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BMP	Best Management Practices
CDL	Construction, Demolition, Land clearing
CFC	Chlorofluorocarbons
DOE	Department of Ecology
EPA	Environmental Protection Agency
MFS	Minimum Functional Standards
MSW	Municipal Solid Waste
MTCA	Model Toxics Control Act
OCC	Old Corrugated Containers
PCB's	Polychlorinated Biphenyl's
PCS	Petroleum Contaminated Soil
RCRA	Resource Conservation and Recovery Act
SWAC	Solid Waste Advisory Committee
SWMPS	Solid Waste Management Plans
WGA	Waste Generation Areas
WUTC	Washington Utilities and Transportation Commission
WCCUBC	Wahkiakum County Clean Up and Beautification Committee

CHAPTER 1

PLANNING BACKGROUND

PURPOSE

The ***2013*** Wahkiakum County Comprehensive Solid Waste Management Plan (CSWMP) ***update*** provides a 20-year comprehensive county-wide approach to solid waste handling, solid waste recovery and recycling, which will minimize land, air and water pollution and conserve natural, economic, and energy resources.

PLANNING REQUIREMENTS

The Washington State Solid Waste Management--Reduction and Recycling Act, Chapter 70.95 RCW, requires the preparation of a comprehensive solid waste management plan. In 1989 the state legislature passed Engrossed Substitute House Bill No. 1671 (ESHB 1671, Chapter 4.31, Laws of 1989, also known as the "Waste Not Washington Act"), which amends RCW 70.95. It requires local solid waste management plans to include a waste reduction and recycling element.

Each county and city comprehensive solid waste management plan shall include the following:

1. 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.(RCW 70.95.090).

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

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

   (a) Meet the minimum functional standards for solid waste handling adopted by the department and all laws and regulations relating to air and water pollution, fire prevention, flood control, and protection of public health;

   (b) Take into account the comprehensive land use plan of each jurisdiction;

   (c) Contain a six year construction and capital acquisition program for solid waste handling facilities; and

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

4. A program for surveillance and control.

5. A current inventory and description of solid waste collection needs and operations within each respective jurisdiction which shall include:

   (a) Any franchise for solid waste collection granted by the utilities and transportation commission in the respective jurisdictions including the name of the holder of the franchise and the address of his or her place of business and the area covered by the franchise;

   (b) Any city solid waste operation within the county and the boundaries of such operation;

(c) The population density of each area serviced by a city operation or by a franchised operation within the respective jurisdictions;

(d) The projected solid waste collection needs for the respective jurisdictions for the next six years.

6. A comprehensive waste reduction and recycling element that, in accordance with the priorities established in RCW 70.95.010, provides programs that (a) reduce the amount of waste generated, (b) provide incentives and mechanisms for source separation, and (c) establish recycling opportunities for the source separated waste.

7. The waste reduction and recycling element shall include the following:

(a) Waste reduction

(b) Source separation strategies, including:

(i) Programs for the collection of source separated materials from residences in urban and rural areas. In urban areas, the programs shall include collection of source separated recyclable materials from single and multiple family residences, unless the department approves an alternative program, according to the criteria in the planning guidelines. Such criteria shall include: Anticipated recovery rates and levels of public participation, availability of environmentally sound disposal capacity, access to markets for recyclable materials, unreasonable cost impacts on the ratepayer over the six-year planning period, utilization of environmentally sound waste reduction and recycling technologies, and other factors as appropriate. In rural areas, these programs shall include but not be limited to drop-off boxes, buy-back centers, or a combination of both, at each solid waste transfer, processing, or disposal site, or at locations convenient to the residents of the county. The drop-off boxes and buy-back centers may be owned or operated by public, nonprofit, or private persons;

(ii) Programs to monitor the collection of source separated waste at nonresidential sites where there is sufficient density to sustain a program;

(iii) Programs to collect yard waste, if the county or city submitting the plan finds that there are adequate markets or capacity for composted yard waste within or near the service area to consume the majority of the material collected; and

(iv) Programs to educate and promote the concepts of waste reduction and recycling;

(c) Recycling strategies, including a description of markets for recyclables, a review of waste generation trends, a description of waste composition, a discussion and description of existing programs and any additional programs needed to assist public and private sector recycling, and implementation schedule for the designation of specific materials to be collected for recycling, and for the provision of recycling collection services;

(d) Other information the county or city submitting the plan determines necessary.

8. An assessment of the plan's impact on the costs of solid waste collection. The assessment shall be prepared in conformance with guidelines established by the utilities and transportation commission. The commission shall cooperate with the Washington state association of counties and the association of Washington cities in establishing such guidelines.

9. A review of potential areas that meet the criteria as outlined in RCW 70.95.165.

The CSWMP must emphasize waste reduction and source separation strategies to assist the state in achieving the goal established in 1995 of a fifty percent recycling rate.

STATE SOLID WASTE PLANNING GUIDELINES

In February 2010, The Washington State Department of Ecology released an update to the Guidelines for the Development of Local Solid Waste Management Plans and Plan Revisions. These guidelines are intended to assist local governments in preparing plans which comply with the requirements of:

Chapter 70.95 RCW, Solid Waste Management, Recycling and Reduction

Chapter 36.58 RCW, Solid Waste Disposal

Chapter 70.93 RCW, Waste Reduction, Recycling, and Model Control Act

Chapter 173-350 WAC, Solid Waste Handling Standards

Chapter 173-351 WAC, Criteria for Municipal Solid Waste Landfills

Wahkiakum County's CSWMP is organized and written to meet the intent of these guidelines.

RELATION TO OTHER LOCAL PLANS

The Beyond Waste Plan

The Beyond Waste Plan (2009 update) is Washington's statewide solid waste management plan to reduce wastes and toxic substances. The Beyond Waste Plan can be found on Ecology's we site at https://fortress.wa.gov/ecy/publications/summarypages/0907026.html The Beyond Waste Plan is updated by the state every five years. State law requires Ecology to develop and regularly update statewide hazardous wste and solid waste plans (Chapter 70.105 and 70.95 RCW). The plan provides statewide guidance for reducing the use of toxic substances, decreasing waste generation, increasing recycling, and properly managing any wastes that remain.

The Beyond Waste Plan focuses on five initiatives:

- Moving Toward Beyond Waste with Industries
- Reducing Small Volume Hazardous Materials and Wastes

- Increasing Recycling of Organic Materials
- Making Green Building Practices Mainstream
- Measuring Progress toward Beyond Waste

The Wahkiakum County Solid Waste Management Plan and the Beyond Waste Plan share the objectives of reducing small volume hazardous materials and increasing recycling of organic materials.

County/City Comprehensive Plans

The Wahkiakum County Comprehensive Plan has been developed as a framework for achieving a balance between land development, maintenance of the natural resource base, and preservation of a lifestyle currently enjoyed by the county's residents. It does not seek to stifle development, but sets guidelines for reasonable growth throughout the county. It is the intent of this plan to establish the process for making land use decisions based on the stated goals, objectives and policies. The comprehensive plan is developed to achieve the following broad objectives:

1. To assure that public services and facilities can be provided as needed and in a manner that does not place an excessive burden on the general taxpayers or residents of the area.

2. To assure that future development whenever possible is compatible with existing uses. This is generally accomplished by requesting that future development mitigate any activity which will cause degradation or a sudden profound change in existing land uses or degrade the health, safety or welfare of current residents of the area.

The Wahkiakum County Comprehensive Plan is divided into two sections: Part I - Goals, Objectives, Policies, and Action Plan; Part II - Background Information.

Part I consists of nine separate chapters. These correspond to the chapters found in the text, which include: Land Use; Economic and Natural Resources; Housing; Public Facilities and Services;

Transportation/Circulation; Parks and Recreation; Natural Environment; Energy; Historical Preservation. Part II provides the background information upon which the goals and policies are based.

A comprehensive land use plan map is also included. It provides a general, quick reference to areas that have existing or planned services (roads, power, septic tank and well water capacity, water lines, etc.) adequate to serve the indicated use. The map depicts the general areas where each use may be compatible with existing uses, such as forestry, agriculture, rural residential, low and high density residential development, rural service areas and the Cathlamet urban development area.

This plan is not the final answer. It is the means for making sound land use decisions; it does not make the decisions. The intent of the plan is to define the process of making these decisions, not to be the end product.

The Wahkiakum County Comprehensive Plan ***was adopted in 1984.***

The Town of Cathlamet's last comprehensive plan was completed in ***2002.***

Wahkiakum County Drop Box Facility Operations Plan

WAC 173-350-310 requires owners or operators of drop box facilities to adopt and implement an operations plan. The intent is to meet these requirements, provide guidance for the day-to-day operation of the facility and to prepare related budgets. The plan includes ***an overview of the operation. The role of Wahkiakum County in operating the K-M Drop Box Facility is mainly collection of fees. Peninsula Sanitation operates components such as hauling and placement of drop boxes.***

PLANNING PROCESS

GOVERNMENTS INCLUDED IN THE PLAN

State law assigns solid waste planning authority to local government (RCW 70.95.08) and directs each county in the state to prepare a plan in cooperation with cities and towns in the planning area. Cities have the following three options to meet their planning requirements:

1. Prepare and deliver to the county auditor a plan for its own solid waste management for integration into the comprehensive county plan.
2. Enter into an agreement with the county in which the city shall participate in preparing a joint city-county plan for solid waste management.
3. Authorize the county to prepare a plan for the city's solid waste management for inclusion in the comprehensive county plan.

The town of Cathlamet signed a resolution of concurrence authorizing Wahkiakum County to update the solid waste management plan on its behalf (Located in Appendix A).

The Wahkiakum County Solid Waste Advisory Committee (SWAC) is responsible for overseeing the planning process; making goal, objective and policy recommendations, and submitting the final plan to the county and the town of Cathlamet for review and preliminary approval (see Appendix B for list of SWAC members). Pursuant to the resolutions of concurrence, the CSWMP governs the solid waste management policy of Wahkiakum County and the town of Cathlamet.

Wahkiakum County, in the past, contracted with the Cowlitz-Wahkiakum Council of Governments (CWCOG) for staff assistance in the plan update. Staff provided coordination between the Board of Wahkiakum County Commissioners, the Town of Cathlamet, the Wahkiakum County Solid Waste Advisory Committee, and Ecology. During that process, CWCOG staff assisted with coordination, problem and needs identification, data collection, the development of goals and objectives, alternative analysis and the selection of preferred recommendations and actions.

During the current update, Public Works staff assisted the Solid Waste Advisory Committee in drafting plan text that meets state planning requirements. Ecology assisted with review of the draft, and provided text assistance for the Moderate Risk Waste Chapter, and other information. Wahkiakum County staff carried forward final revisions to the preliminary draft, developing a final document that is up-to-date and ready for adoption.

PUBLIC PARTICIPATION

SWAC meetings were open to the public. Plan update meetings were announced in the county newspaper (the Wahkiakum County Eagle). The Town of Cathlamet and Wahkiakum County will adopt the final plan in public meetings.

SCHEDULE AND ADOPTION PROCESS

Wahkiakum County, the Town of Cathlamet and the Department of Ecology must approve the final plan. The review and approval process includes:

- SWAC reviews and approves document draft during the plan development process.
- Planning staff submits document draft to Ecology's southwest regional planners and the Ecology grants office throughout the planning process.
- ***July 2013*** is the target date to submit an official draft plan to Ecology, Utilities and Transportation Commission, (UTC - 45 day review), County Commissioners, Town Council, related agencies and interested citizens. By state statute, Ecology has 120 days to review and comment on the draft plan.
- Wahkiakum County facilitates a public hearing(s) to receive comments on the plan.

- The final plan will be submitted to Wahkiakum County and the town of Cathlamet for adoption in late ***2013***.

- Ecology has 45 days to approve or disapprove the final plan.
- Ordinances of adoption and a notice of SWAC participation.

FUTURE REVIEW AND UPDATE

RCW 70.95.110 requires comprehensive solid waste management plans (CSWMP) to be reviewed and revised, if necessary, at least once every five years. Revisions should reflect solid waste management priorities and incorporate any amendments. The CSWMP should be reviewed annually by county public works staff to identify solid waste management changes that may require incorporation into the plan through an amendment process. Amendments must be approved by the affected jurisdictions, the county commissioners and Ecology.

PLANNING HISTORY

Pre-1971 Planning Activity.

Prior to the early 1970s, solid waste planning was crisis oriented. Little thought was given to long-range problems or needs unless public outcry, management emergencies or obvious environmental damage occurred. Each local jurisdiction maintained its own open dump(s), and management decisions for the most part were made independently of the need to coordinate programs.

The 1971 Plan.

The 1969 state Solid Waste Management Act required that local agencies prepare solid waste management plans. The plans should contain a program for orderly development of needed facilities, a six-year construction element, a financing plan and a description of collection needs.

The local governments of Cowlitz and Wahkiakum counties met the state planning requirements through a regional planning process. The Cowlitz-Wahkiakum Governmental Conference coordinated this process and in 1971 produced the region's first solid waste management plan.

1971 to 1981 Planning Activities.

Following adoption of the 1971 plan, the Wahkiakum County element of the regional planning effort focused on one major issue -- what to do with the two open dumps used for solid waste disposal. The plan had recommended that the dumps, located near Rosburg and the town of Cathlamet, be closed and replaced with a drop box collection system. Waste was to be hauled to a regional landfill in Cowlitz County.

This recommendation was not implemented at that time. As a result, a landfill site study was conducted in 1976 by the Wahkiakum County Planning Commission. The recommendations of this study were also not implemented, and the two dumps remained open despite efforts by the Cowlitz-Wahkiakum Health District and Ecology to force their closure. Following these setbacks, solid waste planning activity in the county slowed until, in the early 1980s, the town of Cathlamet commissioned a geotechnical analysis of the town's open dump. The study showed that the dump was full and that conversion to a sanitary landfill would be prohibitively expensive.

New state regulations, the above mentioned problems, issues in Cowlitz County, and other regional needs and problems all indicated that the 1971 regional solid waste plan had become outdated. Consequently, a plan update process was started in the early 1980s.

The 1985 Plan.

The 1985 plan update addressed a number of issues that had troubled the region for fifteen years. Following a 2-1/2 year effort, the plan made a number of recommendations that dramatically changed the management of solid waste in the two-county region.

The cornerstone of the Wahkiakum County section was the recommendation that the Cathlamet and Rosburg open dumps be closed and replaced with a single sanitary landfill. Collection of waste at a transfer station for shipment out of county was identified as a backup alternative if a new landfill was found impractical.

Post-1985 Planning Activities. Since the adoption of the 1985 plan, one amendment has been proposed and approved. It was developed in 1987 by the Wahkiakum County Solid Waste Advisory Committee (SWAC). The amendment recognized that, given new federal and state regulations, construction of a landfill in Wahkiakum County was not financially or environmentally practical. Instead, it was proposed that a transfer station be constructed in central Wahkiakum County and collected solid waste be hauled either to Pacific County or Cowlitz County. After approval of the amendment, a state grant was obtained to aid in construction of the transfer station. When it opened, the two open dumps were closed.

In 1988, Wahkiakum County joined Cowlitz County to participate in a regional, two-county effort to produce a state-required moderate risk hazardous waste management plan. ***Cowlitz County conducts an annual household hazardous waste collection event for the residents of Wahkiakum County.***

The ***2013*** Plan ***Update***

The ***2013*** plan will ***review operational practices*** to more closely reflect the actual solid waste needs of the county. The plan will continue to reflect the need for recycling and proper solid waste disposal. There will be an emphasis on the need to educate the public starting at an early age to reduce consumption and solid waste outflow, and to increase their recycling efforts. The plan will also continue on the path of the 1994 plan using it as a foundation for a continued community effort for good solid waste management.

Table 1-1

2013 Recommendations Summary

Recommendation	Affected Jurisdiction/Facility	Status
1. Research the feasibility of utilizing a waste energy facility to alleviate hauling of waste and to create an energy source.	Wahkiakum County, the ***Town*** of Cathlamet and State and Federal Agencies	To be looked at for possible future implementation.
2. Continue to evaluate energy recovery possibilities.	Wahkiakum County	To be evaluated throughout the duration of the plan.
3. Continue to explore resource recovery to reduce industrial waste .	Wahkiakum County Manufacturers	The large industries maximize the use of waste reduction, recycling and resource recovery.
4. Continue disposal of sludge at Cowlitz County Landfill.	Cathlamet Sewage Treatment Plant (CSTP)	CSTP ***sludge currently remains in the lagoons***.
5. Assess the need for household hazardous waste collection.	Health Department, Ecology, Wahkiakum and Cowlitz County	Local governments adopted a Cowlitz-Wahkiakum small quantity hazardous waste plan in April 1991.
6. Non-hazardous industrial waste	Private Industry	Local private industry manages

Recommendation	Affected Jurisdiction/Facility	Status
will be left to private industry. An additional industrial landfill may be required.		its industrial waste by a combination of waste disposal/ storage on site and utilization of out of county private landfills.
7. Responsibility for proper wood waste disposal will be left with private industry.	Private Industry	Same as above
8. Continue to educate the public about illegal dumping	Wahkiakum County Health Department	Continue illegal dumping and litter education program.
9. Illegal dumping-post signs that state dumping is illegal and strictly enforced.	Wahkiakum County	The Wahkiakum County Health Department initiated a solid waste enforcement grant.
10. Illegal dumping-determine adequacy of disposal regulations and amend or develop new ordinances as necessary.	General Purpose Governments	Both the county and Health District need to update solid waste ordinances to determine the adequacy of disposal regulations, and amend or develop new ordinances as necessary as they relate to the state Solid Waste Handling Standard, WAC 173-350.
11. Conduct cleanup programs for illegal dump sites. Possibly	All Jurisdictions	Ongoing promotion through education and enforcement.

Recommendation	Affected Jurisdiction/Facility	Status
utilize jail crews.		
12. Encourage clean up and education programs as a public service.	Civic Organizations	Occasionally service groups conduct cleanup programs, however, there are no specific records on this type of activity
13. Solid waste management planning should remain with ***Cowlitz and -Wahkiakum Counties***	Cowlitz and Wahkiakum Counties	Wahkiakum County is developing a ***2013*** plan update.
14. Continue receiving Ecology Solid Waste Enforcement Grant to support costs for enforcement and monitoring activities.	Local Government/ Ecology	A two-year $12,500 grant was received for solid waste enforcement only for the years 2006-2007.
15. Use state grants to fullest extent possible.	Local Government	The state has expanded its grant program. Wahkiakum County has received grants for enhancement of recycling opportunity and solid waste planning.

SIGNIFICANT SOLID WASTE DISPOSAL FACILITIES

In 1985 the State of Washington adopted new Minimum Functional Standards for Solid Waste Handling (MFS), WAC 173-304, to regulate solid waste disposal and recycling. Existing landfills not able to comply with these new standards were required to close prior to November 28, 1989 or obtain variances from the new standards. In response to new federal requirements enacted into law in 1991, mixed municipal solid waste landfill requirements were rewritten under a separate rule in WAC 173-351.

In 2003, a new solid waste management rule, Chapter 173-350 WAC, Solid Waste Handling Standards, went into effect and applied to all new facilities. This rule applies to all solid waste handling facilities except municipal solid waste landfills subject to Chapter 173-351 WAC and special incinerator ash subject to 173-306 WAC.

SOLID WASTE GOALS AND PLANNING OBJECTIVES

Our solid waste management goals were developed to set the tone for the update of the plan and guide how solid waste will be managed for the next twenty years. They express the SWAC's understanding of the region's needs and desires. More immediately, they establish targets to be met by the planning process.

Planning objectives for each of the goals are the specific activities undertaken by the SWAC and staff in order to conduct the plan update. One of the most important activities is the completion of the state-required planning tasks mentioned in Objective 2, Goal 1.

GOAL 1

> To provide the residents and industries of Wahkiakum County with solid waste management facilities and services that is well planned, environmentally safe, economical and convenient to use.

Objectives

1. To provide the county with a solid waste management plan that can be modified and updated at any time and that is a usable tool for: (1) management of all solid waste categories; (2) the operation of

present solid waste collection and disposal facilities; and (3) the identification and protection of future solid waste disposal facilities.

