all solid waste in the city. The city contract does not specify where the waste must be disposed of (Willis, 2002). The current three-year contract was renewed in 2004. Although the collection contract gives Waste Control the license to collect garbage within Kalama, the garbage collection rates are regulated by the UTC. Kalama bills Waste Control's customers in exchange for 15 percent of gross fees collected. There are currently 629 residential and commercial customers participating in the mandatory curbside garbage pickup program. Presently, residential customers pay $13.85 a month for a 32-gallon container, $17.30 a month for a 60-gallon container, and $20.15 a month for a 90-gallon container on a bimonthly billing schedule.

City of Castle Rock—The city of Castle Rock has a population of approximately 2,130. With a land area of 1.33 square miles, Castle Rock has a population density of 1,597 people per square mile. Castle Rock is the only city in Cowlitz County that does not have mandatory collection. Castle Rock Ordinance No. 86-5 grants Waste Control the authority to provide weekly garbage collection service to the residents of Castle Rock. Because of the benefits of population density toward collection efforts, Castle Rock residences are charged $0.50 less per month compared to residences in unincorporated areas of the county, resulting in a monthly fee of $13.35 for a 32-gallon container, $16.80 for a 60-gallon container, and $19.65 for a 90-gallon container. There is no contract between Castle Rock and Waste Control.

City of Woodland—The portion of the City of Woodland that falls within Cowlitz County has a population of 3,688 and a total land area of 2.48 square miles, resulting in a population density of 1,487 persons per square mile. In June 2001, Waste Control purchased the Woodland contract for weekly garbage pickup and curbside recycling from Ted's Sanitary Service. The initial contract is for seven years, with five-year renewal periods. The contract does not specify where Waste Control must dispose of collected waste, although currently it goes to the Cowlitz County Landfill. Woodland bills customers in exchange for 15 percent of the gross fees collected. There are currently approximately 1,350 customers. Residential and small commercial customers of mandatory weekly garbage collection pay a monthly fee of $10.25 for a 60-gallon container. Mandatory curbside recycling is $3.80 per month. Larger commercial customers pay $67.25 monthly for 300-gallon containers and $85.00 monthly for a 450-gallon container. Customers are billed on a bimonthly basis.

It should be noted that a portion of Woodland falls within Clark County. The waste generated in this area is also collected by Waste Control and disposed of at the Cowlitz

County Landfill. The incorporated Clark County area of Woodland had a population of approximately 92 in the 2000 census. Service is also provided to residents of the unincorporated area surrounding Woodland in Clark County. As of 2004, Waste Control recorded an additional 433 residential and commercial customers living in the unincorporated Clark County area around Woodland. Customers in the unincorporated areas are charged the UTC rates discussed in Section 6.2.2.1.

6.3 Needs and Opportunities

This section discusses the adequacy and availability of solid waste collection services in Cowlitz County and identifies areas where the level of service provided may not match the current or projected need.

City of Kelso—Kelso has no additional solid waste collection needs for mixed municipal waste. However, Kelso residents are not provided with any financial incentive to practice waste-reduction/recycling activities. The City currently has no curbside recyclables collection program.

City of Longview—The City of Longview has implemented an automated waste-collection system using both 90-gallon carts and 300-gallon tubs. The automated system is fast and efficient. The City of Longview implemented curbside collection of recyclables beginning in August 1992.

City of Castle Rock—Castle Rock should consider implementing mandatory collection of garbage to increase subscriptions and potentially reduce the cost of collection.

City of Kalama—No special needs have been identified for the city of Kalama in regard to the collection of solid waste. Mandatory garbage collection is in place.

City of Woodland—No special needs have been identified for the city of Woodland in regard to the collection of solid waste. Mandatory curbside garbage and recycling programs are currently in place.

Unincorporated Cowlitz County—Most of the self-haulers in the county reside in unincorporated areas. Certificated haulers should continue to solicit additional subscriptions for collection service in the unincorporated areas of the county. The demand for solid waste collection in the rural unincorporated areas of Cowlitz County will depend on population growth. Implementation of mandatory garbage collection to the maximum extent permissible by law would increase subscriptions and potentially reduce the unit cost of collection in those areas. Mandatory collection could also result in less illegal dumping.

As illustrated in Figure 6-1 there is an unincorporated area of east Cowlitz County on Lewis River Road (Highway 503) between Merwin Lake and Yale Lake that is not currently served by any UTC certificate. It is recommended that Cowlitz County inquire with the UTC for the expansion of the Waste Control (G-101) or Waste Connections (G-253) certificate to provide service for residents in this area.

Summary—The current waste-collection system in Cowlitz County appears to be adequate to handle current and future needs for collection of solid waste. Problems identified are limited to illegal disposal in rural areas, lack of financial incentives to encourage waste reduction and recycling, and inconsistent opportunities to recycle county-wide.

6.4 Collection Alternatives

The following section presents alternatives for addressing the collection needs and opportunities identified above. The collection alternatives presented are intended to establish a collection system that will improve upon the waste-reduction and recycling activities of the county and ensure that waste is disposed of in an environmentally safe manner.

6.4.1 Mandatory Collection

Description—Currently the cities of Longview, Kelso, Kalama, and Woodland provide mandatory refuse collection. Castle Rock and unincorporated areas have voluntary collection, with approximately one-third of residents self-hauling their refuse to the Cowlitz County Landfill (Willis, 2002).

Roadside dumping, open burning, and other forms of illegal disposal are unacceptable practices. These problems could be corrected through a variety of programs, including mandatory collection in all jurisdictions, a solid waste collection district that requires mandatory collection throughout the urban areas of the county, strict enforcement of anti-litter laws, and/or strict enforcement of a regulation requiring loads to be properly secured with a tarp to prevent blowing litter.

Effectiveness—The requirement for all cities to implement mandatory collection is allowed by State law. Mandatory collection would help to eliminate problems associated with illegal disposal, and would likely reduce the number of people who self-haul their waste in private vehicles, thus reducing the incidence of roadside litter caused by poorly secured loads. Mandatory collection programs throughout the rest of Cowlitz County would provide some benefits, but not without some costs. Benefits include a reduction in illegal disposal, a reduced need for enforcement activities associated with illegal disposal and their associated cleanup costs, greater ability to provide recycling programs

(assuming some combination of recycling services will be provided along with garbage collection), and increased revenues to support solid waste programs.

Mandatory collection may act as a disincentive for those who are avidly trying to reduce wastes unless volume-based rates are used. However, costs may be a problem even with volume-based rates. In areas with very low population densities, such as in the rural unincorporated areas of Cowlitz County, garbage collection services can be expensive to provide. The establishment of mandatory collection in unincorporated areas could be implemented through a solid waste collection district. State law (RCW 36.58A) enables a county to establish such a district. This idea is discussed more fully in Chapter 12, Administration and Enforcement.

6.4.2 Variable Can Service

Description—Variable-can service or volume-based rates require residents to select a garbage-container size or a number of containers that will on average hold all waste material needing disposal each week. Residents are then charged according to the size and number of containers set out for collection; higher volumes result in higher bills. Variable-can service has been implemented in Castle Rock, Kalama, Woodland, and the outlying unincorporated areas of the county. The City of Longview is currently looking into technology that may allow for a weight-based version of the system.

Effectiveness—Variable-can service has proven to be an extremely effective waste-reduction and recycling incentive. In the city of Seattle, the introduction of variable-can rates almost immediately reduced the average number of cans per subscription from three and one-half to one. Variable-can service also provides an equitable fee structure so each household pays only for what is generated. A weight-based version of the system is even more effective. The effectiveness of a variable-can program is enhanced with the implementation of parallel recycling programs.

6.4.3 Residential Recycling Collection

Residential recycling programs have been discussed in detail in Chapter 4 of this plan. The cities of Longview and Woodland have curbside collection of recyclables. Kelso and the unincorporated urban areas of the county have access to multi-material drop-box facilities. These programs, in combination with the programs mentioned previously, provide both an opportunity and an economic incentive for county residents to recycle and to reduce solid waste generation.

6.5 Recommendations

1. The Solid Waste Advisory Committee recommends that mandatory curbside garbage collection be implemented throughout the county but recognizes that this may not be economically feasible in all areas. The establishment of mandatory collection in unincorporated areas of Cowlitz County would require the establishment of a solid waste collection district.

2. Curbside recycling should be provided for all incorporated and urbanized areas of the county not currently receiving service but recognizes that this may not be economically feasible in all areas.

3. Haulers collecting waste in Cowlitz County should include in their operations a process to facilitate and encourage source separation of demolition and inert waste for recycling or disposal at permitted demolition/inert-waste landfills. Also, yard waste and special wastes should be source separated and collected independently from MSW.

4. Cowlitz County and cities should take stronger action to eliminate illegal dumping through increased enforcement.

5. An unincorporated area of east Cowlitz County on Lewis River Road (Highway 503) between Merwin Lake and Yale Lake is not currently served by any UTC certificate. It is recommended that Cowlitz County inquire with the UTC for the expansion of the Waste Control (G-101) or Waste Connections (G-253) certificate to provide service for residents in this area.

6.6 Chapter Highlights

- Three collection companies currently provide all municipal-waste-collection service for Cowlitz County.

- Mandatory solid waste collection can reduce the cost of collection per customer by increasing the number of subscriptions. All areas in Cowlitz County, except Castle Rock and unincorporated Cowlitz County, have established mandatory solid waste collection.

- Variable-can service has been implemented in Castle Rock, Kalama, and the outlying unincorporated areas of the county. Variable-can service is an extremely effective waste-reduction technique that also encourages recycling.

7 SOLID WASTE TRANSFER SYSTEM

7.1 Introduction

Transfer systems consist of fixed facilities with drop boxes and/or transfer stations that receive waste from public and commercial sources. The purpose of a transfer system is to provide a centralized location for consolidation of numerous small waste loads, loading the waste into larger transfer containers, and shipping it to a disposal site. Consolidation improves the economics of waste hauling and reduces traffic impacts at land disposal sites. In addition to the consolidation of waste materials, transfer stations can serve as a location for the processing of recyclable materials. Material-processing activities include the separation, preparation, and consolidation of recyclable material collected through curbside programs or removed from incoming loads.

This chapter will discuss the existing transfer system in the county, identify needs and opportunities, and identify system strategies for implementation, and will conclude with transfer system recommendations.

7.1.1 Transfer Facility Types

Drop-Box Station—A drop-box station receives both compacted and uncompacted waste where material is deposited directly into a drop box. When the drop box is full, it is loaded onto a roll-off truck and hauled to a disposal site or material recovery facility (MRF). Drop-box facilities are common in rural areas, requiring lower capital expenditures for land, structures, and equipment. Drop-box facilities can also provide opportunities for recycling and for the separate collection of yard debris, woodwaste, and/or construction, demolition, and land-clearing (CDL) waste.

Transfer Station—A transfer station is a facility that receives compact and loose waste from both commercial sources and the general public. Transfer stations may use a dumping pit or tipping floor to consolidate waste material before transferring it into a trailer or compactor. In transfer stations with a dumping pit, a tractor is used to crush and compact the waste before loading it into the trailer or compactor. Trailer loading usually requires the use of a knuckle-boom crane to evenly distribute and compact the waste in the trailer. A transfer station with a tipping floor typically uses a stationary compactor.

Waste is pushed into a receiving pit, where it is compacted, and then pushed forward into a trailer container.

Material-recovery functions can be performed at transfer stations in order to reduce the amount of material requiring disposal. Material-recovery functions include the following:

- Consolidation or processing of source-separated or commingled recyclable material
- Separation and intermediate processing of white goods, woodwaste, yard waste, tires, CDL waste, and other easily segregated components of the solid waste stream
- Separation and intermediate processing of household or conditionally-exempt-generator hazardous waste
- Enhanced materials-recovery of solid waste using mechanical separation or picking lines

7.1.2 Background Information

Closed Transfer Stations

Following the 1971 Cowlitz County Regional Solid Waste Plan, Cowlitz County closed the open dumps located at Cougar, Toutle, Castle Rock, and Ryderwood and constructed two transfer stations, one near Castle Rock and the other in the Toutle area. The two transfer stations were closed in 1980 because of decreasing volume and increasing revenue deficits. A drop-box facility was reestablished in the Toutle area in 1986.

Transfer Station Analysis at County Landfill

In March 2004, the County finalized a cost estimate to construct a transfer station and intermodal facility at the Cowlitz County Landfill site to be utilized when the landfill reaches capacity. That cost analysis, conducted by Maul Foster & Alongi, Inc., concluded that a transfer station, intermodal yard, and associated equipment and land would cost approximately $4.5 million in 2004 dollars. The design incorporated the existing operations building in combination with a new intermodal yard extending toward the west and parallel to the existing Burlington Northern Santa Fe Railroad switching yard. This analysis was conducted as part of the Statement of Qualifications (SOQ) for Solid Waste Services process conducted by the County and the cities of Longview and Kelso.

Waste Control Transfer Station

Waste Control, Inc. (Waste Control) has expressed an interest in establishing a regional transfer station in Cowlitz County since the late 1980s. Its latest proposal calls for the construction of a transfer station on a 5.7-acre parcel of land adjacent to the existing Waste Control Material Recovery Facility. The March 20, 2003, operating plan submitted to the County calls for a 31,200-square-foot transfer station building, a knuckle-boom crane for compacting waste in rail-compatible containers, and a rail spur. Waste Control obtained a shoreline permit in 2002; the operating permit is currently being negotiated with Cowlitz County. The original proposals would have been for a privately developed and operated facility with County oversight, but the County has now contracted Waste Control to construct and operate a transfer station facility. Waste Control has received a permit for a transfer station handling the waste tonnage that it currently handles under its existing G-101 certificate.

7.2 Existing Conditions

Recycling Drop-Off Centers—There are numerous recycling drop-off centers scattered throughout Cowlitz County. Specific features of the drop-off centers are outlined in Chapter 4.

Toutle Municipal Solid Waste (MSW) Drop Box Facility— After the 1980 eruption of Mount St. Helens Local tourism increased throughout the Toutle area, which contributed to the garbage-disposal burden on the community. To assist local businesses in handling the increased volume of waste requiring disposal, the Cowlitz County Commissioners made a decision to open an MSW drop-box facility in the Toutle area. The facility opened in 1986. A recycling drop-off center was added to the Toutle site in the early 1990s.

The drop-box facility is located at 200 South Toutle Road in the unincorporated community of Toutle, which is located in the north-central part of the county. Toutle is 26 miles from the Cowlitz County Landfill. The site is currently open two days a week and is staffed by one part-time attendant. The facility has a maximum 5-cubic-yard drop-off restriction, which eliminates its use by most commercial haulers. Two 40-yard drop boxes are located at the Toutle site. Each day's operation fills an average of 1.3 drop boxes. Recorded annual solid waste tonnage hauled to the landfill was approximately 1,067 tons in 2002, 1,113 tons in 2003, and 1,140 tons in 2004. Hauling costs have been reduced approximately 30 percent since 2000, when compaction of drop boxes was first implemented—in 1999, transportation was $34 per ton; in 2004, it was $24 per ton. Labor and maintenance in 2004 cost $11 per ton. Revenue for 2004 was approximately $59 per ton. The total operating cost of the facility is approximately $74 per ton, which included the full disposal fee of $39.30 per ton at the landfill. In 2004, the County subsidized a total of $17,051 for the operation of this facility.

Cowlitz County Landfill—The Cowlitz County Landfill, located in Longview, provides disposal services for the entire county. Because the landfill is centrally located in the county and is well connected to the existing transportation system, except for the Toutle drop box there is no need for a transfer station for use in conjunction with present landfill activities. In order to keep the public away from the landfill operations, a public waste-disposal station utilizing drop boxes is located just inside the scale house. County personnel transfer the waste to the active disposal area in the landfill.

Weyerhaeuser Material Recovery Facility/Transfer Station—The Weyerhaeuser Material Recovery Facility/Transfer Station at the Longview facility is used primarily as a staging area for waste to be transported to the Weyerhaeuser Headquarters landfill by train. Approximately 85 percent of the waste processed there is generated at the Longview facility, with most of the remaining 15 percent produced at other Weyerhaeuser plants.

Longview Fibre Recycling Yard—The Longview Fibre Recycling yard operates primarily as a transfer station. Recycled materials from throughout the facility are consolidated in the recycling yard and then transported by Waste Control to appropriate facilities. Waste consolidated in the recycling yard is currently transported to either the Roosevelt Landfill or the Cowlitz County Landfill.

Swanson Bark—Through its normal operations, Swanson Bark handles and transfers 292,000 tons of bark annually for commercial use. Swanson Bark accepts clean demolition wood and brush from the community, this is combined and shredded with other wood residuals received from around the northwest and processed into hog fuel and bark mulch, and added to soil for sale as topsoil. These products are marketed in 47 states. The facility processed approximately 292,000 tons in 2004, with most of the material originating from outside Cowlitz County. Some of the wood residuals that are processed at the facility are classified by the State of Washington as solid waste.

Pacific Fiber—Pacific Fiber processes wood residuals from the lumber industry around the Pacific Northwest, but does not accept woodwaste from the general public. The residuals are made into wood chips for the paper industry, shredded into bark mulch, shredded and added to soil for sale as topsoil, and shredded into hog fuel. The bark mulch, soil, and hog fuel are wholesaled throughout Washington, Oregon, and California. Tonnage of material processed by the facility in 2004 has not been estimated.

Waste Control Material Recovery Facility—The Waste Control MRF is described in detail in Chapter 4. The primary function of the MRF is the sorting of commingled recyclables obtained from curbside recycling programs and the consolidation and transfer of recyclable materials from industrial and commercial sources. Tailing-off waste, residual waste remaining after recovery of the recyclables at the facility, is transferred from the MRF to the Cowlitz County Landfill.

Planned Waste Control Transfer Station—In May 2001, Waste Control presented to the Solid Waste Advisory Committee (SWAC) a proposal to export all solid waste instead of building the final landfill cell (Cell 3B). An economic study was completed by Integrated Utilities Group, Inc., of Portland, Oregon, in December 2001 and presented to the SWAC in January 2002. That study and a "second opinion" study were considered and forwarded to the Cowlitz County Board of Commissioners for its consideration. The Board of Commissioners subsequently decided to build the final County landfill cell but opted not to seek another in-county replacement landfill. In November 2002, Waste Control was given approval to build and operate a transfer station to transport out of the county the waste it collects under the Washington Utilities and Transportation Commission (UTC) Certificate G-101 permit in parts of Skamania and Clark counties and in unincorporated Cowlitz County. Waste Control is planning to construct the new transfer station on property to the south of the existing Waste Control MRF, located on Third Avenue in Longview. From November 2002 to July 2003, the County conducted an SOQ process for long-term solid waste disposal services. In July 2003, the process concluded with the County selecting Waste Control as a negotiating partner for long-term solid waste disposal services. The negotiations progressed to the signing of a Letter of Understanding between Waste Control and the Board of Commissioners on November 23, 2004. The Letter of Understanding sets the parameters and issues that have been incorporated into the contract for solid waste disposal in the county for the next 30 to 40 years. The waste agreement was executed on November 14, 2006. The final agreement calls for the filling of the County landfill to capacity, followed by the utilization of the Waste Control Transfer Station for export of all waste to the Roosevelt Landfill. Interlocal agreements executed between the County and the cities assure their participation with this transfer station plan.

Given the November 14, 2006 solid waste contract between waste control and Cowlitz county, the transfer station permit needs to be extended to accept all MSW for Cowlitz County. Contract conditions phase in the use of the transfer station. Beginning in July 2009, all public will be routed to the transfer facility, waste will be hauled to Cowlitz County landfill until fall, estimated late 2012. Terms of the contract provide for a private-public partnership through December 31, 2035 with the option for two-5 year extensions. The waste agreement calls for rail transport of waste to the Roosevelt Regional Landfill.

7.3 Needs and Opportunities

This section discusses the adequacy of the existing transfer system to provide uniform service in Cowlitz County.

North Cowlitz County—The Toutle Drop-Box Facility adequately serves the needs of residents in north Cowlitz County.

Central Cowlitz County—The central areas of Cowlitz County, which include the urban areas of Longview-Kelso and the communities of Castle Rock and Kalama, are not currently in need of a transfer facility. The Cowlitz County Landfill provides a convenient disposal site, allowing haulers and the public to direct-haul to the landfill.

Based on the contract with Waste Control, the landfill is projected to be full by mid-2013. By that time Waste Control will have in place a privately owned and operated transfer facility to take the place of the landfill. The development of the transfer facility will occur on a schedule outlined in the contract to ensure uninterrupted service to the citizens of the county. The waste disposal agreement allows for county control of the transfer station to take place should waste control default on the contract.

The County should prepare a Contingency Plan in the event that there is an interruption of service (such as rail transport slowdown or natural disaster) or that the partnership with Waste Control dissolves. The contingency plan should identify alternate methods of transport. Alternative storage or disposal locations should be identified as well as a list of pre-qualified trucking companies. In addition the County can pursue agreements with neighboring counties for disposal and transfer services

Southern Cowlitz County—There is currently no need in the southern part of Cowlitz County for transfer-system services. The area is adequately served by Waste Control and Waste Connections. Waste Control transports waste from south Cowlitz County directly to the Cowlitz County Landfill; the waste collected by Waste Connections is transported to the Finley Buttes Landfill in Boardman, Oregon, by way of transfer stations in Clark County. With consideration of the future transfer facility in the central county area, the economics of a south county transfer station may at some point prove to be better for these ratepayers.

Currently, collection vehicles from the south county travel a minimum of 40 miles roundtrip to use facilities in the central county area. A south county transfer station would serve principally the Woodland/Cougar corridor, and would be open to all haulers, including self-haulers. If transfer services for the southern part of Cowlitz County become economically advantageous to the general public after operation of the central county transfer station begins, then a south county transfer station could be considered.

7.4 Transfer-System Strategies

The following section presents strategies for the implementation of a transfer system in Cowlitz County when the Cowlitz County Landfill reaches capacity. A transfer system could also be implemented on a gradual basis in order to ensure a smooth transition from present operations. Depending on the outcome of negotiations and design specifics, the gradual implementation of a transfer station could extend the life of the landfill.

7.4.1 Transfer System through County-Controlled Procurement

This alternative would provide for the development of a uniform transfer system implemented by the County. It is assumed that this would include the continued operation of the Toutle Drop Box Facility, the development of a centralized transfer station in the Longview-Kelso area, and possible development of transfer capability in the southern part of the county, near Woodland.

Implementation of this system calls for a County procurement process to select and contract with a vendor for transfer system services. Actual operation of the facilities would be determined by negotiated contracts between private vendors and Cowlitz County. Existing private operations would continue to operate as they do now. Any other transfer stations proposed outside this process would be inconsistent with the Solid Waste Management Plan (SWMP) and thus would be denied an operating permit by the Health Department. Financial viability of the transfer system would be ensured by maintaining a revenue stream generated through disposal fees and designation of sites as authorized disposal facilities.

7.4.2 Transfer System through Private Development and County Oversight

This alternative allows the private sector to independently provide for transfer facilities with the County's role restricted to identification of needs and timing, service area, and service standards. Since transfer facilities are developed principally to provide enhanced collection economics, haulers are best suited to develop facilities if they are deemed necessary. The advantage of this alternative is that it requires minimal involvement by the County, and the private sector retains responsibility to provide transfer facilities. However, there is a degree of risk in relying completely on the private sector to site, build, and operate the needed facilities. Problems with siting, public opposition, and financial uncertainty may discourage the private sector from initiating projects. Additionally, the County may experience problems in adhering to specific time frames and service areas and in requiring that recycling opportunities be provided.

7.4.3 Status Quo

Under this alternative, the County's transfer system would remain unchanged, with the Toutle Drop Box Facility as the only transfer facility in the county. Waste transfer in other rural areas of the county would continue to rely on waste collection by private haulers who haul directly to the Cowlitz County Landfill. The development of a replacement facility after the closure of the Cowlitz County Landfill would remain uncertain. Under this alternative, any proposed facility would be inconsistent with the SWMP, thus requiring plan amendment for development.

7.5 Recommendations

The alternative proposed in Section 7.4.1, Transfer System through County-Controlled Procurement, is recommended. This deviates from the 1993 SWMP, which promoted the concept of a transfer station being developed privately with County supervision. The 1993 SWMP recognized the intent of the private hauler in the Woodland area, Ted's Sanitary, to build a small transfer station to consolidate loads for transport to the Cowlitz County Landfill. Based on Cowlitz County's experience with operating the Toutle Drop Box Facility and two other small transfer stations in the 1980s, the County did not want the entire County system to subsidize increased transfer-station costs for the benefit of south county residents, hence the decision to allow Ted's Sanitary to develop the transfer station as a private venture. However, Ted's Sanitary did not pursue construction of the proposed transfer station in the following nine years before selling the business to Waste Control in June 2001. Subsequently, in 2002, Waste Control combined the Woodland UTC-certificated area (G-049) with the rest of its certificated collection area in rural Cowlitz County (G-101). Direct hauling of south county garbage to the Cowlitz County Landfill is reflected in the January 2003 rate increase allowed by the UTC. Waste Control would still like to be able to consider the option to privately develop a south county transfer station as discussed through the process described in Section 7.4.2.

In selecting these options, the County identifies the following for implementation:

North Cowlitz County—Continue with existing levels of service at the Toutle Drop Box Facility. The operational changes that were made in late 2000, which substantially cut hauling costs, have allowed the facility to remain nearly self-supporting.

Central Cowlitz County—All commercial and self-haulers should continue to direct-haul to the Cowlitz County Landfill all residential and commercial, nonrecyclable waste generated in Cowlitz County. The process to develop a new transfer facility to replace the County landfill should continue as outlined in the Letter of Understanding and the formal contract between the County and Waste Control. These agreements call for the gradual phasing of self-hauled waste acceptance from the County landfill to the new Waste Control transfer station, beginning on July 1, 2009.

South Cowlitz County—As stated in Section 7.3, there is currently no need for transfer-system services, but if the economics of transferring waste show that it would be advantageous to rate payers, a south county transfer station could be considered. The strategy for determining the need for such a transfer station would probably involve a privately developed transfer station as outlined in Section 7.4.2. This transfer station would principally serve the Woodland/Cougar corridor, and would be open to all haulers, including self-haulers. The transfer station would need to be a self-supporting, privately owned and operated facility.

7.6 Chapter Highlights

- A transfer station is not required at this time in Cowlitz County; however, one will be developed prior to the Cowlitz County Landfill reaching capacity.

- Development of a central county transfer station to supplement or replace the Cowlitz County Landfill should be developed privately, with County-controlled procurement.

- Development of a south county transfer station to supplement of the operation of a central county transfer station could be considered if the economics show an advantage to ratepayers, but should be privately developed and operated.

8 DISPOSAL

8.1 Introduction

Landfilling is defined as the practice of disposing of solid waste on land in a series of compacted layers and covering it with soils or other protective layers. Landfilling has traditionally been the primary method of municipal solid waste (MSW) management. Although this plan emphasizes both reduction and recycling of solid waste, a need exists to provide environmentally safe landfill capacity for materials that are nonrecyclable, noncompostable, or noncombustible. This chapter examines:

- Existing conditions, including development of the Cowlitz County Landfill and its operations, closure, and waste capacity
- Disposal needs and opportunities

State law identifies priorities for the collection, handling, and management of solid waste. Under the State system of prioritizing, landfilling is the least preferred management method for solid waste compared to waste reduction; recycling; physical, chemical and biological treatment; incineration; and solidification/stabilization (Revised Code of Washington [RCW] 70.105.150). However, landfilling is generally the most common method of solid waste management. It is also more economical than some methods that are ranked a higher priority by the State.

8.2 Existing Conditions

Landfilling is the primary means of waste disposal in Cowlitz County. The Cowlitz County Landfill is the only MSW landfill currently operating in Cowlitz County. The Weyerhaeuser Headquarters landfill is used primarily for Weyerhaeuser industrial waste generated in Cowlitz County but it also accepts some industrial waste and construction, demolition, and land clearing (CDL) waste from other sources. This facility and its wastes are discussed in Chapter 10—Special and Industrial Waste.

8.2.1 History of Landfilling in Cowlitz County

Before the development of the Cowlitz County Landfill, a number of scattered municipal landfills were operated by the County and the cities of Longview and Kelso. During the 1960s and early 1970s, the Cowlitz County Department of Public Works operated the Coal Creek Sanitary Landfill west of Longview, and smaller municipal dumps near Castle Rock, Toutle, Kalama, Ryderwood, and Cougar. During the same period, the cities of Longview and Kelso operated dumps on the east and west banks of the Cowlitz River near the confluence with the Coweeman River.

In 1969, Cowlitz County recognized that the number of active dumps must be reduced. The County entered into an agreement with the City of Longview to allow the City to use the County's Coal Creek dump site in exchange for closing its Gerhart Gardens dump adjacent to the Cowlitz River. Plans at that time called for the old dump to be used as a park and a marina. However, to date only the park and a boat launch have been constructed. During the same year, the County's dump at the Kalama grain elevator was closed and covered.

Two years later, in 1971, the County's Castle Rock dump near the Cowlitz River on Chapman Road was closed and a transfer station with a capacity of 100 cubic yards per day was built on the site. Transfer of waste from the station to the Coal Creek Landfill was accomplished using a 50-cubic-yard drop box. The transfer station initially operated six days per week during fixed hours.

The Toutle-area dump, located off the Spirit Lake Highway (SR 504) on land owned by the Weyerhaeuser Corporation, was closed in August 1971, and the site was returned to Weyerhaeuser for use as a tree farm. The County then constructed a small transfer station in the unincorporated community of Toutle. The station, which had the same capacity as the Castle Rock facility, initially had no attendant and was open 24 hours a day. Waste was transferred to Coal Creek Landfill an average of three times per week, using the same method as at the Castle Rock facility.

The Ryderwood dump, located adjacent to the unincorporated community of Ryderwood, was also closed in 1971. After its closure, the area was served by a private hauler who hauled solid waste to the Castle Rock Transfer Station. For ten years following the closure of the Castle Rock Transfer Station in 1980, waste from Ryderwood was hauled to the Vader Transfer Station in Lewis County. Since 1990, the Ryderwood waste has been hauled to the Cowlitz County Landfill.

In 1972, Cowlitz County closed the small, 7-acre open dump located approximately 1 mile east of Cougar near Dog Creek, and returned ownership to the Weyerhaeuser Corporation. A private collector, who operated out of Clark County, provided waste disposal. The 1971 Cowlitz County Solid Waste Management Plan (SWMP) noted that the Cougar dump served only 60 families on a year-round basis, but that because of

tourist activities during the summer months, the Cougar area averaged 27,000 visitors per week.

The 38-acre Kelso dump site on the east bank of the Cowlitz River was closed in 1974. Scheduled initially for shutdown in 1975 when a new County facility was due to come on line, the Kelso dump was closed about six months early when a Kelso-owned dozer became permanently inoperable, making continued operation of the landfill uneconomical. Kelso solid waste was then sent to the Coal Creek Landfill until the Coal Creek facility was closed in May 1975.

The Coal Creek Landfill, located near the Columbia River sloughs at the mouth of Coal Creek, was the last of Cowlitz County's dump-type landfills. During the early 1970s, the Washington State Department of Ecology (Ecology) expressed concern that the landfill might become a source of water pollution. In response, Cowlitz County carried out a major upgrade of the Coal Creek Landfill in 1971. Improvements included construction of dikes around the landfill to prevent leachate and waste from polluting surface water, and an upgrade of operational procedures to include improved covering of waste and reduced hours for public access. A small public tipping area was also constructed at the edge of the landfill to provide the public with a dump site away from the working face of the landfill, especially important during wet weather.

Before 1969, the Coal Creek Landfill handled relatively small volumes of MSW. However, with the closure of the Longview and Kelso city dump sites, the annual volume of waste disposed of at Coal Creek increased significantly. Concern about surface water and leachate contamination continued. As a result, the Cowlitz Regional Planning Commission adopted a regional SWMP in 1971, which recommended development of a new, centrally located, regional sanitary landfill to be sited in the Longview-Kelso urban area. Following the opening of this new landfill in the Longview industrial area in May 1975, the Coal Creek Landfill was closed, covered, and regraded for eventual use as a park. After the Coal Creek Landfill was closed, the refuse from the Castle Rock and Toutle transfer stations was transferred to the new Cowlitz County Landfill until the transfer stations were closed in 1980.

8.2.2 Development of the Cowlitz County Landfill

The Cowlitz County Landfill is owned and operated by the County and is located in an industrial/heavy-manufacturing zone at 85 Tenant Way, Longview, Washington, near the confluence of the Cowlitz and Columbia rivers (see Figure 8-1). The landfill site occupies approximately 100 acres. An area of approximately 55 acres in the west and south parts of the site has been developed for landfilling and ancillary facilities. The surrounding area is used primarily for heavy industry.

Operations at the present landfill site began in 1975, and the site originally operated as a shredfill. A shredder reduced incoming waste to a uniform size, thereby reducing the volume of voids in the waste when placed in the landfill in an effort to increase landfill volume capacity. Shredding the waste was also intended to be the first step in conversion of waste to refuse-derived fuel for a proposed waste-to-energy facility.

The shredder was used at the Cowlitz County Landfill from 1975 until December 1982. By 1982, Cowlitz County had conducted a test burn of refuse-derived fuel in cooperation with Longview Fibre Company's hog-fuel boilers. The County also noted an increasing number of unsuccessful efforts by solid waste disposal facilities in the United States to produce and market refuse-derived fuel from municipal refuse.

In 1982, the cost-effectiveness of the shredding operation was questioned, and the County decided to shut down the shredder for one year to compare the cost of landfilling unshredded refuse to that of landfilling shredded refuse. Results showed shredding of waste to be significantly more expensive than direct landfilling. The 1985 SWMP recommended that the shredding operations be discontinued. Delivery of waste to the active area of the landfill by both public and commercial haulers continued until the public tipping facility near the entrance to the landfill was constructed in 1991.

In the summer of 1988, the southeast sector of the landfill site, which was reserved for future expansion, was prepared for stockpiling of dredge spoils. After dikes, inlet structures, and outlet piping were constructed, approximately 750,000 cubic yards of dredge material from the Columbia River was deposited. In 1989, an additional 300,000 cubic yards of dredge material was deposited. In 1991, 250,000 cubic yards was added; in 1993 another 450,000 cubic yards was added; in 1995, 234,000 cubic yards was deposited; and in 1997, 120,000 cubic yards was deposited.

In 1989, the County initiated engineering studies to expand landfill operations to the southern part of the site in accordance with the requirements of the Washington State Minimum Functional Standards for Solid Waste Handling (Washington Administrative Code [WAC] 173-304) (to be replaced by WAC 173-350). The County also prepared a plan for the closure of those parts of the landfill not meeting the requirements of the Minimum Functional Standards. The original landfill, Site A, was closed in November 1991. Cell 1 and Cell 2 were built in the early 1990s. Cells 1 and 2 were closed in 2000. Cell 3A was built in 1996 and is close to reaching its stand-alone capacity. Cell 3B was constructed in 2003 to facilitate filling the entire Cell 3 area. Cell 3B began accepting waste in August 2004. The landfill is now subject to the requirements of the Washington State Criteria for Municipal Solid Waste Landfills (CMSWL) (WAC 173-351). A transition permit was issued under WAC 173-351 in July 1995.

8.2.3 Current MSW Disposal

Waste is currently delivered to the Cowlitz County Landfill directly by the public and commercial haulers. The landfill has a single entrance with a lockable gate, which remains open only during business hours. Business hours currently are 7:30 a.m. until 5:30 p.m. daily, with reduced hours on major holidays. All vehicles are stopped at the gatehouse, questioned about the content of their loads, and directed to the proper disposal area. Site personnel direct self-haulers to the recycling and/or public disposal facility, and commercial haulers are directed to the active landfill area.

8.2.4 Cowlitz County Landfill Site Features

The main features of the Cowlitz County Landfill are support facilities, including an administrative office; scales and a scale house; maintenance, recycling, public-disposal, composting, sludge-processing, and moderate-risk-waste-processing facilities; environmental control systems; and environmental monitoring systems. Site features are depicted in Figure 8-2. Environmental controls were designed to meet or exceed Minimum Functional Standards and CMSWL, and are briefly described as follows:

Leachate-Management System—The leachate-collection system consists of drainage layer, a composite-liner system comprised of 2 feet of low-permeability soil below a flexible membrane liner, and a series of pipes that collect liquids accumulating within the drainage layer above the disposal cell liner. The system pumps leachate directly to the Three River Wastewater Treatment Plant, which is located west of the landfill site. An aeration lagoon exists in the northwest corner of the site and serves as a lined collection basin for the runoff from the 3-acre compost pad. Before 2003, the lagoon was also used for pretreatment of leachate, but this was discontinued following a study that determined that pretreatment was unnecessary. Leachate discharge to the regional sewage treatment plant is regulated by a State waste discharge permit (permit number ST6074).

Landfill Gas Control System—The landfill gas control system is designed to prevent off-site migration of methane gas generated by the decomposition of waste, to provide protection of on-site structures, and to provide control of emissions in accordance with CMSWL requirements. The landfill gas control system consists of a horizontal and vertical gas-collection system placed within the waste fill, a gas-extraction and flaring system, and a condensate-collection system. The condensate system discharges to the leachate-collection system. The landfill gas control system is installed in all the closed cells and will be installed in Cells 3A and 3B as new cells are filled. Order of Approval SWAPCA 92-1462R2, issued by the Southwest Air Pollution Control Authority, regulates the existing gas control system. The landfill gas control system can also be easily modified to deliver pressurized landfill gas for direct energy recovery to a neighboring industrial facility.

Surface-Water Management System—The system consists of a surface-water conveyance and discharge system as well as erosion- and sedimentation-control systems. One point of surface discharge is maintained for the entire 98-acre site. Surface water runoff is regulated by a facility Industrial Stormwater General Permit Number SO3-000754D.

Cover System—The system consists of a multicomponent barrier layer over the entire surface area of filled sections of the landfill. The geomembrane caps are underlain with either low-permeability soil or a geosynthetic clay liner for added control of infiltration, and overlain with a drainage layer and vegetative topsoil layer to control erosion.

Vector- and Bird-Control Programs—The programs are designed to minimize the danger that birds pose to local airports, as well as to reduce the populations of rodents and other disease-carrying organisms. The County has maintained U.S. Department of Agriculture Animal Damage Control personnel on site to implement and document the effectiveness of the bird-control program.

Recycling Facilities and Moderate-Risk-Waste Facility—The recycling facilities include a drop-off area for collection of mixed paper, cardboard, newspaper, glass, tin cans, plastic, aluminum, foam carpet pad, ferrous metal, appliances, yard debris, dimensional lumber, antifreeze, automotive and household batteries, and waste oil. In addition, a moderate-risk-waste-processing facility collects household hazardous waste, providing a mechanism to divert hazardous waste from the landfill.

The environmental monitoring program includes systems and procedures for quarterly monitoring of surface water, groundwater, landfill gas emissions, and leachate quality. The environmental monitoring programs, including monitoring procedures, laboratory analyses performed, and release-response provisions, are defined in the Operations Plan used for the landfill.

8.2.5 Compliance with Criteria for Municipal Solid Waste Landfills

Subsections of the CMSWL that are applicable to the Cowlitz County Landfill include Locational Restrictions, General Facility Requirements, Surface-Impoundment Standards, Landfilling Standards, Groundwater-Monitoring Requirements, and Closure/Post Closure Requirements. Compliance with these requirements is described below.

8.2.5.1 Locational Restrictions

Several locational restrictions are included in the CMSWL to prevent degradation of resources. Those that have the most significance to the Cowlitz County Landfill are:

Proximity to seasonal high level of groundwater—Groundwater elevations at the landfill fluctuate seasonally. Studies also indicate a relationship between water elevations

of the Columbia and Cowlitz rivers and the groundwater elevation at the landfill site. In compliance with CMSWL, the bottom of the lowest liner was constructed to be no lower than 10 feet above the seasonal high groundwater elevation established by Ecology.

Proximity to airport runway—The airport-setback standards established by CMSWL pertain to birds attracted to the landfill that pose hazards to aircraft. Because the landfill is located within 5,000 feet of an airport, inside the limit specified by the CMSWL and Minimum Functional Standards, the landfill was granted a waiver from the Federal Aviation Administration. As part of the waiver agreement, the County has taken steps to minimize bird attraction at the landfill by implementing a variety of bird-control measures throughout the years: habitat control, daily cover, cracker shells, overhead wires, scare-away propane guns, and ultrasonic noisemakers. The bird-control measures have been effective in minimizing the bird-to-aircraft hazard associated with the landfill's proximity to the airport.

Geologic stability—The landfill is located in an area of alluvial deposits determined to be compressible. This problem was overcome with the use of preload fill to induce settlement before construction of Cells 1, 2, and 3A. Extensive geotechnical-fault and hydrogeological-characterization reports were undertaken as part of the 1994 Cell 3 permitting process.

8.2.5.2 Plan of Operation

The Plan of Operation of the CMSWL relates to plans of operation, recordkeeping, reporting, and inspections. The Operations Plan currently in use for the Cowlitz County Landfill conforms to all requirements of the CMSWL. The landfill currently operates under a plan of operation reviewed and approved by the Cowlitz County Health Department in February 2007 through its designated agent, the Cowlitz County Department of Building and Planning (Building and Planning). The plan is updated with addendums and appendices as needed.

8.2.5.3 Landfilling Standards

The Landfilling Standards of the CMSWL include performance standards, design standards, and operation and maintenance standards. All cells except Site A of the Cowlitz County Landfill were designed to meet the design and performance requirements of the Minimum Functional Standards and the CMSWL.

Site A was constructed before the establishment of the Minimum Functional Standards; however, it closed under the requirements of the Minimum Functional Standards in 1991.

