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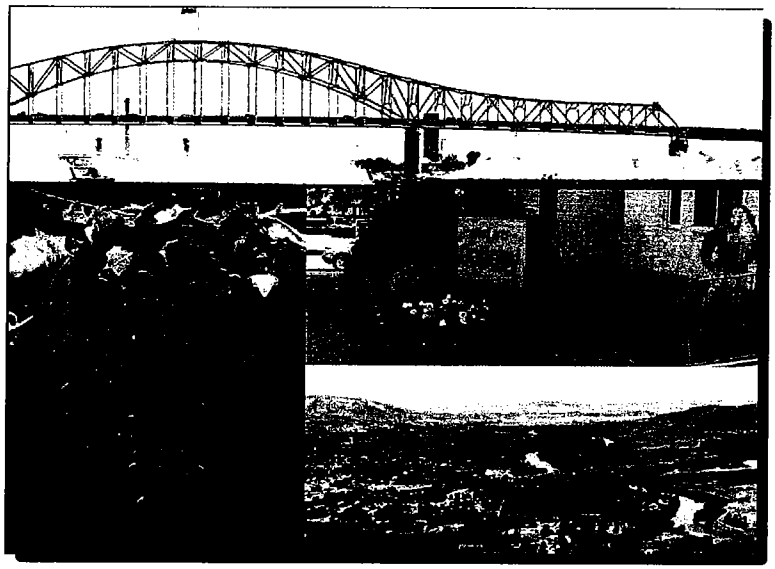
ORIGINAL

Preliminary Draft Plan

2006 Solid Waste Management Plan Update



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Chapter 1

Introduction

1.1 INTRODUCTION

The 2006 Benton County Comprehensive Solid Waste Management Plan Update (2006 Plan) provides background and guidance for a long-term approach to solid waste management in the region. The 2006 Plan updates the 1994 Benton and Franklin Counties Comprehensive Solid Waste Management Plan and has been prepared in accordance with The Solid Waste Management - Reduction and Recycling Act, Chapter 70.95 of the Revised Code of Washington (Ch 70.95 RCW). The revision was initiated with the goal of developing a plan exclusive of Franklin County, as both jurisdictions mutually agreed upon separation on a regional basis with cooperation and coordination on issues that affect both entities. The 2006 Plan was developed as a joint effort of Benton County and the cities of Kennewick, Richland, West Richland, Benton City, and Prosser. It is intended to provide citizens and decision makers in Benton County with a guide to implement, monitor, and evaluate future solid waste activities in the planning area for a 20-year period. The recommendations for the 2006 Plan not only guide local decision makers, but substantiate the need for local funds and state grants to underwrite solid waste projects.

The format of the 2006 Plan follows the recommendations outlined in the Department of Ecology (Ecology) Guidelines for the Development of Local Solid Waste Management Plans and Plan Revisions (December 1999). The Plan is organized as follows:

- Chapter 1 Introduction and Background of the Planning Area
- Chapter 2 Waste Reduction, Recycling, and Organics
- Chapter 3 Waste Generation
- Chapter 4 Collection Systems
- Chapter 5 Transfer and Disposal
- Chapter 6 Special Wastes and Moderate Risk Wastes
- Chapter 7 Administration and Enforcement
- Chapter 8 Implementation

1.2 PLAN GOALS AND OBJECTIVES

The intent of this plan is to establish the foundation for the proper management of solid waste in Benton County. This plan update incorporates the following goals and objectives:

GOAL #1: Emphasize public outreach and educational programs.

Objectives:

- Seek supplemental funding sources.
- Review the Solid Waste Management Plan every 5 years.

GOAL #2: Continue developing solid waste programs and projects that promote and maintain a high level of public health and safety which protects the human and natural environment of Benton County.

Objectives:

- Encourage development of sustainable waste management technologies.
- Be consistent with all existing resource, land use, and waste management plans.

GOAL #3: Manage solid wastes in a manner that promotes, in order of priority: waste reduction; and recycling, with source separation of recyclables as the preferred method.

Objectives:

- Work towards reaching a diversion rate of 50% by 2020.
- Emphasize programs for commercial waste diversion.
- Establish consistent methodologies to measure the baseline and future progress in achieving waste diversion.
- Obtain accurate data on waste diversion activities.

GOAL #4: Encourage and expand coordination and communication regarding solid waste issues among all jurisdictions, agencies, and private firms in Benton County.

Objectives:

- Encourage consistent policies across jurisdictions.
- Encourage public involvement in the planning and implementation process.
- Emphasize local responsibility for solving solid waste management issues.

GOAL #5: Provide for efficient collection, transfer, and disposal of MSW and recyclables.

Objectives:

- Ensure access to collection or drop-off services for residences, businesses, and industry.
- Locate recycling and solid waste transfer and disposal facilities to optimize service levels and transportation efficiencies.
- Ensure adequate disposal capacity.

GOAL #6: Establish guidelines and strategies for management of specific waste streams.

Objectives:

- Develop a plan to address management of disaster debris.
- Develop Best Management Practices for agricultural waste reuse and recycling.
- Continue and expand the use of litter work crews.

1.3 PLANNING AUTHORITIES

Solid Waste Advisory Committee

According to Chapter 70.95 RCW, each county shall establish a local solid waste advisory committee (SWAC) to assist in the development of programs and policies concerning solid waste handling and disposal, and to review and comment upon proposed rules, policies, or ordinances prior to their adoption. Two primary responsibilities of the SWAC are to advise on 2006 Plan development and to assist in the plan adoption process. This Plan Update was prepared under the direction and guidance of the Benton County Solid Waste Planning Committee and the SWAC. The SWAC has participated in the 2006 Plan development by reviewing draft reports, providing input and comment on all issues covered by the 2006 Plan, acting as a liaison to their constituencies, and assisting in public involvement. The committees will also review the complete draft and final Plans, and will be asked to recommend the 2006 Plan for adoption by the county and municipalities. After the 2006 Plan is adopted, the SWAC will routinely evaluate implementation of recommended programs, and will help to promote waste reduction and recycling throughout the region. SWAC members will also participate in amending the 2006 Plan, if necessary.

Role of Local Governments

The cities of Benton County have chosen to fulfill their solid waste management planning responsibilities by participating with the county in preparing a joint city-county plan for solid waste management.

The 2006 Plan has been developed with Benton County as the lead agency with participation and corporation defined in an inter-local agreement between the County and the cities of Richland, Kennewick, Prosser, West Richland and Benton City, with only the Hanford area excluded.

1.4 SOLID WASTE PLANNING HISTORY IN BENTON COUNTY

Solid waste planning began in Benton County in 1970. A discussion of two previous plans follows. However, this 2006 Plan is the most recent plan and replaces all previous plans.

1977 Comprehensive Solid Waste Management Plan

Benton and Franklin Counties developed the first two phases of a solid waste management plan in 1970. Phase 1 and phase 2 studies addressed residential, industrial, and agricultural solid waste. The 1977 Benton-Franklin Regional Solid Waste Management Plan and Program replaced the earlier two phases of study and included planning for potential resource recovery programs. The 1977 Plan was based on general objectives and recommendations.

1994 Benton-Franklin Counties Comprehensive Solid Waste Plan

The 1994 Plan was developed in conjunction with Benton and Franklin counties, their respective cities and the SWAC for the Benton Franklin Regional Council. The elements found in the plan are listed below.

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

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

- A program for the orderly development of solid waste handling facilities in a manner consistent with the plans for all of Benton and Franklin Counties that:

  - Meets the MFS for solid waste handling adopted by the Department of Ecology and all laws and regulations relating to air and water pollution, fire prevention, flood control, and protection of public health.

  - Takes into account the comprehensive land use plan of local jurisdictions.

  - Contains a 6-year construction and capital acquisition program for solid waste handling facilities.

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

- A program for surveillance and control.

- A current inventory and description of solid waste collection needs and operations within each jurisdiction included in the Plan that includes:

  - Any franchise for solid waste collection granted by the Utilities and Transportation Commission including the name of the franchise holder, the business address, and the service area covered.

  - Any city solid waste operation within Benton and Franklin Counties and the boundaries of the operation.

  - The population density of each area serviced by a city or franchise operation.

  - The projected solid waste collection needs for the respective jurisdictions for the next 6 years.

- The waste reduction and recycling element includes:

  - Waste reduction strategies.

  - Source separation strategies, including: (1) programs for collecting recyclables in urban and rural areas, (2) programs to monitor the collection of source separated

waste at nonresidential sites, (3) programs to collect yard waste, and (4) programs to educate and promote the concepts of waste reduction and recycling.

- Recycling strategies, including: (1) a description of markets for recyclables, (2) a review of waste generation trends, (3) a description of waste composition, (4) a discussion of existing programs and any additional programs needed, and (5) an implementation schedule for the designation of specific materials to be collected and for the provision of recycling collection services.

- Other information that the counties or cities submitting the plan determine is necessary.

- An assessment of the plan's impact on the cost of solid waste collection.

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

1.5 RELATIONSHIP TO OTHER PLANS

The solid waste management plan must be viewed in the context of the overall planning process within all jurisdictions. As such, it must function in conjunction with various other plans, planning policy documents, and studies which deal with related matters. Included among these are the County Comprehensive Plans, Zoning Codes and Shoreline Management Master Plans and Benton and Franklin Counties Moderate Risk Waste Management Plan.

The planning guidelines require that the solid waste management plan reference all comprehensive land use plans for all participating jurisdictions to ensure that the solid waste management plan is consistent with policies set forth in the other documents. These plans include the Benton County 2006 Growth Management Act Comprehensive Plan Review and Update and comprehensive plans for various cities.

Benton County's Comprehensive Plan is the official statement adopted by the Benton County Board of Commissioners (Board) setting forth goals and policies to protect the health, welfare, safety and quality of life of Benton County's residents. The fundamental purpose of the Plan is to manage growth and land use in order to sustain and enhance the quality of life for county residents, as that quality is defined by the residents themselves via the public process. The Plan expresses a long-range vision of how citizens want their rural community to look and function in the future. The plan helps to focus, coordinate, and direct the many diverse activities of County departments by providing a comprehensive and common vision.

The County is required to update the Comprehensive Plan every 6 years, with the most recent update due in December 2006. The County is in the process of completing the 2006 update. The cities of Kennewick and Prosser have completed their 2006 Comprehensive Plan updates.

Shoreline Management Plans

Shoreline Management Plans establish policies and regulations for development along shorelines. Shorelines are defined as all waters of the state, including reservoirs, floodplains and their associated wetlands. Portions of rivers having a mean annual flow of less than 20 cubic feet per second, and lakes less than 20 acres in size, are excluded from the regulations.

While the area is recognized as arid and semi-arid there are a number of hydrological features meeting the definitions for protection under the Washington Shoreline Management Act of 1972. Benton County contains Mound Pond and Yellepit Pond. The shorelines of the Columbia and Yakima Rivers are also regulated by the Shoreline Management Act.

The Benton County Shoreline Management Master Plan prohibits development of sanitary landfills along shorelines.

Benton and Franklin Counties Moderate Risk Waste Management Plan

The Hazardous Waste Management Act calls for the implementation of a local moderate risk waste management plan for each county and municipality in Washington State by December 1991. The Benton and Franklin Counties Moderate Risk Waste Management Plan was adopted by Benton and Franklin Counties and each of the cities and towns within the counties. A description of the Moderate Risk Waste Management Plan and its new relationship to this 2006 Plan is included in Chapter 6.

1.6 REGULATORY REALTIONSHIPS

In preparing and implementing solid waste management plans, it is important to identify the effect of other regulatory requirements on solid waste issues. An individual-medium approach can result in the transfer of pollutants to other media, rather than actual removal of pollutants from the environment or reduction in toxicity. For example, stringent limits in wastewater discharges have resulted in the generation of increased quantities of wastewater residuals, which sometimes contain the very pollutants originally intended to be controlled. Similarly, remediation of groundwater contaminated with volatile and semi-volatile organics can lead to increased emissions of volatile organic compounds into the air depending on the treatment technology employed. In the case of solid waste practices in Washington, in the past, uncontrolled burning of garbage was a common practice both on an individual basis and at unlined dumps. This caused cross contamination of air, water, and soils.

Since the early 1970's the federal clean air and clean water acts have been implemented that called for reduction of pollution of the air and water. After more than three decades, great progress has been made in compliance with these Acts, and the effort continues. One of the results of regulatory compliance has been a shift in burden of air and water pollution management to solid waste management. Control of water pollution has essentially eliminated the dumping of effluent into waterways, and replaced this with solid waste handling methods, such as land application or composting of biosolids. Similarly, electronic precipitators and baghouses have removed industrial air pollutants from process air streams, and created a solid waste in the form of ash that requires

disposal. Another major regulatory effort is control of toxic and hazardous contaminates and pollutants. Collection and accumulation of materials containing these pollutants has also increased the needed for solid waste disposal for these waste streams.

The State policies and programs that affect, or are affected by solid waste planning issues are discussed in more detail below:

Air Quality Policies and Programs

The Benton Clean Air Authority (BCAA) has principal jurisdiction over air quality, with responsibility for compliance with the federal and Washington State Clean Air Acts. In addition, the BCAA is responsible for any local regulations passed by the BCAA Board of Directors. The U.S. Environmental Protection Agency and the Washington State Department of Ecology have oversight and a degree of proprietary jurisdiction also.

Starting January 1, 2007, residential and land clearing burning will be banned in all urban growth areas (UGAs) in the State of Washington. Residential burning is a fire meant to dispose of household yard waste, such as leaves, grass, brush and other yard trimmings. Right now, the law bans outdoor burning within the Urban Growth Areas for cities with more than 5,000 people. The ban does not apply to agricultural burning or limit recreational (camp fires) burning. The new law will also prohibit land-clearing burning in areas with population densities of greater than 1,000 people per square mile.

The Washington State Legislature passed the land clearing burning law in 1991 as part of Washington's Clean Air Act, and voted to phase in the ban on residential burning. The ban was originally set to take effect in 2001. This was to give local governments and communities time to develop alternatives to burning, such as composting, chipping, curbside pickup of yard waste, local yard waste disposal stations, and seasonal cleanup days. In 1998, the Legislature delayed the ban for smaller communities until January 1, 2007, to give them more time to make these preparations. For communities with populations of 5,000 or more, outdoor burning has been banned since 2001.

Among alternatives to burning the vegetative material there is a hierarchy of preferences. Landfill disposal is considered to be a better choice than burning but several other reuse and recycling options are preferred. The needed and preferred alternatives will simultaneously satisfy reductions in burning and solid waste. Among these are composting, mulching, and primary reduction in the form of reducing production of vegetative waste.

Water Quality Policies and Programs

The Department of Ecology, Water Quality Program, is delegated by the U.S. EPA as the state water pollution control agency, responsible for implementing all federal and state water pollution control laws and regulations. Wastewater and stormwater discharges are regulated primarily by wastewater discharge permits, which stipulate specific limits and conditions of allowable discharge.

A wastewater discharge permit is required for disposal of waste material into "waters of the state," which include rivers, lakes, streams, and all underground waters and aquifers. A wastewater

discharge permit is also required for certain industrial users that discharge industrial waste into sanitary sewer systems.

One alternative for the disposal of wastewater treatment solids is the use of land application of biosolids. This method is used successfully throughout the state, and eliminates the disposal of biosolids in landfills. Another method which involves the co-composting of biosolids with green waste is also gaining attention as an alternative to landfill disposal.

Hazardous Waste Policies and Programs

In 1985, the Washington State Legislature amended the Hazardous Waste Management Act to require all cities and counties in the state to develop plans for improving moderate risk waste management in their jurisdictions. Moderate risk waste, as defined by the Act, includes:

- Any household wastes identified by Ecology as hazardous household substances.
- Any hazardous waste conditionally exempt from regulation because the waste is generated or accumulated in quantities below the threshold for state or federal regulation (typically 220 pounds per month or per batch or accumulate less than 2,200 pounds on site).

Management of the moderate risk waste stream is closely associated with the management of other solid wastes. Proper management of moderate risk waste is important, since such wastes pose a threat to public health, worker safety, and the environment. Moderate risk waste management plans, therefore, support solid waste management plans by discouraging indiscriminate dumping, and diverting hazardous waste from solid waste handling and disposal facilities and wastewater treatment facilities. In 1992, Benton and Franklin Counties completed their moderate risk waste management plan as required by the Hazardous Waste Management Act. The findings and recommendations of the Benton and Franklin Counties Moderate Risk Waste Management Plan have been totally integrated into this document as an ongoing effort to streamline the planning process in Solid Waste, improve solid waste permitting, and address proper solid waste handling.

1.7 BACKGROUND OF THE PLANNING AREA

An understanding of the environmental, land use and demographic features of Benton County assists in providing baseline information regarding existing and potential future solid waste handling needs. This chapter provides information on the natural environment of the county, which includes climate, air quality, hydrogeology/hydrology and geology. The human environment is described, including area population and economics.

Natural Environment

Description of the Environment--

Benton County is located in the southeast part of Washington State, where the Snake and Yakima rivers flow into the Columbia River. The Columbia River forms its northern, eastern, and southern

borders. On the south, the Columbia River is also the border between Washington and Oregon. The Yakima River bisects the County into north and south portions, and is responsible for much of the varied topography of central Benton County. The County is bordered on the west by Klickitat and Yakima Counties, on the north by Grant County on the east by Franklin and Walla Walla Counties and on the south by Umatilla County in Oregon State. It covers an area of 1760 square miles. The highest elevation in Benton County is 3,629 feet, found in the Rattlesnake Mountains north of Prosser (the highest unforested peak in the United States). The lowest elevation, 265 feet, is found near Plymouth along the north bank of the Columbia River. The present valley floor ranges from about 300 feet above sea level at its confluence with the Columbia River at the City of Richland, to around 700 feet at the Yakima County line.

Climate--

Benton County is generally characterized as semi-arid and arid with an average yearly precipitation of 7 inches. The area averages 10.3 days annually of snowfall and 7.5 days of rainfall. High wind velocities, with peak gusts as high as 70 mph can be expected at any time of the year. As the moist air moves inland from the Pacific and rises over the western slopes of the Cascade Mountains, it becomes warmer and drier descending the eastern slopes. This results in relatively high precipitation on the western slope and into the lower elevations of the Cascade Mountains. The air masses that move over the eastern slope and into the lower elevations of Benton County are depleted of moisture, and therefore most of the County is in the rain shadow. Precipitation gradually increases in an easterly direction to 10 or more inches annually in the eastern Horse Heaven Hills and on the Rattlesnake Hills. These circumstances create a mountain snowpack that is a significant source of water for use during the irrigation season and provides a recharge for aquifers in the County.

The area experiences hot summers and clear, dry, cold winters. The majority of summer days are sunny. Summer afternoon temperatures reach into the nineties, falling to about 60° Fahrenheit at night. In the summer relative humidity goes from approximately 50% at sunrise to about 25% in the afternoon. The prevailing winds are from the west and northwest, but the strongest are from the southwest. In summer there is a noticeable increase in wind velocity late in the afternoon. During winter months there is considerable fog and cloudiness, with heavy fog expected on five to ten nights each month. Winter afternoon temperatures range between the low twenties and the high thirties, with a relative humidity ranging from approximately 85% at night to about 75% in the afternoon. The region experiences year round inversion conditions. In winter there is very little diurnal variation in wind speed, and wintertime inversions can be very persistent and last for many days.

Air Quality--

Air quality in Benton County is generally good in so far as measurements are made of pollutants in the air. Sources of air pollution in the area include point sources, area sources, and mobile sources. Point sources include power boilers, asphalt plants, chemical plants, grain terminals, and petroleum product storage tanks. Area sources include many small sources that are distributed over larger areas, such as gasoline stations, dry cleaners, residential wood stoves and fire places, outdoor burning (uncontrolled combustion), and spray painting operations. Mobile sources include exhaust

emissions from motor vehicles. As with solid waste generation, actual and potential air pollution increases with population. Mobile and area source air pollution is most directly linked to population. Because there is a relatively small amount of industrial activity in the County, emissions from motor vehicles and area sources are a proportionally large share of the total inventory of air pollutants.

The Quad-cities region that includes Kennewick, Pasco, Richland, and West Richland is a small urban area surrounded mostly by rangelands, irrigated and dryland agriculture, plus areas of undisturbed natural land. Dryland summer fallow winter wheat occupies several tens of thousands of acres upwind from the Quad-cities. Periodically, episodes of windblown dust generate dust storm conditions, whereby suspended small particulates are transported into the urban area. Therefore, the principle air quality problem appears to be suspended particulates, because it is the only pollutant that is currently officially measured in the air for compliance with the national ambient air quality standard (NAAQS). Primary NAAQS standards protect public health. Secondary NAAQS standards protect public welfare from other possible effects such as corrosion, damage to vegetation, and visibility.

Episodic windblown dust storms overwhelm the amount of air pollutants from all other sources. However, recent changes in the NAAQS for suspended small particulate matter is placing more emphasis on the smaller end of this range. The coarser fraction of suspended particulate is what constitutes the windblown dust of the Quad-Cities region. Therefore, the County is currently in a transition in assessing the health effects from airborne particles and parsing them according to particle size. The smallest particles are emerging as those with the greatest health effects. Furthermore, in this area the majority of the smallest airborne particles do not come from dust but from many other sources that includes both area and mobile sources. Combustion in residential woodstoves, fireplaces, outdoor burning, and internal combustion engines are among the most significant contributors of the smallest particulates.

Two other air quality issues are emerging: toxic or hazardous air pollutants and greenhouse gases. Toxic air pollutants come from a variety of sources including areas sources and mobile sources. Diesel exhaust is a specific example of a source of both the smallest of particulates, toxic air pollutants, as well as the more traditional nitrogen and sulfur oxides. Greenhouse gases such as carbon dioxide are principally associated with any burning of fossil fuels.

Hydrogeology/Hydrology--

Structure and Groundwater Movement--The Columbia Plateau regional aquifer is a major system that consists chiefly of a great thickness of basalt belonging to the Columbia River Basalt Group, together with minor intercalcated sedimentary deposits, which are overlain by undifferentiated consolidated and unconsolidated surficial sediments. For hydrologic purposes, these formations have been subdivided into four hydrogeologic units along stratigraphic boundaries. These are, from oldest to youngest: the Grande Ronde, Wanapum, Saddle Mountain, and overburden surficial units (Drost, Whiteman, Gonthier, 1990).

The Grande Ronde is the thickest and most extensive hydrogeologic unit. Each of the overlying younger units, in turn, covers less area and is less voluminous. The thickness of each unit ranges

from a minimum of zero feet to a maximum of about 14,000 feet for the Grande Ronde, 1,200 feet for the Wanapum, and zero to 1,000 feet for the Saddle Mountain unit. The overburden consists of undivided unconsolidated to semiconsolidated sedimentary deposits, or fluvial and lacustrine origin, together with local deposits of windblown silt (loess) ranging from Miocene to Pleistocene in age. Collectively, these deposits are referred to as the Ringold Formation. Locally, saturated sections of Pleistocene glacial flood deposits (informally designated as the Hanford Formation) overly the Ringold Formation.

Regionally, groundwater surfaces within the Ringold Formation and Saddle Mountains Basalt appear roughly to parallel the land surface, especially where there is little or no overburden. Water levels in shallow wells in these areas are only tens of feet below land surface. Lateral groundwater flow in these hydrogeologic units is generally toward major surface-drainage features, but there are numerous local modifications imposed by small and intermediate-sized drainage basins. Local variations also occur for the Wanapum and Grande Ronde basalts, where they are not overlain by other hydrogeologic units. With increasing depth, however, groundwater flow in the Wanapum and Grande Ronde basalts is controlled less by local surface drainage and more by the major river's systems.

Within the Palouse sub province north of the Snake River, the regional groundwater flow is generally to the southwest, roughly paralleling the regional dip slope of the basalt. The dominant groundwater pattern in the Yakima Fold Belt sub province is from the anticlinal axes toward rivers flowing within the intervening synclines. Structural deformation in the plateau has had a wide range of effects on groundwater movement. In some areas, groundwater movement has been dammed or slowed either by direct deformation of basalt flows or by the enhancement of secondary mineralization along faults.

Geology--

Benton County landforms and soils are comprised primarily of level to steeply sloping valleys, terraces, plateaus, and till plains. The area's climatic/vegetative make up is characterized as a steppe zone with sagebrush. This county is part of the upper Sonoran life zone (200 to 1,900 feet in elevation) with the higher elevations moving into the arid transition grassland zone.

Despite low annual rainfall, much of the moisture escapes evaporation during winter months and sinks deep into the soil. This provides water to sustain vigorous growth of natural uncultivated plants' growing activity in the spring. The upland loams soils are dominated by bluebunch wheat grass, Idaho fescue, and sandberg's blue grass. The sandy soils support Indian rice grass and sand dropseed.

The "shrub-steppe" areas are recognized by big sagebrush or threetip sagebrush broken on occasion by rabbitbrush, horsebrush, and spring hopsage. Over most of the steppe region, the non-native cheatgrass assumes dominance. The thin stony soils, which are extensive owing to the turbulent floods during glacial times, support perennial bluegrass along with stiff sagebrush and several species of buckwheat.

The varied terrain and major river environments cutting through the steppe region of the county create many unique habitats for wildlife. Some of the most noted critical wildlife habitats in Benton County are Wallula Lake and surrounding cliffs, Blalock Island, Dead Canyon, Rattlesnake Hills, Upper Gold Creek, and the Columbia River from Richland to Priest Rapids Dam. Existing wildlife refuges in the county area include the Umatilla National Wildlife Refuges and the McNary and Rattlesnake Slope State Wildlife Recreation Areas.

The Washington Environmental Atlas lists over 35 important species of birds and 5 species of mammals which range into the two-county area. This includes the white pelican, Canada goose, golden eagle, partridge, sage hen, coyote, cougar, and Ord's kangaroo rat. The striped shipsnake and the spotted night snake have a restricted range in Benton County.

Clearly, the Columbia River is an important ecosystem for the two counties. The river between McNary Pool and Priest Rapids Dam is the river's only remaining free flowing segment in Washington, and the last spawning grounds of the fall Chinook salmon. Also, about 80% of the Great Basin Canada goose population nests and lives most of the year in the Columbia River region, which also provides wintering grounds for the rare Giant Canada goose.

Soils--

Soil types in Benton County are extracted from the 1971 Soil Survey, conducted by the U.S. Soil Conservation Service (now known as the Natural Resources Conservation Service or NRCS). The Survey is dated, and needs to be redone with current scientific and computer mapping technology. The descriptions of farm uses on certain soils described below are not entirely accurate today, as changes in markets, crops, and irrigation technologies have expanded the range of crops grown on most irrigated soil types.

Following are eight Primary Soil Associations within Benton County:

- **Ritzville-Willis Association:** Gently sloping soils that are silt loam throughout and very deep to shallow over basalt bedrock; formed in loess; precipitation zone 9 to 12 inches.

- **Warden-Shano Association:** Gently sloping soils with silt loam throughout and very deep to moderately deep over basalt bedrock; formed in lacustrine material and loess; precipitation zone 6 to 9 inches.

- **Walla Walla Lickskillet Association:** Gently sloping soils that are silt loam throughout and very deep to shallow over basalt bedrock; formed in loess, precipitation zone 11 to 15 inches.

- **Starbuck-Scooteney Association:** Gently sloping soils that are silt loam throughout, and shallow to very deep over gravel or basalt bedrock; formed in old alluvium and loess; precipitation zone 6 to 9 inches.

- **KionaRitzville Association:** Steep soils that are silt loam throughout and very deep to shallow over basalt rubble or bedrock; formed in loess and residuum; precipitation zone 6 to 12 inches.

- **HezelQuincyBurbank Association:** Gently sloping soils that have a loamy sand surface layer and are very deep to shallow over gravel, lacustrine material, or basalt bedrock; formed in windblown sand, lacustrine material, or alluvium; precipitation zone 6 to 9 inches.

- **ScooteneyKennewick Association:** Gently sloping, very deep soils that are silt loam throughout; formed in old alluvium and lacustrine material; precipitation zone 6 to 9 inches.

- **FinleyBurbankQuincy Association:** Nearly level soils that are loamy sand to very fine sand throughout; formed in old alluvium and windblown sand; precipitation zone 6 to 9 inches.

1.8 HUMAN ENVIRONMENT

Historical and Archeological

There are three zones of archaeological significance in the county region. These are the Richland site, the Twin Sisters area recognized as a ceremonial site of the Wanapum Indians, and the Gable Mountain ceremonial locality.

There are a number of historical sites and trails in the county. A few of these include the Hanford Townsite and the British poplar tree site. The cultural history of trail crossings is very rich, including the Mullan Road, Cariboo Trail, Naches Trail, Umatilla Trail, and the trail of the Lewis and Clark expedition. However, the most recent archeological find was in the summer of 1997. The remains of a 9,300-year-old skeleton were discovered along the shore of the Columbia River in Kennewick. The skeletal remains of "Kennewick Man" have since been moved to Seattle.

Economy

During the current decade, all of eastern Washington is experiencing significant population and economic growth for reasons beyond local influence. It is anticipated that the current regional growth trend will continue into the near and mid-term future (5 to 10 years).

Three major sectors have been the principal driving forces of the economy in the Benton County since the early 1970s:

- DOE and its contractors operating the Hanford Site;

- Supply System in its construction and operation of nuclear power plants; and

- The agricultural community, including a substantial food-processing component. Except for a minor amount of agricultural commodities sold to local-area consumers, the goods and services produced by these sectors are exported outside the county.

In addition to the direct employment and payrolls, these major sectors also support a sizable number of jobs in the local economy through their procurement of equipment, supplies, and business services. A summary of the non-agricultural employment is provided in Exhibit 1-1.

Exhibit 1-1. Non-Agricultural Employment

Non-Agricultural Employment	Employees
Goods Producing	11,800
Construction	6,100
Manufacturing	5,700
Service Providing	74,100
Trade, Transportation, Utilities	14,700
Finance, Insurance, Real Estate	3,500
Services	58,000
Government	16,100
Total Nonfarm	85,900

Source: Washington State Labor Area Summaries, February 2006.

In addition to these three major employment sectors, three other components can be readily identified as contributors to the economic base of the county. The first of these, loosely termed "other major employers," include the five major non-Hanford employers in the region. A summary of the major employers of the region (Benton and Franklin counties) is provided in Exhibit 1-2.

Exhibit 1-2. Major Employers in the Tri-Cities Region

Company	Product/Service	Number of Employees
Battelle/PNNL	Research/National Laboratory	4,178
Fluor Hanford	Government Contractor	3,499
Bechtel National	Government Contractor	2,185
ConAgra/Lamb-Weston	Food Processing	1,685
Kadlec Medical Center	Hospital	1,313
CH2M Hill Hanford Group	Government Contractor	1,136
Energy Northwest	Electric Utility	1,072
Kennewick General Hospital	Hospital	765
Tri-Cities Airport	Airport	703

Exhibit 1-2 (continued)

Company	Product/Service	Number of Employees
Benton County	County Government	664
Lockheed Martin	Information Technology	650
AREVA NP, Inc.	Nuclear Fuel	625
Apollo Inc.	Manufacturing/Contractor	290
DOE Richland Operations	Government Contractor	243
AgriNorthwest	Agricultural Services	200
Eberline Services of Hanford	Environmental Health and Safety Management	160
DOE Office of River Protection	Government Contractor	102

Source: Washington State Labor Area Summaries, February 2006.

The second component contributing to the economic base of the county is tourism. An increase in the number of visitors to the county over the last several years has resulted in tourism playing an increasing role in helping to diversify and stabilize the area economy. Annual visitor spending rose from $246.3 million in 2002 to $261.7 million in 2003. Hotel and motel expenditures have climbed since 1990 from $328,049 to $686,992 in 2004 (Washington State Community, Trade and Economic Development).

The final component in the economic base relates to the local purchasing power generated not from current employees but from retired former employees. Government transfer payments in the form of pension benefits constitute a significant proportion of total spendable income in the local economy.

Land Use

The land area of the County is 1,743.1 square miles. In 2005, 50% of the county was in some form of agricultural use:

- Irrigated farmland - 23%
- Dryland - 27%

The Hanford Reservation accounts for over 24% of the county's area, or about 416 square miles. The land use trend on the Hanford Site can be broadly described as the gradual reintegration of major portions of Hanford's resources (land, water, and infrastructure) into the economy, custom and culture and regulatory authority of local jurisdictions within which the Site lies. The Site is presently being cleaned up for future uses that, in addition to federal missions, will likely include non-defense related private and public sector uses. Local jurisdictions are preparing Land Use Plans for the portions of the Hanford Site within their boundaries.

1.9 EVALUATION OF POTENTIAL LANDFILL SITES

A preliminary siting review assessment was performed in 1994, with the intent of providing an initial assessment of the feasibility of siting a new landfill in Benton County (Appendix C). Some of the locational standards are not appropriate for evaluating an entire county at once. These criteria are site specific and should be used when evaluating a single candidate site or a limited number of potential sites. The Solid Waste Management Plan should not be used for detailed site analysis, but rather to identify areas that can be examined in detail in other studies.

Areas addressed in the study included:

- Geology
- Surface water
- Climatic factors
- Groundwater
- Slope
- Land use
- Soil
- Cover material
- Toxic air emissions
- Flooding
- Capacity
- All other factors determined by Benton-Franklin Health District.

Chapter 2

Waste Reduction, Recycling, and Organics

SECTION 2.1
INTRODUCTION

This chapter describes existing programs and potential options for reducing the amount of waste being generated and disposed in Benton County. The programs discussed in this chapter are organized as follows:

- Public Education and Outreach
- Waste Reduction
- Recycling
- Organics

The next section, public education and outreach, is common to all three programs (waste reduction, recycling, and organics). Messages covering all three topics often are included in a single outreach effort. The next section, waste reduction, discusses programs that reduce the amount of waste generated, while the final two sections discuss programs that reduce the amount of waste requiring disposal (recycling and organics management).

This chapter provides an update of the County's waste diversion methods as well as fulfills State requirements regarding waste reduction and recycling programs. The Revised Codes of Washington (RCW), RCW 70.95 requires that local solid waste management plans demonstrate how the following goals will be met:

- Washington State's goal is to achieve a statewide recycling and composting rate of 50% by 2007.

- There is a statewide goal to eliminate yard debris from landfills by 2012 in those areas where alternatives exist.

- Source separation of waste (at a minimum, separation into recyclable and non-recyclable fractions) must be a fundamental strategy of solid waste management.

- Steps should be taken to make recycling at least as affordable and convenient to the ratepayer as mixed waste disposal.

SECTION 2.2
PUBLIC EDUCATION AND OUTREACH

The solid waste planning goals in the area of public education and outreach are to emphasize public outreach and educational programs, and to encourage and expand coordination and communication regarding solid waste issues among all jurisdictions, agencies, and private firms in Benton County. These goals will be accomplished by:

- Seeking supplemental funding sources.
- Reviewing the Solid Waste Management Plan every 5 years.
- Encouraging consistent policies across jurisdictions.
- Encouraging public involvement in the planning and implementation process.
- Emphasizing local responsibility for solving solid waste management issues.

EXISTING PROGRAMS

Public education and outreach programs supporting waste reduction, recycling and organics management activities have been ongoing. Local governments have developed programs on a variety of topics. Education efforts include the following:

- Display booth.
- Speakers bureau.
- Solid waste videos.
- Mailings and advertisements.
- Promotional materials.
- Composting workshops.
- Compost bin sales.
- Environmental workshops.
- Classroom out reach.
- Website.

Examples of outreach and education programs developed within the county are described below.

City of Richland

The City has a part time "Environmental Education Coordinator" who provides information to the public about various environmental issues effecting the City or community. Information is regularly sent out to the public in newsletters, utility bill inserts, press releases to radio and television, e-newsletters and other printed publications (including the local newspaper). The Environmental Education Office also has a number of environmental resources available to the public, including books, curriculum, handouts, and videos. Programs relating to the environment also are made available to schools. The City's website includes information on how to recycle in

Richland and the materials that are accepted through various programs. The City of Richland has a 24-hour government access channel (CityView, Channel 13) which regularly plays environmentally related videos during the "Eye on our Earth" segment, and runs public service announcements. The City also encourages homeowners to compost in their own backyard, and hosts backyard composting programs each year where free bins and books are provided to each trained participant.

City of Kennewick

The City provides curbside and drop box recycling information on its website, and also offers backyard composting workshops.

Benton County

The County provides information on a website covering the household hazardous waste facility, used motor oil collection sites, and the location of drop boxes and various private collection sites for various recyclables. The County also provides outreach on litter control at the County Fair, and information to high schools on paper recycling.

KEY ISSUES

One of the goals developed for this plan is to emphasize public outreach and educational programs. The County and cities have several educational programs aimed at youth, the general public, and local businesses. These existing programs should be continually monitored to gauge attendance, interest, and feedback. Adjustments to educational and outreach programs should be made, as necessary.

OPTIONS

The following are options for public outreach and education programs.

1. Bilingual Outreach Materials

The County needs to address the communication needs of the increasing bilingual population. To date, none of the recycling and solid waste information materials are available in Spanish. Outreach materials, such as flyers, newsletter, and the website, should be translated into Spanish, and disseminated along with English versions.

2. Direct Mailing Newsletter

This alternative would include the mailing of an annual or twice yearly newsletter directly to each household in the county. Content of the newsletter would include information on recycling, waste reduction, solid and hazardous waste disposal, littering and other solid waste enforcement issues.

3. Phone Book Section Insert

This alternative utilizes an existing medium--the phone book--to reach every household. A four- to eight-page section near the front of the local phone book would describe rates, facilities, programs and laws related to solid waste and recycling.

4. Website

Little information currently is offered on Benton County's website concerning solid waste or recycling program activities. Benton County should update its website to be a successful component of a waste reduction and recycling education campaign. As with any promotional medium, the website must be user-friendly, accurate, and interesting. The website should be professionally designed, if possible.

5. Technical Assistance to Schools and Businesses

This option recognizes the need to reach schools and businesses regarding their handling of waste. Outreach to schools and businesses would offer free technical assistance and waste audits to identify opportunities to implement waste reduction, recycling and composting activities. The benefits of this alternative are that commercial sources produce a significant portion of solid waste in Washington. Focusing waste reduction efforts towards the business sector can have a large impact on the waste stream as a whole. This alternative is inline with the State's Beyond Waste Plan (Initiative 1). It is also important to provide waste audit assistance to schools. A functional waste reduction and recycling program in a school yields daily reminders to the students of their direct impacts on the environment.

RECOMMENDATIONS

The Solid Waste Advisory Committee reviewed the options discussed above and has recommended the following options:

1. Bilingual outreach materials.
2. Direct mailing newsletter.
3. Phone book section insert.
4. Website improvements.
5. Technical assistance to schools and businesses.

SECTION 2.3
WASTE REDUCTION

Activities and practices that reduce the amount of wastes that are generated are classified as "waste reduction." Waste reduction is the highest priority for solid waste management according to RCW 70.95.

The planning goal in the area of waste reduction is to manage solid wastes in a manner that promotes, in order of priority: waste reduction; and recycling, with source separation of recyclables as the preferred method. The goal is based on a review of Ecology's Best Management Practices Analysis for Solid Waste, existing levels of recycling, and the rural characteristics of most of the County. The supporting objectives to reach this goal include:

- Work towards reaching a diversion rate of 50% by 2020.
- Emphasize programs for commercial waste diversion.
- Establish consistent methodologies to measure the baseline and future progress in achieving waste diversion.
- Obtain accurate data on waste diversion activities.

The following presents a discussion of existing waste reduction programs and includes options for residential and commercial waste reduction programs.

EXISTING PROGRAMS

Area jurisdictions are involved in several internal activities. The county and cities are working to instill waste reduction and recycling as a work ethic among employees, and to set an example for the community. To assist in closing the recycling loop, most local jurisdictions have developed procurement policies for purchasing recycled materials.

Most of the programs used in the county to encourage residential waste reduction are centered on education and outreach. Washington State offers a statewide, online materials exchange, www.2good2toss.com, for municipalities. This website provides a free, online bulletin board for residents to sell or give away used, but useable items, instead of sending them to the landfill.

The Richland Landfill has a materials exchange program for oil, pesticides, and paint. County residents can drop-off and pick up these materials free of charge.

The City of Kennewick has recently announced plans to develop a ReUse Store in the City.