2. To complete a solid waste management plan that accomplishes the planning tasks required by Ecology.

3. To recommend and design a solid waste disposal system to allow the acceptance of all kinds of non-hazardous waste.

4. To investigate the need to provide equitably financed solid waste transfer stations on a county wide or specific area basis.

GOAL 2

To provide for recycling, waste reduction and the cost-effective conversion of solid waste to energy.

Objectives

1. To determine if it is feasible for the county, in cooperation with private industry and the state, to combust solid waste to generate energy.

2. To determine the feasibility of source separation in order to encourage recycling.

GOAL 3

To ensure the enforcement and administration of solid waste management regulations while improving relations between regulating agencies and solid waste system users and operators.

Objectives

1. To develop an agenda for dialogue and coordination between solid waste disposal site operators and environmental control authorities.

GOAL 4

To provide the region's citizens with information and education about alternatives for better solid waste management.

Objectives

1. To develop a process for providing the region with detailed information on solid waste management practices, including information on recycling, energy recovery, waste reduction, collection, disposal and proper methods for handling and disposing of hazardous and dangerous wastes.

2. To conduct a series of public meetings, as part of the regional plan update, in order to provide and collect information from citizens concerning solid waste problems, planning and decision making.

3. To develop a process for providing industry and the community, on a bi-annual basis, information on current developments in the areas of recycling, energy production, and waste reduction.

LOCAL SUPPORT OF STATE'S 50 PERCENT RECYCLING GOAL

According to the ***2010*** Federal Census, Wahkiakum County's ***2010*** population is ***3,978*** and the state's is ***6,724,540***. Wahkiakum County comprises ***a very small percentage of the*** state's population. No matter how much Wahkiakum County residents and businesses recycle, the effect on the state's recycling goals will be minimal.

Because of its small population, Wahkiakum County has limited resources to implement extensive recycling programs. The county must emphasize education and provide opportunities to recycle. It is unlikely that intensive programs such as curbside collection would be effective in the county because of its rural nature. The county must put its best effort into programs which are cost effective, such as:

- Education of its citizens on waste reduction, reuse and recycling
- Providing convenient places to bring recyclables
- Encouraging private enterprise to operate recycling programs.

CHAPTER 2

BACKGROUND INFORMATION AND SOLID WASTE PROFILE

INTRODUCTION

This chapter provides general background information on the planning area. This information includes location and setting, water services, climate, population, economics and transportation facilities within the county.

LOCATION AND SETTING

Natural Environment

Wahkiakum County, with a land area of 264 square miles, is located in southwest Washington, adjacent to the Columbia River, which forms its southern boundary. The Willipa Hills to the north is the other natural feature which generally defines Wahkiakum County. The county is bounded on the north and west by Pacific County. Lewis County is part of its northern boundary and Cowlitz County lies to the east.

Topography and Drainage

Topography is quite varied, from less than 10 feet above sea level along the Columbia River to approximately 2,675 feet in the northern part of the county. In areas where topography is rugged, which includes the majority of the region; there are very few households and public roadways. Uninhabited areas are, however, used intensively for hunting, fishing and other recreational activities. As a result, solid waste can be found along the many private roads owned by timber companies, much of it left in illegal dumps or in the form of litter.

Rivers and the streams that flow into them are the primary cause of the county's topography. The Deep, Grays, and Elochoman rivers flow south. Other major drainage basins include Brooks Slough, Skamokawa Creek, and Crooked Creek. The Elochoman and Grays rivers serve as municipal water sources. All provide a habitat for fish and wildlife.

All of the region's streams and the Columbia River Estuary are important recreational resources for the local population as well as attracting tourists. Their quality is important to the region.

When siting a landfill or transfer station, variations in topography can cause difficulties which necessitate special design considerations or planning decisions. Flat or gently rolling terrain may be the most suitable for land filling but could also be used as prime agricultural, residential or industrial sites. Likewise, low-lying flatland may be occasionally flooded and is therefore unfit for land filling. At the other extreme, severely eroded topography (canyons, ravines, etc.) may also be suitable for land filling except for the fact that these features were formed by flowing water, water that must be kept out of a landfill site. In this case, adequate surface drainage features must be designed so that erosion water cannot interfere with landfill operations or because excessive amounts of leach ate.

Manmade depressions often function well as landfills if the material surrounding the site can act as an effective barrier to water movement. Gravel pits, however, are generally poor as landfill sites because of the difficulty in keeping moisture either in or out of the site.

Special considerations must be given to any proposal for sitting a landfill in a marshland or shoreline area. Except under extremely unusual circumstances, such operations should be avoided. Disposal of solid waste in a saturated high water environment, such as a marshland, is undesirable it may cause pollution of public water, is detrimental to wildlife and destroys scenic beauty.

Drainage in the area of a landfill site is important for a number of reasons. Water flowing over a site can lead to infiltration, the leaching of waste contaminates into public waters, and including ground water and the actual loss of refuse or cover material. Landfill sites must, therefore, be designed to minimize the entry of surface water and to channel uphill generated runoff around the site. Additionally, cover material must be of a type that reduces the amount of moisture permeating a site.

SOILS AND GEOLOGY

The flow of water, as discussed above, through a proposed or existing landfill site is of extreme importance. Therefore, it is important to consider the flow characteristics of water in various types of earth materials. The structural integrity of these materials is also important in providing support for landfills. Accordingly, attention must be given to the geological aspects of any proposed landfill site, including the flow characteristics (permeability) of the soils and rocks present and their structural characteristics. Factors that must be evaluated include the depth and types of soils present, the depth to and characteristics of soil types present and other important properties, such as inconsistencies within rock layers. This type of information is generally obtainable from the U.S. Geological Survey, the Division of Geology and Earth Resources of the Washington State Department of Natural Resources, the U.S. Soil and Conservation Service or actual site hydro-geologic studies.

Soils.

Soil types are also important in planning a sanitary landfill. Some soil material such as sand and gravel are undesirable near a landfill site because of the ease with which water moves through them. Ideally, materials used around, under and on a landfill should have a low permeability (the ability to transfer moisture). Clay is almost ideal under and around a landfill; however, because it is difficult to work when wet and cracks when dried, it is not an ideal cover material. Thus a well-graded soil containing both course and fine-grained constituents is a better cover material than solid clay. The U.S. Soil Conservation Service can be consulted for detailed information on the region's soils.

Geology.

The Willapa Hills Province, located in the southwestern part of the state, extends from Grays River and the lower Chehalis River to the Columbia River. It fronts on the Pacific Ocean and extends east to an indefinite boundary that separates it from the southern extension of the Puget Sound basin. The province covers the majority of Wahkiakum County.

The Willapa Hills trend southward through the region and consist of rugged mountainous uplands, a surrounding belt of low hills (as is found in eastern Cowlitz County), and areas of relatively broad, flat floodplains located along the south fringe of the province. Most of the region is less than 2,000 feet in altitude. The descent to the Columbia River on the south is generally precipitous but elsewhere the hills merge gradually into the surrounding lowlands. The many tributaries have developed a very complex drainage network that intricately dissects the area into a maze of forested hills. As in the Cascade province, these hills provide a base for the region's timber industry.

The bedrock comprises a series of moderately folded Tertiary formations: volcanic and sedimentary rocks of Eocene Age; sedimentary rocks of Oligocene and Miocene age, and a minor amount of late Miocene and Pliocene sedimentary rocks. Deformation of the strata occurred during the late Tertiary period, producing the north-south trend. Concealing these formations in part of the area are thick deposits of unconsolidated Pleistocene sediments, some of which, although exposed well above the present ocean level, contain shells of oysters.

No metallic minerals of economic importance have been found in the province except magnetite in deposits of "black sand," mainly near the coast. Some limestone, in small isolated bodies, is exposed in a few places along outcrops but even the common industrial minerals are scarce, the exception being bauxite northeast of Cathlamet. The results of recent work by oil companies may someday prove the existence of oil or gas reserves in the region.

Regional Generalized Geologic Map.

Figure 2-1 is a generalized geology map of the region. It was completed by the Council of Governments in order that the area's geologic formations could be viewed in a regional context rather than through the confusing and contradictory use of a number of maps and documents. It is not intended as a definitive source and should not be used to replace actual hydro-geologic studies which are necessary for planning solid waste disposal facilities.

GROUNDWATER

Groundwater is tapped for private water supplies, irrigation, and industrial use. No significant man-caused contamination has been identified in the county.

CLIMATE

Climate influences waste disposal and collection practices and consequent environmental effects. For example, rain may wash wastes into soils and water systems, affecting operations of landfills (by creating leach ate) and sewage treatment plants. The season and weather also influence the public's use of hazardous substances such as solvents for stripping paints, antifreeze used in vehicle radiators, pesticides, and other chemicals.

Temperature.

The climate of the county is predominantly mid-latitude, west coast marine type climate with moist air, cool, dry summers, mild but wet winters, and a slight daily temperature range. There is a significant difference between the climate at the higher elevations of the county and that in the lower valleys. Cold air in winter and hot air in summer, flowing westward through the Columbia River Gorge east of Portland, has sporadic influence on local climate. Table 2-1 illustrates average and extreme temperature variations by location and time of year

Rainfall.

One of the major climate influences for the region is the position and intensity of the large high and low pressure centers in the North Pacific Ocean. Circulation of air around those centers results in a rainy season beginning in fall, peaking in winter, declining in the spring and giving way to a dry season in summer. The number of days that have measurable rainfall each month increases from less than five in midsummer to twenty or more late in the fall and winter.

The average annual precipitation in the region varies widely depending on topography, elevation and proximity to the ocean. Rainfall amounts in Wahkiakum County run between 60 and 110 inches per year, with the higher amounts in the northern and western portions of the county (see Figure 2-1). Average annual precipitation amounts are shown for selected locations in Table 2-1. During periods of high

precipitation landfill operations are affected because soils become saturated, causing more leach ate to be produced.

Figure 2-1
Wahkiakum Region
Generalized Geology Map

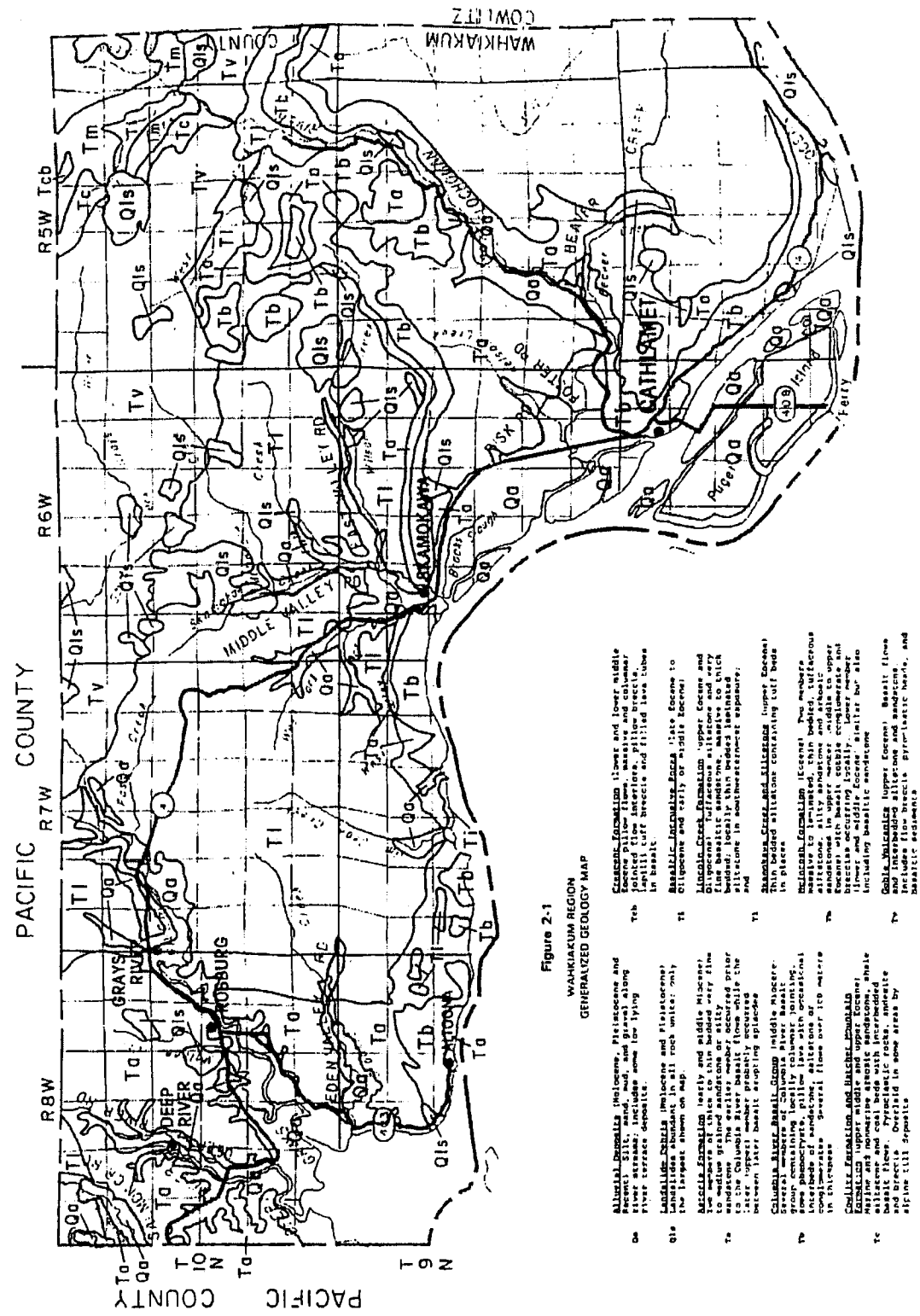

Table 2-1

Average (mean) Annual Precipitation (by watershed)

Station	Elevation (Feet)	Average Annual Precipitation (inches)
Grays River	~~50~~	90
Cathlamet	~~476~~	55
Skamokawa	~~180~~	79

Source: Limiting Factors Analysis WRIA 25, Washington State Conservation Commission, 2002

Wind.

Finally, winds or the lack thereof can influence air shed capacity and/or cause odor problems associated with land filling or incineration of waste. Winds can also contribute to problems with litter.

WATER SERVICES

In Wahkiakum County, public water systems are operated by the Town of Cathlamet, Skamokawa, and Wahkiakum County Public Utility District Number 1. The Elochoman River is the source for the water system serving Cathlamet and Little and Puget islands. A Grays River related aquifer is the source of the water system serving the Grays River Valley; The Wahkiakum PUD recently installed a water system serving the Salmon Creek area and part of Deep River. A variety of private wells springs and streams serve the rest of the county.

BUILT ENVIRONMENT

Population, population density, the economic base, and number and types of businesses along with other factors influence the type and quantity of wastes that are generated in a region.

POPULATION DENSITY

According to the ***2010*** federal census, Wahkiakum County contained ***3,978*** persons. Physically, the area is 264 square miles, or 168,960 acres in size. The overall population density of the region is about 15 persons per square mile with most of the population concentrated in the area's river valleys and lowlands. These are the areas that require solid waste collection and disposal services and are the location of most solid waste generation. The greater part of the county is sparsely populated highlands, which ***can*** attract illegal dumpsites. ***The majority of the higher elevation land is gated private timberland ownership, however some State owned timber lands and private lands are not gated and may still attract illegal dumping.*** Table 2-2 provides population density information for the county, unincorporated area and the town of Cathlamet.

Table 2-2

Population Density Per Square Mile

	Population

Geographical Area	***2010*** Population	Area (Sq. Miles)	Density Per Sq. Mi.
Wahkiakum Co.	***3,978***	264.30	***15.05***
Unincorporated	***3,446***	261.60	***13.17***
Cathlamet	***532***	2.70	***197***

WAHKIAKUM COUNTY GROWTH HISTORY, TRENDS AND FORECASTS

Table 2-3 and Table 2-4 contain the historical and projected populations of Wahkiakum County and the town of Cathlamet. A discussion of growth history, trends and forecasts follows.

Table 2-3: Historical and Projected Population for Wahkiakum County and Washington State from 1990 to 2010, Projections 2015 to 2040

	Wahkiakum County	Washington State	
1990	**3,327**	**4,866,659**	Historical
1995	3,546	5,396,569	Historical
2000	**3,824**	**5,894,143**	Historical
2005	3,824	6,298,816	Historical
2010	**3,978**	**6,724,540**	Census
2015	3,931	7,022,200	Projection
2020	**3,877**	**7,411,977**	Projection
2025	3,830	7,793,173	Projection
2030	**3,772**	**8,154,193**	Projection
2035	3,716	8,483,628	Projection
2040	**3,669**	**8,790,981**	Projection

Source: Washington State Office of Financial Management, Forecasting Division May 2012

Table 2-4: Populations of Wahkiakum County and the Town of Cathlamet for 2010, 2011, and 2012

Jurisdiction	2010 Population Census	2011 Population Estimate	2012 Population Estimate
Wahkiakum County	3,978	4,000	4,025
Unincorporated Wahkiakum County	3,446	3,470	3,500
Cathlamet	532	530	525
State Total	6,724,540	6,767,900	6,817,770

Source: Washington State Office of Financial Management, Forecasting Division, April 2012 Population of Cities, Towns and Counties, Used for Allocation of Selected State Revenues

Initially, settlement of Wahkiakum County was stimulated by the opportunities available in agriculture, forestry, and the abundant fish resources in the Columbia River. Growth of the county's population during the 1920 to 1970 period has been irregular, primarily due to economic factors. During the 1920s and 1930s, the population increased by an almost equal percentage. During the 1940 to 1960 period, the population declined from 4,286 to 3,426, or by about 20 percent. Economic fluctuations in the forestry and agriculture industries were the primary causes of this decline. Other economic factors included Wahkiakum County citizens moving to the Longview-Kelso urban area for the jobs available there; the demise of the canning industry; and the decline in commercial fishing. The resultant loss of population was a common trend in most rural counties during this period.

The 1980 population of the county was 3,832 persons, a 6.7 percent increase over 1970. In the 1980's, Wahkiakum County's population decreased by 13.2 percent to a 1990 population of 3,327.

In the 1990's, Wahkiakum County's population increased by 14.9% to a 2000 population of 3,824. The only incorporated area in Wahkiakum County is the Town of Cathlamet. This community lost population in the previous two decades but during the 1990's increased its population to 565 or by about 10 percent.

Whether Wahkiakum County's 2020 population is 4,000 or 6,000, it is unlikely that solid waste management practices will need to change. The community will still be relatively small with limited resources.

HOUSING TYPES

Table 2.5 provides a breakdown of the number of housing types in Wahkiakum County. Multifamily dwellings (two or more unit structures) comprise less than seven percent of Wahkiakum County's housing stock. Consequently, most residential waste comes from single family homes.

Table 2-5

Housing Units by Structure Type

Location	Total No.	Single Family	2 or More Unit Structures	Mobile Homes	Other
Wahkiakum Co.	1,792	1,169	64	450	39
Unincorporated	1,268	1,005	13	22	28
Cathlamet	228	164	51	2	11

Source: Washington State 1990 Federal Census

ECONOMIC CONDITIONS

A review of economic conditions is helpful to understand where and what types of business wastes are generated. This section presents an overview of the county's economy and employment. This section provides background information useful in understanding the types of business wastes that are present.

The economy of Wahkiakum County has traditionally been dependent upon the harvesting and processing of three basic resources; timber, agriculture and fishing. Manufacturing in the county, according to state Employment Security personnel consists primarily of wood products. Table 2-6 shows that government and services also play a significant role in the county's economy. The two categories, when added together, amount to 60 percent of the average monthly employment and 75 percent of the total wages. When the category of agriculture, forestry and fishing is added to the manufacturing category, they total 35 percent of the employment and 48 percent of the total wages.

Table 2-6

Wahkiakum County

1999[1] Employment and Wages

By Industry

Industry	Average Monthly Employment	Total Annual Wages
Agriculture/Forestry/Fishing	35	927,379
Construction	22	379,423
Manufacturing	256	8,962,227
Transportation & Public Utilities	30	706,530
Retail Trade	107	1,065,473
Finance/Insurance/Real Estate	20	417,895
Services	109	1,649,788

Government	249	6,352,475
Totals	828	20,461,190

[1]Employment and wages are included for all employees whose place of work was in the county and who were covered by state or federal unemployment laws.

Source: Washington State Employment Security Department, Labor Market and Economic Analysis Branch.