8.2.5.4 Surface-Impoundment Standards

Leachate-treatment lagoons were reconstructed in 1990 to conform to the requirements of the Minimum Functional Standards. The lagoons were enlarged and a geomembrane liner system was installed to provide approximately 750,000 gallons of storage. The modifications provided increased hydraulic and solids loading capacity to the

pretreatment system. During the summer of 2003, the lagoon system was modified following a study showing that the treatment aspect of the lagoon was unnecessary for leachate and was not required by the National Pollutant Discharge Elimination System permit. Following the changes, leachate now bypasses the pond and goes directly to the regional treatment plant. The lagoon continues to store and treat compost-pad runoff.

8.2.5.5 Groundwater-Monitoring Requirements

The Cowlitz County Landfill groundwater-monitoring program conforms to all relevant aspects of the groundwater-monitoring requirements of the Minimum Functional Standards and CMSWL. The groundwater-monitoring program is fully defined in the Landfill Operations Plan.

8.2.5.6 Operational Requirements

The following operating procedures are required in operating the Cowlitz County Landfill in accordance with Resource Conservation and Recovery Act (RCRA) Subtitle D and the CMSWL:

- Establishing an operating and recordkeeping procedure
- Providing for daily cover material over disposed-of solid waste
- Providing disease-vector control
- Maintaining a run-on/runoff control system for stormwater, and preventing a discharge of pollutants into surface water
- Implementation of procedures for detecting and preventing disposal of regulated hazardous wastes
- Prohibiting the disposal of noncontainerized liquids or sludges containing free liquids
- Implementation of a program of routine methane monitoring and control
- Ensuring that the landfill does not violate established air criteria
- Monitoring daily climatic conditions
- Weighing all incoming waste

8.2.5.7 Closure/Post-Closure Requirements

A closure/post-closure plan for the Cowlitz County Landfill was prepared in November 1990 to address the requirements of the Minimum Functional Standards, and is included in the Solid Waste Handling Permit Application. An updated closure plan was included

as part of Chapter 9 of the 2007 Operations and Maintenance Manual Update. Included in the plan are descriptions of closure activities, post-closure maintenance activities, environmental monitoring requirements, and end-use considerations. Also included as an element of the plan is the establishment of a financial assurance fund. Cowlitz County Resolution No. 84-257 established a solid waste fund in December 1984. The fund is available for capital purchase of solid waste equipment, land, and facility needs. Deposits to the reserve fund generated by tipping fees are considered adequate to meet the projected closure and post-closure costs. Separate closure and post-closure funds have been established for the old, unlined landfill and for the new, lined landfill. Total post-closure costs for the old, unlined landfill (Site A) and the new, lined landfill cells (Site B) have been estimated at $1.58 million and $7.12 million, respectively, in the annual update of the Financial Assurance Analysis (Cowlitz County Department of Public Works, 2007). Remaining Site B closure cost is estimated at $5.04 million in 2007. No deficiencies in meeting the CMSWL requirements for reserve accounts to fund the closure and post-closure maintenance of the Cowlitz County Landfill have been identified. The closure plan was updated as part of Chapter 9 of the 2007 Operations and Maintenance Manual Update prepared in February 2007.

8.3 Needs and Opportunities

Disposal needs and opportunities for the county fall into two categories. The first addresses the need for identification or development of future disposal facilities. The second addresses any improvements needed at the Cowlitz County Landfill.

8.3.1 Future Disposal Requirements

Landfills have a specific volumetric capacity for disposal of waste. Because of the high cost of facility development and the limited availability of land, this capacity must be treated as a valuable resource to be used efficiently. Conservation methods should be used to extend the landfill capacity, including, but not limited to, separation of wastes that might not require lined facilities, such as CDL debris; and improved compaction techniques for placing new waste in the landfill. Reduction and recycling of wastes are discussed in Chapters 3 and 4. Implementation of any or all of these methods may significantly reduce the amount of waste requiring disposal.

Table 2-10 presents the low, medium, baseline, and high growth rate projections for MSW to be disposed of at the Cowlitz County Landfill before closure. The baseline projection is the anticipated growth rate in the quantity of waste disposed of. If baseline projection remains constant, Cells 3A and 3B will reach capacity by mid-2012. Other scenarios are presented for purposes of comparison only.

8.3.2 Cowlitz County Landfill Improvements

The Cowlitz County Landfill will provide the county with needed disposal capacity through mid-2012. In order to provide reliable disposal services, the facility must meet or exceed the design and operational requirements of the CMSWL and RCRA Subtitle D. Therefore, the following activities have been or will be conducted to ensure the continued operation of the Cowlitz County Landfill:

1. Construction of Cell 3B was completed in 2003 at a cost of $2,133,847.

2. Continued operation of the landfill, including operation and maintenance of support activities and environmental control facilities.

3. Continue environmental monitoring and post-closure maintenance for Site A under Minimum Functional Standards requirements until 2014, and for Cells 1 and 2 until 2043. The leachate systems, surface-water-control systems, cover systems, and landfill-gas-control systems must be operated and maintained. The cost of post-closure maintenance and monitoring is approximately $38,000 per year for Site A. Monitoring of Cells 1 and 2 will continue under landfill operations until the site is formally closed in 2013.

4. Continue environmental monitoring of the lined portions of the landfill for a minimum of 30 years following closure. Groundwater- and leachate-monitoring costs are estimated to be $77,000 per year. Leachate treatment, gas collection, and stormwater-related costs as well as site maintenance are estimated to be $180,000 per year.

Another project that could be carried out at the landfill is the construction of a gas pipeline to facilitate recovery of landfill gas for use by nearby industries. Construction costs for the gas pipeline could cost between $1,000,000 and $2,000,000, depending on the distance to the end-user. The pipeline would generate revenue for the landfill from the sale of landfill gas.

8.4 Disposal Alternatives

The following alternatives are identified for disposal of MSW over the 20-year planning period.

8.4.1 Continue Disposal at Cowlitz County Landfill

The Cowlitz County Landfill will provide Cowlitz County with reliable disposal capacity through mid-2012. The current disposal fee is $37.30 per ton.

8.4.2 Site New County Landfill

At this point, the County is not investigating the possibility of siting a new County landfill as per the adopted policies of the Cowlitz County Commissioners. A present worth analysis was completed in December 2001 by Maul Foster & Alongi, Inc., comparing three disposal scenarios. The options evaluated were: Scenario A—Locate a landfill in the I-5 corridor in 2014; Scenario B—Longhaul 30 percent starting in 2003, 100 percent in 2020; and Scenario C—Longhaul 100 percent starting in 2014. Scenario A (an in-county landfill) was approximately $10 million or 30 percent cheaper than Scenario C (longhaul). With the issuance of the Waste Control, Inc. (Waste Control) Transfer Station permit in November 2002, 30 percent of the waste was destined to leave the system, which made all three scenarios invalid. Without 30 percent of the waste stream, the economics of Scenario A increased by 40 percent and Scenario C increased by 20 percent. A similar economic study was prepared by Paul Mathews for the SWAC which reported similar results (Integrated Utilities Group, 2001). In June 2002, Resolution 02-119 was adopted, which indicated that a new in-county landfill or incinerator will not be pursued as a future waste-disposal option. The resolution recognized several circumstances that led to the decision:

- Only one new MSW landfill had been sited in western Washington within the past 15 years and the facility took 12 years to permit it, due to legal and environmental challenges.

- RCW 70.95.060 required that an impermeable berm be constructed around the landfill to contain all materials inside the landfill.

- Significant increases in construction costs could result from the requirements of RCW 70.95.060.

- Several regional landfills existed with sufficient capacity to accept the county's waste and they had demonstrated a stable disposal cost.

- The scenarios evaluated in the financial study completed for the Public Works department were invalidated if waste from Waste Control were not included.

- Guidance in the form of a County resolution was needed for the development of this SWMP update.

Accordingly, the County decided to compromise and preserve the waste stream as one unit in order to keep rates at a minimum. As a result, the 2003 County-initiated Statement of Qualifications process focused on preserving the waste stream as one unit. Coupled with RCW 70.95.060, which requires an impermeable berm to be constructed around new landfills, the option to construct a new landfill in Cowlitz County is no longer economically viable.

8.4.3 Multi-County Facility

In the early 1990s, Cowlitz, Wahkiakum, and Pacific counties participated in Phase 1 of the Southwest Washington Inter-County Solid Waste Advisory Board spearheaded by Lewis, Grays Harbor, Mason, Jefferson, and Thurston counties. At that time, it was concluded that a multicounty disposal facility including Cowlitz and Wahkiakum counties would not be a worthwhile venture; however, future opportunities for joint, multicounty disposal alternatives should be considered if local and regional conditions change.

8.4.4 In-County Private Disposal Facility

The Weyerhaeuser Landfill is the only privately operated landfill in Cowlitz County. Although the Weyerhaeuser Landfill has the capacity to receive Cowlitz County MSW, because it is privately owned it has never formally been considered a potential receiving facility for county MSW. Despite this, changes in local and regional conditions may warrant investigation of this potential option in the future. The facility would require revisions to its permit to allow acceptance of MSW under CMSWL standards.

8.4.5 Export MSW Out of County

Transporting waste to out-of-county land disposal facilities is referred to as longhauling or waste exporting. The export of waste has been a nationwide trend since the 1980s as local landfills reached capacity and more stringent regulations governing their operation were put in place. In the Pacific Northwest, the trend toward waste export is influenced by climatic conditions. Leachate generation in landfills in western Washington is significantly higher than in landfills in eastern Washington, due to higher rates of precipitation. Several out-of-county disposal alternatives currently exist, including:

- Oregon Waste Systems' Columbia Ridge Landfill near Arlington in Gilliam County, Oregon
- Tidewater Barge Lines' Finley Buttes Landfill near Boardman in Morrow County, Oregon
- Rabanco's Roosevelt Landfill near Goldendale in Klickitat County, Washington

Costs for waste export, at minimum, are comprised of two components: landfill disposal cost, or tipping fee, and transportation cost. Other costs associated with these disposal options include services such as transfer-station development and operation, intermodal facility construction and operation, waste-reduction/recycling programs, and small-quantity hazardous-waste-removal programs.

Tipping fees at the regional landfills are approximately $17 to $21 per ton. The 2006 tip fee at Roosevelt Landfill is $17.50 per ton for MSW. The basic tip fee at Finley Buttes is $21 per ton for MSW; at Columbia Ridge the fee is $18 per ton. Transport fee is dependent on travel distance and other factors.

The cost of disposal of MSW varies widely throughout western Washington. In 2006, the average cost of MSW disposal in western Washington was $81.69 per ton. The average cost of MSW disposal for the four counties with active landfills was $71.65. The average cost of MSW disposal for the 14 counties that export was $90.83 per ton (Olson, 2006).

8.5 Recommendations

1. The Cowlitz County Landfill should remain open until it reaches capacity.

2. Preparation for additional disposal capacity should continue to ensure necessary disposal capacity for the 20-year planning period. The contract with Waste Control for waste-export through Waste Control's planned transfer station will address the County's disposal capacity needs through the 20 year planning period.

3. All disposal facilities in Cowlitz County must continue to be permitted and meet the Solid Waste Handling Standards and CMSWL for operation, closure, and post-closure. It is the responsibility of the Building and Planning to enforce compliance with the Solid Waste Handling Standards and CMSWL, operating permits, and SWMP elements. All landfills operating in Cowlitz County must continue to have reserve accounts to fund closure construction and post-closure maintenance and monitoring.

4. Cowlitz County and private waste-management enterprises should continue existing programs to ensure that toxic and dangerous materials do not enter disposal facilities. These programs should be implemented in accordance with the Cowlitz County Moderate Risk Hazardous Waste Management Plan, which is addressed in Chapter 10.

5. Cowlitz County should continue to monitor local industries for opportunities to partner in a landfill gas pipeline project for energy recovery of landfill gas generated by the Cowlitz County Landfill.

8.6 Chapter Highlights

- All cells except Site A of the Cowlitz County Landfill were designed to meet the design and performance requirements of the Minimum Functional Standards and the CMSWL.

- Preparation for additional disposal capacity should continue. The contract with Waste Control for waste export will address the County's disposal capacity needs through the term of the contract.

- Long-term landfill-capacity issues will be addressed through the longhaul transfer contract with Waste Control.

9 SOLID WASTE IMPORT AND EXPORT

9.1 Introduction

9.1.1 Purpose

The purpose of this chapter is to describe how Cowlitz County should respond to solid waste import and export activities. The chapter includes:

- A discussion of the regionalization of solid waste facilities and the corollary activity of solid waste import and export; the legal framework associated with the movement of solid waste; and the major regional solid waste disposal facilities operating in the Pacific Northwest.
- A description of current solid waste import and export activities in Cowlitz County.
- Identification of proposed Cowlitz County solid waste import and export activities.
- Identification of a process for responding to solid waste import activities.
- Identification of possible impacts associated with solid waste import and export activities, and mitigating measures.

9.1.2 Regionalization of Solid Waste Facilities

In the past, communities provided solid waste disposal primarily within small, local, publicly owned landfills. Most of these landfills practiced uncontrolled "open dumping" with few, if any, pollution controls. Such practices resulted in unsanitary conditions, methane explosions, and releases of hazardous substances to groundwater and the atmosphere. Consequently, municipal landfills make up about ten percent of the almost 12,000 sites currently on the Superfund National Priorities List.

Both national and state environmental regulations were enacted to control the disposal of non-hazardous waste. Subtitle D of the Resource Conservation and Recovery Act of 1976

(RCRA) encourages solid waste management practices that promote environmentally sound disposal methods. Specifically, RCRA Subtitle D establishes technical standards for the environmentally safe operation of solid waste disposal facilities.

The adoption in 1985 of state rule Chapter 173-304 of the Washington Administrative Code (WAC), the *Minimum Functional Standards* (MFS) *for Solid Waste Handling* (revised in 1988) brought about a comprehensive set of regulations for all solid waste handling facilities in the state. The MFS include standards for location and environmental protection, recordkeeping requirements, daily operations, closure standards, and requirements for a reserve account for financing closure and post-closure costs. The MFS were updated and clarified through new legislation in 1998 in a new rule, Chapter 173-350 WAC, *Solid Waste Handling Standards*. The new rule was written to address the change in waste management priorities and to address technological advancements in environmental protection at solid waste disposal facilities. In addition to the changes to the state regulations, new federal regulations were brought about through the *Solid Waste Disposal Facility Criteria*, 40 CFR 258. To address the new federal requirements, the Washington State Department of Ecology (Ecology) adopted a new set of rules governing landfills called the *Municipal Solid Waste Landfill Criteria*, Chapter 173-351 WAC in 1993.

A direct result of regulations requiring environmentally sound design, construction, operation, and closure of solid waste landfills was the tremendous increase in the cost of disposal. Many counties had no more than a few years' disposal capacity, and in almost all cases it was very difficult to find a site for a new landfill. Additionally, the costs of constructing and operating facilities to meet the MFS made it difficult to replace locally owned and operated landfills. As a result, private companies have responded by developing large landfills capable of handling wastes from several counties.

The development of large solid waste landfills has enabled local jurisdictions to consider the use of regional disposal options designed to serve the needs of multiple jurisdictions and private companies. Regionalization potentially offers significant benefits if facilities are sited, designed, and operated for maximum environmental protection. Possible positive impacts associated with export include: municipal solid waste (MSW) disposal as a variable cost, making it easier to see savings with reduction and recycling; cost savings associated with reduced regulatory burden; reduced long-term liability; extended life of existing local facilities; and lower costs as a result of economies of scale. Possible positive impacts associated with import include: lower cost of disposal; expanded tax base; expanded employment opportunities; and attraction of secondary development.

While regionalization may provide economic and environmental benefits, individual jurisdictions and communities may experience various costs or negative impacts. Possible negative impacts that a jurisdiction might experience hosting a regional facility include: lowered property values; additional traffic; additional regulatory burden; scenic impacts;

local quality of life impacts (noise and litter); and negative public perception hurting business development and tourism. Possible negative impacts associated with exporting to a regional facility include: monopolization of solid waste services; vulnerabilities associated with high import fees; transportation disruptions; a natural calamity at the site; and lack of control over regional facility operations.

9.1.3 Flow Control

Flow control is a practice historically used by communities that, through local ordinances, regulations, or other official directives, compels MSW haulers to process or dispose of waste at designated facilities. Currently, the movement of solid waste is protected under the commerce clause of the U.S. Constitution. Solid waste is considered to be a commercial product; therefore, jurisdictions have very limited authority to manage the interstate movements of waste.

In *C & A Carbone Inc. v. Town of Clarkstown NY,* 114 S. Ct. 1677, (1994), the U.S. Supreme Court issued a ruling on waste movement. The case involved a community's flow control ordinance that required waste haulers to bring all MSW to a town-selected transfer station and pay a tipping fee for this material. It was discovered that C&A Carbone, which collected and sorted recyclables, was sending residual waste from the sorting process to out-of-state disposal facilities, in violation of the town's ordinance. The Supreme Court ruled in favor of the recycler, stating that the flow control ordinance violated the commerce clause of the U.S. Constitution, which prohibits the interference with interstate commerce. The flow control ordinance was found to favor a single MSW processor and to exclude out-of-state and other in-state processors from the market.

In *United Haulers Association v. Oneida-Herkimer Solid Waste Management Authority* 550 U.S. ____ (2007), the U.S. Supreme Court issued a decision on local government flow control, ruling that a local ordinances that direct locally generated wastes to publicly owned waste facilities do not discriminate against interstate commerce. The Solid Waste Management Authority had created an ordinance directing waste to local publicly owned facilities and the United Haulers Association had filed suit in federal district court, arguing that by prohibiting the export of waste and preventing waste haulers from using less expensive out-of-state facilities, the ordinance conflicted with the dormant Commerce Clause. The Court found that the burden to commerce was incidental and was outweighed by financial, health, and environmental benefits.

Flow control through means other than government regulation has passed court challenges in cases where municipalities direct flow through contracts for collection services and where the local government is viewed as a "market participant" purchasing disposal services. Through market participation, local governments have been able to contract for or franchise collection and disposal services where the service provider is required to take waste to specific facilities for processing or disposal. In other cases,

municipalities have displaced local private haulers and have assumed responsibility for collection and disposal entirely; they are then allowed to direct the flow of all waste that is collected.

9.1.4 Major Regional Landfills

The need for environmentally sound, cost-effective solid waste disposal has resulted in the development of a system of large landfills owned and operated by private corporations. These regional facilities are rapidly replacing smaller, publicly owned and operated landfills that may not be able to afford to meet new environmental standards. In developing and siting major regional landfills, private companies have sought out sites that are isolated from urban development and located in areas that provide more inherent environmental protection through conditions such as drier climates and/or less sensitive wildlife species. In some cases, private waste management companies provide siting incentives to the host community. The major regional landfills developed to serve the Pacific Northwest primarily are as follows:

Columbia Ridge Landfill and Recycling Center—Located in Gilliam County, Oregon, the landfill is owned and operated by Waste Management, Inc. The facility is located on 2,000 acres of former rangeland and receives an average of 9 inches of precipitation each year. The landfill has an estimated capacity of 190 million tons, with additional acreage over which to expand. Currently the landfill receives solid waste from Portland, Seattle, and communities in eastern Oregon. The facility is approximately 180 miles from Cowlitz County and is accessible by rail, barge, and truck.

Finley Buttes Landfill—Located 13 miles southeast of Boardman in Morrow County, Oregon, the landfill is owned and operated by Waste Connections, Inc. The facility is located on 1,200 acres of rangeland and receives about 9 inches of rainfall a year. The landfill has an estimated capacity of over 100 million tons. Currently, the landfill receives waste from Clark County and areas in southeast Washington and northeast Oregon. The facility is approximately 205 miles from Cowlitz County and is accessible by rail, barge and truck.

Roosevelt Regional Landfill—Located in Klickitat County, about 5 miles northeast of Roosevelt, Washington, the landfill is owned and operated by Rabanco, an Allied Waste, Inc. company. The facility is on 2,005 acres, of which 380 acres will be developed into an active solid waste landfill; another 240 acres are proposed for a separate construction, demolition, and land clearing (CDL)/woodwaste landfill. The facility is located in an arid region receiving about 10 inches of rain a year and is accessible by rail, barge, and truck. The facility has an estimated capacity of 180 million tons and has a service area that includes Washington and the southern areas of Alaska and British Columbia. The distance between Cowlitz County and the Roosevelt Regional Landfill is approximately 180 miles.

Proposed Adams County, Washington, Landfill—Waste Management, Inc. has permitted a landfill in Adams County, Washington. No design information is available, but the site could have a capacity of 60 million tons. The facility has not yet been developed by Waste Management, Inc., since there is not sufficient demand for another regional facility. The proposed facility would be approximately 325 miles from Cowlitz County.

9.1.5 Long-Distance Solid Waste Transport

In order to utilize a regional solid waste facility, it is often necessary to transport solid waste long distances. The long-distance transport of solid waste can be accomplished using the following three modes of transport:

Truck Transport—The transport of solid waste by truck typically involves the use of tractor trailers hauling compacted solid waste in sealed containers. Truck transport is most cost-effective under 100 miles. Few if any supporting facilities are required to implement a truck transport system. Potential impacts associated with truck transport include wear and tear on roadways and bridges, increased truck traffic on haul routes, congestion, odor, accidents, and possible release of contents.

Rail Transport—Beyond a distance of 100 miles, rail transport begins to provide significant economies of scale. Rail transport requires significant up-front handling of the waste, such as loading waste containers onto rail cars at the intermodal yard and offloading rail cars at the landfill. Rail transport may or may not require truck transport at either end of the trip. Potential impacts associated with the transport of solid waste by rail include derailment and release of contents, noise, odor, and congestion created by road crossings.

Barge Transport—A single barge may hold as many as 42 sealed containers, resulting in a total shipment of 1,200 tons of solid waste. Barge transport requires the use of a loading and unloading dock, as well as truck transport at either end of the trip. Transportation backup systems must be developed during periodic maintenance of river locks. Potential impacts associated with barge transport include odor, noise, and release of containers into surface water bodies.

9.2 Existing Conditions

The following sections address Ecology planning guidelines relative to identification of current waste import and export activities.

9.2.1 Import of Waste to the Cowlitz County Landfill

The Cowlitz County Landfill serves as the principal disposal facility for MSW generated in Cowlitz County. The facility receives approximately 1,914 tons per year of imported MSW from Wahkiakum County, and 481 tons of imported MSW from Clark County (adjacent to the City of Woodland), for a total of 2,395 tons or approximately 2.2 percent of the total disposed of at the Cowlitz County Landfill in 2006. Currently, no interlocal agreements exist between Cowlitz, Wahkiakum, and Clark counties that acknowledge this import activity.

9.2.2 Import of Waste to the Weyerhaeuser Regional Landfill

Weyerhaeuser Company owns and operates a private industrial-waste landfill referred to as Weyerhaeuser Regional Landfill. The facility opened in November 1993 to provide capacity for the disposal of forest-product industrial waste generated by Weyerhaeuser, and is the only privately operated landfill in Cowlitz County. The facility is permitted to receive industrial waste and CDL waste. The facility received approximately 82,100 tons of industrial waste from sources outside the county in 2006, of which 23,300 tons originated outside of the state. The imported waste accounts for approximately 28 percent of the waste received at the landfill.

Because it is not approved for MSW and it is privately owned, Weyerhaeuser Regional Landfill has never formally been considered a potential receiving facility for Cowlitz County MSW, although it has the capacity to receive it. The facility would require revisions to its permit to allow acceptance of MSW under Criteria for Municipal Solid Waste Landfills standards.

9.2.3 Export of Cowlitz County Waste to Clark County

An estimated 264 tons of MSW was collected in 2004 by Waste Connections of Vancouver from both residential and commercial accounts in the Cougar area of the extreme southeastern corner of Cowlitz County along the Lewis River. Waste Connections transfers the waste to the Finley Buttes Landfill in Morrow County, Oregon. Currently, no interlocal agreements exist between Cowlitz and Clark counties that acknowledge this export activity.

9.2.4 Export of Cowlitz County Special Waste

The following special wastes are exported from Cowlitz County:

Biomedical Waste—Unknown quantities of biomedical waste are being collected and hauled to other counties for treatment and disposal. In addition, Stericycle collects

biomedical waste generated by the St. John Medical Center in Longview, and transports the material to Morton, Washington, in Lewis County, for treatment.

Industrial Sludge—Between 140 and 160 tons per month of industrial sludge generated by Noveon Kalama (formerly Kalama Chemical) is currently being land-applied by Fire Mountain Farms in Lewis County.

Waste Tires—Many local tire dealers and the Cowlitz County Landfill export waste tires to processors in Portland, Oregon, such as Tire Disposal & Recycling, Inc. It is not known how many tires are exported.

Petroleum-Contaminated Soil—Unknown quantities of petroleum-contaminated soil from underground storage tanks are being exported to the Hillsboro Landfill in Washington County, Oregon.

Dangerous Waste—Although not addressed by this solid waste management plan (SWMP), significant volumes of hazardous waste are exported to hazardous waste facilities outside Cowlitz County.

9.2.5 Recommendations Regarding Current Waste Import/Export Activities

- Current Cowlitz County solid waste import and export activities should be permitted to continue.

- Cowlitz County should develop interlocal agreements with Wahkiakum and Clark counties recognizing current solid waste import and export activities.

9.3 Recommended Waste Export Activities

As discussed in Chapter 7, the export of waste by Waste Control Recycling, Inc. (Waste Control) is currently being implemented based on the provisions of contracts with the County. This export activity represents the County's recommended alternative to the County landfill after its closure.

This alternative will provide for a disposal solution for MSW after the closure of the County landfill. It will utilize Waste Control's new transfer station as a point of consolidation of all MSW generated in the county. After consolidation of the waste, it will be loaded into leak-resistant containers and shipped to the Roosevelt Regional Landfill, in Roosevelt, Washington, via railroad, with other transportation as backup.

9.3.1 Proposed Export of County MSW

Cowlitz County has contracted with Waste Control to provide a disposal solution for MSW after the closure of the County landfill. This contract will utilize Waste Control's planned transfer station as a point of consolidation of all MSW generated in the county. After consolidation of the waste, it will be loaded into leak-resistant containers and shipped to the Roosevelt Regional Landfill, in Roosevelt, Washington, via railroad, with other transportation as backup.

As a contingency measure, Cowlitz County will negotiate emergency plans with both Lewis and Clark Counties for export of waste through their solid waste systems should the need arise in Cowlitz County.

9.4 Policy Issues Raised in the Importation of Waste

- Encourage a free market for access to disposal capacity.
- Evaluate solid waste import impacts and adopt mitigating measures.
- Restrict and discourage the importation of waste from all sources.

9.4.1 Encourage a Free Market for Access to Disposal Capacity

Cowlitz County could encourage a competitive free market for disposal capacity or other solid waste handling activities by not restricting the importation of waste. Such a strategy, if adopted by all counties in the state, may provide the lowest-cost service and the greatest flexibility for jurisdictions in choosing management options. In addition, it ensures that disposal options are available for those counties that cannot provide environmentally sound services because of high cost or a lack of suitable sites. At a minimum, facilities that accept imported waste must meet or exceed all applicable SWHS.

A risk associated with this approach is the possible consumption of in-county disposal capacity sooner than anticipated, and the burden of direct impacts, which may or may not be directly mitigated, on the importing jurisdiction.

9.4.2 Evaluate Solid Waste Import Impacts and Adopt Mitigating Measures

Cowlitz County could regulate imported waste received by private and public solid waste facilities in Cowlitz County. Solid waste import impacts created by a new or expanded solid waste facility would be identified through local land-use and regulatory requirements as part of the solid waste facility permitting process. The primary purpose of requiring agency review of solid waste import activities is to identify impacts and adopt appropriate mitigating measures. Conclusions developed during the land-use review or the permit process would be implemented by the solid waste facility owner/operator.

Legal risks are associated with this option. The commerce clause can be violated by a regulation that places an undue burden on out-of-state waste importation. In *City of Philadelphia v. New Jersey*, 437 U.S. 617 (1978), the Supreme Court said that even though a state regulation has a legitimate purpose, "it may not be accomplished by discriminating against articles of commerce coming from outside the State unless there is some reason, apart from their origin, to treat them differently." Therefore, it is important that a waste import regulation be based on objective considerations of public health and safety and of the environment. If the regulations are merely protectionist measures in disguise, they may be declared invalid (SCS Engineers and Cowlitz County Public Works, 1993).

9.4.3 Discourage Importation of Waste from All Sources

Solid waste disposal is a necessary public service, similar to sewer and water services. In addition, solid waste facilities are becoming increasingly difficult to site and are a finite resource in a jurisdiction. Disposal capacity, whether private or public, could be preserved as a resource for those in the jurisdiction. In-county disposal capacity could be protected through an outright ban on waste import.

There are several risks associated with this approach. First, banning the importation of waste may result in existing private landfills going out of business, unable to meet fixed costs on a limited amount of waste; or it may become uneconomical to upgrade an existing facility to meet more stringent environmental standards. Second, the termination of in-region waste flow may result in high political tensions making it impossible for jurisdictions to cooperate. And lastly, a prohibition on waste import may be challenged as a violation of the commerce clause and therefore unconstitutional. However, as discussed above, a ban against both out-of-county and out-of-state waste may be upheld if it was demonstrated that a waste import ban was designed to accomplish important local objectives.

9.4.4 Waste Import Policy Recommendations

1. Cowlitz County recognizes that current economic conditions and environmental regulations favor the regionalization of solid waste facilities. This trend is generally positive as long as regional solid waste facilities are sited, constructed, and operated to stringent environmental standards. Therefore, Cowlitz County will allow the import of solid waste into the county so long as the significant adverse impacts associated with the waste import activity according to the State Environmental Policy Act have been appropriately mitigated as determined by the lead agency. Compliance with all applicable regulations should also be required. The SWMP does not approve of solid waste

import to any particular site or location, but rather requires solid waste import activities to be evaluated as part of the solid waste facility permitting process.

2. Existing permitted solid waste facilities would be required to address solid waste import activities as part of their operating permit should they receive 10 percent or more of their annual solid waste from outside of Cowlitz County. The facility operator would be required to apply for an expanded operating permit to ensure that the waste import activity does not adversely impact public health and safety.

3. New or expanded solid waste facilities would be required to address the impacts associated with solid waste import activity during the land-use review or other applicable permit application process.

4. Tracking of the source, type, and quantity of solid waste will become part of the annual operating permit process undertaken by the Environmental Health Unit.

5. The movement of recyclable materials (solid wastes that are separated for recycling or reuse, such as papers, metals, and glass) into Cowlitz County is exempted from waste import policies.

6. Contingency plans should be developed with Clark County and Lewis County that mutually allow the use of waste transfer and export systems in the event of an emergency.

9.5 Waste Import Impacts and Mitigating Measures

In the event of solid waste import into Cowlitz County to either private or public solid waste facilities, the following potential impacts should be evaluated and mitigating measures specified as part of a solid waste permit for on-site impacts and/or a special use permit for off-site impacts, as well as other city/County ordinances. Permit or special use requirements would be enforced by the agency with jurisdiction.

9.5.1 Solid Waste Utility Impacts

With the development of regional solid waste facilities, a host community often desires to restrict the flow of waste from exporting jurisdictions or regions. A primary concern expressed by host jurisdictions is the impact to the local solid waste system. A waste import activity may have the effect of disrupting the daily operation of solid waste facilities, thereby creating a threat to the environment and public health and safety.

Mitigating Measures—As noted above, the U.S. Constitution provides the legal framework for regulating the movement of solid waste, reserving that right to Congress. A body of law has developed as states attempt to find out how far they can impinge on federal authority. The Court has addressed the question of whether a governmental action imposes greater economic burdens on those outside the state than on those within. In so doing, the Court has established a balancing test to determine whether the burden of interstate commerce is excessive in relation to the local benefit derived from restricting waste flows (*Pike v. Bruce Church, Inc.,* 1970). Therefore, before accepting out-of-county waste (both interstate and intercounty), waste import proposers must evaluate impacts to the Cowlitz County solid waste system. The import of waste that would result in the rapid closure of critical facilities or pose system disruptions should be prohibited. New import activities to the Cowlitz County Landfill should be carefully reviewed, as this could significantly impact the anticipated closure date of the landfill (SCS Engineers and Cowlitz County Public Works, 1993).

9.5.2 Nuisance Impacts

Nuisance impacts commonly associated with solid waste import activities include noise, litter, dust, and light and glare. Noise is generated off site primarily from traffic to and from the facility. Litter comes from waste blowing onto roads and adjacent properties during transportation to a disposal facility. Dust is generated from windblown, open soil areas along the transportation route. Light and glare from motor vehicles transporting material to a site can be an obtrusive impact onto properties adjacent to transportation routes. Light and glare can also create safety hazards or interfere with views.

Mitigating Measures

- Noise: Measures to mitigate noise impacts include placing noise limits on operational activities and individual pieces of equipment. If noise receivers are in close proximity to the proposed regional facility, the effectiveness of noise barriers should be investigated. Off-site noise impacts could be mitigated through strict enforcement of State motor vehicle noise emission regulations and reductions in the average vehicle travel speed.

- Litter: Measures to mitigate the impact from litter may include requiring litter crews to retrieve material collected along transportation routes adjacent to the waste importing facility. All waste transported may be required to be fully contained in a leak-proof container.

- Dust: Measures to mitigate the impact from dust may include requiring the watering of dirt roads when necessary and limiting driving speeds. Roads and other areas that might be exposed for prolonged periods could be paved, planted with a vegetative ground cover, or covered with gravel.

- Light and glare: Measures to minimize the impacts of light and glare created by transporting solid waste may include constructing fencing around roadways to deflect lights from headlights, or restricting operations to daylight hours only.

9.5.3 Environmental Impacts

Potential environmental impacts associated with waste import activities may include impacts to air and water quality, and the generation of odor. Air quality can be impacted by transportation activities that increase the concentration of air pollutants from exhaust emissions. Exhaust emissions typically include sulfur dioxide, carbon monoxide, oxides of nitrogen, and hydrocarbons. Impacts to water quality can occur from accidents along the transportation corridor that result in the spilling of waste in or near a body of water. Odor impacts can be generated by imported waste along transportation routes from leaking containers or temporary storage.

Mitigating Measures

- Air Quality: Air pollution emissions associated with the transportation of solid waste are typically considered insignificant. However, waste import projects should identify the expected emissions from the transportation activities and take realistic measures to satisfy air quality concerns.

- Water Quality: Solid waste should be imported to a disposal site in leak-resistant, sealed containers consistent with Ecology requirements. Routine maintenance, including pressure washes, and inspections of empty containers would also help to ensure against leaks.

- Odor: Odors can be mitigated by eliminating leaking, treating organic vapors, and minimizing storage time.

  – The containers should be sealed to prevent leaking during storage and transport. Seals should be required for the rear doors of the containers.

  – If production of problem odors is anticipated, the container can be fitted with an odor-removing filtration system using a carbon canister filter.

  – Storage time for imported waste can be minimized at any one location, on a first in/first out rotation

- All facilities importing waste should be required to develop, and show diligence in exercising, a waste screening program to ensure that incoming loads of waste do not contain dangerous or hazardous waste or other types of waste determined by the County and/or other permitting agencies to be unacceptable at the facility.

9.5.4 Transportation Impacts

Additional traffic generated by a regional solid waste facility could cause congestion on local roads and thereby increase travel time for local residents.

Mitigating Measures

- All facilities importing waste should consider existing traffic levels on haul routes, and the capacity of these roadways to handle additional truck traffic. In some cases it may be necessary to improve roadways or adjust haul routes or schedules to mitigate potential impacts.

- Waste import projects should review all principal transportation modes, specifically rail, barge, and truck.

9.6 Waste Export Impacts and Mitigating Measures

In light of the Waste Control contract for a new transfer station/longhaul disposal alternative, the impacts due to the export of all of Cowlitz County's MSW should be evaluated, and mitigation measures should be considered. Waste exporting has many of the same nuisance, environmental, and transportation impacts to the public that are discussed above for waste importing. Additional impacts to recycling; vulnerability to system interruption; Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) liability; and system funding as a result of exporting activities are discussed below.

9.6.1 Export Impact on Recycling

Communities with their own municipally owned landfills or incinerators may be negatively impacted by recycling success, in that they may no longer be receiving enough tipping fee revenues to cover fixed costs. In contrast, a community that pays "by the ton" for disposal at private regional landfills has an incentive to encourage recycling because every dollar not spent at the landfill is a dollar that might be saved or used to support recycling.

Mitigating Measure—Under the future export scenario, the County must ensure that the disposal-services contract with the landfill operator contains incentives to maximize recycling activities by setting no minimum volume of waste that must be shipped to the facility.

The proximity of the new Waste Control transfer station to the existing Waste Control MRF could promote more efficient recycling of materials recovered at the transfer

station. Since both facilities are operated by the same company, there could be an increased awareness and effort in the separation of potentially recyclable materials that are dropped off at the transfer station. Transfer station operators can then easily direct these materials to the adjacent MRF for sorting.

9.6.2 Physical Vulnerability

With the closure of local landfills and the continued reliance on a few large regional landfills, communities may be faced with the prospect of service disruptions should any element become inoperable. A service disruption for the disposal of solid waste can become a catastrophic event in a short period of time and can result in a public health emergency.

Mitigating Measure—When Cowlitz County implements the export of solid waste, the contract for disposal services must identify alternative disposal plans, including other routes and modes of transportation.

Cowlitz County should ensure that the Waste Control contract provides for the continued disposal of MSW in the event of an interruption of the disposal of waste at the Roosevelt Regional Landfill.

9.6.3 Future CERCLA Liability

Under CERCLA, any landfill operator faces potential liability for future environmental damage from waste disposed of at the facility. Cowlitz County currently has this liability with the existing landfill, even though there have been no issues to date.

A jurisdiction using a large regional facility could still be held liable for future environmental damage under CERCLA. Since there are other jurisdictions and companies that use the facility, the liability could be shared. Few mechanisms exist to provide control over regional facility operations.

Mitigating Measure—In order to reduce the potential for future liability under CERCLA, Cowlitz County should continue the existing dangerous waste screening program for materials being received at the County landfill. The screening program will reduce the likelihood that hazardous materials are disposed of in the landfill by making employees and the public aware of banned wastes.

Any regional solid waste facility used by Cowlitz County must meet or exceed all SWHS requirements. Provisions may be made in the contract for services for periodic, independent environmental audits. Regional solid waste facilities can provide significant

environmental benefits if they are designed and operated for maximum environmental protection.

9.6.4 Financial Impacts on Existing System

The export of waste from Cowlitz County or its cities to a regional facility may have the effect of significantly reducing revenues needed to support County solid waste facilities. It might also reduce bonding capacity, or the ability to fund a closure reserve.

Mitigating Measure—Analysis of the economic impacts of the future waste export scenario shows that total operating costs will remain consistent with current levels, including provisions for closure of existing solid waste landfills.

Under the contract with Waste Control, disposal of MSW at the County's landfill will continue until such time as the landfill has reached permitted capacity. This contract will ensure that there are adequate funds for the closure and post-closure costs of the landfill.

9.7 Chapter Highlights

- There are adequate systems in place in Cowlitz County to deal with the import and export of solid waste.

- Additional mitigation measures should be considered when the County transitions to a longhaul transfer system, which would export all of the county's MSW to a regional landfill in eastern Washington or Oregon. This would include consideration of impacts to recycling, vulnerability to system interruption, CERCLA liability, and system funding.

- Cowlitz County should develop contingency plans with neighboring counties to allow for emergency export or import, depending on the situation and use of transfer/long-haul systems, should short term system issues develop.

10 SPECIAL AND INDUSTRIAL WASTE

10.1 Introduction

Special wastes are materials that require special or separate handling due to their unique characteristics, such as bulk, water content, or dangerous constituents. Special wastes discussed in this chapter are:

- Construction, demolition, and land clearing (CDL) waste
- Agricultural waste
- Auto hulks
- Asbestos wastes
- Petroleum-contaminated soil
- White goods
- Tires
- Biomedical wastes
- Biosolids
- Household hazardous waste (HHW)

Industrial solid waste is defined as waste by-products from manufacturing operations such as scraps, trimmings, packaging, and other discarded materials not otherwise designated as a dangerous waste under Washington Administrative Code (WAC) Chapter 173-303. The primary industrial waste in Cowlitz County is forest-products industry waste. This chapter discusses the management needs and opportunities associated with special waste and industrial waste and recommends management strategies to encourage recovery and reduce environmental impacts.

10.2 Construction, Demolition, and Land Clearing Waste

10.2.1 Existing Conditions

There are several facilities in Cowlitz County that process CDL waste, including the following:

10.2.1.1 Construction, Demolition, and Land Clearing Waste Recycling Facilities

Lakeside Industries

Lakeside Industries is located in Longview at 500 Tennant Way. Lakeside accepts approximately 8,000 tons of asphalt per year, depending on the amount of activity in the community each year. The fee is $5.00 per ton for reprocessing of asphalt from sources throughout the county.

Storedahl & Sons

Storedahl & Sons accepts approximately 1,000 tons of clean concrete rubble per year, at a charge of $5.00 per ton. The material is crushed for use as road-base material, using a standard rock crusher at the Coal Creek Pit.

Waste Control, Inc.

The Waste Control Recycling, Inc. (Waste Control) material recovery facility (MRF) is located at 1150 Third Avenue in Longview, Washington. Part of the facility is dedicated to the processing of mixed and source-separated CDL waste. It is estimated that Waste Control processes between 300 and 600 tons of CDL waste per month. It charges $8.00 per ton for concrete, asphalt, and brick, which is crushed and used for road-base material; $25.00 to $30.00 a ton for "clean" wood; and $39.30 a ton for mixed loads.

Swanson Bark

Swanson Bark accepts clean demolition wood and brush at a charge of $8.00 per truckload from the community. This material is combined and shredded with other wood residuals received from around the northwest and processed into hog fuel and bark mulch, and added to soil for sale as topsoil. These products are marketed in 47 states. The facility processed approximately 292,000 tons in 2004, with most of the material originating from outside Cowlitz County.