KEY ISSUES

The County and cities could do more to adopt policies and procedures that address waste reduction, including procurement and contract requirements. The County and cities could also improve outreach efforts to promote existing waste reduction programs. In addition, it is important to be able to measure the results of waste reduction activities. Personal and commercial efforts in waste reduction cover a broad range and are not well documented. Waste reduction could be shown to be handling significantly more waste if the personal and commercial efforts could be measured more completely.

OPTIONS

Following are potential programs and policies for waste reduction:

1. Procurement of Recycled Products

Local, state, and federal government can and do use their tremendous purchasing power to influence the products that manufacturers bring to the marketplace. In the last decade or so, most efforts have focused on encouraging procurement of products made from recycled content. The goal of these procurement programs is to create viable, long-term markets for recovered materials. The Environmental Protection Agency (EPA) has developed a list of designated products and associated recycled-content recommendations for federal agencies to use when making purchases. These are known as Comprehensive Procurement Guidelines.[1]

To date, EPA has developed more than 60 comprehensive procurement guidelines that fall into the general categories of construction products, landscaping products, non-paper office products, paper and paper products, park and recreation products, transportation products, vehicular products, and miscellaneous products. For example, federal agencies are instructed to buy printing or writing paper that contains at least 30% post-consumer recycled content. EPA has already designated or is proposing to designate the products listed in Exhibit 2-1 and has developed recycled-content recommendations.

Without consumer support, markets for recyclables, and products made from them, will not reach their full potential. Procurement programs create viable, long-term markets for recovered materials and provide more efficient use of valuable resources. Research is necessary to determine the types of recycled content products that are available, their specifications, performance, and cost. Much of this research is available to purchasing agents, however, through published results available through other municipalities such as King County, Washington (www.metrokc.gov/procure/green/index.htm).

Government purchasing agents often have concerns about the quality and price of recycled-content products. Careful testing and selection of recycled content products can minimize concerns about product quality. Certain recycled-content products may have a higher initial purchase cost, but may

[1] U.S. Environmental Protection Agency. *Comprehensive Procurement Guidelines*. Available at www.epa.gov/cpg

require less maintenance or long-term costs over the life of the product. Cost concerns can be addressed by considering short-term and long-term costs (life cycle costs) in comparing product alternatives.

Benton County and the local jurisdictions can draw upon this work by EPA and others to ensure that they are purchasing, to the maximum extent practicable, products made with recycled content.

Exhibit 2-1. Federal Procurement Guidelines

Construction Products		
Designated		**Proposed**
Building insulation products Carpet (polyester) Carpet cushion Cement and concrete containing: • Coal fly ash • Ground granulated blast furnace slag • Cenospheres • Silica fume Consolidated and reprocessed latex paint Floor tiles	Flowable fill Laminated paperboard Modular threshold ramps Nonpressure pipe Patio blocks Railroad grade crossing surfaces Roofing materials Shower and restroom dividers/partitions Structural fiberboard	Nylon carpet and nylon carpet backing
Landscaping Products		
Designated		**Proposed**
Compost made from yard trimmings or food waste Garden and soaker hoses Hydraulic mulch Lawn and garden edging Plastic lumber landscaping timbers and posts		Compost made from manure or biosolids Fertilizers made from recovered organic materials
Non-paper Office Products		
Designated		**Proposed**
Binders, clipboards, file folders, clip portfolios, and presentation folders Office furniture Office recycling containers Office waste receptacles	Plastic desktop accessories Plastic envelopes Plastic trash bags Printer ribbons Toner cartridges	None at this time.
Paper and Paper Products		
Designated		**Proposed**
Commercial/industrial sanitary tissue products Miscellaneous papers Newsprint Paperboard and packaging products Printing and writing papers		None at this time.

Exhibit 2-1 (continued)

Park and Recreation Products		
Designated		**Proposed**
Park benches and picnic tables Plastic fencing Playground equipment	Playground surfaces Running tracks	None at this time.
Transportation Products		
Designated		**Proposed**
Channelizers Delineators Flexible delineators	Parking stops Traffic barricades Traffic cones	None at this time.
Vehicular Products		
Designated		**Proposed**
Engine coolants Rebuilt vehicular parts	Re-refined lubricating oils Retread tires	None at this time.
Miscellaneous Products		
Designated		**Proposed**
Awards and plaques Bike racks Blasting grit Industrial drums Manual-grade strapping	Mats Pallets Signage Absorbents	None at this time.

2. Environmentally Preferable Purchasing

More recently, efforts have expanded beyond buy-recycled programs and policies (discussed above) to "Environmentally Preferable Purchasing" (EPP). In fact, the federal government has been directed by Executive Order 13101 to identify and give preference to the purchase of products and services that pose fewer environmental burdens. Environmentally preferable products typically are defined as products that have a lesser or reduced effect on human health and the environment when compared with competing products that serve the same purpose. They include products that have recycled content, reduce waste, use less energy, are less toxic, and are more durable.

Some of the benefits of EPP include:

- Improved ability to meet existing environmental goals.
- Improved worker safety and health.
- Reduced liabilities.
- Reduced health and disposal costs.

Federal agencies are now encouraged to consider a broad range of environmental factors in purchasing decisions. Benton County and the cities could follow this lead and incorporate this philosophy in purchasing decisions using the five guiding principles adopted by the federal government:[2]

- Environment + Price + Performance = EPP: Include environmental considerations as part of the normal purchasing process.
- Pollution Prevention: Emphasize pollution prevention early in the purchasing process.
- Life Cycle Perspective/Multiple Attributes: Examine multiple environmental attributes throughout a product's or service's life cycle.
- Comparison of Environmental Impacts: Compare relevant environmental impacts when selecting products or services.
- Environmental Performance Information: Collect accurate and meaningful information about environmental performance and use it to make purchasing decisions.

Given the number of products that local governments typically purchase, it can be challenging to determine which products to substitute for safer ones. Computer products can be a good candidate to consider for EPP because of the potential environmental impacts associated with the manufacture, use, and end-of-life management of computers. Electronic waste is often identified as one of the most significant waste problem with respect to management costs and potential environmental impacts. Furthermore, electronic waste has become a primary concern as a result of the increase of new electronic products combined with their rapid obsolescence, low recycling rate and their potential to contain hazardous materials.

Benton County and the cities could develop environmentally preferable purchasing criteria for computers and electronics (such as CPUs, monitors, keyboards, printers, fax machines, and copiers) which could include:

- Compliance with federal Energy Star Guidelines.
- Reduced toxic constituents.
- Reduced toxic materials used in manufacturing process.
- Recycled content plastic housing.
- Pre-installed software and on-line manuals.
- Designed for recycling/reuse.
- Upgradeable/long life.
- Reduced packaging.
- Manufacturer provides product take-back service.
- Manufacturer demonstrates corporate environmental responsibility.

[2] U.S. Environmental Protection Agency. More information available at www.epa.gov/opptintr/epp

Adoption of EPP practices allows government agencies to reduce the harmful environmental impacts of their activities as well as promote the development of products that have improved environmental performance. Specifically, implementing an EPP program for computers can result in the purchase of computers with lower operating costs, extended useful lives and reduced disposal costs.

3. County/City Waste Reduction Policies

In addition to educating consumers and businesses, it is important for local governments to "practice what they preach." Through numerous, small choices employees make each day, large amounts of waste can be prevented. Employees should be encouraged to learn more about waste reduction practices and work toward implementing and promoting such practices.

Such practices by county/city employees should be implemented whenever practicable and cost-effective. Examples include:

- Electronic communication instead of printed, double-sided photocopying and printing.
- Using copiers and printers capable of duplexing.
- Allowing residents to submit electronic rather than paper forms and applications.
- Washable and reusable dishes and utensils.
- Rechargeable batteries.
- Streamlining and computerizing forms.
- "On-demand" printing of documents and reports as they are needed.
- Leasing long-life products when service agreements support maintenance and repair rather than new purchases, such as carpets.
- Sharing equipment and occasional use items.
- Choosing durable products rather than disposable.
- Reducing product weight or thickness when effectiveness is not jeopardized in products such as, but not limited to, paper and plastic liner bags.
- Buying in bulk, when storage and operations exist to support it.
- Reusing products such as, but not limited to, file folders, storage boxes, office supplies, and furnishings.

- Mulching pruned material from parks and using on site. County and city employees are most knowledgeable about ways that waste can be reduced or even eliminated and their ideas are essential. Adopted policies should be reinforced through employee incentives for outstanding performance.

4. Methods to Measure Waste Reduction Results

Waste reduction is the top solid waste management priority, but it is inherently difficult to measure something that has not been produced. In 1996, the Department of Ecology undertook a literature review to determine the various types of waste reduction measurement methodologies that were being used around the state and country. At the same time, other entities, such as the U.S. Environmental Protection Agency (EPA), UCLA, and Cornell, were working on a similar project. In 1997, EPA finalized a document titled "Source Reduction Program Potential Manual" that Ecology staff believed summarized the work of all parties together in a comprehensive format. In light of multiple financial and project priorities in Ecology at that time, staff recommended that it would be more efficient to use the information the EPA had developed and discontinued the project at the state level.

The work developed by EPA is based on "program potential" and whether a specific waste reduction program has the potential to reduce a significant portion of the waste stream in a cost-effective manner. The manual provides guidance for calculating program potential for the following programs: grasscycling, home composting, clothing and footwear reuse, office paper reduction, converting to multi-use pallets, and paper towel reduction. Using "grasscycling" as an example, the manual calculates program potential by:

- Identifying a general waste category (e.g., yard trimmings) and relying on national or local data for baseline composition of the waste stream;

- Multiplying by an "applicability factor" (e.g., amount of grass in yard trimmings waste category);

- Multiplying by a "feasibility factor" (e.g., portion of grass that could be reduced through grasscycling programs); and

- Multiplying by a "technology factor" (e.g., technical or physical limitations to grasscycling).

The solid waste manager is then left to design and document a program for addressing that portion of the waste stream. Numeric measurement would likely rely on a waste audit or waste composition study after implementing the program to determine if the amount of targeted waste decreased between the two time intervals. If necessary, numeric waste reduction goals could then be reexamined and changed.

Waste reduction successes can also be measured qualitatively, through observed changes in industrial processes, purchasing patterns, shifts in public perception as identified through surveys, business policies, and city initiatives and ordinances.

5. ReUse and Swap Shops

Some communities establish reuse and Swap operation at landfills and transfer stations. After passing over the scales, customers can voluntarily set items that are deemed in usable condition in a designated area. Other residents can pick up the item at no charge after signing a hold harmless waiver. At the Richland landfill Moderate Risk Waste facility there is a waste exchange program for household hazardous waste. The landfill, as well as the County drop-off sites, could add reuse or swap shops for additional items, such as bicycles, toys, electronics, construction materials, and other reuseable materials, for residents to take.

6. Pay-As-You-Throw Pricing

Traditionally, the cost per residence for waste collection is constant regardless of differences in the amount of waste placed at the curb for collection. Some communities have turned to economic incentives to encourage residents to prevent waste whenever possible and recycle or compost the remainder. One such incentive is unit pricing.

Unit-based or variable rate pricing, which is frequently referred to as Pay-As-You-Throw (PAYT), is where customers pay for municipal waste management services per unit of waste collected, rather than through a fixed fee. PAYT takes into account variations in waste generation rates by charging residents or households based on the amount of refuse they place at the curb, thereby offering residents an incentive to reduce the amount or waste they generate and dispose. For example, the City of Kennewick offers a 35-gallon toter for $10.33 per month, or a 95-gallon toter for $12.65 per month.

Unit pricing programs can take two basic forms. Residents can be charged by:

- Volume of waste: Using bags, tags or stickers, or prescribed sizes of waste cans. Each household is charged a flat price for each unit of waste placed out for collection. This system is the most common form implemented.

- Weight of waste: With the collector measuring at the curbside the amount of waste set out for collection and billing for service by the pound. While this system provides a more precise measurement of waste, special equipment is required for weighing and billing (e.g., truck-mounted scales, bar coding on waste cans).

While they operate differently from one another, these systems share one defining characteristic: residents who throw away more pay more.

The EPA supports this approach to solid waste management because it encompasses three interrelated components that are key to successful community programs:

- Environmental sustainability: PAYT reduces solid waste and increases recycling.
- Economic sustainability: PAYT allows residents to take control of their solid waste bill.
- Equity: PAYT systems are fair. Residents who recycle are not subsidizing those who do not recycle.

EPA has compiled a list of benefits and potential barriers to PAYT that were reported by communities implementing programs. These are summarized in Exhibit 2-2.

Exhibit 2-2. Unit Pricing: Benefits and Barriers

Strategy	Potential Benefits
Waste reduction	Can substantially reduce the amount of waste disposed of in a community. Some communities report that unit pricing helped their municipality achieve reductions of 25 to 45 percent in the amount of waste requiring disposal.
Reduced waste disposal costs	When the amount of waste is reduced, communities often find their overall MSW management costs have declined as well. (A portion of the revenues previously spent on waste disposal, however, may need to be dedicated to recycling, composting, or other diversion activities).
Increased waste prevention	To take advantage of the potential savings that unit pricing offers, residents typically modify their traditional purchasing and consumption patterns to reduce the amount of waste they place at the curb. These behavioral changes have beneficial environmental effects beyond reduced waste generation, often including reduced energy usage and materials conservation.
Increased participation in composting and recycling programs	New or existing recycling and yard waste composting programs become opportunities for residents to divert waste for which they otherwise would pay. Experience has shown that these programs are the perfect complement for unit pricing: analysis of existing unit pricing systems shows that composting and recycling programs divert 8 to 13 percent more waste by weight when used in conjunction with a unit pricing program.
Support of the waste management hierarchy	By creating an incentive to reduce as much waste as possible using source reduction and to recycle and/or compost the waste that cannot be prevented, unit pricing supports the hierarchy of waste management techniques defined by EPA.

Exhibit 2-2 (continued)

More equitable waste management structure	Traditional waste management fees, in effect, require residents who generate a small amount of waste to subsidize the greater generation rates of their neighbors. Under unit pricing, waste removal charges are based on the level of service the municipality provides to collect and dispose of the waste, similar to the way residents are charged for gas or electricity. Because the customer is charged only for the level of service required, residents have more control over the amount of money they pay for waste management.
Increased understanding of environmental issues in general	Communities have the opportunity to explain the hidden costs of waste management. Traditional waste management systems often obscure the actual economic and environmental costs associated with waste generation and disposal. Once individuals understand their impact on the environment, they can choose to take steps to minimize it.
Illegal dumping	Some residents have strong reservations about unit pricing, believing it will encourage illegal dumping or burning of waste in their area. Communities can counter this fear with an effective public education program. Since most communities with unit pricing programs have reported that illegal dumping proved to be less of a concern than anticipated, providing residents with this information can help allay their concerns over illegal dumping.
Recovering expenses	Since unit pricing offers a variable rate to residents, the potential exists for uneven cash flow that could make it harder to operate a unit pricing program. To address this, communities must be sure to set prices at the appropriate level to ensure that, on average, sufficient funds are raised to pay for waste collection, complementary programs, and special services.
Administrative costs	Effectively establishing rates, billing residents, and collecting payments under a unit pricing program will likely increase a waste management agency's administrative costs. Communities need to set waste collection prices at a level that can cover these costs.
Perception of increased costs to residents	While a unit pricing program offers residents greater control over the cost of collecting their waste, it could initially be seen as a rate increase. An effective public outreach campaign that clearly demonstrates the current costs of waste management and the potential reductions offered by unit pricing will help to address this perception.
Multi-family housing	Extending direct waste reduction incentives to residents of multi-family housing can present a challenge. Since waste generated by these residents typically is combined in a central location to await collection, identifying the amounts of waste generated by individual residents in order to charge accordingly can be difficult. Communities must experiment with rate structures and collection systems to encourage residents of multi-family housing to reduce waste.

Exhibit 2-2 (continued)

Building public consensus	Perhaps the greatest barrier to realizing a unit pricing program is overcoming resistance to change, both among citizens and elected officials. Informing residents about the environmental and economic costs of current waste generation patterns can help overcome this resistance and build support for unit pricing.

Source: *Pay-As-You-Throw: Lessons Learned About Unit Pricing*, U.S. Environmental Protection Agency, April 1994.

Within Benton County, PAYT structures can be implemented as follows:

- Cities, such as Kennewick, have the authority to establish service standards and set rates within the municipality.

- Counties have the authority to define solid waste collection services by adopting a service level ordinance. The WUTC requires collection companies to "use rate structures and billing systems consistent with the solid waste management priorities set forth under RCW 70.95" and provide minimum levels of solid waste collection and recycling services pursuant to local solid waste management plans and municipal ordinances. The County could adopt a service level ordinance to define rate policies. For example, under a linear rate policy, the rate for weekly collection of a 64-gallon container is twice the rate for weekly collection of a 32-gallon container.

RECOMMENDATIONS

The Solid Waste Advisory Committee reviewed the options discussed above and has recommended the following options:

1. Procurement of recycled products.
2. Environmentally preferable purchasing.
3. City/County waste reduction policies.
4. Methods to measure waste reductions results.
5. ReUse and Swap Shops.

SECTION 2.4
RECYCLING

WASHINGTON STATE REQUIREMENTS

Recycling has been established by the State as a fundamental aspect of solid waste management which is reflected in various sections of the Revised Codes of Washington (RCW) 70.95. Specifically, solid waste management plans should provide programs that:

- Provide incentives and mechanisms for source separation.
- Establish recycling opportunities for source separated waste.

Washington State's goal is to achieve a statewide recycling and composting rate of 50% by 2007.

OREGON STATE REQUIREMENTS

Oregon statute (ORS 459.305) requires out-of-state local governments, which export more than 75,000 tons annually into Oregon for landfill disposal, to provide the opportunity to recycle and implement recycling education programs. Specifically, the local government must either achieve a recovery rate equivalent to that achieved in a comparable Oregon county or implement an equivalent recycling program. The disposal site operator is responsible for demonstrating to the Oregon Department of Environmental Quality that the city from which the waste originates has implemented an equivalent recycling program.

An equivalent recycling program requires that each person be notified of the opportunity to recycle and be encouraged to source-separate recyclables through education programs. Additionally, for cities with a population of:

- Less than 4,000, a convenient drop-off recycling location must be provided for source-separated recyclables.

- 4,000 or more, monthly curbside collection of source-separated recyclables must be provided.

Furthermore, cities with a population of more than 4,000 are required to implement certain elements out of a list of nine provided in the statute. The elements include:

- Provide durable recycling containers (e.g., recycling bins).

- Provide weekly curbside recycling collection, on the same day as garbage collection.

- An expanded education program that informs generators on how to recycle; the benefits of reducing, reusing, recycling, and composting; and promotes the use of recycling

services. The city must either submit an education plan to DEQ or implement an education program that follows the requirements of ORS 459A.010(2)(c)((B).

- Collection of at least four principal recyclable materials from each multi-family dwelling complex having five or more units.
- An effective residential yard debris collection and composting program that promotes home composting and includes either monthly curbside collection of yard debris or a system of yard debris collection depots that are open weekly.
- A commercial recycling program for source-separated materials for firms employing 10 or more persons and occupying 1,000 square feet or more in a single location.
- Expanded depots for recycling and expanded education to increase depot use.
- Residential collection rates that encourage waste reduction, reuse, and recycling, through reduced rates for smaller containers and a rate that does not decrease on a per-pound basis for large containers.
- A collection and composting system for food, contaminated paper, and other compostable waste from commercial and institutional entities that generate large quantities of this waste.

Cities that export more than 75,000 tons annually, and with a population of at least 4,000 to 10,000, must implement the first three elements or design a program incorporating at least three elements from the list. Cities with a population of more than 10,000 must implement the first three elements and one additional element or design a program that includes at least five elements from the list.

Waste Management submitted a Waste Reduction Certification plan, and it is approved by the Oregon Department of Environmental Quality for the City of Kennewick. At this time, that is the only City that is required to comply with the Oregon regulations.

BENTON COUNTY SOLID WASTE MANAGEMENT PLAN GOALS

One of the goals developed for this plan includes managing solid wastes in a manner that promotes, in order of priority: waste reduction; recycling, with source separation of recyclables as the preferred method. The goal is based on a review of Ecology's Best Management Practices Analysis for Solid Waste, existing levels of recycling, and the rural characteristics of most of the County.

Objectives identified to attain this goal include:

- Work towards reaching a diversion rate of 50% by 2020.
- Emphasize programs for commercial waste diversion.

- Establish consistent methodologies to measure the baseline and future progress in achieving waste diversion.
- Obtain accurate data on waste diversion activities.

BENTON COUNTY DIVERSION RATES

There are numerous methodologies for calculating a diversion or recycling rate, as described below.

MSW Recycling Rate: To determine a recycling rate that is consistent and comparable to past years, Ecology has measured a very specific part of the solid waste stream since 1986. It is roughly the part of the waste stream defined as municipal solid waste by the Environmental Protection Agency. It includes durable good, nondurable good, containers and packaging, food wastes, and yard trimmings. It does not include industrial waste, inert debris, asbestos, biosolids, petroleum contaminated soils or construction, demolition and landclearing debris recycled or disposed of at municipal solid waste landfills and incinerators.

Diversion Rate: Since the mid-1990s, Ecology has noted very large increases of material recovery in "non-MSW" waste streams; most notable are the growing industries in recycling asphalt, concrete, and other construction, demolition, and landclearing debris. The recovery of these materials for uses other than landfill disposal is termed "diversion." The diversion rate is an overall measure which includes materials that fall under the "MSW Recycling Rate" and also "diverted" materials.

It has been estimated that in 2005, the residents and businesses in the county generated approximately 326,150 tons of waste, and approximately 118,000 tons of this waste was diverted from disposal. A summary of the types and quantities of materials diverted in the Benton County in 2005 is shown in Exhibit 2-3.

Exhibit 2-3. Benton County Diversion - 2005

Material	Total (Tons)	Material	Total (Tons)
Paper		***Batteries***	
High Grade Paper	1,637.78	Household Batteries	0.13
Newspaper	3,070.23	Vehicle Batteries	501.60
Corrugated Paper	11,587.14	***Special Wastes***	
Mixed Paper	630.57	Anti-freeze	122.77
Plastic		Asphalt/Concrete	67,481.50
PET Bottles	179.59	Electronics	8.83
HDPE Plastic	168.70	Fluorescent Light Bulbs	10.03
LDPE Plastic	47.03	Land Clearing Debris	180.00
Photographic Films	1.27	Reuse - Clothing and Household Items	12.84

Exhibit 2-3 (continued)

Material	Total (Tons)	Material	Total (Tons)
Container Glass	562.70	Other Light Bulbs	0.22
Metals		Oil Filters	59.40
Aluminum Cans	493.12	Textiles	42.80
Tin Cans	186.13	Tires (recycled)	462.12
Ferrous Metals	18,472.37	Topsoil	3,526.50
Nonferrous Metals	2,655.90	Used Oil	2,155.06
White Goods	1,628.50	***Donated Food and Merchandise***	5.00
Organics		**Total**	**118,187.20**
Food	1,085.78		
Rendering	67.00		
Wood	1,144.58		

The 2005 diversion rate is calculated using the following formula:

$$\text{Diversion Rate (\%)} = \frac{\text{Diversion (tons)}}{\text{Waste Generation (tons)}} = \frac{118{,}187.20}{326{,}149.74} = 36.2\%$$

Benton County and the cities have established an objective of working towards reaching a diversion rate of 50% by 2020. One method to reach this rate is to increase recycling. This section presents programs and policies to increase recycling, including county and city internal recycling programs, and residential and commercial recycling programs.

EXISTING PROGRAMS

County and City Internal Recycling Programs

Benton County and the cities of Kennewick and Richland have all implemented in-house recycling programs. City of Kennewick employees collect their office paper and aluminum cans in boxes located in all major departments. A local recycler picks up the used paper and transports it to their main collection center. The City of Richland collects and recycles office paper, phone books, cardboard, toner cartridges, cell phones and rechargeable batteries. In addition, many of the buildings collect aluminum, plastic, and tin. Materials are collected by staff and transported to a local recycler. Cardboard recycling is also part of the City of Richland's and City of Kennewick's in-house programs.

The development and implementation of these programs help encourage local government employees to take the recycling habit home with them, promoting recycling both at home and in the workplace.

Residential Recycling Programs

The principal method for collecting recyclables generated in Benton County is through a system of conveniently located drop boxes. The location of drop boxes is provided in Exhibit 2-4. The city of Kennewick has a curbside collection program that collects glass; tin and aluminum; PETE and HDPE; used motor oil; and newspaper, cardboard, mixed paper, and magazines. Kennewick also includes on their website a list of all recycling locations in the City.

In addition, a number of private and non-profit recycling centers provide opportunities to recycle a wide variety of materials, such as paper, aluminum, glass, auto batteries, scrap metal, used motor oil, and white goods. Materials may be dropped off for free or sold, depending on the item and the recipient. Most of the buyback centers and drop-off sites are conveniently located. Some facilities specialize in collecting only certain types of materials. For example, one company only accepts batteries. Other facilities provide comprehensive collection of such items as glass, aluminum, tin, paper, plastic, used oil, scrap metal, cardboard, and car batteries. Usually these facilities pay for some materials and accept other materials at no charge. The County maintains a list of available recycling opportunities on its website.

Exhibit 2-4. Location of Drop Boxes

Facility Location/Type of Facility	Owner
Benton City ***Recycling Drop Box Site*** Della Avenue and 11th Street	Ed's Disposal
Kennewick Kennewick Transfer Station ***Recycling Drop Box Sites*** Value Village N Columbia Center Boulevard McDonalds Canal Drive Waremart West Clearwater McDonalds Kennewick Avenue/Hwy 395 Al's Auto Supply Eastgate Elementary School	Waste Management
Prosser ***Recycling Drop Box Sites*** Dudley Avenue Prosser Food Depot - 8th and Meade Alexander/Highland	Basin Disposal

Exhibit 2-4 (continued)

Facility Location/Type of Facility	Owner
Richland Richland Landfill/HHW/MRW ***Recycling Drop Box Sites*** Hanford Bus Lot Battelle 7th and W Avenue 7-11 George WA Way Westgate Shopping Center Uptown Shopping Center Fran Rish Stadium Albertsons West Gage Boulevard	 City of Richland City of Richland
West Richland ***Recycling Drop Box Sites*** Tapteal Elementary School West Richland City Hall Mt. Adams Road & Bombing Range Road	Ed's Disposal

Commercial Recycling Programs

The planning guidelines do not require jurisdictions to develop commercial recycling programs, but do require jurisdictions to monitor the nonresidential waste stream. Commercial establishments currently are provided collection opportunities through several private waste management companies.

KEY ISSUES

Following is a summary of several key issues surrounding recycling programs in the County.

Designation of Recyclable Materials

The Washington Administrative Code (WAC 173-350-100) defines Recyclable Materials to mean, "those solid wastes that are separated for recycling or reuse, including, but not limited to, papers, metals, and glass that are identified as recyclable material pursuant to a local comprehensive solid waste plan." In order for any material to be considered a recyclable material under Chapter 173-350, it must be identified as such in the local comprehensive solid waste management plan. If a materials is not identified in the plan as recyclable, then the ability of the person/company wanting to recycle this material and be able to benefit from some of the exemptions granted under Section 350 does not exist. If materials are not designated as recyclables, they remain regulated as solid wastes.

The following materials are designated as recyclable materials in the County:

- Paper (newspapers, magazines, mixed paper, and corrugated cardboard).
- Glass bottles (clear, brown, and green).
- Plastic bottles (PETE and HDPE).
- Steel and aluminum cans.
- Ferrous metals.

The addition or deletion of materials accepted for recycling will require ongoing evaluation and will be based on several factors such as market stability and collection and processing costs. As required by the planning guidelines, criteria have been developed for adding or removing materials from the above list of materials. The following will be considered for adding new materials:

- Local markets and/or brokers expand their list of acceptable items based on new uses for materials or technologies that increase demand.
- New local or regional processing or demand for a given material occurs.
- Sufficient quantity of the material is available in the waste stream.
- The material can be collected efficiently and has minimal processing requirements.
- Other conditions not anticipated at this time.

Removing materials from the list requires:

- The market price becomes so low that it is not longer feasible to collect, process, and/or ship to markets.
- No market can be found for an existing recyclable material, causing the material to be stockpiled with no apparent solution in the near future.
- Other conditions not anticipated at this time.

Although it is unlikely that any existing recyclables would be removed from the current collection program barring a sudden shift in market conditions, it is likely that additional markets might become available for materials not currently recycled.

A proposal to add or delete a designated recyclable material will be brought to the SWAC, who will vote for or against the proposal. In the event the SWAC is not scheduled to meet in a timely manner, the county solid waste manager or his designee will make the decision, utilizing the above-referenced criteria. Following approval or non-approval of the proposal, all parties in the County will be notified of the addition or deletion of the material.

Urban and Rural Designation

The planning guidelines recognize that there are differences in the services that can be offered to urban versus rural areas for solid waste services. The guidelines require solid waste management plans to identify urban/rural service areas for the purpose of determining:

- Required recycling programs for single and multi-family residences.
- Voluntary services for rural areas such as conveniently located drop-off boxes and buy-back centers.

The County currently uses the following designation to determine the level of services provided to residents:

Urban = Population greater than or equal to 12,000

The rural nature of Benton County limits the economic feasibility of certain methods of recyclables collection. For example, curbside collection may only be economically feasible in the two communities which have a population base to support this type of system.

OPTIONS

A number of options are included to enhance recycling programs for local government, residential and commercial sectors.

1. Internal Recycling Program

Benton County and the cities of Kennewick and Richland have declared their commitment to reducing waste by providing all employees the opportunity to recycle. The other jurisdictions in the county should be encouraged to do the same. The various entities will need to design a system to collect the recyclable materials, identify key staff to make decisions and resolve problems, notify employees regarding the recycling program, and train staff.

For informational purposes, the general steps involved in setting up a recycling program include:

- Designate a "Recycling Coordinator": Select someone to oversee the recycling program. The recycling coordinator will be responsible for arranging collection of recyclables, encouraging employees to recycle and overall monitoring of the recycling program.
- Arrange for Collection: There are several options to consider for collection. The first place to start is the current waste hauler.
- Get Recycling Bins: Buy new bins for multiple locations in county/city offices, or transform some existing trash cans into recycling.
- Location: To generate maximum participation, recycling bins should be placed at each workstation or office (desk side), as well as in central areas such as lunchrooms, lounges and office machine rooms.

- Label the Bins: Clearly label every recycling bin to indicate what items go in the bin.
- Kick-Off the Recycling Program: Announce the office-recycling program through an event or a series of internal emails.
- Keep Up the Enthusiasm: Create employee recycling incentive programs to keep the momentum going.

2. Special Event Recycling

In addition to the recyclables generated during normal county/city activities, there are a number of special events scheduled in the region throughout the year, such as the county fair, at which recycling opportunities could be provided.

These special events present a different kind of recycling challenge:

- Substantial amounts of waste are generated in a short period of time.
- There is a need to coordinate with vendors, event organizers, and others involved with a given event.
- Education and monitoring is important, because contamination is a problem at most special events.

Generally, such events generate significant volumes of corrugated cardboard from vendors. Generation of steel, aluminum, glass, and plastic containers may vary depending on what food/drink vendors are offering. Because it is difficult to anticipate volumes and exact types of materials, it is probably best to collect all recyclable containers commingled in public areas, and provide separate containers for cardboard generated by vendors in areas not open to the public.

It may be possible to have some control over the types of recyclable containers generated by placing guidelines on what vendors can offer, though this may be difficult to enforce and may result in loss of vendors who are not able to meet the guidelines. Another option is simply to provide guidelines that encourage vendors to reduce waste and encourage recycling through use of recyclable/refillable containers, minimal packaging, and bulk condiments in containers (rather than single serve packages).

The number and types of collection containers and how they are serviced will need to vary somewhat based on the size, area, and nature of the event. Even with specially designed containers, however, contamination will probably still be a problem. To reduce this problem, volunteers from organizations could act as monitors at recycling points to greet and educate the public about recycling educate participants and raise recycling awareness.

3. Expanded Recycling Drop-Box Program

Benton County and the cities could consider expanding the current drop-off center program by either adding additional materials for collection or adding additional sites located in the county:

- At a minimum, the county and cities should periodically evaluate the range of recyclables accepted at the current drop boxes (as required by the 1999 Ecology planning guidelines) and determine whether new materials should be added.
- The county and cities also should monitor growth patterns within the county and provide drop boxes to areas that are showing increased growth.

4. Rewards Program for Residential Recyclers

One method to encourage residents to subscribe to curbside recycling is to reward those that do--with cash prizes or gift certificates. Below is a description of a program used by one community to encourage recycling.[3] Kennewick could adopt a similar, but modified, program.

Six Lucky Fontana Residents per Month Could Win Cash for Recycling Correctly!

The City of Fontana and Burrtec Waste Industries want to reward Fontana residents who take the time to recycle correctly...with a CASH PRIZE of up to $100!

Residents who recycle correctly keep rates lower for everyone and recycling everything possible lowers the amount of trash going to the landfill! We want to put Fontana at the Top of the Heap of cities that recycle - you can help by taking the Recycling Challenge.

We encourage you to participate by entering the contest and recycling correctly...you could turn your BLUE and GREEN BINS into a win-win payoff for you and the environment! Six names will be drawn each month, see details below.

How to Enter:

Fill out the entry card inside and drop it in the mail — or drop it off at the City of Fontana Public Works Center.

If your entry is selected, we will take your BLUE (recyclables) bin and your GREEN (yard waste) bin on your regularly scheduled trash pickup day.

We will analyze the contents of your bins and return them to you (emptied) within 24 hours.

If the contents of BOTH of your bins meet the recyclable and yard waste guidelines (see list in this brochure), you win $100 in CASH! (If one bin is correct, you win 50!)

[3] More information available at: http://www.fontana.org/main/public_serv/recycle_contest_e.htm

5. Recognition for Commercial Waste Reduction and Recycling Successes

Businesses are not always motivated solely by the "bottom line." Recognizing this fact, many communities publicly recognize and reward local businesses and organizations for their environmental achievements. The county and cities could take this approach and could provide recognition to groups or businesses that successfully prevent or recycle waste. For example, the City of Richland has the Green Business Award. The county and other cities could follow this lead and offer a similar award program. They could host special events, publish case studies on web sites, and help businesses and organizations attract positive press.

6. Business Education

Similar to education programs aimed at residents, the county and cities can develop educational materials for businesses regarding waste reduction and recycling opportunities. As discussed in the previous section, this information could take the form of brochures.

For outreach, businesses could be targeted by the type of waste they generate. One approach involves categorizing the types of businesses currently operating in the county and their related wastes. For example, the North American Industrial Classification System (NAICS) Codes are used throughout North America to group establishments into broad and specific industries. Industries within the same NAICS code are likely to exhibit similarities in the composition of their disposed waste streams. If one industry is particularly prevalent in a region, for example, it might be cost-effective to target businesses in that particular industry.

Exhibit 2-5 provides two-digit, NAICS codes and their definitions, as well as the number of establishments in Benton County. The County could use this system to assess the prevalence of local industries and use the information to provide insight as to the types of materials most likely to be recovered. By targeting business outreach efforts to just one or two NAICS codes, the County will be able to focus research on materials to just one or two waste streams, and focus its education efforts.

Exhibit 2-5. Benton County NAICS Codes

NAICS Code	Description	Number of Establishments in Benton County
21	Mining	Not published
22	Utilities	Not published
23	Construction	Not published
31-33	Manufacturing	116
42	Wholesale Trade	96
44-45	Retail Trade	585
48-49	Transportation and Warehousing	Not published
51	Information	43

Exhibit 2-5 (continued)

NAICS Code	Description	Number of Establishments in Benton County
52	Finance & Insurance	Not published
53	Real Estate, Rental and Leasing	161
54	Professional, Scientific and Technical Services	345
55	Management of Companies and Enterprises	Not published
56	Administrative, Support, Waste Management, and Remediation Service	160
61	Educational Services	23
62	Health Care and Social Assistance	450
71	Arts, Entertainment, and Recreation	69
72	Accommodation and Food Services	289
81	Other Services (except public administration)	228

Source: U.S. Census Bureau, 2002 Economic Census.

Given the information provided by the U.S. Census Bureau, initial efforts could target retail establishments and health care establishments.

7. Commercial Waste Audit Assistance

Many industry associations have taken on the role of promoting recycling within their industries. This is particularly true for large businesses where waste reduction and recycling provide opportunities to reduce overhead costs and where disposal costs have risen substantially. It is often the smaller businesses that may lack information about opportunities and the role recycling may play in reducing disposal costs.

The City of Richland offers businesses information on its website on how to conduct a waste audit. However, Benton County could provide its smaller businesses with free technical assistance, by providing waste audits. A waste audit is essentially a comprehensive study of wastes generated by a business or establishment. A waste audit should go beyond measuring the quantity of waste and identifying its composition, to identifying the underlying reasons and operational factors for waste generation. A waste audit should address:

- The amount, nature, and composition of the waste generated in all functional areas of an establishment.
- How the waste is produced, including relevant management policies and practices.
- How the waste is managed.

The information from the waste audit is the basis for identifying and developing the waste reduction and recycling options for the business.

8. Use Economic Development to Attract Recycling Businesses

Benton County could consider mechanisms to attract business that manufacture recycled products or assist its current businesses with methods to use recycled materials. This helps to close the loop for recycling and provides Benton County with markets for its collected recyclables.

A "Recycling Market Development Zone" is a means to attract businesses that manufacture products using waste materials, and also create jobs and tax revenue for the region, by offering profitable incentives to those manufacturers. Such a program could be modeled after that used in California.

The California Integrated Waste Management Board's (CIWMB) Recycling Market Development Zone program combines recycling with economic development to fuel new businesses, expand existing ones, create jobs, and divert waste from landfills. This program provides low-interest loans, technical assistance, and free product marketing to businesses that: (1) process secondary materials or use materials from the waste stream to manufacture their products; and (2) are located in one of the specially designated geographical zones throughout California. These designated zones cover roughly 71,790 square miles of California from the Oregon border to San Diego.[4]

Assistance offered by the CIWMB includes:

- Loans: The purpose of these loans is to promote market development for waste materials. CIWMB funds up to 75 percent of the startup costs, up to $2 million per business, for qualified recycling-based businesses (one that manufactures a recycled content product).

- Technical Assistance: Businesses are provided information on sources of secondary materials and processes, markets, technology, and useful organizations.

- Marketing Support: In addition to a state-wide buy recycled directory, the CIWMB operates an online "RecycleStore" to showcase innovative recycled-content products.

Assistance is provided by local zone administrators and the Board's Referral Team. Additional local government incentives, which vary from jurisdiction to jurisdiction, may include:

- Less stringent building codes and zoning laws.
- Streamlined local permit processes and siting assistance.
- Reduced taxes and licensing.

Companies that have used the Recycling Market Development Zone program include a nonprofit e-waste recycler, an organic material recycler, a vermiculture and vermicomposting operation (using earthworms), a tire recycling business, and a construction and demolition debris hauling and recycling firm.

[4] More information available at: http://www.ciwmb.ca.gov/RMDZ

RECOMMENDATIONS

The Solid Waste Advisory Committee reviewed the options discussed above and has recommended the following options:

1. Internal recycling program.
2. Special event recycling.
3. Expanded recycling drop-box program.
4. Rewards program for residential recyclers.
5. Recognition for commercial waste reduction and recycling successes.
6. Business education.
7. Commercial waste audit assistance.

SECTION 2.5
ORGANICS

EXISTING PROGRAMS

The planning guidelines require yard waste collection programs where there are "adequate markets or capacity for composted yard waste within or near the service area to consume the majority of the material collected." The County and cities actively promote backyard composting as a waste reduction method by providing backyard composting workshops. Additionally, yard waste is accepted at the City of Richland Landfill. The material is chipped and mixed with biosolids from the City's Wastewater treatment plant and land applied.

KEY ISSUES

Yard waste comprises a significant portion of the recyclable waste stream. The ban on outdoor burning in urban areas will increase this waste stream. Backyard composting and mulching lawnmowers can lessen the impact of grass clippings and leaves. Brush, limbs and other woody wastes need to be addressed. Community clean-up days where residents are allowed to self haul waste to disposal facilities show an estimated 40% of material is "woody waste." Chipping of this material reduces volume and creates a material that is reusable as mulch, animal bedding, and soil amendment.