TRANSPORTATION FACILITIES

Wahkiakum County is traversed (east to west) by SR 4 and by the Columbia River. Contained completely within the county is SR 409, which not only serves area residents but provides a link between SR-4 and the Wahkiakum County ferry. This ferry operates every day between Puget Island, Washington and Westport, Oregon. It provides a vital link between the two states while serving as an alternative travel route to and from the county during periodic closures of SR-4 ***or alternate route during closures of US-30 in Oregon***. There is no railroad system or airport within the area. There are river access points and a marina for recreational and commercial fishing boats. A barging facility is located within the town of Cathlamet.

CHAPTER 3

SOLID WASTE PROFILE

This chapter provides information on the amount of waste generated, disposed or recycled in the county and trends and variations in the waste stream. It also includes sections on special wastes and illegal dumping.

FUTURE SOLID WASTE DISPOSAL SITES

Federal and state regulations for siting and operating an incinerator are very complex, but an incinerator may be a consideration within the 20 year span of this plan due to possible future increases in solid waste disposal costs and the increasing need to generate power. The county is not interested in being a disposal site for out-of-county municipal waste.

However, it is possible that private industry may want to site a wood waste landfill or inert/demolition waste landfill. If so, the county will defer to the state minimum functional standards and siting criteria for those types of landfills. The county does discourage any solid waste disposal sites located near the Columbia River estuary or on the major stream valley bottoms.

FUTURE NEEDS

The future of the County's solid waste program depends on revenue. In order for the KM Drop Box Facility to become fully profitable, the county would have to raise rates on a frequent basis until the KM Station can become self-sustaining.

MUNICIPAL WASTE DISPOSAL

Municipal waste in Wahkiakum County is collected by two refuse collection firms and at a drop-box facility. Tables 3-1, ***3-1(a)***, and 3-2, and ***3-2(a)*** contain yearly amounts of refuse disposed by Stanley's Sanitary Service, which serves the east end of the county, and the Wahkiakum County Drop-Box Facility. Amounts collected by Peninsula Sanitation Service, which serves the west end of Wahkiakum County, are also indicated below.

Table 3-1:

Municipal Waste Collected by Stanley's Sanitary Service

and Disposed at Cowlitz County Sanitary Landfill

from 1988 thru 2006 (in Tons)

Year	Total	Year	Total
1988	722	2000	1,017
1989	698	2001	1,121
1990	754	2002	1,133
1991	762	2003	1,115
1993	826	2004	1,263
1994	844	2005	1,293
1995	978	2006	1,408
1996	1,061		
1997	1,170		
1998	1,022		
1999	1,050		

Source: Cowlitz County Public Works, Solid Waste Division

Table 3-1(a): Municipal Waste Collected by Stanley's Sanitary Service and disposed in Cowlitz County from 2007 through 2012 (in tons)

Year	*Total Tons*
2007	*1483*
2008	*1355*
2009	*1254*
2010	*1245*
2011	*1332*
2012	*1257*

Source: Stanley's Sanitary, electronic communication, June 2013

Table 3-2:

Municipal Waste from Wahkiakum County Drop Box Facility Disposed at

Cowlitz County Sanitary Landfill from 1988 thru 2006 (in Tons)

Year	Total	Year	Total
1988	371	2000	562
1989	430	2001	563
1990	509	2002	514
1991	654	2003	558
1992	717	2004	516
1993	780	2005	532
1994	658	2006	521
1995	611		
1996	601		
1997	598		
1998	592		
1999	574		

Source: Wahkiakum County

Table 3-2(a)

Waste from K-M Drop Box Facility

Disposed At Cowlitz County Sanitary Landfill

From 2009 through 2012 (tons)

Year	*Total*
2009	*249*
2010	*259*
2011	*220*
2012	*202*

The reduction in waste collected at the K-M Drop Box facility may be partly attributable to an increase in recycling, however it is likely that with the increase in the fee to $0.07 per pound, more individuals chose curbside collection or hauling their waste directly to Cowlitz County. The net result for Wahkiakum County has been a reduced supplementation of the cost of the Drop Box facility operation with general County funds, due to reduced hauling costs in proportion to revenue.

The exact amount of curbside waste collected by Peninsula Sanitary Service in Wahkiakum County is not known because the waste is mixed with Pacific County waste. The route which serves both part of Pacific County and Wahkiakum County has a total of 278 customers of which 242 are residential and 36 are commercial. The Wahkiakum County portion has ~~28~~ 56 residential and 10 commercial customers. Peninsula Sanitation Service estimates the route collects 5.74 tons per month of Wahkiakum Waste. It is

therefore estimated that Peninsula Sanitary Service disposes of approximately 69 tons of west Wahkiakum County municipal waste per year.

Table 3-3 gives yearly municipal waste disposal totals for Wahkiakum County from 1988 thru 2006. In 2001, the year's waste disposal total for Stanley's Sanitary Service was 1121 tons. The county's drop-box facility total was 563 tons. Adding the estimated amount for Peninsula Sanitation results in a total of approximately 1,753 tons of municipal waste. The yearly amount of municipal waste disposed has been steadily increasing.

The amount of municipal waste disposed from 1988 to 1997 showed a trend for increased disposal. In 1998 through 2000 there was a drop in the amount of waste. However in the years 2000 through 2006 there was an increase of tonnage received by the Cowlitz County Landfill from Wahkiakum County. Hopefully, programs implemented as the result of this plan will result in a continued reduction in the amount of waste going to landfills.

It is estimated that there is more waste disposed in the spring and summer seasons due to seasonal increases attributed to yard waste. Recommended programs to encourage home composting will likely decrease this seasonal bump.

Table 3-3

Yearly Totals of

Known Municipal Waste Disposed by

Wahkiakum County 1992–2006

(In Tons)

Year	Total	Year	Total	Year	Total
1992	1,480	1998	1,837	2004	1,779
1993	1,675	1999	1,693	2005	1,825
1994	1,658	2000	1,648	2006	1,929
1995	1,571	2001	1,753		
1996	1,658	2002	1,647		
1997	1,731	2003	1,673		

Table 3-4

Taxable Retail Sales in 1990 for Wahkiakum County and Southwest Washington Waste Generation Area by Standard Industrial Classification Categories

	Wahkiakum County Pop. 3,827		Southwest Washington WGA Pop. 391,119	
Retail Trade	$3,703,440	$1,113.15	$1,419,710,837	$28,629.87
Services	1,154,385	346.97	293,986,668	751.66
Contracting	3,419,921	1,027.93	580,056,106	1,483.07
Manufacturing	147,724	44.40	121,526,406	310.56
Transportation/ Comm/Utilities	847,564	254.75	127,526,406	326.06
Wholesaling	1,897,521	570.34	494,432,384	1,264.15
Finance/Insurance/ Real Estate	144,342	43.39	37,667,080	96.31
Other Business	56,924	17.11	85,276,376	218.03
TOTAL	$11,371,821	$3,418.04	$3,160,121,718	$8,079.69

WASTE DISPOSAL AND GENERATION RATES

The Department of Ecology (Ecology) information in Table 3-5 provides comprehensive data for Wahkiakum County and the region north and east of it. The study divided the state into sub-regions called Waste Generation Areas (WGA). The Western Washington WGA consists of Clallam, Clark, Cowlitz, Grays Harbor, Island, Jefferson, Kitsap, Lewis, Mason, Pacific, San Juan, Skagit, Skamania, Thurston, Wahkiakum, and Whatcom counties. Wahkiakum County contains less than one percent of the population of the Western Washington WGA.

Table 3-5

Washington Department of Ecology

Western Washington Waste Generation Area

Categories	Self-haul Residential Waste Stream Tons	Self-haul Commercial Waste Stream Tons	Total WGA Waste Stream (Includes all categories) Tons
PAPER			
Newspaper	3,945	542	34,602
Corrugated Paper	4,061	4,414	56,264
Computer Paper	35	77	3,751
Office Paper	232	387	6,351
Mixed Recyclable Paper	4,177	1,549	71,574
Milk/Juice Cartons	0	0	6,841
Aseptic Juice Containers	0	0	136
Frozen Food Containers	0	0	2,300
Other Paper	1,392	1,161	58,125
Total	**13,842**	**8,130**	**172,542**
PLASTIC			
PET Containers (#1)	116	77	4,484
HDPE Containers (#2)	116	232	7,000
LDPE Plastics (#4)	0	0	149
Polystyrene (#6)	348	387	5,138
Plastic Bags	1,160	1,936	33,314
Other Coded Plastic Packaging	1,160	1,549	4,228
Other Plastics	3,481	3,872	31,102
Total	**6,381**	**8,053**	**85,415**

GLASS

Clear Glass Containers	1,160	387	26,036
Green Glass Containers	232	232	4,769
Brown Glass Containers	580	77	7,892
Refillable Beer Bottles	116	77	193
Other Glass	1,160	1,161	4,821
Total	**3,249**	**1,936**	**38,891**

FERROUS METALS

Tin Cans	464	77	17,641
Bi-metal Cans	0	0	0
Mixed Metal & Other Metals	3,713	2,710	11,738
White/Brown Goods	348	77	1,666
Other Ferrous Metals	5,801	2,633	21,475
Total	**10,326**	**5,498**	**52,520**

NON-FERROUS METALS

Aluminum Cans	348	387	5,455
Other Aluminum	232	77	1,516
Other Non-Ferrous Metals	464	77	1,629
Total	*1,044*	*542*	*8,601*

ORGANICS

Food	3,713	1,161	108,539
Yard Wastes	24,249	5,033	56,022
Other Organics	1,276	619	50,813
Total	*29,238*	*6,814*	*164,561*

CONSTRUCTION DEBRIS			
Wood Wastes	29,006	23,229	73,079
Gypsum Drywall	2,230	1,549	6,059
Inert Solids/Fines	4,061	2,710	8,694
Other Construction Debris	8,122	12,389	26,635
Total	**43,509**	**39,876**	**105,774**

OTHER WASTES			
Disposable Diapers	116	77	26,281
Textiles	5,801	5,420	33,165
Rubber Products (except tires)	0	542	3,232
Large Bulky Items	1,740	0	5,063
Other Materials	0	0	486
Total	**7,658**	**6,040**	**68,227**

HAZARDOUS WASTE			
Paint/ Adhesives/ Solvents	464	155	3,764
Cleaners	0	0	56
Pesticides/ Herbicides	0	0	0
Non-Vehicle Batteries	0	0	401
Other Hazardous Wastes	232	387	4,200
Total	**696**	**542**	**8,421**

SPECIAL WASTES			
Used Oil	0	0	565
Tires	116	0	116
Vehicle Batteries	0	0	0

Ferrous Vehicle Parts	0	0	-
Total	**116**	**0**	**681**
	116,058	**77,430**	**705,633**

Wahkiakum County has less commercial activity than other counties in the Western Washington WGA. Consequently, the county's residential waste stream most likely constitutes a larger percentage of the total waste stream than for the full WGA.

Disposal and generation, rates can be estimated for Wahkiakum County by using the study results. The county's population percentage of the WGA (.2%) can be multiplied by the WGA disposal rates for individual wastes, waste streams, or waste types. For example, in the Western Washington WGA, 34,602 tons of newsprint per year is generated. This figure multiplied by.2 percent results in an estimated county generation rate of 69 tons of newsprint per year. However, this method does not give a complete picture; more adjustments need to be made.

Wahkiakum County does not have the same level of economic activity as other counties in the WGA. It can be reasonably assumed that such an area would generate less waste. A measure of county commercial activity is the amount of annual taxable retail sales. 1999 and 2000 taxable retail sales for Wahkiakum County compared to the rest of the Western Washington WGA shows this to be true.

Wahkiakum County	Wahkiakum County	Rest of WGA
Taxable Retail Sales	Taxable Retail Sales	Taxable Retail Sales
1999 - $3,828,633	2000 - $4,588,750	$4,310,955,734

In Table 3-4, the 1990 population of the two areas is divided into eight categories of taxable retail sales and total sales to derive a per capita rate for each. This analysis reveals that the total per capita retail sales

for WGA is 2.4 times the rate for Wahkiakum County. The county's lesser rate of economic activity should be factored in when using BMP study results. For instance, the total disposal rate for the WGA was 275,290 tons per year. One percent of that figure is 2,753 tons. Dividing this amount by the commercial activity factor of 2.4 results in a revised estimate of 1,147 tons per year of waste disposed in Wahkiakum County. When this BMP derived estimate is compared to the amount of 1988 municipal waste disposed in Wahkiakum County of 1,158 tons (Table 3-3) there is a difference of only 11 tons. Using the same methodology a total waste generation estimate of 1,557 tons/year and recycling rate of 410 tons/year are derived for the county.

RECYCLING

Recyclables Collected.

There are four recycling facilities in Wahkiakum County that accept multiple recyclables. Three recycling drop boxes were placed as a result of the 1994 Comprehensive Solid Waste Plan. These drop boxes are located in Skamokawa, Cathlamet, and Puget Island. ***The Wahkiakum County recycle drop boxes accept corrugated paper (cardboard), mixed paper, aluminum cans, and plastic for recycling***. In ***2008, 73*** tons of mixed paper were collected along with ***6*** tons of aluminum cans, ***15.5*** tons of plastic, and ***36.6*** tons of corrugated paper. Used motor oil is collected by a licensed oil collection company ***at a location near the Chevron station in Cathlamet.***

Peninsula Sanitation collected the following materials for recycling at the K-M Drop Box Facility for Solid Waste in 2011: Aluminum cans 320 pounds, Newspaper 3,962 pounds, Glass 15795 pounds, Plastic 659 pounds, Magazines 4241 pounds, cardboard 4,520 pounds. Used motor oil is also collected at the K-M Drop Box Facility for Solid Waste.

The Wahkiakum County Lions Club operates a newspaper-recycling program. They have collecting sites located at the high school in Cathlamet, ***and other locations***.

Recycling Rates and Available Recyclables.

In ***2008***, approximately ***131*** tons of recyclables were taken to the County recycling bins. ***Data from 2011 indicates an additional 12.5 tons per year of recycle-able materials are collected at the K-M Solid Waste Drop Box Facility***. No doubt other wastes are also being recycled by Wahkiakum County residences and business but records are not ***readily available. Paper and aluminum cans are also***

collected at the County courthouse offices, and then transferred to the recycle drop boxes. The recent increase in value of scrap metals has created great incentive for individuals to collect and haul these materials to recycling destinations. Some residents ***may*** self-haul recyclables out of county. Records for other recyclables such as automotive batteries and refillable bottles are also unavailable. It may be possible for the county to recycle at a greater rate ***when it is cost-effective to haul a wider variety of recyclable materials.*** Consequently, it appears Wahkiakum County ***may have future*** opportunity to improve its recycling rate.

A substantial portion of the municipal waste stream can be composted. In Table 3-4, the organic (i.e. food and yard waste) portion of the total waste stream is shown for the WGA. When the three organic categories are added and then extrapolating for the county, an estimated 329 tons/year of organic waste is derived. However, much of this organic matter does not enter the municipal waste stream. Wahkiakum County is rural; many persons live on large lots or acreage and may have a compost pile away from the house.

EXPORT AND IMPORT OF WASTE

Wahkiakum County has no licensed final destination disposal sites. Therefore, no waste is imported into the county for final disposal. For the same reason, municipal solid waste is exported out of county for disposal.

OTHER SIGNIFICANT WASTES

Other significant wastes are those materials which may require special or separate handling due to their unique characteristics, such as bulk, or dangerous constituents. Significant wastes generated in Wahkiakum County may need to be handled separately from municipal waste. This section discusses the management needs and opportunities associated with these wastes and recommends management strategies to encourage recovery and reduce environmental impacts. The significant wastes discussed in this chapter are:

- construction, demolition and land-clearing waste
- agricultural waste
- auto hulks
- asbestos wastes

- petroleum contaminated soil
- white goods
- tires
- sewage sludge and septage
- biomedical wastes

Because of Wahkiakum County's small population, the county does not generate much special waste. The amounts are small enough that special facilities in Wahkiakum County for processing special wastes are not practical. Thus, the county must export its special wastes.

Construction, Demolition and Land-clearing Waste (CDL)

Construction waste is defined as materials resulting from the construction, remodeling, and repair of buildings and other structures. Generally, waste generated during construction consists of new materials which may include: wood, concrete, brick, glass, dirt, gravel, and steel, copper piping, aluminum, galvanized piping, plastic piping, sheetrock, and paper. Construction waste does not include dangerous wastes or food waste.

Demolition waste is defined as largely inert waste, resulting from the demolition or razing of buildings, roads, and other man-made structures. Demolition waste is typically mixed and size reduced, and consists of: concrete, asphalt, brick, wood and masonry, composition roofing and roofing paper, steel and minor amounts of other metals like copper. Plaster, sheetrock and any other material (other than wood), which is likely to produce gases or a leach ate during the decomposition process, are not considered to be inert. Asbestos wastes also are not considered to be inert.

Land clearing waste is defined as brush, stumps, limbs, rock, and dirt resulting from land clearing operations.

A number of facilities in neighboring Cowlitz County process source-separated and mixed loads of CDL waste. CDL recycling facilities include the following:

> Lakeside Industries -- Located in Longview at 500 Tennant Way, Lakeside Industries accepts source-separated asphalt for reprocessing. Material is accepted for $5.00 per ton.

Storedahl & Sons -- Located in Kelso at 2233 Talley Way, Storedahl & Sons accepts source-separated concrete without rebar for processing at $5.00 per ton. The material is crushed and used as a road base material.

Waste Control Inc. -- Located in Longview at 1150 Third Avenue, Waste Control operates a material recovery facility. Waste Control accepts: Newspapers, cardboard, high-grade paper, mixed paper, poly-coated paper, high-density polyethylene, polyethylene terephthalate, glass, aluminum, ferrous (iron), nonferrous, tin, wood, magazines, and auto hulks. A portion of the facility is devoted to the processing of both sources separated and mixed loads of CDL. Material recovered includes wood, old corrugated containers (OCC), metals, and concrete. Both wood and OCC are the principal items recovered. Incoming loads of wood are charged a tip fee of $30.00 per ton for clean wood, and $37.50 per ton for "dirty" wood, or wood that contains a lot of nails, staples, etc. Concrete is $8.00 per ton.

Currently, ***there is only one landfill*** near Wahkiakum County, which accepts construction, demolition and land-clearing waste. ***This is the Cowlitz County Sanitary Landfill on Tennant Way. Cowlitz County hopes to open the Headquarters Road facility*** about 14 road miles northwest of Kelso, Washington ***later this year***. CDL can be taken to the Long Beach Recycling and Transfer Station. The CDL waste is mixed with the municipal waste and shipped to a landfill in eastern Oregon.

Source-separation activities should be encouraged by waste generators to enhance recovery at existing facilities. The materials which are most likely to be recovered are those that are present in a relatively clean form, sufficient quantity or have substantial market value. Materials which fit these categories include wood, cardboard, asphalt/concrete, metals, and reusable items. Wood and old corrugated containers (OCC) are the most common materials found within CDL waste and are easy to remove and process for recovery.

Agriculture Wastes

Puget Island and the lowlands along the Grays River, the Skamokawa creeks and the Elochoman River are primary farming areas in Wahkiakum County. According to the 1997 Federal Agriculture Census, Wahkiakum County has 110 farms, averaging 115 acres in size with a total acreage of 12,611. Of those farms, 33 had sales of $5,000 or more. Many farms in the county are operated to provide a second income to supplement that earned through the owner's primary employment, typically logging or manufacturing.

Dairying, the raising of cattle and calves, and the growing of feed for these animals are the principal farming activities. The 1997 agriculture census shows there were 4,000 cattle and calves, 1,300 beef cows, and 600 milk cows.

Solid waste disposal sites are not generally located in agricultural areas except for sludge utilization sites. These frequently may be located in agricultural areas in order that the beneficial properties of the sludge can be used to improve farm soils.

Wastes generated by agricultural uses are similar to those generated by rural residential uses, with two notable exceptions. The wastes that are unique to farming include farming chemicals and their containers and animal wastes, especially from dairy cows. Local data is not available on either type of waste; however, based upon information contained in the it is estimated that Wahkiakum County's 600 milk cows produce approximately 9,000 gallons of animal waste daily. Typically, the waste is hauled and spread on fields; however irrigation systems are becoming popular elsewhere in the state as methods are found to reduce the labor required for their operation. Disposal of animal waste can be a major problem, especially if the dairy farms are located near bodies of water or high water tables. The state is currently working with farmers to minimize pollution problems through improved farm management practices.