Pacific Fiber

Pacific Fiber processes wood residuals from the lumber industry around the Pacific Northwest. The residuals are made into wood chips for the paper industry, shredded into bark mulch, shredded and added to soil for sale as topsoil, and shredded into hog fuel. The bark mulch, soil, and hog fuel are wholesaled throughout Washington, Oregon, and California. Tonnage of material processed by the facility in 2004 has not been estimated. Some of the wood residuals that are processed at the facility are classified by the State of Washington as solid waste.

10.2.1.2 Construction, Demolition, and Land Clearing Waste Disposal Facilities

Cowlitz County Landfill

In 2004, the landfill accepted approximately 5,529 tons of CDL waste. The tip fee for disposal of CDL waste is the same as for all other materials, $37.30 per ton.

Weyerhaeuser

Weyerhaeuser processes its own CDL waste and accepts, sorts and processes CDL waste from pre-approved third parties for use in its landfill. Weyerhaeuser seeks CDL waste from outside sources because it acts as an industrial waste stabilizer, enhancing the landfill stability and drainage as well as providing a small source of revenue from the recovered recyclables. In 2004, Weyerhaeuser disposed of approximately 20,000 tons of CDL waste from outside parties at the facility.

10.2.2 Needs and Opportunities

There appear to be adequate facilities for the processing and disposal of CDL waste in Cowlitz County at a variety of price levels. Pricing for sorted CDL waste such as asphalt, concrete, and wood encourages recycling and reflects the fact that it can be reused. In the event of the closure of the Cowlitz County Landfill, there are appropriate disposal options remaining for the economical disposal of CDL waste.

10.2.3 Alternatives

10.2.3.1 Status Quo

This no-action alternative assumes the continued handling of CDL waste by the private sector with minimal involvement on the part of Cowlitz County.

10.2.3.2 Enhanced Reuse and Recycling Opportunities

There is a CDL waste recovery system in place in the county. Existing processors have developed the capability to recover both source-separated and mixed loads of CDL waste. Recovery of these materials could be enhanced through distribution of educational materials at local builders' associations, contractors, and haulers.

CDL waste processors can continue to promote source separation through reduced tipping fees, which provides contractors and haulers with an economic incentive to balance the increased cost of handling materials. Cowlitz County can further this effort by working actively with construction/demolition contractor associations and permitting agencies to promote the development of a recovery/disposal plan before large construction and demolition projects begin.

Several communities in the United States have begun incentive fees for the disposal of construction and demolition waste. In several variations of this program, contractors pay a higher fee for a building permit, which specifies a percent diversion. At the end of the project the contractor must present evidence that the diversion percentage is met or exceeded, and then a portion of the building permit fee is returned. The fees are typically determined on the value and type (new construction or remodeling) of the construction project.

10.2.3.3 Recommendations

Cowlitz County should collaborate with private CDL waste processors to develop educational materials for distribution to local builders' associations, contractors, haulers, and residences. The County could also sponsor a pilot project designed to demonstrate the feasibility of source separation of materials on the construction site. The County and incorporated cities could jointly investigate the implementation of diversion incentives for CDL waste generated by construction projects.

10.3 Agricultural Wastes

Agricultural wastes result from the production of agricultural products, which include crop-processing waste and manure. Agricultural wastes are defined in WAC 173-350-100 as: wastes from farms resulting from the production of agricultural products including but not limited to manures and the carcasses of dead animals weighing each or collectively in excess of 15 pounds.

10.3.1 Existing Conditions

Most of the agricultural activity in the county occurs in the Woodland Bottoms area, adjacent to the community of Woodland. The principal agricultural activities in the Woodland Bottoms area are dairy farming, berry farming, flowers, and vegetable crops such as sweet corn, green peas, and carrots. Another area with significant agricultural activity is the Delameter Valley, which has a number of large chicken-raising facilities. In total there are approximately 5,000 farms in the county, which generated approximately 136,191 tons of agricultural waste in 2002 (see Table 10-1). The amount of agricultural waste generated was estimated from the county's estimated crop acreage and livestock numbers applied to a waste-generation rate developed for each unit, as shown in Table 10-1.

Agricultural wastes are a significant source of organic material. Typically, very little of this material is disposed of at a solid waste disposal facility. The typical current practice is to return as much of the material as possible to the soil. On-site agricultural waste disposal can be problematic in areas that are close to bodies of water, particularly situations involving livestock.

The landfill does accept individual animal carcasses at $7.00 per carcass, but encourages individuals to use rendering services that provide free pickup services.

Table 10-1
Agricultural Wastes

CROP OR LIVESTOCK	ANNUAL WASTE GENERATION FACTORS[1]	NUMBER OF UNITS[2]	ANNUAL TONNAGES
Grains	1.5 tons/acre	500 acres	750
Hay and Pasture	0.5 tons/acre	1,900 acres	950
Berries	2.0 tons/acre	450 acres	900
Vegetables	2.0 tons/acre	630 acres	1,260
Sod[3]	0.5 tons/acre	50 acres	25
Beef Cattle	1.0 tons/head	2,800 head	2,800
Dairy Cattle	2.0 tons/head	400 head	800
Hogs[3]	0.3 tons/head	200 head	60
Sheep and Lambs[3]	0.2 tons/head	200 head	40
Goats[3]	0.2 tons/head	175 head	35
Horses	1.5 tons/head	500 head	750
Llamas[3]	0.2 tons/head	50 head	10
Chickens	47.0 tons/1,000 birds	2,700,000 birds	126,900
	TOTAL TONS PER YEAR		135,280

NOTES:
[1]California Solid Waste Management Board. 1974. Solid waste generation factors in California. Bulletin Number 2.
[2]Fredricks, G. 2005. E-mail correspondence (re Washington State Department of Agriculture statistics) with E. Bakkom, Maul Foster & Alongi, Inc., Portland, Oregon. March 8.
[3]Waste generation rate estimated from values for similar crops or livestock.

10.3.2 Needs and Opportunities

Agricultural wastes do not present a significant problem for the Cowlitz County solid waste system, since most of the material is returned to the soil. However, opportunities may exist to assist farmers engaged in intensive livestock production with the management of manure from chickens and dairy cattle. The large volumes of high-quality compost feedstock could be used in combination with woodwaste and dredge spoils to create a marketable compost product for the general public as well as the agricultural community.

10.3.3 Alternatives

Because agricultural wastes are not a significant problem in Cowlitz County, the alternatives discussed in this section would take advantage of opportunities for recovery and use of agricultural waste.

10.3.3.1 Status Quo

This no-action alternative reflects the status quo by continuing to rely on the management of agricultural wastes by farmers and ranchers at the point of generation. Current practices do not produce large quantities of agricultural wastes that require disposal off the farm. However, this alternative ignores possible opportunities for intensive use of the large amount of organic waste generated by dairy and chicken operations.

10.3.3.2 Agricultural Compost Study

Cowlitz County could research the possible development of a commercial compost facility that could take advantage of the large quantity of organic waste generated in the county by the local forest-products industry, river dredging projects, and agricultural activities. If combined and composted, the materials would produce a high-quality compost product for topsoil production, farms, tree plantations, and private gardens.

10.3.4 Recommendations

1. Because agricultural wastes are being handled effectively, the County should encourage farmers and ranchers to continue their current waste-management practices.

2. In addition, if the agricultural community or commercial interests show an interest, it may be possible to use agricultural wastes in combination with other waste streams to produce a high-quality compost product. If such a venture were to be successful, it would require active involvement on the part of the agricultural community. Cowlitz County should conduct a study investigating possible arrangements that would lead to enhanced composting of agricultural wastes.

10.4 Auto Hulks

Auto hulks are the entire body of a junked automobile. Junked automobiles are an important source of ferrous steel scrap. The Institute of Scrap Recycling Industries estimates that in 1998, 92 percent of junked cars were recycled nationwide.

10.4.1 Existing Conditions

In Cowlitz County, automobile hulks are currently accepted by a number of licensed auto hulk companies for the reuse of parts and the recycling of scrap metal. Markets for auto hulks are located in Vancouver and Tacoma, Washington, and in Portland, Oregon. The Cowlitz County Landfill does not accept auto hulks; however, pieces of automobiles occasionally appear in the waste stream. An unknown quantity of junked automobiles is illegally disposed of in the county every year. Abandoned vehicles in right-of-ways of local roads are handled by local police and public works departments. Vehicles abandoned on state highways and I-5 are handled by the State Patrol and the Washington Department of Transportation. Hulks abandoned elsewhere are handled by local abatement officers in Kelso and Longview, or by the County Building and Planning Department.

10.4.2 Needs and Opportunities

Because illegally dumped auto hulks are not common in Cowlitz County, they are not considered a significant solid waste problem there. Because of this, no alternatives are proposed.

10.4.3 Recommendations

Because auto hulks are being handled effectively by the private sector, the County should continue to encourage existing practices.

10.5 Asbestos Wastes

Asbestos is a group of naturally occurring minerals that have a fibrous structure and heat-resistant properties. These unique properties allow asbestos to be made into useful products but also allow it to break down into microscopic fibers that can become airborne. When inhaled by humans, asbestos can cause lung cancer, mesothelioma (a cancer of the chest and abdominal linings), and asbestosis (irreversible lung scarring that can be fatal). Depending on its physical state, asbestos can be classified as friable or nonfriable. Friable asbestos can easily break apart and become airborne, and thus it presents a much greater risk to human health, while nonfriable asbestos has less of a tendency to break apart.

10.5.1 Existing Conditions

Relatively small quantities of asbestos wastes are disposed of in Cowlitz County, typically from building-demolition activities and pipeline-replacement projects. Asbestos is considered nonhazardous when properly encapsulated. Asbestos handling is regulated

by the Southwest Clean Air Agency; asbestos disposal is regulated by the Cowlitz County Public Works Department at the Cowlitz County Landfill.

The Cowlitz County Landfill is licensed to accept asbestos waste when the waste is triple-bagged in plastic and placed in the bottom of cells to avoid being damaged and opened by the compactor. In 2006, approximately 13.5 tons of asbestos was disposed of at the Cowlitz County Landfill. The amount of asbestos disposed of has decreased greatly since peaking in the 1990s, when most asbestos was removed from schools and industrial facilities. As an example, in 1993, 1,040 tons of asbestos was disposed of at the Cowlitz County Landfill.

Handlers of asbestos must be certified by the State of Washington, which allows them to also dispose of abated asbestos materials at permitted facilities. Prior to bringing any asbestos to the landfill, licensed asbestos contractors are required to provide 24-hour notice and to identify the amount of asbestos to be disposed of, the method of containment, and the name and location of the generator. Placement of asbestos in the landfill is recorded in case it is necessary to open closed parts of the landfill at a future date.

10.5.2 Needs and Opportunities

The management and disposal of asbestos waste is not currently considered a problem in Cowlitz County. The current contract with Waste Control includes provisions for the handling of special wastes through the new transfer station; this will include asbestos handling when properly prepared.

10.5.3 Alternatives

The current handling of asbestos at the landfill is adequate to meet the County's current needs, and future needs will be addressed by the contract between Waste Control and Cowlitz County. Weyerhaeuser Regional Landfill has requested the ability to receive asbestos material and if approved, it would provide an alternate disposal location for asbestos in the future.

10.5.4 Recommendations

Because asbestos is currently being handled effectively, the County should maintain existing asbestos-disposal practices. Management of asbestos should be shifted to the transfer station, in accordance with the contract with Waste Control, so that future appropriate handling and disposal of this material are guaranteed.

10.6 Petroleum-Contaminated Soil

The primary statute governing cleanup of petroleum-contaminated soil in Washington state is the Model Toxics Control Act (MTCA), Chapter 70.105D Revised Code of Washington (RCW). Chapter 173-340 WAC contains regulations to implement MTCA, including sections on corrective action requirements for leaking underground storage tanks and on cleanup standards.

It is possible that lead, benzene, polycyclic aromatic hydrocarbons, or polychlorinated biphenyls (PCBs) could also be present in petroleum-contaminated soil, which could trigger a designation as dangerous waste. Treatment, transportation, and disposal of dangerous wastes are subject to the State dangerous waste regulations, Chapter 173-303 WAC. Dangerous wastes can be transported only to specifically permitted facilities for treatment, storage, or disposal.

Under the Minimum Functional Standards (MFS), petroleum-contaminated soils that are not dangerous wastes are called "problem wastes" as defined in Chapter 173-304-100 WAC. The MFS do not have specific treatment or disposal standards for problem wastes.

The Washington State Department of Ecology's (Ecology) rule Chapter 173-340 states that petroleum-contaminated soil that contains contaminants at MTCA Method A cleanup standards or lower are to be regulated as solid wastes.

10.6.1 Existing Conditions

Currently, petroleum-contaminated soil considered "dangerous waste" is either treated on site, treated off site, or transported to out-of-county landfills that can legally accept "dangerous waste." Most material treated off site goes to the Woodworth & Co. thermal desorption facility in Lakewood, Washington, or to the Fife Sand and Gravel bioremediation facility in Fife, Washington. The nearest landfill that accepts petroleum-contaminated soil considered "dangerous waste" is the Chemical Waste Management facility in Arlington, Oregon, operated by Waste Management, Inc. "Dangerous waste" is also accepted at the US Ecology, Inc. landfill in Grand View, Idaho.

Cowlitz County Landfill and the Weyerhaeuser Regional Landfill accept petroleum-contaminated soil that does not exceed MTCA A cleanup levels and uses them as daily cover.

10.6.2 Needs and Opportunities

Because there is an adequate system in place in Cowlitz County to manage petroleum-contaminated soil considered "dangerous waste" as well as petroleum-contaminated soil

that does not exceed MTCA A contamination levels, there is no need to change the status quo.

10.6.3 Recommendations

1. The hierarchy established by Ecology should be used to select appropriate treatment methods for petroleum-contaminated soils generated in Cowlitz County.

2. The Cowlitz County Landfill should not accept petroleum-contaminated soil that exceeds MTCA A contamination levels. Treated or untreated contaminated soil that does not exceed MTCA A contamination limits can be used as daily cover at the Cowlitz County Landfill.

3. Management of petroleum-contaminated soil currently directed to the landfill should be shifted to the transfer station, in accordance with the contract with Waste Control, so that future handling and disposal of this material are guaranteed.

10.7 White Goods

The term "white goods" refers to large appliances such as refrigerators, washers, and dryers. These items typically contain large amounts of steel and are a traditional source of ferrous scrap. Because these wastes are very bulky and extremely difficult to compact in a landfill, they consume significant landfill space.

There are two environmental problems associated with recycling white goods: the handling of PCBs and the recovery of chlorofluorocarbons (CFCs). PCBs are present in the electrical capacitors of some appliances produced or repaired prior to 1979. Because these capacitors leak PCB-contaminated oil when shredded at steel-shredding facilities, scrap dealers no longer accept appliances known to contain PCBs. Starting July 1, 1992, the Clean Air Act prohibited releasing refrigerants into the atmosphere; thus, refrigerants must be recovered before disposal of refrigeration and air conditioning equipment and other appliances.

10.7.1 Existing Conditions

The Cowlitz County Landfill charges a $5.00 handling fee for each white-good item received. White goods are set aside in an area adjacent to the multi-material drop-off center. From this staging area, the items are sorted—components of white goods containing PCBs are removed for proper disposal, units with CFCs are set aside, and all remaining items free of PCBs and CFCs are recycled. White goods containing CFCs are

collected and hauled by St. Vincent de Paul to its Eugene, Oregon, location, where the CFCs are properly collected for recycling and the steel is scrapped.

There are also a number of private companies in the county that accept and recycle white goods.

10.7.2 Needs and Opportunities

An adequate system exists for the recycling and disposal of white goods, including those containing CFCs and PCBs. The contract with Waste Control provides for the management of white goods at the transfer station so that adequate services are guaranteed.

10.7.3 Recommendations

Because an adequate system is currently in place to address CFCs and PCBs, the Cowlitz County Landfill should continue to accept white goods, including those containing PCBs and CFCs. The County should establish a plan for the management of white goods at the transfer station prior to the County landfill closing.

10.8 Tires

Waste tires present a variety of management problems, ranging from storage to disposal. The storage of tires may present a potential fire hazard, and tires provide protected spaces that encourage the breeding of rodents and mosquitoes. The disposal of tires into sanitary landfills can lead to problems. Because of their bulkiness and resilience, tires tend to rise to the surface, damaging the cover materials, which allows water to seep into the landfill. Because of this, Cowlitz County hauls tires collected at the landfill to tire-processing facilities.

10.8.1 Existing Conditions

Ecology estimates that each person in the state generates one waste tire annually. In Cowlitz County, this would result in the generation of over 95,000 waste tires requiring disposal each year (2004 figures). In 2004, the Cowlitz County Landfill accepted 181 tons of tires (approximately 18,100 tires, assuming 100 tires per ton), charging $1.00 per passenger tire and $5.00 per truck tire. Customers with tires on rims are charged $4.00 for each tire; the landfill removes the rims for scrap. Tires accepted at the landfill are shipped to Tire Disposal and Recycling, Inc. in Clackamas, Oregon. Retail tire sales stores also receive significant quantities of used tires that are exchanged during the purchase of new tires. The quantity handled by these retail stores is not known.

The two closest waste tire processing centers are located in the Portland region—Tire Disposal and Recycling, Inc. in Clackamas, and Waste Recovery in Portland. Both facilities charge $1.00 per automobile tire and $5.20 per truck tire.

WAC 173-350-350 provides storage requirements for tire piles. The U.S. Uniform Fire Code also regulates tire piles, since they present a fire hazard.

10.8.2 Needs and Opportunities

Assuming that 95,000 waste tires are generated annually in Cowlitz County and that approximately 15,800 tires are being handled at the Cowlitz County Landfill, and despite the fact that a large number of tires are disposed of by retail stores, it is possible that some tires are being disposed of illegally. Landfilling of tires is undesirable because it consumes valuable landfill space, especially since opportunities do exist to process the tires at a marginally higher cost.

Waste tires represent a good alternative fuel source, either whole or chipped. The heating value of tires is between 12,500 and 14,000 British thermal units per pound (Btu/lb), which compares to about 12,000 Btu/lb for coal. Tires are also moderate in both sulfur and ash content compared to coal, and do not adversely affect the quality of stack emissions. The most promising development in scrap tire incineration is the shredded tire chip, commonly called tire-derived fuel or TDF. An increasing number of cement kilns and steam-generating boilers routinely burn TDF as a supplemental fuel. Most problems associated with the use of TDF stem from the inability of tire processors to deliver on a dependable schedule.

The future disposal of tires has been included in the Waste Control contract with Cowlitz County to ensure options for proper disposal of waste tires by county residents.

10.8.3 Alternatives

The County has several alternatives for the handling and proper disposal of waste tires:

- Status quo
- Tire processing plant at the Cowlitz County Landfill
- Additional tire drop-off site
- Education and promotion

10.8.3.1 Status Quo

Under the no-action alternative, waste tires would continue to be collected at the Cowlitz County Landfill and hauled to the Portland area for processing, along with continued collection at retail tire stores.

This alternative does not address the issue of illegal disposal and stockpiling of tires, which present both a fire risk and a health hazard.

10.8.3.2 Tire Processing Plant at the Cowlitz County Landfill

The County may want to investigate the possibility of investing in a slow-speed shear shredder to reduce whole tires to smaller pieces. In a single pass, a tire shredder would produce tire strips from 2 to 4 inches wide and up to one-third the length of the tire casing. Without further treatment, this product is suitable only for landfilling, providing better compaction and improving surfacing problems typical with landfilled tires. For smaller, uniform chip sizes, the first-pass product must be screened and returned to the shredder to produce a uniform output of 2-inch chips. These uniformly-sized chips can be used as a road-base material at the landfill site, sold as a ground cover to control dust at other industrial sites, or used as fuel.

Initial equipment costs would range from $216,000 for a basic shredding machine to $684,000 for a plant designed to produce a controlled-size chip. Without a much larger secure tire supply and the necessary markets, very large subsidies would be required for a tire-processing plant at the Cowlitz County Landfill to be financially feasible. Should investment costs significantly increase, the disposal charge for tires and the problems associated with illegal tire disposal or stockpiling would unquestionably increase. For these reasons, procurement of a tire shredder is not considered a viable alternative at this time.

10.8.3.3 Additional Tire Drop-Off Site

Cowlitz County could establish a tire collection drop box at the Toutle transfer station. A disposal cost would be charged to cover the cost of handling and transport to a waste tire processor.

10.8.3.4 Promotion and Education

Cowlitz County could establish an education campaign to inform businesses and the public that most tire piles and all tire dumping is illegal. The campaign should identify appropriate disposal or recycling options in the region.

Enhanced regulation of tire piles by the County health authorities and Prosecuting Attorney would help to reduce stockpiling.

10.8.4 Recommendations

1. Cowlitz County should inform businesses and the public that most tire piles and all tire dumping is illegal, and provide information about existing recycling/disposal opportunities when possible.

2. The County should develop plans for a drop-off location for tires after the closure of the landfill.

10.9 Biomedical Waste

In the medical industry, a number of definitions exist for biomedical waste brought about by overlapping and inconsistent local, state, and federal regulations governing its management. This has a critical impact on the management of the material, since each generator's quantity of biomedical waste is greatly influenced by how inclusive the definition may be.

In response, the State of Washington has developed a state-wide definition of biomedical waste to simplify compliance with local regulations while preserving local control of biomedical waste management (70.95K RCW). The State definition of biomedical waste is to be the sole definition for biomedical waste in the state, and will preempt biomedical waste definitions established by a local health department or local government. Biomedical waste is defined and limited to the following types of waste:

Animal Waste is waste animal carcasses, body parts, and bedding of animals that are known to be infected with, or that have been inoculated with, pathogenic microorganisms infectious to humans.

Biosafety Level 4 Disease Waste is waste contaminated with blood, excretions, exudates, or secretions from humans or animals that are isolated to protect others from highly communicable infectious diseases that are identified as pathogenic organisms assigned to biosafety level 4 by the current edition of the Centers for Disease Control manual "Biosafety in Microbiological and Biomedical Laboratories."

Cultures and Stocks are wastes infectious to humans, and include specimen cultures, cultures and stocks of etiologic agents, wastes from production of biologicals and serums, discarded live and attenuated vaccines, and laboratory waste that has come into contact with cultures and stocks of etiologic agents or blood specimens. Such waste includes but is not limited to culture dishes; blood specimen tubes; and devices used to transfer, inoculate, and mix cultures.

Human Blood and Blood Products are discarded waste human blood and blood components, and materials containing free-flowing blood and blood products.

Pathological Waste is waste human-source biopsy materials, tissues, and anatomical parts that are derived from surgery, obstetrical procedures, and autopsy. Pathological waste does not include teeth, human corpses, remains, and anatomical parts that are intended for interment or cremation.

Sharps Waste is all hypodermic needles, syringes with needles attached, IV tubing with needles attached, scalpel blades, and lancets that have been removed from the original sterile package.

In general, the major sources of biomedical waste include hospitals, medical laboratories, research laboratories, commercial diagnostic laboratories, outpatient medical clinics, dental clinics, nursing homes, and veterinary hospitals and schools.

10.9.1 Existing Conditions

The concerns associated with the management of biomedical waste arose after a number of high-visibility national incidents of improper disposal. In addition, the focus on the recovery of recyclable materials has resulted in increased handling and processing of solid waste and therefore increased risk to the health of solid waste personnel should they come in contact with biomedical waste.

Currently, the management of biomedical waste in Cowlitz County is regulated by a number of separate agencies, including the Washington Utilities and Transportation Commission (UTC), the Washington State Department of Labor and Industries (WISHA), Ecology, and the Cowlitz County Health Department (CCHD).

- UTC—The UTC has developed a number of rules relating to the safe transportation of biomedical waste for commercial transporters: WAC 480-70-456, -461, -466, -471, and -476.

- WISHA—WISHA has developed safe workplace practices to prevent occupational exposure to hepatitis B virus and human immunodeficiency virus.

- Ecology—173-300 WAC requires that the owner or operator of a solid waste incineration facility, including biomedical waste incinerators, employ a certified operator. In addition, it is required that biomedical waste incineration be conducted so that no part of the combustible material is visible in its uncombusted state.

- CCHD—Currently the CCHD does not have rules for the management of biomedical waste generated in Cowlitz County because the State regulates them. The CCHD has developed a pamphlet for distribution to clinics on the proper handling of biomedical waste. There have not been any documented cases of improper disposal of biomedical waste in Cowlitz County in recent years.

The St. John Medical Center in Longview is the only general hospital in Cowlitz County. Currently the hospital contracts with Stericycle to handle biomedical waste properly.

Stericycle requires that biomedical waste be bagged, boxed, and labeled. The material is then sent to its processing facility in Morton, Washington, where it is shredded and then microwaved until sterile. The shredded material is then processed to remove recyclable steel and plastic. Paper recovered from the process is pelletized and sold as a fuel.

Sharps waste generated by residents is accepted at the Cowlitz County Landfill at the approved sharps drop-off center. The sharps must be contained within a durable container, such as a polyethylene terephthalate (PET) bottle or a coffee can, which is capable of maintaining its structural integrity. The sharps material that is brought to the landfill by residents is kept separate from other wastes and is disposed of in such a manner as to avoid possible injury to landfill personnel. Sharps should not be disposed of in residential trash, as there is no way that landfill personnel or future transfer station personnel can know that there are needles in containers.

10.9.2 Needs and Opportunities

Since there are no recent documented cases of improper disposal of biomedical waste in Cowlitz County, it is assumed that generators are fulfilling their responsibility to manage biomedical waste properly. Despite that, it is possible that small quantities of biomedical waste are being delivered untreated to disposal facilities. As a result, solid waste facility staff in the county may accidentally come in contact with biomedical waste during the processing of solid waste prior to disposal.

The National Institute for Occupational Safety and Health (NIOSH) has developed recommended workplace behaviors that should be followed by solid waste handling personnel. The following is a brief outline of protective clothing that should be adopted by both public and private solid waste facilities operating in Cowlitz County:

- Protective Eye Gear—Safety glasses with side shields should be used.
- Hardhat—Protective headgear is recommended to help prevent injury to head and face.
- Skin Protection—The skin should be covered during solid waste handling as much as possible. This includes full-body coveralls, waterproof gauntlet gloves, and safety glasses. Hand protection is especially important when handling solid waste. Gloves should protect against punctures and lacerations, chemical hazards, and biological hazards, and should be waterproof.
- Protective Footwear—Boots should be of sufficient thickness and strength to protect the wearer against injury from sharp objects.

- Masks—Solid waste handlers, landfill equipment operators, or transfer station workers should wear a NIOSH-approved dust mask when working indoors or whenever necessary to protect against dust.

10.9.3 Recommendations

1. Cowlitz County solid-waste facilities, both private and public, should require that personnel involved in the actual handling of solid waste take necessary precautions to prevent exposure to infectious agents, as outlined by NIOSH.

2. The Cowlitz County Landfill should continue to accept properly prepared sharps waste from residents.

10.10 Biosolids

Biosolids are generated by sewage treatment plants serving the Longview-Kelso urban area and by some of the other treatment facilities located in the smaller communities of Castle Rock, Kalama, Woodland, Toutle, Ryderwood, Woodbrook, and Camelot. Rural residents of the county are served by on-site disposal systems.

10.10.1 Existing Conditions

As part of the 1985 Cowlitz-Wahkiakum Regional Solid Waste Management Plan, a detailed municipal sewage sludge utilization and disposal plan was developed. The Longview-Kelso area is served by two sewage treatment plants, the Central Sewage Treatment Plant and the West Longview Lagoon System. All of the biosolids generated at the Central Sewage Treatment Plant are mixed with shredded yard debris and composted for use as an enhancement for cover at the Cowlitz County Landfill. Approximately 15 cubic yards of biosolids is generated and sent to the landfill on a daily basis. The compost is mixed with soil and will be used as a soil amendment during closure in the final soil cap (63,000 cubic yards of enriched soil is expected to be required). The West Longview Lagoon System Treatment Center does not generate any biosolids. Biosolids generated at the facilities in Castle Rock, Kalama (40 dry tons/year), and Woodland (100 dry tons/year) are land applied. The Toutle facility is cleaned once a year, which produces 10 to 15 cubic yards of biosolids, which are also mixed with shredded yard debris at the landfill and composted for use as an enhancement for cover. The Ryderwood and Woodbrook facilities typically do not generate biosolids.

10.10.2 Needs and Opportunities

As a result of the sludge management plan developed for Cowlitz County, no biosolids disposal problems currently exist. The future closure of the County landfill will require the Cowlitz Sewer Operating Board to investigate alternate methods of disposal for the biosolids generated at wastewater treatment plants. The County is currently studying a biosolids process that would result in the biosolids being reused as fertilizer instead of composting and use as vegetative cover during landfill closure. The modified lime stabilization was developed by RDP Technologies and produces a Class A biosolid material that can be composted or applied as fertilizer. The stabilized biosolids could then be sent to the landfill's compost operation or used as a soil amendment.

Another option that may be available is to dispose of Class A biosolids at Weyerhaeuser Regional Landfill. The landfill currently has a letter authorizing it to receive limited types of biosolids, and review of the permit conditions is required before biosolids can be disposed of at this facility.

10.10.3 Recommendations

1. Sewage treatment plants in Cowlitz County should continue to support the existing biosolids management programs that provide an alternative to biosolids disposal at solid waste landfills.

2. Sewage treatment plants should begin to develop plans for biosolids disposal in order to prepare for the eventual closure of the County landfill.

3. The contents of biosolids currently disposed of at the County landfill should be reviewed, along with the criteria stated in the Weyerhaeuser Regional Landfill permit, to determine if the facility can accept these materials.

10.11 Household Hazardous Waste

Many products used regularly in the home contain hazardous constituents. If mishandled, these materials pose a risk to human health and the environment. Examples include cleaners, paints, pesticides, and many automobile products such as motor oil, which have the characteristic of being corrosive, ignitable, toxic, and/or reactive.

10.11.1 Existing Conditions

The Cowlitz-Wahkiakum Council of Governments (formerly the Cowlitz-Wahkiakum Governmental Conference) developed the 1991 Cowlitz-Wahkiakum Moderate Risk Hazardous Waste Management Plan. The plan identifies priority HHW for management:

- Motor oil
- Vehicle antifreeze
- Paints and solvents
- Pesticides
- Batteries (vehicle)
- Household cleaners
- Household electronics (computers)

Using a typical figure of 29.1 pounds of hazardous waste produced per household, approximately 591 tons of HHW, or moderate risk waste (MRW), was produced in Cowlitz County in 2004. Approximately half of this MRW, 335 tons, was collected at the HHW facility at the landfill, 11 oil and antifreeze satellite collection stations, and five mobile HHW collection events throughout the county in 2004.

The Cowlitz County Public Works Moderate Risk Waste Program also serves small-quantity generators as defined by WAC 173-303-00 (8). The program requires that entities preregister and schedule an appointment for materials drop-off. Users of the small-quantity generator program are charged a fee to cover the disposal of their materials. In 2006, the program served 118 businesses, which generated 30 tons of hazardous waste. The program collected $15,073 in waste disposal fees. The MRW programs include:

- Continuation of an HHW education program
- Continued collection of HHW two days a week at the landfill
- Continued yearly mobile collections
- Continued technical assistance and collection of small-quantity generator waste for a disposal fee.

10.11.2 Needs and Opportunities

As a result of the Cowlitz-Wahkiakum Moderate Risk Hazardous Waste Management Plan, a detailed strategy has been developed and programs have been implemented to manage the material.

The Waste Control contract with Cowlitz County provides for the continued implementation of MRW collection at an MRW facility at the transfer station, and the operation of several HHW collection events in other areas of the county. Cowlitz County will continue to administer the Ecology grant and will make payment to Waste Control for disposal of the materials. Cowlitz County will also direct Waste Control in the disposal of the hazardous materials.

10.11.3 Recommendations

1. Cowlitz County should continue to implement the Cowlitz-Wahkiakum Moderate Risk Hazardous Waste Management Plan. The plan should be updated once Ecology updates the local hazardous waste planning guidelines.

10.12 Industrial Solid Wastes

Industrial solid waste is defined as waste by-products from manufacturing operations such as scraps, trimmings, packaging, and other discarded materials not otherwise designated as a dangerous waste under Chapter 173-303 WAC. The primary source of industrial waste in Cowlitz County is the forest-products industry. Therefore, this section focuses exclusively on the forest-products industry.

10.12.1 Existing Conditions

The forest-products industry is the most significant waste generator in Cowlitz County. A number of forest-products facilities are concentrated in the Longview manufacturing complex, producing a variety of wood, pulp, and paper products. Three pulp and paper mills currently operate in Cowlitz County:

- Longview Fibre Company operates a pulp mill and a paper mill producing linerboard, corrugated and kraft boards, and specialty papers.

- North Pacific Paper Company is a pulp mill and newsprint producer, and is a joint venture between Weyerhaeuser and Nippon Paper Industries.

- Weyerhaeuser Paper Company operates a wood-handling and preparation facility, a kraft pulp mill, and a paper mill producing bleached specialty boards.

Both Weyerhaeuser and Longview Fibre use an integrated management approach to the handling of industrial waste. However, even with waste reduction and recycling activities, significant volumes of waste material are landfilled. All Weyerhaeuser industrial waste is disposed of at the Weyerhaeuser Regional Landfill. In 2004, approximately 196,000 tons of forest-products waste generated by Weyerhaeuser at its Cowlitz County facilities was disposed of at the Weyerhaeuser Regional Landfill. Longview Fibre disposed of approximately 70 cubic yards of boiler ash in the Cowlitz County Landfill on a daily basis for cover through 2004. The remainder of its boiler ash was transported to the Roosevelt Regional Landfill. Beginning in November 2004, all Longview Fibre boiler ash, excluding green liquor dregs, have been disposed of at the Cowlitz County Landfill at a reduced fee. The ash is utilized as daily cover and comes into the landfill during operating hours. Ash disposed of at the landfill may total 40,000 tons per year. Ash disposal was

part of the recent contract with Waste Control, which stipulates that the Longview Fibre ash will remain outside of the municipal disposal system once the landfill reaches capacity. Longview Fibre could then contract with Waste Control separately for disposal of the ash. With the exception of the Longview Fibre boiler ash, limited quantities of non-forest-product industrial waste and very limited quantities of forest products are handled by the Cowlitz County solid waste system.

Waste recycling activities on the part of municipalities have increased industrial waste volumes generated in Cowlitz County. This apparent increase in industrial waste is a result of materials that were originally diverted from the municipal solid waste stream as recyclable, which, after processing at the paper recycling mills, cannot be fully recycled and must be disposed of. The processing of newsprint and fine paper recycling by pulp and paper mills in Cowlitz County results in approximately 15 to 20 percent of the total recyclable material received becoming reject fiber, which must be managed as industrial waste.

10.12.2 Needs and Opportunities

The forest-products industry in Cowlitz County generates a very significant volume of waste that requires disposal. Most of the waste is disposed of at the Weyerhaeuser Regional Landfill and at the Cowlitz County Landfill. With the exception of boiler ash used for cover, Cowlitz County allows only very limited forest-products waste disposal in the Cowlitz County Landfill. The following sections identify needs and opportunities connected with specific waste streams.

10.12.2.1 Logyard Waste

Logyard waste is a mixture of soil, rock, bark, and fine organic matter that is produced in large volumes by wood-processing plants. Logyard waste usually accumulates where logs are handled, such as at rail sidings, sort yards, and log storage yards, and under live decks at mill sites. The high inorganic content prevents it from being incinerated in a boiler, and the high organic content makes it unsuitable as a fill material.

Currently, logyard waste is processed, primarily, with smaller amounts burned, land applied, landfilled, or stockpiled. Land disposal presents environmental problems due to spontaneous combustion and leaching of acidic wood extracts into groundwater or surface water. Logyard waste presents a major solid waste disposal problem for the forest-products industry as air and water quality regulations become stricter, landfill costs increase, and land availability decreases.

10.12.2.2 Pulp and Paper Residuals

The U.S. pulp and paper industry generates approximately 100 lbs of residuals per ton of pulp. These residuals are primarily wastewater treatment solids (lost fiber, biosolids, etc)

and lime residuals (mostly inert materials from the chemical recovery process). Residuals are commonly landfilled, but alternatives do exist.

For example, wastewater treatment solids may be land-applied or incinerated. Incineration can be challenging because of the solids' high water content. However, many mills have found that incineration can be an effective strategy to recover the solids' fuel value and reduce disposal costs. Land application of wastewater treatment solids is successfully practiced at many pulp and paper facilities. Each facility must weigh the economics of this practice, versus other alternatives, on a facility by facility basis. Factors impacting the economics include available acreage, transportation distance, beneficial need, and regulatory acceptance.

Alternative techniques for the re-use of lime residuals include land application, compost amendments, and incorporation into cement-like products or road bases. As with all industrial byproducts, reuse of these residuals is subject to extensive testing and strict adherence to regulatory guidelines. Beneficial aspects and economics must be evaluated for each facility when considering these options.

10.12.2.3 Boiler Ash

Boiler ash represents one of the largest waste streams generated by the pulp and paper industry in Cowlitz County. The material generated at the Weyerhaeuser facilities is disposed of at Weyerhaeuser Regional Landfill. A percentage of boiler ash from Longview Fibre is used as daily cover at the Cowlitz County Landfill. The Weyerhaeuser landfill would be another acceptable local disposal option. Significant volumes of combustible material are diverted from land disposal by using it as a fuel to generate steam and power. The use of woodwaste and other combustible materials as fuel should be encouraged; however, incineration generates significant volumes of ash requiring specialized handling and disposal. Ash may contain trace amounts of metals and organic compounds.

10.12.3 Alternatives

10.12.3.1 Waste Exchanges

A waste or material exchange operates as a clearinghouse to facilitate the reuse of industrial materials that otherwise might be disposed of as waste. The materials may be either the by-products of a manufacturing process or surplus materials. Typical materials exchanged include acids; alkalis; inorganic chemicals; solvents; organic chemicals; oils, fats and waxes; plastic and rubber; textiles and leather; wood and paper products; and metals and metal sludges.

Currently there are two waste-exchange operations in the Pacific Northwest: Industrial Materials Exchange (IMEX) in Seattle, and the Pacific Materials Exchange (PME) in Spokane.

PME

The PME, in Spokane, was formed as a private, nonprofit organization, and has support from various private and public sources that provide a diverse funding base. The PME issues publications to waste-generating industries, recyclers, and brokers. The catalog is issued every two months. Annual subscription to the PME is $48.00. The PME has recently developed an on-line computer system allowing all regional exchanges to hook up nationally and internationally, providing a network of over 100,000 industrial companies. It is estimated that participating industries save approximately $27,000,000 through avoided disposal costs and reduced costs for raw materials.

IMEX

IMEX, based in Seattle, was formed by the Seattle-King County Department of Public Health. IMEX publishes a catalog every two months for free distribution.

Cowlitz County could promote and facilitate the use of existing waste-exchange operations by working closely with industrial-waste generators. A waste-exchange program could be aligned with other programs, such as waste audits, office paper recycling programs, and institutional purchasing of recycled products. One approach may be to promote a waste exchange in Cowlitz County by distributing exchange newsletters free of charge to waste generators.

10.12.3.2 Composting of Logyard Waste and Pulp and Paper Sludge

Recent advances have been made in the commercial feasibility of composting woody material derived from the forest-products industry, particularly with logyard wastes that cannot be diverted into fuel applications. During the composting process, woody material is screened, hogged to yield material up to 8 inches in length, and then composted in a large pile with minimal control. Bacteria and fungi degrade the organic matter to carbon dioxide and humic material, with a volume reduction of approximately 50 percent. Pile temperatures of 120ºF to 180ºF ensure that weed seeds and pathogens are killed and do not contaminate the final compost. Piles are mixed and aerated with a bulldozer as needed to control the rate of composting and odors. The composting process typically requires three months but can vary from one and one-half months to a year. After composting, the material is screened to yield the desired product. The screened compost may be sold as is, or it may be mixed with soil or bark to yield a variety of products. Because of the low nitrogen content of woodwaste, an inexpensive nitrogen source such as sewage sludge or manure may be added.

Composting of pulp and paper sludge is increasingly showing promise as a reliable disposal method. Composting can be used to reduce sludge mass and thus hauling costs, reduce odor, degrade compounds that are toxic or inhibit plant growth, biodegrade chlorinated organics, and produce a high-value material suitable for horticultural and agricultural applications. Composting of pulp and paper sludge can be achieved using

technologies that range from simple windrows to highly controlled, in-vessel composting systems. The rate of decomposition, stabilization, and humification can be slowed considerably for highly lignified, cellulosic wastes as compared to log sort wastes. Finished products can be used for horticultural and agricultural crop production, land reclamation, vegetation establishment, and erosion control. In some instances material is composted for several months prior to use on site. The composting process reduces mass and volume, conserving landfill space, and reduces potential leachate problems. As mentioned earlier, agricultural waste would be a beneficial addition to the composting process.

Drawbacks associated with the composting of forest-products wastes are associated with its high cost as compared to landfilling, the lack of long-term and reliable markets for the compost product, odor generation, and liability from possible contaminants.

10.12.3.3 Logyard Waste Processing

Logyard waste processing consists of separating and upgrading the material into discrete fractions that can be used more effectively on the site or sold. Several mobile and fixed logyard waste processing systems have been developed to separate logyard waste into rock, hog fuel, and fines. The rock may be used as a fill material, the hog fuel as a boiler fuel, and fines as soil amendments.

10.12.3.4 Economic Development Strategies

Cowlitz County could assist forest-products industry waste recycling and reuse technologies as a future economic development strategy. Implicit in this selection would be the recognition that certain environmental technologies and services have the potential to solve existing industrial waste problems. Cutting-edge technologies and services targeted to assist the forest products industry could be attracted and may include the following:

- The composting of forest products wastes and their conversion into products that can be used safely and beneficially in the environment.