Washington State has a statewide goal to eliminate yard debris from landfills by 2012 in those areas where alternatives exist. Additionally, one of the initiatives of the State's Beyond Waste Plan is to increase recycling for organic materials. Furthermore, as of December 30, 2000, burning of residential and land clearing debris is not allowed within the urban growth areas of cities or where there are reasonable alternatives. There also have been instances of illegal dumping of greenwaste within the County.

Many restaurants, institutions, supermarkets and food suppliers often have leftover food which can be a good candidate for diversion, as well as provide greater uses for this resource. Food waste is often characterized as "pre-consumer" or "post-consumer." Pre-consumer food waste typically is generated as a result of commercial/industrial food production or preparation for consumption. Post-consumer food has been served to consumers and is not recoverable for human consumption.

In 2005, a biomass inventory and bioenergy assessment was completed for Washington State. The goal of the study was to inventory Washington's bioresources as a first essential step to implement the state's Beyond Waste strategy for reduction of organic residuals in solid waste. This inventory also is seen as a first step toward a sustainable energy policy and vision within the state.[5]

[5] Washington State University and Washington State Department of Ecology, *Biomass Inventory and Bioenergy Assessment: An Evaluation of Organic Material Resources for Bioenergy Production in Washington State*, December 2005.

The project geographically identified 45 potential biomass sources in Washington at a county level. The biomass inventory was then converted to potential energy production using anaerobic digestion (for non-woody plants) and simple combustion (for woody plants) as representative conversion technologies. Electrical energy production was the calculated product for this study; however, the report notes the need for additional study for other products such as fuels and chemical bioproducts.

The study results show that Benton County has an annual production of over 204,920 tons of underutilized dry biomass that is capable of producing, via assumed combustion and anaerobic digestion, over 174 million kWh of electrical energy. Exhibit 2-6 presents the biomass inventory for Benton County.[6]

OPTIONS

1. Expand Yard Waste Chipping Program

A semi-annual program providing a chipper at designated drop-off sites throughout the area would address the need for additional capacity to handle yard waste in the County. This option would only be implemented when appropriate end use markets are available for the chipped material, which may include public use for parks, medians or other landscaped areas, or in private operations.

2. Food Waste Management

The suggested order for management of food waste which cannot be prevented is: (1) food donation, (2) convert to animal feed and/or rendering, and (3) compost. Local establishments should be encouraged, through educational efforts, to follow this hierarchy when possible. Local haulers could also be encouraged to offer food waste collection services to commercial customers.

- Food Donation: Food that is not wanted and in edible condition may be donated to a food bank. This can include excess food prepared at a restaurant, excess produce or bread from a supermarket, or packaged food that may be about to expire. Food banks typically set standards to guarantee food safety.

- Animal Feed: Food waste may be used as a source of nutrition for animals. Food waste can either be processed minimally and fed to animals or fully processed to remove excess moisture and condensed into small pellets. For this to be a viable option, the food waste must be free of contaminants such as plastics, beverage containers, straws, and utensils.

- Rendering: Rendering companies process animal by-products into saleable commodities. Grease, fats, and oils from restaurants are common by-products collected and processed. Many companies also will accept meat, fat, bone, and carcasses.

[6] More information available at http://www.pacificbiomass.org

- Compost: Food waste that is not fit for food donation or consumption by animals can be suitable for composting. Food wastes require proper source-separation and proper containers to deter odors prior to collection. Again, the waste must be free from plastic contaminants. Food can be collected and sent to a composting facility generally as part of a separate collection route, as well as composted on-site with commercially available vessels.

3. Biomass Processing

Biomass is any sort of vegetation--trees; grasses; and plant parts such as leaves, stems, and twigs. During photosynthesis, plants combine carbon dioxide from the air with water to form carbohydrates, which form the building blocks of biomass. Biomass can produce electricity, heat, liquid fuels, gaseous fuels, and a variety of useful chemicals, including those currently manufactured from fossil fuels. Currently, biomass can be used for:

- Biofuels: Liquid fuels for transportation, such as ethanol and biodiesel.
  - Ethanol is an alcohol that is made using a process similar to brewing beer where starch crops (such as corn) are converted into sugars, the sugars are fermented into ethanol, and then the ethanol is distilled into its final form. Ethanol made from cellulosic or hemi cellulosic biomass materials (such as agricultural and forestry residues) instead of traditional feedstocks (starch crops) is called bioethanol.
  - Biodiesel is manufactured from vegetables oils, animal fats, and recycled restaurant greases.
- Biopower: The use of biomass feedstocks instead of conventional fossil fuels (natural gas or coal) to generate electricity or industrial process heat and steam. Biomass is burned and the resultant heat is used to turn water into steam, which is then used to turn turbines that are connected to electric generators.
- Bioproduct: A chemical, material, or other product derived from renewable biomass resources.

Given the rural nature of Benton County, the potential exists for the generation of significant amounts of biomass that could be used in the production of one of the above-mentioned products.

The County should be aware that not all of the biomass will be available for development of biofuels, biopower, or bioproducts. For example, the biomass report indicates that almost 7,000 tons of grape pomace could be produced. However, many wineries reuse pomace either by composting it or selling it to silage processors who turn it into feed supplements. Additionally, many of the other agricultural wastes mentioned in the report also are beneficially reused and don't enter the waste stream. For example, potato waste from one food processor is sold for cattle feed, and pomace from a fruit processor is trucked to farms for land application.

Inquiries with a small number of food processors and growers indicated some interest in biofuels/bioenergy. Benton County could further investigate the generation and availability of these

feedstocks, and the potential for beneficial reuse of biomass within the county. The County, in conjunction with growers and processors, could investigate the feasibility of developing a facility for the production of biofuels, biopower, or bioproducts.

4. Assess Feasibility of In- or Out-of-County Composting Facility

Composting of yard waste does not occur within Benton County. To address this need, the County could assess the feasibility of developing a composting facility. For example, the City of Richland, as part of the Landfill Master Plan, is evaluating the potential to site a composting facility at the Horn Rapids Landfill, that could include composting of biosolids from the City's wastewater treatment plant. The County and City could work together to further evaluate the potential for County yard waste or other organic materials to be composted at this facility.

Alternatively, the County could evaluate using composting facilities located in other counties for composting of yard waste and other organic materials. The county could enter into a contract with a private operator and/or hauler for the collection and composting of yard waste and other organic materials generated in Benton County.

RECOMMENDATIONS

The Solid Waste Advisory Committee reviewed the options discussed above and has recommended the following options:

1. Expand yard waste chipping program.
2. Food waste management.
3. Investigate opportunities for biomass processing.
4. Assess feasibility of in-or out-of-county composting facility.

Exhibit 2-6. Biomass Inventory for Benton County

Field Residue	Wheat Straw[1]	Other Field Residue[2]	Mint Slug[3]	Hops Residue[4]					**Total**
Biomass (tons/year)	38,454	4,942	6,388	1,080					50,863
Energy (million kWh)	34	4	6	1					45
Animal Waste	Cattle	Horse	Swine						**Total**
Biomass (tons/year)	5,055	13,095	33						18,183
Energy (million kWh)	3	1	0						3
Forestry	Land Clearing Debris[5]								**Total**
Biomass (tons/year)	3,941								3,941
Energy (million kWh)	4								4
Food Packing	Cull Onions[6]	Cull Potatoes[7]	Cull Apples[8]	Cull Misc. Fruit[9]	Asparagus Butts[10]				**Total**
Biomass (tons/year)	551	19,255	3,718	728	48				24,300
Energy (million kWh)	1	23	2	1	0				27
Food Processing	Apple Pomace[11]	Grape Pomace[12]	Misc. Fruit Pomaces[13]	Potato Solids[14]	Asparagus Trimmings[15]	Mixed Vegetables[16]			**Total**
Biomass (tons/year)	2,518	6,932	967	4,040	9	2,826			17,291
Energy (million kWh)	2	5	1	3	0	3			13
Animal Processing	All Animal Mortality[17]								**Total**
Biomass (tons/year)	1								1
Energy (million kWh)	0								0
Municipal	Food Waste[18]	Yard Non-Wood[19]	Yard Burn[20]	Other Organics[21]	Paper[22]	Wood Residue[23]	Yellow Grease[24]	Brown Grease[25]	Bio-solids[26]	**Total**
Biomass (tons/year)	3,645	11,802	451	420	42,319	25,830	463	514	4,896	90,341
Energy (million kWh)	5	9	0	0	38	25	0	0	4	82
Grand Total										**Total**
Biomass (tons/year)										204,920
Energy (million kWh)										174

1. Collectable wheat straw left on fields after harvest (25% collection factor).
2. Combination of data referencing cereal grain burns, grassland and CRP clearing, orchard tear outs and orchard thinning.
3. Remaining grass residue after distillation of mint oil (50 lbs residue/lb mint).
4. Vines, stems, and miscellaneous residue after harvest of hops (50% harvest residue).
5. Land clearing debris from municipal and county land clearing of land for residential and commercial use.
6. Onions not considered suitable for market (5% of harvest).
7. Potatoes not considered suitable for market (10% of harvest).
8. Apples not considered suitable for market and used for juice (10% of harvest).
9. Fruit not considered suitable for market and used for juice (10% of harvest).
10. End of stalk spears that are removed prior to market (25% of harvested mass).
11. Solids remaining after apple processing operations (8.6% of net weight).
12. Solids remaining after grape processing operations for both juice and wine (10% of net weight).
13. Solids remaining after fruit processing operations (17% of net weight).

14. Solids remaining after potato processing operations (3.7% of net weight).
15. Solids remaining after asparagus processing operations (10% of net weight).
16. Solids remaining after mixed vegetables (sweet corn, peas, and carrots) are processed (13% of net weight).
17. Total tons of animal mortality (cattle, swine, horse, and poultry) as determined using national mortality ratios for each animal.
18. Food waste entering the municipal waste collection system as reported by the Department of Ecology through MSW, Diversion and Recycle Databases.
19. Yard waste entering the municipal waste collection system as reported by the Department of Ecology through MSW, Diversion and Recycle Databases.
20. Yard waste estimated to be burned in piles and not entering municipal waste collection system (125 lbs/pile).
21. Organic waste entering the municipal waste collection system as reported by the Department of Ecology through MSW, Diversion and Recycle Databases (other organic defined as manures, carcasses and offal).
22. Paper waste entering the municipal waste collection system as reported by the Department of Ecology through MSW, Diversion and Recycle Databases.
23. Wood waste entering the municipal waste collection system as reported by the Department of Ecology through MSW, Diversion and Recycle Databases
24. Restaurant grease collected (6.7 lbs/person/year).
25. Sewer and pipe grease that are trapped and collected via water treatment facilities (7.44 lbs/person/year).
26. Biosolids produced at municipal water treatment facilities.

Chapter 3

Waste Generation

SECTION 3.1
INTRODUCTION

An accurate analysis of the types and quantities of waste generated provides the necessary data for identifying existing and future solid waste system needs, and the policies and programs to be implemented to meet those needs. This chapter analyzes Benton County's waste generation trends, and utilizes historical and projected population data to produce a 20-year (2005 to 2025) waste generation forecast.

For the purposes of this analysis, waste generation is defined as tons of solid waste disposed and diverted in Benton County. Most types of solid waste are disposed of in landfills; however, some wastes are recycled, incinerated, used as soil amendment, or disposed in sites designated for a specific type of waste. The largest component of the waste stream is mixed municipal solid waste (MSW) and consists of waste typically generated by residences, offices, and other businesses and institutions, excluding special wastes. Special wastes include industrial waste, wood waste, demolition debris, biomedical wastes, sludge and septic tank pumpings, tires, and other types of wastes. Each category of special waste has its own characteristics and handling needs. Special waste and hazardous wastes produced by households, and by businesses in small quantities, are addressed separately in Chapter 6 of this Plan.

Data used in this Plan reflect a key difference between *disposed* and *generated quantities* of waste. As used in this Plan, *disposed* solid waste is considered to be all solid waste placed in landfills within, or outside of the county. Waste *generation* is calculated as the sum of all disposed waste and diverted waste, which includes waste that is recycled, composted, or otherwise diverted from disposal.

$$\text{Waste Generation} = \text{Disposed Waste} + \text{Diverted Waste}$$

SECTION 3.2
COUNTY DEMOGRAPHICS

POPULATION

The population data used for this Plan are consistent with the data used in the Benton County Comprehensive Plan 2006 update.

Historical population growth shown in Exhibit 3-1 reflects a 40% growth rate in the whole County from 1990 to 2005.The greatest growth rate occurred in the incorporated area, with a 44% growth rate during the period 1990 to 2005. The majority of the growth has occurred in the cities of Kennewick, Richland, and West Richland.

Exhibit 3-1. Benton County Population, 1990-2005[7]

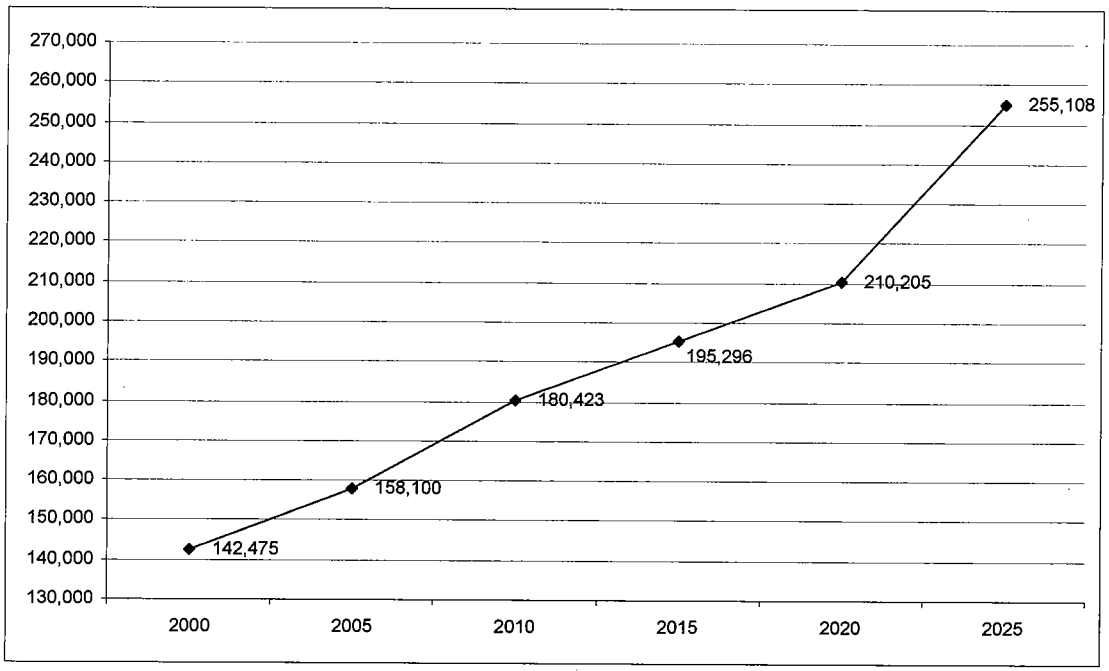
	1990 Population	2005 Population Estimates	Rate of Population Growth	Change in Population
County Total	**112,560**	**158,100**	40.5%	45,540
Unincorporated	**27,849**	**36,075**	29.5%	8,226
Incorporated	**84,711**	**122,025**	44.0%	37,314
Benton City	1,806	2,840	57.3%	1,034
Kennewick	42,152	60,410	43.3%	18,258
Prosser	4,476	5,045	12.7%	569
Richland	32,315	43,520	34.7%	11,205
West Richland	3,962	10,210	157.7%	6,248

[7] Washington State Office of Financial Management, May 2006.

PROJECTED GROWTH

The population projections for the solid waste management Plan planning period 2005 to 2025 utilizes the 2006 County Comprehensive Plan data. Based on this data, it is estimated that the County's population will reach 255,000 by the year 2025. Exhibit 3-2 shows population projections in 5-year increments.

Exhibit 3-2. Benton County Population, 2000-2025[8]



[8] Benton County Comprehensive Plan, 2006.

SECTION 3.3
WASTE STREAM ANALYSIS

EXISTING WASTE GENERATION

In 2005, the total amount of waste reported as generated in Benton County was approximately 326,000 tons, including 208,000 tons disposed and 118,000 tons diverted.

Exhibit 3-3 depicts the amount of solid waste disposed from the County since 2000. As indicated, disposal has increased over the last 6 years, from approximately 120,000 tons in 2000 to just less than 200,000 tons in 2005. Much of the increase in disposal can be related to the increase in population and economic growth in the County, both of which can directly contribute to an increase in the amount of waste generated.

Exhibit 3-3. Tons of Solid Waste Disposed, 2000-2005

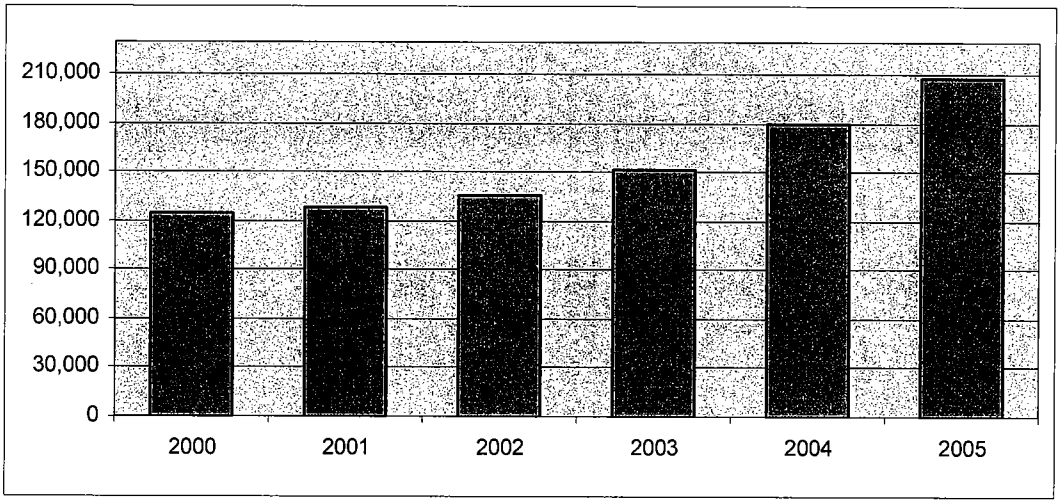
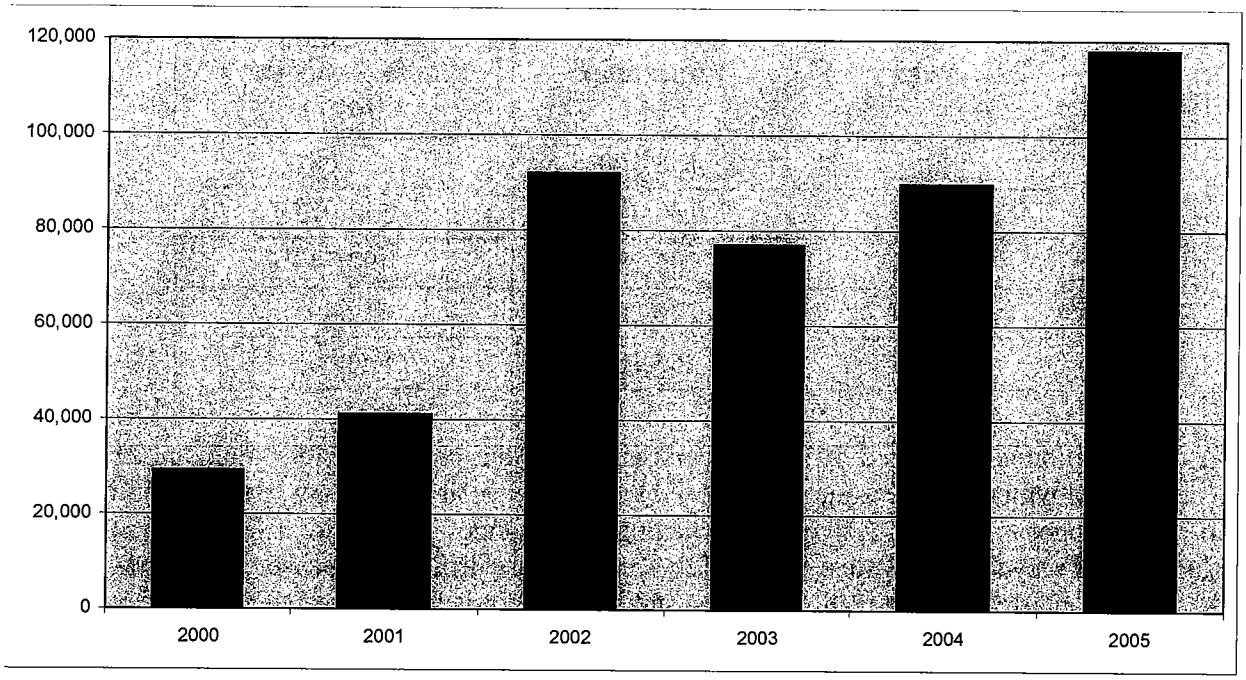


Exhibit 3-4 indicates the quantities of waste diverted by year from 2000 through 2005. As indicated, diversion increased from 30,000 tons in 2000 to over 90,000 tons in 2002, but then decreased to less than 80,000 tons in 2003. In 2004 diversion increased, and in 2005 reached a total of 118,000 tons.

Exhibit 3-4. Tons of Diversion, 2000 to 2005



WASTE GENERATION PROJECTIONS

The methodology used to estimate solid waste generation rates for the next 20 years consists of using the per capita generation rate and multiplying this rate by population projections. The per capita waste generation rate for the State of Washington in 2004 (the last year it was calculated) was 13.8 lbs/person/day (including inert and limited purpose landfills), or 5,037 lbs/person/year. Utilizing this number and Benton County population data, the 2005 waste generation in Benton County would be calculated to be over 390,000 tons, which is more than 60,000 tons higher than the 326,000 reported for the County in 2005. Ecology also published a generation rate of 7.5 lbs/ person/day (2,741 lb/person/yr) for 2004, which does not include inert or limited purpose landfills. Using this per capita generation rate, the County's estimated generation rate for 2005 would be 217,000 tons, which is considerably less than documented for the year.

Therefore, this study calculates the County's per capita generation rate using the known data from 2005. That calculation is:

$$\text{Generation Rate (2005)} = \frac{\text{Total Waste Generation (tons)}}{\text{Population (pp)}} = \frac{326{,}149 \text{ (tons)}}{158{,}100 \text{ (pp)}} \times \frac{2{,}000 \text{ lb}}{\text{ton}} \times \frac{365 \text{ days}}{\text{year}} = 11.3 \text{ lb/pp/day}$$

Exhibit 3-5 utilizes population projections from the County Comprehensive Plan and reflects the total waste generation over the 20-year planning period using the 2005 Benton County per capita generation rate.

Exhibit 3-5. Benton County Solid Waste Projections

Year	Population	Projected Waste Generation (tons)
2005	158,100	326,041
2010	180,423	372,077
2015	195,296	402,749
2020	210,205	433,495
2025	255,108	526,096

Waste generation is influenced by various demographic and economic factors, including changes in levels of employment and personal income, the value of recyclable materials, the price of disposal services, changes in product design and packaging, and changes in behavior affecting waste reduction and recycling activities. Some of these factors are difficult to measure over time, while others are so interrelated that using them in a statistical analysis lowers the accuracy of the forecast. For these reasons a forecast was developed based on the historical waste generation and using population to indicate the upper limit of potential increase in solid waste generation within the county. However, it is important to realize that any of these related factors may change within the forecast period. To maintain accuracy, the generation rate should be monitored and projections should be routinely updated.

LEVEL OF SERVICE

The population projections for Benton County predict a growth of approximately 97,000 people between 2005 and 2025. In order to maintain an adequate level of service, Benton County will need to provide waste management programs for an additional 168,000 tons generated in 2025.

SECTION 3.4
WASTE COMPOSITION

In addition to the amount of waste being generated, it is important to evaluate the components of disposed waste in order to identify potentially recyclable materials. This information is valuable in planning effective recycling and waste minimization programs.

Several factors affect waste composition, including opportunities available for recycling or composting materials, types of business and industry, the area climate, occurrence of natural disasters, mix of urban versus rural designations, the density of single and multi-family dwellings, and technological advances.

No detailed waste composition study has been performed to date for Benton County. Waste composition studies from other jurisdictions were reviewed,[9] and it was determined by the consultant that the waste composition study conducted for Yakima County in 2002-2003 is most representative of Benton County's disposed waste, due to proximity to the County and similar geography and climate. In order to estimate Benton County's disposed composition, the categorical percentages from the Yakima County study were multiplied with the total disposed tonnage for Benton County in 2005.

The results of the composition analysis are shown in Exhibit 3-6. The information presented in Exhibit 3-6 is important for identifying the types and quantities of materials that could potentially be targeted for recycling or other diversion programs.

[9] "Waste Composition Analysis for the State of Washington," Green Solutions, Inc., June 2003.

Exhibit 3-6. Waste Disposal Composition Summary for Benton County Using Yakima County Percentages[10]

Category	Yakima County Percentages (%)	Benton County Estimated Tons
Paper	**16.7%**	**34,631**
Newspaper	2.1%	4,383
Cardboard	4.4%	9,203
Other Groundwood Paper	0.3%	582
High-grade Paper	0.8%	1,600
Magazines	0.70%	1,454
Mixed/Low-grade Paper	3.8%	7,811
Compostable Paper	3.6%	7,437
Other Paper	1.0%	2,161
Plastic	**12.5%**	**26,030**
PET Bottles	0.6%	1,288
HDPE Bottles, Clear	0.4%	789
HDPE Bottles, Colored	0.3%	582
Plastic Film and Bags	4.1%	8,559
Plastic Bottles Types 3 - 7	0.1%	83
Expanded Polystyrene	0.5%	935
Other Rigid Plastic Packaging	1.8%	3,739
Other Plastic Products	3.9%	8,060
Other Plastic	1.0%	1,994
Organics	**19.3%**	**40,094**
Food Waste	5.05%	10,491
Mixed Food, Other	5.42%	11,260
Yard Debris	8.29%	17,222
Brush and Prunings	0.54%	1,122
Wood Wastes	**12.84%**	**26,674**
Natural Wood	0.37%	769
Treated Wood	0.14%	291
Painted Wood	3.03%	6,295
Contaminated	0.78%	1,620
Dimensional Lumber	2.32%	4,820
Engineered Wood	2.71%	5,630
Roofing, Siding	0.77%	1,600
Pallets, Crates	1.69%	3,511
Other Wood	1.03%	2,140

[10] Ibid.

Exhibit 3-6 (continued)

Category	Yakima County Percentages (%)	Benton County Estimated Tons
CDL Wastes	**5.11%**	**10,616**
Fiberglass Insulation	0.10%	208
Asphalt	0.00%	0
Concrete	0.50%	1,039
Drywall	1.06%	2,202
Soil, Rocks	1.79%	3,719
Roofing	1.08%	2,244
Ceramics, China	0.16%	332
Other CDL	0.42%	873
Glass	**3.96%**	**8,227**
Clear Bottles	1.35%	2,805
Green Bottles	0.20%	415
Brown Bottles	0.86%	1,787
Non Recyclable Glass	1.55%	3,220
Metal	**11.94%**	**24,805**
Aluminum Cans	0.48%	997
Aluminum Foil	0.09%	187
Aerosol Cans	0.15%	312
Non-ferrous Metals	1.01%	2,098
Tin Cans	0.99%	2,057
White Goods	0.33%	686
Ferrous Metals	3.69%	7,666
Computers	0.52%	1,080
Other Electronics	0.57%	1,184
Mixed Metals	4.11%	8,538
Other Waste	**15.54%**	**32,283**
Textiles	2.66%	5,526
Carpeting	1.56%	3,241
Disposable Diapers	1.99%	4,134
Tires and Other Rubber	0.15%	312
Rubber Products	0.31%	644
Cosmetics	0.12%	249
Furniture	2.19%	4,550
Ash, Dust	0.17%	353
Misc. Organics	0.07%	145
Misc. Inorganics	0.31%	644
Fines	1.66%	3,449
Residuals	4.35%	9,037

Exhibit 3-6 (continued)

Category	Yakima County Percentages (%)	Benton County Estimated Tons
Hazardous / Special Wastes	**2.86%**	**5,941**
Motor Oil, Other	0.01%	21
Oil Filters	0.06%	125
Antifreeze	0.00%	0
Auto Batteries	0.00%	0
Household Batteries	0.11%	229
Pesticides and Herbicides	0.01%	21
Latex Paint	0.19%	395
Oil Paint	0.08%	166
Medical Waste	0.04%	83
Fluorescent Tubes	0.02%	42
Solvents	0.02%	42
Adhesives, Glues	0.50%	1,039
Cleaners, Corrosives	0.04%	83
Gasoline, Fuel Oil	0.00%	0
Animal Carcasses	0.09%	187
Animal Excrement	0.66%	1,371
Other Special Wastes	0.27%	561
Truly Hazardous Wastes	0.76%	1,579
Total Tons		**209,301***

* Totals may not match due to rounding.

Chapter 4

Collection Systems

4.1 INTRODUCTION

This chapter provides a discussion of refuse collection in Benton County, including background information on how refuse collection is regulated, the legal authority that counties and municipalities have in managing collection services for solid waste and recyclables, and existing conditions for these activities. The chapter concludes with a discussion of the key issues surrounding collection, and represents options for meeting existing and future collection needs in the county.

For the purposes of this plan, Benton County has established a goal to provide for efficient collection, transfer, and disposal of MSW and recyclables. To meet this goal, the following objectives have been identified:

- Ensure access to collection or drop-off services for residences, businesses, and industry.
- Locate recycling and solid waste transfer and disposal facilities to optimize service levels and transportation efficiencies.
- Ensure adequate disposal capacity.

4.2 BACKGROUND

The Washington Utilities and Transportation Commission (WUTC), the county, and the municipalities regulate refuse collection in Benton County. The regulatory authority and jurisdiction of each of these entities is described below.

WUTC Authority

The WUTC supervises and regulates solid waste collection companies. WUTC authority (Chapter 81.77 RCW and Chapter 480-70 WAC) is limited to private collection companies and does not extend to municipal collection operated by municipalities or their contractors. The Commission requires reports, establishes rates, and regulates service areas and safety practices.

A private solid waste collection company must apply to the WUTC for a certificate of public convenience and necessity to operate in the unincorporated areas of the county or in incorporated areas which choose not to regulate refuse collection. The WUTC grants certificates within a designated service area to an applicant based on cost data, documented need for the service, and, if the district is already served by a franchise holder, the ability or inability of the existing franchise holder to provide service to the satisfaction of the WUTC. The Commission requires annual reports showing the refuse collection company's gross operating revenue. Certificates may have terms and conditions attached and may be revoked or amended after a hearing held by the WUTC.

The Commission conducts open meetings for public discussion of rate increase requests or "rate cases." At these meetings, Commission staff presents their review of the hauler's request for a rate increase. Representatives of the haulers and the counties are welcome to attend and comment on the Commission staff's findings and present other information relative to the case. Hearings are

scheduled during rate cases when there are unresolved issues between Commission staff and certificate haulers, or on other occasions when the Commissioners believe a case merits formal adjudicative handling. County experts witnesses may be called to testify, or may enter as an intervening party. County governments may offer written or oral comments during all rate cases affecting certificate haulers serving unincorporated areas of the county.

Commission regulation of solid waste collection companies does not include collecting or transporting of recyclable materials from a drop box or recycling buy-back center. It also does not include collecting or transporting recyclable materials by or on behalf of a commercial or industrial generator of recyclable materials to a recycler for use or reclamation (Chapter 81.77.010(8) RCW). Transportation of these materials is regulated under Chapter 81.80 RCW which governs the regulation of motor freight carriers. These carriers require a WUTC permit and proof of insurance to operate in the state. If the commercial recycling hauler also possess a certificate to operate as a solid waste company, WUTC is responsible for ensuring compliance with safety practices. For other commercial recycle haulers, the Washington State Patrol oversees hauler traffic safety practices.

County Authority

The rights of the counties in terms of solid waste collection include the establishment of solid waste collection districts for the mandatory collection of solid waste (Chapter 36.58.100 RCW). However, solid waste collection districts cannot include incorporated areas without the consent of the legislative authority of the city or town.

To form a solid waste collection district, public hearings must be held and the county legislative authority must determine that mandatory collection is in the public interest. County provision of collection services can be implemented only if the WUTC notifies the county that no qualified haulers are available for a district. Under mandatory collection, a hauler may request that the county collect fees from delinquent customers.

In Benton County, all unincorporated areas are covered by WUTC certificate holder franchises, there are no solid waste collection districts. Although county authority to collect refuse in the unincorporated areas is limited, counties have the legal authority to assess fees on collection services provided in those areas. Presently, Benton County includes a surcharge tax on garbage collected in the unincorporated portions of the County. RCW 36.58.045 authorizes counties to assess such fees to fund administration and planning expenses associated with solid waste management.

Municipality Authority

Cities and towns have several options for managing solid waste collection under state law, including:

- The city may choose not to manage or regulate its own refuse collection services. Collection services may then be provided by the certificate hauler(s) with authority for that area under the regulation of WUTC.

- The city may require a private company to obtain a refuse collection license from the city and to conform to all city collection guidelines.

- The city may award contracts to private companies for refuse collection in all or part of the city. The contract hauler does not need to hold a WUTC certificate for that area. Usually contracts are awarded on a competitive basis to the lowest bidder.

- The city may decide to manage and maintain its own municipal collection system for all or part of its jurisdiction.

- The WUTC would not have jurisdiction over the last two options (Chapter 81.77.020 RCW). State law also allows municipalities to require residents and businesses to subscribe to designated refuse collection services.

The City of Richland is the only municipality in the region that provides collection services through a city solid waste utility.

Franchise Holders

Trash collection service in the unincorporated portions of Benton County is voluntary. All areas of the County are under franchise and curbside pickup is available. Rates for these areas are approved by the WUTC. The following are refuse haulers franchised by the WUTC for Benton County:

Certificate G-118
Basin Disposal, Inc.
PO Box 3850
Pasco, WA 99302-3850
(509) 547-2476

Certificate G-110
Ed's Disposal, Inc.
PO Box 3850
Pasco, WA 99302-3850
(509) 547-2476

Certificate G-173
Sanitary Disposal, Inc.
Box 316
Hermiston, OR 97838
(541) 567-8842

Certificate G-237
Waste Management of Kennewick
PO Box 6088
Kennewick, WA 99336-0088
(509) - 582-5121

4.3 EXISTING REFUSE COLLECTION SERVICES

Each municipality has the right to regulate its own solid waste collection services. The City of Richland is the only municipality in the region that provides collection services through a city solid waste utility. The remainder of the municipalities contract for their collection services. The collection services areas are shown in Exhibit 4-1.

City of Richland

The City of Richland provides its own curbside collection of trash. Richland city crews collect garbage on a Monday through Friday schedule. The city provides one container per household for

automated collection service. A second container may be obtained for a $50 maintenance fee, prepaid tags for may be purchased for 75 cents each to attach to extra bags of residential refuse.

City of Kennewick

The City of Kennewick contracts with Waste Management to provide collection services to homes and businesses within the city. Residents are able to choose either a 35-gallon or a 90-gallon cart for trash. If a customer elects to subscribe to the 35-gallon cart service, there is an additional charge for each extra bag or container that doesn't fit in a cart with the lid closed (or is above the 65-pound limit). Customers subscribing to the 90-gallon cart service may set out unlimited amounts of garbage for the base rate, as long as it is placed in a Waste Management provided cart. There is a minimal rental fee for each additional cart. Weekly curbside recycling is included in this service.

City residents also are provided coupons that allow them the opportunity to self-haul waste to the transfer station free of charge up to 12 times per year. Waste Management also offers scheduled holiday clean-ups.

City of Prosser

Prosser has unlimited curbside collection services provided by Basin Disposal, Inc. Additionally, Prosser sponsors spring and fall clean up events. Basin Disposal, Inc., transfers waste to Finley Buttes Landfill in Oregon.

Benton City

The residents of Benton City have unlimited collection services provided by Ed's Disposal, Inc.

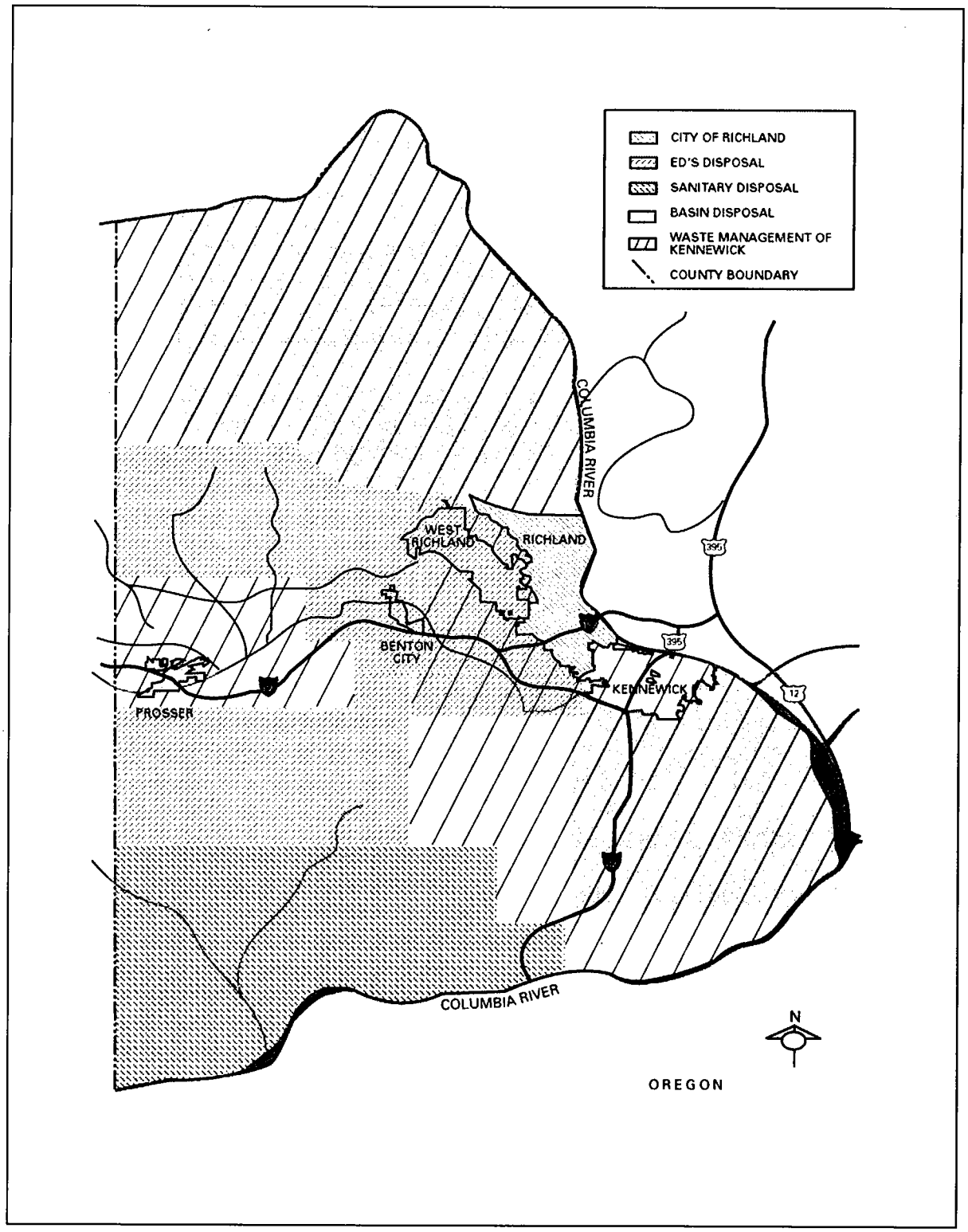
West Richland

Trash collection in the City of West Richland is provided through a City partnership with Ed's Disposal, Inc. Residents are provided with unlimited collection services. An additional fee is charged to citizens if they choose to use an extra automated container. There is no additional cost for additional bagged waste.

Unincorporated Benton County

Trash collection in unincorporated Benton County is voluntary and trash collection services are provided under a franchise granted by the WUTC. Four haulers are franchised by the WUTC for Benton County.