The other types of waste unique to agriculture are the chemicals used to control insect and weed problems and the empty containers that result from their use. According to representatives of the Washington State Extension Office and Wahkiakum Conservation District these wastes are not a significant problem locally. Most farmers apparently take special care to clean used containers and then reuse or recycle them.

Auto Hulks

Junked automobiles are an important source of ferrous scrap, and large amounts are currently recycled in the United States. The Steel Recycling Institute estimates that as much as 14 million tons of ferrous scrap was generated nationwide from recycling old automobiles in 2000.

In Wahkiakum County, there is a licensed automobile hulk company for the reuse of parts and the recycling of scrap metal. It appears auto hulks are taken to neighboring county wrecking yards. Markets for whole auto hulks are located in Tacoma, Washington and Portland, Oregon, part of a well-developed national system for processing junked autos. Unknown quantities of junked automobiles are illegally disposed every year. ***Wahkiakum County has considered a junk vehicle ordinance in the past, and is considering an ordinance again this year. The ordinance may address junk vehicles and other nuisances.***

Asbestos Waste

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. Depending on its physical state, asbestos can be classified as friable or non-friable. Friable asbestos can easily break apart and become airborne and thus it presents a much greater risk to human health, while non-friable asbestos has less of a tendency to break apart.

Typically asbestos waste comes 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.

In the past, the little asbestos waste generated in Wahkiakum County was mixed with the municipal waste stream. Now, asbestos waste needs special handling and disposal methods. The Cowlitz County Landfill will accept asbestos waste from Wahkiakum County under the conditions set by the Cowlitz County Landfill. The Long Beach Recycling and Transfer Station in Pacific County will also accept asbestos waste. For both disposal sites, asbestos disposers must make arrangements ahead of time. The transfer station charges extra for asbestos waste.

Wahkiakum County should keep on hand the procedures for disposing of waste asbestos at the Cowlitz County Landfill and the Long Beach Recycling and Transfer Station. This information should then be made available to county residents and businesses disposing of waste asbestos.

Petroleum Contaminated Soils (PCS)

Soil is considered contaminated if it contains significant quantities of fuel oil, gasoline, or other volatile hydrocarbons. The primary statute governing cleanup of petroleum contaminated soil in Washington State is the Model Toxics Control Act (MTCA), Chapter 70.105D RCW. Chapter 173-340 WAC contains regulations to implement MTCA, including sections on corrective action requirements for leaking underground storage tanks, and cleanup standards.

It is possible that lead, benzene, polynuclear aromatic hydrocarbons, or contaminants such as polychlorinated biphenyls in the soils 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 only be transported to specifically permitted facilities for treatment, storage, or disposal.

Ecology's policy is that Petroleum Contaminated Soils (PCS) which contain contaminants above the Model Toxics Control Act Method of cleanup standards are to be regulated as solid wastes. Specifically:

- The local health department should be notified of on-site treatment of greater than 100 cubic yards of PCS.

- The local health department should be notified if any PCS are to be transported into or within their area for treatment at a temporary treatment facility.

- The local health department should permit regional treatment centers.

- If Class 3 soils from more than one site are placed in a single location; the location should be permitted as a new solid waste disposal facility.

- Class 4 soils must be treated or disposed of in a permitted solid waste facility.

Currently PCS are either treated on site or transported to out-of-county landfills. It is not known where the majority of the material exported is going. Bioremediation is a treatment technology which provides for enhanced conditions for the biodegradation (bacteria, fungi, etc.) of contaminants.

Regulations governing the removal of leaking underground storage tanks containing petroleum products have resulted in adding large quantities of contaminated soil to the waste stream. The land filling of PCS is the least preferred management method according to state regulations. Petroleum-contaminated soils should only be land filled when other solutions are not available.

Ecology has established management policies for PCS through the Toxics Cleanup Program, and the Solid and Hazardous Waste Program. Specifically, Ecology encourages on-site treatment as long as the actions themselves will not cause a threat to human health. The Model Toxics Control Act established a hierarchy for selecting treatment technologies (WAC 173-340-360). The list of management methods is as follows:

1. Reuse or recycling
2. Destruction or detoxification
3. Separation or volume reduction, followed by reuse recycling, destruction, or detoxification
4. Immobilization
5. On-site or off-site disposal at an engineered facility
6. Isolation or containment

Several existing and proposed PCS treatment facilities are located in the southwest region, existing facilities include the following:

- Woodworth & Company (thermal desorption), located in Tacoma.
- Fields Shotwell Corp. (thermal treatment/recycling), located in Port Angeles.

The hierarchy established by Ecology should be used to select appropriate treatment technologies for petroleum-contaminated soils generated within Wahkiakum County. Contractors who wish to treat or transport PCS should contact the Wahkiakum County Health Department.

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 polychlorinated biphenyls (PCBs) and the recovery of chlorofluorocarbons (CFCs). PCBs are present in the electrical capacitors of some appliances produced or repaired prior to 1979. When these appliances are shredded, the capacitors are crushed and leak PCB-contaminated oil over the shredder fluff. The presence of PCBs in white goods has resulted in scrap dealers accepting only appliances which do not contain PCBs.

The Clean Air Act prohibits releasing refrigerants into the atmosphere. The EPA has developed regulations that would require recycling of ozone depleting compounds during the servicing, repair and disposal of air conditioning and refrigeration equipment.

In the past, white goods coming into the drop-box facility were mixed in with the municipal waste and shipped to the Cowlitz County Landfill. Cowlitz County then picked the appliances out of that waste stream and then processed them for recycling. Cowlitz County no longer wants the white goods mixed in with the municipal waste stream. The landfill will continue to take Wahkiakum County resident's discarded appliances provided they are separated from other waste. They currently charge $5.00 for each appliance for private individuals.

Wahkiakum County Public Works Department has implemented another alternative. Persons bringing in white goods to the drop-box facility will be directed to place that item in a holding area. When enough

appliances have collected to fill a drop box, public works personnel will load them in a drop box. The drop box will be taken to the Long Beach Recycling and Transfer Station. At the transfer station, the white goods will be stored until there are enough of them to economically bring in a company to process them. A company then comes to the site, drains the freon, removes the parts with PCBs, crushes and bails the appliances and trucks them to a recycler in Portland, Oregon.

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 provide protected spaces which encourage the breeding of rodents and mosquitoes. The disposal of tires into sanitary landfills also presents numerous problems. Because of their bulkiness and resilience, they tend to rise to the surface, damaging the cover materials which allows water to seep into the landfill.

Ecology estimates that each person in the state generates one waste tire annually. In Wahkiakum County, this would result in the generation of over 3,800 waste tires requiring disposal each year (2000 figures). The Cowlitz County Landfill accepts tires, charging less than ten tires in load Passenger $1.00 each with rim $3.00 extra Truck $5.00 each with rim.

The two nearest waste tire processing plants to Wahkiakum County are Waste Recovery, Incorporated in Portland, Oregon, and Tire Disposal and Recycling in Clackamas, Oregon. Tires are accepted at the Waste Recovery facility for $1.30 for car tires and $4.50 for truck tires. Tire Disposal and Recycling accepts car tires for $.85 and truck tires for $3.50. WAC 173-350-350 provides storage requirements for tire piles containing more than 800 tires. The U.S. Uniform Fire Code also regulates tire piles, since they present a fire hazard. The Wahkiakum Health Department can develop local regulations to reduce stockpiling.

As part of their solid waste education program, Wahkiakum 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.

Sewage Sludge (Biosolids) and Septage

The Cathlamet Sewage Treatment Plant serves approximately 700 to 750 persons in the Cathlamet area. The plant serves 565 in the town of Cathlamet and 163 outside of Cathlamet, these include 50 commercial

customers. The plant, which is located near the town marina, uses a sewage lagoon system for final treatment. It is in this lagoon that the small amounts of sludge produced by the plant accumulate. The lagoon required cleaning once when improvements to the plant in 1984 required deepening of the lagoon. The town does not expect that sludge will need to be disposed of again for up to 5 years with the installation of more aerators at the treatment plant. Sludge taken from the lagoon in 1984 was disposed of by land application on nearby farms. Sludge for land application was reclassified in 1998 as biosolids. Biosolids are not considered a solid waste. However, sewage sludge is considered a solid waste but is not suitable for land application and requires land filling. It should be noted that when biosolids are combined with compost it is considered a solid waste and would require a solid waste permit for land application. ***The Town of Cathlamet is currently constructing a new wastewater treatment plant, which will be operational by the end of 2013.***

The rest of the county residents depend on septic systems. The Cathlamet Sewage Treatment Plant does not accept septage. Wahkiakum County residences hire firms from outside the county to pump out their septic tanks. The effluent is then taken out of county for disposal.

Biomedical Waste

Biomedical waste is defined by the state as follows:

> 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, human pathogenic microorganisms infectious to humans.
>
> Biosafety Level 4 Disease Waste -- is waste contaminated with blood, excretions, exudates, or secretions from humans or animals who are isolated to protect others from highly communicable infectious diseases that are identified as pathogenic organisms assigned to biosafety level 4 by the centers for disease control, national institute of health, biosafety in microbiological and biomedical laboratories, current edition.
>
> 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 -- is 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 emanate 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, farms, and schools.

There are no hospitals, veterinary hospitals, medical laboratories or medical schools in Wahkiakum County. Currently, within the county, there is a medical clinic, a dentist, and a nursing home that ceased operation, but may renew operations in the near future. Each contracts with a medical waste disposal company to dispose of their biomedical waste.

Sharps wastes generated by homeowners are accepted at the Cowlitz County Landfill. The sharps must be contained within a 2-liter pop bottle, sealed, taped, and labeled. The collected material is kept separate from other wastes, and disposed of in such a manner as to avoid possible injury to landfill personnel, as well as, the public and professional individuals.

ILLEGAL DUMPING AND LITTER

Illegal Dumping

Illegal dumping continues to be a problem in Wahkiakum County, however, with the gating of most logging roads in the county, some of the problem has declined. Practically, every remote wide spot or logging road off of county and state roads has some trash illegally dumped. The Wahkiakum County Health and Human Services Department has applied for and received a renewable Solid Waste Grant from Ecology in the amount of $12,500 for two years, $6,250 for the year 2006 and $6,250 for the year

2007. The grant will be used to help control illegal dumping, promiscuous dumping, and litter within the county through enforcement and education.

The quantity of waste illegally dumped in Wahkiakum County is probably less than other counties due to Wahkiakum's small population and the ready access to legal means of disposal. Residents can subscribe to a collection service or self-haul to the drop-box facility. These services are relatively inexpensive when compared to other parts of the state and country. Some residents and businesses may take their waste directly to the Cowlitz Transfer Station since many county citizens shop or work in the Longview/Kelso area. Others, who live on large lots or acreage, have the space to bury or burn their vegetative wastes on their land. However, backyard burning of anything other than natural vegetation is illegal. This is due to changes in the state's Clean Air Act. Burying waste is still legal, but frowned upon by the state as environmentally undesirable. The county offered a one free disposal coupon to residents up until 2007, when budget constraints ended this opportunity. This program was believed to help reduce illegal dumping by those with limited financial means.

Illegal disposal could be corrected through a variety of programs, including mandatory collection within all jurisdictions; 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.

Litter

Most litter in Wahkiakum County is found along state highways. County prisoners and those sentenced to community service pick up litter along Ocean Beach Highway (State Route 4). This is done through a contract with the Washington State Department of Transportation. Department of Ecology records show that in 2000, 29,090 pounds of litter was picked up by various programs throughout Wahkiakum County. The Department of Transportation estimates that 55 cubic yards of litter was picked up along SR 4. Aluminum cans and some bottles are recycled.

There is no regular program to pick up trash along county roads. However, if a litter problem develops along a section of road, county prisoners and community service people are sent to clean up the problem.

Recommendations for Alleviating Illegal Dumping/litter Problems

Education and enforcement are the primary tools to reduce illegal dumping problems. Many persons enjoy the forests in Wahkiakum County; however, there is a trend for private forest owners to close their land to public use. This is due, in part, to illegal dumping problems. It costs money to clean up illegal dumps and litter. Taxpayers and property owners bear that burden. Persons must be educated to the consequences of illegal dumping.

Persons should be encouraged to turn in polluters. The phone number of the agency charged with enforcing illegal dumping regulations should be readily available. It should be published in the Wahkiakum County Eagle newspaper regularly.

Wahkiakum County needs to review their ordinances regarding illegal dumping and litter to ensure that they are effective. Funds for enforcement have been made available to the county through a solid waste grant from the Department of Ecology.

ENFORCEMENT

The Department of Ecology, Wahkiakum County Departments of Public Works, Health and Human Services and the Wahkiakum Solid Waste Advisory Committee are all involved in the administration and enforcement of solid waste regulations.

Washington State Department of Ecology

The Department of 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.

Wahkiakum County Department of Public Works

Currently, the County has no staff assigned for coordination of Solid Waste activities. The Public Works Director and the Public Works Accounting Manager handle these activities along with many other tasks and responsibilities. Public Works monitors the amount of waste that enters the landfill through tonnage data collected at the KM Transfer stations and recycle bins.

Wahkiakum Solid Waste Advisory Committee (SWAC)

The SWAC consists of appointed members and alternates from the ***Town of Cathlamet***, business, citizens, and the solid waste industry. The Wahkiakum 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 Wahkiakum 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.

Enforcement

Wahkiakum County's Health Department handles the enforcement of the Solid Waste Laws. If a citizen/county complaint surfaces Public Works is notified and received a complaint which then goes to a 'complaint record system' where it is tracked and handled. Depending on the nature of the complaint, the Health Department may become involved. If the complaint for problem pertains to the KM ***Drop Box Facility*** , then the Department of Public works enforces the laws. In extreme cases, the County Sheriff is called in.

Washington State Department of Ecology role is to oversight, review, and approve Solid Waste Management Plans and provide assistance.

SOLID WASTE ORDINANCE

In 2004 Wahkiakum County adopted a Solid Waste Ordinance. The ordinance is known as "County Litter and Solid Waste Control Code." The ordinance number is 137-2004. The Solid Waste Ordinance was adopted by the Wahkiakum County Commissioners whereas Section 70.95.160 of the Revised Code of Washington requires each County Board of Health to adopt regulations governing solid waste disposal.

Purpose

The purpose of this Ordinance is to accomplish litter and solid waste control in Wahkiakum County. This ordinance is intended to place upon all persons within the County the duty of contributing to the public cleanliness of the County in order to promote the public health, safety and welfare and of the people of the County against unsanitary and unsightly conditions. It is further the intent of this Ordinance to protect the people against the expense incident to littering and improper disposal of solid waste.

Litter

Litter receptacles shall be placed in all places in respect to the service of transient habitation, parks, trailer parks, gasoline service stations. Tavern parking lots, shopping centers, grocery store parking lots, marinas, boat launching areas, beaches, bathing areas and other such public places in numbers appropriate to need as specified by state regulation. It shall be the responsibility of any person owning or operating any establishment of public place in which litter receptacles are required to procure, place and maintain such litter receptacles at their own expense on the premises in accord with such state regulations.

Adopted

The Solid Waste Ordinance was adopted on April 13th, 2004. The Ordinance is codified in the Revised Code of Wahkiakum County as Chapter 70.95.

DROP BOX FACILITIES

Recyclables

Wahkiakum's Drop Box (Accepted):

Metals – Aluminum cans

Paper – Mixed

Paper – Cardboard OCC

Plastic – 1PET-plastic bottle

Plastic – 2HDPE-natural plastic bottle jug

KM Transfer Station Drop Box (Accepted):

Metals – Aluminum cans

Paper – Catalogues

Paper – Corrugated cardboard

Paper – Magazines

Plastic – 1PET-plastic bottle

Plastic – 2HDPE-natural plastic bottle jug

Glass

Motor oil (From households)

CHAPTER 4

SOLID WASTE COLLECTION

INTRODUCTION

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

EXISTING CONDITIONS

Legal Authority

Legal authority for solid waste collection in Wahkiakum County is shared among a number of public agencies. These agencies are the Department of Ecology (Ecology), the Washington Utilities and Transportation Commission (WUTC), the county, and the town of Cathlamet.

Department of Ecology

The Department of Ecology evaluates solid waste management plans for compliance with state guidelines. Solid waste management plans are required to address issues regarding solid waste collection, and specifically its interrelationship with recyclables collection.

Washington Utilities and Transportation Commission

Chapter 81.77 RCW gives the WUTC a role in certifying and regulating garbage and refuses collection. Certificates for solid waste collection (sometimes referred to as franchises) are issued by the WUTC. These certificates have market value and may be purchased from existing certificate holders. Certificates exist in perpetuity for the areas to which they apply. However, should a collector fail to adequately serve its franchised area, a potential competitor may petition the WUTC to replace the original hauler. Certificates are also issued for collection of different types of waste materials, such as infectious medical

waste, hazardous waste, and recyclables. These areas may overlap franchised areas for mixed municipal solid waste.

The law excludes from WUTC oversight the operation of a collection company under contract to a city or town. It also excludes from regulation any city or town that itself undertakes the collection of garbage.

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 consent is given by the affected municipalities. A county must demonstrate that mandatory collection is necessary for the preservation of public health. The collection service must be provided by a qualified WUTC collection company. Should a qualified collection company not be available, the county may provide the service.

Following the adoption of a comprehensive solid waste management plan 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, cities and towns have the following options for managing solid waste collection.

Cities and towns have the option of entering into contracts with private haulers for the collection of residential waste, commercial waste, and recyclables. The contract hauler is not required to hold a WUTC certificate for that area. Usually the contracts are awarded on a competitive basis to the lowest bidder.

Cities have the option of issuing licenses for the collection of solid waste. In a licensed collection system, WUTC certificates are augmented by city licenses, which allow the city or town additional regulatory control over collection services and fees.

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.

In addition, a city or town may require mandatory collection. Under mandatory collection, a city or town may require that all residents and businesses subscribe to designated refuse collection services.

SOLID WASTE COLLECTION COMPANIES

Below is a listing of the participating collection haulers in Wahkiakum County including the name, address and WUTC permit number.

FRANCHISE NAME	ADDRESS	WUTC PERMIT NUMBER
Stanley's Sanitary Service	P. O. Box 548 Cathlamet, WA 98612 (360) 795-3369	G-86
Peninsula Sanitation Service, Inc.	P. O. Box A Ilwaco, WA 98624 (360) 642-2541	G-11

COLLECTION SYSTEMS IN WAHKIAKUM COUNTY

This section describes the collection systems currently operating in Wahkiakum County. Solid waste collection services are provided throughout the County by private contract operators, and private certificated (franchised) haulers. These collection practices are described below.

WUTC-Certified Collection Companies

Certificated collection operations are companies operating under certificates issued by the WUTC. Collection arrangements are made between the waste generator and the collection company with rates approved by the WUTC. Franchised collectors usually operate under a city license or WUTC certificate. WUTC-certified haulers who provide collection services within Wahkiakum County are as follows:

Stanley's Sanitary Service

Stanley's Sanitary Service serves that portion of Wahkiakum County east of KM Mountain and the Town of Cathlamet, the county's only incorporated area. All major rural east county areas are served including Puget Island, Skamokawa, Flandersville, and the valley roads along the county's major rivers and creeks. In 2007 an estimated 807 residential and commercial accounts were served.

Peninsula Sanitation Service, Inc.

West of KM Mountain, Wahkiakum County is served by Peninsula Sanitation Service which operates out of Pacific County. An unknown but presumably small number of commercial businesses are located in the Grays River and Rosburg areas. Peninsula Sanitation collects solid waste from 66 residential and 10 commercial accounts in western Wahkiakum County. Peninsula Sanitation Service estimates it collects 5.74 tons of solid waste per month.

Stanley's Sanitary Service manually loads their refuse trucks. Peninsula Sanitation Service utilizes automated trucks that use automated arms to pick up rolling 60-gallon cans. The collected refuse is then taken out of county for disposal.