- The conversion of biomass into methane gas. Technologies are now available to convert a variety of biomass materials into efficient fuels. Solids from the process can produce soil amendments and a nutrient-rich, single-cell protein that can be processed as an organic fertilizer or as feed for animals. In 1995 the Port of Tillamook Bay, in Oregon, began operating a large-scale anaerobic digestion facility for about 15 percent of the 200 dairy farms within a 35-mile radius of Tillamook. The anaerobic digestion facility produces biogas, which is sold to the Tillamook Public Utilities Department.

Local economic development officials in Cowlitz County could identify forest-products industry waste recycling and reuse technologies as a key industry for development in Cowlitz County. These officials would work to identify pioneering technologies that yield

less waste and can make industries more efficient, cost-effective, and competitive in the international marketplace. Once promising firms have been identified, local economic officials could draw in State financial support. Organizations such as the Clean Washington Center have the ability to link pioneering firms with private investors. The Clean Washington Center can also provide marketing assistance for local firms to expand both in the Pacific Northwest and worldwide.

10.12.4 Recommendations

1. The forest-products industry in Cowlitz County should encourage composting as an alternative to landfilling. It is assumed that most clean wood residues will be consumed mainly as a fuel, and do not constitute a long-term disposal problem. In contrast, logyard waste will continue to be a disposal problem, because of the high inorganic content and moisture content. Composting of logyard waste or other forest products residues could be used as a reliable waste-reduction technique.

2. Facilities are available to effectively separate logyard waste into a more valuable material and to reduce the environmental problems associated with disposal. To the extent possible, the forest-products industry and private companies in Cowlitz County should continue to separate and enhance the value of logyard waste through existing or proposed woodwaste-recycling facilities. In addition, specific activities such as paving logyards and using steel cribs should be encouraged to prevent logyard waste contamination.

3. Cowlitz County should continue to discourage the use of the Cowlitz County Landfill as a disposal facility for forest-products waste.

10.13 Chapter Highlights

- There currently are adequate systems in place in Cowlitz County to deal with special and industrial waste.

- In anticipation of the closure of the County landfill, the County should ensure that special waste needs that are currently addressed by use of the landfill can be satisfied through other commercial entities in the county or through the contract with Waste Control.

- Parts of the agricultural and forest-product industry waste streams in Cowlitz County could be used to create either a marketable compost product or methane gas for energy production.

11 ADMINISTRATION AND ENFORCEMENT

11.1 Introduction

Administration and enforcement of solid waste regulations in Cowlitz County is carried out by various public entities within the County with different degrees of responsibilities. Administration of solid waste regulations is the joint responsibility of the Washington State Department of Ecology (Ecology), the Cowlitz County Department of Public Works (Public Works), and the incorporated cities within the County. Responsibilities for the enforcement of solid waste regulations are distributed between Ecology, the Cowlitz County Department of Building and Planning Environmental Health Unit (EHU), and the solid waste enforcement officials for the cities of Longview, Kelso and Woodland.

This chapter identifies the statutes and regulations that form the basis for solid waste administration and enforcement and the agencies responsible for implementing them, discusses their effectiveness, and offers recommendations for improvements.

11.2 Existing Conditions

11.2.1 Administration

There are three agencies involved in the administration of solid waste regulations in Cowlitz County: Ecology, Public Works, and the cities.

11.2.1.1 Washington State Department of Ecology

Through Chapter 70.95 Revised Code of Washington (RCW), Ecology regulates the handling of solid waste in Washington state. The law assigns primary responsibility for solid waste planning and management to local governments, but requires Ecology to review and approve all plans. In the late 1980s and early 1990s, Ecology developed the Washington State Solid Waste Management Plan (SWMP) and the Best Management Practices Analysis for Solid Waste as a guide for carrying out a coordinated State solid waste management program. Through Washington Administrative Code (WAC) Chapter 173-304, it set minimum functional standards (MFS) for solid waste handling. WAC Chapter 173-350 and WAC 173-351 were implemented in 2003 and 1993 respectively, replacing the MFS and implementing the RCW statute.

11.2.1.2 Cowlitz County Department of Public Works

In 2004, Public Works had one full-time employee responsible for solid waste administration. Public Works Solid Waste Division has the authority and responsibility to prepare and revise a comprehensive SWMP, own and operate solid waste facilities or contract for services, and set rates and hours of operation and conditions for access to public facilities (RCW 36.58). Public Works may also contract for the collection of recyclables generated in unincorporated areas of the county.

Solid Waste Division monitors the amount of waste that enters the landfill through tonnage data collected at the entrance scales. Solid Waste Division has a software package that tracks all of the materials entering the landfill over the scale system. In addition to the information produced by the tracking software, the Solid Waste Division conducts an annual survey of the landfill to assess remaining landfill capacity and to estimate waste placement density in the landfill.

11.2.1.3 Cities

Incorporated cities may develop, own, and operate solid waste handling facilities, and are responsible for providing collection services within their own jurisdictions (RCW 35.21). Cities may also elect to develop their own SWMPs. The five incorporated cities in the county (Longview, Kelso, Woodland, Castle Rock, and Kalama) have agreed to participate with the County in updating the SWMP.

11.2.1.4 Cowlitz County Solid Waste Advisory Committee

The Cowlitz County Solid Waste Advisory Committee (SWAC) was formed in accordance with RCW 70.95.165. The SWAC consists of appointed members and alternates from incorporated cities, business, citizens, and the solid waste industry. The Cowlitz County SWAC performs several critical administrative functions:

- Advises County staff and County Commissioners on solid waste management issues.
- Assists in the development, updating, and implementation of the Cowlitz County SWMP.
- Assists in the formation of County solid waste policies and ordinances, or rules related to solid waste.
- Meets periodically with city councils and citizen groups to exchange ideas, ask for opinions, and disseminate information on solid waste issues.
- Meets annually to review the SWMP.

11.2.2 Enforcement

The agencies involved in the enforcement of solid waste regulations in Cowlitz County are: the EHU, Ecology, and the cities.

11.2.2.1 Environmental Health Unit

The EHU took over enforcement responsibilities from the Cowlitz County Health Department in 1999. Prior to 1993, the Cowlitz County / Wahkiakum Health District was the enforcing agency. The EHU is responsible for the enforcement of State statutes and regulations and of local regulations at the county level. According to RCW 70.95.170, a solid waste facility cannot receive waste without the issuance of a solid waste permit. The EHU is responsible for issuing permits for solid waste facilities. The EHU may contract any portion of its permit/enforcement program to Ecology, subject to restrictions and compliance with RCW 70.95.165. Every application for a permit is reviewed to determine whether the facility meets all applicable laws and regulations, conforms to the approved comprehensive SWMP, and complies with all zoning requirements. The EHU is also responsible for enforcing laws restricting illegal disposal. Currently, the EHU has one person who devotes about half of his or her time to solid waste enforcement activities; this contrasts to the 2.5 full-time Cowlitz / Wahkiakum Health District employees responsible for solid waste enforcement activities in 1991. Funding for solid waste enforcement duties comes from Ecology grants and solid waste permit fees; additional funding comes from the County General Fund if it is needed.

11.2.2.2 Washington State Department of Ecology

Generally, State statutes do not grant Ecology a clearly defined solid waste management enforcement role; its role is primarily one of oversight. Ecology is given responsibility to review and approve SWMPs, review solid waste facility permits and provide technical assistance, appeal permit issuance to the Pollution Control Hearings Board, approve permit variances, and enforce state littering laws.

11.2.2.3 Cities of Longview, Kelso, and Woodland

The cities of Longview, Kelso, and Woodland all have abatement officers who deal with a range of general nuisance issues, including illegal dumping.

11.3 Needs and Opportunities

11.3.1 Administration

This section identifies the needs and opportunities of Public Works in the effective administration of the Cowlitz County solid waste system.

11.3.1.1 Solid Waste Flow Control

Flow control through ordinance and interlocal agreement was not achieved as proposed in the 1993 SWMP. The cities have maintained control of their waste and its disposal through contract mechanisms between the city and the waste hauler. Waste Control is currently under contract to haul waste from several incorporated communities to their designated disposal site, which is currently the County landfill. The only material that has not gone to the County landfill is the residual material from the Waste Control Material Recycling Facility. Under the terms of the contract that was negotiated between the County and Waste Control, this residual material will be returned to the County landfill until such time that the landfill closes, and longhaul transport and disposal by Waste Control begins.

Additionally, the terms of the Waste Control contract require that the cities sign interlocal agreements with the County for the term of the Waste Control contract, guaranteeing the disposal of municipal solid waste (MSW) through the County disposal system (i.e., the transfer station). The hauler contracts for unincorporated areas of the county should require disposal within the County disposal system, which would be defined as the transfer station for the duration of the Waste Control contract. The County worked to reach an agreement with Waste Control for the disposal of incorporated areas' waste and unincorporated areas' waste as a single stream to provide the best transportation and disposal rates for MSW from county residents after the closure of the landfill.

11.3.1.2 Monitor Solid Waste Flow

The basis for payment for the disposal of solid waste through the contract with Waste Control is tonnage, which is easily and accurately measured. To ensure that proper payment is made in a timely manner, the transfer station should be required to have entrance scales and a tracking system to calculate and collect the required tip fee and to generate disposal totals for the basis of payment for Waste Control. The tracking system should also record waste quantities by category to assist in planning efforts. A proper tracking system will also enable the County or the cities to perform periodic audits to ensure that all money and waste are accounted for. The tracking system should be similar to the system currently used at the landfill, but should also allow for accounting of the separate waste types that are covered under the contract.

11.3.1.3 Evaluate Future Disposal Needs

The contract with Waste Control will provide longhaul disposal of waste through the next 28 to 38 years. Before the end of the contract, the County should reassess the continued longhaul disposal of waste or investigate an alternate disposal method that may become available to avoid service interruption to residents. It would be necessary for this process to include time to develop infrastructure needed to implement any resulting decisions, so a review of options ten years prior to the end of the Waste Control contract would be appropriate.

11.3.1.4 Administer Disposal Contract

After the Waste Control contract is signed and services begin, Public Works will need to provide staff to administer the contract with Waste Control to ensure that the contract terms are being met and that proper payments are made. When commercial haulers and the public are transitioned to the transfer station, the role of contract administration will greatly increase. In addition to normal landfill operations, the Public Works solid waste manager will be required to begin planning for the closure and post-closure care of the landfill. The County should assess the need for additional solid waste staff to assist the current manager with the administration of the disposal contract and landfill operation (including closure and post-closure planning).

11.3.2 Enforcement

This section identifies the needs and opportunities of the Cowlitz County EHU in the enforcement of solid waste regulations in Cowlitz County.

11.3.2.1 Current Program Funding

The EHU has experienced staffing variability as a result of County budget difficulties. Budget shortfalls typically have been made up through the Cowlitz County general fund. The EHU is in need of funding to support minimum staff needed for solid waste enforcement duties. Providing the EHU with adequate financial resources for solid waste activities will enable training or hiring of a sufficient number of specialized staff to ensure SWHS enforcement, efficient permit processing, and enforcement activities related to illegal dumping.

11.3.2.2 Illegal Disposal

Although disposal rates have been stable or have moderately increased for years, illegal disposal continues to be a problem in rural county areas. In cities, it has been frequently reported that rural residents are dumping into the city-operated containers. Large landowners are particularly hard hit, since they are often the recipients of the material, and they must clean up the material or face the prospect of being held responsible for owning an illegal dump site. In addition, as restrictions are placed on the type of solid waste acceptable at solid waste facilities, illegal dump sites increasingly contain problem waste streams, such as construction debris and car bodies, or toxic chemicals. Given the size of the county, the possibility of multiple sites scattered throughout the county, and the difficulty of gathering sufficient evidence, enforcement activities related to illegal disposal are very time-consuming. At this time, the EHU staff only responds to complaints, and does not actively patrol the county looking for illegal disposal sites. On average, there have been 110 complaints per year since the EHU took over administration and enforcement of solid waste from the Cowlitz County / Wahkiakum Health District in 1999. Adequate funding is needed to provide for permanent resources to meet the present

volume of complaints, patrol known illegal disposal sites, and coordinate appropriate site cleanup if necessary.

The EHU's complaint tracking consists of an initial site visit for pictures and verification of illegal dumping; research of ownership, property owner, etc.; enforcement letters; followup public contacts, correspondence, and inspections; and court preparation and appearances, if needed. It is EHU policy to encourage voluntary compliance and avoid the use of law enforcement agencies. If there is a lack of progress, the sheriff's department becomes involved, which may result in a civil action and subsequent court date.

In addition to the general problem of adequately responding to complaints of illegal disposal, bringing charges against violators is further complicated by the evidence requirements for prosecution based on State law. The current system can consume numerous man-hours to gather sufficient evidence, conduct repeated inspections / investigations, and possibly bring court action. Updates to County Code 15.30 were adopted in 2004, which improved the enforceability of illegal dumping regulations, but the allocation of solid waste staff within the EHU is not sufficient to adequately enforce these regulations.

11.3.2.3 County Solid Waste Management Ordinance Update

County Code 15.30 was updated through Ordinance 04-061, adopted in 2004. The ordinance also repealed County Code 15.32. This update incorporated changes brought about by WAC 173-350, which addresses facilities, primarily. The County code addresses illegal dumping, handling, storage, and ownership responsibilities that have been problematic in the county in the past with regard to enforcement. The new County code is sectioned for facilities and illegal disposal and includes the ability to issue a civil infraction (monetary fine) or, if it is a facility violation or repeat dumping or handling violation, the authority to ask the courts to issue a misdemeanor charge. The new ordinance has not yet been tested in court, due in part to the low priority given by the EHU to solid waste enforcement.

11.3.2.4 Non-Regulated Solid Waste Facilities

Before 2003 and the adoption of WAC 173-350, various types of facilities were exempt from regulation by the MFS and therefore were not regulated. These included inert/demolition and woodwaste landfills that receive less than 2,000 cubic yards per site, and waste tire piles of 200 to 800 tires. These categories have come to be regulated under WAC 173-350, Solid Waste Handling Standards, providing the County with a means to regulate these facilities.

Three facilities are currently operating under solid waste permit exemptions in the county under WAC 173-350: J.L. Storedahl & Sons (concrete), Lakeside Industries (asphalt), and Waste Control (concrete). Two additional facilities may be eligible for permit exemptions of their material recovery operations: Waste Control and Weyerhaeuser. The County solid

waste ordinance has been rewritten so that these facilities must annually reapply for the exemptions, and the County must make annual inspections of the facilities to ensure that they are meeting the qualifications for exemption as required by County Code 15.30.200.

11.3.3 Flow Control

Cowlitz County has contracted with Waste Control, Inc. to provide disposal services after the close of the Cowlitz County Landfill. As agreed in the Letter of Understanding, dated November 23, 2004, Waste Control will provide disposal of MSW through its planned transfer station to the Roosevelt Regional Landfill. The negotiations for cost were based on the current waste flows that go to the County Landfill.

The contract that the County and Waste Control have signed guarantees a minimum amount of waste to be handled by Waste Control. In order for the County to negotiate the best disposal rate for its residents, it must rely on economies of scale. The final agreed disposal fee includes all transfer costs, of which there are a significant amount of fixed costs. Examples of these fixed costs are staffing and maintaining the transfer facility, which are the same for a small or large volume of MSW handled at the facility. This means that a higher disposal rate would be charged for a small annual volume of MSW, but a lower rate could be applied if a larger annual volume of MSW could be guaranteed to the facility. Since a city's decision to dispose of its MSW at a different disposal facility could prevent the County from providing the amount of MSW guaranteed by the contract, the participants must establish flow control for the duration of the contract. Interlocal agreements giving control of waste disposal to Cowlitz County must be established for all public entities using the County's contract for disposal with Waste Control after enactment of the contract. The interlocal agreement for management of MSW between the county and cities was executed on May 15, 2007 and is included in Appendix A.

11.4 Recommendations

11.4.1 Administration

1. Cowlitz County should follow the terms of the contract with Waste Control, Inc. for the disposal of county-generated MSW at a regional landfill after the County landfill closes. The final contract provides for a smooth transition for residents so that there is little confusion regarding the proper disposal options for their waste.

2. Cowlitz County should formalize control of the flow of MSW through the development of interlocal agreements with cities for MSW generated in incorporated areas, and through hauler contracts for MSW generated in

unincorporated areas, requiring the use of the County disposal system. All actions are to be consistent with the Cowlitz County SWMP and the Waste Control contract. Flow control through interlocal agreements with the cities should be executed after signing the Waste Control contract. The interlocal agreements should be for a period of time that corresponds to the Waste Control contract to ensure that all MSW generated in the county is disposed of through the County disposal system.

3. The County should continue to use and maintain its existing waste tracking system and weight scales to properly account for all waste entering the landfill and the money that is generated through tip fees. In addition, the County should ensure that provisions for the continued tracking of wastes are included in the contract with Waste Control.

4. The County should assess the need for additional solid waste administration staff to address the requirements of the Waste Control contract as well as for the landfill operation, closure, and post-closure activities.

11.4.2 Enforcement

1. Cowlitz County should ensure that the EHU solid waste activities are fully funded to adequately provide enforcement activities for at least one full-time employee.

2. The EHU should implement a public education program that communicates to the public the environmental and economic consequences of illegal disposal.

3. The EHU should regularly review and update local solid waste regulations to conform to recent changes to State statutes and regulations.

4. The cities of Longview, Kelso, and Woodland should maintain their abatement officer staffing to enforce illegal dumping restrictions.

11.5 Chapter Highlights

- Cowlitz County has contracted with Waste Control, Inc. for the disposal of county-generated MSW at a regional landfill after the County landfill closes. The final contract provides for a smooth transition for residents so that there is little confusion regarding the proper disposal options for their waste.

- Cowlitz County will be formalizing control of the flow of MSW through the development of interlocal agreements with cities for waste generated in

incorporated areas, and through hauler contracts for waste generated in unincorporated areas, requiring the use of the County disposal system. Flow control will be resolved after executing the contract with Waste Control, Inc.

- Staffing needs for the operation and closure of the landfill as well as for the administration of the Waste Control contract may require adding personnel to Public Works.

- The EHU appears to be understaffed in the enforcement area. The EHU's solid waste program is less than a half-time person effort. The program is administered by one person, who is also responsible for other programs that are not related to solid waste.

12 FUNDING AND FINANCE

12.1 Introduction

This chapter addresses available methods for funding costs associated with solid waste management programs and activities in Cowlitz County.

12.2 Existing Conditions

For more than 20 years, the County's solid waste programs and facilities have been funded through a combination of grants and disposal fees. Tipping fees typically provide approximately 96 percent of the overall annual solid waste budget, with the remaining revenues coming from Ecology grants (3%) and other sources (1%).

The County's solid waste programs and facilities are "self-funded" in the sense that they do not require the input of money from other sources of County funding. Maintaining this financial independence while providing high-quality, low-cost service requires prudent financial planning by the Solid Waste Division.

The Solid Waste Division directs disposal fees into the Cowlitz County Solid Waste Fund, an enterprise fund established in December 1984 by County Resolution No. 84-257. The Solid Waste Division currently operates five programs within this enterprise fund. These programs, and a synopsis of the programs based on Solid Waste Division budget information, are as follows:

- Operations
- Equipment, Land and Facilities
- Post-closure—Unlined Landfill
- Post-closure—Lined Landfill
- Lined Landfill Closure

Operations—The goal of the operations program is to operate the County's landfill and the Toutle drop box facility as efficiently and effectively as possible and to provide safe and sanitary disposal of the county's solid waste in compliance with federal, state, and local codes and regulations. Money from this program is also used to fund the other

activities of the Solid Waste Division, such as hazardous waste management and public education. Residual equity from this program is transferred into the other four programs.

Equipment, Land and Facilities—This program was established to accumulate reserve funds for the purchase of equipment, land, and facilities for the county's solid waste sites. This fund is also used to pay for capital projects and updates to the SWMP.

Post-Closure–Unlined Landfill, Post-Closure–Lined Landfill, and Lined Landfill Closure—These three programs were established with the purpose of meeting the regulatory requirements of financial assurance contained in WAC 173-351-600. The programs accumulate reserve funds to finance landfill closure and post-closure activities. Closure activities will include capping lined landfill areas. Post-closure activities include groundwater monitoring, leachate control, and gas collection.

12.3 Current Tipping Fee

The tipping fee at the landfill is currently $37.30 per ton. This fee was authorized by County Ordinance 95-100 and went into effect in January 2007. The tipping fees have been fairly stable over time, with no dramatic increases or decreases. The previous tipping fee of $39.30 was in effect from 1998 to 2006. Before that the previous tipping fee of $37.47 per ton was in effect from January 1996 to January 1998, while the $35.50 per ton tipping fee listed in the 1993 SWMP was in effect from February 1990 to January 1996.

The tipping fee is established at a level to satisfy current and future financial requirements over the life of the facility. A component breakdown of current tipping fee allocations is shown in Table 12-1.

Table 12-1
Summary of Tipping Fee Revenue per Ton (2007)

Requirement for Maintenance of Landfill	$12.38
Equipment Land and Facilities Fund	$19.29
Landfill Closure Costs	$2.75
Post-closure Fund—Lined Landfill	$2.01
Post-closure Fund—Unlined Landfill	$0.87
TOTAL TIPPING FEE	**$37.30**

A comparison of 2006 tipping fees for landfill facilities in western Washington is shown in Table 12-2. As shown in the table, Cowlitz County's 2006 tipping fee was far lower

than that for any other county in western Washington. Note that the different county rates are probably not all based on the same levels of service or identical contractual agreements, and a direct comparison between rates should not be made. However, a review of the data does help provide some context for Cowlitz County's disposal rates, and the underlying funding costs of Cowlitz County solid waste programs, relative to those of other western Washington counties. This is especially true given that most of Cowlitz County's solid waste programs are funded through the tipping fee and state grants, i.e., no additional charges, taxes, or fees are collected from Cowlitz County residents.

The County's 2006 tipping fee was $22.72 lower than that of Kitsap County—the next cheapest county. The County's tipping fee was also approximately $49.09 per ton lower than the average for these 18 counties, and over $52.27 per ton lower than the average for the 14 counties that export their waste to regional facilities. The County has consistently been able to provide solid waste disposal to Cowlitz County citizens, as well as to fund other solid waste management services, for far less than other western Washington counties.

Tipping fees in the future are expected to remain at $37.30 until the landfill closes in 2012. The reserve accounts are sufficiently well funded that the County will be able to stabilize this rate. Additionally, the County contract with Waste Control includes a stabilization of tipping fees at the transfer station to allow a gradual transition after the landfill closes so that residents do not experience a spike in disposal rates.

Table 12-2
Solid Waste Tipping Fee Survey, October 2006

County	Disposal $/Ton	Disposal Method
King	89.10	In-County Landfill
Pierce	92.96	In-County Landfill
Snohomish	89.00	Export—Roosevelt, WA
Clark	80.00	Export—Boardman, OR
Kitsap	62.02	Export—Arlington, OR
Thurston	70.80	Export—Roosevelt, WA
Whatcom	100.00	Export—Roosevelt, WA
Cowlitz	**39.30**	**In-County Landfill**
Skagit	83.00	Export—Roosevelt, WA
Grays Harbor	83.00	Export—Roosevelt, WA
Lewis	82.00	Export—Roosevelt, WA
Clallam	84.20	In-County Landfill

County	Disposal $/Ton	Disposal Method
Island	89.00	Export—Arlington, OR
Mason	63.00	Export—Arlington, OR
Jefferson	110.00	Export—Roosevelt, WA
Pacific	105.00	Export—Arlington, OR
San Juan	238.00	Export—Roosevelt, WA
Wahkiakum	140.00	Export—Longview, WA
Average disposal cost for 18 western Washington counties		$88.39
Average disposal cost for four counties with active landfill		$77.22
Average disposal cost for 14 counties that export		$91.57

Source: Cowlitz County Department of Public Works

12.4 Funding Alternatives

12.4.1 Potential Need

A disposal fee funded program relies primarily on disposal fees with grants assisting in specific areas. In Cowlitz County this disposal fee consists of the tipping fee collected at the landfill. The amount of waste disposed of at the landfill, and thus the amount of money collected from disposal fees, could decrease for a variety of reasons. For example, if waste reduction or recycling efforts lead to decreased disposal quantities, the amount of disposal fees collected at the landfill will decrease. Similarly, the amount of disposal fees collected at the landfill will decrease if the County elects to utilize the private sector for disposal of some or all of the county's waste stream. If the amount of money collected from disposal fees at the landfill decreases, the County's current rate structure may no longer be applicable.

Program costs that are not controlled by the County are the costs of the recycling and moderate risk waste programs. The recycling program requires the County to pay for the removal of some recycled material categories. These costs vary, depending on the market, and might not be offset by the income derived from other recycling streams. Also, the moderate-risk waste collected by the County must be disposed of at a hazardous waste landfill at a high cost. The costs associated with these programs are tracked by the County and could influence disposal fees in the future.

Approximately half of the county's solid waste related costs consist of non-operational costs. These non-operational costs will not decrease even if the amount of waste handled by County-owned and -operated facilities decreases. These non-operational costs include items such as funding the post-closure reserve funds for the lined and unlined parts of the landfill facility. Also, the operational costs include necessary elements, such as vector control, for which the incurred costs are relatively independent of the amount of waste

handled at the facility. Some costs, such as environmental monitoring and administering the Solid Waste Management Plan (SWMP), will still be the responsibility of the County even when the County contracts for solid waste disposal. If the County is not receiving sufficient revenue from the disposal fees to fund solid waste programs, it will be necessary for the County to cut non-mandatory programs or to adjust the disposal fees to maintain the programs.

Under the Waste Control contract that was signed, all municipal solid waste (MSW) generated within the county will be sent to the landfill through interlocal agreements and hauler contracts. This would have the effect of granting flow control to the landfill until it is closed, guaranteeing the disposal fees to be collected at the landfill, and thus guaranteeing that the closure and post-closure funds are sufficient. After landfill closure and commencement of waste export, any shortfalls in the post-closure operations of the landfill or in the other ongoing solid waste program responsibilities can be addressed by adjusting the disposal fee.

12.4.2 General Categories

There are four general categories of funding alternatives available for County solid waste management programs and facilities:

- Capital Improvement Financing
  - Internal financing
  - General obligation bonds
  - Revenue bonds
  - Industrial development bonds
  - County general and road funds
- State Grants
  - Community litter cleanup program
  - Coordinated prevention grant
- Disposal Fee Financing
  - Tipping fees
  - Solid waste collection fees

- Taxes
  - Property, sales, and single-item taxes
  - Solid waste disposal district
  - Solid waste collection district

This listing of general categories, and the discussion of options in each category that follows, is not intended to be exhaustive. Rather, the listing and discussion are intended to provide information related to those options that are generally the most widely used for funding municipal activities. For example, since it is unlikely that private financing would be used to fund County solid waste management programs or facilities, private financing is not discussed.

Also, privately owned and operated facilities or programs, such as Weyerhaeuser's Regional landfill and Waste Control's material recovery facility (MRF), play a role in the management of solid waste in the county; however, private sector facilities or programs are privately financed, and the private sector usually recovers costs through fees charged directly to customers. This funding discussion is intended to address funding for public-sector activities or programs. Funding for privately-owned and -operated facilities or programs is not specifically addressed in this document.

12.4.3 Capital Improvement Financing

Capital improvement financing alternatives are discussed below.

Internal Financing / Disposal Fee Financing—Internal financing by cash reserves, also called disposal fee financing, is the least expensive method of funding projects or programs. This method avoids the interest costs, bond issuance fees, legal fees, and administrative overhead required by other financing methods. Unlike restrictions imposed by debt financing, there are generally fewer restrictions when internal reserves are used, especially with regard to the required time frame of expending proceeds. Internal reserves are initially collected in the form of disposal fees, and consist of contributions made to the ELF fund. This is the primary method of financing currently being used by the County's Solid Waste Division.

General Obligation Bonds—General obligation bonds pledge the full faith and credit of the County that payments on the bonds will be made to the bondholders. There are two forms of general obligation bonds, non-voted and voted. The State of Washington establishes the maximum limit (debt ceiling) of general obligation debt that municipalities are allowed to have outstanding at any time. Funds generated by solid

waste disposal fees would be used to pay the debt service. In case of default, the County would ultimately be responsible to the bondholders.

Debt ceiling is not the only concern when considering issuance of general obligation bonds. Cowlitz County must also consider the programmatic impacts of using its full debt capacity on one particular fund or project. For example, funding the recommended programs of the SWMP with general obligation debt could expend a substantial portion of the County's debt limit, thus leaving little debt allocation for other projects. Submitting a general obligation bond issuance for system financing to a vote by the constituents would be time-consuming, and the outcome would be uncertain. Such bond proposals have a poor history of gaining approval in most areas of Washington, being subject to defeat for a variety of reasons. These reasons are often unrelated to the merits of the programs, or the voters' perceptions of system needs.

Revenue Bonds—Revenue bonds pledge the revenues of an enterprise activity against the debt service on the issued bonds. They do not require voter approval because they depend on the revenues from enterprise activity rather than the full faith and credit of the County. Due to factors such as higher interest rates, coverage requirements, and bond reserves, the cost of this type of bond is usually higher than nonvoted general obligation bonds. State limitations on debt ceiling do not apply to revenue bonds.

The use of revenue bond financing would place a higher priority on a guaranteed waste stream and thus a guaranteed revenue base, because the collateral for these bonds would exist solely in the revenue of the Solid Waste Division's enterprise fund. Waste flow control measures are usually required for revenue bonds. This means that all participating municipalities would have to sign a formal agreement committing their waste streams to the County for a period that meets or exceeds the term of the bond issue. In addition, it would be necessary for the County and the municipalities to issue waste handling contracts that require disposal at facilities in the county and ensure that revenue is properly received through disposal fees.

Industrial Development Bonds—Industrial Development Bonds may be issued if the County is considering a joint venture arrangement with a private enterprise as a means for financing all or part of a capital improvement project. Although these bonds provide a viable financing alternative, they would have to compete with other projects in the state for a portion of the allocation under the statewide cap for such bonds. Resource recovery facilities are commonly financed by Industrial Development Bonds.

County General and Road Funds—The County could consider using money from established County funds such as the general fund or the road fund to pay for costs related to solid waste management. (The use of road fund money for County services provided in the unincorporated areas of the county is allowed by RCW 36.33.220.) However, this may

not be politically acceptable, and there are often restrictions or limitations associated with the use of County funds for purposes other than that for which they were established.

In recent years, solid waste enterprise fund money has been temporarily loaned to other County programs, such as the Road Department, to make up temporary shortages in operating expenses. Approximately $1,000,000 of solid waste enterprise fund money was also loaned to the County Parks Department for construction of the Willow Grove boat launch. The previous use of money from solid waste funds by other County programs indicates that the use of money from other County programs for solid waste funding may not be very feasible. This situation also indicates that any decreases in the funding generated by landfill disposal fees could have an impact on other County programs.

12.4.4 State Grants

Historically, the County has successfully obtained state grant money to fund a number of solid waste activities. For example, the County received over $245,000 in Referendum 26 and 39 grant money for construction of the compost facility at the landfill in 1997. Referendum 26 and 39 grant money was also used for most of the capital costs of the old, unlined County landfill. The County will continue to actively pursue grants to offset the costs associated with its solid waste management programs and facilities.

Ecology's Solid Waste and Financial Assistance Program currently administers two grant programs that are viable funding sources for the County's solid waste activities:

- Community litter cleanup program (CLCP)—Provides money to local governments to clean up litter and illegal dumps and to educate the public.

- Coordinated prevention grant (CPG) program—Helps local governments develop and implement their hazardous and solid waste management plans.

CLCP Grants—This source of funding has been used in Cowlitz County by the Department of Corrections. The current CLCP grant (July 1, 2003, to June 30, 2005) is for $63,903; $55,903 of the grant is for litter and illegal dump cleanup, $4,000 is for litter and illegal dumping education, and $4,000 is for the purchase of a utility trailer for hauling litter and refuse in a safe and legal manner. The County has used grants of similar amounts for similar purposes since 1998.

CPG Grants—Ecology began the CPG program in 1991 to provide funding for prevention and minimization of future contamination from solid and hazardous waste disposal. The funding is available on a biannual basis, and the County has successfully participated in the CPG program every biennium since the program's inception.

Ecology allocates funds for the CPG program, using a base amount for each county plus a per capita amount. However, these funds are not automatically given to the counties, and qualified projects must go through an application and approval process before receiving funding. Ecology usually does not authorize the total amount of funding requested in the County's grant applications. The projects can include local cities; however, the grant is submitted under the auspices of the County. Counties are also responsible for administering the grants. Ecology currently requires that matching funds equal to 25 percent of the project costs be provided by the grant recipient. Ecology has published grant guidelines that explain specific details of the CPG program.

The CPG program is funded by money in the Local Toxics Control Account, and RCW 70.105D.070 contains a hierarchy for spending from this account. In this hierarchy, hazardous waste plans and programs under 70.105 RCW have precedence over solid waste plans and programs under Chapters 70.95, 70.95C, 70.95I, and 70.105 RCW. An important ranking and approval element is that the activity must help implement an action identified in an Ecology-approved hazardous or solid waste management plan. Solid waste disposal oriented activities or programs usually are not grant-eligible, though some solid waste capital expenses may be grant eligible.

Public Works has previously prepared coordinated grant applications with the Cowlitz County Department of Building and Planning Environmental Health Unit (EHU) and the cities of Kelso, Longview, and Woodland. The cities of Castle Rock and Kalama have not participated in the CPG program because of the matching fund requirements. A history of the grant money authorized by Ecology, broken down by grant recipient, is shown below in Table 12-3.

Table 12-3
Coordinated Prevention Grant History
Cowlitz County Landfill

Year	Project	2006-2007	2004-2005	2002-2003	2000-2001	1998-1999	1996-1997	1994-1995
Funding %			**75%**	**75%**	**60%**	**60%**	**65%**	**75%**
Cowlitz	HHW-Disposal	200,000	206,000	206,000	265,000	254,000	202,500	201,157
	HHW-Educ		18,100	18,100	15,000		7,500	
	SQG-Waste		9,840	9,840	15,000	15,000	15,000	15,590
	WRR-Education		12,000	18,600	15,000	11,000	5,000	
	WRR-Capital	28,000	15,400	8,800	15,000			7,333
Longview	WRR-Education	50,193	56,120	37,151	79,329	30,019	47,075	83,115
	WRR-Capital		5,000					
Kelso	WRR-Education	30,000	20,370	21,500	27,871	39,288	28,748	53,553
Woodland	WRR-Capital		-	-	-	37,000	-	-
EHU/Health	Enforcement	103,744	132,000	153,846	153,846	153,846	118,462	102,667
TOTAL		411,937	474,830	473,837	586,046	540,153	424,285	463,415
Local Match		102,984	118,707	118,459	234,418	216,061	148,500	115,853.75
State Match		308,953	356,123	355,378	351,628	324,092	275,785.25	347,561.25

Note: In some years Longview and Kelso have not spent the entire authorized amount shown.
WRR=waste reduction and recycling
SQG=small-quantity generator
HHW=household hazardous waste

Although the money received by Public Works has been used for a variety of activities, Public Works has used most of the grant money for implementation of the County's moderate-risk waste collection and disposal program. A partial listing of projects funded in whole or in part with this money includes:

- Operation of the moderate-risk waste facility at the County landfill.
- Installation of used oil and antifreeze drop-off facilities in Castle Rock, Cathlamet, Kelso (two locations), Longview (three locations), Kalama, Ryderwood, Toutle, and Woodland. These facilities are available to the public 24 hours a day, seven days a week.
- Holding mobile household hazardous waste (moderate-risk waste) events. Currently, annual events occur in Castle Rock, Cathlamet, Kalama, Ryderwood, and Woodland.
- Development and distribution of educational material related to household hazardous waste, waste reduction, and recycling.
- Participation in local events such as the County Fair and Earth Day activities.
- Implementation of the small-quantity generator program.
- Providing technical assistance and education materials to SQGs and acting as liaison between SQGs and applicable enforcement agencies.
- Purchasing and distributing residential home compost bins and residential used motor oil receptacles.

The cities typically use their grant money to implement recycling programs, while the EHU usually uses its money for enforcement and permitting activities.

12.4.5 Disposal Fee Financing

Disposal fee financing places the cost burden of the solid waste system on the individuals and collectors, both public and private, who use the system. Under this alternative, disposal fees are based on the amount of waste generated by the user or delivered to the disposal site. Waste quantities are generally measured on a volume or weight basis.

As previously mentioned, the County currently funds most of its solid waste facilities and programs via disposal fees collected at the landfill. These disposal fees are then directed into an enterprise fund. As with any funding alternative, there are advantages and

disadvantages to a disposal fee based system. The following advantages were significant factors in the County's decision to use and maintain such a system:

- Disposal system operating costs are borne by system users in direct proportion to their level of use.
- Funds are not diverted to the disposal system from other needed County funds or programs.
- A direct cost motivates the system user to implement waste reduction or recycling measures.
- A direct cost encourages system users to be more aware of issues impacting solid waste management, including the purpose of the fee and the use of funds generated by the fee.

Potential disadvantages of a disposal fee system include:

- Moving toward waste reduction and recycling goals leads to a decrease in collected disposal fees.
- High disposal fees increase the likelihood of illegal dumping.

Disposal fees are typically assessed as either tipping fees or solid waste collection fees.

Tipping Fees—Tipping fees provide the most direct means of charging users for solid waste services. These charges are assessed at the point of disposal and are generally based on either volume or weight. These fees are set to recover all costs for current operation and future closure of facilities, as well as to accumulate reserves for internal financing of capital expenses. A portion of the fee is used to generate revenue for local government planning and administration expenses. The fees are applied to all loads, although different types of loads may be charged a different fee. The waste collection companies recover the cost of the tipping fee by charging their customers directly.

If the receiving facility is privately owned, the tipping fee is usually set through a contract with the appropriate jurisdictional authority. Additional services provided by the jurisdiction are paid for either by an amount included in the tipping fee or through alternative public sector funding mechanisms.

Solid Waste Collection Fees—Solid waste collection programs may utilize user charges to pay for services. Fees are billed directly to the generators either by the refuse hauler or by local government, usually on a volume basis, e.g., a 5-cubic-yard dumpster. The collection fee usually covers all costs of solid waste management, including collection, transfer, administration, and disposal.

If the fees associated with collection, transfer, and disposal are billed by the refuse hauler in unincorporated areas, the County can still recover the costs associated with administering County programs. RCW 36.58.045 states, in part, "any county may impose a fee upon the solid waste collection services of a solid waste collection company operating within the unincorporated areas of the county, to fund the administration and planning expenses that may be incurred by the county in complying with the requirements in RCW 70.95.090. The fee may be in addition to any other solid waste services fees and charges a county may legally impose." The County must notify the Washington Utility and Transportation Commission and the affected collection companies 90 days prior to implementing the fee.

If the fees associated with collection, transfer, and disposal are billed by the refuse hauler in incorporated areas, the County will also need to enter into interlocal agreements with the cities in order to recover County administration and planning expenses. The SWMP would then have to be updated to reflect the interlocal agreements.

12.4.6 Taxes

Property, Sales, and Single-Item Taxes—Although these taxes may generate substantial revenue, they are not widely used as a means of recovering the costs of solid waste management services. This is because the taxes are typically of the single-item variety. The single-item tax is a sales tax levied on individual products such as batteries or tires that traditionally present disposal problems, or items such as disposable diapers that constitute a notably large portion of the solid waste stream.

The ease of implementing and administering the tax, the possibility of tax noncompliance, the potential for undercollection of revenues, and the extent of public support for the tax must be considered when using solid waste taxes. In addition, there are often legal constraints affecting state and local options in levying solid waste taxes. Federal restrictions on taxes may include prohibition of taxes that could impede interstate commerce or that discriminate against certain products and materials. Certain taxes would require the passage of a code ordinance by the County Commissioners, a vote by county residents, or the establishment of enabling state legislation.

Solid Waste Disposal District—A solid waste disposal district is an authority with the power to levy and collect taxes. Specifically, RCW 36.58.140 states, in part, "A solid waste disposal district may levy and collect an excise tax on the privilege of living in or operating a business in a solid waste disposal taxing district sufficient to fund its solid waste disposal activities…." RCW 36.58.150 also gives solid waste disposal districts the authority to issue general obligation bonds or revenue bonds. This chapter of the RCW also provides detail regarding the levy and taxation authority of such a district.

RCW 36.58.100 gives the legislative authority of any county with a population of less than one million the permission to establish one or more of these districts. If a county reaches an agreement with cities or towns, a disposal district may include all or part of the incorporated areas in a county. The rules for establishing, modifying, or dissolving solid waste disposal districts are given in Chapters 36.58.110 and 36.58.120 of the RCW.

12.5 Transfer Station Development

Under the Waste Control Inc./Cowlitz County contract, Waste Control will privately develop and construct a transfer station on its property adjacent to the MRF in Longview, which is approximately 3 miles from the existing landfill. Between July 1, 2009 and the close of the landfill, public and commercial disposal activities will be shifted from the landfill to the new transfer station, although waste will be transferred to the landfill for disposal. Following the close of the landfill, waste will be transferred to the Roosevelt Regional Landfill from the Waste Control transfer station.

12.6 Estimated Costs for SWMP Recommendations

The estimated costs for specific recommended SWMP implementation actions are discussed in Chapter 13. The estimated costs are based on the assumption that the existing funding structure will be maintained.

12.7 Recommendations

1. Continue to finance the daily operation of the solid waste management system and planned long-term capital acquisitions through disposal fees. Expenditures for solid waste management should continue to be paid from the existing Solid Waste Fund. This is a policy decision of the Board of County Commissioners, and as conditions or circumstances change, modifications may be made without formal update or amendment to this SWMP. Those long-term capital acquisitions not originally established as part of the SWMP should be financed through solid waste tipping fees and internal reserve funds. As a last resort, the County may use general obligation or revenue bonds.

2. Monitor and pursue state and local grant funding opportunities to the maximum extent possible, specifically for waste reduction and recycling programs.