Exhibit 4-1. Benton County Collection Service Areas



Waste collected from unincorporated Benton County is managed as follows:

- Basin Disposal, Inc.: Serves primarily the eastern tip of Benton County and the Hanford site. Waste collected by Basin Disposal, Inc., trucks is brought to a transfer station located in Pasco (1721 Dietrich Road) and is long-hauled to Finley Buttes for final disposal.

- Ed's Disposal, Inc.: Ed's Disposal, Inc., of Pasco primarily serves central Benton County. Waste is transported to a transfer station in Pasco and long-hauled to the Finley Buttes facility for final disposal.

- Sanitary Disposal, Inc.: Sanitary Disposal, Inc., from Hermiston, Oregon, collects waste from the southwestern corner of Benton. Waste collected in this section of the county is transported to a transfer station in Umatilla County, Oregon, between the Cities of Hermiston and Umatilla, and is long-hauled to Finley Buttes for final disposal.

- Waste Management of Kennewick: Serves portions of unincorporated Benton County for the collection and disposal of solid waste. Waste collected by Waste Management is transported to its transfer station in Kennewick and hauled to Columbia Ridge landfill for disposal.

Collection Services for Other Jurisdictions

Any company that provides refuse collection on a federal reservation and transports the waste over a public highway is regulated by the WUTC. If the collection and disposal are completely on a federal reservation, no certificate from WUTC is required. Waste Management of Kennewick and Basin Disposal Inc. of Pasco provide roll-off container collection services for some contractors in the Hanford Reservation. The U.S. Department of Energy provides for most of its own waste collection services at the Hanford Reservation and contracts with a private hauler from Franklin County. The Washington Public Power Supply System, located on the Hanford Reservation transports its waste to the Horn Rapids Landfill for disposal.

4.4 EXISTING PROGRAMS FOR SELF-HAULED WASTE

Several options are available in the County for residents that choose to self-haul their waste.

Drop Box Facilities

There is a Drop Box Facility located in Prosser for city residents that choose to self haul. This drop box is operated by Basin Disposal Inc. The drop box is open for 16 hours per week on Wednesdays, Fridays, and Saturdays. Paints, auto batteries, and non-commercial motor oil and antifreeze also are accepted at the facility.

Ed's Disposal, Inc., operates a Drop Box Facility within Benton City. This drop box is also open 16 hours per week, on Thursdays and Saturdays. The facility also accepts paints, auto batteries, and non-commercial motor oil and antifreeze.

The Drop Box facilities consist of an elevated receiving floor and a stationary compactor unit. The receiving floor is generally 20 feet by 30 feet in size and is constructed of asphalt. The facility operator uses a tollbooth on-site to conduct transactions.

Once waste is compacted into the container, the loaded container is transported to the Columbia Basin LLC transfer station located in Pasco prior to shipment to Finely Buttes for disposal. Exhibit 4-2 provides a summary of waste tonnages collected at the two drop boxes.

Exhibit 4-2. Tons of Waste Collected

Drop Box Facility	Year				
	2001	2002	2003	2004	2005
Benton City	103.4	162.9	314.9	269.6	223.6
Prosser	117.6	146.4	271.5	244.1	240.0

Source: Annual reports submitted to Department of Ecology.

Transfer Station

Waste Management operates a transfer station in Kennewick which is available for use by collection vehicles and the general public. The facility also includes a public recyclable materials and limited-purpose moderate risk waste drop-off area that accepts used oil, used antifreeze, and paint. The facility generally is open 5 days per week.

Horn Rapids Landfill

County residents also may self-haul waste to the Horn Rapids Landfill. Richland residents who show a valid utility bill, matching identification, and are present in the vehicle may dispose of household trash free of charge.

4.5 COLLECTION OF RECYCLABLES

Legislation passed in 1989 (State of Washington Chapter 431, Laws of 1989) directs counties and cities to define minimum levels of service within the waste reduction and recycling elements of the solid waste management plan. In determining the level of recycling service to be provided, the counties and cities must develop clear criteria for designating areas as urban and rural.

Urban and Rural Designation

The 1989 legislation allows counties to contract for the collection of source-separated recyclable materials from residences within unincorporated areas. Under this provision, counties can manage, regulate and establish the price of curbside recycling collection services. However, this does not mean the counties are authorized to operate their own solid waste collection systems as municipalities may. If the counties do not elect to contract for the collection of source separated recyclable materials from residences, the WUTC must be notified in writing no later than ninety days following the approval of the solid waste management plan's waste reduction and recycling

element. Upon notification, the WUTC would have the responsibility for implementing any mandated curbside recycling or yard waste programs and determining their service levels, as addressed in the waste reduction and recycling element of the solid waste management plan.

Municipalities have the authority to provide or contract for residential curbside recycling services within their boundaries (Chapter 35.21.120 RCW). Additionally, they have the authority to manage, regulate, and fix the price of these services. Municipalities designated as urban are required to provide curbside collection of recyclables, or an equivalent program [70.95.090(7)(b)(i)]. Municipalities designated as rural may choose to meet minimum service level requirements either independently or in cooperation with the county.

The 1999 planning guidelines issued by the Department of Ecology require local governments to develop clear criteria to determine the designations for urban and rural areas for disposal and waste reduction and recycling (RCW 70.95.092). Criteria to be considered include:

- Anticipated population growth.
- The presence of other urban services.
- Density of developed commercial and industrial properties.
- Geographic boundaries and transportation corridors.

The Cities of Kennewick and Richland have been designated as "urban" (population of 12,000 or more) and the remainder of Benton County is designated "rural."

Existing Residential Collection Programs for Recyclables

The principal method for collecting recyclables generated in Benton County is through a system of conveniently located drop boxes. The location of drop boxes was provided in Chapter 2.

The City of Kennewick, through Waste Management, has a curbside collection program that collects glass; tin and aluminum; PETE and HDPE; used motor oil; and newspaper, cardboard, mixed paper, and magazines.

4.6 KEY ISSUES

Requirements for future solid waste collection will depend upon population growth rates. As required in RCW 70.95.090(5)(d), solid waste collection needs must be projected for the next 6 years. Estimated current population and housing densities are provided in Exhibit 4-3. Forecasted growth in population for Benton County for the years 2005 through 2015 was provided in Exhibit 3-2.

Exhibit 4-3. Estimated Population and Housing Densities for Incorporated Areas

Municipality	Land Area (sq. mi.)	2005 Population	Average Estimated Population Density (pop./sq. mi.)	Number of Housing Units (2000 Census)	Average Estimated Housing Density (houses/sq. mi.)	Average Estimated Housing Density (houses/acre)
Benton City	1.7	2,840	1,671	1,043	614	0.96
Kennewick	22.9	60,410	2,638	22,043	963	1.50
Prosser	4.3	5,045	1,173	1,800	419	0.65
Richland	34.8	43,520	1,251	16,458	473	0.74
West Richland	21.7	10,210	471	3,092	142	0.22

Requirements for future collection services will depend on population growth rates. In 2005, the population of unincorporated Benton County was 33,695 and incorporated Benton County was 138,926. According to the Washington State Office of Financial Management, the population of unincorporated Benton County will reach 44,918 and incorporated Benton County will reach 150,378 by the year 2015. This level of growth will most likely require additional collection routes. In addition, the City of West Richland is expected to exceed 12,000 residents between the years 2015 and 2020 and will be required to provide curbside recycling, or an equivalent program, under the current "urban" designation.

4.7 OPTIONS

At this time, solid waste collection appears adequate for the residents of Benton County. However, continued population growth will likely require additional collection routes in the future.

The following options have been submitted to the Solid Waste Advisory Committee for their consideration:

1. Change Recycling Service Levels to Capture More Households.

As discussed above, the WUTC requires certificate holders to implement the provisions of the waste reduction and recycling element of a comprehensive solid waste management plan. As discussed earlier, the County has established a minimum population of 12,000 to receive curbside recycling. At this time, Kennewick provides curbside recycling, while Richland provides "equivalent" recycling opportunities through the use of drop boxes located throughout the city.

The County could consider changing the population requirement as a means to offer more recycling services in certain areas. For example, the County could use housing density rather than population. The WUTC haulers will be required to provide the recycling services specified in this plan. By working with haulers, the County could define a new minimum service level that expands recycling and encourages haulers to invest in additional equipment for service.

2. Contracting for Recycling.

Counties have the authority to contract with private vendors to provide recycling services to residences. Counties that choose this option assign service areas, establish and enforce service standards, and set rates. The County can consider contracting for residential recycling collection in unincorporated areas where a hauler fails to provide residential recycling established by the minimum service level.

3. Alternative Collection Strategies.

The County could encourage haulers to implement alternative co-collection strategies as a means to offer collection of recyclables where it is currently not offered. Co-collection is the collection of waste and recyclable materials at the same time. Co-collection is accomplished by using methods that fall into two general categories:

- Bin-based methods: One truck with two or more compartments is used to hold the different materials (trash in one compartment and recyclable materials in one or more other compartments). The compartments are then emptied separately, sometimes at two different facilities. This option would require the franchised haulers to purchase new trucks.

- Bag-based methods: Sometimes recyclables are separated by residents into a "blue bag" but still placed in a container with their trash. The bags are then collected in the same truck compartment as the trash and recovered later after the load is emptied on the floor of a transfer or processing facility.

The advantage of co-collection is that collection costs and truck traffic can be reduced. Potential disadvantages include the inefficiencies that result from incorrectly-sized compartments (for bin-based methods) or the loss of recyclable materials due to bag breakage (for bag-based methods) Several co-collection programs have been tried in other areas and failed due to such problems.

4. Mandatory Collection in Unincorporated Areas.

Currently, collection services in most of the unincorporated county are voluntary. Residents and businesses may choose to self-haul their waste to drop boxes, transfer stations, or to the Horn Rapids landfill. The County could consider making collection services mandatory. Mandatory collection requires that all residents within a defined area sign up and pay for a minimum level of service. The primary reasons for taking this step are to minimize illegal dumping and to distribute the costs of recycling and solid waste management equitably among all residents.

To require mandatory collection in an unincorporated area or county-wide, the County would be required to form a collection district as described in RCW 36.58A.030 The statute requires the County to hold public hearings on the issue and get approval by the County Commissioners. The Commissioners could approve a mandatory collection district in all or part of the County if it was deemed in the public interest and necessary for the protection of public health. The procedures and costs to the County to form a collection district could be substantial.

A proposal for mandatory collection also may draw criticism from private haulers and residents. Requiring mandatory collection of all residences, particularly those in remote areas, could incur substantial additional costs to haulers in terms of travel time, equipment maintenance, and use of vehicles with little payload. These costs are not easily recovered under the current WUTC regulatory system.

RECOMMENDATIONS

The Solid Waste Advisory Committee reviewed the options discussed above and has recommended the following option:

1. Change service levels to capture more households for recycling.

Chapter 5

Transfer and Disposal

5.1 INTRODUCTION

This chapter includes a discussion of solid waste handling systems that includes transfer stations, landfills, and export of waste outside of Benton County and the laws governing these activities.

5.2 TRANSFER STATIONS

Waste transfer stations play an important role in a waste management system, serving as a link between local waste collection programs and the final disposal facility. The primary reason for using a transfer station is to reduce the cost of transporting waste to disposal facilities. Consolidating smaller loads from collection vehicles into larger transfer vehicles enables collection crews to spend less time traveling to and from distant disposal sites and more time collecting waste. Transfer stations reduce overall transportation costs, air emissions, energy use, truck traffic, and road wear and tear. Three privately-operated transfer stations are used for management of waste generated in Benton County. The transfer stations include:

- Waste Management operates a transfer station in Kennewick that is available for use by collection vehicles and the general public. The facility also includes a public recyclable materials and limited-purpose moderate risk waste drop-off area that accepts used oil, used antifreeze, and paint. The facility generally is open five days per week.

- Columbia Basin LLC, d.b.a. BDI Transfer, operates a transfer station in Franklin County, at 1721 Dietrich Road in Pasco, which is available for use by commercial haulers and the general public. The facility accepts municipal solid waste, recyclable materials, and moderate risk waste (moderate risk waste is accepted from Franklin County residents only). Waste collected in Benton County by Basin Disposal, Inc., and Ed's Disposal, Inc., is sent to this facility.

- Waste collected by Sanitary Disposal is sent to a transfer station in Umatilla County, Oregon, between the Cities of Hermiston and Umatilla.

Tonnages of municipal solid waste received at the facilities, which originated from Benton County, are provided in Exhibit 5-1.

Exhibit 5-1. Transfer Station Tonnages - Municipal Solid Waste

Transfer Station	Year			
	2002	2003	2004	2005
Kennewick	73,421.6	76,994.5	77,862.8	79,386.6
Pasco	28,459.8	30,382.5	36,565.9	48,127.9
Hermiston	425.2	424.8	411.4	475.81

5.3 LANDFILLS

Landfilling is the disposal method whereby solid waste is permanently placed in or on land. Solid waste landfills in the State of Washington are regulated by local health departments and the Department of Ecology through the Minimum Functional Standards (MFS) Chapter 173-351 WAC. This section will provide information on landfills regulations, landfill goals, local facilities, and an inventory of present capacity.

Landfill Regulations

On October 9, 1991, the EPA promulgated the Solid Waste Disposal Facility Criteria, Final Rule (40 CFR Parts 257 and 258). These standards, issued under authority of the Resource Conservation and Recovery Act (RCRA) of 1976, set forth location restrictions, requirements for facility design and operations, groundwater monitoring, corrective action measures, and landfill closure standards. Under law, Congress has assigned primary responsibility for managing solid waste to state and local governments. States are required to incorporate federal standards into current state waste permitting programs. The most significant costs to implement the new federal standards are associated with design requirements, groundwater monitoring, corrective action, and facility closure/post closure costs.

Ecology responded to the new federal standards in November of 1993 with its revised Minimum Functional Standards (Chapter 173-351 WAC). In general, the MFS standard for municipal solid waste landfills must be at least as strict, in every way, as the federal standards. However, because the federal standards do not establish rules for non-municipal solid waste landfills (i.e., demolition and woodwaste landfills), regulatory requirements for these landfills were developed by the state (173-350).

Goals for Landfilling

Benton County has established a goal of ensuring the efficient collection, transfer, and disposal of municipal solid waste and recyclables. To support this goal, the County has established the objective of ensuring adequate disposal capacity.

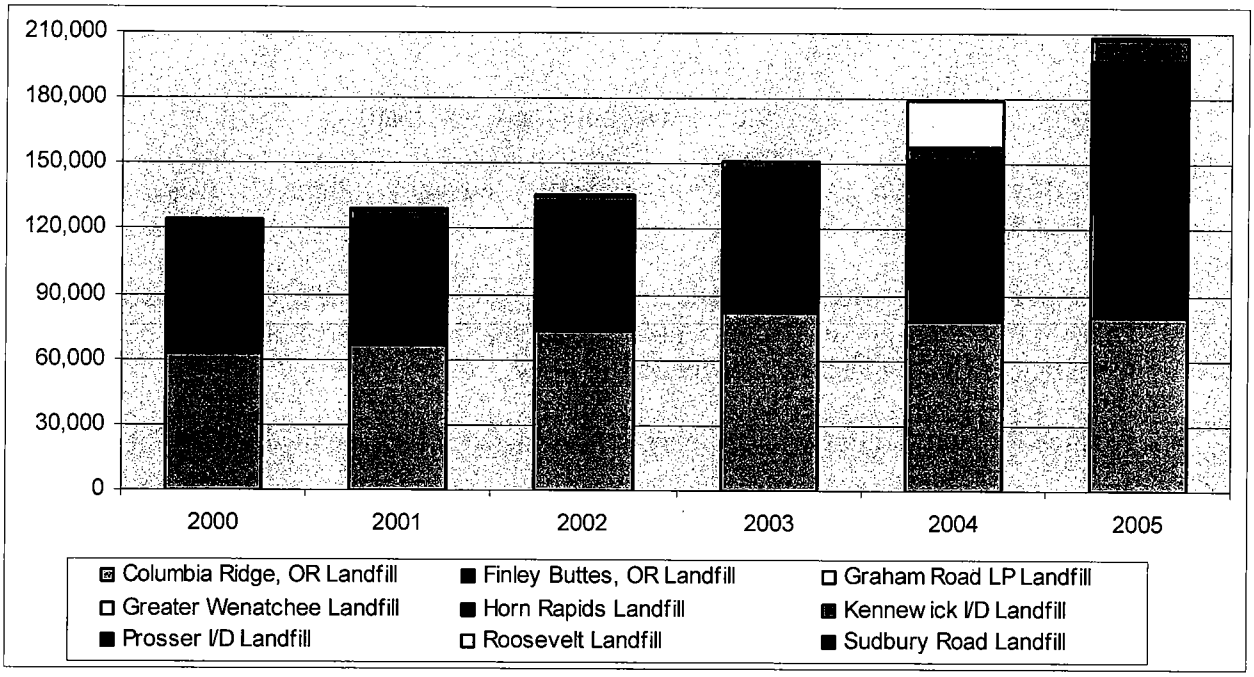
Existing Landfills

Over the past 5 years, nine landfills have been used to dispose of waste generated in Benton County. They include:

- Horn Rapids Landfill, Richland, Washington.
- Columbia Ridge Landfill, Arlington, Oregon.
- Roosevelt Regional Landfill, Klickitat County, Washington.
- City of Prosser Inert Landfill, Prosser, Washington.
- Finley Buttes Regional Landfill, Morrow County, Oregon.
- Greater Wenatchee Landfill, Douglas County, Washington.
- Graham Road, Spokane County, Washington.
- City of Kennewick Inert Landfill, Washington.
- Sudbury Road, Walla Walla, Washington.

The Hanford Central Landfill will not be addressed in this report because it has been closed. The Benton County tonnages reported for these landfills are provided in Exhibit 5-2.

Exhibit 5-2. Disposal Summary for Benton County



Horn Rapids Landfill--

The City of Richland owns and operates the Horn Rapids Landfill, located approximately 3.5 miles northwest of town, off of Highway 240. Approximately 46 acres, out of 114, of the property are permitted for solid waste disposal. Adjacent to the permitted area is a separately permitted area of approximately 25 acres for the land application of biosolids, plus approximately 14 acres which are occupied with facilities that include:

- An office/toll booth and a scale for weighing incoming loads.
- A transfer station for use by self-haul residential and small commercial waste and recyclables haulers.
- The Benton County Regional Moderate Risk Waste Facility that accepts household hazardous waste from all Benton County residents, free of charge, and from businesses classified as Small Quantity Generators for a fee.
- An area for land farming of petroleum contaminated soils generated in Benton County.

The landfill operates under a solid waste disposal permit issued by the Benton-Franklin Health District in compliance with provisions of Chapter 173-351 WAC. The operating landfill was not designed with a bottom liner or leachate collection system. A 4-acre vadose monitoring zone has been established within the Northeast corner of the permitted 46-acre disposal area. Small amounts of organic contamination have appeared in the water samples collected at the property boundary. Additional wells were installed in 1998 closer to the active disposal area to further define concentration levels of contaminates. The City of Richland has finished the remedial investigation, as required by the Toxics Control Act, and designed a landfill gas extraction system that has been approved by the Department of Ecology. Part of the gas system design also includes a modified closure design that extends the landfill's capacity to December 2013, which has been approved by Ecology. Landfill staff is presently performing detection monitoring to determine the origin and extent of the contamination and to decide what future options will be needed to address the situation.

Waste disposal activities within the currently permitted area are projected to continue until 2011, according to the City's 1999 Closure / Post-Closure Report. The City's financial assurance for Closure / Post-Closure is being funded by a surcharge collected against each ton of waste crossing the scales. The Richland City Council will consider whether the City will continue the landfill operation by expanding into available adjacent property at such time as the currently permitted area nears its final capacity.

Prosser Inert Landfill--

The City of Prosser owns and operates an inert waste landfill located on the south side of town within the City limits. The landfill is used by the City Public Works Department only and is not open to the general public. The site was permitted by the BFHD on September 19, 1990; however, material has been accepted at the site since August 1, 1990. In 2005, a reported 286 tons of material

were accepted at the facility from Benton County, including cured concrete, used asphaltic materials (non roofing), rock/dirt, and sweepings.[11] The life of the facility is not known.

Kennewick Inert Landfill--

The City of Kennewick operates an inert waste facility in a similar manner to Prosser. In 2005, approximately 9,180 tons of materials were accepted at the landfill from Benton County. The wastes sent for disposal included concrete, used asphaltic materials, and waste generated from street sweepings, levee lowering, and general city maintenance.[12]

Columbia Ridge Landfill--

The Columbia Ridge Landfill is a regional landfill that is owned and operated by Waste Management, Inc. The landfill is situated on a 2,036-acre site located in Arlington, Oregon. The facility is designed to meet both state and federal environmental standards and operates under Oregon Department of Environmental Quality Permit #391. The landfill became operational in 1990 and has a life expectancy of over 100 years. The facility accepts more than 8,500 tons of solid waste per day with 60% of that waste arriving by rail and the remaining 40% arriving by truck.

Roosevelt Regional Landfill--

The Roosevelt Regional Landfill is located in a remote area of Klickitat County in South Central Washington. The largest private landfill in the state, Roosevelt covers an area of 2,545-acres, has a 120 million ton capacity, and a 40-year expected life span. The landfill is designed to meet all current solid waste landfill regulations, including the Minimum Functional Standards (MFS) and WAC 173-351. The landfill is operated by Rabanco.

This landfill currently accounts for 79% of the State's disposal capacity and in 2005 received some type of solid waste from 30 counties in Washington.[13]

Finley Buttes Landfill--

The Finley Buttes Regional Landfill is located in Morrow County, Oregon. It is a regional solid waste management facility, owned by Waste Connections, which serves the Pacific Northwest. The landfill is located 10 miles south of Boardman, Oregon. Access to the site is by highway, Columbia River barge system and rail.

The site is operated under ODEQ Solid Waste Disposal Permit No. 394 and the landfill is designed, constructed, and operated to be in compliance with all requirements of the Oregon DEQ and EPA Subtitle D MSW landfill requirements. Landfilling operations at the site began in 1990. Waste Connections is permitted to utilize 510-acres of the 1,802-acre site for municipal solid waste (MSW) disposal.

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[11] Source: Solid Waste Disposal Data by Facility (2004), inert waste, available at: *http://www.ecy.wa.gov/programs/swfa/solidwastedata/recycle/2004Disposal.xls.*

[12] Ibid.

[13] Washington State Department of Ecology, *Solid Waste in Washington State--Fourteenth Annual Status Report.*

The estimated available fill capacity at the site, as currently permitted by the Oregon DEQ, is 90 million tons of MSW. The landfill receives over 500,000 tons of MSW annually. The projected life of the currently permitted landfill exceeds the 20-year period covered by the 2006 Benton County Solid Waste Management Plan Update.

Greater Wenatchee Landfill--

This landfill is owned by Waste Management of Washington and is located in Douglas County, Washington. In the year 2000, approximately 99 tons of asbestos waste and tires were sent to the facility from Benton County. No Benton County waste has been sent to the facility since that time.

Sudbury Road Landfill--

This landfill is located in Walla Walla County, Washington. It is owned by the City of Walla Walla. Since 1994, limited amounts of asbestos containing materials originating from Benton County have been sent to this landfill for disposal. In 2005, no materials were sent for disposal to this facility.

Graham Road Limited Purpose Landfill--

The Graham Road Facility is owned and operated by Waste Management of Washington, Inc., and is located in Spokane County. Graham Road is a Limited Purpose Landfill that accepts construction and demolition debris, asbestos, tires, wood, concrete, asphalt, special waste, petroleum-contaminated soils, creosote-contaminated wood, and railroad ties. Graham Road has been in operation since 1991. Waste Management has owned and operated the landfill since 1997. In 2005, approximately 18 tons of C&D, inert and asbestos-containing waste were sent to the facility from Benton County.

5.4 WASTE IMPORT/WASTE EXPORT

Waste Import

"Waste import" refers to transfer of waste into Benton County from other areas. Some waste entering the County comes from neighboring Franklin County residents bringing materials to the Horn Rapids Landfill in Richland. This is assumed to be a very small amount of waste, and is not tracked independent of regular residential waste brought to the landfill. Periodically, Yakima County residents may use the Prosser Drop Box Facility, particularly during Prosser Cleanup Days. The Prosser Inert Landfill, as stated above, only accepts demolition waste from its Public Utility Department. Therefore, the importation of municipal solid waste for landfill disposal is essentially non-existent in Benton County.

Waste Export

"Waste export" refers in this section to the transfer of waste from Benton County to a landfill located outside the area. Waste Management of Kennewick, Ed's Disposal, Inc., and Basin Disposal, Inc., of Pasco, and Sanitary Disposal of Hermiston provide for the collection of solid waste, and export waste out of the county for disposal. Information on the provision of this service is provided below.

Waste Management--

Currently, Waste Management of Kennewick is under contract with the City of Kennewick and under a WUTC franchise certificate, to portions of unincorporated Benton County for the collection and disposal of solid waste. Waste collected by Waste Management of Kennewick is transported to its transfer station in Kennewick. At the transfer station the waste is off-loaded and compacted into closed-top transfer vehicles for transport to Waste Management's Columbia Ridge Landfill and Recycling Center, a MSW landfill located in Arlington, Oregon. Waste Management utilizes third party transportation companies for the 90-mile transfer of waste from the Kennewick transfer station to the Columbia Ridge Landfill. Currently, eight to nine fully loaded transfer trucks (each carrying 31 tons of compacted solid waste) make the trip from the Kennewick transfer station to the Columbia Ridge Landfill each day. Additional transport can be added to accommodate waste for the planning period.

Ed's Disposal, Inc.--

Ed's Disposal, Inc., of Pasco transports waste to the Finley Buttes Landfill from unincorporated sections of Benton County, and the cities of West Richland and Benton. Waste collected by Ed's Disposal, Inc., trucks is brought to the BDI Transfer Station in Franklin County and long-hauled to the Finley Buttes Landfill for final disposal. The BDI Transfer Station can increase the number of daily transports to accommodate volumes of waste projected for the 20-year planning period.

Basin Disposal, Inc.--

Basin Disposal, Inc., of Pasco transports waste to the Finley Buttes Landfill from unincorporated sections of Benton County and Prosser. Waste collected by Basin Disposal, Inc., trucks is brought to the same transfer station in Franklin County as Ed's Disposal, Inc., and is long-hauled to the Finley Buttes facility for final disposal.

Sanitary Disposal--

Sanitary Disposal, Inc., from Hermiston, Oregon, collects waste from sections of unincorporated southern Benton County in the communities of Plymouth and Paterson. Waste collected in this section of the county is transported to a transfer station in Umatilla County, Oregon, between the Cities of Hermiston and Umatilla, and is long-hauled to the Finley Buttes Regional Landfill in Morrow County, Oregon.

5.5 KEY ISSUES

Given current technology and disposal patterns, landfills are and will remain a necessary and important component of waste management. Source reduction and recycling can divert significant portions of the waste stream, but not all components of the waste stream are recyclable. Therefore, Benton County will be required to continue to secure out-of-county disposal capacity or create additional capacity within the County.

As discussed above, four landfills provide the majority of disposal capacity for the County:

- The Horn Rapids Landfill, located in Richland.
- Three regional landfills: Columbia Ridge Landfill, Finley Buttes Landfill, and to a lesser extent Roosevelt Regional Landfill.

The Horn Rapids Landfill has the capacity to accept waste generated by the City of Richland for approximately 5 to 10 years, when the existing permitted capacity is expected to reach its limit. However, the facility has the capacity to expand and accept additional waste beyond this date. The three regional landfills have capacity well beyond the timeframe addressed by this plan. If the Horn Rapids Landfill is not expanded, then waste from the City of Richland will also need to be long hauled outside of the County, similar to the other cities and county unincorporated areas.

5.6 OPTIONS

The following options are presented for consideration:

1. Expand the Horn Rapids Landfill to Ensure In-County Disposal Capacity.

The City of Richland currently uses the Horn Rapids Landfill for disposal of waste, while the remainder of the County relies on long-haul for disposal of waste. As discussed earlier in this section, the Horn Rapids Landfill has an estimated remaining capacity of 5 to 10 years. The City is presently undertaking a Landfill Master Plan, which includes identifying related solid waste activities the City may want to pursue at the site, and phasing plans for a possible future site expansion. Another option could be to investigate the feasibility of expanding the landfill within the remaining acreage, and create a regional facility that would be accessible to the remainder of the County. As discussed in a technical memorandum report prepared for the Master Plan, additional non-landfill sold waste activities at the site could include:

- Composting (including biosolids from the City's waste water treatment plants).
- Inert waste landfill.
- Expanded recycling.
- Expanded MRW collection.

The proposed phasing plan was determined based on a total capacity in the expansion area of approximately 12,500,000 cubic yards. Three scenarios of waste streams and associated landfill capacities are evaluated in the report:

- Waste from the City of Richland only. The site life for this scenario is 53 years.
- Waste from Benton County (including Richland). The site life for this scenario is 30 years.
- Waste from County (including Richland) and Franklin County. The site life for this scenario is 25 years.

2. *Assess Development of an In-County MSW Landfill, Either Public or Privately Owned and Operated.*

The County could elect to site, permit, and develop a new landfill in Benton County that meets the regulatory requirements established by the Washington Department of Ecology and Benton-Franklin Health District. To be a viable disposal alternative, the landfill should be designed and permitted to accept the daily disposal tonnage needed by the County and should provide a minimum of 20 to 30 years of capacity. Capital costs that need to be considered include land acquisition, environmental studies, engineering design and permitting costs, new cell construction costs, closure construction costs, and post-closure maintenance costs. Landfill operating costs also need to be evaluated for waste placement, compaction, cover, and environmental monitoring and control measures.

Options for this alternative include public ownership and operation, private ownership and operation, or a combination public/private ownership and operation.

3. *Assess Long-Haul of Municipal Solid Waste Out of the City of Richland.*

Solid waste landfills located outside of Benton County, including those located outside of Washington State, provide a potentially viable option for future disposal of municipal solid waste generated within the City of Richland. Privately owned regional landfills in proximity of the City of Richland current possess nearly 300 years of combined capacity.

Potential landfills should meet the following requirements:

- Be in compliance with applicable landfill regulatory requirements.
- Must be permitted to accept the daily tonnage required by the City.
- Must have significant remaining disposal capacity to address long-term disposal needs.

Evaluation of potential long-haul out of the City must take into account transfer costs, transportation costs, and disposal tipping fees, just as each of the other cities with the County have done:

- Transportation costs are likely to be significant and will correlate with the distance between the point of transfer and the disposal location. With a large portion of costs attributed to driver labor costs and fuel costs, overall transportation costs will increase the farther the selected landfill is located from Benton County.

- Tipping fees charged by regional landfills typically are based on what the market will bear and is driven by supply and demand. The tip fee likely will be based on contractual arrangements.

To be an economically viable option, the combined costs for long-haul out of the City should be less than the costs for current and future disposal methods. The City of Richland could assess these long-haul costs to determine if long-haul of municipal solid waste is feasible after scheduled closure of the Horn Rapids Landfill.

4. Expand local transfer station capacity.

Additional capacity could be developed in the County to handle the waste that is transferred to out-of-County and out-of-State landfills. This option may be especially necessary if the Horn Rapids landfill is not expanded, and the landfill were to close in the next 5 to 10 years. New transfer stations could be developed either by private sector owner/operators, or public sector, including city or county, or a combination of both, or existing transfer stations could be expanded.

The development of new transfer stations would be required to comply with State solid waste facility requirements. The existing private facilities utilized by the cities (except Richland) and the County have served the cities and county well for many years. With nearly 300 years of combined capacity between three regional landfills that service the area, these transfer stations can continue to provide a high level of service to the region.

RECOMMENDATIONS

The Solid Waste Advisory Committee reviewed the options discussed above and has recommended the following options:

1. Expand Horn Rapids Landfill to ensure in-county disposal capacity.

2. Assess long-haul of MSW out of City of Richland.

3. Expand local transfer station capacity.

Chapter 6

Special Wastes and Moderate Risk Wastes

6.1 INTRODUCTION

The purpose of this section is to review the generation, handling, and disposal methods for several special wastes in Benton County. Special wastes are solid wastes that require special handling and disposal and are generally managed separately from municipal solid waste. The special wastes addressed in this chapter are:

- Tank pumpings.
- Septage.
- Oil/water separator sludges (car washes).
- Fats/Oils/Grease (FOG) from sewer interceptors.
- Construction and demolition debris.
- Wood wastes.
- Industrial wastes.
- Agricultural wastes.
- Tires.
- Biomedical wastes.
- Petroleum-contaminated soil.
- Asbestos.
- Street wastes.
- Electronic wastes.

Wastes such as low-level radioactive wastes and biosolids will not be addressed in the Plan. There may be other items for the special waste category but they have not been identified or have not caused a problem in the County.

The nature and sources of these wastes, as well as the existing programs for managing these wastes in Benton County are described. All of the wastes are also examined for key issues and, where warranted, options are presented.

6.2 GOALS AND OBJECTIVES

With respect to special wastes, the County has adopted a goal to establish guidelines and strategies for management of specific waste streams. Objectives established to meet this goal include:

- Develop a plan to address management of disaster debris.
- Develop Best Management Practices for agricultural waste reuse and recycling.
- Continue and expand the use of litter work crews.

6.3 TANK PUMPINGS

This section examines tank pumpings which include septage, oil/water separator sludges, and fats/oils/grease from sewer interceptors.

Septage

Septage is defined as semisolids consisting of settled sewage solids combined with varying amounts of water and dissolved materials generated in a septic tank system. Septage is generated from onsite sewage disposal systems, either from individual residential systems or larger community systems.

All homes and businesses that are not hooked up to public or private sewer treatment systems in the County are required to treat their wastewater in an onsite sewage disposal system, consisting of a septic tank and a disposal unit, and may have additional treatment units. Septage from individual onsite septic tanks are pumped out typically every three to five years by system owners.

Existing Conditions--

The Benton-Franklin Health District (BFHD) currently licenses 17 contractors to pump septic tanks.[14] They operate out of several cities, including Pasco, Prosser, Sunnyside, Kennewick, and Yakima. They are required to dispose of these materials at an approved permitted facility. The contractors are required to submit a report each month, detailing the date of the pumping, the address, the nature of the material pumped, the disposal site, and the date of disposal.

The Department of Ecology is responsible for approval and permitting of septage disposal sites. Land application sites for septic wastes must meet the requirements of Chapter 173-308-270 WAC. Surface impoundments and tanks greater than 1,000 gallons, including those that hold septage, are regulated under Chapter 173-350-330 WAC.

A site near Finley in the Horse Hills is a permitted facility for land application of septage through injection. This facility began operation in April 1992 and handles all of the septage generated in Benton County. The site is 1,200 acres in size and septage is applied at agronomic rates which equal approximately 30,000 gallons/acre/year. Injection is similar to plowing: the ground is tilled and the septage is allowed to flow into the resulting troughs.

Disposal sites in adjacent counties are limited. Yakima County does not allow waste generated out-of-county to be disposed of in Yakima County. Several haulers in the region used the wastewater treatment plant in Walla Walla until they stopped accepting septage in 1992.

Key Issues--

Currently, there is only one site operating which takes all of the septic tank wastes. Finding additional sites would eliminate potential "emergencies" similar to the situation which occurred in 1992, and eliminates future uncertainties related to septic waste utilization or disposal.

Options--

The County and cities should continue to allow the private sector to manage and dispose of septage. The licensed pumpers are required to dispose of this material at permitted facilities.

[14] Source: BFHD website (*http://www.bfhd.wa.gov/eh/lustp.php*).

Oil/Water Separator Sludges

This waste is defined as semi-solid after decanting the liquid; sludges usually come from holding tanks associated with sewer systems that contain small amounts of petroleum hydrocarbons and heavy metals. The semi-solid material is not amenable to treatment at a sewage treatment plant. It is therefore separated out from that process.

When pumped or removed, this liquid includes material and sludges from tank bottoms. Other generators of these wastes include industrial facilities and meat, fruit and vegetable processing facilities. Wastes occur when liquids are properly decanted, and when classified as solid wastes, they must be disposed of in accordance with solid waste disposal regulations. In many instances, the solid material being pumped contains petroleum or metals that make its beneficial reuse costly.

Existing Conditions--

The BFHD regulates pumpers, and is responsible for approval and permitting of disposal sites. Disposal sites for these wastes must meet the requirements of Chapter 173-350 WAC, and local BFHD policy. State regulations regarding disposal are provided in the MFS under "surface impoundment standards" (WAC173-350-330), and land application disposal standards (WAC 173-350-230).

Wastes in this category can go to a solid waste landfill if they meet specific standards set by the receiving facility. Standards vary among facilities and may include: free liquids, TPH's, and pH.

Key Issue--

Because in-county disposal options of these wastes are limited, many of these commercial liquid waste generators must locate out-of-county disposal sites or provide for on site waste disposal. Currently there are no facilities located in Benton County that handle this type of solid waste. Much of this waste is disposed in Yakima County. Iron Horse Vac LLC operates a decanting bed, which then recycles and disposes of wastes pumped from catch basins and carwash facilities.

Options--

The County could assess the feasibility of developing a facility to manage this waste if out-of-county disposal becomes limited.

Fats/Oils/Grease from Sewer Interceptors

These wastes are defined as semi-solid after decanting the liquid, and usually come from holding tanks associated with a sewer system, that contains solid particles or chunks of animal or vegetable fats/oils/grease (FOG). This semi-solid material is not amenable to treatment at a sewage treatment plant. The solids are pumped out of the pit or vault. This removal maintains the sewer interceptors working capability.

When removed or pumped from an interceptor this material contains mostly FOG and liquids. The liquids can be decanted back into a sewerage system. The remaining particulates are a solid waste.

Existing Conditions--

The BFHD regulates pumpers and is responsible for approval and permitting of disposal sites. Disposal sites for these wastes must meet the requirements of Chapter 173-350WAC, and local BFHD policy. State regulations regarding disposal are provided in "Surface impoundments and tanks" (WAC173-350-330) and "Land application" (WAC 173-350-230).

The particulates remaining after decanting can be reused through the rendering process or disposed of in a landfill. Currently, there are no licensed rendering companies located in Benton County. The material is taken out of county.

Key Issues--

With the adoption of the 1998 Uniform Plumbing and Building Codes, this particular waste stream will increase in volume as new construction standards mandate the use of sewer interceptors for commercial restaurants, bakeries, and food preparation businesses.

Options--

The County and cities should continue to allow the private sector to manage and dispose of this material.

6.4 CONSTRUCTION AND DEMOLITION DEBRIS

Construction and demolition (C&D) debris consists of the materials generated during the construction, renovation, and demolition of buildings, roads, and bridges. This waste stream often contains:

- Concrete.
- Wood (from buildings).
- Asphalt (from roads and roofing shingles).
- Gypsum (the main component of drywall).
- Metals.
- Bricks.
- Glass.
- Plastics.
- Salvaged building components (doors, windows, and plumbing fixtures).
- Trees, stumps, earth, and rock from clearing sites.

Quantities Generated

A study conducted by the City of Richland in 2005, estimated that nearly 57,000 tons of C&D are generated in Benton County annually.[15] This estimate was derived using two methodologies. One method used construction permit data combined with average generation rates. The second method used landfill data for accounts likely to dispose of C&D and determined that 22.7 percent of the

[15] City of Richland, *Construction and Demolition Waste Feasibility Study*, July 2005.

waste brought to the Horn Rapids Landfill was C&D. The average of the estimates generated by both methodologies was used for the report.

Disposal Regulations

Demolition waste includes primarily inert waste resulting from the demolition or razing of buildings, roads, and other man-made structures. It consists of, but is not limited to, concrete, brick, bituminous concrete, wood and masonry, composition roofing and roofing paper, steel, and minor amounts of other metals like copper. Plaster (i.e., sheet rock or plaster board) or any other material, other than wood, that is likely to produce gases or a leachate during the decomposition process, and asbestos wastes are not considered to be demolition wastes.

A category closely related to C&D is "inert waste." Inert waste includes cured concrete that has been used for structural and construction purposes, including embedded steel reinforcing and wood, that was produced from mixtures of Portland cement and sand, gravel, or other similar materials; asphaltic materials that have been used for structural and construction purposes (e.g., roads, dikes, paving) that were produced from mixtures of petroleum asphalt and sand, gravel, or other similar materials; brick and masonry that have been used for structural and construction purposes; ceramic materials produced from fired clay or porcelain; and glass, composed primarily of sodium, calcium, silica, boric oxide, magnesium oxide, lithium oxide or aluminum oxide. Glass presumed to be inert includes, but is not limited to, window glass, glass containers, glass fiber, glasses resistant to thermal shock, and glass-ceramics. Glass containing significant concentrations of lead, mercury, or other toxic substance is not presumed to be inert; nor are stainless steel and aluminum.