CONTRACT COLLECTION

Contract collection operations involve private companies contracted by a municipality to collect and haul municipal solid waste. Currently, the town of Cathlamet contracts with Stanley's Sanitary Service for collection services. Often, service charges are collected by the municipality for services provided by the contractor. However, in the case of Cathlamet, Stanley's Sanitary Service collects and keeps all service charges. Usually collection contracts are awarded on a competitive basis to the lowest bidder and contractors must typically furnish suitable performance bonds.

Collection Fees

Both Stanley's Sanitary Service and Peninsula Sanitation Service charge a variable can rate. Residents and businesses are charged according to the size and/or the number of containers set out for collection, with higher volumes resulting in higher bills. This practice encourages waste reduction because customers have a financial incentive to limit their waste to one can a week.

For residential customers, as of year 2007, Stanley's charges $19.59 for one 32 gallon can placed at curbside and $22.98 for two cans. ***As of 2013 these rates had increased somewhat, Stanley's charges $21.14 per month for one 32 gallon can picked up weekly, and $24.80 for two 32-gallon cans picked up weekly. An additional adjustment of these rates is anticipated.***

In 2013, Peninsula's residential customers are charged $14.40 for one 60-gallon curbside can collected monthly. $24.30 is the charge from Peninsula for weekly pickup of the 60-gallon can.

COLLECTION ALTERNATIVES

The following section presents collection alternatives for improving upon waste reduction and recycling activities of the county. This will ensure that disposal of municipal waste is done in an environmentally safe manner.

Variable Can Service

As discussed above, this alternative has already been implemented in Wahkiakum County. This alternative can be very effective. In the city of Seattle, the introduction of variable can rates almost

immediately reduced the average number of cans per subscription from three and a half to one. Because this method successfully decreases the waste entering the waste stream, it should be continued.

Residential Recycling Collection

Residential recycling programs have been discussed in detail in Chapter 6 of this plan. As discussed in Chapter 6, curbside collection of recyclables is not a viable option for a rural county like Wahkiakum County. Instead, residents of the county will be provided with the opportunity to recycle through multi-material drop-box facilities. This program, in combination with the variable can rates, will provide both an opportunity and economic incentive to residents within the county to recycle.

Mandatory Collection

Currently, Cathlamet and Wahkiakum County do not have mandatory refuse collection. Many cities and towns in Washington State have implemented mandatory collection. 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 could be feasible within the Town of Cathlamet city limits and/or jurisdiction.

Advantages to Mandatory Collection

- It would insure that waste generators would pay their fair share of the cost of proper disposal. In Wahkiakum County, those who self-haul do not pay the complete cost of disposal because much of the operating expenses for the county's solid waste system come from the county's general funds. Yet, those who subscribe to a waste collection service pay the full cost of disposal through collection service fees. Plus, they also pay county taxes, some of which go towards the operation of the drop-box facility. Because of this subscribers pay two times for solid waste services.

- There are households that use the county solid waste system little if at all. Some households bury their solid waste on their property and/or use burn barrels. Backyard burning of anything other than natural vegetation is illegal. Mandatory collection would bring these households into the system and may help to eliminate these practices.

- Countywide mandatory collection would begin to eliminate problems associated with illegal disposal. Additionally, mandatory collection is likely to reduce the number of people who self-haul their waste in private vehicles and in turn reduce the incidence of roadside litter as a result of poorly secured loads. It may also result in a reduced need for enforcement of illegal disposal and associated clean-up costs.

- Mandatory collection would most likely reduce the amount of county general funds spent on the solid waste system. The drop-box facility would probably need to be retained for residential waste that does not fit readily into garbage cans because of size or amount. However, facility operating costs would be much less because there would be less waste coming into the facility.

- If, in the future, the county needed to implement curb-side (road side) recycling, mandatory collection would insure greater ability to provide recycling programs (assuming some combination of recycling services will be provided along with garbage collection).

Disadvantages to Mandatory Collection

- Mandatory collection could be unpopular with residents and politically difficult to implement. It would limit a household's solid waste disposal options. Solid waste disposal costs would increase for households which currently dispose of their waste at a cost less than a collection service. Citizens might see mandatory collection as government interference in the operation of their households.

- In areas with very low population densities, such as in the rural unincorporated areas of Wahkiakum County, garbage collection services can be expensive to provide. Houses are farther apart, so collection trucks must travel much farther to get a load. Rural roads tend to be in poorer condition or built to lesser standards (gravel roads) than urban roads. ***Often there is little to no road shoulder area for a garbage truck to pull over and stay out of the way of traffic.*** Consequently, rural roads tend to be harder on equipment ***and may be less safe for operation.***

- Commonly, rural lots have long driveways. This makes it inconvenient for the resident to take their waste to the roadside.

- The drop-box facility would still be needed for those residential wastes which are not conducive to roadside collection due to size, quantity, or other factors. The two primary operating costs of the facility are tipping fees and hauling. If mandatory collection were implemented much less waste would come into the facility, so those costs would be reduced substantially. However, the county would still have to support base operating expenses for the facility.

ELECTRONIC WASTE (E-WASTE)

Covered electronic (E-Waste) products are computers, televisions, computer monitors, e-readers, portable, or laptop computers used by households, small governments, small businesses, and charities.

In 2006 the Washington State Legislature passed an E-Waste Bill in which a manufacturer must participate in an independent plan or the standard plan to implement and finance the collection, transportation, and recycling of covered electronic products by no later than January 1, 2009. ***Wahkiakum County residents can take their electronic products for recycling to Stanley's Sanitary on Hedlund Road on Puget Island near Cathlamet.*** Citizens can call 1-800-RECYCLE to find available electronic product recycling services in your area.

RECOMMENDATIONS

1. To encourage waste reduction and recycling, collection companies should continue to charge variable can rates.

If new circumstances force the county to seek more expensive disposal alternatives, mandatory collection may be viable. To pay for increased costs, the county may choose to explore the mandatory collection option before the next solid waste plan update or at a later date.

CHAPTER 5

DROP-BOX FACILITY

INTRODUCTION

Wahkiakum County operates a drop-box facility located near the summit of KM Mountain on State Highway 4 between the unincorporated communities of Skamokawa and Grays River. It has been in operation since late 1987. The drop boxes are hauled by Peninsula Sanitation Service, Incorporated. Currently, the waste is taken to the Cowlitz County Sanitary Landfill for final disposal. The drop-box station is open Thursday and Saturday from 8 a.m. to 4 p.m.

PHYSICAL PLANT

The facility consists of four covered and screened drop boxes placed on a concrete pad next to a retaining wall. The upper part of the retaining wall has a concrete pad for temporary parking during unloading operations. One 50 gallon used motor oil igloo, and one recycling container for aluminum cans, glass, plastics, magazines, newspaper and one for cardboard are located nearby. All weather approach and exit roads for the facility area are gravel and are maintained on a reimbursement basis by the road crew of the public works department.

Buildings on the site consist of a scale shack for the Drop-Box site attendant. Adjacent buildings not part of the Drop Box facility include a large metal shed for storage and office area as well as a vacant house that may be demolished in the near future.

Water for cleaning comes from a well located on the property. Security lights in front and behind the large building plus one next to the house provides full illumination of the area. Telephones are available in the ***attendant's*** house plus in front of the large building.

The facility does not accept animal carcasses, batteries, asbestos, and fuel containers. In addition, commercial firms are prohibited from using the site regardless of materials. Scavenging is prohibited.

Solid waste is placed, by the customer, directly into the drop boxes. The attendant may assist in this operation if workload permits. Plywood sheeting attached to the top of the retaining wall is used to

bridge the small gap between the wall and the boxes. This helps to prevent materials from falling on the ground.

The Wahkiakum County Solid Waste Advisory Committee has determined that the drop-box facility at KM Mountain adequately meets the self-haul disposal needs of Wahkiakum County residents. The demand for the facility is not expected to increase greatly. Currently, the facility is open only 16 hours a week. If the need for the facility grows, then it can remain open longer, instead of expanding the physical plant. ***Recent experience has shown that demand has diminished.***

Also, usage of the KM Mountain Drop-Box Facility is expected to go down because Pacific County or other out-of-county residents are no longer allowed to use the facility. All the waste collected at the drop-box facility goes to the Cowlitz County Sanitary Landfill for final disposal. The Cowlitz County landfill only accepts municipal waste from Cowlitz and Wahkiakum Counties. If Pacific County residents were allowed to dispose at the drop-box facility, Cowlitz County would be accepting waste from Pacific County. This would not be consistent with Cowlitz County's solid waste management plan.

REVENUES FROM DROP-BOX FACILITY

The tipping fees at the drop-box facility currently (December ***2013***) are:

- $4.50 per garbage can
- If more than 3 cans are to be dumped, the fee is based on a per-ton rate of $140.00 a ton. And, $.07 per pound for each additional pound.

Tipping fee revenues in 2006 amounted to $43,518.50 or approximately 83.68 percent of the county's solid waste expenses for that year. The remaining costs were paid from the county's general fund.

Note: Tipping fee revenues for 2004 were $35,546.50 and in 2005 $40,230.50.

COST FOR WAHKIAKUM COUNTY SOLID WASTE SYSTEM

In 2001, 569.96 tons of waste was hauled from the facility. The cost for the county's solid waste system that year was $69,064.38. The largest expenses were for drop-box hauling ($31,924.49) and for disposal fees ($22,422.43). The cost per ton for hauling and tipping fees was $56.01 and $39.34 respectively. Those two costs total $95.35 per ton. The table on the following page provides a cost breakdown for the system from 2000 through 2001.

HISTORICAL PROBLEMS WITH THE CURRENT FEE SYSTEM

The Wahkiakum County Solid Waste Advisory Committee identified the following problems with the current tipping fees at the drop-box facility.

- The tipping fee did not cover the full cost for operating the solid waste system.

- Those who self-haul do not pay the complete cost of disposal because much of the operating expenses for the county's solid waste system come from the county's general funds. Yet, those who subscribe to a waste collection service pay the full cost of disposal through collection service fees. Plus, they also pay county taxes, some of which go towards the operation of the drop-box facility. Thus, subscribers pay more for solid waste services than self-haulers.

- Self-haulers also pay taxes which go towards the solid waste system and they pay a tipping fee at the drop-box facility. If they are hauling a couple of garbage cans every other week, the tipping fee per can is such that they are paying at or near the cost for final disposal.

- The fee system provide*s* an incentive for waste reduction and/or recycling, ***by virtue of the fact that people don't have to pay a fee for disposal for the recycled items.***

ALTERNATIVE TIPPING FEE METHODS

A scale was installed at the drop box facility in 1994. Since then any load greater than three garbage cans is weighed and fees are assessed based on the weight of the load.

Structuring Tipping Fees to Re-cover More of the Operating Costs

In 2001, the tipping fees charged the county averaged $39.34 per ton. Wahkiakum County disposed of their waste exclusively at the Cowlitz County Sanitary Landfill where the tipping fee was $39.30 per ton. The cost for drop-box hauling had increased too. In 1999 it was about $51 a ton; in 2001 it was about $56 per ton. Assuming the tipping fee stayed the same throughout 2002 at $39.30 a ton and hauling costs increased by five percent from 2002 costs (5% is about the average yearly increase in hauling cost from 1999 to 2001), the total cost for tipping fee and hauling was about $99.50 per ton. Other costs for the solid waste system (personnel, maintenance, and administration) averaged $26.26 per ton from 1999 through 2001. Therefore, the 2002 cost for the solid waste system was about $126.00 per ton.

The county decided to make the drop-box facility more self-sustaining and charge a tipping fee to cover the complete cost of the solid waste system. The County increased the rate for disposal to $0.07 per pound in 2005 to make the facility more self-supporting.

The cost of disposal is not the only cost the county will incur. The county hopes to increase the county's recycling rate. The cost to recycle materials can be higher than the disposal cost for those materials. Recyclables need more handling and are processed at much smaller volumes than waste. Markets for recyclables vary. Sometimes little or no money is paid for recycled materials.

By recycling, the cost for disposal is avoided, saving about ***$140.00*** per ton. But if the market will only pay $50 for that ton and that ton cost $200 to process, recycling will cost the county more than disposal. Of course, by recycling, long term environmental costs of disposal are avoided. Fewer landfills need to be built and less virgin materials must be extracted.

Encourage Waste Reduction and Recycling

An incentive, which does not involve a direct discount in tipping fees, is to encourage customers to recycle before they weigh in. With the recycling bins at the drop-box facility easily accessible before customers reached the scales, they can unload the recyclables before being weighed and pay a tipping fee on the reduced weight.

RECOMMENDATIONS

Continue operating the K-M Drop Box Facility consistent with current operational parameters for the next planning horizon.

CHAPTER 6

MUNICIPAL WASTE DISPOSAL

INTRODUCTION

Wahkiakum County must export its municipal waste it has no disposal sites of its own. This chapter discusses past and current disposal practices and future disposal options.

PAST MUNICIPAL WASTE DISPOSAL PRACTICES

Two municipal landfills operated in Wahkiakum County until 1987. The Cathlamet Landfill was closed on August 1, 1987 and the Rosburg Landfill was closed on September 26, 1987. Both were closed prior to the state requirement for closure permits. A description of these landfills follows:

Cathlamet Landfill.

The public solid waste disposal site near Cathlamet was in operation more than 30 years. The site is located on a portion of two acres of Town of Cathlamet property. It is located about 1.5 miles southeast of Cathlamet between Highway 4 and the Columbia River, and is in the southeast 1/4 of Section 12, T8N, R6W. The property is rectangular in shape, approximately 417 feet long, 208 feet wide, and oriented northwest/southeast approximately parallel to Highway 4. Two perennial drainage ways cross the southeast end of the property, join near the property line and ultimately discharge over the rock bluff into the Columbia River. The burned refuse is located on the west slope of the main drainage way.

The site is on the Environmental Protection Agency (EPA) Inventory of Open Dumps (Federal Register, V. 46, No. 103). Solid waste facilities listed on this inventory do not comply with the Resource Conservation and Recovery Act (RCRA) "Criteria for Classification of Solid Waste Disposal Facilities," (40 CFR 257). Although federally mandated, the inventory resulted from solid waste disposal facility evaluations conducted by Ecology.

Rosburg Landfill.

The Rosburg Landfill ***was*** located approximately one mile southeast of the community of Rosburg in Section 17 of T9N, R8W. The landfill ***was*** about 500 feet from the Grays River and a similar distance from Nikka Creek. The upland portion of the site is moderate to gently sloping hills although a deeply incised creek is present along the eastern boundary of the site. The site has been logged and is now primarily covered with blackberries, alder and small fir trees. The toe of the landfill extends into the floodplain of Grays River where grasses and phreatophytes predominate. Wet conditions exist during most of the year on the lower portion of the site.

After the Rosburg and Cathlamet open dumps were closed, Stanley's Sanitary Service began taking the waste they collected to Cowlitz County. The Peninsula Sanitation Service continued taking the waste they collected to the Rainbow Valley Landfill. Waste from the county drop-box facility was taken to either landfill, depending on which one had the lower tipping fee.

CURRENT MUNICIPAL WASTE DISPOSAL PRACTICES

At the end of July 1991, the Rainbow Valley Landfill closed. Now, municipal waste collected by Peninsula is taken to a transfer station in Pacific County. Stanley's Sanitary Service continues to dispose at the Cowlitz County ***Transfer Station on 3rd Avenue in Longview***. Waste from the drop-box facility goes only to the Transfer Station on 3rd Avenue in Longview.

About 95 percent of Wahkiakum County's municipal waste goes to the Cowlitz County Sanitary Landfill. It is located in the southeast part of the Longview-Kelso urban area. ***The landfill is expected to close in 2013, and Cowlitz County hopes to open the Headquarter facility later this year.*** Currently, the rate for disposing at the landfill is $37.30 per ton. ***It is anticipated the disposal rate per ton will increase when the Headquarters facility begins operations.***

About 5 percent of Wahkiakum County's total municipal waste stream is collected by Peninsula Sanitation Service on their route in the western portion of the county. This waste is taken to a transfer station in Pacific County, where it is then shipped to the Wasco County Landfill in Dalles, Oregon.

DISPOSAL ALTERNATIVES

Alternatives identified for disposal of solid waste in the county include:

- Continue to dispose of MSW at the Cowlitz *Transfer Station* and the transfer station at Pacific County.

- ❖ Site a landfill within the county.

- ❖ Cooperate with local counties to develop a multi-county disposal facility.

- ❖ Export wastes out of the county to regional landfills.

- ❖ Export all municipal wastes out of the county to Pacific County transfer station.

- ❖ Site an incinerator in the county to incinerate waste and produce energy.

- ❖ Waste Control Transfer.

Continue to Dispose at Cowlitz County transfer station and Pacific County transfer station.

In 2002, the cost to operate the drop-box facility ***was*** expected to be at least $126.00 a ton (~~$39.30~~ $37.30/ton tipping fee; $60/ton transport cost; and $26.26/ton other costs). Stanley's Sanitary Service also pays a $37.30/ton at the Cowlitz County Transfer Station. This option is at present the least expensive of the disposal options available to Wahkiakum County.

Cowlitz County allows Wahkiakum County to use its landfill. Permission was given in a July 1987 letter from the Cowlitz County Board of Commissioners to the Wahkiakum County Board of Commissioners (Appendix D). It is anticipated an inter-local agreement will be prepared to formalize the arrangement between the two Counties for the future.

Site a County Landfill.

Although siting a county landfill is an option, it is not very viable. The cost for siting, constructing and operating a landfill that meets state and federal minimum functional standards is beyond the resources of the county. In fact, the 1985 solid waste plan recommended siting a landfill in Wahkiakum County. This

recommendation was found to be too expensive to implement. So, the 1985 plan was amended to recommend a drop-box facility be built instead.

Multi-County Disposal Facility.

The Southwest Washington Inter-County Solid Waste Advisory Board (SWIC SWAB) prepared a multi-county plan addressing multi-county solid waste management options.

Wahkiakum County should consider opportunities for joint, multi-county disposal alternatives as they are proposed.

Export MSW to Regional Landfills

Solid waste disposal nationwide is tending towards waste export (long hauling) as localized landfills close due to loss of capacity or the cost of meeting more stringent regulations governing their operation. In the Pacific Northwest, the trend towards waste export is highly influenced by climatic conditions. Due to higher rates of precipitation, leachate generation in landfills located in western Washington is significantly higher than that of landfills in eastern Washington. Drier climate and low population densities make for better landfill conditions in eastern Washington and Oregon locations.

Several jurisdictions in western Washington and Oregon are currently exporting waste or long hauling. These jurisdictions include:

- Pacific County, Washington
- Metropolitan Service District (Metro), Portland, Oregon.
- Seattle, Washington.
- Island County, Washington.
- Snohomish County, Washington.
- Clark County, Washington.
- Whatcom County, Washington.

Several disposal alternatives currently exist, including:

Wasco County Landfill – Waste Connections: Located approximately 80 miles from Portland in The Dalles, Oregon, its life expectancy is 150 years. The fee for disposal is $27.69 per ton which includes all DQC fees and Wasco County fees.

Columbia Ridge Landfill and Recycling Center: Located in Gilliam County, Oregon, the landfill is owned and operated by Oregon Waste Systems, a division of 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 60 million tons, with additional acreage over which to expand. Currently the landfill receives solid waste from Portland, Seattle, and Kennewick and Prosser in Benton County. The facility is accessible by rail, barge, and truck. The Portland, Oregon Metropolitan Service District currently pays a tipping fee of approximately $28.00 per ton.

Finley Buttes Landfill. Located 13 miles southeast of Boardman in Morrow County, Oregon, the landfill is owned and operated by the Finley Buttes Landfill Company, a subsidiary of Tidewater Barge Lines. The facility is located on 1,200 acres of range land and receives about 9 inches of rainfall a year. The landfill has an estimated capacity of 40 million tons. Currently, the landfill receives waste from Clark and Morrow counties. The facility is accessible by rail, barge and truck. The tipping fee at the Finley Buttes Landfill is approximately $25.00 per ton.

Roosevelt Regional Landfill: Located in Klickitat County, about five miles northeast of Roosevelt, Washington, the landfill is owned and operated by the Rabanco Regional Landfill Company. The facility is on 2,005 acres of which 380 acres will be developed into an active solid waste landfill, and another 240 acres are proposed for a separate CDL/wood waste 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.