3. Continue to evaluate private sector financing, ownership, and operations of solid waste facilities to better serve the County, such as a south county transfer station or drop off locations for tires and appliances. Funding and ownership should be evaluated for each project. Such evaluation should be based on

criteria that provide system users with the most efficient and cost-competitive solid waste system.

4. During the annual SWMP review, the Solid Waste Advisory Committee should conduct a review of the Cowlitz County solid waste financial plan, capital needs acquisition, and the Cowlitz County disposal fee to ensure that solid waste programs are paid primarily through direct user fees. A written summary of this review should be provided to the Board of County Commissioners and to the cities.

5. The County should manage reserve funds and the disposal fee schedule so that county residents do not experience a spike in disposal fees.

12.8 Chapter Highlights

- Cowlitz County's solid waste programs are self-funded.
- Cowlitz County's tipping fee is significantly lower than that of all other counties in western Washington.
- Cowlitz County's tipping fee will continue to be cost-effective.

13 IMPLEMENTATION

13.1 Introduction

The purpose of this chapter is to outline the planning process followed in the development of the Plan, identify implementation responsibilities, identify implementation actions, and identify an overall implementation schedule.

13.2 Planning Process

The preparation of the 2007 Cowlitz County Solid Waste Management Plan (SWMP) began in early 2002 and proceeded through December 2002, when plan development was put on hold. Between December 2002 and December 2004, Cowlitz County determined that it would not pursue the development of a new county landfill, and began negotiations with Waste Control, Inc. to provide disposal of all county municipal solid waste (MSW) through a transfer system that would include a privately developed and operated transfer station and disposal at the Roosevelt Regional Landfill, in the eastern part of Klickitat County, Washington. Revision of the SWMP resumed in 2005, when the agreement between the County and Waste Control had been mostly resolved. The revision of the SWMP included provisions of the new agreement. Between October 2005 and November 2006 work on the SWMP was suspended while the details of the contract between the County and Waste Control were finalized, resulting in a contract which was executed November 14, 2006. Upon the completion of the contract, the SWMP was revised again to reflect the details of the contract. All draft chapters and subsequent revisions of the 2007 SWMP have been reviewed by the Solid Waste Advisory Committee (SWAC). The Cowlitz County SWAC is made up of citizens, solid waste industry representatives, industry representatives, and local elected officials. All jurisdictions have designated Cowlitz County as the lead agency for solid waste planning, and have, through their participation in the SWAC and signed resolutions of concurrence, indicated their intent and commitment to adopting the 2007 Cowlitz County SWMP.

A State Environmental Policy Act (SEPA) Checklist was prepared along with the SWMP. During the review process for the SWMP, the SEPA Checklist will be submitted to the Cowlitz County Department of Building and Planning for review. The findings of the Department of Building and Planning will be added to the SEPA Checklist appendix of the SWMP when the final draft of the SWMP is prepared.

If the Department of Building and Planning issues a Determination of Non-Significance (DNS) no further action is required other than to include the notice with the final draft of the SWMP. If the Department of Building and Planning issues a Determination of Significance then the County will be required to prepare an Environmental Impact Statement. A mitigated determination of non-significance was issued on May 10, 2007 and is included in Appendix B.

The draft 2007 Cowlitz County SWMP will be reviewed by the Washington State Department of Ecology (Ecology), the Washington Utilities and Transportation Commission (UTC), the Cowlitz County Department of Building and Planning—Environmental Health Unit (EHU), the public, and all local jurisdictions represented on the SWAC (Castle Rock, Kalama, Kelso, Longview, and Woodland). A comment period will be provided for written comments on the draft SWMP. The draft will be made available at local government offices and public libraries for the entire comment period. During the comment period the Cowlitz County Department of Public Works (Public Works) will hold public hearings on the draft SWMP. The public will also be invited to comment at the SWAC during the SWAC meetings. Public Works will revise the preliminary draft SWMP as necessary to address comments received from all parties. The revised draft amendment will then be submitted to Ecology for final review.

Once Ecology indicates that the revised draft SWMP is ready for local adoption, all participating jurisdictions will be encouraged to adopt the SWMP. Resolutions of adoption will be obtained from all participating jurisdictions. After adoption by all jurisdictions intending to do so, the final draft SWMP will be submitted to Ecology for final approval. After Ecology approves the final draft Amendment, implementation of the 2007 Cowlitz County SWMP will begin.

13.3 Implementation Responsibility

Solid waste management is governed by the laws and regulations of federal, state, and local governments. These laws and regulations create the legal framework defining roles and responsibilities. The following section discusses the roles and responsibilities of local government in the management of solid waste in Cowlitz County.

13.3.1 Waste Reduction and Recycling

Waste reduction and recycling is a fundamental strategy and top priority for solid waste management in Cowlitz County, and is a critical element of the Cowlitz County SWMP. Local governments (cities and the County) are responsible for designing and implementing recycling programs that will collectively achieve a state-wide recycling rate of 50 percent by 2007. Each city must implement local waste reduction and recycling programs as directed by this plan.

13.3.2 Collection

The cities in Cowlitz County manage the solid waste collection systems, including the establishment of rates to pay for the service. Cities are responsible for ensuring that their solid waste collection system, whether public or privately owned, are in compliance with the County SWMP.

Although the County may contract for the collection of recyclable materials from residences in unincorporated areas, the County is explicitly prohibited from operating a solid waste collection system. Solid waste collection in the unincorporated areas of the county is regulated by the UTC.

13.3.3 Disposal

It is the responsibility of the County to ensure that a long-term disposal system is available for MSW. The Cowlitz County SWMP is required to describe existing solid waste disposal handling facilities and assess the need for solid waste handling facilities for 20 years into the future.

13.3.4 Education and Public Involvement

Comprehensive education is to be conducted throughout the county so that people are informed of the need to reduce, source separate, and recycle solid waste. Educational programs are required to be developed as part of the local comprehensive SWMP (Chapter 70.95 Revised Code of Washington [RCW]).

The County is responsible for ensuring that the public has a chance to participate in the decision making process. This will be accomplished by holding public meetings on the SWMP and other solid waste issues, providing adequate public notice of SWAC meetings, establishing a comment period during which citizens may submit written comments on the proposed plan, distributing informational brochures, and soliciting ideas from citizens.

13.3.5 Solid Waste Permits

The EHU is responsible for issuing permits for solid waste handling facilities. The EHU reviews applications for a solid waste permit to establish, alter, expand, improve, or continue to use a solid waste handling or disposal facility. The EHU must investigate every application to determine whether an existing or proposed site and facilities meet all applicable laws and regulations, conform to the approved Cowlitz County SWMP, and conform to all zoning, shoreline, and other requirements. Applicants must secure all necessary permits before a solid waste permit can be issued. The EHU has sole

jurisdiction for issuing and suspending permits in accordance with locally adopted rules and state regulations.

The Board of County Commissioners must adopt regulations or ordinances governing solid waste handling that are as stringent or may be more stringent than the minimum functional standards (MFS), solid waste handling standards (SWHS), and/or the criteria for municipal solid waste landfills (CMSWL). The EHU enforces the MFS with oversight and technical assistance from Ecology (Chapter 70.95 RCW).

13.3.6 Solid Waste Management Planning

Cowlitz County has responsibility for solid waste planning and management. Cowlitz County, in cooperation with the cities, is required to prepare a coordinated, comprehensive SWMP. The Cowlitz County SWMP is to be prepared in accordance with Chapter 70.95 RCW, Ecology's Guidelines for the Development of Local Solid Waste Management Plans and Plan Revisions, and the Cost Assessment Guidelines published by UTC in accordance with RCW 70.95.090(8).

13.3.7 Implementation

It is the responsibility of Cowlitz County and cities to begin implementing programs following the adoption and approval of the 2007 Cowlitz County SWMP. Cowlitz County and the cities are required to adopt regulations or ordinances governing solid waste handling to implement the 2007 Cowlitz County SWMP (Chapter 70.95 RCW).

13.3.8 Reporting

Municipalities that provide their own solid waste disposal are required to report annual tonnage information to Ecology.

13.3.9 Solid Waste Advisory Committee

Cowlitz County is required to establish a local SWAC to assist in the development of programs and policies concerning solid waste management. The SWAC also reviews and comments on proposed rules, policies, and ordinances before their adoption. The SWAC is advisory only. The committee makes recommendations to the County Board of Commissioners, which makes final decisions after considering committee recommendations and other available information. The Cowlitz County SWAC elects its own chairperson, adopts its own bylaws, and conducts its own meetings in accordance with the Ecology Solid Waste Planning Guidelines.

The Cowlitz County SWAC is also responsible to annually review the SWMP and assess the implementation of the recommendations contained within the plan. The written summary of the assessments made during this review are provided to the Board of County Commissioners and to the cities.

13.4 Recommended Implementation Actions

The following is a list of implementation actions for the County, cities, the EHU, private haulers, and private businesses. The list is derived from the recommendations section of each chapter contained in this SWMP. For implementation actions that will result in an expenditure by Cowlitz County, a reference number is provided in parentheses to locate the item in Table 13-1, which serves as a schedule and summarizes implementation costs.

CHAPTER 1—INTRODUCTION AND BACKGROUND

Cowlitz County

- The SWAC shall conduct an annual review of the Cowlitz County SWMP and assess progress towards achieving recommendations. A written summary of the SWAC's findings shall be provided to the Board of County Commissioners and the Cities (Table 13-1, Item 1a).

- Prepare an update of the Cowlitz County SWMP every five years (Table 13-1, Item 1b).

CHAPTER 2—WASTE STREAM DESCRIPTION

Cowlitz County

- Refine waste characterization information as it becomes available from Ecology or elsewhere and continue to increase detail of information on a jurisdictional basis (Table 13-1, Item 2a).

- Track, cooperatively with Waste Control, quantities of all recycled MSW (Table 13-1, Item 2b).

- Track, cooperatively with Weyerhaeuser, quantities of waste diverted and recycled by Weyerhaeuser and factor into countywide recycling and waste reduction quantities (Table 13-1, Item 2b).

- Maintain a fairly constant quantity of material disposed of, despite increases in population, through effective recycling.

CHAPTER 3—WASTE REDUCTION

Cowlitz County

- Develop ongoing public education and awareness programs for waste reduction and recycling (Table 13-1, Item 3a).
- Continue to support home composting programs (Table 13-1, Item 3b).
- Continue to provide funding for the local home composting demonstration site at the Cowlitz County Fairgrounds (Table 13-1, Item 3c).
- Continue to support the state developed reuse website, 2-Good-2-Toss (www.2good2toss.com). (Table 13-1, Item 3d)
- Continue and expand group and school presentations (Table 13-1, Item 3a).
- Provide technical assistance to nonresidential generators to encourage them to evaluate their processes and policies that affect waste generation (Table 13-1, Item 4c).
- Continue to follow in-house waste reduction programs and procurement policies (Table 13-1, Item 3e).
- Coordinate with the cities to continue to track waste reduction, recycling, and disposal (Table 13-1, Item 2b).

Cities

- Develop ongoing public education and awareness programs for waste reduction and recycling.
- Develop or continue to follow in-house waste reduction programs and procurement policies.
- Continue to support home composting programs.
- Continue to provide funding for the local home composting demonstration site.
- Longview should continue to support and other cities should consider supporting the state developed reuse website, 2-Good-2-Toss (www.2good2toss.com).
- Continue and expand group and school presentations.

- Coordinate with the County to continue to track waste reduction, recycling, and disposal.

CHAPTER 4—RECYCLING

Cowlitz County

- Evaluate residential curbside recycling in the designated unincorporated urban areas of Cowlitz County (Table 13-1, Item 4a).

- Design and implement a program to provide multimaterial drop-off centers for the designated areas of Cowlitz County (Table 13-1, Item 4b).

- Ensure implementation of the multifamily recycling program within the designated unincorporated urban areas of Cowlitz County (Table 13-1, Item 4a).

- Provide technical assistance to businesses and institutions county-wide to encourage the development of in-house waste reduction and recycling programs (Table 13-1, Item 4c).

- Develop a program to monitor nonresidential recycling activities, and build a comprehensive list of generators in the county (Table 13-1, Item 4d).

- Continue to provide a commercial recycling collection route available to all commercial businesses in the designated urban service area.

- Encourage commercial generators in outlying areas of the county to use multimaterial drop-off centers.

- Lead by example in the implementation of department-wide recycling programs.

- Evaluate contracting policies to encourage contractors to segregate yard waste.

- Continue use of 3-acre compost pad at landfill for yard waste disposal.

- Evaluate need for mechanized turning, moisture conditioning, and aeration of compost pile to expedite the composting process (Table 13-1, Item 4e).

- Evaluate pay-as-you-throw waste programs to reduce waste stream volume (Table 13-1, Item 4f).

- The County should encourage the development of commercial composting facilities in-county to provide capacity for additional yard and food waste.

- Conduct a compost-market evaluation and identify end users (Table 13-1, Item 4e).

- Develop long-term agreements with compost end-users to serve as a reliable market for processed material.

- Accumulate 85,000 cubic yards of composted soil for landfill closure cover of Cells 3A and B, and reapplication over closed Site A.

- Develop and distribute educational materials dedicated to recycling opportunities in the county (Table 13-1, Item 3a).

- Develop a waste reduction and recycling theme and a portable display for use at county events (Table 13-1, Item 4g).

- Coordinate educational activities with cities; haulers; and private, nonprofit organizations.

- Evaluate educational programs routinely through public feedback and measurement of program performance (Table 13-1, Item 4h).

Cities

- Evaluate pay-as-you-throw waste programs to reduce waste stream volume.

- Coordinate educational activities with the County; haulers; and private, nonprofit organizations.

- Evaluate educational programs routinely through public feedback and measurement of program performance.

- Provide technical assistance to businesses and institutions to encourage the development of in-house waste reduction and recycling programs (Table 13-1, Item 4c).

- Lead by example in the implementation of department-wide recycling programs.

- Evaluate contracting policies to encourage contractors to segregate yard waste.

- Continue residential curbside recycling for single-family households in the designated incorporated urban areas of Cowlitz County.

- Continue the multifamily recycling program within the designated incorporated urban areas.

CHAPTER 5—SOLID WASTE PROCESSING

Cowlitz County

- Continue recyclables processing services through the Waste Control Material Recovery Facility (MRF).
- Develop capabilities at the Waste Control MRF to handle additional components of the waste stream.
- Continue operation of the yard waste composting system.
- Evaluate curbside collection of yard waste (Table 13-1, Item 5a).
- Evaluate fee reduction for yard waste at the landfill to encourage separation (Table 13-1, Item 5a).
- Promote the use of backyard composting (Table 13-1, Item 3b).
- Continue to subsidize home composting bins (Table 13-1, Item 3b).
- Continue to pursue possibility of supplying land fill gas to local industries.

CHAPTER 6—SOLID WASTE COLLECTION

Cowlitz County

- Continue to evaluate the establishment of a solid waste collection district to include the designated unincorporated urban areas not currently receiving service, in order to implement mandatory collection and curbside recycling (Table 13-1, Item 6a).
- Encourage collection of source-separated construction, demolition, and land clearing (CDL) and inert waste by haulers in unincorporated areas (Table 13-1, Item 6b).
- Encourage collection of yard waste and special wastes independently from MSW (Table 13-1, Item 6b).
- Work with the EHU to eliminate illegal dumping (Table 13-1, Item 6b).
- Work with UTC to expand service boundary to residential customers between the Waste Control (G-101) and Waste Connections (G-253) boundaries on Lewis River Road.

Cities

- Work with the EHU to eliminate illegal dumping.

CHAPTER 7—SOLID WASTE TRANSFER

Cowlitz County

- Continue the existing level of service at the Toutle drop box facility in the north county area.

- Implement the terms of the contract with Waste Control to provide a new, privately developed and constructed transfer station for the county (Table 13-1, Item 7a).

- Evaluate the need for a south county transfer station to be developed privately (Table 13-1, Item 1b).

CHAPTER 8—SOLID WASTE DISPOSAL

Cowlitz County

- The Cowlitz County Landfill should remain open until it reaches capacity.

- Implement the terms of the contract with Waste Control concerning waste-export opportunities associated with Waste Control's transfer station to ensure necessary disposal capacity for the 20- to 30-year planning period (Table 13-1, Item 7a).

- All public disposal facilities in Cowlitz County must continue to be permitted and meet the Minimum Functional Standards and Criteria for Municipal Solid Waste Landfills for operation, closure, and post-closure.

- All public landfills operating in Cowlitz County must continue to have reserve accounts to fund closure construction and post-closure maintenance and monitoring.

- Continue existing programs to ensure that toxic and dangerous materials do not enter disposal facilities, in accordance with the Cowlitz County Moderate Risk Hazardous Waste Management Plan.

- Cowlitz County should continue to monitor local industries for opportunities to partner in a landfill gas pipeline project for energy recovery of landfill gas generated by the Cowlitz County Landfill .

Environmental Health Unit

- Continue to enforce compliance with the Minimum Functional Standards and Criteria for Municipal Solid Waste Landfills, operating permits, and SWMP elements for all solid waste facilities in the county.

- Ensure that all landfills located in Cowlitz County are permitted and meet the SWHS for operation, closure and post-closure.

Private Sector

- Provide recycling opportunities at private disposal facilities as well as procedures to identify and remove potentially hazardous materials.

- Continue existing programs to ensure that toxic and dangerous materials do not enter private disposal facilities, in accordance with the Cowlitz County Moderate Risk Hazardous Waste Management Plan.

- All private landfills operating in Cowlitz County must continue to have reserve accounts to fund closure construction and post-closure maintenance and monitoring.

- All private disposal facilities in Cowlitz County must continue to be permitted and meet the Minimum Functional Standards and Criteria for Municipal Solid Waste Landfills for operation, closure, and post-closure.

CHAPTER 9—SOLID WASTE IMPORT AND EXPORT

Cowlitz County

- Current Cowlitz County solid waste import and export activities should be permitted to continue.

- Develop interlocal agreements with Wahkiakum and Clark counties recognizing current solid waste import and export activities (Table 13-1, Item 9a).

- Require new or expanded solid waste facilities to address the impacts associated with solid waste import activity during either SEPA review or the special use permit application process.

- Cowlitz County should develop contingency plans with neighboring counties to allow for emergency export or import, depending on the situation and use of transfer/long-haul systems, should short term system issues develop.

Environmental Health Unit

- Develop procedures to track the source, type, and quantity of solid waste received by all solid waste facilities located in Cowlitz County.

- Review disposal facility import quantities. For facilities receiving more than 10 percent from sources out of county, an expanded operating permit would be required to ensure that the waste import activity does not adversely impact public health and safety.

- Track source, type, and quantity of solid waste as part of the annual operating permit process.

CHAPTER 10—SPECIAL AND INDUSTRIAL WASTES

Cowlitz County

- Develop waste reduction and recycling educational materials for distribution to CDL waste generators (Table 13-1, Item 10a).

- Conduct a construction site reuse and recycling pilot project, summarize results, and make information available to contractors (Table 13-1, Item 10b).

- Investigate diversion incentives for CDL waste generated by construction projects (Table 13-1, Item 10c).

- The County should continue to encourage existing activities on the part of farmers and ranchers to reduce agricultural waste.

- Conduct a study to investigate techniques and arrangements that would lead to enhanced composting of agricultural wastes (Table 13-1, Item 10d).

- The County should continue to encourage existing auto hulk practices in the county.

- The County should maintain existing practices with regard to asbestos disposal.

- Management of asbestos should be shifted to the transfer station, in accordance with the contract with Waste Control.

- The hierarchy established by Ecology should be used to select appropriate treatment methods for petroleum-contaminated soils generated in Cowlitz County.

- The Cowlitz County Landfill should accept only petroleum-contaminated soil that does not exceed Model Toxics Control Act A contamination levels, to be used as daily cover.

- Management of petroleum-contaminated soil should be shifted to the transfer station, in accordance with the contract with Waste Control.

- The County should maintain existing practices with regard to the management of white goods.

- Cowlitz County should include provisions for the management of white goods at the transfer station after the landfill closes.

- Cowlitz County should provide educational information about legal tire disposal to businesses and the public with information about existing recycling/disposal opportunities.

- The County should develop plans for a drop-off location for tires after the closure of the landfill (Table 13-1, Item 10e).

- Cowlitz County solid-waste facilities, both private and public, should require that personnel involved in the actual handling of solid waste take necessary precautions to prevent exposure to infectious agents, as outlined by the National Institute of Occupational Safety and Health.

- The Cowlitz County Landfill should continue to accept properly prepared sharps waste from homeowners.

- Owners of sewage treatment plants in Cowlitz County should continue to support the existing biosolids management programs that provide an alternative to biosolids disposal at solid waste landfills.

- Owners of sewage treatment plants should begin to develop plans for biosolids disposal in order to prepare for the eventual closure of the County landfill.

- The contents of biosolids currently disposed of at the County landfill should be reviewed along with the criteria stated in the Weyerhaeuser Regional Landfill permit, to determine if the facility can accept these materials (Table 13-1, Item 10f).

- Cowlitz County should continue to implement the Cowlitz-Wahkiakum Moderate Risk Hazardous Waste Management Plan.

- The plan should be updated once Ecology updates the local hazardous waste planning guidelines.

- Cowlitz County should encourage the separation of logyard waste for processing into more valuable material and to divert the material from landfills. Additionally, the County should encourage the paving of logyards and use of steel cribs at forest product facilities to prevent logyard waste contamination.

- Cowlitz County should continue to discourage the use of the Cowlitz County Landfill as a disposal facility for forest-products waste.

Private Sector

- The hierarchy established by Ecology should be used to select appropriate treatment methods for petroleum-contaminated soils generated in Cowlitz County.

- The forest-products industry in Cowlitz County should encourage composting as an alternative to landfilling.

- To the extent possible, the forests-products industry and private companies in Cowlitz County should continue to separate and enhance the value of logyard waste through existing or proposed woodwaste recycling facilities.

CHAPTER 11—ADMINISTRATION AND ENFORCEMENT

Cowlitz County Public Works

- Implement the terms of the contract with Waste Control, Inc. for the disposal of county-generated MSW at a regional landfill after the County landfill closes.

- Flow control through interlocal agreements with the cities should be executed after the Waste Control contract is signed (Table 13-1, Item 11a).

- Continue to use and maintain the waste tracking system and use of weight scales to account for all waste entering the landfill. Ensure that a similar tracking system is implemented under the Waste Control contract.

- Assess the need for additional solid waste administration staff to administer the Waste Control contract as well as for the landfill operation, closure, and post-closure activities.

Cowlitz County Environmental Health Unit

- Pursue funding of solid waste activities for at least one full-time employee, to adequately provide permitting, inspection, education, and enforcement activities.

- Implement a public education program that communicates to the public the environmental and economic consequences of illegal disposal.

- Conduct regular reviews and updates of local solid waste regulations to conform to changes to state statutes and regulations.

Cities

- Flow control through interlocal agreements with the County should be executed after the Waste Control contract is signed (Table 13-1, Item 11a).

- The cities should continue to maintain their abatement officers to enforce illegal dumping restrictions.

CHAPTER 12—FUNDING AND FINANCE

Cowlitz County

- Continue to finance the daily operation of the solid waste management system and planned long-term capital acquisitions through disposal fees.

- Monitor and pursue state and local grant funding opportunities to the maximum extent possible, specifically for waste reduction and recycling programs.

- Continue to evaluate private sector financing, ownership, and operations of solid waste facilities.

- The SWAC should review the Cowlitz County solid waste financial plan, capital needs acquisition, and the Cowlitz County disposal fee during the annual review of the SWMP. A written summary of this review should be provided to the Board of County Commissioners and to the cities.

- The County and cities should allow Waste Control to privately develop a new transfer station to be used after the closure of the County landfill. Funding for

development and construction would come from private sources under the contract with Waste Control.

- The County should manage reserve funds and the disposal fee schedule so that county residents do not experience a spike in disposal fees.

13.5 Budget Impacts

The Equipment, Land, and Facilities (ELF) Fund that is maintained by the County has a balance that is sufficient to provide the funding for all of the recommendations proposed in this document over the next five-year period as summarized in Table 13-1 and as shown in the ELF Fund balance summary in Attachment B of the UTC Cost Assessment (Appendix C). Since the fund will continue to increase with revenues from landfill tip fees, these activities are not expected to significantly deplete this resource.

Table 13-1
Implementation Action Costs - 2007 through 2012
Cowlitz County
2007 Solid Waste Management Plan

Program Component	Estimated Cost						Responsibility
	2007	2008	2009	2010	2011	2012	
1. Introduction and Background							
a. Annual Plan Review/Report	4,760	4,903	5,050	5,201	5,357	0	County Staff
b. SWMP Update	0	0	0	0	0	196,135	Consultant/County Staff
Subtotal	4,760	4,903	5,050	5,201	5,357	196,135	
2. Waste Stream Description							
a. Update Waste Characterization	2,380	2,451	2,525	2,601	2,679	2,759	County Staff
b. Recycling Tracking	7,140	7,354	7,575	7,802	8,036	8,277	County Staff / Private Disposal Facility
Subtotal	9,520	9,806	10,100	10,403	10,715	11,036	
3. Waste Reduction							
a. WR & Recycling Education							
Update Brochure	7,140	0	0	0	8,036	0	County Staff
Distribute Brochure	16,190	16,676	17,176	17,691	18,222	18,769	County Staff
School Presentations	3,570	3,677	3,787	3,901	4,018	4,139	County Staff
b. Home Composting Program							
Update Brochure	0	0	0	0	2,679	0	County Staff
Distribute Brochure	16,190	16,676	17,176	17,691	18,222	18,769	County Staff
Subsidize Compost Bins	3,570	3,677	3,787	3,901	4,018	4,139	County Staff
c. Fund Home Compost Demo Site	5,000	5,150	5,305	5,464	5,628	5,796	County
d. Sponsor 2Good2Toss Website	500	515	530	546	563	580	County
e. In-House WR and Procurement Policies	2,380	2,451	2,525	2,601	2,679	2,759	County Staff
Subtotal	54,540	48,822	50,287	51,795	64,064	54,950	

Table 13-1
Implementation Action Costs - 2007 through 2012
Cowlitz County
2007 Solid Waste Management Plan

Program Component	Estimated Cost						Responsibility
	2007	2008	2009	2010	2011	2012	
4. Recycling							
a. Curbside Recycling Evaluation (Unincorporated Areas)	0	0	10,100	0	0	0	County Staff
b. Multi-Material Dropoff Centers (cost per site)							
Design	32,380	0	0	0	0	0	Consultant/County Staff
Implement	0	100,106	0	0	0	0	Consultant/County Staff
Operations	0	11,031	22,724	23,406	24,108	24,832	County Staff
c. Nonresidential Technical Assistance	4,570	4,707	4,848	4,994	5,144	5,298	County Staff
d. Nonresidential Waste Database	1,190	1,226	1,262	1,300	1,339	1,380	County Staff
e. Evaluate Compost Operation	0	10,300	0	0	0	0	County Staff
f. Evaluate Pay-As-You-Throw	0	0	10,100	0	0	0	County Staff
g. WR & Recycling Theme & Display	8,140	2,256	2,323	2,393	2,465	2,539	County Staff
h. Evaluate WR & Recycling Ed. Programs	2,380	2,451	2,525	2,601	2,679	2,759	County Staff
Subtotal	48,660	132,077	53,883	34,694	35,735	36,807	
5. Solid Waste Processing							
a. Evaluate Yard Waste Program	0	2,451	0	0	0	0	County Staff
Subtotal	0	2,451	0	0	0	0	
6. Solid Waste Collection							
a. Establish Solid Waste Collection District	0	0	10,100	0	0	0	County Staff
b. Encourage Separated Collection Implementation	1,785	1,839	0	0	0	0	County Staff
c. Assist EHU with Illegal Disposal Issues	5,712	5,883	6,060	6,242	6,429	6,622	County Staff
Subtotal	7,497	7,722	16,160	6,242	6,429	6,622	

Table 13-1
Implementation Action Costs - 2007 through 2012
Cowlitz County
2007 Solid Waste Management Plan

Program Component	Estimated Cost						Responsibility
	2007	2008	2009	2010	2011	2012	
7. Solid Waste Transfer							
a. Transfer Station Development	435,160	441,225	800,724	1,031,136	1,051,680	1,072,380	County Staff/Waste Control
Subtotal	435,160	441,225	800,724	1,031,136	1,051,680	1,072,380	
9. Solid Waste Import and Export							
a. Interlocal Agreements	4,903	0	0	0	0	0	County Staff
Subtotal	4,903	0	0	0	0	0	
10. Special and Industrial Waste							
a. CDL Waste Educational Materials							
Update Brochure	714	735	757	780	804	828	County Staff
Distribute Brochure	1,048	1,079	1,111	1,145	1,179	1,214	County Staff
b. Construction Recycling Demonstration Site	0	24,611	0	0	0	0	County Staff
c. Research and Evaluate CDL Diversion Incentives	0	2,451	0	0	0	0	County Staff
d. Agricultural Waste Composting Study	2,380	0	0	0	0	0	County Staff
e. Tire Dropoff Evaluation	0	2,451	0	0	0	0	County Staff
f. Evaluate Biosolids for Disposal at Weyerhaeuser Regional Landfill	1,190	0	0	0	0	0	County Staff
Subtotal	5,332	31,328	1,869	1,925	1,983	2,042	
11. Administration and Enforcement							
a. Draft Flow Control Agreements with Cities	14,875	15,321	0	0	0	0	County Staff
Subtotal	14,875	15,321	0	0	0	0	
Total	585,247	693,655	938,072	1,141,396	1,175,963	1,379,972	

REFERENCES

Combustion Engineering. 1988. Letter (re: potential incinerator) to D. Olson, Cowlitz County Public Works from Combustion Engineering. November 30.

Cowlitz County Department of Public Works and SCS Engineers. 1993. Cowlitz County comprehensive solid waste management plan. July.

Cowlitz County Department of Public Works. 2000a. State Route 432 route development plan. Commissioned by the Cowlitz-Wahkiakum Council of Governments. January 2000.

Cowlitz County Department of Public Works. 2000b. SR 4/SR 411 urban area congestion mitigation plan. Commissioned by the Cowlitz-Wahkiakum Council of Governments. November 2000.

Cowlitz County Department of Public Works. 2004. Financial assurance analysis annual update. April.

Ecology. 1988. Best Management Practices Analysis for Solid Waste. Washington State Department of Ecology. January.

Ecology. 1999. Guidelines for the development of local solid waste management plans and plan revisions. Washington State Department of Ecology Solid Waste & Financial Assistance Program. Publication No. 99-502 (revised). December.

Ecology. 2004. Solid waste in Washington State—thirteenth annual status report. Washington State Department of Ecology Solid Waste & Financial Assistance Program. Publication No. 01-07-047. December.

Gray, S. 2002. Personal communication with J. Maag, Maul Foster & Alongi, Inc., Vancouver, Washington. August.

Integrated Utilities Group. 2001. Economic evaluation of solid waste disposal options for Cowlitz County. December 4.

Jones, R. 2002. Personal communication with J. Maag, Maul Foster & Alongi, Inc., Vancouver, Washington. August 21.

OFM. 2007. State of Washington Office of Financial Management. http://www.ofm.wa.gov/localdata/cowl.asp (November 2007).

Olson, D. 2006. Solid waste tipping fee survey for western Washington. October.

Olson, D. 2002. Personal communication with J. Maag, Maul Foster & Alongi, Inc., Vancouver, Washington. June through August.

SCS Engineers and Cowlitz County Public Works, 1993. Cowlitz County comprehensive solid waste management plan. July.

Skumatz, L. A. 2002. Variable-rate or "pay-as-you-throw" waste management: answers to frequently asked questions. Reason Foundation, Policy Study 295.

Stinger, J. 2002. Telephone and fax communications with J. Maag, Maul Foster & Alongi, Inc., Vancouver, Washington. June through August.

SWAC. 2002. Discussions at solid waste advisory committee. September 11.

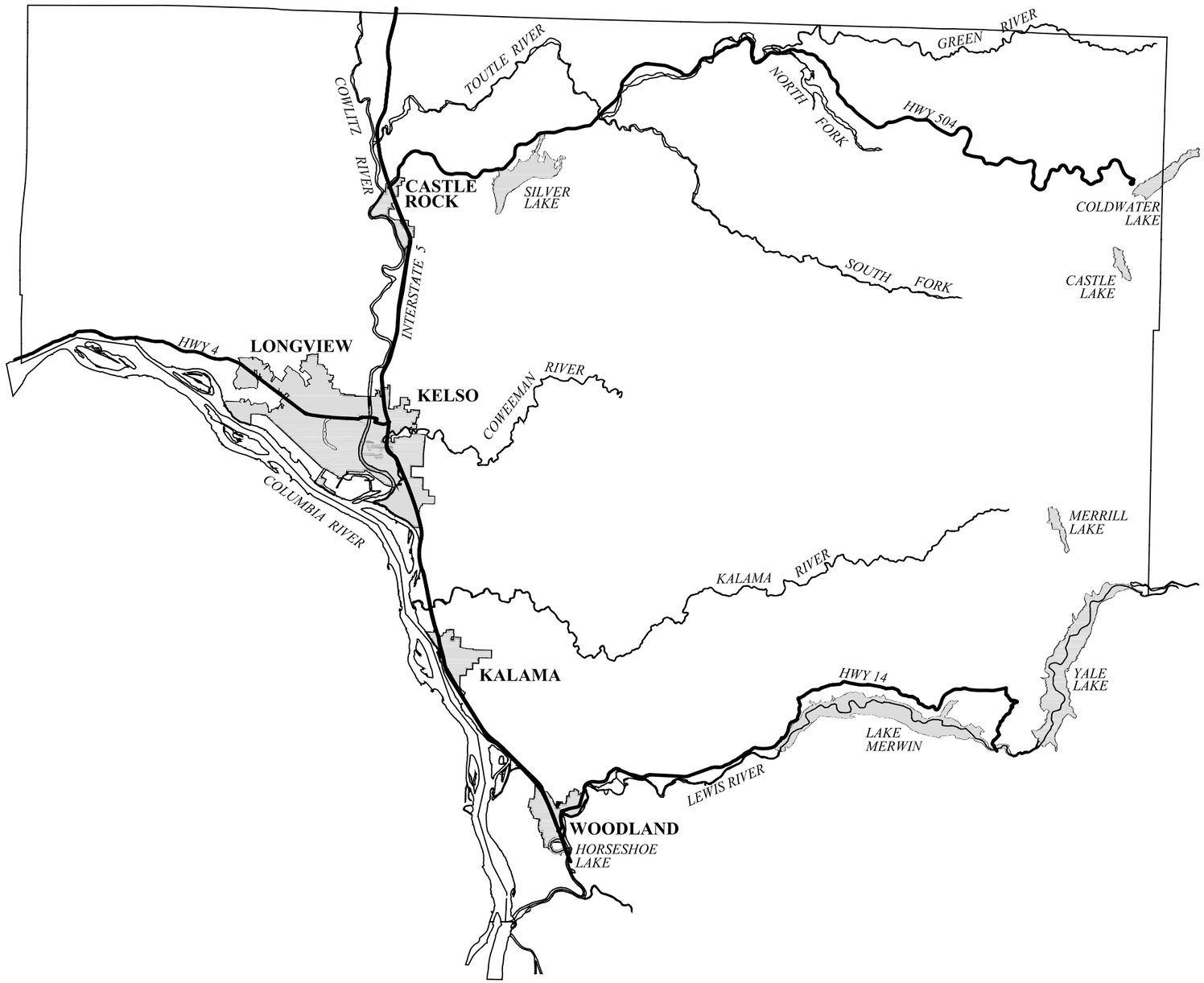
U.S. Census Bureau. 2005. Washington QuickFacts, Cowlitz County 2003 population estimate. http://quickfacts.census.gov/qfd/states/53/53015.html. (May 2005)

USEPA. 1999. Organic materials management strategies. U.S. Environmental Protection Agency. Solid Waste and Emergency Response. July.

Willis, J. 2002. Personal communication with J. Maag, Maul Foster & Alongi, Inc., Vancouver, Washington. September and October.

WSDA. 2002. News release. Ban on using clopyralid on lawns to continue. Washington State Department of Agriculture. May 28.

FIGURES



0 5 10

SCALE IN MILES

Suite B
7223 NE Hazel Dell Ave.
Vancouver, WA 98665

P 360.694.2691
F 360.906.1958

MAUL FOSTER ALONGI

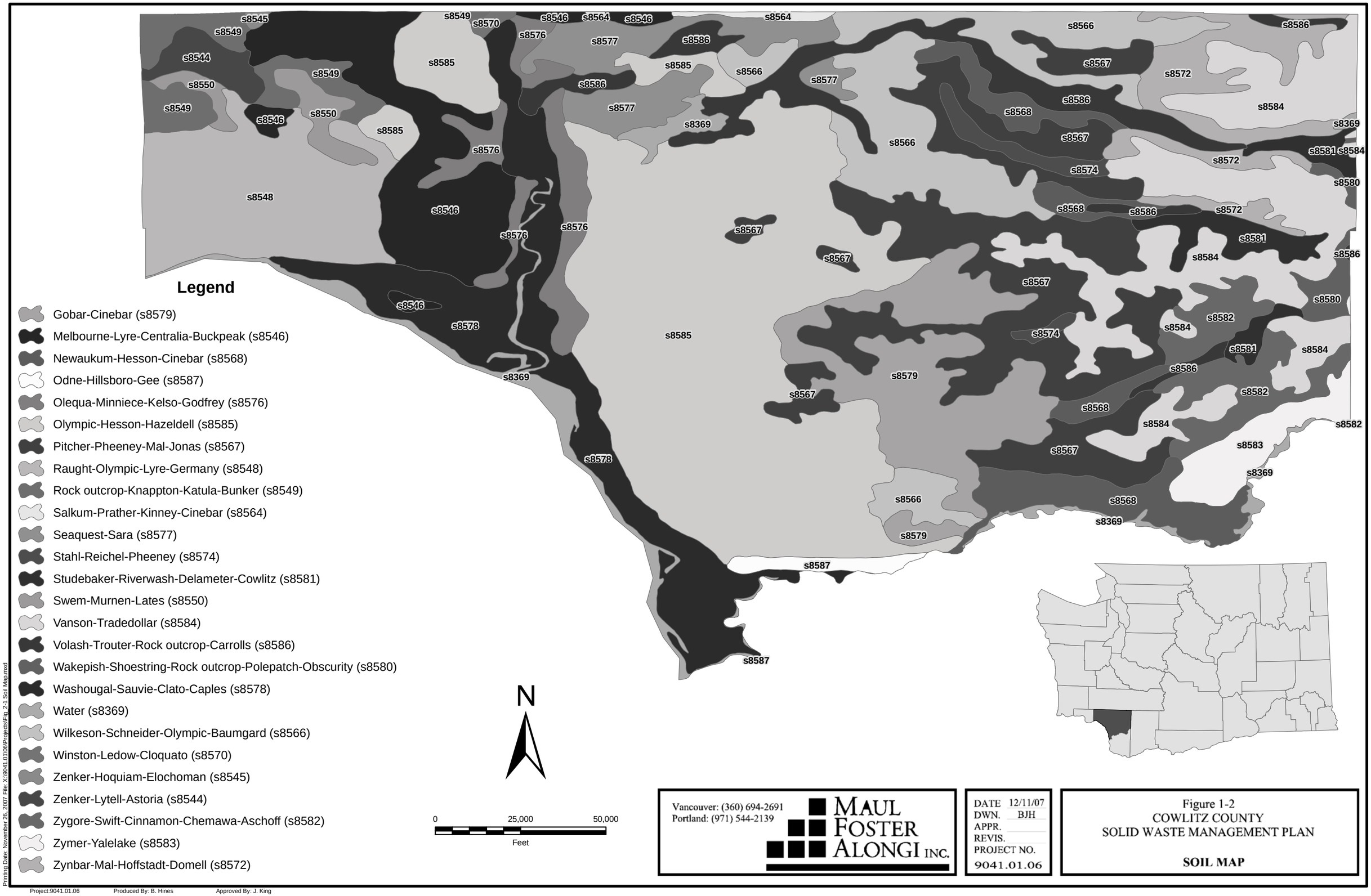
DATE 06/28/02
DWN. JLN
APPR. _____
REVIS. _____
PROJECT NO.
9041.01.06

Figure 1-1
COWLITZ COUNTY
SOLID WASTE MANAGEMENT PLAN

MAJOR COWLITZ COUNTY FEATURES

File: G:\9000\9041-COWLITZ\001\WASTE MANAGEMENT PLAN\COUNTY FEATURES-1.DWG Last edited: JUN. 01, 2005 by: dglaus B/W

LAYOUT: 1



Printing Date: November 26, 2007 File: X:\9041.01\06\Projects\Fig. 2-1 Soil Map.mxd

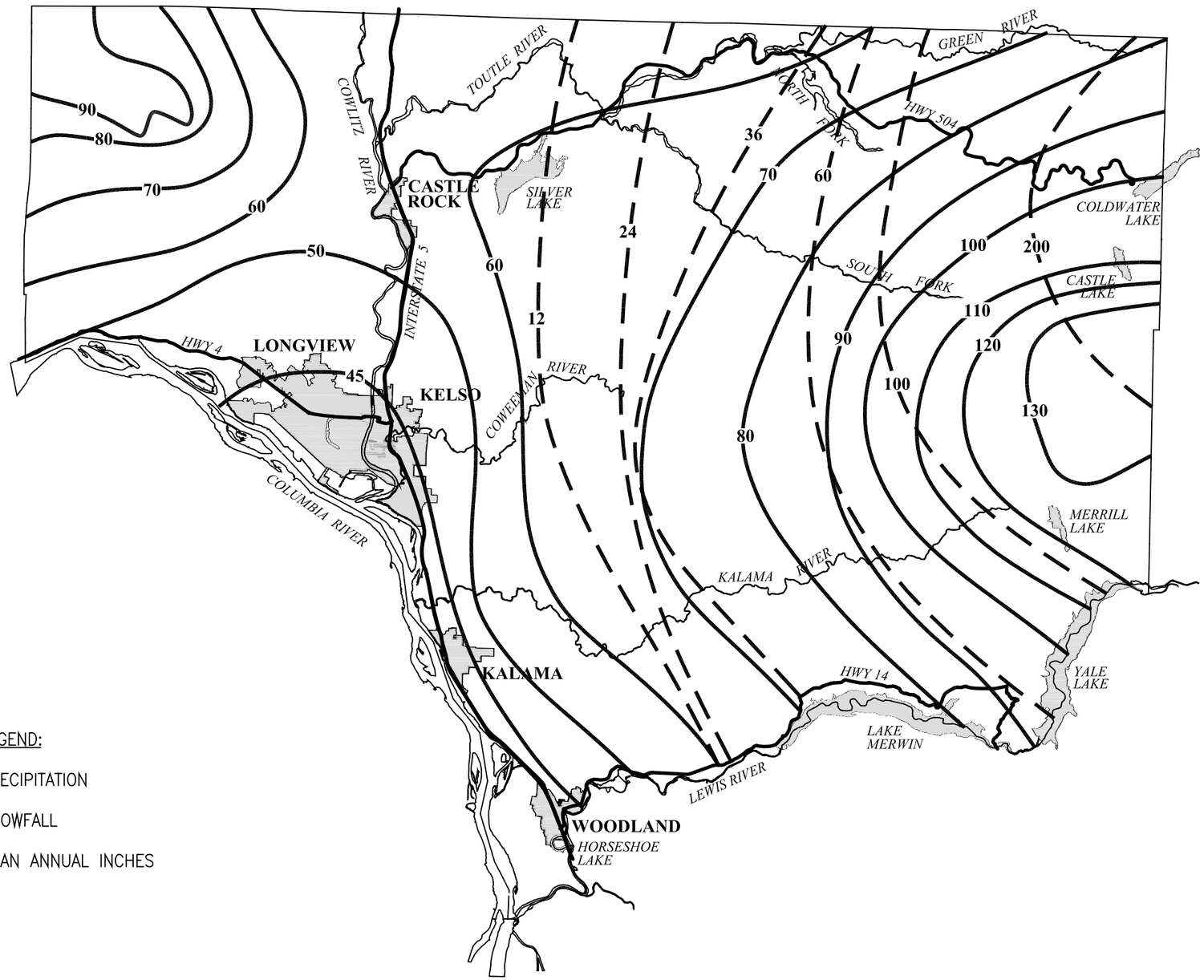
Project:9041.01.06 Produced By: B. Hines Approved By: J. King

Vancouver: (360) 694-2691
Portland: (971) 544-2139
MAUL FOSTER ALONGI INC.