The primary difference between the two types of waste is that demolition waste is considered susceptible to decomposition, whereas inert waste is considered resistant to decomposition.

The disposal of inert C&D is regulated primarily under WAC 173-350. Options for disposal of C&D and inert wastes include:

- **Use of Inert Waste as Fill Material:** WAC 173-350-410 provides for use of limited amounts (less than 250 cubic yards) of inert waste as general unregulated fill material.

- **Disposal in Inert Waste Landfills:** Inert landfills may only manage concrete, asphalt, masonry, ceramics, glass, aluminum, and stainless steel. The waste must meet the definition of "inert" provided earlier.

- **Disposal in Limited Purpose Landfills:** Limited purpose landfills are available to accept many other types of wastes including industrial waste, demolition waste, problem waste, and wood waste. Design criteria for limited purpose landfills are performance based, subject to location standards, design and operating criteria, ground water monitoring, and financial assurance. Limited purpose landfill design specifications may often include a liner and leachate collection system.

Demolition waste also has the potential to be classified as "dangerous wastes" and be regulated under the Dangerous Waste rules (Chapter 173-303 WAC). The following wastes are potentially regulated under the Dangerous Waste rules:[16]

- **Treated Wood:** New types of treated wood are now being used, and those products are treated with copper and other less-toxic chemicals instead of the previous formulation that included arsenic and chromium. So treated wood from current construction sites are not a significant concern, but any treated wood from a demolition project is most certainly the previous type of treated wood (assuming the building being demolished was constructed prior to 2004-2005).

- **Paints and Other Coatings:** Previously, some paint products were being produced and used that contained asbestos, mercury, PCBs, and lead.

- **Plumbing and Pipes:** Some older types of pipe, and associated products such as pipe wrapping materials, may contain asbestos or lead.

- **Light Bulbs:** Fluorescent and high intensity discharge (HID) lamps may contain mercury.

- **Batteries:** May contain lead, mercury, or PCBs.

- **Thermostats, Switches, and Other Electrical Devices:** May contain mercury.

- **Other Potentially Regulated Building Wastes** (siding, flooring, insulation, fireproofing, vinyl, plaster, wallboard, adhesive, caulk and other materials) that might contain asbestos and PCBs.

Whoever first declares a material to be a waste, such as a contractor or property owner, is responsible for determining if the Dangerous Waste rules apply. Sampling and testing may be necessary in many cases to determine if demolition wastes are regulated under the Dangerous Waste rules.

Existing Conditions

C&D waste in Benton County is managed at several landfills, which were previously discussed in Chapter 5. The tonnages of Benton County demolition and inert waste accepted at these facilities are provided in Exhibit 6-1. Limited recycling and reuse opportunities exist for C&D in Benton County. Opportunities do exist for scrap metals, asphalt, and concrete.[17]

[16] Source: Department of Ecology website (*www.ecy.wa.gov/programs/hwtr/demodebris/index/htm*).

[17] City of Richland, *Construction and Demolition Waste Feasibility Study*, July 2005.

Exhibit 6-1. Demolition and Inert Waste Disposal Summary for Benton County

Disposal Site	2000			2001			2002			2003			2004			2005		
	Dem.	Inert	Total	Dem	Inert	Total	Dem.	Inert	Total	Dem.	Inert	Total	Dem.	Inert	Total	Dem.	Inert	Total
Horn Rapids Landfill	6,100	5,353	11,453	5,385	3,535	8,920	10,274	1,229	11,503	7,239	1,977	9,216	7,196	1,080	8,276	16,569	1,520	18,089
Roosevelt							3		3	29		29	10		10	125		125
Columbia Ridge	3	26	29							1		1						
Graham Road (LP)							1		1	2		2	2		2	4	2	6
Prosser (I/D)					325	325	8	453	461	96		96		186	186		207	207
City of Kennewick (I/D)				2,348	1,695	4,043		2,513	2,513		450	450		3,065	3,065		9,130	9,130
Total	6,103	5,379	11,482	7,733	5,555	13,288	10,286	4,195	14,481	7,367	2,427	9,794	7,208	4,331	11,539	16,698	10,859	27,557

Source: Washington Department of Ecology, Solid Waste Disposal Data by County (Landfilled and Incinerated: 1994 - 2004), available at: *http://www.ecy.wa.gov/programs/swfa/solidwastedata/recycle/CountyTotals04.xls.*

Key Issues

Disposal of inert wastes is specifically addressed in WAC 173-350. Under that regulation, the requirements for inert sites are significantly reduced from those required for solid waste landfills. For example, no liners, leachate collection or treatment systems are required for inert fills. The less stringent requirements would result in cost savings in all aspects of construction, operation, and maintenance of the inert fill. It is often advantageous to divert inert wastes from the municipal solid waste stream for disposal at an inert landfill. This reduces the amount of costly landfill space consumed by wastes that do not necessarily require disposal in a solid waste landfill. However, in Benton County, demolition wastes do not represent a significant portion of the landfilled waste stream and the additional costs of constructing and maintaining one or more separate limited purpose landfills in the county is not justified.

The county adheres to the state regulation that inert waste fill of less than 250 cubic yards does not have to be permitted. Improvements could be made in the level of control or scrutiny the county applies to individual demolition and/or construction projects, especially those in the unincorporated areas of the county. Some record of volume, waste type, fill location, and responsible party should be maintained. This could be facilitated through the issuance of demolition permits or through the building permit process.

C&D waste consists largely of common materials, such as wood, asphalt, concrete, rock, gypsum, and various metals, that have multiple potential uses. Many of these materials can be cost-effectively recovered, processed, and used as raw materials for new (or renewed) end uses. Additional materials can be salvaged. For example, concrete and asphalt pavement is crushed and used as base material for new construction or as aggregate in new concrete and asphalt. Wood waste is processed and sold for landscaping mulch or used to produce new wood products. It is often used for hog fuel. Gypsum from wallboard is ground and used to manufacture new wallboard, and fertilizer. Architecturally valuable timbers, hardware, doors and windows are salvaged and reused with minimal or no processing. When recovered, these materials are not considered, or regulated, as waste.

Such activities reduce pressure on waste disposal facilities, reduce dependence on "virgin" raw materials, and decrease energy use. In addition, the economic value of this market activity is enormous. In many communities, C&D and inert materials are now recognized as having significant potential to contribute to recycling goals and reduce waste overall.

Options

C&D wastes are generated at a rate which is proportional to construction activity in a county and therefore dependent on the economic climate as well as population growth. Since Benton County will continue to experience growth and redevelopment, there will be C&D waste to be handled.

Historically, C&D and inert wastes have been collected, transported, recycled, and disposed by the private sector. This responsibility should remain with the private sector. Benton County should, however, support private efforts by encouraging separation of recyclable or reusable materials from the waste stream.

In keeping with the state goals and policies for waste reduction and recycling, the following options have been presented to the Solid Waste Advisory Committee as a means to gain more control and insight into the disposal of demolition wastes, to reduce the amount of C&D and inert wastes requiring disposal, and to prepare for emergencies and disasters that create debris:

1. Provide Education Programs for Contractors.

A straightforward method to help divert C&D and inert waste is to provide general contractors with educational material and information about alternative facilities that take C&D and inert waste. This could be as simple as providing a brochure listing the diversion facilities in the region, with hours, location, cost, and material types accepted. Providing information on reuse opportunities, such as exchange programs, can also be useful. A key opportunity for informing contractors about reduction and recycling opportunities is during the permitting process.

In addition to general reduction and recycling opportunities, contractors could be provided information about deconstruction and green building practices:

- **Deconstruction:** This involves dismantling of a structure, salvaging building contents and components, and finding viable markets and outlets for materials. This practice can be used to varying degrees, which can range from reuse of an entire structure or foundation, to select assemblies and systems, to the careful removal of specific materials or items.

- **Green Building:** A green building, also known as a sustainable building, is a structure that is designed, built, renovated, operated, or reused in an ecological and resource-efficient manner. Green buildings are designed to meet certain objectives such as protecting occupant health; improving employee productivity; using energy, water, and other resources more efficiently; and reducing the overall impact to the environment. Builders could be provided with information on methods to incorporate environmentally friendly practices into the construction of a home.

2. Establish C&D and Inert Waste Diversion Specifications for County or City Projects.

Another method for encouraging C&D and inert waste diversion is to include C&D and inert waste diversion requirements/procedures into project specifications, which are part of the contract between the contractor and the project owner. Because specifications are a major communication tool to convey the requirements of a construction or demolition project, specifications that contractors are required to follow could also include conditions and requirements for diverting C&D and inert materials. If the conditions are not met, the contractor could be held accountable.

The California Integrated Waste Management Board has developed sample construction and demolition (C&D) specifications for use by architects and engineers. This sample specification requires the contractor to submit a C&D waste management plan to the project owner and architect which will recover 75% of the C&D wastes for reuse and recycling. The plan must include a list of reuse and recycling facilities that will be used and materials that will be recovered. At the end of

the project, the contractor must provide a final accounting of the disposition of recovered materials, including submittal of receipts, to receive final payments. This sample C&D specification could be modified for use by Benton County in its future construction, renovation, or demolition projects.[18]

3. Use Recycled Content Building Specifications for County or City Projects.

There are building materials made with recycled content (insulation, plastic lumber, tiles) that are market ready, competitively priced and perform as well as virgin products. To generate demand and promote the reuse of C&D and inert materials in their present and recycled form, Benton County may want to require the use of recovered and recycled materials for county building and renovation projects.

Specifications for incorporating environmentally friendly materials, including recycled products, into building projects are available commercially. Additional tools available to Benton County are the Comprehensive Procurement Guidelines developed by EPA (these were discussed earlier in Chapter 3). Several guidelines have been developed for construction products containing recycled materials.

It is important to obtain information from manufacturers verifying that the recycled content listed for a product is actually material that would otherwise have been discarded. Materials containing post-consumer waste or recovered materials have the greatest recycling merit. In-plant recycling, though it increases the efficiency of manufacturing, does not have the same environmental benefits since it does not close the consumer/manufacturer waste loop.

The Beyond Waste plan addresses construction and demolition wastes in one of the five initiatives established in that plan, "making green building practices mainstream." The short term goal of the Green Building Initiative is "to dramatically increase adoption of environmentally preferable building construction, operation and deconstruction practices throughout the state and the region." The long-term goal of this initiative is "for green building to be a mainstream and usual practice throughout the state."

Other governmental actions are being taken on the state and local level. The High Performance Green Building Bill was signed in to law by Governor Gregoire on April 8, 2005. This bill adopts LEED (Leadership in Energy and Environmental Design) standards for state-owned buildings and schools.

4. Develop a C&D and Inert Waste Diversion Ordinance.

Many jurisdictions, primarily in California, have found that adopting and implementing a C&D diversion ordinance is an effective method for diverting this material from disposal. These ordinances generally require contractors, as a condition of receiving building permits, to develop waste management plans designed to divert a certain percentage of C&D materials generated by each project. The ordinances also include mechanisms, such as a deposit system and reporting requirements, which ensure that diversion actually occurs. The California Integrated Waste

[18] More information available at: *http://www.ciwmb.ca.gov/ConDemo/Specs.*

Management Board has developed a model C&D diversion ordinance for adaptation by municipalities.[19] Benton County could consider adopting a similar C&D diversion ordinance.

5. Develop a Disaster Management Plan for Benton County.

In the aftermath of a disaster, the primary focus of government response teams is to restore and maintain public health and safety. As a result, debris diversion programs such as recycling and reuse can quickly become secondary. Advance planning, through a Disaster Management Plan, can help Benton County identify options for collecting, handling, storing, processing, transporting, diverting, and disposing of debris. Preparing a plan before an emergency happens can save valuable time and resources if it is needed.

To assist local government agencies in preparing debris management plans, the California Integrated Waste Management Board has developed a model debris management plan.[20] This model plan includes 17 chapters that cover the various aspects of a debris management strategy. The four major parts of the plan include:

- Government coordination, pre-disaster planning, and debris management programs.
- The emergency management system.
- Case studies.
- Checklists that summarize the tasks to be undertaken by the local government, primarily the designated debris manager and team.

Benton County could use the information presented in this document to develop its own disaster management plan.

[19] More information available at: *http://www.ciwmb.ca.gov/lglibrary/CandDModel.*

[20] More information available at: *http://www.ciwmb.ca.gov/Disaster/.*

6. *Establish Locations for Emergency Staging and Temporary Storage of Debris Generated by Natural Disaster.*

Major natural disasters can generate enormous volumes of debris in short periods of time.

According to the Federal Emergency Management Agency (FEMA), natural disasters generally create similar types of debris:[21]

- **Tornadoes:** Debris consists primarily of trees, construction materials from damaged or destroyed structures and personal property.
- **Floods:** Debris consists of sediment, wreckage, personal belongings, and sometimes hazardous materials deposited on public and private property. Additionally, heavy rains and floods may produce landslides; in such cases, debris consists primarily of soil, gravel, rock and some construction materials.
- **Earthquakes:** Debris consists of building materials, personal property, and sediment caused by landslides.
- **Wildfires:** Debris consists of burned out structures, cars and/or other metal objects, ash and charred wood waste.
- **Ice Storms or Snowstorms:** Debris consists of significant amounts of woody debris from broken tree limbs and branches.

Though not discussed in FEMA literature, Benton County must also be prepared to manage ashfall from volcanoes situated along the Cascade Range.

One of the first responses to a natural disaster is rapid debris removal from roads. Debris removal often relies on the availability of suitable temporary debris storage sites, where the debris is temporarily stored until it is reduced in volume (e.g., sorted, chipped, or burned) and/or taken to a permanent disposal location. Identifying these temporary sites before a major natural disaster occurs can expedite debris removal and subsequent volume reduction and disposal actions.

Benton County should identify potential sites to be used as emergency staging and temporary debris storage sites to be used in the event of a natural disaster. The number of temporary sites ultimately needed by the County for debris storage will vary with:

- Size of the site(s).
- Distance of the site(s) from the disaster area.
- Speed of reduction (mixed debris is slower than clean woody debris).
- Removal urgency.

[21] Federal Emergency Management Agency, "*Debris Management Guide – FEMA Publication 325*," available at: *http://www.fema.gov/rrr/pa/dmgtoc.shtm.*

Generally, FEMA suggests the following considerations for evaluating potential temporary debris storage and reduction sites:[22]

- Use public lands first to avoid costly leases. Pre-designated sites should be on public property and consist of between 50 and 100 acres, depending on anticipated needs. Consider the locations with respect to noise, traffic, and the environment. Use private land only if public sites are unavailable.

- When selecting public or private sites, consider pre-existing conditions that will have to be restored upon site closeout.

- The required size of the site will depend on the expected volume of debris to be collected and planned volume reduction methods. As a general rule, larger sites mean fewer sites and, hence, easier site closeout. However, larger sites may create logistical problems.

- Environmentally sensitive areas (such as wetlands, areas with endangered animal and plant species, critical habitats, well fields and surface water supplies, and historic/archaeological sites) should be avoided.

- Whenever possible, avoid locating near residential areas, schools, churches, hospitals, and other such sensitive areas.

- Look for sites with good ingress/egress to accommodate heavy truck traffic and a site configuration that allows for an efficient layout.

The Army Corps of Engineers uses the following assumptions to estimate debris storage site size requirements:[23]

- Debris can be stacked to a height of 10-feet and 1 acre can be used to store 16,117 cubic yards.[24]

- 60 percent of the site is for storage the remaining 40 percent provides for roads and safety buffers.

For example, a natural disaster generating 1,000,000 cubic yards of debris will require 62 acres for debris storage only. To provide for roads and buffers, the acreage must be increased by a factor of 1.66 which increases the required site size to 103 acres.

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[22] Ibid, Page 12.

[23] Ibid, Appendix A.

[24] 1 acre = 4,840 square yards.
10-foot stack height = 3.33 yards.
Total volume per acre = 4,840 square yards/acre x 3.33 yards = 16,117 cubic yards/acre.

7. Develop Regional C&D processing facility

Support development of either a public or private regional C&D processing facility to separate out the recyclable portions of the C&D waste stream and reduce the amount of C&D requiring disposal. This alternative would require the construction of a specialized recycling facility designed to process mixed loads of C&D wastes.

Such a facility would use a combination of mechanical sorting (e.g., conveyors, screens, magnets, and water sorters) and manual sorting to separate materials for recycling from loads of mixed debris. For example, ferrous metal is typically removed by an overhead electromagnetic separator. Screening drums or other special equipment such as air classification units are used to separate the waste stream generally into size classifications: an undersize stream (fine particles and aggregate materials) and an oversize stream that contains other large objects. Floatables (primarily wood) can be separated with water.

Generally, the following products can be recovered:

- Wood: Wood can be used as a fuel or processed into mulch or soil amendments.
- Metal: Metal is manually or magnetically separated and typically sold to a salvage yard.
- Aggregate: Rocks, bricks and concrete are separated during various stages of processing and can be converted into crushed aggregate that can be used in a variety of construction applications.
- Dirt/fines: Dirt and fines can be used as daily or intermediate cover at landfills.
- Cardboard and gypsum wall board: Usually require manual sorting for recovery.

After all components with value have been captured, residuals (such as dirty paper and plastic) require disposal.

6.5 WOOD WASTES

Wood waste is defined as solid waste consisting of wood pieces or particles generated as a by-product or waste from the manufacturing of wood products, handling and storage of raw materials, trees, and stumps. This includes, but is not limited to, sawdust, chips, shavings, bark, pulp, hog fuel, and log sort yard waste, but it does not include wood pieces or particles containing chemical preservations such as creosote, pentachlorophenol, or copper-chrome-arsenate.

Excess wood is a commonly generated waste in industrial and residential areas. Wood that is not used, sold, or burned to recover energy is excess and can be considered waste.

Existing Conditions

The major sources of wood waste in Benton County include wood wastes from pallets, construction and demolition activities, and residential yard debris. Recycling, composting, burning in an incinerator or boiler, or landfilling, typically handles many of these wastes, as described above. Boise Cascade in Walla Walla County takes wood wastes to burn as hog fuel in their boilers. They are supplied with wood material from Waste Management of Kennewick's transfer station. The City of Richland uses a tub grinder to pulverize wood material for use as intermediate cover material at the landfill, and for their City facilities, including construction projects.

Key Issues

Present wood waste disposal practices appear to meet most of the county's wood waste disposal needs. The exception is the increase in yard debris created by the ban on outdoor burning, which was discussed in Chapter 2.

Options

Options for the management of wood waste in Benton County include:

1. *Facility Diversion.*

All wood wastes that arrive at solid waste facilities, including the landfill and transfer stations, would be separated in the same way that other recyclable materials are handled. The wood could then be diverted to a recycling operation. This alternative is in keeping with the State's Beyond Waste Plan, which encourages viewing wastes as a resource. This option would be developed only if acceptable end-uses for the material are available.

2. *Public Education.*

Inform residents and businesses of the local, private wood waste recycling operations in the County and surrounding areas. This could be accomplished through public service announcement, information on the county's website, and brochures made available at city and county offices and at the solid waste facilities.

6.6 INDUSTRIAL WASTES

Industrial solid waste is defined as waste by-products from manufacturing operations such as scraps, trimmings, packing, and other discarded materials not otherwise designated as dangerous waste under Chapter 173-303 WAC.

Existing Conditions

Major industrial waste generators in Benton County include Sandvik Special Metals located in the Finley area, various fruit and vegetable processing plants located in the Prosser area, and two fertilizer manufacturing plants. In Richland and Kennewick, there are vegetable processing plants that produce industrial-type waste, such as potato waste and vegetable greases.

Sandvik Special Metals uses an animal-based non-soluble oil material that becomes contaminated with hydraulic lubricating oils and some metals during processing. The waste generated is not considered hazardous. Currently, the waste is stored in rubber bladders on site, and then transported to Seattle, Washington, or Arlington, Oregon, for disposal. The fruit processing plants located in the Prosser area generate a diatomaceous earth and pumice (skins and seeds) waste. This material is not considered inert and must be disposed of in a permitted solid waste facility. Currently, this waste is land applied to agricultural land for beneficial use, either nutritional or for soil amending qualities. The Benton County fertilizer manufacturers provide their own on-site sewage disposal system; no special wastes requiring off-site disposal are produced.

Laws other than those governing municipal waste do not regulate wastes typically generated by industrial sources. Thus, owners of most "industries" have many disposal options and usually use those options which are the most cost-effective (see comment below). Wastes, which are considered hazardous, however, must be managed according to the State's Dangerous Waste Regulations (Chapter 173-303 WAC).

Key Issues

Benton County's policy for managing industrial wastes is to evaluate the waste produced by each industry or generator and enforce the laws and regulations governing the handling of that waste. The existing level of County involvement in the handling of industrial solid waste streams appears to be adequate. The BFHD is addressing problems on a case by case basis.

Options

Because it appears that industrial solid waste is being managed properly, procedures for monitoring and managing existing industrial solid waste handling and disposal should continue. The BFHD should continue to monitor and regulate industrial solid waste handling and disposal in the county, and provide assistance to waste generators regarding applications and operations plans. The County solid waste department should provide technical assistance and education to businesses as requested.

6.7 AGRICULTURAL WASTES

Agricultural wastes are by-products of farming and ranching that include crop harvesting waste and manure.

Existing Conditions

According to the 2002 Census of Agriculture, the number of farms in Benton County is decreasing; down 16 percent from 1,570 in 1997 to 1,313 farms in 2002. The total acreage in farms, however, decreased only 4 percent, totaling 607,963 acres in 2002.[25] Livestock inventory also has changed since 1997:

- Cattle: In 2002, the inventory was 28,513 up from 16,427 in 1997.

[25] 2002 Census of Agriculture, Benton County, United States Department of Agriculture, Washington Agricultural Statistics Service.

- Hogs and pigs: In 2002, there were 29 farms raising hogs and pigs in the county which is down from 50 in 1997.

Agricultural wastes result from farming and ranching activities, and consist of primarily crop residues and manure. Of the total 2002 farm acreage, approximately 268,700 acres are harvested cropland, 110,700 acres are used for wheat, 24,400 acres are for potatoes, 40,000 acres are used for vegetables, 13,300 acres are used for forage, and slightly less than 41,800 acres are used for orchards.

Key Issues

A rural waste characterization study conducted for the Washington State Department of Ecology attempted to quantify and characterize the types of waste disposed, recycled, or reused for four agricultural groups (field crops, orchards, vegetables, and livestock).[26] The study found that less than 1 percent of the waste generated by these agricultural groups was landfilled. The primary means of handling waste generated by agriculture was through beneficial use, such as replenishment of soil nutrients.

Options

Given the rural nature of Benton County, the potential exists for the generation of significant amounts of agricultural waste. However, little agricultural waste requires disposal in Benton County, therefore, no analysis of disposal options or recommendations is presented at this time.

Benton County has adopted a goal of developing best management practices for agricultural waste reuse and recycling. Options for investigating the generation and beneficial reuse of biomass within the county and investigating the feasibility of developing a facility for the production of biofuels, biopower, or bioproducts were discussed earlier in Chapter 3.

A committee could be formed to discuss potential opportunities in the County to further investigate opportunities for developing these types of alternative energy industries. Interested and affected stakeholders to be included in the discussions could include, but would not be limited to, city and county representatives, farmers, processors, energy industry representatives, and the waste and recycling industry.

6.8 TIRES

The term "tires" refers to tires from automobiles, trucks, tractors, or any other use. They are formed from rubber and usually reinforced with cords of nylon, fiberglass, or steel. Tires do not include the metal wheel to which they are usually fastened.

Refuse tires are an inevitable by-product of normal vehicle use. A tire becomes refuse when it wears out and is not retreaded or used in some other way. With its useful life over, it must be stored (temporarily) or disposed of. Tire dealerships remove most old tires in the process of selling new

[26] Washington State Department of Ecology, *Rural Waste Characterization Report*, 2003.

ones. Individuals may also accumulate old tires. When vehicles are junked, the tires on the vehicle, spares, and snow tires may be stored by the owner or wrecking yard.

Existing Conditions

The tire pile regulations are applicable and enforceable for piles where more than 800 tires are stored (WAC 173-350). The Benton-Franklin Health District permits one tire pile facility within the County, and is aware of three other un-permitted piles at area wrecking yards.

The Richland Landfill will accept tires for a fee. Tires are no longer buried, but transported off site to recycling operations.

Waste Management accepts tires at the Kennewick Transfer Stations for a fee. Tires are not collected curbside with refuse. Tires are shipped by Waste Management to a facility in Richland.

Most large tire retailers contract with a tire collector for transport away from the site and eventual disposal/recycling. The majority of tires collected in the county are transported out of the county or state. Currently tires are not a major concern as they are properly collected, stored, and transported out of Benton County.

An operation in Benton County bales and stores used tires. Tires are accepted for $1.00 each ($1.50 with a rim). The facility accepts 350,000 tires per year. The facility bales loose tires and sells them as products for engineered drainage and other applications.

Key Issues

Tires have long been a nationwide disposal problem. They can cause problems at landfills because whole tires tend to migrate upward and can eventually damage the landfill cover. Tires also generate pollution if incinerated. Tires are sometimes thought to be potentially useful or valuable enough to merit saving. For example, tires are often used for bank stabilization or landscape planters. For citizens in many locales, the cost of disposal is higher than for other waste and tires are generally considered inert or harmless. For all of these reasons, people are often willing to keep tires around or accept them onto their land for profit. The persons wanting to get rid of tires may find a private hauler or stockpile the least expensive means of "disposal."

Tire stockpiles, especially large piles, are a health and safety hazard. They provide breeding ground for insects and rodents which can carry diseases. They can also leach chemicals into the surface and ground water, and, if ignited (by lightning, range fire, or vandalism), burn hot and produce noxious fumes. Such fires are very difficult to extinguish. The runoff and leachate produced by dousing a burning pile can be very contaminated, and the ash residue can be high in heavy metals.

General statutory nuisance regulations and the MFS (Chapter 173-350 WAC) provide standards for the regulation and storage of tires. The state requirements call for tires to be stacked in piles a maximum of 10 feet high, with each pile having a maximum area of 5,000 square feet. A clear space of 40 feet between piles allows fire truck access. There is also a requirement that the pile be fenced to prevent indiscriminate dumping and vandalism.

The Solid Waste Management and Reduction and Recycling Act (RCW 70.95.500, et seq.) addresses the storage and handling of tires. The law requires haulers (more than five tires) to obtain a license and post a $10,000 bond, and storage pile owners (800 or more tires) to obtain a solid waste handling permit and obtain a financial assurance mechanism for closure of the site. Penalties for unlicensed haulers and site owners are a misdemeanor charge with a maximum one-year in jail and a $5,000 fine.

RCW 70.95.510 was amended to reinstate the tire fee, effective July 1, 2005. The original tire fee, which had expired in 1994, had been used to clean up tire dumps, fund a study of tires, and conduct other activities. The new fee is also intended to clean up unauthorized tire dumps and to help prevent future accumulations of tires. The fee is expected to raise $4.4 million per year and will expire in 2010. Other amendments provide for stricter licensing requirements and make tire transporters (licensed or not) liable for the cost of cleaning up illegally stored or dumped tires. The amendments also directed Ecology to conduct a study of unauthorized tire piles.

Current EPA direction for handling of the waste tire problem is to encourage waste tire reduction and recycling, with special emphasis on reducing the number of tires in uncontrolled stockpiles and illegal dumps. Scrap tires can be used in a number of productive and environmentally safe applications. The three most common uses are:

- **Civil Engineering Applications:** Scrap tire material replaces some other material currently used in construction such as lightweight fill materials like expanded shale or polystyrene insulation blocks, drainage aggregate, or even soil or clean fill. Some of the applications include: subgrade fill and embankments, backfill for wall and bridge abutments, subgrade insulation for roads, and septic system drain fields.

- **Ground Rubber Applications:** Tires are processed to a small particle size and the finished product, crumb rubber, can be used in a variety of applications, from loose fill (e.g., playground cover) to molded products to rubberized asphalt.

- **Tire Derived Fuel:** Scrap tires are used as fuel because of their high heating value. Using scrap tires is not recycling, but is considered a beneficial use. Typical tire derived fuel users include the cement industry, the pulp and paper industry, electric utilities, and certain industrial boilers.

At present, tire disposal in Benton County does not appear to be a significant problem. Tires will continue to be accepted for recycling by the Richland Landfill, Kennewick Transfer Station and local tire retailers. The BFHD will identify tire piles that do not comply with state regulations and require compliance with these regulations. In addition, the County will pursue state grants, if available, to assist in tire pile cleanup. Municipal and county solid waste staff will coordinate tire recycling activities with programs in other jurisdictions.

Options

1. County and City Purchasing Programs for Recycled Tire Products.

As was discussed in Chapter 3, Benton County can use its purchasing power to promote markets for scrap tires. There are a wide variety of tire-derived products available in the marketplace such as molded rubber products (e.g., carpet underlay, flooring material, dock bumpers, patio decks, railroad crossing blocks, roof walkway pads, rubber tiles and bricks, movable speed bumps). EPA has developed recycled-content recommendations for many products made from scrap rubber. Additionally, rubberized asphalt can have applications in many public works projects and loose fill crumb rubber can be used in a variety of applications for recreation and outdoor use such as playgrounds and walking trails.

Purchasing programs also can promote the use of retreads in government fleets, which is a common practice in commercial fleets for large truck tires. Retreading refers to reusing a tire casing and applying a new tread to the tire surface. EPA also has a procurement guideline developed for retread tires.

2. County and City Programs to Reduce Tire Waste.

City and county governments can divert tires from the waste stream from their fleets through maintenance and repair programs. Good tire maintenance can extend the life of a tire significantly. Windshield stickers can be used to remain maintenance facilities to check tires just as stickers are used for oil changes. Tires also can be repaired, if damaged, to increase their life span. Tire waste also can be reduced by purchasing longer-life tires.

3. Public Education Programs.

Consumers can be educated on tire maintenance, tire repair, and lifecycle costs to encourage purchase of longer-life tires. One specific target for educational materials could be companies that operate commercial fleets.

6.9 BIOMEDICAL WASTES

Medical treatment and research facilities generate a wide range of special wastes that require handling and disposal. Because of the variety of waste streams, several different regulatory agencies at the local, regional, state, and federal level have regulations pertaining to best management practices, and apply their own definitions to waste types. For the purpose of this Plan Update, biomedical waste means, and is limited to the following types of waste in accordance with RCW 70.95K.010:

- **Animal Waste:** 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:** Waste contaminated with blood, excretions, exudates, or secretions from humans or animals which are isolated to protect others from highly communicable infectious diseases that are identified as pathogenic organisms assigned to biosafety Level 4 by the Centers of Disease Control, National Institute of Health, Biosafety in Microbiological and Biomedical Laboratories, current edition.

- **Cultures and Stocks:** Wastes infectious to humans, includes 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:** Discarded waste human blood and blood components, and materials containing free-flowing blood and blood products.

- **Pathological Waste:** 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:** 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.

The handling, transport, treatment, and disposal of infectious waste are regulated in some fashion by the following entities:

- U.S. Environmental Protection Agency.
- Washington Department of Ecology.
- Washington Department of Health.
- Washington Department of Transportation.
- Washington Utilities and Transportation Commission (WUTC).
- Benton-Franklin Health District.
- National Hospital Certification Association.

Under the Medical Waste Tracking Act of 1988 (MWTA), the EPA gives states the responsibility of permitting infectious waste treatment technologies. Treatment technologies must be consistent with the requirements of Title V of the Federal Clean Air Amendments.

Washington State agencies most directly involved in this process are Ecology, the Department of Health, and the WUTC. Ecology administers permits for the following biomedical wastes treatment alternatives:

- Incineration.
- Autoclaving.

- Chemical Disinfection.
- Microwaving.
- Macrowaving (for offsite treatment only).
- Gas vapor and irradiation sterilization.

Existing Conditions

The two major hospitals in the area (Kennewick General Hospital and Kadlec Medical Center, located in Richland) no longer incinerate their biomedical wastes. One franchise hauler, Stericycle, has a certificate granted by the WUTC (certificate G-244) to collect biomedical throughout the state. The collection service is provided on an on-call and regular basis.

Key Issues

Major generators of biomedical wastes in Benton County dispose of their wastes through a licensed state franchise service provider. At this time there have been neither reported problems with biomedical wastes nor identification of biomedical waste disposed improperly in the waste stream. Although no problems have been identified, a potential exists for improper disposal of these wastes. The BFHD provides a brochure on proper home disposal of syringes and lancets, and refers the medical community to Stericycle for disposal options.

While most medical facilities are informed about proper management of biomedical wastes, residential generators may not be informed about proper management for sharps and outdated pharmaceuticals. Pharmaceutical wastes present both wastewater and solid waste management issues. Often residents flush unwanted pharmaceuticals down toilets or pour them down drains, leading to potential contamination of surface waters, ground waters, and biosolids. In areas where there are wells and septic systems, this practice could affect drinking water. Proper disposal is also an issue for solid waste collection workers who must handle the waste.

Options

Two options to address residential biomedical waste are presented:

- Educational materials for correct management of medical waste generated by residents.
  - Educational materials should continue to inform residents about the risks associated with their wastes and the services available to properly store and dispose of them. Residential sharps generators can use information about correct containers and collection opportunities.
- Collection of sharps and outdated pharmaceuticals at household hazardous waste collection sites.
  - Some communities currently provide collection for sharps and outdated medicines at household hazardous waste collection centers. Some will provide sharps containers, but most encourage residents to use sturdy, shatter and puncture proof, plastic bottles as sharps containers. Residents are provided label to use to identify the bottle as a sharps container, so it is not inadvertently put in a recycling bin.

6.10 PETROLEUM-CONTAMINATED SOILS

Petroleum-contaminated soils (PCS) are soils that have been contaminated by a petroleum product through leaks from petroleum product storage tanks or spills. Some PCS can be contaminated with lead, benzene, solvents, and PCBs and therefore may be considered hazardous. This section discusses only non-hazardous PCS.

PCS requires clean up when hydrocarbon contamination levels exceed those specified in Ecology's Model Toxics Control Act Cleanup Regulation (MTCA) (WAC 173-340). Under the MTCA, there are separate cleanup levels for industrial verses non-industrial zoned land along with maximum allowable levels for each individual constituent. PCS above MTCA cleanup levels can be treated in-situ, in place, or excavated and treated onsite or at an approved treatment facility.

Existing Conditions

PCS generated in Benton County may be disposed of in several ways. One option is for the generator to remediate and dispose of the soil on site. Another option, which is only available to generators in Benton County, is to haul the PCS to the Horn Rapids Landfill, where the wastes are landfarmed, disked in with native soils, and then used as cover and road-building materials at the landfill. The Benton-Franklin Health District monitors the acceptance of PCS at the landfill and requires testing of the material before it is used at the landfill at least 6 months after it was first land farmed. The Horn Rapids Landfill uses a special form and procedure to track PCS through the treatment process. Other options for disposal are the Kennewick transfer station and export to one of the regional landfills.

Key Issues

Proper disposal of PCS is largely the responsibility of the generator. Generators have several options, including treating their soils onsite, disposing of them at a regional treatment center, or disposing of them at a permitted landfill. The generator must select a method approved by Ecology and will use cost to make the final selection of disposal method. The BFHD approves and monitors PCS delivered to the Horn Rapids Landfill for treatment and re-use; however, on-site landfarming of PCS is monitored by Ecology. Generators with PCS designated as dangerous wastes must find other methods of appropriately disposing of their wastes that complies with all local, state, and federal regulations.

Because direct disposal of PCS in Benton County landfills does not take place, valuable landfill space is not consumed. If PCS were consuming landfill space, it might be necessary to encourage other means of disposal. At the Horn Rapids Landfill, treated PCS are used as means of enhancing onsite soils for landfill cover or construction purposes.

Volumes of PCS that are generated and require disposal are highly variable and dependent on the number and size of remedial activities taking place. However, most efforts to remove and upgrade aging gasoline or fuel tanks have been accomplished and volumes of PCS originating from these activities are expected to decrease. Present disposal and treatment options for PCS appear to be adequate. PCS wastes generated in Benton County will continue to be disposed at the Horn Rapids Landfill, on-site, Roosevelt Regional Landfill, Finley Buttes Landfill, and Columbia Ridge Landfill.

Options

The County and cities should allow the private sector to continue to manage and dispose of contaminated soils. These operations are likely to continue to use the Horn Rapids Landfill or other appropriately permitted facilities. Where appropriate, the County and cities should support and encourage the private sector to treat contaminated soils to minimize the amounts landfilled.

6.11 ASBESTOS

Asbestos is a material that was used for thermal insulation, surfacing materials, and other purposes in buildings throughout the 1950s, 1960s, and 1970s. When asbestos-containing material (ACM) becomes easily crumbled by hand pressure, it is called friable and dangerous because it can release asbestos fibers into the air. Likewise, cutting or sanding of non-friable ACM can release asbestos fibers into the air. Friable asbestos fibers are a known carcinogen, which can cause lung cancer and other disabling and fatal diseases.

Federal regulations governing handling, transportation, and disposal of ACM are known as the National Emissions Standards for Hazardous Air Pollutants (NESHAP) (40 CFR Part 61). Requirements for asbestos disposal include, to name a few, standards for covering the waste, maintenance of waste shipment records, and maintenance of records concerning location and quantity of waste disposed.

Ecology Dangerous Waste Regulations (WAC 173-401-531) states that asbestos waste that contains 0.01% of friable asbestos exceeds the criteria for carcinogenic dangerous waste and must be regulated. WAC 173-303-071(3)(m) exempts friable asbestos waste from regulation as dangerous wastes, provided these wastes are managed in compliance with, or in a manner equivalent to, the asbestos management standards of NESHAP (40 CFR Part 61).

The Benton Clean Air Authority (BCAA) is the local agency responsible for enforcing federal, state, and local asbestos regulations. The Authority has adopted local regulations, consistent with existing federal and state regulations, for the removal, encapsulation, and disposal of ACM. In its regulations, BCAA has lowered the limits for notification and emission control from 260 linear feet (or 160 square feet) to 10 linear feet (or 48 square feet). Asbestos may only be removed by licensed asbestos contractors or by homeowners after a notice is provided to BCAA. Asbestos contractors are licensed by the Washington State Department of Labor and Industries.

Existing Conditions

Municipal solid waste landfills can accept non-friable asbestos wastes if acceptance and disposal procedures are in compliance with federal, state, and local regulations. There are a limited number of facilities that currently accept ACM for disposal. Asbestos waste generators in Benton County can haul their waste to either the Columbia Ridge Landfill (Oregon) or the Roosevelt Regional Landfill (located in Klickitat County) for disposal. Both sites have approved programs for asbestos waste disposal. As discussed in Chapter 5, some ACM originating in Benton County is sent to Sudbury Road and Graham Road landfills.

The Horn Rapids Landfill has modified their waste policy to accept ACM (non-friable asbestos).

Key Issues

Asbestos-containing materials can be disposed of in solid waste landfills if they are encapsulated, packaged, and covered for disposal in accordance with the local, state, and federal asbestos regulations described previously. Acceptance of asbestos at a landfill facility requires special handling of the material, additional paper work, and additional training of personnel. These requirements increase asbestos waste disposal costs.

Options

Asbestos regulations require a written notice of intent to remove or encapsulate asbestos. This notice is provided to the BCAA and includes information for handling of the wastes, from removal and encapsulation to disposal. The BCAA is responsible for ensuring that the procedures outlined in the notice of intent are enforced. The BCAA should be encouraged to increase enforcement of asbestos waste disposal activities, including additional follow-up on notices of intent to ensure that the wastes were disposed of in the approved manner. Fining illegal dumpers and publicizing incidents of illegal asbestos dumping in local newspapers should help to discourage illegal dumping and help the public become educated and aware of proper disposal practices.

Much of the asbestos waste generated results from demolition and remodeling projects. The quantities generated are a direct result of the amount of this type of work that is conducted. While private contractors are generally aware of asbestos handling requirements, homeowners doing their own project work may not recognize asbestos-containing materials. Current BCAA requirements allow homeowners to remove their own asbestos if they are doing the renovation/remodeling work themselves. Some homeowners may be unknowingly placing asbestos-containing materials from small remodeling projects in with their trash.