Export MSW to Nearby Transfer Stations

If needed, Wahkiakum County could take their waste to transfer stations near Long Beach or Vancouver. Transportation costs would most likely be lower than shipping to a regional landfill because the transfer stations are much closer to Wahkiakum County.

Long Beach Recycling and Transfer Station. A company called Pacific Solid Waste owns the Long Beach Recycling and Transfer Station. The station is near the city of Long Beach in Pacific County. It is about 52 miles from Cathlamet and 39 miles from the KM Mountain Drop-box Facility.

Vancouver Transfer Stations. There are two transfer stations near Vancouver. Vancouver is about 65 miles from Cathlamet and 78 miles from the KM facility. The base tipping fee at the Vancouver transfer stations is 69.03 per ton. In addition, there is a $10.00 transaction fee.

Exporting Costs

Costs for waste export are, at a minimum, comprised of two components: tipping fees and transportation costs. Costs also associated with disposal include such services as transfer station development and operation, intermodal facility construction and operation, and even some waste reduction/recycling programs.

Tipping Fees. Tipping fees at the regional landfills are approximately $28 per ton. The Long Beach transfer station charges ***$135 per ton*** and the Vancouver transfer stations charge $69.03 $79.03 (includes $10.00 transaction fee) per ton. In contrast, the Cowlitz County landfill, where most of Wahkiakum's MSW currently goes, charges $39.30 per ton.

Transport Modes and Their Cost. A significant cost associated with the regional disposal of solid waste is the long distance transport of waste from local transfer stations to a regional disposal site. Long distance transport of solid waste can be accomplished by three modes of transport: rail, truck and barge. Cost estimates for each transportation mode may significantly differ from contract to contract depending upon how capital and operating costs are shared.

There is no railroad in Wahkiakum County. So, rail transport of waste is not a viable option.

Wahkiakum County is next to the Columbia River but barging solid waste is not plausible for the county. Barging is economical when transporting large tonnages. In 2001, the county exported an estimated 1,566 tons of waste. 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 also requires the use of a loading and unloading dock, as well as the need for truck transport at either end of the trip. Wahkiakum County does not have adequate barging facilities for solid waste. Also, transportation backup systems must be developed during periodic maintenance of river locks.

The total cost for shipping waste via tractor-trailer rig is about 8 10 cents a ton per mile, or $15 to ship a ton of waste 150 miles. Additional indirect costs can be incurred such as wear and tear on roadways and bridges, increased congestion, accidents, and pollution. For trucking to be economical, the amount of waste hauled per trip must be maximized.

Portland Metro currently contracts for truck transport of its waste a distance of 125 miles to the Columbia Ridge landfill for approximately $13 per ton, which includes fuel costs. Pacific County transport costs are about ***$43.00 per ton*** to truck waste to the ***Wasco County Landfill at the Dalles, Oregon.*** These figures do not include the cost to operate transfer stations or intermodal facilities.

Need for a Transfer Station. In order for Wahkiakum County to economically ship waste long haul directly to eastern Washington and Oregon landfills, a transfer station would need to be built.

A transfer station may even be needed if Wahkiakum County were to export their waste to nearby transfer stations such as those in Long Beach and Vancouver. Stanley's Sanitary Service currently empties its collection trucks at the Cowlitz County ***Transfer Station on 3rd Avenue in Longview***. It is approximately 60 miles round trip. Round trip distance would double if the trucks went to the Pacific County transfer station and almost triple if they dumped at the Vancouver stations. Driving individual packer trucks the extra distance may prove to be cost prohibitive. If so, Stanley's would need some means to locally combine loads so they could make fewer trips to the transfer stations. If commercial collection trucks started using the KM Mountain facility, it would have to be upgraded from a drop-box facility to a transfer station.

The drop-box facility ships waste in un-compacted 40-yard drop-boxes. They are emptied ***as needed,*** to avoid odor and vector problems. Assuming an un-compacted cubic yard of municipal waste weighs 350 pounds, a full 40 cubic yard box contains 7 tons of waste. In contrast, the Long Beach transfer station in Pacific County ships waste to The Dalles Oregon in 30 ton loads. They do this by consolidating and compacting wastes before shipping. As stated earlier, the Long Beach transfer station pays about $27.50 per ton for transportation. If Wahkiakum County had to make 4+ trips to ship as much waste as the transfer station does in one trip, trucking costs for Wahkiakum County would be substantially higher.

Building a transfer station in Wahkiakum County might decrease transportation costs but the county would have additional costs generated by the transfer station. The costs for siting, building, maintaining and operating a transfer station is usually higher than that of a drop-box facility. Transfer stations need more personnel and equipment to operate than a drop-box facility. Plus, the state's minimal functional standards are more stringent for transfer stations than drop-box facilities.

It is estimated that operating costs for small transfer stations (3,000 to 7,000 tons per year) ranges from 35 to 40 dollars per ton. This estimate includes the cost for paying for the physical plant. Economies of scale work here. Whether a transfer station is processing 3,000 or 7,000 tons, the same types of buildings and

equipment ~~is~~ are needed. Consequently, the station processing the larger amount does so at a lower cost per ton than the smaller station.

If a transfer station is needed, the county would have two options. They could convert the KM Mountain Drop-Box Facility to a transfer station or they could build a transfer station at a different site.

A small, very basic, transfer station was built near Raymond in Pacific County prior to the 1993 Wahkiakum County Solid Waste Plan. The cost for site preparation, the building and electrical work was $140,000. This amount does not include the cost for the land and equipment such as scales and a backhoe. At the time it processed about 3,000 tons of waste per year. SCS Engineers provided some estimates on the cost to build various types and sizes of transfer stations for the 1993 Wahkiakum County Solid Waste Plan. These estimates are provided in Appendix E. Due to inflation and other factors, the cost estimates for these facilities are no longer applicable. However, the information for the types and sizes of transfer stations and construction would still apply. Please note, the first type listed qualifies as a drop box facility but not as a transfer station. The SCS cost estimates in 1993 ranged from $180,000 for an enclosed double roll-off station with a capacity of about 25 to 50 tons per day to $600,000 for a single trailer tipping floor transfer station with a capacity of 100 tons a day.

At a minimum, the following improvements would have to be made to the KM Mountain Facility to upgrade it to a transfer station: a building would have to be constructed over the dumping area, another lift of concrete would have to be added to the current pad to accommodate truck trailers, pollution control measures to handle leach ate and equipment cleaning would be required, and wash down water would have to be installed. A tractor to handle waste would also need to be purchased. The cost of upgrading the facility in 1993 was from $120,000 to $150,000. Due to inflation and stricter environmental standards, the costs for a facility upgrade could be much higher.

As shown above, there may not be much difference in cost between building a new transfer station and converting the drop-box facility. There are several advantages to converting the KM site. It is a proven site with a history of being a disposal site. The county already owns it. It does not have any residential neighbors.

The primary advantage to building a new transfer station is that it could be built nearer to county population centers. However, since no one seems to want a disposal site as a neighbor, this advantage might be considered a disadvantage by some. A new site might draw opposition making the permitting process difficult and time-consuming. A suitable county-owned site closer to population centers may not

be available. Therefore, the county might need to purchase a site, which would add to the cost of development.

RECOMMENDATIONS

1. Continue disposing municipal waste at the Cowlitz County landfill and the Long Beach transfer station.

2. If, in the future, Cowlitz County does not allow Wahkiakum County use of their landfill, municipal waste should be sent to the Long Beach transfer station or a transfer station located in Cowlitz County until a comprehensive analysis of alternatives can be completed.

3. Before using an out-of-county transfer station on a permanent basis, the county should consider siting a transfer station in Wahkiakum County or converting the KM Mountain Drop-box facility to a transfer station.

The recommendations given above are the preferred options of many explored during plan development. In the future, the preferred options may not be available or they may become too costly. The ultimate goal is to implement a disposal option that is safe at the most reasonable cost. The recommendations above should not limit the county from seeking other more cost-effective options, if needed.

CHAPTER 7

WASTE REDUCTION AND RECYCLING

BACKGROUND AND OBJECTIVES

Washington State has adopted the following overall goals for waste reduction and recycling:

1. A 50% recycling rate was to be achieved by 1995; Ecology reported the statewide rate reached 50.1% in 2012.

2. Develop Systems that make recycling at least as affordable and convenient to the ratepayer as mixed waste disposal.

3. Make waste reduction and source separation fundamental waste management strategies. (Source separation means removing recyclables from the waste stream prior to disposal; the recyclables remaining after source separation are co-mingled. This contrasts with source segregation where recyclables are segregated by type at the time they are removed from the waste stream.)

Local governments are given primary responsibility for developing and implementing programs that will help meet these statewide goals. The state offers assistance to counties by: 1) developing statewide data and analysis such as the Best Management Practices Analysis; 2) providing education and information materials; 3) involving counties in the statewide planning process; and 4) providing limited financial and technical assistance.

The state guidelines for the development of Solid Waste Management Plans require that the plans contain a Waste Reduction and Recycling Element, which must include:

- Waste reduction and source separation strategies, including programs for collection of recyclables in urban and rural areas.
- Programs to provide information on and promote the concepts of waste reduction and recycling.
- Programs to monitor the collection of source separated commercial waste.
- Programs for yard waste composting.
- Descriptions of how the effectiveness of waste reduction and recycling programs will be evaluated.
- Assessments of the effect of waste reduction and recycling programs on the cost of solid waste collection.

While State law established a 50% statewide recycling goal by 1995, both state law and the Best Management Practices Analysis acknowledge that identical goals between urban and rural areas would not be appropriate; many large urban areas have adopted recycling goals of 60 to 65%. In light of this, a goal of less than 50% is more likely to be attainable for very rural counties, such as Wahkiakum County.

WASTE REDUCTION AND RECYCLING DEFINED

Waste Reduction

Washington State defines waste reduction as "reducing the amount or toxicity of waste generated or reusing materials." Waste reduction includes any activity that reduces or eliminates waste from being generated at its source such as: households, businesses, government agencies, and recreational facilities.

Two basic principles underlie waste reduction efforts: resource conservation and waste minimization. Reducing the total volume of waste helps to conserve valuable resources such as energy and materials. The preserved resources are therefore made available for more productive endeavors. Waste reduction also reduces the pressure on collection and waste processing systems, and preserves landfill capacity. Waste reduction efforts typically focus on preventative measures including changes in the production of goods, in packaging, and in consumer buying and disposal practices.

Recycling

The Revised Codes of Washington Chapter 70.95.030 defines recycling as "transforming or remanufacturing waste materials into usable or marketable materials for use other than landfill disposal or incineration."

INVENTORY OF EXISTING WASTE REDUCTION AND RECYCLING PRACTICES

Past local waste reduction efforts have focused on education. Wahkiakum County public works and the Washington State University Extension service have distributed solid waste brochures. The Wahkiakum County Extension service has demonstrated home composting at the county fair. In cooperation with Cowlitz County and Ecology, Wahkiakum County distributed waste reduction and recycling materials for the purpose of public information and education.

In addition, because of the economic benefits often associated with waste reduction (such as less money spent on packaging and containers, and lower disposal costs), individual businesses and households in Wahkiakum County are undertaking limited actions on their own to reduce waste. Because of the informal nature of these efforts, it would be very difficult and costly to quantify the current level of waste reduction in the county.

There have been both public and private efforts to provide recycling opportunities in the county. The Wahkiakum County drop box facility accepts motor oil, aluminum cans, glass, magazines, plastic (#1 PET and #2 HDPE) and newspapers, ***cardboard, ferrous metals, and white goods*** for recycling. Three other recycling drop boxes located in Cathlamet, Puget Island, and Skamokawa collect all the above mentioned recyclables except glass. These materials, except for motor oil, are recycled by Peninsula Sanitation. The recycling bins were opened in October of 1989. ***According to Peninsula Sanitation, in 2008, 73 tons of mixed paper along with 6 tons of aluminum cans, 15.5 tons of plastics and 36.6 tons of corrugated paper were hauled to recycling destinations.*** Used motor oil is collected and taken to a certified oil recycler. Oil ***and anti-freeze are*** also recycled at the Chevron station in Cathlamet and disposed at the Cowlitz County Landfill under a grant by the Washington State Department of Ecology. ***Used motor oil is also collected at the Elochoman Slough Marina, their collection site is located adjacent to 3rd Street, by the storage units.*** The Wahkiakum County Lions Club also operates a newspaper-recycling program

WASTE REDUCTION AND RECYCLING NEEDS AND OPPORTUNITIES

Suitable waste reduction and recycling programs in Wahkiakum County will help the county meet state solid waste management priorities, protect environmental and natural resources, and extend the life of disposal facilities.

Waste reduction and recycling programs often rely heavily on education and information programs. These programs also increase general awareness of other waste disposal and resource depletion issues. Waste reduction can, therefore, contribute to recycling and other solid waste management programs and help each agency, business, and household to improve the efficient and cost-effective operation of the system.

Whichever approach the county chooses to take toward recycling, the public must be encouraged to increase and maintain high levels of recycling through an ongoing educational campaign. A convenient recycling program will not be effective unless persons are convinced of its benefits and know how to use it. Conversely, education will not be effective unless there is a convenient means to recycle.

There are many brochures, pamphlets, and other multi-media approaches to recycling that can be adapted by Wahkiakum County. An effort needs to be made to select information that is most relevant to rural recycling, and to seek permission to adapt and distribute materials county wide.

Wahkiakum County does not have any television or radio stations. The one local newspaper is the Wahkiakum County Eagle. Currently, few articles involving recycling education are published in the paper.

As discussed in Chapter 2, Wahkiakum County recycles at the rate much lower than the total Southwest WGA. Consequently, it appears Wahkiakum County has substantial opportunity to improve its recycling rate from 2001 rates.

A major need in Wahkiakum County is to plan recycling programs and facilities that are convenient to use; and are designed to overcome some of the limitations created by having a sparsely populated county.

A major factor in evaluating any recycling effort is the available market for recycled materials. If the market is very distant and the price is low, there will be little market-driven incentive to recycle. Conversely, if the market is close and prices are high, market incentives may be able to support a strong, private-sector recycling system. The market does not necessarily have to be close if the prices are high enough to offset transportation costs.

The low population density within Wahkiakum County means that the cost of transportation will be relatively high. High transportation costs will be incurred in delivering recyclables to central locations within the county and in delivering those recyclable materials to metropolitan markets in Seattle or Portland. The distance to these markets is considerable. Cathlamet is 75 miles from Portland; 150 miles from Seattle. These high transportation costs have constrained the growth of a private recycling industry within Wahkiakum County and within other rural counties.

There is another factor to consider when evaluating the need and opportunities for recycling within a county. State law places a high priority on recycling based on the concept of avoided cost. Recycling should be valued not just on market prices for recyclable material, but also on the cost of the alternative: landfill disposal or incineration. Recycling becomes more cost effective as the cost of land filling or incinerating increases. Wahkiakum County has installed recycling receptacles at Wahkiakum High School, Puget Island Fire Station, Skamokawa Fire Station, and KM Mountain Drop Box Facility.

Education and Public Awareness

Education and media campaigns are key elements in promoting voluntary waste reduction. Without an awareness of the need and rationale for reducing waste, reduction efforts are not likely to be successful. Both producers and consumers must be educated about the importance of waste reduction.

School Programs.

The Oregon Association of Environmental Educators has developed a curriculum called Three R's: Reduce, Reuse, and Recycle for use in schools. Other formal education activities may include: studying the economic advantages and environmental savings from waste reduction; field trips to local industries or agencies that practice waste reduction; and working with students to help them design waste reduction plans for their own households. Field trips to landfills and disposal sites can help emphasize the benefits of and need for waste reduction.

General Public Education.

Informal or media based public awareness and education efforts may include: newspaper articles; public service announcements; displays at county-wide events such as festivals, rodeos, and the county fair; distribution of waste reduction brochures to business and households; printed messages on grocery and shopping bags.

While conducting household hazardous waste collection days in Wahkiakum County, it was discovered that newspaper advertisements and the distribution of flyers were the most effective means of publicizing the collection events. These advertising methods should also be effective for waste reduction and recycling education.

Education efforts targeted to the general public often focus on opportunities for waste reduction associated with buying durable goods, buying commodities in bulk, choosing products that are not excessively packaged, and selecting less hazardous household products.

Recommended durable goods include cloth diapers, metal flatware, razors with replaceable blades, and reusable cloth napkins, glass or plastic cups or mugs. While similar principles can be applied to appliances and other large items, it is often more difficult for the average consumer to judge the durability of such goods.

Buying consumer items like soaps, grains, nuts, pet food and many other items in bulk quantities or in larger sizes also may save consumers money while reducing waste. In some stores, customers can bring their own containers back to refill from bulk bins or barrels.

Finally, household buyers can be sensitized to the amount of materials used to package items and can be encouraged to make choices between similar products based on the amount of packaging. Seattle Solid Waste Utility estimates that selective household shopping can reduce the amounts of plastics and paper products in the residential waste by as much as 10-20% for households that practice waste reduction techniques. In Wahkiakum County, however, consumers have less opportunity to selectively shop than in a large city. This may change to some degree as consumers become aware of waste reduction potential and start asking at local markets for products that generate less waste.

Education-based waste reduction efforts can also target businesses or public agencies by offering information and technical assistance. Such efforts often start with informal or media-based efforts designed to highlight the benefits to specific businesses. For example, by implementing waste reduction programs, businesses and agencies can cut disposal and material costs, develop a better public image, and help preserve resources. These general promotional efforts can then by followed by distribution of brochures on waste reduction methods and possibly waste consultation.

A waste reduction audit may involve reviewing waste disposal and purchasing records, observing processes, further identifying waste streams and their sources, and documenting these findings. The final step of the consultation is to follow up with an economic and technical evaluation in order to choose the best options for implementation.

Businesses may reduce waste by installing equipment or processes that produce a smaller waste quantity per product, by soliciting waste reduction ideas from employees, establishing purchasing and office operating policies that identify waste reduction as a primary goal, and by evaluating waste reduction potential through a waste reduction consultation.

Home Yard Waste Composting

Home yard waste composting (backyard composting) is considered a waste reduction strategy since it effectively removes yard waste from the waste stream before it is collected. It has been estimated that over 22 percent of the residential waste stream is lawn and garden wastes. Home yard waste composting also has the advantages of low cost and citizen involvement in addition to reducing the level of yard waste in the waste stream.

Special Government Programs

To help convince the private sector and general public to voluntarily and conscientiously practice waste reduction and recycling, governments often implement waste reduction measures in their own offices. County and town offices could take internal action to reduce the amount of paper and other waste materials that are routinely discarded. For example, offices can be encouraged to routinely make double-sided rather than single-sided copies. In addition, the county could consider revising its procurement policies to encourage the purchase of more durable and/or reusable products. The county could also allow a five to ten percent cost differential to purchase products with recycled materials. This encourages the recyclables market.

Incentive/Disincentive Based Programs

An incentive-based program for waste reduction provides for financial and other incentives to reward behavior that reduces waste generation or disposal. Award programs can serve as incentives at a very low cost while also enhancing public awareness about the importance and benefits of waste reduction.

Disincentive-based programs can include bans or taxes on specific types of products, and product design or product labeling regulations. Because local markets are strongly affected by national and international forces, the effectiveness of local disincentive-based regulation is limited. Some cities and counties consider and adopt ordinances, such as product bans, which send a message about the importance of waste reduction.

Product bans most often target plastic products because they are difficult to recycle and tend to persist in the environment after disposal. Disposable diapers, non-recyclable packaging, and non-refillable beverage containers are also frequent targets of such legislation.

Variable garbage rates for residential and business customers can also be designed to provide financial incentives and disincentives aimed at increasing waste reduction. For example, charging for a second can provides a disincentive toward throwing away more waste. Also, mini-can rates provide an incentive for waste reduction. For certificated (franchised) haulers, these rate changes require the approval of the Washington Utilities and Transportation Commission (WUTC) and would be administered by the local waste collection companies. For cities that have their own waste collection systems, the variable rates can be instituted by the city itself without going through the WUTC. In some cases, however, the additional administrative effort required to track variable can rates may offset a portion of the advantages provided by the waste reduction achieved.