DATE 12/11/07
DWN. BJH
APPR.
REVIS.
PROJECT NO. 9041.01.06

Figure 1-2
COWLITZ COUNTY
SOLID WASTE MANAGEMENT PLAN

SOIL MAP



LEGEND:

PRECIPITATION

SNOWFALL

60 MEAN ANNUAL INCHES

0 5 10

SCALE IN MILES

Suite B
7223 NE Hazel Dell Ave.
Vancouver, WA 98665

P 360.694.2691
F 360.906.1958

MAUL FOSTER ALONGI

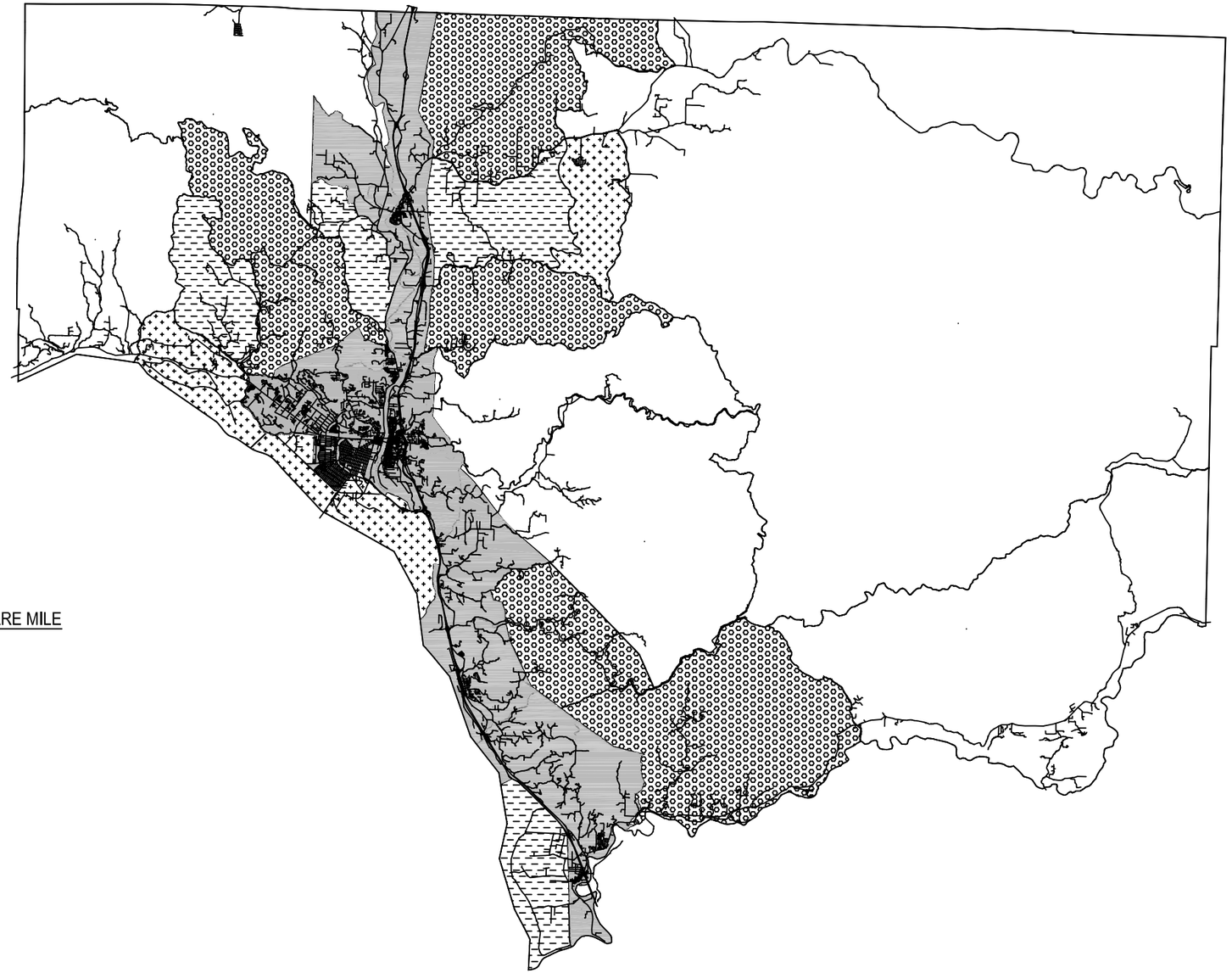
DATE 06/28/02
DWN. AJY
APPR. _____
REVIS. _____
PROJECT NO.
9041.01.06

Figure 1-3
COWLITZ COUNTY
SOLID WASTE MANAGEMENT PLAN

MEAN ANNUAL PRECIPITATION

File: G:\9000\9041-COWLITZ\001\WASTE MANAGEMENT PLAN\COUNTY FEATURES-1.DWG Last edited: JUN. 01, 2005 by: dglaus B/W

LAYOUT: 2



POPULATION PER SQUARE MILE

- 0-24
- 25-49
- 50-74
- 75-99
- ≥ 100

0 5 10

SCALE IN MILES

Vancouver: (360) 694-2691
Portland: (971) 544-2139

MAUL FOSTER ALONGI INC.

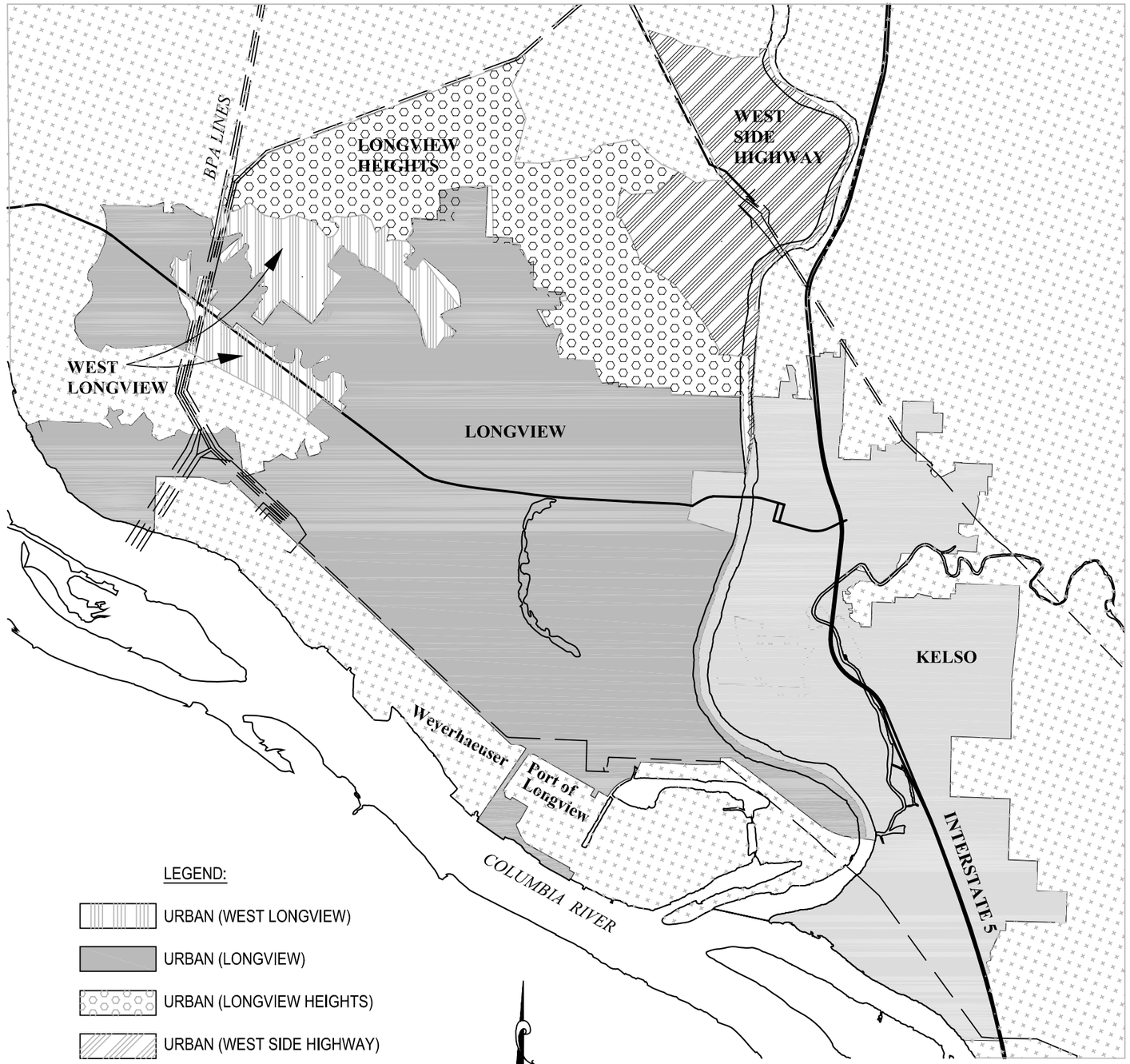
DATE 06/03/05
DWN. DLG
APPR.
REVIS.
PROJECT NO.
9041.01.06

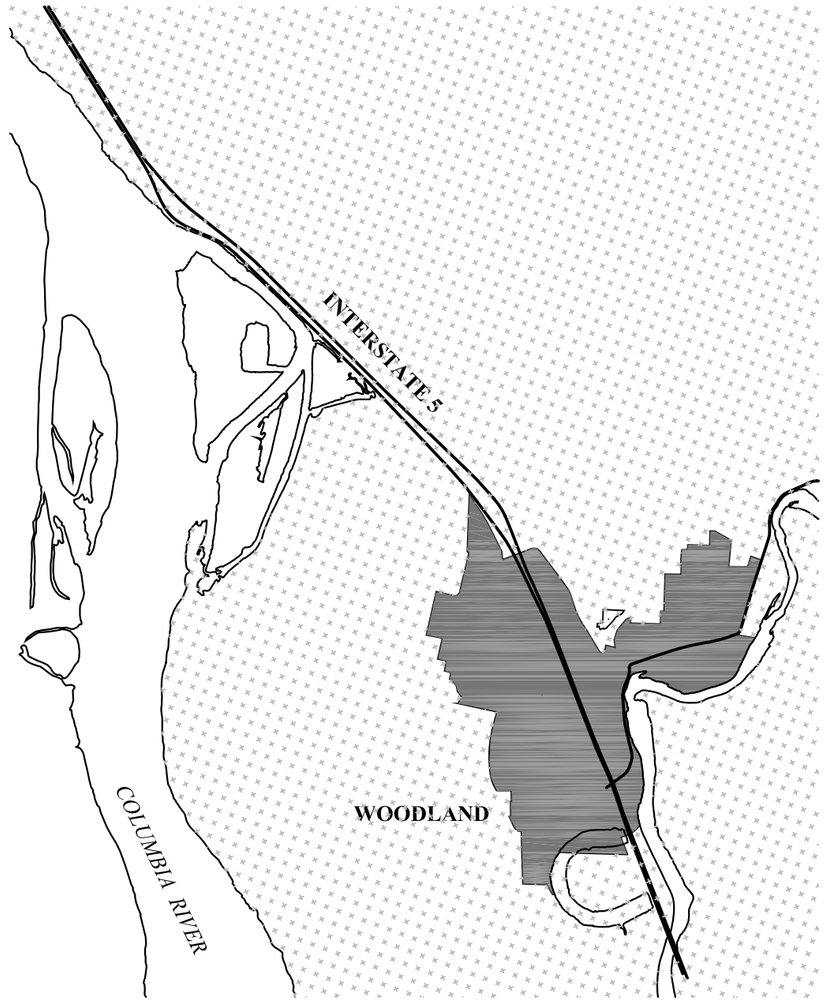
Figure 1-4
COWLITZ COUNTY
SOLID WASTE MANAGEMENT PLAN

POPLUATION DENSITIES

G:\9041.01 Cowlitz County\01_Waste Management Plan\POPULATION.dwg, 11/27/2007 9:41:37 AM, PDF-11x17 L.pc3

LAYOUT:





LEGEND:

- URBAN (WEST LONGVIEW)
- URBAN (LONGVIEW)
- URBAN (LONGVIEW HEIGHTS)
- URBAN (WEST SIDE HIGHWAY)
- URBAN (KELSO)
- URBAN (WOODLAND)
- NON-URBAN

0 1 2

SCALE IN MILES

Vancouver: (360) 694-2691
Portland: (971) 544-2139

MAUL FOSTER ALONGI INC.

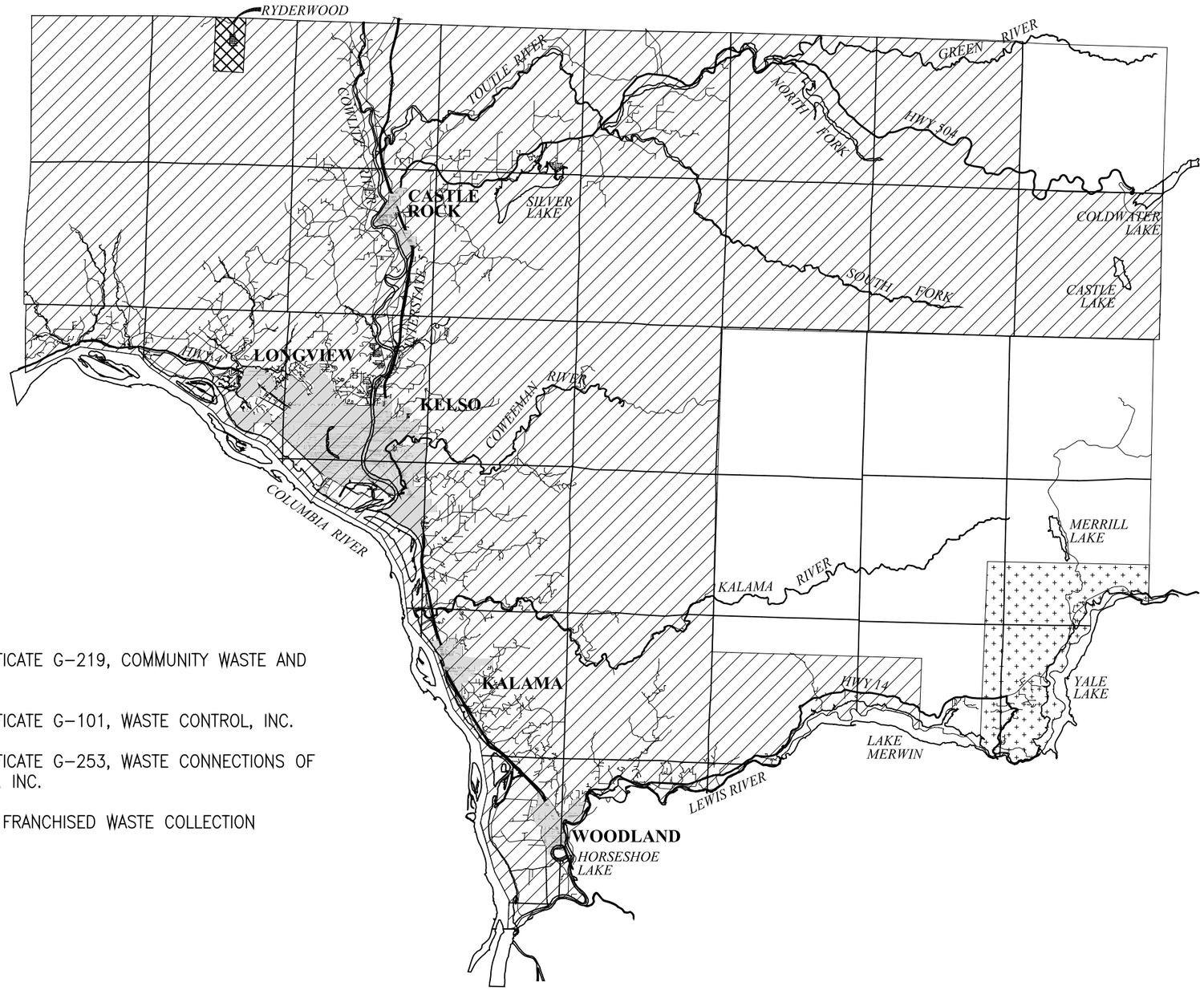
DATE 06/03/05
DWN. DLG
APPR.
REVIS.
PROJECT NO. 9041.01.06

Figure 1-5
COWLITZ COUNTY
SOLID WASTE MANAGEMENT PLAN

DESIGNATED URBAN AREAS

G:\9041.01 Cowlitz County\01_Waste Management Plan\CENSUS-DESIGNATED AREAS.dwg, 11/27/2007 9:38:22 AM, PDF-11x17 L.pc3

LAYOUT:



LEGEND:

- WUTC CERTIFICATE G-219, COMMUNITY WASTE AND RECYCLING
- WUTC CERTIFICATE G-101, WASTE CONTROL, INC.
- WUTC CERTIFICATE G-253, WASTE CONNECTIONS OF WASHINGTON, INC.
- CITY LIMITS, FRANCHISED WASTE COLLECTION

0 5 10

SCALE IN MILES

Suite B
7223 NE Hazel Dell Ave.
Vancouver, WA 98665

P 360.694.2691
F 360.906.1958

MAUL FOSTER ALONGI

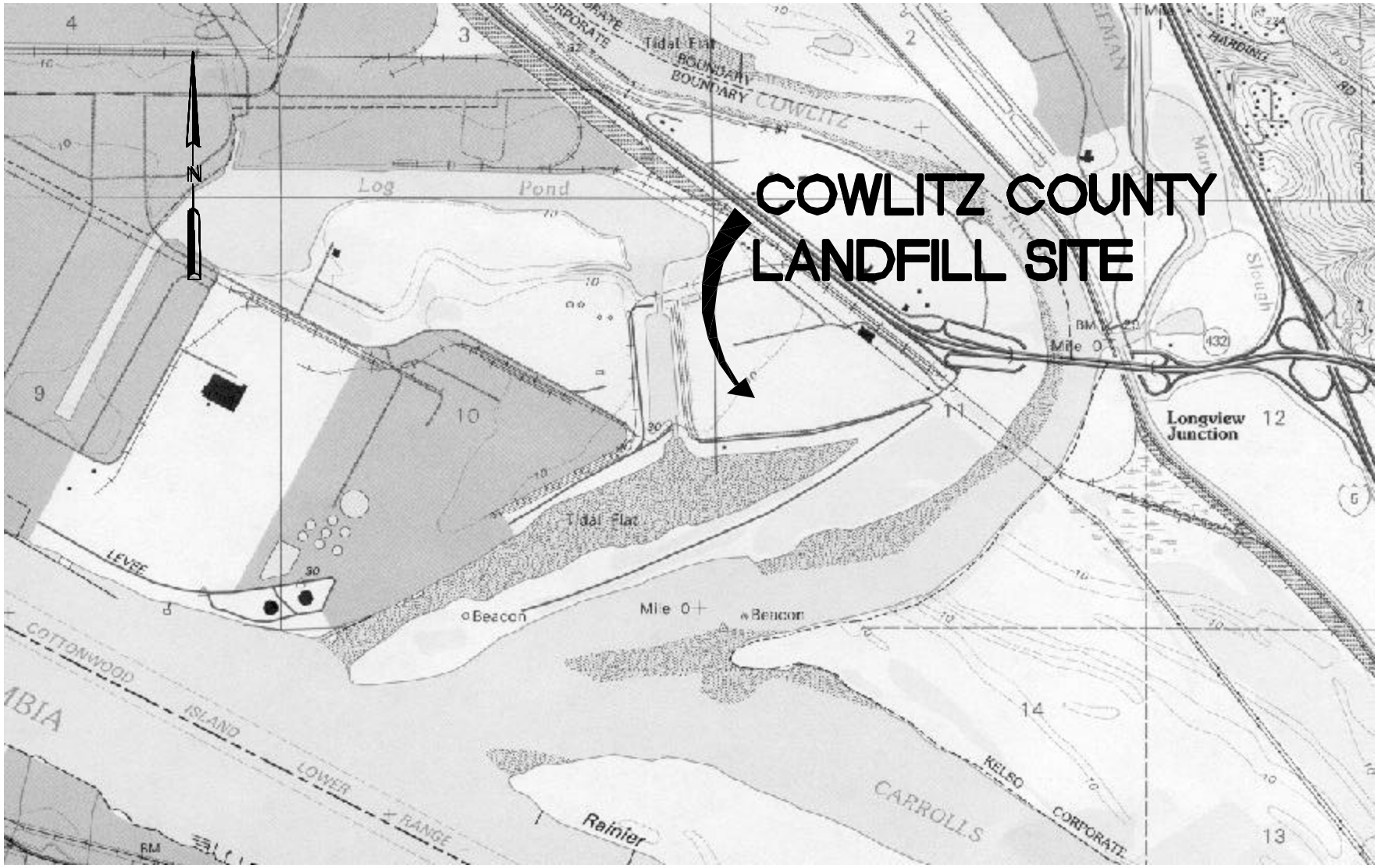
DATE 09/17/02
DWN. JLN
APPR. _____
REVIS. _____
PROJECT NO.
9041.01.06

Figure 6-1
COWLITZ COUNTY
SOLID WASTE MANAGEMENT PLAN

COLLECTION CERTIFICATE AREAS

File: G:\9000\9041-COWLITZ\001\WASTE MANAGEMENT PLAN\COLLECTION-AREAS.DWG Last edited: MAY 26, 2005 by: dglaus B/W

LAYOUT: 1



BASE MAP FROM USGS 7.5' QUAD, RAINIER, OR–WA 1990

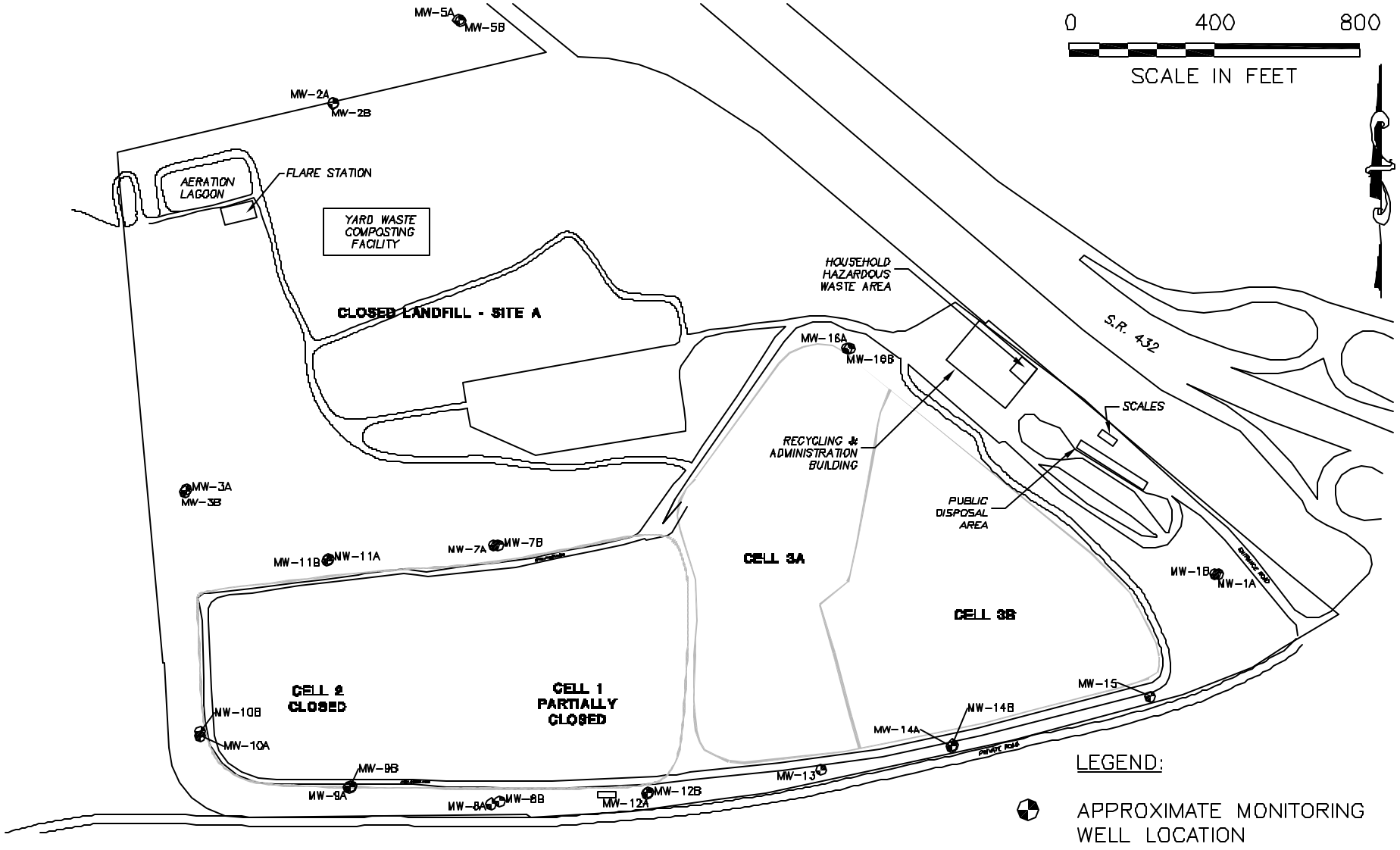
Vancouver: (360) 694-2691
Portland: (971) 544-2139
MAUL FOSTER ALONGI INC.

DATE	01/13/05
DWN.	AJY
APPR.	
REVIS.	
PROJECT NO.	9041.01.06

Figure 8-1
COWLITZ COUNTY LANDFILL
COWLITZ COUNTY, WASHINGTON

SITE LOCATION

File: G:\9000\9041-COWLITZ\001\SWMP\REVISED 2005\SITE LOCATION.DWG Last edited: JAN. 13, 2005 @ 11:40 a.m. by: ayoung Xrefs: none black/wh
LAYOUT: 1



Vancouver: (360) 694-2691
Portland: (971) 544-2139
MAUL FOSTER ALONGI INC.

DATE 01/12/05
DWN. AJY
APPR. _____
REVIS. _____
PROJECT NO.
9041.01.06

Figure 8-2
COWLITZ COUNTY
COWLITZ COUNTY, WASHINGTON

LANDFILL SITE PLAN

File: G:\9000\9041-COWLITZ\001\SWMP\REVISED 2005\SITE PLAN.DWG Last edited: JAN. 12, 2005 @ 1:44 p.m. b/w

LAYOUT: 2

APPENDIX A

INTERLOCAL AGREEMENTS AND RESOLUTIONS OF PARTICIPATION AND ADOPTION

INTERLOCAL AGREEMENT FOR MANAGEMENT OF MUNICIPAL SOLID WASTE

INTERLOCAL AGREEMENT FOR
MANAGEMENT OF MUNICIPAL SOLID WASTE

WHEREAS, Cowlitz County (the "County") and the signatory City have cooperated in developing and implementing the Cowlitz County Comprehensive Solid Waste Management Plan (the "Comprehensive Solid Waste Management Plan") pursuant to RCW 70.95 and,

WHEREAS, the Comprehensive Solid Waste Management Plan designates Cowlitz County to be responsible for the selection of sites and a method for the disposal of solid waste generated within the County; and,

WHEREAS, the County has selected a vendor to provide certain solid waste handling services, including development of local facilities (the "facilities") for the receipt, recycling, and containerizing for out-of-county disposal of solid waste generated within the cities and within unincorporated areas of the County; and,

WHEREAS, in order to successfully develop and finance the County's Solid Waste Disposal System and provide for cooperative management of solid waste generated in Cowlitz County, it is desirable that all such solid waste, including waste generated in incorporated cities within the County, be disposed of through the County Solid Waste Disposal System and that County be authorized to designate disposal sites for the disposal of certain solid waste (as defined herein) generated within the corporate limits of the City; and,

WHEREAS, the County and City have jointly contributed to a County managed solid waste reserve fund (ELF) that is recognized to be a joint asset of the County and those Cities who have disposed solid waste at Cowlitz county operated facilities; and,

WHEREAS, the County and City are authorized and empowered to enter into this interlocal agreement pursuant to Chapter 39.34 RCW; now therefore,

COWLITZ COUNTY AND THE UNDERSIGNED CITY UNDERSTAND AND AGREE AS FOLLOWS:

1. Definitions. For purposes of this Interlocal Agreement, the following definitions shall apply.

1.1. "Certain solid waste" means solid waste collected within the City, whether by the City, a City contractor, or a private hauler under the authority of a "G" certificate granted by the Washington State Utilities and Transportation Commission under the provisions of Chapter 81.77 RCW, and may include moderate risk waste as defined in RCW 70.105.010.

1.2. "City" means the city located within Cowlitz County executing this Interlocal Agreement.

1.3. "Comprehensive Solid Waste Management Plan" means the Cowlitz County Comprehensive Solid Waste Management Plan adopted and amended by the County pursuant to Chapter 70.95 RCW.

1.4. "County" means Cowlitz County, Washington.

1.5. "Disposal Site" means a facility where any final treatment, utilization, processing, transfer or deposit of certain solid waste originating in the County or the City occurs. For the purpose of this agreement, a waste export transfer station shall be deemed a disposal site.

1.6. "Equipment, Land, and Facilities Fund" (herein "ELF Fund") means certain fund reserves held and managed by the County that have been generated through collection of tipping fees at the County landfill. For purposes of this Agreement, the ELF Fund specifically refers to those reserves remaining in the fund after providing for the following landfill purposes: operation of the County landfill, closure of the County landfill, post closure costs for the "lined" and "unlined" County landfill in existence at the time of this agreement, post closure monitoring expenses, landfill gas utilization system installation and operation, and equipment replacement. Such ELF Fund reserves are estimated to be approximately $10,000,000 on January 1, 2007.

1.7. "Hazardous waste" means those solid wastes designated by 40 CFR Part 261, and regulated as hazardous and /or mixed waste by the United States EPA or designated a dangerous or extremely hazardous waste as defined by Washington State regulations adopted pursuant to Chapter 70.105 RCW or as amended.

1.8. "Interlocal Agreement " means this Interlocal Agreement for Management of Municipal Solid Waste.

1.9. "Recycling" means the extraction of useful materials from the solid waste stream and diverting such materials from the disposal site.

1.10. "Solid Waste" means solid waste as defined by RCW 70.95.030 with the exception of hazardous waste.

1.11. "System" means all facilities for solid waste handling provided by the County, either directly or by contract with a vendor, and all administrative activities related thereto. The term "System" includes all sites designated by the County for the receipt or disposal of solid waste.

2. Responsibility for Solid Waste Disposal. For calendar years 2006 through 2045, the County shall be responsible for the disposal of solid waste generated within unincorporated areas of the County and within the City to the extent provided in the Comprehensive Solid Waste Management Plan and the Agreement executed by the County with Waste Control Recycling, Inc., on or about November 20, 2006.

3. Comprehensive Plan. For the duration of this Interlocal Agreement, the City and County shall adhere to the Comprehensive Solid Waste Management Plan prepared and periodically reviewed and revised by the County pursuant to Chapter 70.95 RCW. For the duration of this Interlocal Agreement, the City authorizes the County to include in the Comprehensive Solid Waste Management Plan provisions acceptable to the City for the management of solid and moderate risk waste generated in the City.

4. Solid Waste Advisory Committee. Pursuant to RCW 70.95.165(3) and RCW 39.34.030(4) and Cowlitz County Code Chapter 15.30, the Solid Waste Advisory Committee (SWAC) shall continue operating for the purpose of rendering advice to Cowlitz County and the Governance Committee created under section 5 of this Agreement regarding general solid and moderate risk waste related issues, service levels, disposal rates, and short and long term planning, and especially the administration and implementation of the Comprehensive Solid Waste Management Plan.

4.1. Regular Members. Regular members shall be appointed by the Board of County Commissioners and shall, as a minimum, represent the cities, the waste management industry, and citizens.

4.2. Ex-Officio Members. The Board of County Commissioners (BOCC) may appoint Ex-Officio Members who will serve at the pleasure of the BOCC. Ex-Officio Members will be non-voting members.

4.3. Auxiliary Members. The regular membership of the Solid Waste Advisory Committee may appoint auxiliary members for a specific time period to serve on the committee in a non-voting capacity, for the purpose of providing specific information, technical advice, and information of a general nature which is pertinent to the committee's activities or any other form of assistance which will aid the committee in carrying out its purposes.

4.4. Meetings. The Chair will call meetings of SWAC as needed. It is anticipated that meetings will be monthly or semi monthly during Solid Waste Management Plan updates and annually during off-planning years.

5. Governance Committee.

5.1. Purpose - The Governance Committee shall review solid waste operations and Comprehensive Solid Waste Management Plan implementation. Any proposed changes or improvements significantly affecting the operation of the solid waste disposal system or which may directly or indirectly significantly impact disposal rates, changes to disposal rates, use of ELF Fund reserves for other than landfill operation and maintenance, or siting of disposal facilities shall be submitted to the Governance Committee to provide an opportunity for adequate review, deliberation, and the formulation of comments and recommendations, prior to any final decision by the Board of Cowlitz County Commissioners. The Board of Cowlitz County Commissioners shall not approve expending or committing ELF Fund reserves for any use other than landfill operation and maintenance unless such expense or commitment is supported by a majority vote of the Governance Committee.

5.2. Regular Members - The Governance Committee shall consist of two (2) County representatives and one (1) representative each from the two largest Cities in the County. Each entity shall designate a member and an alternate for each representative position.

5.3. Meetings - The Governance Committee shall meet annually, or additionally as needed, to review the status of the solid waste disposal system; any recommendations from the Solid Waste Advisory Committee; tipping fee adjustments; use of ELF Fund reserves for other than landfill operation and maintenance; and, any proposed changes or improvements significantly affecting the operation of the solid waste disposal system.

6. City Designation of County System for Solid Waste Disposal. The City by execution of this Agreement designates the County System for the disposal of certain solid waste (as hereinabove defined) generated within the corporate limits of the City, and authorizes the County to designate a disposal site or sites for the disposal of such solid waste. This designation shall also apply to solid waste generated through the City's recycling collection and sorting operations. This designation of the County System shall continue in full force and effect for calendar years 2006 through 2045 or the duration of the County contract with Waste Control Recycling, Inc., whichever occurs first. The designation of the County in this section shall not reduce or otherwise affect the City's control over solid waste collection as permitted by applicable state law.

7. Waste Reduction and Recycling. The City and the County agree to cooperate to achieve the priorities for waste reduction and waste recycling set forth in the

Comprehensive Solid Waste Management Plan. Where appropriate and agreed, the County may provide funding to the Cities to implement such waste reduction and recycling programs, provided such programs have been included in the Comprehensive Solid Waste Management Plan and such funding is recommended by the Governance Committee.

8. Contracts with Vendors / No City Obligation.

8.1. The County has entered into a contract with Waste Control Recycling, Inc. for long-term handling, transfer and disposal of solid waste. The County may at its discretion enter into further contracts with vendors to provide solid waste handling services. The City acknowledges that in entering into such contracts, the County may rely on the City's designation of the County as the entity with responsibility for preparing and revising the Comprehensive Solid Waste Management Plan and for designating solid waste disposal sites under the terms of the Comprehensive Solid Waste Management Plan and this Interlocal Agreement.

8.2. The City shall not be obligated, directly or indirectly, for the collection or delivery of any specified quantity of solid waste to a solid waste disposal site designated by the County. No contract between the County and a vendor shall purport to create any general obligation or special fund or utility obligation of the City.

9. Indemnification.

9.1. Except as provided below, the County shall indemnify and hold harmless, and shall have the right and duty to defend the City, through the County's attorneys, against any and all claims arising out of the County's operations of the System, and the right to settle such claims, recognizing that all costs incurred by the County thereby are System costs which must be satisfied from disposal rates. In providing a defense for the City, the County shall exercise good faith in that defense or settlement so as to protect the City's interests. For purposes of this paragraph, "claims arising out of the County's operations" shall include claims arising out of the ownership, control or maintenance of the System, but shall not include any claims arising out of the City's collection of certain solid waste, the disposal or attempted disposal of hazardous waste, or other activities under the control of the City.

9.2. In the event that the County acts to defend the City against a claim, the City shall cooperate with the County.

9.3. For purposes of this section, reference to the City and to the County shall be deemed to include the officers and employees of any party, acting within the scope of their authority.

10. Duration. This Interlocal Agreement shall continue to be in full force and effect through calendar year 2045 or the duration of the Waste Control Recycling, Inc. contract, whichever occurs first, unless terminated as described in the following paragraph.

11. Amendment, Supplementation or Termination. This Interlocal Agreement shall be reviewed by the parties every 5 years or in conjunction with the SWMP update, whichever occurs first, and may be amended, supplemented or terminated upon the agreement of both the County and all Cities that executed the original Agreement with the same formalities as the original Agreement. Any amendments, supplement or termination shall be in writing and shall be signed by the authorized officers of the County and the Cities at least 30 days in advance of the effective date of such action.

12. ELF Fund Reserves

12.1. It is the intent of the County and Cities to use ELF Fund reserves for solid waste purposes including, but not limited to, future capital improvement projects or rate stabilization.

12.2. When any of the Cities or the County determine that expenditure of the ELF Fund reserves is required for any Solid Waste purpose, excepting only maintenance and operations of the landfill, the County will initiate a meeting of the Governance Committee to review the proposed use of the ELF Fund reserves and the Governance Committee shall make a recommendation to the Board of Commissioner's on such use.

12.3. In the event this Agreement is terminated as stipulated in Section 11 of this Agreement, the Governance Committee shall meet and determine an equitable distribution of the ELF Fund reserves to the parties to this Agreement. Existing indebtedness, accounts payable, and any other liability related to operation and capital expenditures of the solid waste System operated by the County shall be satisfied prior to any distribution of the ELF Fund reserves to the parties.

13. Miscellaneous.

13.1. No waiver by any party of any term or condition of this Interlocal Agreement shall be deemed or construed to constitute a waiver of any other term or condition or at any subsequent breach whether of the same or of a different provision of this Interlocal Agreement.

13.2. This Interlocal Agreement is entered into to protect the public health, safety and welfare of the residents of the City and County and to promote the effective and efficient disposal or handling of solid waste in the City and the County.

THIS INTERLOCAL AGREEMENT has been executed by the parties shown below and is dated as of the ____ day of _____, 2007.

CITY OF LONGVIEW

By: Robert J Gregory
Robert J. Gregory, City Manager

Attest: Ann C Davis
City Clerk

Name Printed: Ann C Davis

Approved as to form:

M K Nitteberg-Hoan
Attorney for City of Longview

Name Printed: M.K. Nitteberg-Hoan

THIS INTERLOCAL AGREEMENT has been executed by the parties shown below and is dated as of the 3rd day of April, 2007.

CITY OF KELSO

By: _____
Don Gregory, Mayor

Attest: _____
City Clerk

Name Printed: Veryl A. Anderson

Approved as to form:

_____
Attorney for City of Kelso

Name Printed: Paul Brachvogel

THIS INTERLOCAL AGREEMENT has been executed by the parties shown below and is dated as of the 4th day of April, 2007.

CITY OF CASTLE ROCK

By: Barbara L. Larsen
Barbara L. Larsen, Mayor

Attest: Ryana Covington
City Clerk

Name Printed: Ryana Covington

Approved as to form:

Attorney for City of Castle Rock

Name Printed: Tom O'Neill

THIS INTERLOCAL AGREEMENT has been executed by the parties shown below and is dated as of the 6th day of April, 2007.