There may be a need to educate homeowners about proper identification of asbestos-containing materials and proper handling and disposal methods. While some information is available on the BCAA website, the County could work with BCAA to develop more comprehensive information and outreach strategies.

6.12 STREET WASTES

Street wastes are collected during maintenance activities of cleaning streets, parking lots, storm sewers, and drainage systems. They are considered a solid waste in RCW 70.95.030 when the liquids have been decanted. Typically these street wastes fail the Model Toxics Control Act standards for total petroleum hydrocarbon (WTPH 418.1 Modified) and heavy metals; however, on the east side of Washington, street sweepings do meet MTCA standards due to the high volatilization. Many generators are now disposing of this material in landfills at considerable expense.

Existing Conditions

Street sweepings and vactor truck wastes collected at the Richland and Kennewick Decant Facilities have routinely tested under MTCA levels. Kennewick disposes of the material at their Inert Landfill, while Richland uses it for cover at the landfill. Prosser also disposes of street sweepings in

their Inert Landfill. Decanted water from both decant facilities enter oil/water separators and each city's sewerage system.

Key Issues

Numerous reuse options for street wastes are potentially available. For example, the material might be used as feedstock in cement manufacture, asphalt production, composting, concrete manufacture, and industrial fill. Other reuse options include construction uses like fill or roadbed material. Some of the processing and reuse options for street wastes may not be realistic given regulations, permitting requirements, and material specifications involved in the options, leaving landfilling or treatment as the only options. Richland and Kennewick have both constructed street waste facilities, with all wastes going to landfills.

Options

No options have been identified at this time.

6.13 ELECTRONIC WASTE

In Benton County, there are no restrictions on disposal of residential electronic waste. Disposal of commercial electronic waste follows no additional restrictions in the County beyond state and federal rules regarding hazardous or dangerous wastes.

The Washington State Legislature passed in 2006 Engrossed Substitute Senate Bill 6428, which established the Washington State Electronics Product Recycling Law. The law requires manufacturers of electronic products sold in Washington State to finance and implement electronics collection, transportation, and recycling programs in Washington State no later than January 1, 2009. This program will be available to households, small governments, small businesses, and charities. Ecology will oversee this program. Electronic products that are covered in the legislation include cathode ray tube (CRT) and flat panel computer monitors having a viewable area greater than four inches when measured diagonally, desktop computers, laptops, and portable computers.

Updated information on the law and rules are on Ecology's Electronic Waste webpage http://www.ecy.wa.gov/ programs/swfa/eproductrecycle/.

Options

1. Inventory available opportunities for e-waste collection and recycling: A study should be conducted to identify existing companies or agencies within the County or region that can provide collection and/or recycling services for electronic waste.

2. Establish relationships with recyclers and programs to recycle e-waste: Based on the results of the study of available resources, the County and cities should seek to establish relationships with e-waste recyclers in the County or surrounding region.

6.14 MODERATE RISK WASTES

Local governments are required by the Washington State Hazardous Waste Management Act (HWMA, Chapter 70.105 RCW) to address moderate risk waste management in their jurisdictions. Moderate risk wastes are hazardous wastes produced by households, and by businesses and institutions in small quantities. Commercial and institutional generators of hazardous waste are conditionally exempt from full regulation under the HWMA, provided that they do not produce or accumulate hazardous waste above specified quantities defined by Ecology (quantity exclusion limits). These "small quantity generators" produce hazardous wastes in quantities that do not exceed the following State regulatory limits:

- 220 pounds (100 kg) of dangerous waste per month or per batch.
- 2.2 pounds (1 kg) of acute or extremely hazardous waste per month or per batch.

In addition, to maintain its status as a small quantity generator, a business or institution may not accumulate more than 2,200 pounds of dangerous waste or more than 2.2 pounds of acute or extremely hazardous waste at one time.

Businesses or institutions producing or accumulating hazardous waste above the quantity exclusion limits are required to meet a stringent set of regulations when storing, handling, and disposing of their hazardous wastes. In addition, these fully regulated hazardous waste generators must comply with extensive waste tracking and reporting requirements. Small-quantity generators must meet certain requirements for identifying and managing their hazardous wastes, but are exempt from portions of the waste tracking and reporting requirements.

Background

In 1990, the Benton-Franklin Regional Council contracted with the consulting firm PARAMETRIX, INC. to provide a comprehensive Moderate Risk Waste (MRW) Plan for Benton and Franklin Counties combined. The report was finished and accepted by the local jurisdictions of both counties in 1991. A copy of the MRW Plan for Benton and Franklin Counties is included as Appendix A. In 1992, the two counties could not agree on siting and funding a permanent facility for moderate risk wastes. Subsequently, the following year in Benton County, the governmental entities of Richland, Kennewick, and Benton County signed the Interlocal Agreement for Household Hazardous Waste Program. In 1996, there were two situations that are of importance to moderate risk wastes in Benton County. First, the Department of Ecology gave guidance through the Central Regional Office that the Five (5) Year Update to the MRW Plan did not need to be done in order for counties to continue receiving Ecology Funding. The Central Regional Office suggested that the MRW and Solid Waste (SW) Plans be incorporated into one plan. This could be done when the Benton County SW Plan was due for revisions in 1998. Secondly in 1996, the original Interlocal Agreement was modified to include the "Small Quantity Generator" program in Benton County.

Existing Conditions

This section provides information on programs to collect moderate risk wastes in Benton County.

Regional Facility--

As a result of the 1993 Benton County Interlocal Agreement on Household Hazardous Wastes, a permanent facility was cited and constructed at the Horn Rapids Landfill. The Moderate Risk Waste facility opened on May 31, 1995. The facility is staffed with two full time personnel and accepts wastes from the households and small quantity generators in Benton County. "Household Hazardous Wastes" can be taken to the Richland site weekdays from 8:00 a.m. to 4:00 p.m., and weekends from 9:00 a.m. to 5:00 p.m. Small quantity generators must make an appointment to deposit wastes.

Collection Events--

Two, one-day collection events took place in 2005 in Prosser and Kennewick. A mobile moderate risk waste solid waste handling permit is kept valid for events. The BFHD requires a 14-day advance written notice of the event for approval.

Satellite Collection Facilities--

Three satellite collection sites are open for limited drop-off of HHW, collection of latex and oil based points, antifreeze, and used oil. These sites are located at the Waste Management Transfer Station, the Benton City Drop Box Facility, and the Prosser Drop Box Facility.

Small Quantity Generator Program--

The small quantity generator program was formalized in 1996 for all of Benton County businesses that generate less than 220 pounds of acutely hazardous waste per month. The program is by appointment only and operates out of the Moderate Risk Waste facility. There is a charge to the business to use the facility. Materials collected are combined with household hazardous waste and packaged and shipped for disposal.

Waste Exchange Program--

The waste exchange program returns useable products back to the public for reuse. Most products consist of recycled latex paint, pesticides, aerosols, cleaning products, and automotive products. Propane tanks and fire extinguishers are recycled at Amerigas located in Kennewick.

Quantities Collected--

In 2005, 507,849 pounds of moderate risk waste were collected in Benton County through the Moderate Risk Waste facility, collection events, satellite facilities, and the small quantity generator program. Of this amount, 460,044 pounds were household hazardous waste (HHW) and 47,805 pounds were business waste from small quantity generators (SQG). There were 5,921 Benton County residents and 55 businesses that used the available programs.[27]

Agricultural Wastes--

The Washington State University Cooperative Extension provides farmers and citizens with information about moderate risk waste and agricultural chemicals, including pesticide containers.

[27] Source: Year 2005 Fixed Facility Annual Report.

Activities include providing written materials within the cooperative extension offices, assisting in providing information where pesticides and other agricultural products are sold, mailing information to farmers, and providing speakers to address interested groups on the topic of moderate risk waste and agricultural chemical waste management.

No locally financed programs for agricultural chemical waste collection are in place. However, waste pesticides are collected by a special program administered by the Washington State Department of Agriculture. These events occur approximately every 2 to 3 years in Benton County or an adjacent county.

Education Programs--

Household Hazardous Waste--The educational effort directed at the general public concentrates primarily on providing speakers, preparing brochures, flyers, point-of-sale information, and display boards. Educational materials stress identification of hazardous products, their possible hazards, available product substitutes that are non-hazardous or less hazardous, proper waste storage, handling and management, and locally available recycling or disposal options. Information sheets, videos, and other information already printed by Ecology and local businesses or organizations are also made available for distribution to the public.

These materials are provided to the public upon request, and distributed through mailings using existing distribution networks (possibly utility bill inserts, utility newsletters, press releases, or news articles). Point-of-sale information and display boards are used at businesses, public buildings, and public functions such as county fairs. Information regarding moderate risk waste disposal is provided at the Horn Rapids landfill and the Kennewick transfer station. Knowledgeable speakers within the region are recruited to assist in providing information to community organizations and citizen's groups.

To respond to requirements of the Used Oil Recycling Act (SSSB 5591), emphasis is given in the educational activities to promoting recycling of used oil. Citizens are informed of the problems associated with improper disposal, and are told where they may recycle used oil. The MRW Facility continues to expand opportunities for recycling used oil, paints, and antifreeze.

The second part of the general public education is the A-Way with Waste program in local schools. This program is now available from the Department of Ecology Air Quality Division. A volunteer program to deliver information to schools concerning hazardous waste and other environmental issues was evaluated during 1999. Classroom presentations by knowledgeable volunteers minimize burdens on teachers and are an effective way to inform students on the issues. This program is coordinated closely with other informational programs offered by the schools and local agencies to avoid duplication of efforts.

The City of Richland distributes information and promotes the safe disposal of household hazardous waste material through a number of outreach programs. Some of the programs include:

- Area school presentations and tours of the fixed facility.
- Household hazardous waste publications through newspaper, fliers, TV broadcasts, and internet information.

- Informing businesses of disposal outlets.
- Updated HHW answering machines, both HHW facility and 24-hour hotline.

Business Education--Like household educational materials, the information materials for businesses stress identification of hazardous products, waste reduction opportunities, proper storage, handling and management, and available services for waste treatment, recycling, and proper disposal.

This information is to be supplemented with information available from Ecology. Some materials focus on particular waste generating groups and other material should target specific wastes. Local trade groups, industrial associations, downtown merchant's associations, and chambers of commerce are encouraged to help disseminate information and prepared materials, through meetings, workshops, and regular mailings.

In addition, coordinators of existing or planned trade shows or similar events are encouraged to include booths and displays focusing on moderate risk waste management. Existing commercial material/waste exchange listings will be made available to interested groups in the region. Those groups are also encouraged to subscribe to the waste exchange listings independently. The agencies conducting educational programs also contact local business licensing departments to develop procedures to target businesses applying for licenses. Such businesses are provided information at the time of licensing concerning procedures and requirements for proper moderate risk waste management.

The Benton County MRW Facility provides a central informational resource center and serves as a second educational tool containing information on a variety of commercial moderate risk waste management as well as household hazardous waste issues. This facility disseminates information to local libraries, private organizations, and public agencies. Specific locations are determined by the lead agency.

Targeted business groups include: vehicle maintenance and gas stations; retail trade; construction; labs and medical establishments; paper, printing and allied services; wood products and services; and funeral services. These groups continue to receive particular attention to promote improved moderate risk waste management practices.

Key Issues

Since the permanent MRW Facility opened in 1994, operations have steadily improved. The unit cost per participant using the services provided is one of the lowest in the State of Washington. The citizen participation has steadily increased each year and the cost to dispose of the remaining waste material has decreased to make this a very cost-effective operation. The City of Richland continues to provide excellent employees at this facility.

Benton County has benefited from the 1993 Interlocal Agreement for their Household Hazardous Waste Program and subsequent modification in 1996 to include the Small Quantity Generator Program. Each governmental agency involved has had sufficient resources to carry out these programs. The Department of Ecology also provides funding for this program.

Options

The Guidelines for the Development of Local Solid Waste Management Plans and Plan Revisions, published in 1999, specifically address reducing the toxicity of the waste stream. The guidelines require that each jurisdiction plan and implement programs in five areas of toxicity reduction.

These required program areas are:

1. Household and public education.
2. Household hazardous waste collection.
3. Business technical assistance.
4. Business collection assistance.
5. Enforcement.

Options for reducing the toxicity of disposed wastes are presented within these five areas of toxicity reduction.

Household and Public Education

1. Expanded Public Education.

For education, current household hazardous waste efforts appear to be fairly comprehensive, although these efforts need to be continued on an ongoing basis to reach new residents and new generations. One segment of society that could benefit from targeted educational efforts is that where English is used as a second language. For example, Sonoma County (California) teaches a used oil/filter recycling lesson for immigrants in English as a second language (ESL) classes. The lesson has been well-received by ESL students who, following the lesson, report that they are recycling their used oil. As discussed in Chapter 3, the County also is experiencing growth within the Asian population and could consider creating educational materials in Asian languages such as Korean and Vietnamese.

2. Education on Alternative Products.

In addition to the message about proper disposal of household hazardous waste and used oil, Benton County could expand its educational messages to include information on alternatives to hazardous household products. Much of this type of information can be found on the Washington Toxics Coalition's Home Safe Home Program website. The Home Safe Home Program has produced a series of fact sheets that identify hazards with various types of products and suggest alternatives.

Household Hazardous Waste Collection--

Expanded collection capabilities and increased collection events may help extend opportunities for proper disposal to more residents. Several opportunities exist for Benton County to expand its current household collection capabilities.

3. Use Mobile Collection Centers to Target Rural Areas.

In addition to permanent collection facilities, many communities use mobile facilities that travel to areas where residents do not have easy access to permanent facilities. Residents can bring their household hazardous waste to the mobile facility when it is in their community. Often communities will place a limit on the amount of waste that may be brought in by an individual, usually 5 gallons or 50 pounds total per vehicle per trip. Benton County could consider offering this type of service in the rural areas of the county. This option will be implemented depending on the availability of funding.

4. Provide On-Call Collection Services.

Senior citizens and physically challenged individuals can find it difficult to store HHW in their homes and bring HHW to collection events, the MRW Facility, or the satellite collection areas. Benton County could consider offering on-call services for these individuals.

5. Expand HHW Collection to Include Household-Generated Biomedical Waste.

As was discussed earlier in this chapter, management of sharps and outdated pharmaceuticals generated by homeowners present both wastewater and solid waste management issues. Benton County could consider offering collection of sharps and outdated medicines at the household hazardous waste facilities that do not currently collect these items.

Business Technical Assistance--

Benton County currently provides information to businesses wanting to learn how to reduce and manage hazardous waste and has developed a variety of educational materials. However, the opportunity exists to provide additional educational materials to businesses, as well as local government agencies, to foster markets for used oil and provide recognition for businesses for their environmental achievements.

6. Purchasing Guidelines for Re-refined Lubricating Oils.

Eventually, motor oil becomes dirty and must be replaced with new oil to maintain engine performance. This used motor oil can be re-refined into new oil, processed into fuel oils and used as raw materials for the petroleum industry. Re-refined lubricating oil is subject to the same stringent refining, compounding, and performance standards as virgin oil for use in automotive, heavy-duty diesel, and other internal combustion engines, hydraulic fluids, and gear oils. Laboratory testing and field studies have concluded that re-refined oil is equivalent to virgin oil and can pass all prescribed performance tests (e.g., cold-start, pumpability, rust-corrosion, engine-wear, and high-temperature viscosity tests). Additionally, the three major U.S. automobile manufacturers now recognize that re-refined oil meets the performance criteria in their warranties (as long as the oil meets certification standards issued by the American Petroleum Institute).

The EPA has developed a Comprehensive Procurement Guideline for re-refined oil that local governments can use in their purchasing programs for oil-related products (the price of re-refined oil

is comparable to virgin oil). Additionally, this information can be made available to businesses operating in Benton County, particularly those operating commercial fleets.

7. *Recognition for Environmental Achievements.*

The County could recognize and reward local businesses for their environmental achievements, particularly for preventing pollution and reducing hazardous waste. As discussed earlier in Chapter 3, the County could host special events, publish case studies on the web site, and help businesses attract positive press.

A program used by several counties in western Washington is the "EnviroStars" program. This program certifies businesses for their efforts in preventing pollution and reducing hazardous waste. Certified EnviroStars businesses are given a two-to-five star rating based on their commitment to reducing hazardous waste. The higher the star rating, the more proactive the business has been in protecting the environment. This program is based on the premise that consumers will choose to do business with a company that is environmentally responsible.

EnviroStars businesses are promoted in various marketing campaigns. Qualifying businesses can be promoted: on the Internet, in the Green Business directory, in radio commercials, local newspapers, and other media. The program is available in Jefferson, King, Kitsap, Pierce, and Whatcom counties.

Business Collection Assistance--

The County currently provides for collection of wastes generated by Small Quantity Generators and provides assistance to school laboratories with disposal of unwanted chemicals. The County should continue to provide these services.

Enforcement Efforts--

With respect to businesses generating hazardous wastes, the County has relied primarily on educational efforts and collection opportunities to obtain compliance with state laws. The County should continue with these efforts.

RECOMMENDATIONS

The Solid Waste Advisory Committee reviewed the options discussed above and has recommended the following options:

Construction and Demolition Debris

1. Provide education programs for contractors.

2. Establish C&D and inert waste diversion specifications for public projects.

3. Use recycled content building specifications for public projects.

4. Develop disaster management plan.

5. Establish locations for staging and temporary storage of disaster debris.

6. Assess development of regional C&D facility.

Wood Waste

1. Support diversion at transfer stations and landfills.

2. Provide public education on facilities to divert wood waste.

Industrial Wastes

1. Continue to monitor and regulate industrial waste disposal; provide assistance as necessary.

Agricultural Wastes

1. Form committee to discuss potential opportunities for alternative energy industries using agricultural waste.

Tires

1. City/County purchasing programs for recycled tire products.

2. City/County programs to reduce tire waste.

3. Pubic education programs.

Biomedical Wastes

1. Education materials for correct management of residential medical waste.

2. Collection of sharps and outdated pharmaceuticals at MRW collection sites.

Petroleum Contaminated Soils

1. Private sector to continue to manage and disposal of PC soils.

Asbestos

1. Educate homeowners on proper handling methods.

Moderate Risk Wastes

1. Expanded public education program.

2. Alternative products information.

3. Use mobile collection center to target rural areas.

4. Expand HHW collection to include biomedical waste generated by households.

5. Recognition program for businesses.

6. Business collection assistance.

7. Continue enforcement efforts.

Tank Pumpings

1. Continue private sector management of septage.

2. Assess feasibility of developing facility if disposal becomes limited for oil/waste separator sludge.

3. Continue private sector management of fats/oil grease tank pumpings.

Electronic Wastes

1. Inventory available opportunities for e-waste collection and recycling.

2. Establish relationships with recyclers and programs to recycle e-waste.

Chapter 7

Administration and Enforcement

SECTION 7.1
ADMINISTRATION

The Washington State Solid Waste Management Act, RCW 70.95, assigns local government the primary responsibility for managing solid waste. This chapter describes the administrative structure for solid waste management planning and permitting in Benton County.

EXISTING CONDITIONS

Administrative responsibility for solid waste management in Benton County is divided among several agencies and jurisdictions. The administrative responsibilities of each organization are described below.

Solid Waste Advisory Committee

The State requires that counties establish a Solid Waste Advisory Committee (SWAC) to assist in the development of programs and policies concerning solid waste handling and disposal (RCW 70.95). The Benton County SWAC is an advisory board to the Board of Benton County Commissioners and makes recommendations to the Commissioners on matters relative to the development of solid waste handling programs and policies. One of its main functions is to provide a forum within the community for the expression of opinions regarding solid waste handling and disposal plans, ordinances, resolutions, and programs prior to adoption. SWAC members represent citizens, public interest groups, business, the waste management industry, and local government. The SWAC has a significant role in developing and updating Benton County's Comprehensive Solid Waste Management Plan.

Benton County Public Works Department Solid Waste Program

RCW 36.58 authorizes Benton County to develop, own, and operate solid waste handling facilities in unincorporated areas of the county, or to accomplish these activities by contracting with private firms. The County also has the authority and responsibility to prepare comprehensive solid waste management plans for unincorporated areas and for jurisdictions that agree to participate with the County in the planning process.

The County has entered into interlocal agreements with all of the incorporated cities within the county for the purpose of solid waste management planning and implementation. Interlocal Agreements are developed in accordance with Chapter 39.34 RCW, Interlocal Cooperation Act, for the purpose of permitting local governments to cooperate with one another in the performance of tasks, thus achieving economies of scale and reducing duplication of effort. An Interlocal Agreement is signed by the authorized officials of the local governments involved, and specifies the services and/or facilities to be provided and any compensation between the local governments for such services and/or facilities. The Interlocal Agreements between Benton County and the incorporated cities will remain in effect until 2012. A copy is included in Appendix B.

Benton County exercises its solid waste responsibilities through the Benton County Public Works Department, and specifically through the Solid Waste program. The Solid Waste program has the responsibility for developing and implementing the solid waste management plan, formulating interlocal agreements, administering public education programs, and providing staff support for the SWAC.

Incorporated Cities

RCW 35.21.152 allows cities to develop, own, and operate solid waste handling systems and to provide for solid waste collection services within their jurisdictions. There are five incorporated cities and towns in Benton County. One city operates its own residential garbage collection system and four cities contract with a hauler. Fees charged for the service cover the expenses of the system.

Benton-Franklin Health District

The Environmental Health Division within the Benton-Franklin Health District provides much of the regulatory oversight in Benton County. The agency is the responsible local authority (per RCW 70.95.160) for issuing permits for solid waste facilities. The agency also is responsible for assessing compliance with permit conditions and has the responsibility for maintaining compliance through enforcement activities.

The Health District's responsibilities extend to the following areas for solid waste management:

- Solid Waste Facilities: The Health District issues operating permits for waste handling facilities, including landfills, transfer stations, and recycling facilities.

- Special Wastes: The Health District issues permits for demolition and inert waste landfills and facilities for managing septage and street wastes.

The specific permit requirements for solid waste disposal facilities are defined in WAC 173-304-600, WAC 173-351 and WAC 173-350. Health District responsibilities for processing and evaluating these permits are defined in RCW 70.95.180. These state regulations require jurisdictional health departments to evaluate solid waste permit applications for their compliance with all existing laws and regulations and their conformance with the Solid Waste Management Plan and all zoning requirements. The Department of Ecology's review and appeal process for a permit issued by the Health District is explained in RCW 70.95.185.

Benton Clean Air Authority

The Benton Clean Air Authority is responsible for controlling the emission of air contaminants from sources in the Benton County with authority derived from federal and Washington State Clean Air Acts. Relevant laws are the Code of Federal Regulations (40 CFR) and RCW 70.94, respectively. . In addition, there are a limited number of local regulations in the Benton Clean Air Authority Regulation 1. The WAC 173-400 series of the administrative code is the principal source of regulatory implementation of Washington State air pollution laws.

In terms of solid waste management, the issue is principally one of media transfer in which potential air pollutants are not allowed to be released into ambient air under compliance and enforcement responsibilities of the BCAA. Consequently, some materials, such as vegetative matter that was previously burned legally, can no longer be burned, and specific prohibited materials that could never have been burned legally are being diverted to the solid waste stream. Outdoor burning is currently restricted to permitted residential, land clearing, and agricultural burning plus a certain exempted burning of vegetative materials, principally outside Urban Growth Boundaries. No outdoor burning is allowed within Urban Growth Boundaries except agricultural burning and specifically exempted burning.

Another specifically regulated material that is solid waste is asbestos containing material for which the BCAA requires proper removal, handling, transport, and landfill disposal. The BCAA is also responsible for regulating odor and any hazardous or toxic emissions from any material of biological or non-biological origin. A specific example of the latter is composting facilities. In so far as these materials are involved with a diversionary activity or recycling, the requirements for compliance with air regulations may affect the feasibility of such efforts, operation of relevant materials handling facilities, and whether these materials may be in or out of the solid waste stream.

Some specific compliance and enforcement responsibilities of the BCAA are permitting for composting facilities, landfills, and wastewater treatment plants. Nuisance odor and fugitive dust are among the regulated events.

Washington State Department of Ecology

Ecology has the primary authority for solid waste at the state level. Ecology assists local governments in the planning process by reviewing, providing comments, and approving preliminary and final drafts of solid waste management plans. This review is to ensure that local plans conform to applicable state laws and regulations. In its *Guidelines for the Development of Local Solid Waste Management Plans and Plan Revisions*, Ecology offers recommendations on the preparation of solid waste management plans. Ecology also makes recommendations and comments on reviews of solid waste handling and disposal permits to ensure that the proposed site or facility conforms with applicable laws and regulations.

Washington Utilities and Transportation Commission

The Washington Utilities and Transportation Commission (WUTC) regulates solid waste collection activities under RCW 81.77, through the issuance of certificates entitling private companies to provide solid waste collection services within specified geographic areas of the state. RCW 70.95.096 also grants the WUTC the authority to review solid waste management plans to assess solid waste collection cost impacts on rates charged by collection companies regulated under RCW 81.77 and to advise the County and Ecology of the probable effects of the Plan's recommendations on those rates.

KEY ISSUES

Responsibilities for implementing the Solid Waste Management Plan are assigned to various local agencies. Since responsibilities for specific tasks are assigned to more than one agency, each of the jurisdictions needs to recognize the importance of carrying out all tasks in a manner that ensures efficient use of resources (by avoiding duplication of effort), avoids gaps in program activities, and avoids conflicts or inconsistencies.

OPTIONS

The above objective can be met by holding regular coordination meetings, sharing informational materials, and briefing the Solid Waste Advisory Committee. Participating jurisdictions should track progress as they implement each of the recommendations contained in the Plan as a means to determine the effectiveness of each element of the Plan and the need for adjustments or revisions. As programs are implemented, participating agencies should also solicit comments and suggestions from citizens and participating businesses, regarding the programs' adequacy and effectiveness. The SWAC and the Central Regional Office of the Department of Ecology should receive progress reports on the Plan's implementation. The SWAC should be asked to review and recommend any necessary adjustments or revisions to planned activities.

1. Interagency cooperation should be facilitated.

The large number of different agencies and jurisdictions responsible for solid waste management in Benton County makes interagency cooperation essential. This can be achieved through commitments on the part of each entity to participate on the advisory committee(s), and coordinating committee meetings between the counties and municipalities to facilitate the exchange of information. In addition, coordination can be achieved if technical staff work closely with their counterparts in the other jurisdictions performing similar or related functions.

A cooperative approach to program evaluation is also essential to ensure that the goals and objectives of solid waste management are being met, and to monitor changes that take place in solid waste generation and disposal. Once Benton County and the municipalities have adopted the Plan, mechanisms will need to be developed to ensure that the Plan is effectively implemented. One method for evaluating programs is to continue to utilize the Planning Committee of the SWAC to review the success of individual program components and the Plan as a whole. Methods of review could include tracking waste quantities, participation rates, expenses, income, and implementation problems. Reviews could occur periodically to make necessary adjustments once the Plan is implemented.

RECOMMENDATIONS

The Solid Waste Advisory Committee reviewed the option discussed above and has recommended the following option:

1. Facilitate interagency cooperation.

SECTION 7.2
ENFORCEMENT

The Washington State Solid Waste Management Act, RCW 70.95 assigns local government the primary responsibility for managing solid waste. This chapter describes the structure for enforcement of solid waste management requirements for Benton County.

EXISTING CONDITIONS

A number of different entities are responsible for enforcing solid waste management regulations and requirements within Benton County: the Benton-Franklin Health District, the Benton Clean Air Authority, the Benton County Sherriff's Office, the Washington State Department of Ecology, the Washington Utilities and Transportation Commission, and the incorporated cities. The enforcement responsibilities of these entities are discussed below.

Benton-Franklin Health District

The Benton-Franklin Health District (BFHD) carries the responsibility for enforcing many solid waste regulations and programs within Benton County. State law gives local health departments responsibility for:

> *"ordinances governing solid waste handling implementing the comprehensive solid waste management plan covering storage, collection, transportation, treatment, utilization, processing and final disposal including but not limited to the issuance of permits and establishment of minimum levels and types of service for any aspect of solid waste handling." (RCW 70.95.160)*

In addition, RCW 70.95.160 states that:

> *"such...ordinances shall assure that solid waste storage and disposal facilities are located, maintained, and operated in a manner so as properly to protect the public health, prevent air and water pollution, are consistent with the priorities established in RCW 70.95.010 and avoid the creation of nuisances."*

Falling under the definition of "solid waste handling facilities" are landfills, wood and tire piles, construction and demolition debris sites, compost facilities, transfer stations, and landfills.

The BFHD's enforcement responsibilities extend to the following areas of solid waste management:

- Illegal dumping: BFHD receives and investigates public health related complaints resulting from illegal dumping, improper storage, and littering. If, after notification from BFHD, the property has not been cleaned up, the information is forwarded to the Benton County Prosecuting Attorneys Office for legal action. It also issues clean-up orders.

- Solid waste facilities: BFHD issues and renews permits, and makes periodic inspections of solid waste handling facilities. Inspections ensure that these facilities do not create public health problems, nuisances, or environmental contamination. All solid waste facilities accepting solid waste are inspected at a minimum of every 2 months. Facilities, such as closed facilities or facilities with active permits that are not currently accepting waste, are inspected two times per year. The Richland Landfill is inspected at least annually by the Health District for compliance with State Minimum Functional Standards and Benton-Franklin Health District regulations.

Benton Clean Air Authority

The Benton Clean Air Authority has the responsibility of monitoring the emission of air contaminants from sources in Benton County and is responsible for enforcement of emissions standards. The Authority also regulates asbestos handling and open burning in the County.

Benton County Sherriff's Office

Complaints against illegal dumping are handled by the Sheriff's Office in Benton County. Typically this office gets at least one complaint of illegal dumping per week. Offenders are fined approximately $150 for each day the garbage remains at the illegal dumpsite. Few offenders are apprehended.

Washington State Department of Ecology

Although primary enforcement for solid waste management is through jurisdictional health departments, Ecology has a range of enforcement authorities under various statutes to address existing or potential sources of pollution, including those which result from improper solid waste handling and management. For instance, Ecology has broad authority to take enforcement actions under the State Water Pollution Control Act, the Hazardous Waste Management Act, and the Model Toxics Control Act. Collectively, these laws allow Ecology to issue orders and impose penalties for noncompliance. Under some circumstances, Ecology may also take direct action to remedy threats to public health and the environment, and seek to recover costs from potentially liable parties.

In some instances, Ecology may assume the duties and responsibilities of jurisdictional health departments. RCW 70.95.163 authorizes local health departments to enter into an agreement with Ecology to assume some, or all of their solid waste regulatory responsibilities and authorities, such as biosolid and septage permitting and enforcement.

Washington Utilities and Transportation Commission

The WUTC regulates the collection of solid waste in unincorporated areas of the County. The WUTC's enforcement mechanisms include fines and revocation of the right of private collectors to collect solid waste. The WUTC also enforces against companies that illegally collect solid waste without a certificate.

Incorporated Cities

Cities and counties have the authority to establish solid waste programs, pass ordinances, and provide resources to monitor compliance and take corrective action where necessary. For instance, within the City of Richland's Public Works Department, the Solid Waste Collection Department is responsible for enforcing compliance with refuse collection regulations. The Disposal Department monitors compliance of daily operations at the landfill. The Department also works with the Health District to enforce litter control and illegal dumping programs. The cities are also responsible for enforcing local ordinances covering zoning, land use, illegal dumping, and littering.

KEY ISSUES

Enforcement activities within Benton County generally are focused on compliance with permit conditions and regulatory standards, littering, and illegal dumping. Response often comes from law enforcement agencies for littering. Code Enforcement and the BFHD are responsible for enforcement of illegal dumping/improper disposal. One key issue is to ensure adequate staffing and funding for the agencies responsible for enforcement.

A second key enforcement issue pertains to illegal dumping. Washington's Model Litter Control and Recycling Act (RCW 70.93) prohibits the deposit of garbage on any property not properly designated as a disposal site. Revisions (RCW 70.93.060) provide stiffer penalties for littering and illegal dumping in rural areas including classification as a misdemeanor, punishable by specific penalties.

Illegal dumping can be addressed through enhanced enforcement activities and education.

OPTIONS

1. *Enforcement activities must be coordinated to attain maximum impact without duplication.*

Complex environmental issues, increased emphasis on recycling and waste reduction programs, more complicated operational requirements at sanitary landfills, and the need to coordinate all aspects of the solid waste system, including hazardous waste, have drawn attention to enforcement. Jurisdictions must take the time and effort, not only to understand the laws, but they must also examine their organizations and staffing levels to adequately address the requirements of the laws. Because the majority of solid waste problems are regional, each jurisdiction needs to establish appropriate means of interacting with other jurisdictions.

2. *Improve coordination among County agencies, cities, and other relevant public agencies responsible for illegal dumping cleanup, education, and prevention programs.*

Several Washington communities have addressed illegal dumping concerns by convening a task force to evaluate the roles of the county, cities, and other relevant public agencies responsible for illegal dumping cleanup, education, and prevention programs. Such an effort can lead to better coordination, reduced overlap of responsibilities, and reduced gaps in coverage. This can also lead to uniform enforcement capabilities and quicker response to halt illegal activities.

3. *Develop a coordinated public outreach and education program.*

Education is an important aspect of addressing illegal dumping and related problems. The purpose of a preventive action program is to raise public awareness about illegal dumping. Each jurisdiction could pool their efforts for coordinated outreach. Emphasis could be placed on encouraging citizens to report illegal dumping sites by establishing a "hotline," so that dump sites may be cleaned up before they become a larger problem.

RECOMMENDATIONS

The Solid Waste Advisory Committee reviewed the options discussed above and has recommended the following options:

1. Coordinate enforcement activities among responsible agencies.

2. Improve coordination among County agencies, cities, and other relevant public agencies responsible for illegal dumping cleanup, education, and prevention programs.

3. Develop coordinated public outreach and education program.

Chapter 8

Implementation

8.1 INTRODUCTION

The purpose of this chapter is to outline the actions and budget necessary to implement the recommendations contained in this plan.

8.2 SIX-YEAR CAPITAL AND OPERATING FINANCING

The RCW (Section 70.95.101(3)(c) requires the solid waste management plan to contain a 6-year construction and capital acquisition program for public solid waste handling facilities, including development and construction or purchase of publicly financed solid waste management facilities. The legislation further requires plans to contain a means for financing both capital costs and operations expenditures of the proposed solid waste management system. Any recommendation for the development, construction, and/or purchase of public solid waste management and recycling facilities or equipment should be included in this discussion. Financing operation expenditures should also be added to this section of the plan.

Capital and operating expenses to implement the Plan recommendations over the next 6 years are summarized in Exhibit 8-1. Actual budgets to carry out the recommendations will vary from year to year as specific programs are defined, and will depend upon availability of grant funding and budget approved by local governments. It is important to note that because Benton County relies on the private sector for the majority of solid waste management activities, very few capital costs are projected for the participating jurisdictions.

8.3 IMPLEMENTATION SCHEDULE

The implementation of the recommendations contained in this Plan will begin upon approval of the Plan by the jurisdictions and Ecology. The schedule for implementation is included as Exhibit 8-2. The schedule may be revised as the Plan is updated, and as the objective and needs of the County and jurisdictions change. As indicated, for some recommendations, the programs have been or will be implemented within a few months, for other recommendations implementation will span many years.