Waste Exchanges

Governments can sponsor or promote waste exchange by providing a clearinghouse of information for industry clients about potentially reusable waste materials. However, because there is little industry in Wahkiakum County, the success of or need for a waste exchange program within the county is limited. There are statewide waste exchanges based in Spokane and Seattle. Wahkiakum County could work to make businesses aware of these services and encourage them to participate.

Factors for Selecting Waste Reduction Programs

In determining which waste reduction options to pursue, several criteria should be considered. Because Wahkiakum County has a relatively small population and limited resources to implement solid waste programs, the following criteria were used for determining which waste reduction programs to pursue:

- Waste reduction programs that combine county and non-county resources should be given top consideration. Options that qualify under this criterion include: public awareness education, school curricula, awards and business education and technical assistance.

- Waste reduction programs should be effective at the local level and suitable for a rural community. Programs that qualify under this criterion include public awareness education and technical assistance, onsite composting, variable garbage can rates, awards, in-house County waste reduction, and business agency procurement standards. Product packaging bans, product or container deposits, product use standards or labeling requirements, tax incentives, durable goods

warranties, and waste exchanges are best implemented at the state or federal level, although local support of these types of policies can be effective.

- Waste reduction programs should be incentive rather than disincentive based. The county has concluded that education or incentive based programs should be implemented before disincentive-based programs such as product or packaging bans, product or container deposits, and product use/reuse standards.

RECYCLING GOALS AND PROGRAMS

Urban and Rural Designations within the Planning Area

The state Guidelines for the Development of Local Solid Waste Management Plans and Plan Revisions recognizes that solid waste management systems need to be based on site-specific conditions and must account for local preferences. Accordingly, solid waste management plans (SWMPS) must designate urban and rural areas within a planning area. These designations are then used to determine minimum levels of service for recycling programs.

The state guidelines establish which criteria are to be used in designating urban and rural areas.-These criteria are total population, population density, and any applicable land use or utility service plans.-Other criteria to be considered are anticipated population growth, the presence of other urban services, density of developed commercial and industrial properties, and geographic boundaries and transportation corridors.

The county determined that all of Wahkiakum County should be considered rural for the purpose of solid waste planning. The Best Management Practices Analysis published in 1988-89, suggests a threshold of 5000 or more households within a community for assigning an urban designation. "Washington State Solid Waste Management Plan: Issue Paper No. 5, Phase I, 1990," assumes that an urban area was any city with 25,000 or more inhabitants or counties with population densities of greater than 101 persons per square mile.

Using any of these criteria, Wahkiakum County would be considered rural, as would the town of Cathlamet. Wahkiakum County's population density is approximately 15 persons per square mile and its only incorporated town, Cathlamet, had 565 inhabitants as of 2000. Common sense bears out the rural nature of the county. The SWAC has confirmed a rural designation for the entire county.

Alternative Recycling Goals

There are three basic levels of recycling the county could strive for. The first is to meet the state goal of 50 percent waste reduction and recycling. At the other extreme is to take no further action and continue recycling at the current rate. The third alternative is to set a waste reduction and recycling goal somewhere between the first two alternatives.

To even approach a 50% recycling goal, curbside collection would be necessary. Because much of Wahkiakum County's waste is from residences, household or "curbside" collection of recyclables from residences could be highly effective at diverting recyclables from the waste stream, especially materials such as newspaper, aluminum, tin cans and glass containers. While curbside collection is often convenient and economical in urbanized areas, the need for special collection routes, equipment and facilities often make this option too expensive for rural areas. For example, in many Oregon rural counties, where waste collection companies are required to offer recycling to all residents, the cost of recycling has exceeded the waste collectors' revenues for the additional services, resulting in increased residential rates.

The Best Management Practices Analysis suggests that at least 5,000 households (pickups) in a jurisdiction may be necessary for curbside collection to be economically practical. Wahkiakum County has no such areas. Consequently, a goal of 50 percent recycling is not viable for Wahkiakum County.

The county recycles at a rate of approximately nine percent. In comparison, the statewide rate in 2012 was over 50%. There is much room for improvement in the county.

A 20% recycling goal could be difficult to meet without curbside collection.

RECYCLING PROGRAMS

This section discusses residential, commercial, and educational recycling programs and identifies the types of programs that would be appropriate or necessary to meet the county's recycling goals.

Residential Programs

For rural areas, the state guidelines recognize that curbside recycling may not be financially feasible. The guidelines, therefore, allow drop box/buy-back systems, but specify that these systems should be "convenient to the public."

Possible rural recycling programs listed in the state guidelines include:

- separate household collection of garbage and recyclables
- combined household collection of garbage and recyclables
- drop-box/buy-back centers
- mobile centers in addition to fixed centers
- Community service programs which collect recyclables.

The state guidelines also indicate that these alternatives should be evaluated against the following criteria:

- household collection or fixed recycling centers for every 5,000 to 10,000 people at convenient locations plus recycling centers at solid waste facilities
- consistency with designated materials
- consistency with local plans
- diversion potential maximized
- Comparable performance with existing programs.

The following discussion evaluates possible residential programs against these criteria. Other criteria, including public convenience, ease of implementation, and resource use, are also considered. Finally, the discussion recommends which residential recycling programs should be included with the drop-off recycling centers.

Drop-Off Recycling Centers

Drop-box/buy-back centers can work well in rural areas when properly supported with advertising and public information. A recycling program based on drop-box facilities could be capable of meeting a 20% recycling goal.

Nonetheless, the distance that must be traveled by rural residents to recycling collection centers can significantly affect participation rates. To ensure adequate participation, those centers should be open during normal working hours and be located in convenient locations.

State law requires recycling centers at all major solid waste facilities.

The county currently provides drop-off recycling at the KM Mountain Drop-Box Facility, ***as well as at Skamokawa Fire Hall, Puget Island Fire Hall, and the Wahkiakum High School.***

Community and Youth Group Recycling

A few community groups like the Lions Club of Wahkiakum County, currently recycle materials in their local areas to generate funds for their organizations. These groups have the advantage of volunteer labor which may allow marginally marketable materials to be effectively recycled. For the "Drop Station Recycling Alternative," these community groups could be encouraged through public recognition of their services. Also, school, elderly and other community groups such as boy scouts or girl scouts, could be encouraged to start and maintain local recycling programs through drop boxes and/or collection drives.

Mixed Waste Processing of Recyclables

Under this process, useful materials are recovered from a mixed waste streams. Mixed waste recovery facilities range in sophistication and cost. However, these systems require a throughput of wastes in excess of that available in Wahkiakum County. A minimum capacity facility is considered to be in the range of 200 tons per day with 400 tons per day preferred.

Composting Programs

Removing yard and garden waste is an important component of many county waste reduction recycling programs. The State guidelines state that there are potential markets for yard and garden waste in all areas of the state based on avoided cost. Specifically, markets are assumed to exist for yard waste as long as the cost of processing is lower than the cost of disposal, and the product can be put to a beneficial use. The following paragraphs discuss current and future options for composting in Wahkiakum County.

On-site Yard Waste Composting

Encouragement of on-site composting through public awareness and education efforts is discussed in the previous waste reduction section. Aggressive efforts to encourage on-site composting will be important to the success of meeting the 20 percent goal.

Centralized Yard Waste Composting

With approximately 12 percent of Wahkiakum County's waste stream consisting of a compostable yard and garden waste, centralized yard waste composting in localized population centers could significantly augment recycling rates in the county.

Small, community based, drop-off composting facilities could be operated seasonally to minimize costs and achieve a significant percent of yard waste recycling. A Department of Ecology grant program targeted for composting programs is available to help communities with this type of program.

Municipal Solid Waste (MSW) Composting

MSW composting is a method that bodyguards the organic fraction of the waste stream and produces a soil-like inert end product that may be used as a low grade fertilizer/soil amendment of ground cover. There are various technologies that are used to compost MSW, but they all require volumes of waste greater than the amounts produced in the county.

Food Waste Processing

Non-agricultural food wastes are estimated to comprise over 6% of Wahkiakum County's waste stream. These wastes can be processed as compost or used as an animal feed. These techniques are often used on farms. Therefore, a facility dedicated to food waste processing usually is not economical because of the relatively low volume of food wastes in the waste stream. In addition, reliable markets for food waste compost do not yet exist. In the future, the county may wish to evaluate whether on-site food composting should be added to on-site yard waste promotion programs.

Commercial Recycling Programs

State guidelines and RCW 70.95 do not require commercial recycling programs, but they do require monitoring of nonresidential waste streams where there is sufficient density to maintain such a program. Due to Wahkiakum County's low population (about ***3,978*** people) and extremely low population density, such a monitoring program is not recommended.

Some commercial recycling has historically occurred in the county, primarily collection of cardboard, bottles and cans. This effort is on a small scale and is often unscheduled. Commercial recycling could be

enhanced by information programs that encourage recycling of high-grade office and computer paper and cardboard. Such an effort would be sufficient to obtain 20% recycling.

Education Programs

For a rural county such as Wahkiakum, in-county waste reduction and recycling benefits can be substantially realized through a program of public education stressing the benefits of these management alternatives. Aggressive education should be included as a key component in any recycling system. This education can be provided in a variety of ways including:

- **Waste Reduction and Recycling Brochures and Other Publicity**. Many brochures on waste reduction and recycling are currently available from Ecology and other agencies at no cost. These brochures can be strategically located at places of public gatherings, mailed to county residents, or given out in the school curriculum series. A multi-media publicity campaign using the newspaper and other means will encourage recycling.

- **Public and School Presentations**. Service and community clubs and special interest groups often seek out guest speakers for subjects of community interest. This provides an excellent forum to encourage community support for the county's solid waste management system. Presentations at schools perhaps combined with school-wide events, to local chambers of commerce, at grade fairs or grange meetings, and at county fairs can encourage recycling in schools and in the homes. This program can be provided at little or no additional cost to the local agency. State and local agencies and community groups that are actively involved in waste reduction and recycling promotion could be called on to participate in these presentations.

National/World Observances.

Earth Day is celebrated each year on April 22nd. Communities the world over are involved in events such as concerts, earth fairs, teach-outs, etc., all of which educate and inform people of the many aspects of conservation. Earth Day programs could be used to educate citizens of the county about recycling and proper waste disposal.

America Recycles Day began in 1997 and is celebrated on November 15th. Educational Programs could be designed around this event to educate people to buy recycled products and to encourage recycling. Information about America Recycles Day can be found at www.americarecylesay.org.

RECOMMENDATIONS

Waste reduction and recycling are integral parts of any comprehensive solid waste management system. Benefits from these activities include cost savings for collection, transfer, and disposal; revenues from the sale of some recyclables; and environmental benefits from reduced dependence on disposal and more efficient use of environmental resources. The following programs are recommended for implementation.

- Wahkiakum County should continue to encourage and implement educational and public awareness programs aimed at informing and motivating the community to practice recycling and waste reduction techniques. The county should give first priority to media campaigns advertising, group presentations, and implementation of school curricula.

- The county should give second priority, in its public awareness and educational programs, to the acquisition and distribution of waste reduction brochures, development of local government and major industry model programs, and implementation of an office waste minimization program. Model programs should address purchasing and more day-to-day waste reduction practices.

- Businesses should be encouraged through brochures or waste consultations to consider evaluating their processes and policies that influence waste generation. Waste consultations can help

business identify concrete actions, such as requiring double-sided copying, that they can take to reduce the waste system.

- Wherever possible, waste reduction education efforts should be combined with education and public awareness efforts for recycling and vice versa.

- Government agencies should provide an example to the community in waste reduction methods by implementing an in-house waste reduction program.

- Wahkiakum County should continue its program to provide information brochures and other support for on-site yard waste composting. On-site food waste composting should also be promoted. The county should seek a local organization to build and sell home composting bins. The Wahkiakum High School woodshop class might be an ideal candidate to take on such a task.

- The county should consider implementing an award program to recognize individuals or organizations which have contributed to local waste reduction and/or recycling efforts.

- Commercial recycling, focusing on high-value items such as office paper, computer paper, and corrugated should be encouraged.

- The county should continue to provide recycling bins at its drop-box facility, ***and other locations convenient to the community.***

- Focus on on-site yard waste composting and study the opportunities to institute a peak-season community-based yard waste composting program.

- The county views disincentives as a last resort effort. Consequently, state legislation aimed at product bans, packaging or container regulation, tax surcharges, and disposal bans, would not be encouraged by the county.

- Grants and state sponsored education programs should be pursued to fund recycling and waste reduction measures.

DESIGNATION OF RECYCLABLE MATERIALS

To help design recycling programs that are tailored to individual communities, the state guidelines require that counties develop a list of designated recyclable materials. Under RCW 70.95, a material is considered recyclable if it yields a market price or has a beneficial end use.

The Guidelines for the Development of Local Solid Waste Management Plans and Plan Revisions, lists the following materials as having stable, statewide markets: newsprint, corrugated containers, high grade paper, tin cans, metals, aluminum cans, container glass, and refillable glass. Criteria for developing a list of recyclables for local conditions include:

1. Potential for significant waste stream diversion
2. State and local recycling goals
3. Local market conditions including market risk
4. Continuity in materials collected
5. Regional approach to recycling programs regarding education, processing and market development
6. New technologies and innovative program approaches

Materials that are identified as being recyclable on the basis of avoided cost include yard and garden waste (especially in the Northwest, Southwest and Puget Sound Waste Generation Areas) and white goods. Materials that may have market value in western Washington include PET and HDPE plastic bottles, plastic packaging/film, and mixed waste paper. Additional materials that counties may wish to consider designating include wood waste and land clearing debris, demolition waste, food waste, asphalt, sludge, tires, used oil, and batteries.

The three factors that most strongly influence these potential designations are the ease of diverting the material from the waste stream, the amount of the material in the waste stream, and markets market risk for each material. Thus, while the ease of diverting aluminum cans is high, they comprise less than 1% of Wahkiakum County's waste stream by weight. In addition, long haul distances and high transportation costs mean that higher grade paper products, such as white office paper and computer paper, are the most economic to recycle. For materials that are not high grade such as mixed waste paper, market distance and low product value at best will make recycling only marginally feasible. Finally, market risk refers to the volatility of prices and demand for a given product. For example, markets for paper are quite volatile, especially the markets for mixed waste paper.

To substantially increase the level of recycling in the county, increased collection of designated materials would have to occur and additional materials would have to be designated. Table 8-1 has a number of criteria to evaluate and designate recyclables for drop-station recycling. The table was developed by Klickitat County.

To achieve the 20 percent goal, yard waste programs would have to be particularly aggressive, and in the long run the county may wish to also consider food waste composting and efforts to encourage use of wood waste as hog fuel. There are now some studies being conducted on food waste composting. The county may wish to consider the findings of these studies and their applicability to Wahkiakum County at some time in the future.

Transportation costs may deter recycling of lower value materials. Nonetheless, to cushion against volatile prices, any recycling program should include a variety of materials. Initially, the recycling program should designate the following materials:

- newspaper
- cardboard
- aluminum cans
- mixed paper
- tin cans
- white goods/metals
- waste oil
- copper/brass
- glass (not considered economically viable from all locations in 2013)

However, as discussed previously, additional materials may need to be designated to approach a 20% recycling goal. Therefore, after the recycling program has been operating for a considerable period of success, the county should consider designating the following materials:

- yard waste (community peak season)
- plastic bottles and packaging (residential)

Since markets and technology change, the county needs a mechanism for adding or subtracting materials to the recyclables list. The Wahkiakum County Board of Commissioners can make the decision to change the list. Recommended changes should come from the county Public Works Director. If needed, the Board of Commissioners could ask the Wahkiakum County Solid Waste Advisory Committee for its recommendation.

PROGRAM EVALUATIONS

Waste Reduction Program Evaluation

With an aggressive information and education campaign, it is estimated that the county could reduce its total municipal waste stream by 3%. Highly successful on-site food and yard waste composting programs might reduce waste generation even further. Due to the costs and practical difficulties associated with measuring waste reduction, no formal evaluation is planned During the next plan update, the county will also compare waste disposal needs projected in this plan with actual waste delivered to in-county recycle transfer stations.

Recycling Program Evaluation

The quantitative success of the waste reduction and recycling program will be measured against a baseline study measuring the tonnage and composition of recyclables collected through the program. Similar studies will be conducted periodically to gauge the success of the program and to evaluate the need for adjustments.

More qualitative evaluation measures which may be employed include tracking the number and types of brochures distributed and number of requested waste reduction and recycling presentations and attendance at those presentations.

CHAPTER 8 – MODERATE RISK WASTE MANAGEMENT

INTRODUCTION

The Hazardous Waste Management Act, Chapter 70.105 RCW, requires each local government to prepare a local hazardous waste plan to manage "Moderate Risk Wastes" (MRW) as defined by RCW 70.105.010.

In the past, Wahkiakum County has had a combined plan with Cowlitz County, "The Cowlitz-Wahkiakum Moderate Risk Hazardous Waste Plan." The Wahkiakum County SWAC has decided to include their Moderate Risk Waste Management Plan as a chapter in the update of this Wahkiakum County Comprehensive Solid Waste Management Plan. It will be included with the overall plan and with each plan update. This plan meets the requirements outlined in the *Ecology Guidelines for Developing and Updating Local Hazardous Waste Plans* (https://fortress.wa.gov/ecy/publications/SummaryPages/1007006.html).

This plan provides local management options which will help households and businesses practice proper hazardous waste management and, thereby, reduce the amount of hazardous waste disposed of in solid waste landfills, waste water treatment systems and the environment. The plan encourages the reduction, recycling, treatment, and proper disposal of hazardous wastes. The primary goal of this plan is to reduce improper disposal of hazardous waste. The plan objectives are divided into three categories; household hazardous waste objectives, non-household objectives, and general objectives. The recommendations are divided into the same three categories as follows.

1. Household Program Recommendations

   - Implement a household hazardous waste education program.
   - Operate a mobile collection center.
   - Site and operate drop-off centers for certain targeted wastes in conjunction with Cowlitz County.

2. Business Program Recommendations

   Implement a non-household (small quantity hazardous waste generator) education program.

3. General Program Recommendations

   - Continue to examine the effectiveness of the existing programs and the need to implement contingent alternatives throughout the five year plan.
   - Evaluate the programs and update the plan in the fifth year for a twenty-year time span.
   - Continue to improve the enforcement of policies and regulations related to hazardous waste.

- Improve training programs for solid waste management employees.

CURRENT CONDITIONS

Moderate Risk Waste Inventory

1. Household Hazardous Waste (HHW)

Currently, Wahkiakum County residents can bring their HHW to a yearly collection event in Cathlamet. This collection event is operated by Cowlitz Co. as agreed to in the interlocal agreement between Cowlitz and Wahkiakum Counties. The data below shows the amount of HHW collected at the yearly HHW collection event over the last 5 years:

Year	HHW Collected	Participants	Pounds/Participant
2008	2,180 pounds	36	60.5
2009	2,880 pounds	39	73.8
2010	2,040 pounds	26	78.4
2011	2,500 pounds	35	71.4
2012	2,320 pounds	30	77.3

The pounds per participant number are consistent with statewide data for the same measurement.

The data below shows the amount of used oil collected at the used oil collection site over the last 5 years:

Year	Used Oil Collected	Pounds/Capita
2008	12,388 pounds	3.0
2009	11,740 pounds	2.9
2010	14,689 pounds	3.5
2011	12,425 pounds	3.1
2012	11,160 pounds	2.8

Households can bring covered electronic products to Stanley's Sanitary Service in Cathlamet, a service provider to the E-Cycle Washington program.

Conditionally Exempt Small-Quantity Generator Waste (CESQG)

There is no current waste collection program for CESQG's. If there are inquiries from businesses on how to properly dispose of their business waste, the county refers businesses to private hazardous waste collection companies.

Hazardous Waste Inventory

1. Dangerous Waste Generators

   As of June 2013, there was one CESQG (Brusco Tug & Barge Inc. in Cathlamet) with an EPA ID# registered with the Department of Ecology. There may be more CESQG's in the County, but Ecology can only track those with EPA ID#'s.

2. Remedial Action Sites

   Remedial action sites are listed in Ecology's Toxic Clean-up Program as "*needing investigation or undergoing hazardous waste clean-up activity.*" As of August 2013, there are 80 such sites in Wahkiakum County. For more information on current remedial action sites, go to Washington State Department of Ecology's facility site database at http://www.ecy.wa.gov/fs/.