CITY OF KALAMA

By: Pete Poulsen
Pete Poulsen, Mayor

Attest: Coni McMaster
City Clerk

Name Printed: Coni McMaster

Approved as to form:

PB & P
Attorney for City of Kalama

Name Printed: Paul Brachvogel

THIS INTERLOCAL AGREEMENT has been executed by the parties shown below and is dated as of the 19th day of March, 2007.

CITY OF WOODLAND

By: _____
Douglas A. Monge, Mayor

Attest: _____
Mari E. Ripp, Clerk-Treasurer

Name Printed: Mari E. Ripp

Approved as to form:

_____
Paul Brachvogel, City Attorney for City of Woodland

THIS INTERLOCAL AGREEMENT has been executed by the parties shown below and is dated as of the 15th day of May, 2007.

BOARD OF COUNTY COMMISSIONERS
OF COWLITZ COUNTY, WASHINGTON

Kathleen A. Johnson, Chairman

Absent
George Raiter, Commissioner

Axel Swanson, Commissioner

Attest:

Vickie Musgrove, Clerk of the Board

Approved as to form:

Ron Marshall, Deputy Prosecuting Attorney

RESOLUTIONS FOR PARTICIPATION

RESOLUTION NO. 1736

A Resolution authorizing Cowlitz County to prepare a Solid Waste Management Plan on behalf of the City of Longview, for inclusion in the Cowlitz County Comprehensive Solid Waste Management Plan.

WHEREAS, RCW 70.95.080 requires the City of Longview to engage in the preparation of a cooperative, coordinated, Comprehensive Solid Waste Management Plan; and

WHEREAS, Resolution No. 1514 of the City of Longview, passed June 10, 1993, adopted the Cowlitz County Comprehensive Solid Waste Management Plan as an update of the 1985 Solid Waste Management Plan; and

WHEREAS, RCW Chapter 70.95 requires that said Solid Waste Management Plan be periodically updated; and

WHEREAS, it is in the best interest of the City of Longview to authorize Cowlitz County to prepare such a plan for management of the City's solid waste, for inclusion in the Comprehensive Solid Waste Management Plan of Cowlitz County, Washington; and

WHEREAS, the Cowlitz County Commissioners have committed to using the Cowlitz County Solid Waste Advisory Committee, which includes a voting member representing the City of Longview, to guide development of the plan; and

WHEREAS, the final draft plan will be presented to the City of Longview for review and adoption by the City Council.

NOW, THEREFORE, BE IT RESOLVED by the Longview City Council that said City Council hereby authorizes Cowlitz County, Washington, to prepare a plan for said City's solid waste management, for inclusion in the Comprehensive Solid Waste Management Plan of Cowlitz County, Washington.

Adopted by the Council of the City of Longview and signed by the Mayor at a regular meeting of said Council held on the 27 day of June, 2002.

Mark McCrady
MAYOR

ATTEST:

Ann C. Davis
City Clerk, Deputy

RESOLUTION NO. 02-855

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF KELSO AUTHORIZING COWLITZ COUNTY TO PREPARE A SOLID WASTE MANAGEMENT PLAN ON BEHALF OF THE CITY, FOR INCLUSION IN THE COWLITZ COUNTY COMPREHENSIVE SOLID WASTE MANAGEMENT PLAN

WHEREAS, RCW 70.93.080 requires the City to engage in the preparation of a cooperative, coordinated, Comprehensive Solid Waste Management Plan; and

WHEREAS, Resolution No. 93-689 of the City of Kelso, adopted by the City Council July 6, 1993, adopted the Cowlitz County Comprehensive Solid Waste Management Plan as an update of the 1985 Solid Waste Manage Plan; and

WHEREAS, RCW Chapter 70.95 requires that said Plan be periodically updated; and

WHEREAS, it is in the best interest of the City to authorize Cowlitz County to prepare such a plan for management of the City's solid waste, for inclusion in the general plan for the county; now therefore

THE CITY COUNCIL OF THE CITY OF KELSO DO HEREBY RESOLVE:

That Cowlitz County, Washington be and is hereby authorized to prepare a plan for the City's solid waste management for inclusion in the Comprehensive Solid Waste Management Plan of Cowlitz County, Washington.

ADOPTED by the City Council and SIGNED by the Mayor this 21st day of May, 2002.

MAYOR

RESOLUTION NO. 421

A Resolution authorizing Cowlitz County to prepare a Solid Waste Management Plan on behalf of the City of Kalama, for inclusion in the Cowlitz County Comprehensive Solid Waste Management Plan.

WHEREAS, RCW 70.95.080 requires the City of Kalama to engage in the preparation of a cooperative, coordinated, Comprehensive Solid Waste Management Plan; and

WHEREAS, Resolution No. 307 of the City of Kalama, passed July 21, 1993, adopted the Cowlitz County Comprehensive Solid Waste Management Plan as an update of the 1985 Solid Waste Management Plan; and

WHEREAS, RCW Chapter 70.95 requires that said Solid Waste Management Plan be periodically updated; and

WHEREAS, it is in the best interest of the City of Kalama to authorize Cowlitz County to prepare such a plan for management of the City's solid waste, for inclusion in the Comprehensive Solid Waste Management Plan of Cowlitz County, Washington;

NOW, THEREFORE, BE IT RESOLVED by the Kalama City Council that said City Council hereby authorizes Cowlitz County, Washington, to prepare a plan for said City's solid waste management, for inclusion in the Comprehensive Solid Waste Management Plan of Cowlitz County, Washington.

Adopted by the Council of the City of Kalama and signed by the Mayor at a regular meeting of said Council held on the 15th day of May, 2002.

MAYOR

ATTEST:

City Clerk

RESOLUTION NO. 466

A RESOLUTION AUTHORIZING COWLITZ COUNTY TO PREPARE A SOLID WASTE MANAGEMENT PLAN ON BEHALF OF THE CITY OF WOODLAND, FOR INCLUSION IN THE COWLITZ COUNTY COMPREHENSIVE SOLID WASTE MANAGEMENT PLAN.

WHEREAS, RCW 70.95.080 requires the City of Woodland to engage in the preparation of a cooperative, coordinated, Comprehensive Solid Waste Management Plan; and

WHEREAS, Resolution No. 332 of the City of Woodland, passed June 21, 1993, adopted the Cowlitz County Comprehensive Solid Waste Management Plan as an update of the 1985 Solid Waste Management Plan; and

WHEREAS, RCW Chapter 70.95 requires that said Solid Waste Management Plan be periodically updated; and

WHEREAS, it is in the best interest of the City of Woodland to authorize Cowlitz County to prepare such a plan for management of the City's solid waste, for inclusion in the Comprehensive Solid Waste Management Plan of Cowlitz County, Washington;

NOW, THEREFORE, BE IT RESOLVED by the Woodland City Council that said City Council hereby authorizes Cowlitz County, Washington to prepare a plan for said City's solid waste management, for inclusion in the Comprehensive Solid Waste Management Plan of Cowlitz County, Washington.

Adopted by the Council of the City of Woodland and signed by the Mayor at a regular meeting of said Council held on the 20th day of May, 2002.

James R. Graham

James R. Graham, Mayor

ATTEST:

Mari E. Ripp

Mari E. Ripp, Clerk/Treasurer

Approved as to form:

Patrick Brock

Patrick Brock, City Attorney

RECEIVED
SEP 11 2002
COWLITZ COUNTY
PUBLIC WORKS DEPT

RECEIVED
JUL 29 2002
COMMISSIONERS OFFICE

RESOLUTION NO. 2002-08

A Resolution authorizing Cowlitz County to prepare a Solid Waste Management Plan on behalf of the City of Castle Rock, for inclusion in the Cowlitz County Comprehensive Solid Waste Management Plan.

WHEREAS, RCW 70.95.080 requires the City of Castle Rock to engage in the preparation of a cooperative, coordinated, Comprehensive Solid Waste Management Plan; and

WHEREAS, Resolution No. 93.04 of the City of Castle Rock, passed June 28, 1993, adopted the Cowlitz County Comprehensive Solid Waste Management Plan as an update of the 1985 Solid Waste Management Plan; and

WHEREAS, RCW Chapter 70.95 requires that said Solid Waste Management Plan be periodically updated; and

WHEREAS, it is in the best interest of the City of Castle Rock to authorize Cowlitz County to prepare such a plan for management of the City's solid waste, for inclusion in the Comprehensive Solid Waste Management Plan of Cowlitz County, Washington;

NOW, THEREFORE, BE IT RESOLVED by the Castle Rock City Council that said City Council hereby authorizes Cowlitz County, Washington, to prepare, with the assistance and participation of the City, a plan for said City's solid waste management, for inclusion in the Comprehensive Solid Waste Management Plan of Cowlitz County, Washington.

Adopted by the Council of the City of Castle Rock and signed by the Mayor at a regular meeting of said Council held on the 28 day of May, 2002.

Barbara Larsen
MAYOR

ATTEST:
City Clerk

ATTEST:
City Attorney

RESOLUTIONS OF ADOPTION

APPENDIX B

SEPA CHECKLIST

SEPA CHECKLIST

SEPA Checklist
WAC 197-11-960

A. BACKGROUND

1. Name of proposed project, if applicable:
Cowlitz County Solid Waste Management Plan (SWMP)

2. Name of applicant: Cowlitz County Department of Public Works

3. Address and phone number of applicant and contact person:
Cowlitz County Department of Public Works
Don Olson, Solid Waste Superintendent
207 Fourth Avenue North
Kelso, WA 98626
(206) 577-3125

4. Date checklist prepared:
March 29, 2007

5. Agency requesting checklist:
Cowlitz County Department of Building and Planning

6. Proposed timing or schedule (including phasing, if applicable):
Proposed implementation of the Cowlitz County SWMP will begin upon adoption and proceed through plan revision in 2012. The SWMP recommends various 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.
Yes, the SWMP will be reviewed five years after its implementation and updated if necessary, as required by state law.

8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.
Washington State law requires local governments to develop a local SWMP. Cowlitz County or a local government agency with jurisdiction will conduct appropriate environmental assessment of each element of the selected program prior to implementation in compliance with State Environmental Policy Act requirements. Specific sites associated with the SWMP operate in accordance with permits that include protection of the environment as a condition for operation.

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.
No.

10. List any government approvals or permits that will be needed for your proposal, if known.
In order to participate in the SWMP, each local jurisdiction will need to approve and adopt the SWMP. These jurisdictions include the Washington State Department of Ecology; Cowlitz County Board of Commissioners; Washington Utilities and Transportation Commission; and the cities of Longview, Kelso, Kalama, Castle Rock, and Woodland.

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 Cowlitz County SWMP defines objectives and proposes alternatives for the management and disposal of municipal solid waste (MSW) produced by households and commercial and industrial generators. The SWMP discusses all aspects of solid waste management in the county and incorporated areas, including waste reduction, recycling, composting, collection, transfer, waste disposal, and regulation and administration. Specific recommendations are made for all of the above elements; however, in most cases these recommendations represent program or policy refinements.

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 SWMP will include all incorporated and unincorporated areas in Cowlitz County, Washington. Certain plan recommendations are for specific areas or sites in the county.

B. ENVIRONMENTAL ELEMENTS

1. Earth

a. General description of the site (circle one): Flat, rolling, hilly, steep slopes, mountainous, other . . . . . .

Future solid waste facilities or programs will be required to evaluate site conditions as part of SEPA documentation.

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 (for example, clay, sand, gravel, peat, 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.

Future solid waste facilities or programs will be required to evaluate soils as part of SEPA documentation.

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.

No significant amounts of emissions to the air are anticipated as a result of any of the recommendations made by the SWMP.

Future solid waste facilities or programs will be required to evaluate air emissions as part of SEPA documentation.

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:
Does not apply.

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.
Future solid waste facilities or programs will be required to evaluate surface water as part of SEPA documentation.

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.
Does not apply.

5) Does the proposal lie within a 100-year floodplain? If so, note location on the site plan.
Does not apply.

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.
Does not apply.

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.

Future solid waste facilities or programs will be required to evaluate ground water as part of SEPA documentation.

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.

Future solid waste facilities or programs will be required to evaluate water runoff as part of SEPA documentation.

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

Future solid waste facilities or programs will be required to identify and evaluate impacts to plants as part of SEPA documentation.

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:
Future solid waste facilities or programs will be required to identify and evaluate impacts to animals as part of SEPA documentation.

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:
Does not apply.

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.
Various facilities and programs proposed in the SWMP will require small amounts of electric power and petroleum-based fuels for transportation and facility or equipment operation.

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:
The Cowlitz County SWMP emphasizes waste reduction and recycling, which results in the conservation of energy and natural resources. The SWMP also recommends the evaluation of the potential for utilizing landfill gas for energy.

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 environmental heath risks are anticipated as a result of new or additional programs proposed by the Cowlitz County SWMP. Potential environmental health hazards specific to existing facilities have been addressed through approved facility operation plans or health and safety plans.

1) Describe special emergency services that might be required.
Additional emergency services are not required by any of the SWMP recommendations.

2) Proposed measures to reduce or control environmental health hazards, if any:
There are no net increases in risk caused by the SWMP recommendations. Existing site-specific emergency procedures are addressed in the sites' safety plans.

b. Noise

1) What types of noise exist in the area which may affect your project (for example:
traffic, equipment, operation, other)?
Future solid waste facilities or programs will be required to evaluate noise as part of SEPA documentation.

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. 8. **Land and shoreline use**

a. **What is the current use of the site and adjacent properties?**
Future solid waste facilities or programs will be required to evaluate land use as part of SEPA documentation.

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?**
Does not apply.

j. **Approximately how many people would the completed project displace?**
Does not apply.

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.**
   Does not apply.

   b. **Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing.**
   Does not apply.

   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?**
   Future solid waste facilities or programs will be required to evaluate aesthetics as part of SEPA documentation.

   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?**
   Future solid waste facilities or programs will be required to evaluate light and glare as part of SEPA documentation.

   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?
Future solid waste facilities or programs will be required to evaluate recreation as part of SEPA documentation.

b. Would the proposed project displace any existing recreational uses? If so, describe.
Does not apply.

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.
Future solid waste facilities or programs will be required to evaluate historic and cultural preservation as part of SEPA documentation.

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.
Future solid waste facilities or programs will be required to evaluate transportation as part of SEPA documentation.

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.
Future solid waste facilities or programs will be required to evaluate public services as part of SEPA documentation.

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.
Future solid waste facilities or programs will be required to evaluate utilities as part of SEPA documentation.

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.

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: Don Olson

Date Submitted: April 5, 2007

D. SUPPLEMENTAL SHEET FOR NONPROJECT ACTIONS

Because these questions are very general, it may be helpful to read them in conjunction with the list of the elements of the environment.

When answering these questions, be aware of the extent the proposal, or the types of activities likely to result from the proposal, would affect the item at a greater intensity or at a faster rate than if the proposal were not implemented. Respond briefly and in general terms.

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?**
   Implementation of the proposed SWMP should result in an overall decrease in discharges to the environment as a result of management strategies developed to prevent or minimize problems associated with solid waste. By providing for secure disposal of solid wastes and increased recycling activities, the SWMP is expected to decrease impacts and discharges to water and air, and to provide for more secure handling of toxic or hazardous substances that may be part of the solid waste stream. No substantial increases or decreases in noise levels are expected as a result of the SWMP's recommendations.
   Recycling, waste reduction, and educational programs, along with the construction and demolition debris diversion incentives, recommended in the SWMP should increase public awareness and contribute to decreasing the discharge of contaminants into the environment.
   The recommendation to pursue out-of-county disposal of waste consistent with the Board of Commissioners decision is likely to result in increased air emissions and noise along transportation routes due to the transport of waste to the out-of-county disposal facility.

   Proposed measures to avoid or reduce such increases are:
   Implementation of out-of-county disposal by Waste Control will provide for the transportation of the waste by rail instead of by truck. Rail hauling of waste will minimize air emissions per ton of MSW as opposed to hauling by truck, and should avoid the impacts to public roads and highways with respect to noise and congestion.

2. **How would the proposal be likely to affect plants, animals, fish, or marine life?**
   Implementation of the proposed SWMP should result in improved quality of habitat for plant and animal species in the county by reducing pollution discharged to lakes, streams, groundwater, and air through proper management strategies, source reduction, recycling, and improved disposal methods for solid waste.
   Under the County's plan to keep disposal rates low and provide for community education, occurrences of illegal dumping is expected to remain low. Dumping in uninhabited areas not only contributes the pollution of the area, but the exposed waste can contribute to the pollution of stormwater which runs off into streams and rivers or can make its way into groundwater.
   The recommended educational programs should result in increased public awareness, and should further result in the reduction of land, water and air contamination, improving environmental quality for plants, animals, fish, marine life, and humans.

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?**
   Implementation of the SWMP's strategies for recycling and waste reduction will result in conservation of energy and natural resources. The use of recycled materials generally requires less energy to produce the final product. Replacing virgin resources with recycled materials in the manufacturing process also reduces the demand on natural resources. Reducing the amount of construction and demolition debris going to landfills will conserve building materials and landfill space.
   Implementation of the recommendation for out-of-county disposal will result in a higher consumption of fossil fuels for transportation of MSW to an out-of-county landfill.

   Proposed measures to protect or conserve energy and natural resources are:
   Implementation of out-of-county disposal by Waste Control will provide for the transportation of the waste primarily by rail. Rail hauling of waste will reduce consumption of fossil fuel per ton of MSW as opposed to hauling by truck.

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?**
   The SWMP recommendations will enhance environmentally sensitive areas by improving water quality through the education of the public to properly manage and dispose of solid and hazardous waste, and the positive impact of low disposal fees on illegal dumping.

   Proposed measures to protect such resources or to avoid or reduce impacts are:
   Proposed measures to reduce impacts to sensitive areas include extensive public education on proper waste disposal, source reduction, and recycling of solid waste. The recommendation for out-of-county disposal of MSW will use existing transportation corridors.

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 SWMP does not make any recommendations for land and shoreline use that are incompatible with existing plans or regulations.

   Proposed measures to avoid or reduce shoreline and land use impacts are:
   No impacts are anticipated.

6. **How would the proposal be likely to increase demands on transportation or public services and utilities?**

   Increased recycling will increase the amount of transportation required, since recyclable materials must be hauled separately from waste materials. The implementation of out-of-county disposal of MSW will increase the demands on the existing transportation systems.

   Proposed measures to reduce or respond to such demand(s) are:

   Increased transportation demands may be unavoidable; however, they may be partially offset by savings in energy and materials through the reuse of recycled materials such as paper, glass, aluminum, and steel. Increased recycling and source reduction also conserve space in landfills, thus delaying the need for developing new facilities. Implementation of out-of-county disposal by Waste Control will provide for the transportation of the waste primarily by rail. Rail hauling of waste will reduce air emissions per ton of MSW as opposed to hauling by truck, and should reduce the impacts to public roads and highways with respect to noise and congestion.

7. **Identify, if possible, whether the proposal may conflict with local, state, or federal laws or requirements for the protection of the environment.**

   The SWMP was prepared in response to a State requirement for the proper management of solid waste, and it complies with all applicable local, state, and federal laws and requirements regarding environmental protection.

MITIGATED DETERMINATION OF NON-SIGNIFICANCE

DEPARTMENT OF BUILDING AND PLANNING

207 Fourth Avenue North
Kelso, WA 98626
TEL (360) 577-3052
FAX (360) 414-5550

www.co.cowlitz.wa.us/buildplan

RECEIVED
JUN 13 2007

Board of County Commissioners
Kathleen A. Johnson District 1
George Raiter District 2
Axel Swanson District 3

June 5, 2007

COWLITZ COUNTY
PUBLIC WORKS DEPT.
RECEIVED

Mr. Don Olson
85 Tennant Way
Longview, WA 98632

RE: SEPA COMPLIANCE - SOLID WASTE MANAGEMENT PLAN

Dear Mr. Olson:

A Mitigation Determination of Non-Significance was issued on May 10, 2007 for review of the Solid Waste Management Plan. The comment period ended on May 24, 2007. One comment letter was received from the Cowlitz County Council of Governments (CWCOG).

CWCOG identified one area of concern dealing with the congestion caused by train movement at the intersection of SR 432/Tennant Way. To reduce congestion it was suggested that trains be moved at night when traffic volumes are lowest. Another suggestion was to shift waste handling and rail car preparation at the existing county solid waste site, avoiding altogether the crossing of Tennant Way.

Rail crossing/ traffic issues were addressed through traffic studies at the time the Waste Control Facilities were permitted back in 2003.

There were no comments received indicating the plan would cause significant environmental impacts. Compliance with the State Environmental Policy Act (SEPA) has been achieved.

Sincerely,

Mike Wojtowicz
Director

Attachment: CWCOG Letter
Mitigated Determination of Non Significance

COWLITZ COUNTY

DEPARTMENT OF BUILDING & PLANNING
207 FOURTH AVE. NORTH, KELSO, WA 98626

Phone (360) 577-3052 Fax (360) 414-5550 www.co.cowlitz.wa.us/buildplan

Review Number 07-04-0806

Mitigated Determination of Non-Significance

Description of Proposal

SEPA Review of the Cowlitz County Solid Waste Management Plan (SWMP). The Plan proposes alternatives for the management and disposal of municipal solid waste produced by households and commercial and industrial generators. The plan discusses all aspects of solid waste management in the county and incorporated areas, incliding waste reduction, recycling, composting, collection, transfer, waste disposal, and regulation and administration.

This Determination is subject to the mitigation measures as identified below:

Secure disposal of solid waste & increased recycling methods will be employed to avoid harmful future discharges to water and air.

Full implemation of this plan will result in a more secure handling of toxic or hazardous substances resulting in a cleaner environment.

Out of county disposal will be by rail not truck. This will minimize air emissions and will avoid impacts to public roads & highways with respect to noise and congestion. Rail hauling of waste will reduce consumption of fossil fuel per ton of MSW as opposed to hauling by truck.

Public education on proper waste disposal , source reduction, and recycling of solid waste shall be an intrigal part of this plan.

Maintaining low disposal fees will help reduce illegal dumping through out the county.

Full implementation of this plan is needed to improved quality of habitat for plant and animals by reducing pollution discharge to lakes, streams and groundwater.

Proponent: Cowlitz County Public Works
85 Tennant Way
Longview, WA 98632
Contact Person: Don Olson - Solid Waste Superintendent.
Contact Phone: (360) 577-3125

Location of Proposal Throughout Cowlitz County, Washington

Lead Agency: COWLITZ COUNTY DEPARTMENT OF BUILDING AND PLANNING

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 RCW43.21C.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. Copies of the plan can be reviewed on line at the Cowlitz County Public Works, Solid Waste website, www.co.cowlitz.wa.us/publicworks/sw or copies are available for review at the Kelso, Longview, Castle Rock, Kalama and Woodland public libraries and at the Cowlitz County Public Works Department located in Room 101, County Administration Building 207 4th Avenue North, Kelso, Washington.

COWLITZ COUNTY

DEPARTMENT OF BUILDING & PLANNING
207 FOURTH AVE. NORTH, KELSO, WA 98626

Phone (360) 577-3052 Fax (360) 414-5550 www.co.cowlitz.wa.us/buildplan

Review Number 07-04-0806

This DNS is issued under WAC 197-11-340(2); the lead agency will not act on this proposal for 14 days from the date below. Comments must be submitted by May 24, 2007.

Staff Contact: Sheldon G. Somers

Responsible Official: Mike Wojtowicz, Director

Date: May 10, 2007 **Signature**

cc with enclosures:

Washington State Department of Ecology - Environmental Review
Washington State Department of Natural Resources - SEPA Center
Washington State Department of Transportation
Washington State Department of Utilities and Transportation
Applicant - Cowlitz County Public Works / Solid Waste Division
Elaine Huber, Public Works Director, City of Woodland
Carl McCrary, Public Works Director, City of Kalama
David Vorse, Public Works Director, City of Castle Rock
David Sypher, Public Works Director, City of Kelso
Jeff Cummins, Community Waste and Recycling
Larry Fulcher, Weyerhaeuser Company
Joe Willis, Waste Control
Jeff Cameron, Public Works Director, City of Longview
Larry Fulcher, Weyerhaeuser Company
Joe Willis, Waste Control
Jeff Cummins, Community Waste and Recycling
Pat Campbell, Manager, Lewis County Solid Waste
Anita Largent, Solid Waste Program Manager, Clark County Public Works
Peter Ringen, Director, Wahkiakum County Public Works Dept
Southwest Clean Air Agency
Burlington Northern RR Co. Inc
Ken Stone, Director, Cowlitz County Public Works
Neal Alongi,, Maul Foster and Alongi
Skip Urling, Ecological Land Services, Inc
Steve Harvey, Director, Cowlitz / Wahkiakum Council of Governments
Longview and Kelso Building and Construction, Trades Council
John Leber, Swanson Bark and Wood Products
Carlos Carreon, Director, Cowlitz County Health Department
John Brikey, Director, Community Development City of Longview

APPENDIX C

UTC COST ASSESSMENT

COST ASSESSMENT QUESTIONNAIRE

PLAN PREPARED FOR THE COUNTY OF: Cowlitz

PLAN PREPARED FOR THE CITY OF: N/A

PREPARED BY: Cowlitz County Department of Public Works, Don Olson.

CONTACT TELEPHONE: (360) 557-3125 **DATE:** _____

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 2007**.**
YR.3 shall refer to 2009**.**
YR.6 shall refer to 2012**.**

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	97,768	YR 3	99,733	YR 6	102,755

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	97,768	YR 3	99,733	YR 6	102,755

1.2 References and Assumptions

- Washington Office of Financial Management, Official April 1, 2006 Population Estimates, http://www.ofm.wa.gov/pop/april1/index.htm (December 18, 2006)
- Population increase rate increase of 1.0% per year.

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	350,864	YR 3	357,917	YR 6	368,762

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	339,447	YR 3	346,270	YR 6	356,763

2.3 References and Assumptions

- Table 2-7, 2005 SWMP
- Disposal rate increase of 1.0% per year, based on 2003 disposal data.

- Recycling rate increase of 1.0% per year, based on 2003 recycling and diversion estimates.
- Recycling is comprised of components from residential, industrial, and CDL waste.

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

3.1.1 *Please list the solid waste 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.)*

See SWMP Table 13-1, Section 3, Waste Reduction.

3.1.2 *What are the costs, capital costs and operating costs for waste reduction programs implemented and proposed?*

See SWMP Table 13-1, Section 3, Waste Reduction.

3.1.3 *Please describe the funding mechanism(s) that will pay the cost of the programs in 3.1.2.*

The waste reduction programs are funded through tip fees and Ecology CPG funds.

3.2 Recycling Programs

3.2.1 *Please list the proposed or implemented recycling program(s) and, their costs, and proposed funding mechanism or provide the page number in the draft plan on which it is discussed. (Attach additional sheets as necessary.)*

See SWMP Table 13-1, Section 3, Waste Reduction. The recycling programs are funded through tip fees.

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.)*

Waste Control, Inc (G Permit #101) Only includes WUTC regulated areas (unincorporated areas, Castle Rock, and area outside of Woodland)			
	Year 1 (2007)	Year 3 (2009)	Year 6 (2012)
Residential			
# of Customers	8,264	8,430	8,686
Tonnage	11,545	11,777	12,133
Commercial			
# of Customers	384	392	404
Tonnage	2,947	3,006	3,097

Community Waste & Recycling (G Permit #219)			
	Year 1 (2007)	Year 3 (2009)	Year 6 (2012)
Residential			
# of Customers	292	297	306
Tonnage	345	352	362
Commercial			
# of Customers	10	11	11
Tonnage	88	90	92

Waste Connections, Inc (G Permit #253) Only includes WUTC regulated areas (unincorporated areas) within Cowlitz County			
	Year 1 (2007)	Year 3 (2009)	Year 6 (2012)
Residential			
# of Customers	178	182	187
Tonnage	142	145	149
Commercial			
# of Customers	23	23	24
Tonnage	242	247	254

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.)*

City of Longview Contracted to Waste Control, Inc.			
	Year 1 (2007)	Year 3 (2009)	Year 6 (2012)
Residential			
# of Customers	14,294	14,582	15,024
Tonnage	14,891	15,190	15,651
Commercial			
# of Customers	942	961	990
Tonnage	16,997	17,339	17,864

City of Kelso Contracted to Waste Control, Inc.			
	Year 1 (2007)	Year 3 (2009)	Year 6 (2012)
Residential			
# of Customers	4,068	4,149	4,275
Tonnage	5,943	6,062	6,246
Commercial			
# of Customers	514	524	540
Tonnage	4,253	4,339	4,470

City of Kalama Contracted to Waste Control, Inc. (City contract specifies WUTC set rates)			
	Year 1 (2007)	Year 3 (2009)	Year 6 (2012)
Residential			
# of Customers	581	593	611
Tonnage	836	853	879
Commercial			
# of Customers	67	68	70
Tonnage	578	590	607

City of Woodland Contracted to Waste Control, Inc. (Incorporated areas only. Unincorporated areas of Woodland are included in G-101 summary in Section 3.3.1)			
	Year 1 (2007)	Year 3 (2009)	Year 6 (2012)
Residential			
# of Customers	1,298	1,324	1,364
Tonnage	2,630	2,683	2,764
Commercial			
# of Customers	73	75	77
Tonnage	3,002	3,062	3,155

3.4 Energy Recovery & Incineration (ER&I) Programs

There are no Energy Recovery & Incineration facilities within the jurisdiction of Cowlitz County. However, Cowlitz County is willing to discuss building a landfill gas pipeline to any interested industrial neighbor. The pipeline would convey landfill gas collected from the County Landfill to the their facility. The landfill gas would be used to offset demand for natural gas or hog fuel at any of these facilities. Currently, no pipeline is planned.

3.5 Land Disposal Program

Cowlitz County Landfill

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: Cowlitz County Landfill
Owner: Cowlitz County
Operator: Cowlitz County, Department of Public Works

Landfill Name: Weyerhaeuser Regional Landfill
Owner: Weyerhaeuser
Operator: Weyerhaeuser

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.*

	Year 1 (2007)	Year 3 (2009)	Year 6 (2012)
Cowlitz County Landfill	20,258	20,665	21,291
Weyerhaeuser Regional Landfill	0	0	0

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.*

	Year 1 (2005)	Year 3 (2007)	Year 6 (2010)
Cowlitz County Landfill	80,055	81,664	84,139
Weyerhaeuser Regional Landfill	258,863	264,066	272,068

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.*

	Year 1 (2005)	Year 3 (2007)	Year 6 (2010)
Cowlitz County Landfill	$2,231,443	$2,317,290	$2,454,067

3.5.5 Please describe the funding mechanism(s) that will defray the cost of this component.

Tipping Fees; investment accounts; investment interest.

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

YR 1	$107,870	YR 3	$113,287	YR 6	$122,212

Funding Source

YR 1	Tip Fees	YR 3	Tip Fees	YR 6	Tip Fees

3.6.2 *Which cost components are included in these estimates?*

Labor and benefits only

3.6.3 *Please describe the funding mechanism(s) that will recover the cost of each component.*

Solid waste tip fee

3.7 (a) 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 (a) *Describe the program, or provide a page number reference to the plan.*

Existing Home Composting Program (SWMP Section 5.3.4)

3.7.2 (a) *Owner/Operator*: Cowlitz County

3.7.3 (a) *Is WUTC Regulation Involved? If so, please explain the extent of involvement in section 3.8.*

No.

3.7.4 (a) *Please estimate the anticipated costs for this program, including capital and operating expenses.*

See SWMP Table 13-1, Section 3, Waste Reduction

3.7.5 (a) *Please describe the funding mechanism(s) that will recover the cost of this component.*

Solid waste tip fees, state coordinated prevention grant

3.7 (b) 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 (b) *Describe the program, or provide a page number reference to the plan.*

Planned Solid Waste Transfer / Long Haul Development (Section 7.4)

3.7.2 (b) Owner/Operator: Waste Control Recycling, Inc.

3.7.3 (b) *Is WUTC Regulation Involved? If so, please explain the extent of involvement in section 3.8.*

No.

3.7.4 (b) *Please estimate the anticipated costs for this program, including capital and operating expenses.*

YR 1	$484,657	YR 3	$926,110	YR 6	$1,310,935

3.7.5 (b) *Please describe the funding mechanism(s) that will recover the cost of this component.*

Solid waste tip fees

3.7 (c) 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 (c) *Describe the program, or provide a page number reference to the plan.*

Existing Special Waste Program

Education Materials	Sections 3.4, 4.10, & 10.2.3.3
White Goods	Section 10.7.3
Tires	Section 10.8.4
Sharps	Section 10.9.3 (3)
Moderate Risk Waste	Section 10.11.3

3.7.2 (c) *Owner/Operator:* Cowlitz County

3.7.3 (c) *Is WUTC Regulation Involved? If so, please explain the extent of involvement in section 3.8.*

No.

3.7.4 (c) *Please estimate the anticipated costs for this program, including capital and operating expenses.*

See SWMP Table 13-1, Section 1, Introduction and Background

3.7.5 (c) *Please describe the funding mechanism(s) that will recover the cost of this component.*

Included in landfill operations in Section 3.5.4, above.

3.7 (d) 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 (d) *Describe the program, or provide a page number reference to the plan.*

Solid Waste Management Plan Update (Section 1.1.1)

3.7.2 (d) *Owner/Operator:* Cowlitz County

3.7.3 (d) *Is WUTC Regulation Involved? If so, please explain the extent of involvement in section 3.8.*

Yes, review cost assessment

3.7.4 (d) *Please estimate the anticipated costs for this program, including capital and operating expenses.*

See SWMP Table 13-1, Section 1, Introduction and Background

3.7.5 (d) *Please describe the funding mechanism(s) that will recover the cost of this component.*

Solid waste tip fee

3.8 References and Assumptions *(attach additional sheets as necessary)*

- Section 3.1 and 3.2:
- Section 3.3: Customers and tonnages provided by WUTC haulers and contract haulers. Estimation and projection calculations and assumptions are attached.
- Section 3.4:
- Section 3.5:
- Section 3.6:
- Section 3.7:

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.*

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)
Cowlitz County Landfill	Landfill	$37.30			Cowlitz County Landfill	102,306	$3,816,014
Toutle Drop Box	Transfer	$59.35[a]	$29,310	Toutle, WA	Cowlitz County Landfill	1,215	$72,110

Notes

[a] The tip fee at the Toutle Drop Box facility is based on the number of containers, not on weight. Waste collected at the facility is not weighed until it reaches the Cowlitz County Landfill. The tip fee is estimated on the facility revenue at the facility and the tonnage received at the landfill.

Table 4.1.2 Tip Fee Components

Tip Fee by Facility	Surcharge	City Tax	County Tax	Transportation Cost	Operational Cost	Administration Cost	Closure Costs
Cowlitz County Landfill	$17.42[a]	$0	$0	$0	$14.25[b]	NA[b]	$5.63[c]
Toutle Drop Box	$39.30[d]	$0	$0	$9.48[e]	$10.57[b]	NA[b]	$0

Notes

[a] The Surcharge listed for the Cowlitz County Landfill is the deposit made to the Equipment, Land, and Facilities Fund, described in Chapter 12 of the SWMP, which is used for future capital expenses and the procurement of professional services.

[b] Cowlitz County does not segregate landfill operations and solid waste administrative costs. These items are combined and are reported under Operational Costs.

[c] Closure Costs includes contributions to the Closure Fund, Post Closure Fund – Lined Landfill, and Post Closure Fund – Unlined Landfill.

[d] The Toutle Drop Box facility contributes the same disposal fee required at the landfill, plus $20.05 to cover transportation and operational costs.

[e] Transportation component does not include county subsidized portion ($14.64) of the total transportation cost.

Table 4.1.3 Funding Mechanism

Name of Program Funding Mechanism that will defray costs	Bond Name	Total Bond Debt	Bond Rate	Bond Due Date	Grant Name	Grant Amount	Tip Fee	Taxes	Other	Surcharge
Disposal Operations							$1,435,840			
Solid Waste Planning							$53,199			
HHW Collection & Disposal					Coordinated Prevention Grant	$80,105	$26,700			
Backyard Composting							$3,000			
Solid Waste Administration							$107,870			
Solid Waste Closure and Post Closure							$595,698			
Toutle Drop Box							$72,110		$17,788[a]	

Notes:
[a] Excess transportation costs is subsidized by the ELF fund.

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
Cowlitz County Landfill	$37.30	$37.30	$37.30	$37.30	$37.30	$37.30
Toutle Drop Box[a]	$59.35	$59.35	$59.35	$59.35	$59.35	$59.35

Notes:
[a] The disposal rate per volume at the Toutle facility is not expected to change in the next six years. The rate shown per ton assumes similar volume and density as received in 2004. Excess costs will be subsidized by the ELF fund.

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 collectoin 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	Tip Fee %	Grant %	Bond %	Collection Tax Rates %	Other %	Total
Waste Reduction	25	75				100%
Recycling	100					100%
HHW Collection	25	75				100%
ER&I	100					100%
Transfer	100					100%
Land Disposal	100					100%
Administration	100					100%
Other						100%

Table 4.2.2 Funding Mechanism by Percentage

Year Three

Component	Tip Fee %	Grant %	Bond %	Collection Tax Rates %	Other %	Total
Waste Reduction	25	75				100%
Recycling	100					100%
HHW Collection	25	75				100%
ER&I	100					100%
Transfer	100					100%
Land Disposal	100					100%
Administration	100					100%
Other						100%

Table 4.2.3 Funding Mechanism by Percentage **Year Six**						
Component	Tip Fee %	Grant %	Bond %	Collection Tax Rates %	Other %	Total
Waste Reduction	25	75				100%
Recycling	100					100%
HHW Collection	25	75				100%
ER&I	100					100%
Transfer	100					100%
Land Disposal	100					100%
Administration	100					100%
Other						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.

- 2006 Cowlitz County Financial Assurance
- 2006 Cowlitz County Solid Waste Budget

4.4 Surplus Funds

Please provide information about any surplus or saved funds that may support your operations.

Currently the $37.30/ton tip fee is broken into a portion to pay for required services with the surplus going to a fund to pay for future capital and program expenses. The required services amount to $16.84/ton, and include solid waste administration, landfill operation, and landfill closure/post-closure fund contributions. The remaining $17.42/ton is deposited into the Equipment, Land, and Facilities Fund (ELF) (2005 Cowlitz County Financial Assurance Analysis - page 3). This program was established to accumulate reserve funds for the purchase of equipment, land, and facilities for the County's solid waste sites. Surplus funds deposited into the ELF fund to be used to subsidize future solid waste activities, including SWMP recommendations. Additionally the fund will be used to subsidize the tipping fee at the planned private transfer station after the county landfill closes in 2012. Using this subsidy, Cowlitz County does not anticipate a tipping fee increase until 2015.

At the Toutle Drop Box facility the County subsidizes a portion of the actual transportation costs. Use of the facility is based on a price per container instead of a price per weight. The MSW received at the Drop Box facility is not weighed until it reaches the landfill for disposal. The transportation subsidy is covered by the ELF fund, which amounts to approximately $14.64/ton. The disposal of the material at the County landfill is recorded at $39.30/ton, which is then distributed as discussed above, with an additional $2.00/ton deposited into the ELF.

ATTACHMENT C1

UTC CALCULATIONS

WUTC Calculations
Cowlitz County SWMP 2007

Population Growth Rate	1%
Waste Growth Rate	1%

Population	2,004
2004 OFM Estimate	95,300

YR 1 (2005)	YR 3 (2007)	YR 6 (2010)
96,253	98,188	101,163

County Recycling and Disposal	
From Table 2-7	2,003
2003 Total County Recycling	343,951
2003 Total County Disposal	332,759

YR 1 (2005)	YR 3 (2007)	YR 6 (2010)
350,864	357,917	368,762
339,447	346,270	356,763

WUTC Calculations
Cowlitz County SWMP 2007

WUTC Regulated

Waste Control, Inc (G Permit #101)					
Only includes WUTC regulated areas (unincorporated areas, Castle Rock, and area outside of Woodland)					unincorporated areas, Castle Rock, and area outside of Woodland
	Base Year (2004)	Year 1 (2005)	Year 3 (2007)	Year 6 (2010)	2004 Percentage
Residential					
# of Customers	**8021**	8,101	8,264	8,514	95.56%
Tonnage	**11205**	11,317	11,545	11,894	79.67%
Commercial					
# of Customers	**373**	377	384	396	4.44%
Tonnage	**2860**	2,889	2,947	3,036	20.33%
Total Cust	8394				
Total Tons	14065				

Community Waste (G Permit #219)					
Only includes WUTC regulated areas (unincorporated areas)					Ryderwood Area
	Base Year (2004)	Year 1 (2005)	Year 3 (2007)	Year 6 (2010)	2004 Percentage
Residential					
# of Customers	**283**	286	292	300	95.56% Assuming same waste percentage
Tonnage	335	338	345	355	79.67% as uncorporated County
Commercial					
# of Customers	**10**	10	10	11	4.44%
Tonnage	85	86	88	91	20.33%
Total Cust	293				
Total Tons	**420**				

Hauler or city reported information for 2004 in bold.

WUTC Calculations
Cowlitz County SWMP 2007

Waste Connections, Inc (G Permit #253)					Cougar Area
Only includes WUTC regulated areas (unincorporated areas)					
	Base Year (2004)	Year 1 (2005)	Year 3 (2007)	Year 6 (2010)	2004 Percentage
Residential					
# of Customers	**173**	175	178	184	88.72%
Tonnage	**138**	139	142	146	37.00%
Commercial					
# of Customers	22	22	23	23	11.28%
Tonnage	235	237	242	249	63.00%
Total Cust	195				
Total Tons	373				

Non Regulated

City of Longview					Provided by Jerry Stinger, City of Longview
Waste Control, Inc.					
	Base Year (2004)	Year 1 (2005)	Year 3 (2007)	Year 6 (2010)	2004 Percentage
Residential					
# of Customers	**13874**	14,013	14,294	14,728	93.82%
Tonnage	**14453**	14,598	14,891	15,342	46.70%
Commercial					
# of Customers	**914**	923	942	970	6.18%
Tonnage	**16497**	16,662	16,997	17,512	53.30%

Hauler or city reported information for 2004 in bold.