Exhibit 8-1. Benton County Solid Waste Programs Implementation Costs

Chapter	Title	Option	Cost			Expense
			Year 1	Year 3	Year 6	Type
3	Public Education & Outreach	Bilingual Outreach Materials	$7,000	$7,000	$7,000	Service
		Direct Mailing Newsletter	$20,000	$20,000	$20,000	Service
		Phone Book Section Insert	$2,518	$2,518	$2,518	Service
		Website	$1,000	$1,000	$1,000	Labor
		Technical Assistance to Schools and Businesses	$8,500	$8,500	$8,500	Materials
	Waste Reduction	Procurement of Recycled Products	$10,000	$10,000	$10,000	Labor
		Environmentally Preferable Purchasing	$10,000	$10,000	$10,000	Labor
		County/City Waste Reduction Policies	$2,500	$2,500	$2,500	Labor
		Methods to Measure Waste Reduction Results	$45,000	$20,000	$20,000	1 FTE
		ReUse and Swap Shops	$45,000	$45,000	$45,000	1 FTE
	Recycling	Internal Recycing Program	$22,000	$22,000	$22,000	Labor
		Special Event Recycling	$10,000	$10,000	$10,000	Materials & Labor
		Expanded Recycling Drop-Box Program	$5,000 per Station	$5,000 per Station	$5,000 per Station	Materials & Labor
		Rewards Program For Resdiential Recyclers	$10,000	$10,000	$10,000	Ads & Prizes
		Recognition for Commercial Waste Reduction and Recycling Successes	$10,000	$10,000	$10,000	Ads & Prizes
		Business Education	$10,000	$10,000	$10,000	Labor
		Commercial Waste Audit Assistance	$10,000	$10,000	$10,000	Labor
	Organics	Expand Yard Waste Chipping Program	$490,000	$490,000	$490,000	Equipment&Labor
		Food Waste Management	$45,000	$45,000	$45,000	1 FTE
		Biomass Processing	$45,000	$45,000	$45,000	1 FTE
		Regional Composting Facilities	$50,000	$50,000	$50,000	Outreach/Labor
4	Collection Systems	Change Service Levels to Capture More Households	$160,000	$160,000	$160,000	Service
5	Transfer & Disposal	Expand Horn Rapids Landfill to Ensure In-County Disposal Capacity	$20,000,000	$500,000	$500,000	Materials/Labor/Legal
		Assess Long-Haul of MSW Out of City	$150,000	$25,000	$25,000	Labor & Legal
		Expand Local Transfer Station Capacity	$500,000	$25,000	$25,000	Materials/Labor/Legal
		Modify Horn Rapids LP Permit to Allow Disposal of Friable Asbestos	$15,000	$15,000	$15,000	Outreach/Labor

Exhibit 8-1 (continued)

Chapter	Title	Option	Cost			Expense
6	**Construction & Demolition Debris**	Provide Education Programs for Contarctors	$10,000	$10,000	$10,000	Labor & Legal
		Establish C&D and Inert Waste Diversion Specifications	$45,000	$45,000	$45,000	1 FTE
		Use Recycled Content Bldg. Specs. For Projects	$1,000	$1,000	$1,000	Outreach/Labor
		Develop Disaster Management Plan for Benton	$45,000	$45,000	$45,000	Labor
		Est. Locations for ER Staging & Temp. Storage of Debris Generated by Natural Disasters	$45,000	$45,000	$45,000	Labor & Legal
		Regional C&D Facility	$50,000	$50,000	$50,000	Outreach/Labor
	Wood Wastes	Facility Diversion	$45,000	$45,000	$45,000	Outreach/Labor
		Public Education	$15,000	$15,000	$15,000	Outreach/Labor
	Industrial Wastes	Cont. Monitor & Regulate Industrial Solid Waste Handling/Disposal & Provide Asst. to Waste Generators	$100,000	$100,000	$100,000	Labor & Legal
	Agricultural Wastes	Committee Could Be Formed to Discuss Pot. Opp. To Investigate Opp. For Alternatives	$20,000	$20,000	$20,000	Labor
	Tires	County/City Purchasing Programs for Recycl. Tire Products	$20,000	$20,000	$20,000	Labor
		County/City Programs to Reduce Tire Waste	$45,000	$45,000	$45,000	Labor
		Public Education Programs	$15,000	$15,000	$15,000	Outreach/Labor
	Biomedical Wastes	Educationial Materials for Correct Mngmnt. Of Medical Waste Generated by Residents	$15,000	$15,000	$15,000	Outreach/Labor
		Collection of Sharps & Outdated Pharmaceuticals @ Household Hazardous Waste Collec. Sites	$45,000	$45,000	$45,000	Labor & Diposal
	Petrolium Contaminated Soils	Private Sector to Cont. to Manage and Dispose of Contaminated Soils	$0	$0	$0	
	Asbestos	Educate Homeowners About Proper Identification of Contaminated Materials & Proper Methods	$15,000	$15,000	$15,000	Outreach/Labor

Exhibit 8-1 (continued)

Chapter	Title	Option	Cost			Expense
	MRW	Expanded Public Education	$15,000	$15,000	$15,000	Outreach/Labor
		Education on Alternative Products	$15,000	$15,000	$15,000	Outreach/Labor
		Use Mobile Collection Center to Target Rural Areas (HHW)	$215,000	$215,000	$215,000	Outreach/Labor
		Expand HHW Collection to Include Household Generated Biomedical Waste (HHW)	$50,000	$50,000	$50,000	Labor/Disposal
		Recognition for Environmental Achievements (Business)	$20,000	$20,000	$20,000	Outreach/Labor
		Business Collection Assistance	$10,000	$10,000	$10,000	Outreach/Labor
		Continue Enforcement Efforts	$0	$0	$0	
	Tank Pumpings	Continue to Allow Private Sector to Manage & Dispose of Septage	$0	$0	$0	0
		Assess Feasability of Dvlpg. Facility to Manage Waste If Disposal Becomes Limited	$50,000	$50,000	$50,000	Engineering
		Continue to Allow Private Sector to Manage & Dispose of Material	$0	$0	$0	1
	Electronic Waste	Identify opportunites and establish relationships	$50,000	$50,000	$50,000	Outreach/Labor
7	**Administration**	Interagency Cooperation Should Be Facilitated	$20,000	$20,000	$20,000	Outreach/Labor
	Enforcement	Enforcement Activities Must Be Coordinated to Attain Max. Impact W/O Duplication	$20,000	$20,000	$20,000	Outreach/Labor
		Improve Coordination Among Agencies/Cities Responsible for Illegal Dumping /Cleanup/ Education/Prevention Programs	$20,000	$20,000	$20,000	Outreach/Labor
		Develop a Coordinated Public Outreach & Education Program	$20,000	$20,000	$20,000	Outreach/Labor
		Total Cost to Implement Recommendations	$22,714,518	$2,589,518	$2,589,518	
		Total Cost to Continue Programs Currently in Use	$247,000			

Exhibit 8-2. Benton County Solid Waste Management Plan – Implementation Schedule

Chapter/ Option	Option	2006	2007	2008	2009	2010	2011
3	**PUBLIC EDUCATION AND OUTREACH**						
1	Bilingual Outreach Materials						
2	Direct Mailing Newsletter						
3	Phone Book Section Insert						
4	Website						
5	Technical Assistance to Schools and Businesses						
3	**WASTE REDUCTION**						
1	Procurement of Recycled Products						
2	Environmentally Preferable Purchasing						
3	County/City Waste Reduction Policies						
4	Methods to Measure Waste Reduction Results						
5	ReUse and Swap Shops						
3	**RECYCLING**						
1	Internal Recycling Program						
2	Special Event Recycling						
3	Expanded Recycling Drop-Box Program						

Exhibit 8-2 (continued)

Chapter/ Option	Option	2006	2007	2008	2009	2010	2011
4	Rewards Program For Residential Recyclers						
5	Recognition for Commercial Waste Reduction and Recycling Successes						
6	Business Education						
7	Commercial Waste Audit Assistance						
3	**ORGANICS**						
1	Expand Yard Waste Chipping Program						
2	Food Waste Management						
3	Biomass Processing						
4	Regional Composting Facilities						
4	**COLLECTION SYSTEMS**						
1	Change Service Levels to Capture More Households						
5	**TRANSFER AND DISPOSAL**						
1	Expand Horn Rapids Landfill to Ensure In-County Disposal Capacity						
2	Assess Long-Haul of MSW Out of City of Richland						
3	Expand Local Transfer Station Capacity						

Exhibit 8-2 (continued)

Chapter/ Option	Option	2006	2007	2008	2009	2010	2011
6	**SPECIAL WASTES**						
6	**CONSTRUCTION AND DEMOLITION DEBRIS**						
1	Provide Education Programs for Contractors						
2	Establish C&D and Inert Waste Diversion Specifications						
3	Use Recycled Content Bldg. Specs. For Projects						
4	Develop Disaster Management Plan for Benton						
5	Establish Locations for Staging and Temporary Storage of Disaster Debris						
6	Regional C&D Facility						
6	**WOOD WASTES**						
1	Facility Diversion						
2	Public Education						
6	**Industrial Wastes**						
1	Continue Monitoring & Regulating and Provide Assistance to Generators						
6	**Agricultural Wastes**						
1	Establish Committee to Discuss Alternative Energy Uses						
	Tires						
1	County/City Purchasing Programs for Recycled Tire Products						

Exhibit 8-2 (continued)

Chapter/ Option	Option	2006	2007	2008	2009	2010	2011
2	County/City Programs to Reduce Tire Waste						
3	Public Education Programs						
6	**Biomedical Wastes**						
1	Educational Materials for Residents						
2	Collection of Sharps & Outdated Pharmaceuticals at HHW Collection Sites						
6	**Petroleum Contaminated Soils**						
1	Private Sector to Continue to Manage						
2	Educate Homeowners About Identification and Proper Handling Methods						
6	**MRW**						
1	Expanded Public Education						
2	Education on Alternative Products						
3	Use Mobile Collection Center to Target Rural Areas (HHW)						
4	Expand HHW Collection to Include Biomedical Waste						
5	Recognition for Business Environmental Achievements						
6	Business Collection Assistance						

Exhibit 8-2 (continued)

Chapter/ Option	Option	2006	2007	2008	2009	2010	2011
7	Continue Enforcement Efforts						
6	**Tank Pumpings**						
1	Continue to Allow Private Sector to Manage & Dispose of Septage						
2	Assess Facility Development Feasibility						
3	Continue to Allow Private Sector to Manage & Dispose of Material						
6	**E-Waste**						
1	Identify opportunities for recycling						
2	Establish partnerships						
7	**Administration**						
1	Interagency Cooperation Should Be Facilitated						
7	**Enforcement**						
1	Coordinate Enforcement Activities						
2	Improve Coordination Regarding Illegal Dumping						
3	Develop a Coordinated Public Outreach & Education Program						

Planning period

Implementation period

Ongoing

APPENDIX A

MODERATE RISK WASTE PLAN
(ATTACHED AS CD ROM)

APPENDIX B

INTERLOCAL AGREEMENT

INTERLOCAL AGREEMENT
REGARDING SOLID WASTE MANAGEMENT
BENTON COUNTY

This Agreement addresses city-county joint participation in the countywide Solid Waste Plan and joins public agencies to exercise their powers, thereby maximizing their ability to provide services and facilities which will best fulfill the needs of the community as a whole, and is made and entered into effective the first day of January 2006, by and between Benton County, hereafter referred to as the Lead Agency and the cities of Richland, Kennewick, West Richland, Benton City and Prosser, all political subdivisions of the State of Washington, and hereafter referred to as Participating Jurisdictions. The Participating Jurisdictions and Lead Agency may be referred to herein collectively as the Parties, also referred to as Governance Technical Advisory Committee (GTAC).

I. RECITALS

WHEREAS, the parties hereto recognize the requirement to prepare and implement solid and hazardous waste plans under Chapter 70.95 RCW and Chapter 70.105 RCW, and

WHEREAS, the parties hereto recognize the requirement to conduct a public review process to develop and review the Benton County Comprehensive Solid Waste Plan, and

WHEREAS, the parties hereto recognize that an updated and adopted Benton County Comprehensive Solid Waste Plan fulfills their jurisdictional requirements under Chapter 70.95 RCW and Chapter 70.105 RCW, and

WHEREAS, the parties hereto wish to enter into a cooperative effort to administer, plan, and implement the recommendations contained within an adopted Benton County Comprehensive Solid Waste Plan, and

WHEREAS, the parties hereto recognize that the funding sources (*i.e.* Washington Ecology, Coordination Prevention Grant) must be established to adequately support the administration, planning and implementation of the adopted Benton County Solid Waste Plan, and

WHEREAS, each Participating Jurisdiction and Lead Agency shall have one equal vote with regards to policies and decisions made pursuant to all matters of policy and finance. Voting will require a 100% majority with full representation, and

WHEREAS, the Lead Agency will manage, track and provide custody for this Agreement, and

II. AGREEMENTS

WHEREAS, the undersigned signatories of this Agreement are duly authorized to enter into the same by properly adopted resolutions, NOW

THERFORE, in consideration of the foregoing recitals and the mutual agreements and covenants herein contained, the parties agree as follows:

A. AUTHORITIES

The parties to this Agreement have and possess, both jointly and severally, the primary responsibility for effective solid and hazardous waste management, planning and implementation under Chapters 70.95 and 70.105 RCW. Under Chapter 39.34 RCW, the Inter-local Cooperation Act, local governments are authorized to cooperate to provide themselves with services of the nature herein agreed to.

B. PURPOSE

This Agreement is entered into pursuant to Chapter 39.34 RCW for the purpose of cooperative management of solid waste within Benton County. It is the intent of the parties to work cooperatively in developing a comprehensive solid waste management plan pursuant of Chapter 70.95 and 70.105 RCW that is viable and economically responsible to their citizens. Specifically, this Agreement will provide for the administration, planning and operations of the adopted Benton County Comprehensive Solid Waste Management Program.

C. DEFINITIONS

For the purpose of this Agreement, the following definitions shall apply:

'Fair Share' means the amount owed by each of the Parties based upon current population figures supplied by the Washington State MPO and the corresponding population percentage applied to the Solid Waste Program Budget.

'Governance Technical Advisory Committee' (GTAC) means a committee comprised of a representative of each of the Parties. Each Party shall designate its representative to the GTAC to the Lead Agency. The GTAC shall review Solid Waste Program budgets and activities and make recommendations to the Benton County Commissioners.

'Lead Agency' means Benton County, a political subdivision of the State of Washington. The Lead Agency, will administer, plan and implement the Plan and Solid Waste Program.

'Participating Jurisdictions' means any city who has entered into the County-wide Solid Waste Inter-local Agreement with the Lead Agency and who has agreed to

mutually support and financially contribute to the administration, planning and implementation of the Plan.

'Parties' means the collective term for all Participating Jurisdictions and Lead Agency.

'Plan' means the Benton County Comprehensive Solid Waste Management Plan, as the same exists now or may hereafter be amended.

'Routine Operating Agreement' (ROA) means an agreement that is established for the purpose of accomplishing a task set forth by the Parties and is funded within the Solid Waste Program Budget.

'Solid Waste Advisory Committee Members Bylaws' means the bylaws the same as now exist or may hereafter be amended.

'Solid Waste Program Budget' means the annual Countywide Solid Waste Budget, as prepared by Benton County and accepted by the GTAC, that appropriates funds to Routine Operating Agreements and administrative functions that meet specific requirements in RCW 70.95 and/or accomplishes goals as set fourth in the Plan.

'SWAC' means the Benton County Solid Waste Advisory Committee formed per RCW 70.95.165 and as approved by resolution.

'Task' means a project, program, activity, etc., that is annually funded from the Solid Waste Program Budget. All tasks are approved by the GTAC annually and shall meet the recommendations set forth in the Plan.

'Task Manager' is designated to lead and manage a Task per the ROA.

D. LOCAL ADOPTION OF PLAN

Under the authority of RCW 70.95.080 each Participating Jurisdiction has elected to enter into this agreement with the county pursuant to which those jurisdictions shall participate in preparing a joint city-county Plan. Prior to the Plan's "Final Draft" phase, each Participating Jurisdiction is required to adopt the Plan. If any Participating Jurisdiction elects not to adopt the Plan, the Lead Agency will call for a GTAC vote. If a supermajority vote (i.e. 5 of 6) is reached in favor of adopting, the opposing jurisdiction will have to choose between developing a Plan alone, or adopting the favored Plan. If two or more jurisdictions oppose adopting the Plan, then the Parties will revert back to the phase of "Revising the Preliminary Draft Plan" during which a draft Plan revision will be made to satisfy a supermajority vote. The Plan will be adopted by at least the "in favor" supermajority and submitted to Ecology for final approval.

E. PLAN IMPLEMENTATION

Pursuant to RCW 70.95.080 and RCW 70.105.220, the Participating Jurisdictions and Lead Agency will jointly prepare a Plan in accordance with "Guidelines for the Development of Local Solid Waste Plans and Plan Revisions" (*i.e.* Department of Ecology (WDoE) Publication No. 90-11) and implement the Plan's recommendations. Pursuant to RCW 70.95.094, the "Final Draft Plan" shall be deemed approved, if the WDoE does not disapprove it within (45) forty-five days of receipt.

F. BENTON COUNTY SOLID WASTE ADVISORY COMMITTEE

The Parties hereto recognize and support the SWAC as an advisory board created under authority of RCW 70.95.165. The SWAC is an ongoing advisory committee. The SWAC is the focal point of the public involvement effort used in the planning, development and implementation of the Plan. The SWAC also provides advice to the Parties on solid and hazardous waste issues and assists the Parties in developing solid waste ordinances, rules, guidelines and policies prior to their adoption.

G. REGIONAL PLANNING AREA

The Parties hereto recognize the geographical planning area covered by this Agreement to be the incorporated areas of the Participating Jurisdictions and the unincorporated area of Benton County. The Hanford Nuclear Reservation is exempted from the Plan and this Inter-local Agreement.

H. ROUTINE OPERATING AGREEMENT IMPLEMENTATION

Prior to the annual GTAC Solid Waste Program Budget workshop, all task managers are required to submit their ROA. As a minimum, an ROA will include: 1) Task Introduction Statement; 2) Task Scope of Work; 3) Task Responsibilities; 4) Annual Task Cost; and 5) Quality Control. Eligibility of an ROA request is based on task cost and meeting recommendations set forth in the Plan. The GTAC will approve tasks based on a supermajority (*i.e.* 5 of 6) in-favor vote.

I. SOLID WASTE PROGRAM BUDGET

The Parties agree to mutually and financially support the administration, planning and operations of the Plan recommendations or as specified in RCW 70.95. The Lead Agency shall prepare a Solid Waste Program Budget each year for the upcoming budget year. The budget will also include Routine Operating Agreements that provide information on projects funded by the annual budget. This Solid Waste Program Budget is to be reviewed by each of the Parties prior to a GTAC workshop. Each Participating Jurisdiction and Lead Agency shall have one (1) equal vote with regards to decisions made pursuant to all matters of policy and budget. Voting will require a full majority (*i.e.* 6 of 6). The GTAC shall make a recommendation for budget approval to the Benton County Commissioners.

J. ANNUAL FEE

The Parties agree to pay an annual Fair Share for the administration, planning and operation of the Solid Waste Program, as determined and voted-on by the GTAC and approved by the Benton County Commissioners. The Parties agree to remit their fee to the Lead Agency either as a lump sum payment due on or before the 15th day of April of each corresponding year, or as quarterly payments, due by the 15th day of each of the following months: April, July, September and November.

K. DISBURSEMENT OF ASSETS AND DEBTS

If this Agreement is terminated, all Parties to this Agreement shall determine the disbursement of any outstanding debts and the allocation of any assets. If the Parties cannot agree to the disbursement of any outstanding debts and the allocation of any assets, the issues are to be submitted for arbitration, pursuant to state law, RCW 7.04 *et seq.* The Lead Agency and the contesting jurisdiction agree that such arbitration shall be conducted before one (1) disinterested arbitrator.

L. DURATION

This Agreement shall commence on the date set forth above and will continue in effect for six (6) years. As stipulated within RCW 70.95.110(1), each Plan shall be maintained in a current condition and reviewed and revised periodically as may be required by the WDoE. Upon each review such plans shall be extended to show long-range needs for solid waste handling facilities for twenty (20) years in the future, and a revised implementation schedule and implementation budget for six (6) years in the future.

M. REVIEW AND RENEGOTIATION

Any Party may request a review and/or renegotiations on any provision of the Agreement during the six-month period immediately preceding the fifth anniversary for the effective date of the Plan. Such request must be made in writing to the Lead Agency and must specify the provision(s) of the Agreement for which review/renegotiation(s) are requested. Review and/or renegotiation(s) pursuant to such a written request shall be immediately referred to the SWAC for their review and recommendation. Notwithstanding any other provisions in this paragraph to the contrary, the Parties may, pursuant to the procedure outlined within the Solid Waste Advisory Committee Members Bylaws, modify or amend any provision(s) of this Agreement at any time during the term of this Agreement.

N. TERMINATION

This Agreement may be terminated by any Party, by written notice to the Lead Agency no less than three hundred sixty five (365) days immediately preceding the implementation date of the next Solid Waste Program Budget. The Parties agree: (1) that

the termination will not absolve a terminating Party of any financial responsibility to the extent a financial responsibility continues to exist pursuant to the Contractual Commitment provision of this Agreement; and (2) that prior to termination, a withdrawing city shall submit to the SWAC how it intends on meeting its planning obligation under RCW 70.95.080.

O. WAIVER

No waiver by any of the Parties of any term or condition of this Agreement shall be deemed or construed to constitute a waiver of any other term or condition or of any subsequent breach whether of the same or a different provision of this Agreement.

P. ENTIRE AGREEMENT

This Agreement, including the recitals and all subsequent attachments and addendums, constitutes the entire Agreement between the Parties and shall be governed by the laws of the State of Washington. There are no other oral or written agreements or understanding between the Parties as to the subject matter contained herein. The venue for any action of law, suit in equity and judicial proceeding for the enforcement of this Agreement shall be instituted and maintained only in the courts of competent jurisdiction in Benton County, Washington.

Q. SEVERABILITY

Any provisions of this Agreement that is determined to be illegal, invalid or unenforceable for any reason shall be ineffective to the extent of such prohibition without invalidating the remainder of this Agreement.

FOR THE CITY OF BENTON CITY, WASHINGTON.

_____ _____

Bryan H. Robinson, Mayor Date

Attest:

_____ _____

Avigail Sanchez, City Clerk-Treasurer Date

I certify that on this _____ day of _____, 2005, before me, the undersigned Notary Public in an for the State of Washington, duly commissioned and sworn, personally appeared Bryan H. Robinson and Avigail Sanchez, to me known to be the Mayor and City Clerk-Treasurer, respectively, of the City of Benton City, Washington, the corporation that executed the foregoing instrument and acknowledged said instrument to be the free and voluntary act and deed of said municipal corporation for the uses and purposes therein mentioned, and on oath stated that they are authorized to execute said instrument and that the seal affixed is the corporate seal of the City of Benton City.

Witness my hand and official seal hereto affixed the day and year first above written.

_____

Notary Public in and for the State of
Washington residing at _____
My commission expires:_____

FOR THE CITY OF KENNEWICK, WASHINGTON.

_____ _____

James R. Beaver, Mayor Date

Attest:

_____ _____

Valerie J. Loffler, City Clerk Date

Approved as to Form:

_____ _____

John S. Ziobro, City Attorney Date

I certify that on this _____ day of _____, 2005, before me, the undersigned Notary Public in an for the State of Washington, duly commissioned and sworn, personally appeared James R. Beaver and Valerie J. Loffler, to me known to be the Mayor and City Clerk, respectively, of the City of Kennewick, Washington, the corporation that executed the foregoing instrument and acknowledged said instrument to be the free and voluntary act and deed of said municipal corporation for the uses and purposes therein mentioned, and on oath stated that they are authorized to execute said instrument and that the seal affixed is the corporate seal of the City of Kennewick.

Witness my hand and official seal hereto affixed the day and year first above written.

_____

Notary Public in and for the State of
Washington residing at Kennewick
My commission expires:_____

FOR THE CITY OF PROSSER, WASHINGTON.

_____ _____

Linda Lusk, Mayor Date

Attest:

_____ _____

Cathleen Koch, Finance Director/City Clerk Date

Approved as to Form:

_____ _____

Howard Saxton, City Attorney Date

I certify that on this _____ day of _____, 2005, before me, the undersigned Notary Public in an for the State of Washington, duly commissioned and sworn, personally appeared Linda Lusk and Cathleen Koch, to me known to be the Mayor and Finance Director/City Clerk, respectively, of the City of Prosser, Washington, the corporation that executed the foregoing instrument and acknowledged said instrument to be the free and voluntary act and deed of said municipal corporation for the uses and purposes therein mentioned, and on oath stated that they are authorized to execute said instrument and that the seal affixed is the corporate seal of the City of Prosser.

Witness my hand and official seal hereto affixed the day and year first above written.

_____

Notary Public in and for the State of
Washington residing at _____
My commission expires:_____

FOR THE CITY OF RICHLAND, WASHINGTON.

_____ _____

John C. Darrington, City Manager Date

Attest:

_____ _____

Cindy Johnson, City Clerk Date

Approved as to Form:

_____ _____

Thomas O. Lampson, City Attorney Date

I certify that on this _____ day of _____, 2005, before me, the undersigned Notary Public in an for the State of Washington, duly commissioned and sworn, personally appeared John C. Darrington and Cindy Johnson, to me known to be the City Manager and City Clerk, respectively, of the City of Richland, Washington, the corporation that executed the foregoing instrument and acknowledged said instrument to be the free and voluntary act and deed of said municipal corporation for the uses and purposes therein mentioned, and on oath stated that they are authorized to execute said instrument and that the seal affixed is the corporate seal of the City of Richland.

Witness my hand and official seal hereto affixed the day and year first above written.

_____

Notary Public in and for the State of Washington residing at _____

My commission expires:_____

FOR THE CITY OF WEST RICHLAND, WASHINGTON.

_____ _____

Dale Jackson, City Mayor Date

Attest:

_____ _____

Julie Richardson, City Clerk Date

Approved as to Form:

_____ _____

Terry Tanner, City Attorney Date

I certify that on this _____ day of _____, 2005, before me, the undersigned Notary Public in an for the State of Washington, duly commissioned and sworn, personally appeared Dale Jackson and Julie Richardson, to me known to be the Mayor and City Clerk, respectively, of the City of West Richland, Washington, the corporation that executed the foregoing instrument and acknowledged said instrument to be the free and voluntary act and deed of said municipal corporation for the uses and purposes therein mentioned, and on oath stated that they are authorized to execute said instrument and that the seal affixed is the corporate seal of the City of West Richland.

Witness my hand and official seal hereto affixed the day and year first above written.

_____

Notary Public in and for the State of
Washington residing at _____
My commission expires:_____

FOR BENTON COUNTY, WASHINGTON.

_____ _____

Claude L. Oliver, Chairman
Board of County Commissioners

Date

Attest:

_____ _____

Clerk of the Board

Date

Approved as to Form:

_____ _____

Deputy Prosecuting Attorney

Date

I certify that on this _____ day of _____, 2005, before me, the undersigned Notary Public in an for the State of Washington, duly commissioned and sworn, personally appeared Claude L. Oliver, to me known to be the Chairman of the Board of Commissioners for Benton County, Washington, the corporation that executed the foregoing instrument and acknowledged said instrument to be the free and voluntary act and deed of said municipal corporation for the uses and purposes therein mentioned, and on oath stated that they are authorized to execute said instrument and that the seal affixed is the corporate seal of Benton County.

Witness my hand and official seal hereto affixed the day and year first above written.

_____

Notary Public in and for the State of
Washington residing at _____
My commission expires:_____

APPENDIX C

PRELIMINARY LANDFILL SITING EVALUATION

1.0 PRELIMINARY LANDFILL SITING EVALUATION

The *Solid Waste Management /Reduction and Recycling Act* (Chapter 70.95 RCW) requires that solid waste management plans include a "review of potential areas that meet the siting criteria as outlined in RCW 70.95.165 and WAC 173-304-130." In RCW 70.95.165 these site conformance standards include:

- Geology
- Groundwater
- Soil
- Flooding
- Surface water
- Slope
- Cover material
- Capacity
- Climatic factors
- Land use
- Toxic air emissions
- All other factors determined by Ecology

In WAC 173-304-130, these location restrictions included:

- Airport Safety
- Fault areas
- Floodplains
- Seismic impact zones
- Wetlands
- Unstable areas

The *Guidelines for the Development of Local Solid Waste Management Plans and Plan Revisions* (Ecology 1990) specify that solid waste management plans must discuss these standards and any other siting criteria or policies developed by the local governments. Section B. 2.20 to B. 2.31 discusses siting criteria in detail as required by the Minimum Functional Standards.

1.1 Summary of Siting Criteria

Locational criteria are standards established by regulations that govern where landfills can be located. They are meant to prevent landfills from being sited in areas presenting greater risks to the environment and public health and safety. The following is a general summary of the criteria siting guidelines:

- *Geology*: No facility shall be located over a Holocene fault zone, subsidence area or other geologic hazard area.

- *Groundwater*: No facility shall be located where the lowest liner is less than ten feet above the seasonal high level of groundwater in the uppermost aquifer.

  No landfill shall be located over a sole source aquifer.

  No facility's active area shall be located closer than 1,000 ft to a down gradient drinking water supply well.

- *Soil*: Soils used for landfill liners and caps must meet certain criteria of permeability as outlined in the MFS.

- *Flooding*: Landfills that are constructed in a 100-year floodplain shall meet certain criterion that protects potential flooding of the site.

- *Surface Water*: No facility's active face shall be within 200 feet of a body of water.

- *Slope*: No facility shall be located on a hill whose slope is unstable.

- *Capacity*: Different operational standards exist depending on a landfill's size and capacity.
- *Climatic Factors*: Different standards exist depending on whether the site is considered arid or not.

- *Land Use*: No facility shall be located:
  (1) Within 5,000 feet of an airport serving propeller-driven aircraft or 10,000 feet from an airport serving jet-powered aircraft;
  (2) In an area designated by the United States Fish and Wildlife Service or the Department of Game as critical habitat for endangered or threatened species of plants, fish, or wildlife;
  (3) So that the active area is any closer than one hundred feet to the facility property line for land zoned as nonresidential;
  (4) So as to be at variance with any locally-adopted land use plan or zoning requirement; and
  (5) So that the active area is any closer than one thousand feet to any state or national park.

- *Toxic Air Emissions*: Limits are placed on the amount of explosive gases generated by the landfill

A map of exclusionary criteria for siting landfills is presented in Figure B-1.

2.0 INTRODUCTION - PRELIMINARY LANDFILL SITING EVALUATION

Locational criteria are standards established by regulations that govern where landfills can be located. They are meant to protect the environment by restricting landfills from areas where experience has shown a risk to public health and safety. Each of these locational standards is discussed in terms of the requirements in the Minimum Functional Standards for Solid Waste Handling (Chapter 173-304 WAC) and its regional applicability to the county. The siting review included in this plan is intended as a preliminary step before initiating a full-scale siting study for a specific facility.

Some of the locational standards are not appropriate for evaluating an entire county at once. These criteria are site specific and should be used when evaluating a single candidate site or a limited number of potential sites. The Solid Waste Management Plan should not be used for detailed site analysis, but rather to identify areas that can be examined in detail in other studies. For example, the distance to groundwater can only be determined by onsite investigations. Ecology can grant variances in those cases where a fatal flaw has been identified but where design considerations can prevent environmental impacts. In addition to the Minimum Functional Standards, landfill siting must be consistent with local plans and ordinances. Such local considerations generally involve permit review, public input, and socio-economic issues.

2.20 Siting Criteria

To ensure that landfills are sited in an environmentally sound manner, WAC 173-304-130 presents locational standards for siting landfills. These criteria are not guidelines but rather are regulations. Thus, a siting agency must obtain a variance if its site does not meet a criterion.

2.21 Geology

Regulatory Standard

> *"No facility shall be located over a Holocene fault, in subsidence areas, or on or adjacent to geologic features which could compromise the structural integrity of the facility."* (WAC 173-304-130 [2][a]).

This locational standard refers primarily to geologic hazard areas. Such areas include potentially active (earthquake producing) fault zones, active volcanic zones, landslide areas, and subsidence areas. Mitigation is normally not possible for these hazards, and hence these conditions are considered exclusionary. This criterion can be used regionally to exclude areas for consideration for siting a disposal facility.

Assessment for Benton County

Extensive study of local geology will be necessary for a specific site. The preliminary summary presented here is only a general indication of the prevalent geological conditions in the county.

Seismographic Hazards. Benton County experiences a low-to-moderate seismic activity. The earth movements that occur are not known to be related to faults or geological structures. No significant active earthquake faults or volcanic zones are known in the area.

Landslide Hazards. Steep slopes are found in Benton County in the Rattlesnake Hills, the Horse Heaven Hills, and near other locations such as Red Mountain, Candy Mountain and Badger Mountain south of Richland and the hills to the southeast of Kennewick. Extensive study of local geology will be necessary for a specific site. Generally speaking, however, the geologic units are relatively impermeable.

2.22 Groundwater

Regulatory Standard

The regulatory standard for groundwater states:

> *"No facility shall be located at a site where the bottom of the lowest liner is any less than ten feet above the seasonal high level of groundwater in the uppermost aquifer, or five feet when a hydraulic gradient control system or the equivalent has been installed to control groundwater fluctuations;*
> *"No landfill shall be located over a sole source aquifer; and*

"No facility's active area shall be located closer than one thousand feet to a down-gradient drinking water supply well, in use and existing at the time of the county's adoption of the comprehensive solid waste management plan unless the owner or operator can show that the active area is no less than ninety days travel time hydraulically to the nearest down-gradient drinking water supply well in the uppermost usable aquifer." (WAC 173-304-130[2][b][i],[ii],[iii])

Assessment for Benton County

Site-specific analysis would be required to identify groundwater flow systems, water table gradient, and depth for a candidate site. The depth to water table varies in the two-county area. Within the Tri-Cities area, the depth to water table is within 10 feet of the land surface in some locations. In the outlying area, the depth to the water table ranges from approximately 200 to 250 feet (Lyerla 1991). In some cases, irrigation has caused the water table to rise.

Benton County depends heavily on groundwater supplies for domestic and industrial consumption. Municipal water systems in Kennewick, Richland, Prosser and West Richland are supplied by wells. Kennewick and Richland also draw water from the Columbia River. The Columbia River is also used for industrial and process water.

Therefore, the density of water wells throughout the area is an important consideration in landfill siting. However, records of existing wells are inadequate. Within the last eight years the United States Geological Survey (USGS) has started two separate groundwater studies in Benton County. Prior to that time, the USGS published groundwater level maps every 5 years. The Bureau of Land Reclamation also monitors observation wells, but does not publish the results. Field surveys of each candidate site would be needed to locate active wells.

2.23 Soil

Regulatory Standard

The regulatory standard for soil states:

"See WAC 173-304-400, such as WAC 173-304-460(3)(c)(i), Landfill liners." (WAC 173-304-130[c])

"Standard design. The liner shall be constructed of at least a four-foot thick layer of recompacted clay or other material with a permeability of no more than $1x10^{-7}$ cm/sec and sloped no less than two percent; or ..." (WAC 173-304-460[3][c][i])

Soil and other onsite earth materials are used in landfill construction and operation for bottom liners, caps, final cover, daily and intermediate cover, dikes, and roads. The availability of these materials on site influences the cost of site development and operation. Fine-grained materials (silt and clay) are useful for liners and caps while coarse-grained materials (sand and gravel) are useful for gas venting and backfill for leachate collection systems. Because soil and onsite earth material characteristics are

also important for cover material, the locational standard for cover material is combined with that for soil. The regulatory standard is as follows:

"See WAC 173-304-400, such as WAC 173-304-460(3)(e), Landfills, closure;" (WAC 173-304-130[2][g])

"At least two feet of $1x10^{-6}$ cm/sec or lower permeability soil or equivalent shall be placed upon the final lifts unless the landfill is located in an area having mean annual precipitation of less than twelve inches in which case at least two feet of $1x10^{-5}$ cm/sec or lower permeability soil or equivalent shall be placed upon the final lifts. Artificial liners may replace soil covers provided that a minimum of fifty mils thickness is used;" (WAC 173-304-460[3][e][i])

"Final cover of at least six inches of topsoil be placed over the soil cover and seeded with grass, other shallow rooted vegetation or other native vegetation." (WAC 173-304-460[3][e][iii])

Assessment for Benton County

Soil survey data are presented in Chapter 1.7.64.03 and Figure 1.1 of the Plan. Soils in Benton County are not ideal for landfill siting. They are generally silty or sandy, sometimes rocky, loam, lying over basalt or lime-silica hardpan, with gravel or rubble in some areas. The loam is of shallow to moderate depth (12

inches to more than 60 inches), so excavation would be difficult in some locations. The soils are generally well drained, and of moderate to high permeability, but susceptible to erosion. This erosion potential, especially of sandy or ashy soils, would make these soils inappropriate for cover material.

2.24 Flooding

Regulatory Standard

The regulatory standard for flooding states:

"See WAC 173-304-400, such as WAC 173-304-460(3)(d), Landfill, floodplains;" (WAC 173-304-130[2][d])

"All owners or operators of landfills that are located in a one hundred year floodplain shall:

(i) Comply with local floodplain management ordinances and Chapter 508-60 WAC, Administration of flood control zones; and

(ii) Design the landfill so that the landfill entrance or exit roads or practices shall not restrict the flow of the base flood, reduce the temporary water storage capacity of the floodplain or result in washout of solid waste, so as to pose a hazard to human life, wildlife, land or water resources." (WAC 173-304-460[3][d])

Other than local floodplain management ordinances, this standard does not pose a specific exclusionary standard on siting a landfill for flooding. However, location within a 100-year floodplain would require extraordinary flood protection measures.

Assessment for Benton County

Information on the extent of the 500-year flood plain in the county is not available. However, flood hazards in terms of the 100-year flood plain and flash flooding have been identified. In Benton County, flood hazard areas are found along the Yakima River, in some areas along the Columbia in Kennewick and from Paterson Ridge to McNary Dam, and along many small creeks and irrigation canals.

2.25 Surface Water

Regulatory Standard

The regulatory standard for surface water states:

> *"No facility's active area shall be located within two hundred feet measured horizontally, of a stream, lake, pond, river, or salt water body, nor in any wetland nor any public land that is being used by a public water system for watershed control for municipal drinking water purposes in accordance with WAC 248-54-660(4);"* (WAC 173-304-130[2][e])

The distance of a potential site from surface water is an important consideration. Without carefully controlling design and operation, surface water bodies can be contaminated by surface water runoff or groundwater originating from a solid waste disposal site. Therefore, the further a site is from water bodies, the less its potential for contamination and the more suitable it is for disposal. Surface water bodies include perennial streams, lakes, rivers, wetlands, and marshes as defined in Chapter 90.58 RCW, the *Shoreline*

Management Act. The locational standard also specifies that public land included in watershed control for a public water system is excluded from landfill siting consideration. Sites located adjacent to perennial surface water require significantly more complex design, management, and operation to protect against runoff, washout, and groundwater and surface water contamination.

Assessment for Benton County

No portion of the county is designated as a sole source aquifer or as watershed. Most water comes from groundwater wells, as discussed above. Kennewick and Richland also draw water from the Columbia River, and this river is used for industrial and process water. The major surface waters in the county are the Columbia and Yakima rivers. Lake Wallula, 64 miles long, lies on the Columbia River, formed by McNary Dam. All of these are also used extensively for recreation, navigation and irrigation.

2.26 Slope

Regulatory Standard

The regulatory standard for slopes states:

> *"No facility's active area shall be located on any hill whose slope is unstable;"* (WAC 173-304-130[2][f])

Site topography is important from both environmental and operational viewpoints. Steeply sloping land has a greater potential for slope stability problems and can result in increased runoff, which could carry contaminants offsite, and potentially jeopardize ground or surface water quality. Operationally, a site with some slope provides an area to deposit material against and is easier to work than a flat site.

Assessment for Benton County

Steep slopes are found Benton County in the Rattlesnake Hills, the Horse Heaven Hills, and near other locations such as Red Mountain, Candy Mountain and Badger Mountain south of Richland and the hills to the southeast of Kennewick. Extensive study of local geology will be necessary for a specific site. Although more detailed data are available from the USGS, converting and generalizing the information to the regional scale needed for this preliminary siting analysis would remove information and possibly misrepresent areas.

2.27 Cover Material

Information on this locational standard is provided in Chapter 1, Figure 1.1

2.28 Capacity

Regulatory Standard

The regulatory standard for capacity states:

> *"See WAC 173-304-400, such as WAC 173-304-460, Landfilling standards, (for standards that vary according to capacity);* (WAC 173-304-130[2][h])

> *"Small landfill designs. For a landfill whose design and permit allow a total capacity at closure of two hundred thousand cubic yards or less, the need for a liner and leachate collection system shall be determined on a case-by-case basis by the jurisdictional health department in consultation with the department."* (WAC 173-304-460[3][c][v])

> *"All owners and operators shall design landfills, having a permitted capacity of greater than ten thousand cubic yards per year, so that methane and other gases are continuously collected, and*
>
> *(A) Purified for sale;*

(B) Flared; or
(C) Utilized for its energy value."
(WAC 173-304-460[3][f][i])

"Weigh all incoming waste on scales for landfills having a permitted capacity of greater than ten thousand cubic yards per year or provide an equivalent method of measuring waste tonnage capable of estimating total annual solid waste tonnage to within plus or minus five percent;" (WAC 173-304-460[3][g][iii])

"Insure that at least two landfill personnel are onsite with one person at the active face when the site is open to the public for landfills with a permitted capacity of greater than fifty thousand cubic yards per year;" (WAC 173-304-460[4][b][vi])

The regulatory standards quoted above specify various landfilling standards that are applied based on size. Capacity needs are an important criterion for siting a landfill because capacity determines the size of a parcel needed.

2.29 Climatic factors

Regulatory Standard

The regulatory standard for climatic factors states:

"See WAC 173-304-400, such as WAC 173-304-460, Landfilling standard, (for standards applicable to arid climates);" (WAC 173-304-130[2][i])

The standards applicable to arid climates refer to *"locations having less than twelve inches of precipitation annually ... "* (WAC 173-304-460[3][c][iv]).

Assessment for Benton County

According to the Minimal Functional Standards, an area having an annual precipitation of less than 12 inches is suitable for landfills constructed under the requirements for arid land landfills. This is true of virtually all of Benton County, where the yearly precipitation averages 7 inches. The area averages 10.3 days annually of snowfall and 7.5 days of rainfall. Some higher elevations in the Horse Heaven and Rattlesnake hills range up to 10 inches or more of annual precipitation. Snowpack over most of the lower elevations is minimal and should pose no hazard to landfill operations.

2.30 Land Use

Regulatory Standard
The regulatory standard for land use states:

> *"No facility shall be located:*
>
> *"Within ten thousand feet of any airport runway currently used by turbojet aircraft or five thousand feet or any airport runway currently used by only piston-type aircraft unless a waiver is granted by the Federal Aviation Administration. This requirement is only applicable where such facility is used for disposing of garbage such that a bird hazard to aircraft would be created;*
>
> *"In areas designated by the United States Fish and Wildlife Service or the Department of Game as critical habitat for endangered or threatened species of plants, fish, or wildlife;*
>
> *"So that the active area is any closer than one hundred feet to the facility property line for land zoned as nonresidential, except that the active area may be no closer than two hundred and fifty feet to the property line of adjacent land zoned as residential existing at the time of the county's adoption of the comprehensive solid waste management plan;*
>
> *"So as to be at variance with any locally-adopted land use plan or zoning requirement unless otherwise provided by local law or ordinance; and*
>
> *"So that the active area is any closer than one thousand feet to any state or national park."*
> (WAC 173-304-130[2][j])

Each of these restrictions places regulatory exclusions based on land use. These are discussed below.

Airports

The Federal Aviation Administration has stipulated that landfills cannot be located near airports unless a waiver is obtained. Because birds that are attracted to landfills pose a hazard to aircraft, granting of this waiver is dependent on the lack of a bird problem.

Assessment for Benton County

Benton Counties has three airports: Vista Field in Kennewick, Richland Airport, and Beardsley Field in Prosser. These are shown on Figure B - 1. Although no airports regularly accept jet aircraft, they have runways of approximately 3500 feet that could accept some types of new jet aircraft.

Critical Habitat

Areas designated as critical habitat by the agencies specified by regulation (U.S. Fish and Wildlife Service and Washington State Department of Wildlife) are considered regulatory exclusions for landfill siting. The Forest Service also specifies areas as critical habitat.

Although maps of these areas are not generally available, the Forest Service would have final word in the siting of any facility within Forest Service lands.

Assessment for Benton County

Not all critical fish and wildlife habitat areas in the county have been identified in detail. Site specific surveys would be needed for any candidate landfill site. However, it is known that the riparian and shrub-steppe environments create unique habitats. In Benton County, these areas include: Wallula Lake and surrounding cliffs, Blalock Island, Dead Canyon, Rattlesnake Hills, Upper Gold Creek, and the Columbia River from Richland to Priest Rapids Dam. The Columbia River is an important ecosystem, especially the Hanford Reach, the stretch of river between McNary Pool and Priest Rapids Dam, which is the river's only free flowing segment in Washington. It is the last spawning grounds of the fall Chinook salmon and a vital nesting area for the Great Basin Canada goose and a wintering ground for the rare Giant Canada goose.