3. Transporters

   Currently, businesses can call one of the regional or national companies to arrange for pick-up of their hazardous wastes in Wahkiakum County. For additional information on transporters, contact Washington State Department of Ecology. Some information can also be found at the following Ecology website:
   http://apps.ecy.wa.gov/hwsd/default.htm

4. Facilities

   There are no permitted hazardous waste disposal facilities in Wahkiakum County. Several sites in Washington State treat hazardous waste into a non-hazardous waste, store for a period of time, or ultimately dispose the waste. The table below shows a list of the Treatment, Storage, and Disposal sites in Washington.

Treatment, Storage, and Disposal Sites	City	County
Emerald Kalama Chemical LLC	Kalama	Cowlitz
Boeing Company Auburn	Auburn	King
ConocoPhillips Co Ferndale Refinery	Ferndale	Whatcom
US Navy PSNS & IMF	Bremerton	Kitsap
Kronos Micronutrients LP	Moxee	Yakima
Shell OPUS Puget Sound Refinery	Anacortes	Skagit
US Dept of Energy Hanford Facility	Richland	Benton
Perma Fix Northwest Richland Inc	Richland	Benton
Intalco Aluminum Corp Ferndale	Ferndale	Whatcom
Burlington Environmental (PSC) LLC Kent	Kent	King
Emerald Services Inc Alexander Ave	Tacoma	Pierce
Emerald Services Inc Airport Way	Seattle	King
Burlington Environmental LLC Tacoma	Tacoma	Pierce
AREVA NP Inc	Richland	Benton
SSA Tacoma, Inc	Tacoma	Pierce
US DOE BPA Ross Complex	Vancouver	Clark
US NAVY KEYPORT OU1	Keyport	Kitsap

5. Zone Designations

The Washington State Hazardous Waste Management Act (HWMA) of 1985 required local governments to establish land use zones or geographic areas for siting "designated zone facilities," such as hazardous waste recycling, storage and treatment facilities. These local zoning requirements were consistent with the State's hazardous waste siting criteria and allow hazardous waste processing or handling where hazardous substances, such as raw materials, are processed or handled.

According to Ecology records, the Town of Cathlamet received approval for land use zones and Wahkiakum County was conditionally approved in 1992.

LEGAL AUTHORITY FOR THE PROGRAM

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

Federal Law

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

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

Requirements for the collection and disposal of MRW are set forth in WAC 173-350 Solid Waste Handling Standards. This regulation specified the minimum functional standards for the design and operation of MRW storage and processing facilities.

Federal Regulations

This section describes key provisions of the federal laws address hazardous materials and wastes.

Resource Conservation and Recovery Act

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

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

Hazardous waste generated or stored in quantities above the limits specified by EPA or state rules must be tracked by manifest from the point of generation to the ultimate disposal site, better known as "cradle-to-grave" tracking. Business and institutional generators producing and storing hazardous wastes below the specified limits are not fully regulated provided that they comply with rules regarding the designation, management and reporting of wastes. HHW is categorically exempt from RCRA regulation.

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

Universal Waste Rule

In 1995, the EPA adopted the Universal Waste Rule, 40 CFR Part 273, to allow generators of certain hazardous wastes to use alternative regulatory requirements for those wastes in place of the more complex hazardous waste requirements. Wastes covered by the Universal Waste Rule (UWR) are typically generated in small quantities by numerous businesses. They include batteries, mercury bearing

thermostats and fluorescent lamps. The UWR is intended to promote recycling as well as proper disposal, and they ease some of the regulatory requirements for storing, collecting, and transporting universal wastes.

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

Comprehensive Environmental Response, Compensation, and Liability Act

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

Model Toxics Control Act

The Model Toxics Control Act, RCW 70.105D, provides for the identification and cleanup of

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

Used Oil Recycling Act

The 1991 Used Oil Recycling Act, Chapter 70.95I RCW, required each local hazardous waste

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

Electronic Product Recycling Act

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

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

Financing of the Program

The cost of the annual household hazardous waste mobile collection event is expected to be supported by Cowlitz County into the future. Costs for education and outreach to households and businesses will be included in grant requests from the Department of Ecology, supported by a local match from Wahkiakum County.

Governance Structure

Day to day administration of the program is managed by the Wahkiakum County Public Works Department, however the household hazardous waste program would continue to be managed by Cowlitz County Public Works. Both Public Works Departments report to their Boards of County Commissioners for policy and budget authority. In Wahkiakum County, the Solid Waste Advisory Committee provides policy guidance and input for governance to the Public Works Department and offers their views to the County Commissioners.

Program Philosophy

Overall program philosophy is to identify the community needs for moderate risk waste management, and then address those needs as cost-effectively as possible, by cooperating and participating with the much larger programs of neighboring Cowlitz County.

PROGRAM SERVICES

1. HHW Collection

The county will renew an inter-local agreement with Cowlitz Co. to offer and operate a once a year collection event for Wahkiakum Co. residents.

2. Household and Public Education

Wahkiakum County will update its website with information regarding the date of the next HHW collection event once its is known. The website will also link to other information beneficial to households, such as Ecology's Toxic Free Tips website: http://www.ecy.wa.gov/toxicfreetips/index.html

3. Small business Technical Assistance

Wahkiakum County will update its website with information or links to other websites beneficial to businesses in managing their hazardous waste. One such website could be Ecology's managing dangerous waste website: http://www.ecy.wa.gov/programs/hwtr/managewaste.html

4. Small Business Collection Assistance

Wahkiakum County refers businesses to private hazardous waste collection companies.

5. Enforcement

The Wahkiakum County Health Department is responsible for the enforcement of Solid Waste laws and regulations. If a citizen/county complaint surfaces Public Works is notified and received a complaint which then goes to a 'complaint record system' where it is tracked and handled. Depending on the nature of the complaint, the Wahkiakum County Health Department may become involved. If the complaint pertains to the KM ***Drop Box Facility***, then the Department of Public Works typically handles the issue. In extreme cases, the County Sheriff is called in.

6. Used Oil Education and Collection

Wahkiakum County will continue to provide a used oil collection tank for do-it-yourself oil changers in Cathlamet.

IMPLEMENTATION SECTION

Five-Year Implementation Plan

During 2014 and 2015, Wahkiakum County will continue the cooperative arrangement with Cowlitz County for the annual household hazardous waste event. In addition, the Public Works web site will be updated with links to information regarding household and Public Education, and Small Business Technical Assistance.

During 2016 through 2018, Wahkiakum County will continue the cooperative arrangement with Cowlitz County for the household hazardous waste event. In addition, Public Works will seek out grant funds to enable additional community education and outreach regarding households and small businesses.

Objectives

The objectives of this five year implementation plan include helping households and business in Wahkiakum County to identify moderate risk hazardous waste, and to provide options for proper disposal.

ANNUAL BUDGETS

Costs for the program and efforts will be identified in the respective Solid Waste budgets of Wahkiakum and Cowlitz Counties.

PROCESS FOR UPDATING THE PLAN

The Moderate Risk Waste Management Plan will be updated in conjunction with the Comprehensive Solid Waste Management Plan, unless there is a significant change in moderate risk generation in Wahkiakum County that requires it be addressed earlier.

CHAPTER 9

RECOMMENDATIONS SUMMARY, IMPLEMENTATION AND ADMINISTRATION

INTRODUCTION

This chapter summarizes the recommendations made in earlier chapters; contains a six-year capital facilities plan; and discusses administration of the plan and municipal solid waste system.

SUMMARY OF MUNICIPAL SOLID WASTE SYSTEM PROBLEMS

The following is a summary of the major solid waste system problems identified by this plan.

Chapter 3: Future Solid Waste Disposal Sites

Future construction of a solid waste incinerator may be consideration in the next 20 years. Future increases in solid waste disposal costs coupled with the need to generate power to stem increasing costs may make the construction of a solid waste incinerator economically attractive for the county. ***There has been no further discussion of this option in the current plan update.***

Chapter 4: Solid Waste Collection

It is believed there are still some households that use the county solid waste system little, if at all. Some households bury their solid waste on their property and/or burn ***yard waste***. Illegal disposal ***of solid waste including illegal burning and dumping*** continues to be an ongoing problem in Wahkiakum County.

Solid Waste enforcement efforts aimed toward illegal activity will continue to be necessary in the future.

Chapter 6: Municipal Waste Disposal

The county must have a place for final disposal of their municipal waste and disposal options in case the current disposal method is no longer available.

Chapter 7: Waste Reduction and Recycling

Whichever approach the county chooses to take toward recycling, the public must be encouraged to increase and maintain high levels of recycling through an ongoing educational campaign. A convenient recycling program will not be effective unless persons are convinced of its benefits and know how to use it. Conversely, education will not be effective unless there is a convenient means to recycle.

There are many brochures, pamphlets, and other multi-media approaches to recycling that can be adapted by Wahkiakum County. An effort needs to be made to select information that is most relevant to rural recycling, and to seek permission to adapt and distribute materials countywide.

Wahkiakum County does not have any television or radio stations. The one local newspaper is the Wahkiakum County Eagle. Currently, few articles involving recycling education are published in the paper.

Wahkiakum County recycles at a rate much lower than the total Western Washington Waste Generation Area. Consequently, it appears Wahkiakum County has substantial opportunity to improve its recycling rate over its current rates.

A major need in Wahkiakum County is to plan recycling programs and facilities that are convenient to use; and are designed to overcome some of the limitations created by having a sparsely populated county.

A major factor in evaluating any recycling effort is the available market for recycled materials. If the market is very distant and the price is low, there will be little market-driven incentive to recycle. Conversely, if the market is close and prices are high, market incentives may be able to support a strong, private-sector recycling system.

The low population density within Wahkiakum County means that the cost of transportation will be relatively high. High transportation costs will be incurred in delivering recyclables to central locations within the county and in delivering those recyclable materials to metropolitan markets in Seattle or Portland.

PLAN RECOMMENDATIONS

Following are the recommendations to alleviate the problems identified above.

Chapter 4: Solid Waste Collection

1. To encourage waste reduction and recycling, collection companies should continue to charge variable can rates.

2. Mandatory collection should not be implemented at this time. The Town of Cathlamet ***may wish to*** consider mandatory solid waste collection during the span of this plan.

Chapter 5: Drop-Box Facility

1. The county should subsidize no more than ***20*** percent of the cost for solid waste operations for county residents and/or property owners.

Chapter 6: Municipal Waste Disposal

1. Continue disposing municipal waste at the Cowlitz County landfill ***or Headquarters site or*** the Long Beach transfer station.

2. If, in the future, Cowlitz County does not allow Wahkiakum County use of their landfill, municipal waste should be sent to the Long Beach transfer station until a comprehensive analysis of alternatives can be completed.

Chapter 7: Waste Reduction and Recycling

Waste reduction and recycling are integral parts of any comprehensive solid waste management system. Benefits from these activities include cost savings for collection, transfer, and disposal; revenues from the sale of some recyclables; and environmental benefits from reduced dependence on disposal and more efficient use of environmental resources. The following programs are recommended for implementation.

- Wahkiakum County should ***renew efforts*** to encourage and implement educational and public awareness programs aimed at informing and motivating the community to practice recycling and waste reduction techniques. The county should give first priority to media campaigns, advertising, group presentations, and implementation of school curricula and should encourage programs focused around America Recycles Day and Earth Day.

- The county should give second priority, in its public awareness and educational programs, to the acquisition and distribution of waste reduction brochures, development of local government and major industry model programs, and implementation of an office waste minimization program. Model programs should address purchasing and more day-to-day waste reduction practices as well as product stewardship.

- Businesses should be encouraged through brochures or waste consultations to consider evaluating their processes and policies that influence waste generation. Waste consultations can help business identify concrete actions, such as double-sided copying that can help to reduce the amount of waste being generated.

- Wherever possible, waste reduction education efforts should be combined with education and public awareness efforts for recycling and vice versa.

- The county should actively support state policies and legislation that provide incentives through variable collection rates, and product labeling.

- Government agencies should provide an example to the community in waste reduction methods by implementing an in-house waste reduction program.

- Wahkiakum County should continue its program to provide information brochures and other support for on-site yard waste composting. On-site food waste composting should also be promoted. The county should seek a local organization to build and sell home composting bins and worm bins. The Wahkiakum High School woodshop class may be interested in taking on such a task.

- The county should implement an award program to recognize individuals or organizations that have contributed to local waste reduction and/or recycling efforts.

- Commercial recycling should be encouraged.

- The county should continue to provide recycling bins at its drop-box facility

- The county should encourage on-site yard waste composting and look for opportunities to institute a peak-season community-based yard waste composting program.

- The county views disincentives as a last resort effort. Consequently, state legislation aimed at product bans, packaging or container regulation, tax surcharges, and disposal bans would not be encouraged by the county.

- Grants and state sponsored education programs should be pursued to fund recycling and waste reduction measures.

ESTIMATED COST FOR IMPLEMENTING RECOMMENDATIONS

Cost Estimates and Implementation Schedule

Table 9-1 summarizes estimated capital and annual operating costs for recommended programs. The household and business education and technical assistance programs, drop-off centers, as well as the effort to improve enforcement will be in place during the five-year planning period. The plan update process will occur in the fifth year.

Table 9-1

Implementation Action Costs

2013 - 2017(Dollars)

	Year					
Project	2012	***2013***	***2014***	***2015***	***2016***	***2017***

Waste Reduction, Recycling Education, ***Web site Updates***	0	***750***	***4,500***	***3,750***	***3,000***	***3,000***
Operation of four drop-off recycling centers (including hauling).	***40,000***	***47,000***	***49,000***	***51,000***	***53,000***	***55,000***
Develop program to build and distribute home composting bins	***0***	***0***	***1,000***	***1,000***	***1,000***	***1,000***
Implement Solid Waste Enforcement Program with Ecology Grant	***19,285***	***19,285***	***16,644***	***16,644***	***16,644***	***16,644***

Operating costs for the recycling centers will be for publicity, for materials hauling. The operating costs may be lower depending on the amount of revenue generated from the sale of the recycled materials. ***Health and Human Services proposes to update their web site pertaining to solid waste ordinances and enforcement.***

Health and Human Services also proposes the development of a junk vehicle ordinance. The County Commissioners agreed earlier in 2013 to hold public meetings to assess public sentiment on this matter. Health and Human Services estimates grant support in the amount $6,000 over the 2013-2015 biennium would be needed for development of this ordinance.

The program to distribute home composting bins will have some initial costs for material, training and publicity. Contained in Table 8-1 is the estimated cost to implement this plan for the first six years. Funds for implementation will come from the county's general fund, and state grant money (Coordinated Prevention Grants).

Beyond the time frame given in Table 8-1 to the year 2020, the county expects to spend $3,000 per year on waste reduction and recycling education and $60,000 per year to operate the recycling drop-off centers.

Drop-Box Facility Expenses

In addition to the above expenses, the county will still have the operating and maintenance expenses for the KM Mountain Drop-Box Facility. For 2000, operating costs were about $69,231.43 to dispose of 590 tons or about $117.40 per ton. In 2004, the county disposed of 515.68 tons, and this resulted in a total operating cost of $34,727.00.

In 2006 the county disposed of 520.83 tons and resulted in an operating cost of $43,789.00. ***As projected in 2007, for the*** next six years and beyond, the per ton operating costs ***were*** expected to increase at the rate of inflation. For the purpose of this plan it is assumed the inflation rate will be four percent (4%). Of course, there are many variables that can affect the cost of disposal. Fuel prices can affect transportation costs. New regulations can affect tipping fees. ***The new Headquarters landfill in Cowlitz County is expected to have higher operational cost and tipping fees.*** Certainly, the county does not expect per ton operating costs to go down.

Table 9-2 below shows the expected cost per ton from the 2007 update, estimated tonnage to be disposed, and total operating costs for the drop-box facility for the year 2007 through 2010.

Table 9-2

Estimated and Actual Tonnages, Disposal Cost Per Ton and

Total Operating Costs for KM Mountain Drop-box Facility

for 2007-2012 (Actual in italics)

	Cost Per Ton in $	Expected Tonnage	Total Operating Costs
2007	90	500	45,000
2008	98	495	46,000
2009	108	490	48,000
2010	120	490	49,000
2011	***192***	***220***	***42,242***
2012	***200***	***202***	***40,446***

Source: Wahkiakum County Public Works Department

While the per ton cost of disposal was expected to go up in 2007, the amount of waste disposed at the facility was expected to go down. The decrease is expected for the following reasons:

- Pacific County or other out-of-county residents are no longer allowed to dispose at the drop-box facility.
- Starting in 2005, the tipping fees were increased for Wahkiakum County residents. This plan recommends that at least 80 percent of drop-box facility costs should be recovered through tipping fees. As tipping fees increase, it is expected more persons will subscribe to a waste pick-up service.
- The county will continue its waste reduction and recycling education program. As a result of this program, it is hoped the amount of waste being disposed will decrease.

Beyond the time frame given in Table 9-1 to the year 2021, the county expects the per ton cost of disposal, on average, will continue to rise. Meanwhile, the amount of waste disposed at the KM Mountain Drop-Box Facility will vary between ***200 to 500 tons***, depending on population growth in Wahkiakum County, ***and how many residents opt for curbside disposal.***

As there was $36,142 in income for the year 2011 at the K-M Drop Box Facility, this amount resulted in net operating costs for Wahkiakum County of $6,100.00 or approximately $28 per ton supplementation of operational cost from County current expense funds for the $140/ton rate. In 2012 there was $32,511.60 in income from K-M Solid Waste receipts. This resulted in a need to supplement K-M operations costs in the amount $7,934 for 2012, or approximately $39 per ton at the $140/ton rate.

Recommended Agency Responsibilities

It is recommended that the Wahkiakum County Public Works Department serve as the lead agency responsible for coordinating and overseeing implementation of the plan. County personnel will be assisted by the town of Cathlamet and other local agencies for education and technical assistance programs.

Wahkiakum County will have the authority to delegate, through inter-local agreements or contracts, the implementation of any of the recommended programs. Programs could be implemented through a

contract with another county (e.g., Cowlitz County or Pacific County), Cowlitz-Wahkiakum Council of Governments, other public agencies or a private contractor.

Future updates of the plan, as well as periodic evaluation of its effectiveness will be the responsibility of the Wahkiakum County Public Works Department and the Solid Waste Advisory Committee.

PLAN AMENDMENTS

Amendments to the plan may be required before the next update. This section discusses when amendments will be needed, who may apply, who approves the amendments, and the amendment process.

New methods and technologies are constantly being developed to manage waste streams more efficiently. Incorporating an amendment process will allow the region to take advantage of successful new programs that were not evident when the plan was written.

All of the programs recommended in the plan are based upon the six statewide hazardous waste management priorities: waste reduction; waste recycling; physical, chemical, and biological treatment; incineration; solidification/stabilization treatment; and landfill. Proposed programs that meet these qualifications will not necessarily require an amendment. However, an amendment will be required if a proposal meets one of the following criteria:

1. A major change or substitution of any specific program outlined in the plan that is contrary to the plan goals.

2. Any addition, change, or substitution of program(s) that significantly increases participating local jurisdictions funding responsibility and/or the total local government funding share for program implementation.

The Town of Cathlamet, the Director of Public Works or a majority of the Solid Waste Advisory Committee can request that the plan be amended. The Board of County Commissioners (BOCC) will then decide if the request should be considered. However, amendment requests by the Town of Cathlamet that have a direct and unique effect on solid waste management in the town must be considered.

When the board decides to open the plan for amendment, the proposal will be returned to the Solid Waste Advisory Committees for in depth analysis, review and recommendation. During this review, Ecology

will be consulted. Once a recommendation is made, Ecology will be asked to make a preliminary determination on whether the proposed amendment is consistent with state regulations.

The results of SWAC and Ecology review will then be forwarded to the Board of County Commissioners. They may accept, modify, or reject the recommendation. If the BOCC approves the recommendation, the proposed amendment will be forwarded to the town of Cathlamet with a recommendation to adopt. It will also be sent to Ecology for a final determination that the amendment is consistent with state regulations.

SYSTEM NEEDS ASSESSMENT

- Six-year and 20-year projections.
- Recycling efforts should be increased along with citizen's education about reducing solid waste.
- Fees for the drop box facility should cover the total costs to operate the facility.