WUTC Calculations
Cowlitz County SWMP 2007

City of Kelso					
Waste Control, Inc.					
	Base Year (2004)	Year 1 (2005)	Year 3 (2007)	Year 6 (2010)	2004 Percentage
Residential					
# of Customers	**3948**	3,987	4,068	4,191	88.78%
Tonnage	**5768**	5,826	5,943	6,123	58.29%
Commercial					
# of Customers	**499**	504	514	530	11.22%
Tonnage	**4128**	4,169	4,253	4,382	41.71%

Provided by Cindy Kerney, City of Kelso

City of Kalama					
Waste Control, Inc.					
	Base Year (2004)	Year 1 (2005)	Year 3 (2007)	Year 6 (2010)	2004 Percentage
Residential					
# of Customers	**564**	570	581	599	89.67%
Tonnage	**811.6**	820	836	862	59.13%
Commercial					
# of Customers	**65**	66	67	69	10.33%
Tonnage	**561**	567	578	596	40.87%
Total Cust	629				
Total Tons	1372.6				

Contract to Waste Control, but use WUTC set rates.

Hauler or city reported information for 2004 in bold.

WUTC Calculations
Cowlitz County SWMP 2007

City of Woodland					
Waste Control, Inc.					
	Base Year (2004)	Year 1 (2005)	Year 3 (2007)	Year 6 (2010)	2004 Percentage
Residential					
# of Customers	**1260**	1,273	1,298	1,338	94.67%
Tonnage	**2553**	2,578	2,630	2,710	46.70%
Commercial					
# of Customers	**71**	72	73	75	5.33%
Tonnage	**2913**	2,943	3,002	3,093	53.30%
Total Cust	1331				
Total Tons	5466				

Includes incorporated area only (areas outside contained in G101 permit info)
Customers provided by City of Woodland, tonnage distribution assumes percentage is e

Hauler or city reported information for 2004 in bold.

Toutle Drop Box Tip Fee Calculation

	Total Facility	$/ton	Notes
2004 Tons	1,140	- -	Actual tons received at landfill
Revenue[a]	$67,659	$59.35	[a] Use fee for facility is based on price per can or bag, so $/ton is calculated from
Expenses			
Trans Cost	$26,557	$23.30	
Ops Cost	$58,000	$50.88	Includes landfill tip fee of $39.30
Total Cost	$84,557	$74.17	
County subsidized transportation cost			
Total Cost - Revenue		$14.82	
Cust Transportation Cost		$8.47	

ATTACHMENT C2

FINANCIAL ASSURANCE ANALYSIS 2006

COWLITZ COUNTY
SOLID WASTE

FINANCIAL ASSURANCE ANALYSIS ANNUAL UPDATE

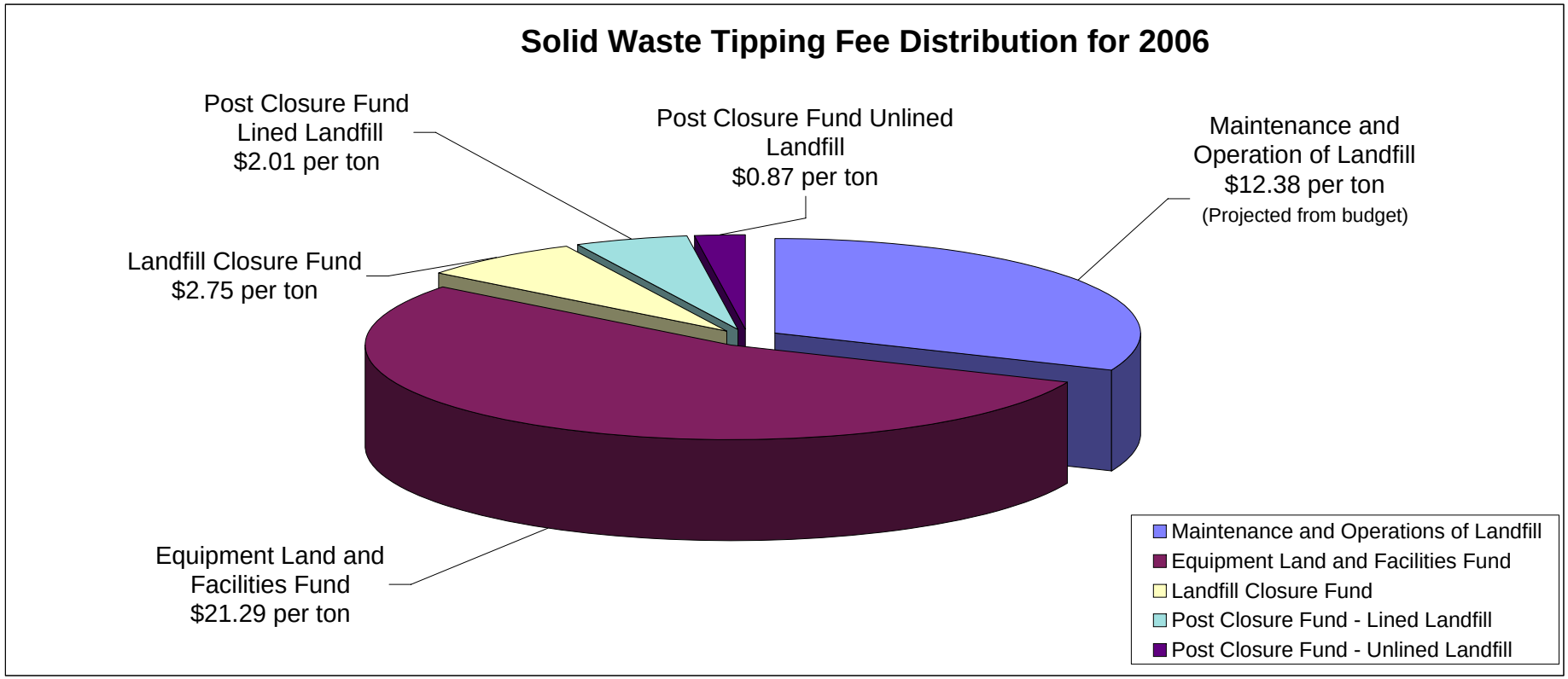
As required by WAC 173-351-600

February 9, 2006

Prepared by
Cowlitz County Dept of Public Works
207 Fourth Avenue North
Kelso, WA 98626-4189
(360) 577-3030

SUMMARY OF TIPPING FEE REVENUE PER TON
(February 2006)

Maintenance and Operations of Landfill	**$**	**12.38**
Equipment Land and Facilities Fund	**$**	**21.29**
Landfill Closure Fund	**$**	**2.75**
Post Closure Fund - Lined Landfill	**$**	**2.01**
Post Closure Fund - Unlined Landfill	**$**	**0.87**
TOTAL TIPPING FEE	**$**	**39.30**



EQUIPMENT LAND AND FACILITIES FUND

YEAR	TONS	ANNUAL $ TO ELF RESERVES	$/TON TO ELF	ANNUAL INTEREST	INTEREST RATE	CPI RATE	EXPENDITURES	BALANCE
1991	**6,500**						**3,443,779**	**3,754,993**
1992	**85,765**	**2,032,931**	**23.70**	**123,776**	**3.1**		**2,741,685**	**3,236,415**
1993	**86,294**	**1,726,174**	**20.00**	**79,092**	**3.2**		**1,929,560**	**3,277,220**
1994	**89,330**	**1,445,291**	**16.18**	**104,954**	**4.2**	**2.8**	**727,047**	**4,145,870**
1995	**95,518**	**1,712,336**	**17.93**	**193,391**	**5.8**	**2.9**	**1,068,265**	**5,054,971**
1996	**82,952**	**1,643,469**	**19.81**	**227,675**	**5.3**	**2.8**	**1,997,302**	**4,986,879**
1997	**81,842**	**1,882,515**	**23.00**	**230,143**	**5.4**	**2.2**	**690,780**	**6,477,952**
1998	**81,527**	**1,786,181**	**21.91**	**306,651**	**5.4**	**1.3**	**197,433**	**8,373,351**
1999	**81,770**	**1,244,550**	**15.22**	**336,358**	**5.3**	**2.3**	**1,429,179**	**9,004,555**
2000	**81,669**	**2,241,596**	**27.45**	**547,019**	**6.0**	**3.5**	**194,433**	**11,598,737**
2001	**78,406**	**1,347,612**	**17.19**	**549,098**	**4.1**	**2.7**	**509,731**	**12,985,716**
2002	**82,806**	**2,400,000**	**28.98**	**276,282**	**1.8**	**1.4**	**312,495**	**15,349,503**
2003	**85,778**	**2,178,574**	**25.40**	**99,588**	**1.2**	**2.2**	**10,783,291**	**6,844,374**
2004	**92,151**	**2,031,419**	**22.04**	**75,144**	**1.4**	**3.0**	**3,029,695**	**5,921,242**
2005	**102,306**	**2,667,528**	**26.07**	**166,414**	**3.1**	**3.5**	**204,462**	**8,550,722**
2006	102,818	2,295,037	22.32	359,130	4.2	3.2	1,473,244	9,731,645
2007	103,332	2,312,501	22.38	437,924	4.5	3.2	592,642	11,889,428
2008	103,848	2,363,727	22.76	535,024	4.5	3.2	972,421	13,815,758
2009	104,368	2,384,163	22.84	621,709	4.5	3.2	1,230,302	15,591,328
2010	104,889	2,404,163	22.92	779,566	5.0	3.2	1,075,185	17,699,873
2011	105,414	2,424,795	23.00	884,994	5.0	3.2	1,096,648	19,913,013
2012	105,942	2,445,506	23.08	995,651	5.0	3.2	1,118,301	22,235,869
2013	73,221	1,683,899	16.51	1,111,793	5.0	3.2	786,496	23,769,995
2013	33,250	1,208,828	39.30	1,188,500	5.0	3.2	1,355,242	27,513,759
2014	107,004	3,910,507	39.30	1,375,688	5.0	3.2	4,805,048	28,015,933
2015	107,539	3,931,533	39.30	1,400,797	5.0	3.2	4,889,907	28,479,487
2016	108,077	3,952,665	39.30	1,423,974	5.0	3.2	4,976,536	28,900,827
2017	108,617	3,973,902	39.30	1,445,041	5.0	3.2	5,064,955	29,276,159
2018	109,160	3,995,245	39.30	1,463,808	5.0	3.2	5,155,188	29,601,474
2019	109,706	4,016,695	39.30	1,480,074	5.0	3.2	5,276,157	29,843,643
2020	110,255	4,038,252	39.30	1,492,182	5.0	3.2	5,399,954	29,995,788
2021	110,806	4,059,917	39.30	1,499,789	5.0	3.2	5,526,645	30,050,623
2022	111,360	4,081,691	39.30	1,502,531	5.0	3.2	5,656,298	30,000,429
2023	111,917	4,103,573	39.30	1,500,021	5.0	3.2	5,788,981	29,837,034
2024	112,476	4,125,565	39.30	1,491,852	5.0	3.2	5,924,765	29,551,787
2025	113,039	4,147,666	39.30	1,477,589	5.0	3.2	6,063,722	29,135,533
2026	113,604	4,169,878	39.30	1,456,777	5.0	3.2	6,205,927	28,578,584
2027	114,172	4,192,201	39.30	1,428,929	5.0	3.2	6,351,455	27,870,695
2028	114,743	4,214,636	39.30	1,393,535	5.0	3.2	6,500,383	27,001,030
2029	115,316	4,237,183	39.30	1,350,051	5.0	3.2	6,652,791	25,958,133
2030	115,893	4,259,843	39.30	1,297,907	5.0	3.2	6,808,759	24,729,897
2031	116,472	4,282,616	39.30	1,236,495	5.0	3.2	6,968,371	23,303,523
2032	117,055	4,305,503	39.30	1,165,176	5.0	3.2	7,131,712	21,665,491
2033	117,640	4,328,504	39.30	1,083,275	5.0	3.2	7,298,868	19,801,517
2034	118,228	4,351,620	39.30	990,076	5.0	3.2	7,469,929	17,696,516
2035	118,819	4,374,852	39.30	884,826	5.0	3.2	7,644,985	10,936,356

Assumptions:

1)Waste stream growth rate 0.5% per year

2) Historical interest thru 2005 is average of monthly Washington State Investment Pool net earnings rate

3) February 11, 2003 BOCC removed by Resolution No. 03-024 $8,511,514 from Solid Waste ELF fund to the General Capital Construction Fund.

4) April 13,2004 BOCC removed by $2,800,000 from SW ELF fund to General Capital Construction Fund.

Equipment Land and Facilities Expenditures

YEAR	PROJECT	APPROX DATE COMPLETED	COST
1989	**Dredge Sand 300,000 cy- booster pump rent**	**Dec-89**	**126,000**
1989	**Permits and Design for Site B…..CH2-Hill**	**Dec-91**	**989,837**
1990	**Southwest Washington Advisory Board**	**Jan-91**	**8,466**
1990	**Lagoon Lining Project**	**Sep-91**	**209,446**
1990	**Purchase Shakemill Property-3 acres**	**Apr-91**	**175,474**
1990	**Cell 1- Preload**	**Dec-90**	**595,070**
1988	**Purchase BN Railroad Property-7.9 acres**	**Jun-91**	**61,741**
1990	**Solid Waste Management Plan Update**	**Sep-93**	**182,133**
1990	**Public Disposal and Storm-drain Construction**	**Mar-92**	**766,471**
1991	**Site A -Unlined Closure**	**Jan-93**	**2,741,685**
1991	**Dredge Sand 250,000 cy - booster pump rent**	**Jun-91**	**120,000**
1991	**Cell 2- Preload**	**Jun-92**	**720,315**
1991	**Cell 1 Construction**	**Oct-92**	**1,522,378**
1991	**Remove Cell 2 Preload and Construct Cell 2**	**Nov-93**	**1,689,710**
1993	**Replace D-8 Cat**	**Dec-99**	**237,430**
1993	**Hazardous Waste Collection Facility**	**Dec-93**	**24,988**
1993	**Legal and Professional Services**	**Mar-95**	**453,124**
1994	**Replace 826C Compactor**	**Dec-94**	**273,923**
1995	**Equipment Maintenance Slab**	**Jun-95**	**11,783**
1995	**Misc Facility Improvement**	**Sep-95**	**9,041**
1995	**Cell 3A-3B Permit / Design Development**	**Jun-95**	**461,704**
1995	**Dredge 234,000 cy of Spoils @ 2.55 c.y**	**Jan-96**	**552,785**
1996	**Purchase Drop Box Truck w/ rolloff system**	**Dec-96**	**115,295**
1996	**Facility Improvements / Cox Tire Cleanup**	**Dec-96**	**260,255**
1996	**Cell 3A Construction**	**Apr-97**	**1,601,007**
1997	**Misc Facility Improvement**	**Dec-97**	**33,144**
1997	**Cell 3 Dredging / Development**	**Jan-97**	**120,434**
1997	**Composting Pad**	**Jan-98**	**494,741**
1998	**Replace Case W-36 Loader**	**Dec-98**	**161,257**
1998	**Misc Facility Improvement**	**Dec-98**	**6,618**
***1998**	**Cell 1-2 Partial Closure**	**Mar-02**	**2,357,042**
1998	**Landfill Replacement Study**	**Jun-02**	**73,168**
1999	**Replace 826C Compactor**	**Dec-99**	**303,654**
1999	**Upgrade Water Truck**	**Dec-99**	**10,000**
1999	**Misc Small Equipment (forklift, mower, hw eq.)**	**Dec-99**	**80,271**
2000	**HazMat Facility Improvements**	**Dec-00**	**13,158**
2000	**Construction Demo Tire Pad**	**Jun-02**	**102,763**
2000	**Visual Screening-Inspection Platform**	**Apr-02**	**153,600**
2001	**Replace Drop Box Truck**	**Dec-02**	**130,000**
2001	**Gas Utilization Development**	**On-going**	**7,540**
2001	**Design / Construct Cell 3B**	**On-going**	**100,488**
2002	**Solid Waste Management Plan Update**	**On-going**	**125,000**
2002	**Request for Solid Waste Services**	**Jun-02**	**19,139**
2003	**Transfer to General Capital Construction Fund**	**Feb-03**	**8,511,514**
2003	**Construct Cell 3B**	**Mar-04**	**2,133,847**
2004	**Transfer to General Capital Construction Fund**	**Apr-04**	**2,800,000**
2004	**Construct Gas Utilization System**	**On-going**	**192,242**
2004	**Replace 81K Aljon Compactor**	**May-04**	**278,884**
2005	**Replace Cat 950-F Loader**	**Oct-05**	**114,441**
2005	**Misc Eq. and Planning**		**90,021**
2006	Construct Gas Utilization System		1,200,000
2006	Fees to Waste Control - $1.45 per ton @ 95,319 tons		138,213
2006	Misc Eq. and Planning		135,031
2007	Fees to Waste Control - $4.73 per ton @ 95,833 tons		453,290
2007	Misc Eq. and Planning		139,352
2008	Fees to Waste Control - $4.77 per ton @ 96,349 tons		459,585
2008	Misc Eq. and Planning		143,811
2008	Replace D7H Cat		369,025
2009	Fees to Waste Control - $8.61 per ton @ 96,869 tons		834,042
2009	Replace Landfill Compactor		396,260
2010	Fees to Waste Control - $11.04 per ton @ 97,390 tons		1,075,185
2011	Fees to Waste Control - $11.20 per ton @ 97,915 tons		1,096,648
2012	Fees to Waste Control - $11.36 per ton @ 98,442 tons		1,118,301
2013	Landfill Full-Aug 2013		
2013	Fees to Waste Control - $11.53 per ton @ 68,213		786,496
2013	Fees to Waste Control - $44.06 per ton @ 30,759 tons		1,355,242
2014	Fees to Waste Control - $44.58 per ton @ 99,504 tons		4,435,888
		Total	**46,483,186**

*Funds from Closure Account all others from Equipment Land and Facilities Fund

*Costs inflated based on projected annual CPI rate - see column G of previous table

2003 CELL CONSTRUCTION COST ESTIMATES COWLITZ COUNTY SANITARY LANDFILL

ITEM BREAKDOWN				CELL 3B - 2003	
ITEM NO.	**DESCRIPTION**	**UNIT**	**2006 UNIT PRICES**	**QTY**	**AMOUNT**
1	Mobilization	LS	54,968	1	54,967.50
2	Subgrade Preparation	ACRE	2,199	12	25,285.05
3	Perimeter Berm Soil Placement	CY	2.20	-	-
4	Sedimentation Control Ditch	CY	38.48	-	-
5	Excavate Preload Stockpiles	CY	0.83	-	-
6	Place Excavated Preload Soils	CY	0.83	-	-
7	Primary Soil Liner	CY	10.99	37,200	408,958.20
8	Leachate Collection Layer	CY	17.59	27,900	468,720.00
9	Filter Gravel	CY	18.90	3,000	56,700.00
10	Primary Geomembrane	SF	0.58	478,000	277,240.00
11	Fabricated Pipe Penetration	EA	3,675.00	2	7,350.00
12	Leachate Manhole	EA	6,825.00	2	13,650.00
13	Leachate Collection Pipeing	LF	17.64	1,600	28,224.00
14	Leachate Transmission Piping	LF	33.92	150	5,088.00
15	Leachate Force Main & Pump Station	LS	157,500.00	1	157,500.00
16	Crushed Surfacing	TON	11.03	350	3,860.50
17	Structural Fill	CY	4.20	2,000	8,400.00
18	Erosion Control Matting	SY	2.89	5,000	14,450.00
19	Culverts	LF	31.50	-	-
20	Chain Link Fence	LF	18.38	-	-
21	Excavate and Haul Sand Stockpile	CY	2.10	170,000	357,000.00
22	Miscellaneous Support Structures	LS	52,500.00	1	52,500.00
SUBTOTAL COST (2003 Unit Prices)					1,917,932.50
State Sales Tax at 7.5%					143,844.94
Permit Engineering/Construction Mgmt Cell 2 & 3 Permit Application		LS	157,500.00	-	-
Permit Modifications		LS	105,000.00	1	105,000.00
Construction Documents		LS	52,500.00	1	52,500.00
Construction Mgmt QA/QC		LS	52,500.00	1	52,500.00
TOTAL COST THIS PHASE (2003Unit Prices)					**2,271,777.44**

LANDFILL CLOSURE FUND

YEAR	TONS	$2.75 /TON	INTEREST	INTEREST RATE	CPI RATE	EXPENDITURES	BALANCE
							602,630
1994	**89,330**	**404,942**	**15,213**	**4.2**	**2.8**	**0**	**1,022,785**
1995	**95,518**	**408,857**	**73,370**	**5.8**	**2.9**	**0**	**1,505,012**
1996	**82,952**	**355,731**	**75,193**	**5.3**	**2.8**	**0**	**1,935,936**
1997	**81,842**	**398,937**	**108,574**	**5.4**	**2.2**	**0**	**2,443,447**
1998	**81,527**	**393,790**	**120,329**	**5.4**	**1.3**	**56,578**	**2,900,988**
1999	**81,770**	**380,648**	**149,029**	**5.3**	**2.3**	**140,900**	**3,294,298**
2000	**81,669**	**188,305**	**163,521**	**6.0**	**3.5**	**2,157,687**	**1,489,958**
2001	**78,406**	**192,435**	**55,729**	**4.1**	**2.7**	**7,931**	**1,730,122**
2002	**82,806**	**195,324**	**28,793**	**1.8**	**1.4**	**0**	**1,954,308**
2003	**85,378**	**259,499**	**20,516**	**1.2**	**2.2**	**0**	**2,234,322**
2004	**92,151**	**296,181**	**29,859**	**1.4**	**3.0**	**0**	**2,560,362**
2005	**102,306**	**286,756**	**82,935**	**3.1**	**3.5**	**0**	**2,930,053**
2006	102,818	282,748	123,062	4.2	3.2	0	3,335,863
2007	103,332	284,162	150,114	4.5	3.2	0	3,770,139
2008	103,848	285,583	169,656	4.5	3.2	0	4,225,378
2009	104,368	287,011	190,142	4.5	3.2	0	4,702,531
2010	104,889	288,446	235,127	5.0	3.2	0	5,226,104
2011	105,414	289,888	261,305	5.0	3.2	0	5,777,297
2012	105,942	291,341	288,865	5.0	3.2	0	6,357,503
2013	73,221	201,358	317,875	5.0	3.2	3,166,647	3,710,089
2014	0	0	0	5.0	3.2	3,166,647	543,442

LANDFILL CLOSURE COSTS (2006 COSTS)

1998 - 1999 Partial Closure Cells 1 & 2	**197,478**
2000 - Closure Phase I (Portions of Cell 1 & 2)	**2,157,687**
2001 - Closure Phase I (Portions for Cell 1 & 2)	**7,931**
2013 - Begin Closure CELL 3A-3B	3,166,647
2014 - Complete Closure CELL 3A-3B	3,166,647
	8,696,390

Assumptions:
1) Waste stream growth rate - 0.5%
2) Historical interest rate thru 2005 is average of monthly Washington State investment pool net earnings rate

2006 CLOSURE CONSTRUCTION COST ESTIMATES

COWLITZ COUNTY LANDFILL

ITEM BREAKDOWN				PHASE 2 - 2013	
ITEM NO.	**DESCRIPTION**	**UNIT**	**UNIT PRICE**	**QUANTITY**	**AMOUNT**
1	Mobilization	LS	158,529	1	158,529
2	Subgrade Preparation	ACRE	4,846	26	125,983
3	Geosynthetic Clay Liner	SF	0.51	1,132,560	581,037
4	60 Mil Geomembrane Cover	SF	0.67	1,132,560	758,906
5	Drainage Layer	CY	19.37	41,960	812,744
6	Geotextile	SF	0.22	1,132,560	249,016
7	Topsoil	CY	8.90	62,920	559,957
8	Drainage Ditches	LF	4.56	5,000	22,791
9	Culverts	LF	39.71	525	20,849
10	Underdrains	LF	4.19	15,050	63,029
11	Hydroseeding	ACRE	1,361.10	26	35,389
12	Flare Station	LS	113,480.14	-	-
13	Blowers	EA	136,171.77	-	-
14	Vertical Gas Extraction Syst.	VF	143.54	1,210	173,688
15	Gas Piping	LF	14.49	10,270	148,817
16	Flare Station Piping	LS	20,065	-	-
17	Crushed Surfacing	TON	16.44	650	10,685
18	Misc Structures & Improvements	LS	55,737.05	4	222,948
SUBTOTAL COST THIS PHASE (2006 Unit Prices)					3,944,369
State Sales Tax at 7.8%					307,661
Permit Engineering & Construction Mgmt					-
Phase 2 & 3 Construction Document (5%)					197,218
Phase 2 & 3 Construction Mgmt (12%)					473,324
TOTAL COST THIS PHASE (2006 Unit Prices)					**4,922,572**

Assumptions:

1) CPI rate puts phase 2 cost at $6,333,294 in 2014

POST CLOSURE FUND - LINED LANDFILL

YEAR	TONS	$2.01 per ton	ACTUAL per ton	INTEREST	INTEREST RATE	CPI RATE	EXPENDITURES	BALANCE
								108,750
1991	**83,755**	**108,750**	**1.30**	**5,959**	**3.7**			**223,459**
1992	**85,765**	**116,000**	**1.35**	**9,120**	**3.1**			**348,579**
1993	**86,294**	**294,050**	**3.41**	**15,401**	**3.2**			**658,030**
1994	**89,330**	**347,345**	**3.89**	**22,214**	**4.2**	**2.8**		**1,027,589**
1995	**95,518**	**253,057**	**2.65**	**71,550**	**5.8**	**2.9**		**1,352,196**
1996	**82,952**	**220,175**	**2.65**	**67,939**	**5.3**	**2.8**		**1,640,310**
1997	**81,842**	**50,928**	**0.62**	**93,004**	**5.4**	**2.2**		**1,784,242**
1998	**81,527**	**50,271**	**0.62**	**88,065**	**5.4**	**1.3**		**1,922,578**
1999	**81,770**	**139,699**	**1.71**	**95,549**	**5.3**	**2.3**		**2,157,826**
2000	**81,669**	**88,899**	**1.09**	**132,268**	**6.0**	**3.5**		**2,378,993**
2001	**78,406**	**90,849**	**1.16**	**140,712**	**4.1**	**2.7**		**2,610,554**
2002	**82,806**	**150,056**	**1.81**	**59,808**	**1.8**	**1.4**		**2,820,118**
2003	**85,778**	**187,122**	**2.18**	**32,487**	**1.2**	**2.2**		**3,039,727**
2004	**92,151**	**221,162**	**2.40**	**40,918**	**1.4**	**3.0**		**3,301,807**
2005	**102,306**	**209,594**	**2.05**	**107,474**	**3.1**	**3.5**		**3,618,875**
2006	102,818	206,663	2.01	151,993	4.2	3.2		3,977,530
2007	103,332	207,697	2.01	178,989	4.5	3.2		4,364,216
2008	103,848	208,735	2.01	196,390	4.5	3.2		4,769,341
2009	104,368	209,779	2.01	214,620	4.5	3.2		5,193,740
2010	104,889	210,828	2.01	259,687	5.0	3.2		5,664,255
2011	105,414	211,882	2.01	283,213	5.0	3.2		6,159,350
2012	105,942	212,943	2.01	307,968	5.0	3.2		6,680,261
2013	73,221	147,174	2.01	334,013	5.0	3.2	97,633	7,063,815
2014	0	0	0	353,191	5.0	3.2	302,272	7,114,733
2015	0	0	0	355,737	5.0	3.2	311,945	7,158,525
2016	0	0	0	357,926	5.0	3.2	321,927	7,194,524
2017	0	0	0	359,726	5.0	3.2	332,229	7,222,022
2018	0	0	0	361,101	5.0	3.2	342,860	7,240,263
2019	0	0	0	362,013	5.0	3.2	353,832	7,248,444
2020	0	0	0	362,422	5.0	3.2	365,154	7,245,712
2021	0	0	0	362,286	5.0	3.2	376,839	7,231,159
2022	0	0	0	361,558	5.0	3.2	388,898	7,203,819
2023	0	0	0	360,191	5.0	3.2	401,343	7,162,667
2024	0	0	0	358,133	5.0	3.2	414,186	7,106,615
2025	0	0	0	355,331	5.0	3.2	427,440	7,034,506
2026	0	0	0	351,725	5.0	3.2	441,118	6,945,113
2027	0	0	0	347,256	5.0	3.2	455,233	6,837,136
2028	0	0	0	341,857	5.0	3.2	469,801	6,709,191
2029	0	0	0	335,460	5.0	3.2	484,835	6,559,816
2030	0	0	0	327,991	5.0	3.2	500,349	6,387,458
2031	0	0	0	319,373	5.0	3.2	516,360	6,190,470
2032	0	0	0	309,524	5.0	3.2	532,884	5,967,110
2033	0	0	0	298,355	5.0	3.2	549,936	5,715,529
2034	0	0	0	285,776	5.0	3.2	567,534	5,433,771
2035	0	0	0	271,689	5.0	3.2	585,695	5,119,765
2036	0	0	0	255,988	5.0	3.2	604,438	4,771,315
2037	0	0	0	238,566	5.0	3.2	623,780	4,386,101
2038	0	0	0	219,305	5.0	3.2	643,741	3,961,666
2039	0	0	0	198,083	5.0	3.2	664,340	3,495,409
2040	0	0	0	174,770	5.0	3.2	685,599	2,984,580
2041	0	0	0	149,229	5.0	3.2	707,538	2,426,271
2042	0	0	0	121,314	5.0	3.2	730,179	1,817,405
2043	0	0	0	90,870	5.0	3.2	753,545	1,154,730

POST CLOSURE COSTS (2006 COSTS)

Environmental Monitoring	75,296	$75,296/yr x 30 years =	2,258,880
General Site Maintenance	9,126	$ 9,126/yr x 30 years =	273,780
Landfill Final Cover System	9,731	$ 9,731/yr x 30 years =	291,930
Leachate Pretreatment System	82,422	$82,422/yr x 30 years	2,472,660
Landfill Gas System	31,547	$31,547/yr x 30 years	946,410
Stormwater System	2,402	$ 2,402/yr x 30 years =	72,060
Administration	21,052	$21,052/yr x 30 years =	631,572
TOTAL	231,576	TOTAL	6,947,292

Assumptions:

1) Waste Stream Growth Rate - .5%

2) Historical interest thru 2005 is average of monthly Washington State investment pool net earnings rate

COWLITZ COUNTY LANDFILL
POST CLOSURE - LINED LANDFILL

(2006 Dollar Estimate)

Post Closure Activity	Basis of Estimate		Total Cost Per Year
ENVIRONMENTAL MONITORING			
Groundwater Monitoring Analysis	12 Wells Sampled Quarterly @ $697 ea	33,456	
Surface Water Monitoring Analysis	2 Locations Sampled Quarterly @ $697 ea	5,576	
Field Blank Monitoring Analysis	1 Sample Per Quarter @ $697 ea	2,788	
Landfill Leachate Monitoring Analysis	2 Locations Sampled Quarterly @ $697	5,576	
Leachate Discharge Monitoring	1 Sample Monthly @ $274	3,288	
Influent Discharge Monitoring	2 Samples Per Year @ $274	548	
Leachate Discharge VOC Monitoring	1 Sample Annually @ $987	987	
Leachate Discharge Reporting	2 Hours Per Month @ $39.26	942	
Landfill Gas Monitoring Labor	2 Hours Per Quarter @ $39.26	314	
Leachate Sampling Labor	24 Hours Per Quarter @ $39.26	3,769	
Leachate Discharge Labor	2 Hours Per Week @ $22.25	2,314	
Groundwater Quarterly Report	40 Hours Per Quarter @ $62.82	10,051	
Groundwater Annual Report	60 Hours @ $72.24 + Direct Costs ($215)	4,549	
Monitoring Equipment Replacement	10 Year Life Span on $11,347 equipment	1,138	75,296
GENERAL SITE MAINTENANCE			
Access & On-Site Roads	5 Hours Per Year @ $57 (grader)	275	
Fence Repair	1 Repair Per Year @ $447	447	
Vegetation Control	Spraying - 4 Hrs/Year@ $56/hr	224	
Illegal Dumping Control	8 Hrs/Year @ $22.25/hr	178	
Health Department Post Closure Fee	40+ Acres @ $8002	8,002	9,126
LANDFILL FINAL COVER SYSTEM			
Drainage Improvements	One Improvement Per Year	5,940	
Liner Repair	One Per Year @ $1,115	1,115	
Erosion Control	One Acre Per Year @ $1338	1,338	
Vegetation Control	Mow Once Per Year @ $1338	1,338	9,731
LEACHATE PRETREATMENT SYSTEM			
Pumping Facilities	10 Pumps/Rebuild Every 10 Years @ $3,403	3,403	
Aerator	20 Year Life @ $28,370	1,418	
Electricity (Aerator; pumps)	$282 Per Month	3,304	
Equipment Maintenance	Lubrication, Repair, Etc. 40 hrs/Yr @ $24.34	974	
Lagoon Cleaning/Liner Inspection	Every August - Drain & Clean	5,674	
Leachate Disposal Treatment	20 Million Gallons Per Year	43,230	
Autodialer	12 Months @ $16.75/mo	201	
Auto Sampler	$4,438/unit - 15-year life	295	
Flow Meter Calibration	2 @ $114	228	
Annual Discharge Permit	Permit Fee	23,695	82,422
LANDFILL GAS SYSTEM			
LFG Collection System Maintenance	8 hrs/month @ $34	3,264	
Blower Maintenance	4 hrs/month @ $34	1,632	
Flare Maintenance	4 hrs/month @ $34	1,632	
LFG Well Replacement	1 Well Every 4 Years @ $4,084/yr	1,021	
LFG Blower Replacement	2 @ 10 Yr Life @ $28,370 ea	5,674	
LFG System Repair Parts	Flare Liners, Sensors, Bearings, Etc	2,214	
LFG Blower Electricity	Per month @ $282	3,304	
Permit Fee	Air Pollution Control Permit @ $12,806/yr	12,806	31,547
STORMWATER SYSTEM			
Ditch and Structure Maintenance	1 Day/Month @ $22.25	2,135	
Stormwater Discharge Permit	Annual Permit Fee	267	2,402
ADMINISTRATION	10% of Annual Operations Cost	21,052	21,052
ANNUAL POST CLOSURE OPERATION & MAINTENANCE COSTS			**231,576**

POST CLOSURE FUND - UNLINED LANDFILL

YEAR	TONS	$0.87 /TON	ACTUAL per ton	INTEREST	INTEREST RATE	CPI RATE	EXPENDITURES	BALANCE
								3,750
1991	**83,755**	**3,750**	**0.04**	**197**	**3.7**		**0**	**7,697**
1992	**85,765**	**4,000**	**0.05**	**304**	**3.1**		**0**	**12,001**
1993	**86,294**	**23,451**	**0.27**	**756**	**3.2**		**0**	**36,208**
1994	**89,330**	**24,094**	**0.27**	**1,148**	**4.2**	**2.8**	**0**	**61,450**
1995	**95,518**	**22,150**	**0.23**	**3,380**	**5.8**	**2.9**	**6,000**	**80,980**
1996	**82,952**	**18,896**	**0.23**	**4,003**	**5.3**	**2.8**	**0**	**103,879**
1997	**81,842**	**29,709**	**0.36**	**5,837**	**5.4**	**2.2**	**0**	**139,425**
1998	**81,527**	**29,325**	**0.36**	**6,781**	**5.4**	**1.3**	**0**	**175,531**
1999	**81,770**	**42,158**	**0.52**	**8,652**	**5.3**	**2.3**	**0**	**226,341**
2000	**81,669**	**28,286**	**0.35**	**13,830**	**6.0**	**3.5**	**0**	**268,457**
2001	**78,406**	**28,907**	**0.37**	**15,807**	**4.1**	**2.7**	**0**	**313,171**
2002	**82,806**	**82,992**	**1.00**	**6,897**	**1.8**	**1.4**	**29,696**	**371,352**
2003	**85,778**	**89,733**	**1.05**	**3,702**	**1.2**	**2.2**	**36,938**	**427,850**
2004	**92,151**	**100,351**	**1.09**	**5,367**	**1.4**	**3.0**	**38,220**	**500,799**
2005	**102,306**	**90,719**	**0.89**	**14,543**	**3.1**	**3.5**	**45,396**	**560,665**
2006	102,818	89,451	0.87	23,548	4.2	3.2	41,153	632,511
2007	103,332	89,899	0.87	28,463	4.5	3.2	42,388	708,485
2008	103,848	90,348	0.87	31,882	4.5	3.2	43,744	786,971
2009	104,368	90,800	0.87	35,414	4.5	3.2	45,144	868,041
2010	104,889	91,254	0.87	43,402	5.0	3.2	46,588	956,109
2011	105,414	91,710	0.87	47,805	5.0	3.2	48,079	1,047,545
2012	105,942	92,170	0.87	52,377	5.0	3.2	49,618	1,142,474
2013	73,221	63,702	0.87	57,124	5.0	3.2	51,206	1,212,095
2014	0	0	0	60,605	5.0	3.2	52,844	1,219,855
2015	0	0	0	60,993	5.0	3.2	54,535	1,226,313
2016	0	0	0	61,316	5.0	3.2	56,280	1,231,348
2017	0	0	0	61,567	5.0	3.2	58,081	1,234,834
2018	0	0	0	61,742	5.0	3.2	59,940	1,236,636
2019	0	0	0	61,832	5.0	3.2	61,858	1,236,610
2020	0	0	0	61,831	5.0	3.2	63,837	1,234,603
2021	0	0	0	61,730	5.0	3.2	65,880	1,230,454
2022	0	0	0	61,523	5.0	3.2	67,988	1,223,988
2023	0	0	0	61,199	5.0	3.2	70,164	1,215,023
2024	0	0	0	60,751	5.0	3.2	72,409	1,203,365
2025	0	0	0	60,168	5.0	3.2	74,726	1,188,807
2026	0	0	0	59,440	5.0	3.2	77,118	1,171,130
2027	0	0	0	58,557	5.0	3.2	79,585	1,150,101
2028	0	0	0	57,505	5.0	3.2	82,132	1,125,475
2029	0	0	0	56,274	5.0	3.2	84,760	1,096,988
2030	0	0	0	54,849	5.0	3.2	87,473	1,064,365
2031	0	0	0	53,218	5.0	3.2	90,272	1,027,311
2032	0	0	0	51,366	5.0	3.2	93,160	985,517
2033	0	0	0	49,276	5.0	3.2	96,141	938,651
2034	0	0	0	46,933	5.0	3.2	99,218	886,366
2035	0	0	0	44,318	5.0	3.2	102,393	828,291
2036	0	0	0	41,415	5.0	3.2	105,670	764,036
2037	0	0	0	38,202	5.0	3.2	109,051	693,187
2038	0	0	0	34,659	5.0	3.2	112,541	615,305
2039	0	0	0	30,765	5.0	3.2	116,142	529,929
2040	0	0	0	26,496	5.0	3.2	119,858	436,567
2041	0	0	0	21,828	5.0	3.2	123,694	334,701
2042	0	0	0	16,735	5.0	3.2	127,652	223,784
2043	0	0	0	11,189	5.0	3.2	131,737	103,236

POST CLOSURE COSTS **(2006 COSTS)**

Environmental Monitoring	5,576	$ 5,576/yr x 38 years =	211,888
General Site Maintenance	9,038	$ 9,038/yr x 38 years =	343,444
Landfill Final Cover System	3,037	$ 3,037/yr x 38 years =	115,406
Leachate Pretreatment System	192	$ 192/yr x 38 years =	7,296
Landfill Gas System	18,889	$18,889/yr x 38 years =	717,782
Stormwater System	680	$ 680/yr x 38 years =	25,840
Administration	3,741	$ 3,741/yr x 38 years =	142,166
TOTAL	41,153	TOTAL	**1,563,822**

Assumptions:
1) Waste Stream Growth Rate - .5%
2)Historical interest thru 2005 is average of monthly Washington State Investment Pool net earnings rate

COWLITZ COUNTY LANDFILL
POST CLOSURE - UNLINED LANDFILL
(2006 Dollar Estimate)

Post Closure Activity	Basis of Estimate		Total Cost Per Year
ENVIRONMENTAL MONITORING	2 Wells Sampled Quarterly @ $697 each	5,576	
Groundwater monitoring analysis. All other monitoring costs included in Site B - Post Closure costs.			5,576
GENERAL SITE MAINTENANCE			
Vegetation Control	Spraying - 4 hrs/yr @ $55/hr	220	
Health Department Post Closure Fee	40+ Acres	8,818	9,038
LANDFILL FINAL COVER SYSTEM			
Liner Repair	One Per Year @ $1,116	1,116	
Erosion Control	One Acre Per Year @ $1,340	1,340	
Vegetation Control	Mow Once Per Year @ $581	581	3,037
LEACHATE PRETREATMENT			
Autodialer	12 Months @ $16/mo	192	
All other costs included in Site B - Post Closure costs.			192
LANDFILL GAS SYSTEM			
LFG Collection System Maintenance	8 hrs/month @ $33.50	3,216	
Blower Maintenance	4 hrs/month @ $33.50	1,608	
Flare Maintenance	4 hrs/month @ $33.50	1,608	
LFG Well Replacement	1 Well Every 4 Years @ $4,020	1,005	
LFG Blower Replacement	2 @ 10 Yr Life @ $27,937 each	5,587	
LFG System Repair Parts	Flare Liners, Sensors, Bearings, Etc	2,115	
LFG Blower Electricity	Per month @ $278	3,336	
Permit Fee	Air Pollution Control Permit @ $414/yr	414	18,889
STORMWATER SYSTEM			
Ditch and Structure Maintenance	1 Day/Quarter @ $21.25/hr	680	680
ADMINISTRATION	10% of Project Cost	3,741	3,741
ANNUAL POST CLOSURE OPERATION & MAINTENANCE COSTS			**41,153**