Existing wildlife refuges in the county area are shown in Figure B - 1, and include the Umatilla National Wildlife Refuge; the Rattlesnake Slope, and McNary State Wildlife Recreation Areas.

Residential Neighborhoods

Because of impacts such as noise, birds, traffic, and odor, landfills are generally considered to be incompatible with high density residential areas. From a practical point of view, population density is directly related to land values and lack of available tracts of land in the size typically required for a landfill. To minimize the amount of disturbance caused by a landfill and to reduce the cost of site acquisition, sparsely settled locations are better sites.

Assessment for Benton County

The areas with maximum allowable residential densities greater than 1,000 people per square mile are: Kennewick, Richland, West Richland, Prosser, Benton City, Plymouth, and Paterson. Only West Richland has large undeveloped areas for a landfill within their boundaries. The small towns outside the Kennewick, Richland and West Richland are small in area and population, with actual populations less per square mile. In addition, rural residential areas, allowing one dwelling unit per acre (640 per square mile) surround many of these areas.

Zoning

A landfill must comply with zoning regulations of the local government with jurisdiction over a site. If a landfill were not allowed on a site, either outright or as a conditional use, the site would be excluded from further consideration.

Assessment for Benton County

County and city zoning cannot conflict with each jurisdiction's comprehensive plan. Less restrictive zoning can only be implemented through a plan amendment process. Since suitable areas are most likely to be found outside of city boundaries, the county land use classifications are discussed here.

Landfills would be allowable in areas classified as "heavy industrial," which are set aside for activities that "may create objectionable or adverse conditions...noise, smoke, odor, etc." Two large heavy industrial areas are located near Plymouth at the southern edge of the county and south of Kennewick. A smaller area is located east of Prosser.

"Light industrial" areas are designated for industrial uses that are more compatible with urban uses; a properly designed landfill could be allowed. Light industrial zones are located northwest of Prosser, west of Richland, and near Plymouth.

The largest portion of the county (aside from the Hanford Reservation) is designated as "Exclusive Agriculture," the most restrictive use. This classification is "to encourage maintenance and enhancement of agricultural production on those lands... best suited for this use" and to protect wildlife lands and lands not suited for development such as slope or flood hazard areas. While certain uses such as limited residential, livestock feed yards, and agricultural processing facilities are allowable, landfills are not mentioned. "General agriculture" areas are buffers that may eventually be developed. This classification allows only non-farm uses that are compatible with agriculture. A comprehensive plan amendment would probably be required for a landfill in either of these areas.

Landfills could be placed in areas classified as "public," which are reserved for a wide variety of public uses. However, much of this appears to be parkland, critical habitats or sensitive areas.

State or National Parks

The Minimum Functional Standards (Chapter 173-304 WAC) stipulate that the active area of a landfill can be no closer than 1,000 feet to any state or national park.

Assessment for Benton County

No national parks are located in Benton County. Benton County has one state park: Crow Butte on the Columbia River at the County's southern tip. In addition, there is one wildlife refuge and two state wildlife recreation areas. All of these features are shown in Figure B-1.

2.31 Toxic Air Emissions

Regulatory Standard

The regulatory standard for toxic air emissions states:

> *"See WAC 173-304-400, such as WAC 173-304-460(2)(b), Landfill performance standards."* (WAC 173-304-130[2][k])
>
> *"An owner or operator of a landfill shall not allow explosive gases generated by the facility whose concentration exceeds:*
>
> > *"(A) Twenty-five percent of the lower explosive limit for the gases in facility structures (excluding gas control or recovery system components);*
> >
> > *"(B) The lower explosive limit for the gases at the property boundary or beyond; and*
> >
> > *"(C) One hundred parts per million by volume of hydrocarbons (expressed as methane) in offsite structures.*
>
> *"An owner or operator of a landfill shall not cause a violation of any ambient air quality standard at the property boundary or emission standard from any emission of landfill gases, combustion or any other emission associated with a landfill."* (WAC 173-304-460[2][b])

Assessment for Benton County

Current air quality standards set by the Benton County Air Pollution Control Authority are an average daily level of 50 or less micrograms of particulates per cubic meter or a level of 150 micrograms per cubic meter, not to be exceeded more than once per year. The Kennewick - Richland area rarely exceeds these levels and only during dry periods when dust from fields and roads increases.

3.0 LOCAL SITING ISSUES

In addition to the siting criteria discussed above there are siting issues and concerns that are not contained in regulations. These issues should be considered in any siting effort although no specific rating guide is offered.

Land Use

Issues that relate to land use but are not specifically covered by the zoning ordinance should be considered in a siting decision. These issues include:

- Preference for a site with zoning on adjacent properties that will assure future development is compatible with the landfill

- Preference for sites where utilities and public services are available or planned for the proposed site

- Limitations on future land uses of the site (after closure)

Operational Issues

Operational issues pertain to site characteristics, which affect the design of the landfill with regard to gas control, leachate management, accessibility, and daily operations.

Gas control. Gas control system requirements at a landfill will vary depending on a number of factors including: topography, underlying geology and soils, acceleration of decomposition processes in the landfill, and distance to adjacent land uses/buildings. Preference should be given to those sites where gas control requirements are minimized.

Leachate Management. Requirements for a leachate control system will vary depending on a number of factors including: underlying geology and soils, precipitation, and access to leachate disposal options. Preference should be given to those sites where leachate management system requirements are minimized.

Accessibility. Haul costs make up a significant portion of disposal costs. Potential landfill sites should be located as close as practicable to the center of waste generation and where the existing road system will not be adversely affected.

Daily Operations. Climatic conditions such as high wind speeds, extreme cold/snow conditions and high rainfall place burdens on operations at a landfill. Preference should be given to sites with low wind speeds, low rainfall and milder temperatures.

4.0 EXCLUSIONARY CRITERIA

Based on the Minimum Functional Standards and the characteristics of Benton County, general exclusionary criteria can be developed for the entire study area. Several of the exclusionary criteria, which can be applied at the regional scale, as described above are shown in Figures B-1 and all are listed below:

- Groundwater
  - Over a sole source aquifer recharge zone.
  - Less than 1,000 feet down-gradient to a drinking water supply well.

- Flooding
  - Within a 100-year floodplain.

- Surface water
  - Less than 200 feet from surface water bodies or public watershed boundaries.

- Wetlands
  - Within a wetland.

- Land Use
  - Within 5,000 feet of an airport serving propeller-driven aircraft or 10,000 feet from an airport serving jet-powered aircraft.
  - Areas designated as critical habitat for endangered or threatened species of plants, fish, or wildlife.
  - Areas where landfill operations are excluded based on zoning restrictions.
  - Within 1,000 feet of any state park.

- Fault areas.
  - Within 200 feet of a fault that has had displacement in Holocene time.

- Unstable Areas
  - Areas where there are poor foundation conditions.
  - Areas susceptible to mass movements.

Ecology can grant variances from these criteria upon demonstration that environmental impacts can be mitigated upon design.

5.0 SITING CONCERNS

The siting of a new landfill can have significant impacts on the surrounding ecosystem, as well as local communities. However, proper siting considerations can help mitigate these concerns.

- Will construction in ecologically sensitive areas (such as wetlands and threatened or endangered species habitats) be avoided?

- Will construction in hazard prone areas, such as flood zones and earthquake zones, be avoided?

- Will construction over groundwater aquifers and near surface waters used as sources of drinking water be avoided? The potential for groundwater contamination can also be reduced by siting a facility in an area with clay soil (or installing a clay liner) and in locations where the groundwater aquifer is not immediately below the landfill. Siting landfills far from lakes and rivers can minimize surface water contamination.

- Will waste transportation corridors be located to minimize impacts on the surrounding environment and the community?

- If transfer stations or other interim collection points will service the proposed landfill, are there plans or policies to assure that the transfer stations will be sited and operated in a manner that will prevent pollution and protect the environment?

6.0 OPERATING CONCERNS

An operating landfill has the potential to affect both air and water quality. These issues must be addressed in an Operations Plan submitted to the Benton Franklin Health District. No facility will be allowed to operate until the Operations Plan is approved.

7.0 CLOSURE and FINAL USE CONCERNS

Solid waste landfill areas, once filled, properly capped, reclaimed, and vegetated, can be used in other ways that benefit society. Are there provisions for closure and final use in the facility plan? Landfill design plans should include provisions for alternative uses once the landfill is full. Former landfills have been converted into usable real estate (primarily recreational properties and wildlife preserves). However, because of continued stabilization and subsidence of landfills, former landfill sites often are not suitable as building sites.

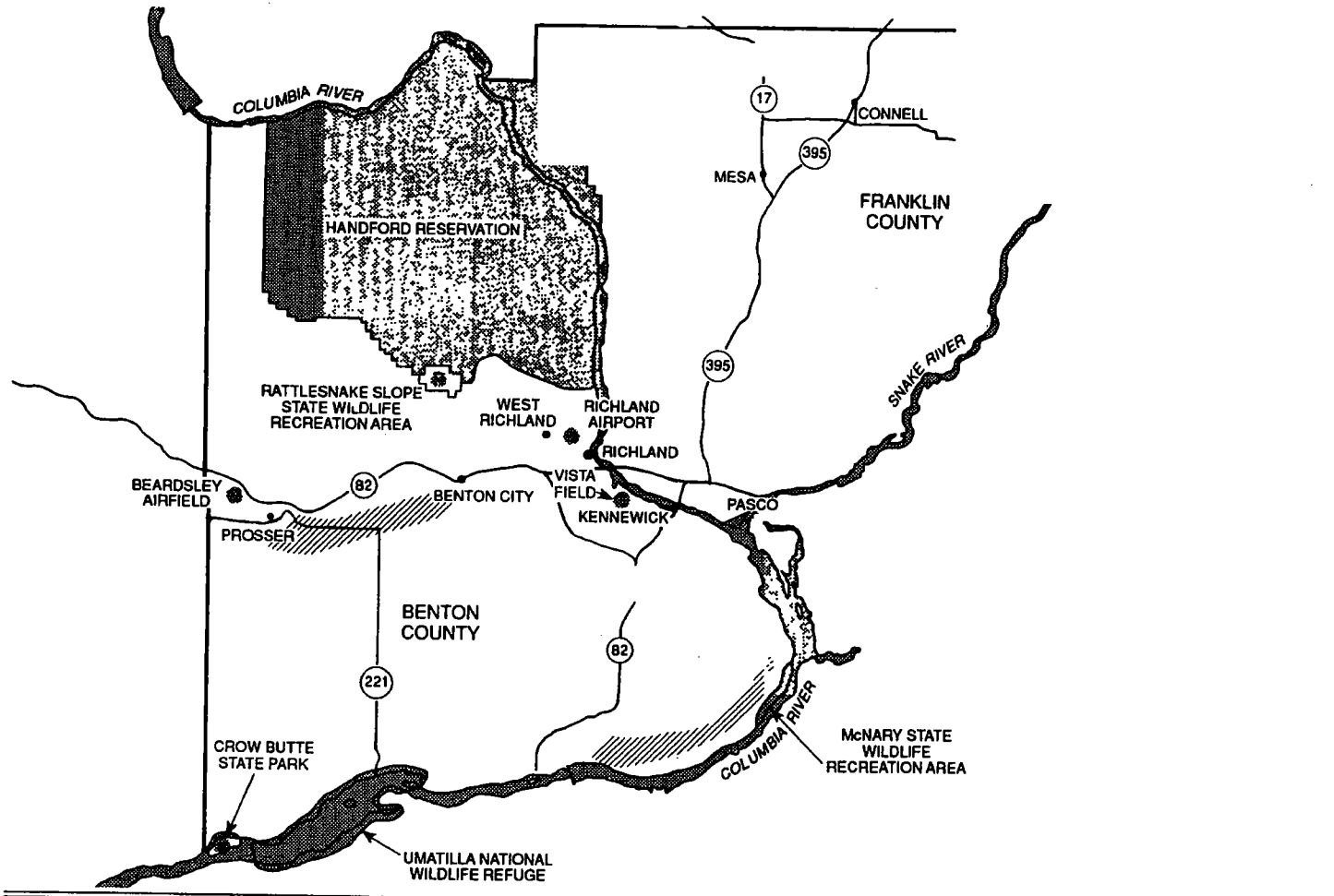

Figure B - 1

Landfill Siting
Exclusionary Areas

APPENDIX D

ACRONYMS

APPENDIX D

ACRONYMS

ACM	Asbestos Containing Materials
BCAA	Benton County Clean Air Authority
BFHD	Benton-Franklin Health District
CDL	Construction, Demolition, and Landclearing Waste
CIWMB	California Integrated Waste Management Board
CPI	Consumer Price Index
CRT	Cathode Ray Tube
DOE	(U.S.) Department of Energy
DEQ	(Oregon) Department of Environmental Quality
Ecology	Washington State Department of Ecology
EPA	(U.S.) Environmental Protection Agency
EPP	Environmentally Preferable Purchasing
FTE	Full-time equivalent
HHW	Household Hazardous Waste
HDPE	High-density polyethylene
HWMA	(Washington) Hazardous Waste Management Act
LDPE	Low-density polyethylene
MFS	Minimum Functional Standards for Solid Waste Handling
MSW	Municipal solid waste
MRW	Moderate risk waste
MTCA	Model Toxics Control Act
NAAQS	National ambient air quality standards
NAICS	North American Industrial Classification System
NESHAP	National Emissions Standards for Hazardous Air Pollutants
OFM	Office of Financial Management (State of Washington)
ONP	Old newsprint
ORS	Oregon Statutes
PAYT	Pay As You Throw
PETE	Polyethylene terephthalate
PVC	Polyvinyl chloride
RCRA	Resource Conservation and Recovery Act
RCW	Revised Code of Washington
SEPA	(Washington) State Environmental Policy Act
SWAC	Solid Waste Advisory Committee

SW/MRWMP	Solid Waste/Moderate Risk Waste Management Plan
SWMP	Solid Waste Management Plan
SQG	Small Quantity Generators
TPD	Tons per day
UGA	Urban Growth Area
WAC	Washington Administrative Code
WUTC	Washington Utilities and Transportation Commission

APPENDIX E

DEFINITIONS

APPENDIX E

DEFINITIONS

Aerobic Decomposition: Degradation of Organic Wastes in the presence of oxygen by microorganisms and bacteria, releasing carbon dioxide gas and heat and producing solid material (compost) that can be used as a soil amendment. An example of Aerobic Decomposition is the waste degradation that occurs in a compost pile. See "Composting." Contrast "Anaerobic Digestion."

Anaerobic Digestion: Degradation of Organic Wastes in the absence of oxygen by microorganisms and bacteria, releasing methane that can be collected and used as a fuel and producing relatively inert solid materials that can be processed for use as a soil amendment. An example of Anaerobic Digestion is the waste degradation that occurs in a landfill. Contrast "Aerobic Decomposition."

Automated Collection: Solid Waste collection by mechanical means, where arms or other devices extend from the collection vehicle, grasp or otherwise manipulate containers, lift them overhead, tip them to empty solid waste into the vehicle, and set them back down on the ground. Fully Automated Collection requires no manual labor to grasp containers; semi-Automated Collection requires manual labor to position containers for mechanical grasping.

Beneficial Use: Utilization or reuse of a material that would otherwise become Solid Waste. Examples include landfill cover, aggregate substitute, fuel substitute, or the feedstock in a manufacturing process.

Biodegradable: Describes waste materials capable of being biologically decomposed by microorganisms and bacteria. For example, Organic Wastes such as paper, wood, food, and plants are biodegradable; metals, glass and most plastics are not.

Biodiesel: Is manufactured from vegetables oils, animal fats, and recycled restaurant greases.

Biofuels: Liquid fuels for transportation, such as ethanol and biodiesel.

Biopower: The use of biomass feedstocks instead of conventional fossil fuels (natural gas or coal) to generate electricity or industrial process heat and steam. Biomass is burned and the resultant heat is used to turn water into steam, which is then used to turn turbines that are connected to electric generators.

Bioproduct: A chemical, material, or other product derived from renewable biomass resources.

Bioreactor Landfill: Engineered landfill or landfill cell where liquid and gas are actively managed in order to accelerate or enhance Biostabilization of waste. Example management includes controlled addition and recirculation of water and capture of methane gas in a piping network.

Bottle Bill: Law that requires payment of a deposit on specified beverage containers, (such as aluminum cans or glass beverage bottles), by consumers at time of purchase, and subsequent refund of the deposit by the product retailer or other entity when consumers return the containers for redemption. Bottle Bills encourage container recycling and discourage littering.

Buyback Center: Facility that refunds deposits on containers subject to Bottle Bill redemption and/or purchases Recyclable Materials.

Buy Recycled: Purchasing Recycled Products. Buy Recycled programs often emphasize purchase of products that contain a specified or maximum level of Post Consumer content and/or Recyclable Materials content without affecting the intended use of the product.

CERCLA: Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S. C Section 9601 et seq., referred to colloquially as "Superfund," providing for clean up and remediation of uncontrolled or abandoned Hazardous Waste sites and response to accidents, spills and other emergency releases of hazardous substances. CERCLA provides EPA with enforcement authority to ensure that responsible parties pay the cleanup costs ("PRP's" are Potentially Responsible Parties).

CESQG (pronounced SQUEEGY): Conditionally Exempt Small Quantity Generators, which are facilities that produce less than 100 kg (220 pounds) of Hazardous Waste (or less than 1 kg of acutely Hazardous Waste) per calendar month. CESQG's are exempt from many of the requirements applicable to Hazardous Waste generators, provided they comply with certain conditions specified in Subtitle C regulations.

Closure: Cessation of operations at a Solid Waste Management facility (especially a Sanitary Landfill) and implementing plans promulgated in accordance with provisions of RCRA in order to ensure future protection of human health and the environment. An example closure requirement is providing specified grading and final cover of a Sanitary Landfill. See "Cover - final cover" and "Post Closure Care."

Commingled Recyclables: Recyclable Materials designated for Recycling either by (1) generators' placement with other Recyclable Materials mixed in a single, common container for collection, or (2) collectors' sorting and placement in a single, common compartment on the collection vehicle. See "Single Stream Recyclables." Contrast "Source Separated Recyclables."

Composted Material: Solid waste that has been subjected to controlled aerobic degradation at a solid waste facility. Natural decay of organic solid waste under uncontrolled conditions does not result in composted material.

Composting: Biological decomposition or decay of Organic Wastes (sometimes including mixed Solid Waste) under controlled conditions. Composting takes place under aerobic conditions, typically in an open pile (called a windrow) or in a tank or container (called in-vessel composting). See "Aerobic Decomposition" and "Anaerobic Digestion."

Corrective Action: Action taken to investigate, describe, evaluate, correct, and clean up contamination from Solid Waste Management facilities as prescribed in accordance with law, including CERCLA and RCRA.

Dangerous Wastes: Any discarded, useless, unwanted, or abandoned substances, including but not limited to certain pesticides, or any residues or containers of such substances which are disposed of in such quantity or concentration as to pose a substantial present or potential hazard to human health, wildlife, or the environment because such wastes or constituents or combinations of such wastes:

(a) Have short-lived, toxic properties that may cause death, injury, or illness or have mutagenic, teratogenic, or carcinogenic properties; or

(b) Are corrosive, explosive, flammable, or may generate pressure through decomposition or other means.

Disposal Site: Location where any final treatment, utilization, processing, or deposit of solid waste occurs.

Diversion: Re-direction of Recyclable Materials from disposal through Resource Recovery.

Diversion Rate: The recovery of "non-MSW" waste streams; most notable asphalt, concrete, and other construction, demolition, and land clearing debris. The diversion rate is an overall measure which includes materials that fall under the "MSW Recycling Rate."

Drop-Off Center: Containers such as bins and Roll-Off Boxes placed at collection sites designated for deposit by generators of specified materials such as Recyclable Materials or Solid Waste.

EIS: Environmental Impact Statement, a document that identifies and analyzes in detail the environmental impacts of a proposed action, including in some instances, the construction of Solid Waste Management facilities, prepared in compliance with the National Environmental Policy Act or state and provincial laws.

Energy Recovery: A process operating under federal and state environmental laws and regulations for converting solid waste into usable energy and for reducing the volume of solid waste.

Environmentally Preferable Purchasing: Buying environmentally preferable products or services that have a less or reduced adverse effect on human health and the environment than competing products or services that serve the same purpose, considering life cycle impacts: raw materials acquisition, production, manufacturing, packaging, distribution, reuse, operation, maintenance, or disposal.

Ethanol: An alcohol that is made using a process similar to brewing beer where starch crops (such as corn) are converted into sugars, the sugars are fermented into ethanol, and then the ethanol is distilled into its final form. Ethanol made from cellulosic or hemi cellulosic biomass materials

(such as agricultural and forestry residues) instead of traditional feedstocks (starch crops) is called bioethanol.

Extremely Hazardous: Any dangerous waste which:

(a) Will persist in a hazardous form for several years or more at a disposal site, and which in its persistent form:

(i) Presents a significant environmental hazard and may be concentrated by living organisms through a food chain or may affect the genetic make-up of man or wildlife; and

(ii) Is highly toxic to man or wildlife;

(b) If disposed of at a disposal site in such quantities as would present an extreme hazard to man or the environment.

Franchise: Right or privilege conferred by a local government on one or more private entities for the collection, transportation or other handling of Solid Waste or Recyclable Materials. A Franchise may extend throughout the corporate limits of the local government or may be limited to a specified area. Local power to grant Franchises typically stems from state or provincial law, municipal charter, or home rule authority. Franchisees may be required to secure licenses or permits in order to perform franchised services.

Functional Standards: Criteria for solid waste handling expressed in terms of expected performance or solid waste handling functions.

Hazardous Waste: All dangerous and extremely hazardous wastes, not including radioactive wastes or a substance composed of both radioactive and hazardous components and does not include any hazardous waste generated as a result of a remedial action under state or federal law.

HDPE: High-Density Polyethylene, a plastic used to make a variety of products including milk jugs and landfill liners. HDPE containers are often identified by the number "2" inside the recycling arrows stamped on the container.

Incineration: A process of reducing the volume of solid waste operating under federal and state environmental laws and regulations by use of an enclosed device using controlled flame combustion.

Incinerator: A facility which has the primary purpose of burning or which is designed with the primary purpose of burning solid waste or solid waste derived fuel, but excludes facilities that have the primary purpose of burning hog fuel.

Inerts: Materials such as concrete, fully cured asphalt paving, glass, plastics, fiberglass, asphalt or fiberglass roofing shingles, brick, slag, ceramics, plaster, clay and clay and clay products that do not degrade or putrefy and are not Hazardous Waste.

Inert Waste Landfill: A landfill that receives only inert waste, as determined under RCW 70.95.065, and includes facilities that use inert wastes as a component of fill.

Landfill: A disposal facility or part of a facility at which solid waste is placed in or on land and which is not a land treatment facility.

Manual Collection: Solid Waste collection by hand rather than machine, where workers grasp, lift and empty cans or toss bags into hoppers or buckets on a collection vehicle. Contrast "Automated Collection."

Materials Recovery Facility (MRF): Building where Commingled Recyclables are separated and processed (including sorting, baling, and crushing) or where Source Separated Recyclables are processed for sale to various markets. See "Intermediate Processing Center." In a Dirty MRF, the incoming Recyclable Materials are co-collected and commingled with other non-Recyclable portions of Solid Waste. See "Mixed Waste Processing."

Mixed Waste Processing: Picking, sorting and otherwise separating Recyclable Materials from commingled Refuse and Garbage, as opposed to picking, sorting and otherwise separating one type of Commingled Recyclables (such as fiber) that was separated and collected separately from Solid Waste from another type of Commingled Recyclable (such as containers). See "MRF."

MRF (pronounced MURF): See "Materials Recovery Facility."

Municipal Solid Waste: See "Solid Waste."

MSW Recycling Rate: To determine a recycling rate that is consistent and comparable to past years, Ecology has measured a very specific part of the solid waste stream since 1986. It is roughly the part of the waste stream defined as municipal solid waste by the Environmental Protection Agency. It includes durable good, nondurable good, containers and packaging, food wastes, and yard trimmings. It does not include industrial waste, inert debris, asbestos, biosolids, petroleum-contaminated soils, or construction, demolition, and land clearing debris recycled or disposed of at municipal solid waste landfills and incinerators.

NIMBY (Not In My Backyard): Neighborhood, community, or local political opposition to the siting and development of Solid Waste Management facilities.

Oil/Water Separator Sludges: Semi-solid after decanting the liquid; sludges usually come from holding tanks associated with sewer systems that contain small amounts of petroleum hydrocarbons and heavy metals.

Participation Rate: Ratio of generators (e.g., individuals, households or businesses) of Recyclables Materials that actually participate in a Recycling Program by setting out Recyclables for collection during a prescribed period of time, to generators who are served by the Recycling Program and could participate in the Recycling Program.

PAYT (Pay As You Throw): See "Variable Rates."

PET (Polyethylene Terephthalate): Plastic commonly used to make containers such as soft drink bottles. PET containers are often identified by the number "1" inside the recycling arrows stamped on the container.

Petroleum-Contaminated Soils (PCS): Soils that have been contaminated by a petroleum product through leaks from petroleum product storage tanks or spills.

Post-Consumer: Products purchased and used by consumers, then discarded or recycled, such as a newspaper that has been purchased and read, Recycled, then used to make newsprint. Contrast "Pre Consumer."

Pre-Consumer: Feedstock used in manufacturing, fabrication or industrial production, then discarded or recycled, comprised of scrap, trimmings, cuttings and other post-production discards such as overruns, over issue publications, and obsolete inventories. Contrast "Post-Consumer."

Product Stewardship: Involves the actions taken to improve the design and manufacture of products to facilitate either their reuse, recycling or disposal, as well as actions to establish programs to collect, process and Reuse or Recycle products when they are discarded.

Pyrolysis: Thermal and chemical decomposition of Organic Waste in a furnace operated without sufficient oxygen to allow combustion. Pyrolitic products include combustible gases, oils, charcoal and mineral matter. Contrast "Incineration."

Rail Haul: Transportation of Solid Waste (generally long distances) by railroad.

RCRA (pronounced RECK RAA): Resource Conservation and Recovery Act, 42 S.S. C. Section 6901 et seq., as amended, the major U.S. Federal legislation first adopted in 1976 that governs the management of Solid Waste and Hazardous Waste in the United States.

Recyclable Materials: Solid wastes that are separated for recycling or reuse, such as papers, metals, and glass, which are identified as recyclable material pursuant to a local comprehensive solid waste plan. Prior to the adoption of the local comprehensive solid waste plan, adopted pursuant to RCW 70.95.110(2), local governments may identify recyclable materials by ordinance from July 23, 1989.

Recycled Content: Portion of a product's or package's weight that is composed of materials re-manufactured from a Recyclable Product or packaging material, including Pre-Consumer Materials or Post-Consumer Materials.

Recycling: Transforming or remanufacturing waste materials into usable or marketable materials for use other than landfill disposal or incineration.

Reuse: Use of a product more than once in its same form for the same or different purpose without substantial alteration. See "Recycled Product."

Septage: Semisolids consisting of settled sewage solids combined with varying amounts of water and dissolved materials generated in a septic tank system.

Sewage Sludge: A semisolid substance consisting of settled sewage solids combined with varying amounts of water and dissolved materials, generated from a wastewater treatment system, that does not meet the requirements of Chapter 70.95J RCW.

Small Quantity Generator (pronounced SQEEGY): Facilities that generate very small quantities of Hazardous Waste, between 100 kg (220 pounds) and 1,000 kg (2,200 pounds) per calendar month. The regulatory requirements for Small Quantity Generators are less stringent than persons who, or entities that, generate larger quantities of Hazardous Waste.

Soil Amendment: Any substance that is intended to improve the physical characteristics of the soil, except composted material, commercial fertilizers, agricultural liming agents, unmanipulated animal manures, unmanipulated vegetable manures, food wastes, food processing wastes, and materials exempted by rule of the department, such as biosolids as defined in chapter 70.95J RCW and wastewater as regulated in chapter 90.48 RCW.

Solid Waste or Wastes: All putrescible and nonputrescible solid and semisolid wastes, including, but not limited to, garbage, rubbish, ashes, industrial wastes, swill, sewage sludge, demolition and construction wastes, abandoned vehicles or parts thereof, and recyclable materials.

Solid Waste Disposal: The discharge, deposit, injection, dumping, spilling, leaking, or placing of Solid Waste on or in the land or water. This definition may vary under diverse local, state, provincial, and national laws.

Solid Waste Management: Planned and organized handling of Solid Waste and Recyclable Materials in an environmentally and economically sound manner, encompassing the generation, storage, collection, transfer, transportation, processing, Resource Recovery, Reuse, and disposal of Solid Waste and Recyclable Materials and including all administrative, financial, educational, environmental, legal, planning, marketing and operational aspects thereof.

Source Reduction (or Waste Reduction): Actions taken to reduce Solid Waste toxicity or disposal, including (1) manufacturers' redesign and management of products and packaging to extend product life, and facilitating repair, (2) consumers' reduced purchase and consumption of products that become wastes; and (3) manufacturers' and consumers' reuse of products.

Source Separation: The separation of different kinds of solid waste at the place where the waste originates.

Subtitle C: Section of RCRA that authorizes U.S. EPA to establish regulations regarding Hazardous Waste management.

Subtitle D: Section of RCRA that authorizes U.S. EPA to establish regulations for Sanitary Landfills.

Superfund: Common name for CERCLA, including generally the entire CERCLA program as well as specifically the trust fund established to fund cleanup of contaminated sites. See "CERCLA."

TCLP: Toxicity Characteristic Leaching Procedure, a lab test designed to determine whether a Solid Waste is a Hazardous Waste because it releases toxic chemicals in Leachate.

Tipping Fee: Fee charged for accepting Recyclable Materials or Solid Waste at a Solid Waste Management facility (such as a transfer station, Solid Waste Combustor, MRF, or Landfill.).

Transfer Station: Facility that receives and consolidates Solid Waste or Recyclable Materials from municipal or commercial collection trucks and self-haulers' vehicles and loads the Solid Waste onto tractor trailers, railcars, or barges for long-haul transport to a distant disposal facility.

Universal Wastes: Several widely generated Hazardous Wastes identified by US EPA (such as batteries, pesticides, thermostats and mercury containing lamps and equipment) that are subject to streamlined requirements for collection, storage and processing if they are Recycled in accordance with law rather than disposed.

Used oil: Includes:

(a) Lubricating fluids that have been removed from an engine crankcase, transmission, gearbox, hydraulic device, or differential of an automobile, bus, truck, vessel, plane, heavy equipment, or machinery powered by an internal combustion engine;

(b) Any oil that has been refined from crude oil, used, and as a result of use, has been contaminated with physical or chemical impurities; and

(c) Any oil that has been refined from crude oil and, as a consequence of extended storage, spillage, or contamination, is no longer useful to the original purchaser. "Used oil" does not include used oil to which hazardous wastes have been added.

Variable Rates (or PAYT / Pay as You Throw): Charges for Solid Waste collection services that incrementally increase with disposed Refuse and Garbage volume (such as 32-, 64-, or 96-gallon carts) or weight, with lesser or no charges for Recyclables collection services, to encourage Recycling and discourage disposal. Variable rates do not necessarily reflect actual operational costs but rather constitute behavioral incentives (or disincentives).

Waste-Derived Soil Amendment: Any soil amendment as defined in this chapter that is derived from solid waste as defined in RCW 70.95.030, but does not include biosolids or biosolids products regulated under chapter 70.95J RCW or wastewaters regulated under chapter 90.48 RCW.

Waste Exchange: Organization or service that facilitates or arranges for Recyclable Materials or discarded materials from various generators or industries to be Recycled or Reused by others.

Waste Generation: Total amount of disposed Solid Waste and diverted Recyclables.

Waste Reduction: All in-plant practices that reduce, avoid, or eliminate the generation of wastes or the toxicity of wastes, prior to generation, without creating substantial new risks to human health or the environment. As used in RCW 70.95C.200 through 70.95C.240, "waste reduction" refers to hazardous waste only.

Waste-to-Energy: Controlled combustion of Solid Waste in Solid Waste Combustors having state-of-the-art pollution controls, and Energy Recovery therefrom. Types of Waste-to-Energy facilities include mass burn units that incinerate mixed Solid Waste with little or no prior separation, and RDF (Refuse Derived Fuel) units that separate combustible Solid Waste from noncombustible Solid Waste prior to combustion. See "Incinerators."

Yard Debris: Plant material commonly created in the course of maintaining yards and gardens, and through horticulture, gardening, landscaping, or similar activities. Yard debris includes, but is not limited to, grass clippings, leaves, branches, brush, weeds, flowers, roots, windfall fruit, vegetable garden debris, holiday trees, and tree prunings that are 4 inches or less in diameter.

Zero Waste: Efforts to reduce Solid Waste generation waste to nothing, or as close to nothing as possible, by minimizing excess consumption and maximizing the recovery of Solid Wastes through Recycling and Composting.

APPENDIX F

WUTC COST ASSESSMENT QUESTIONNAIRE

COST ASSESSMENT QUESTIONNAIRE

Please provide the information requested below:

PLAN PREPARED FOR THE COUNTY OF: BENTON

PLAN PREPARED FOR THE CITY OF: N/A

PREPARED BY: Benton County

CONTACT TELEPHONE: (509) 539- 5432 **DATE:** 2/6/07

DEFINITIONS

Please provide these definitions as used in the Solid Waste Management Plan and the Cost Assessment Questionnaire.

Throughout this document:

YR.1 shall refer to **2006.**
YR.3 shall refer to **2009.**
YR.6 shall refer to **2011.**

Year refers to (circle one) **calendar** (Jan 01 - Dec 31)

1. **DEMOGRAPHICS:** To assess the generation, recycling and disposal rates of an area, it is necessary to have population data. This information is available from many sources (e.g., the State Data Book, County Business Patterns, or the State Office of Finance and Management).

1.1 Population

1.1.1 What is the **total** population of your County/City?

YR.1 160, 210 YR.3 170,498 YR.6 180,523

1.1.2 For counties, what is the population of the area **under your jurisdiction?** (Exclude cities choosing to develop their own solid waste management system.)

YR.1 36,848 YR.3 39,214 YR.6 41,520

1.2 References and Assumptions

2. **WASTE STREAM GENERATION:** The following questions ask for total tons recycled and total tons disposed. Total tons disposed are those tons disposed of at a landfill, incinerator, transfer station or any other form of disposal you may be using. If other, please identify.

2.1 Tonnage Recycled

2.1.1 Please provide the total tonnage **recycled** in the base year, and projections for years three and six.

YR.1 120,661 YR.3 139,912 YR.6 152,704

2.2 Tonnage Disposed

2.2.1 Please provide the total tonnage **disposed** in the base year, and projections for years three and six.

YR.1 335,170 YR.3 368,190 YR.6 381,762

2.3 References and Assumptions

3. **SYSTEM COMPONENT COSTS:** This section asks questions specifically related to the types of programs currently in use and those recommended to be started. For each component (i.e., waste reduction, landfill, composting, etc.) please describe the anticipated costs of the program(s), the assumptions used in estimating the costs and the funding mechanisms to be used to pay for it. The heart of deriving a rate impact is to know what programs will be passed through to the collection rates, as opposed to being paid for through grants, bonds, taxes and the like.

3.1 Waste Reduction Programs

3.1.1 Please list the solid waste programs which have been implemented and those programs which are proposed. If these programs are defined in the SWM plan please provide the page number. (Attach additional sheets as necessary.)

IMPLEMENTED	PROPOSED
See Attached Table 1 (In green)	**See Attached Table 1**

3.1.2 What are the costs, capital costs and operating costs for waste reduction programs implemented and proposed? **See Attached Table 1**

IMPLEMENTED

YR.1 **See Table 1** YR.3 **See Table 1** YR.6 **See Table 1**

PROPOSED

YR.1 **See Table 1** YR.3 **See Table 1** YR.6 **See Table 1**

3.1.3 Please describe the funding mechanism(s) that will pay the cost of the programs in 3.1.2.

IMPLEMENTED

YR.1 **Grant** YR.3 **Grant** YR.6 **Grant**

PROPOSED

YR.1 **Grant** YR.3 **Grant** YR.6 **Grant**

3.2 Recycling Programs

3.2.1 Please list the proposed or implemented recycling program(s) and, their costs, and proposed funding mechanism or provide the page number in the draft plan on which it is discussed (attach additional sheets as necessary).

IMPLEMENTED

PROGRAM	COST	FUNDING
Paper Recycling	**$20,000**	**Grant**

PROPOSED

PROGRAM	COST	FUNDING
See Attached Table 1	**Table 1**	**Grant**

3.3 Solid Waste Collection Programs

3.3.1 Regulated Solid Waste Collection Programs

Fill in the table below for each **WUTC regulated** solid waste collection entity in your jurisdiction. (Make additional copies of this section as necessary to record all such entities in your jurisdiction.)

TABLE 1

Chapter	Title	Option	Cost	Expense
3	**Public Education & Outreach**	Bilingual Outreach Materials	$7,000	Service
		Direct Mailing Newsletter	$20,000	Service
		Phone Book Section Insert	$2,518	Service
		Website	$1,000	Labor
		Technical Assistance to Schools and Businesses	$8,500	Materials
	Waste Reduction	Procurement of Recycled Products	$10,000	Labor
		Environmentally Preferable Purchasing	$10,000	Labor
		County/City Waste Reduction Policies	$2,500	Labor
		Methods to Measure Waste Reduction Results	$45,000	1 FTE
		ReUse and Swap Shops	$45,000	1 FTE
	Recycling	Internal Recycing Program	$22,000	Labor
		Special Event Recycling	$10,000	Materials & Labor
		Expanded Recycling Drop-Box Program	$5,000 per Station	Materials & Labor
		Rewards Program For Resdiential Recyclers	$10,000	Ads & Prizes
		Recognition for Commercial Waste Reduction and Recycling Successes	$10,000	Ads & Prizes
		Business Education	$10,000	Labor
		Commercial Waste Audit Assistance	$10,000	Labor
	Organics	Expand Yard Waste Chipping Program	$490,000	Equipment&Labor
		Food Waste Management	$45,000	1 FTE
		Biomass Processing	$45,000	1 FTE

Chapter	Title	Option	Cost	Expense
4	**Collection Systems**	Change Service Levels to Capture More Households	$160,000	Service
5	**Transfer & Disposal**	Expand Horn Rapids Landfill to Ensure In-County Disposal Capacity	$20,000,000	Materials/Labor/Legal
		Assess Long-Haul of MSW Out of City	$150,000	Labor & Legal
		Expand Local Transfer Station Capacity	$500,000	Materials/Labor/Legal
6	**Construction & Demolition Debris**	Provide Education Programs for Contarctors	$10,000	Labor & Legal
		Establish C&D and Inert Waste Diversion Specifications	$45,000	1 FTE
		Use Recycled Content Bldg. Specs. For Projects	$1,000	Outreach/Labor
		Develop Disaster Management Plan for Benton	$45,000	Labor
		Est. Locations for ER Staging & Temp. Storage of Debris Generated by Natural Disasters	$45,000	Labor & Legal
	Wood Wastes	Facility Diversion	$45,000	Outreach/Labor
		Public Education	$15,000	Outreach/Labor
	Industrial Wastes	Cont. Monitor & Regulate Industrial Solid Waste Handling/Disposal & Provide Asst. to Waste Generators	$100,000	Labor & Legal
	Agricultural Wastes	Committee Could Be Formed to Discuss Pot. Opp. To Investigate Opp. For Alternatives	$20,000	Labor
	Tires	County/City Purchasing Programs for Recycl. Tire Products	$20,000	Labor
		County/City Programs to Reduce Tire Waste	$45,000	Labor
		Public Education Programs	$15,000	Outreach/Labor

Chapter	Title	Option	Cost	Expense
	Biomedical Wastes			
		Educationial Materials for Correct Mngmnt. Of Medical Waste Generated by Residents	$15,000	Outreach/Labor
		Collection of Sharps & Outdated Pharmaceuticals @ Household Hazardous Waste Collec. Sites	$45,000	Labor & Diposal
	Petrolium Contaminated Soils	Private Sector to Cont. to Manage and Dispose of Contaminated Soils	$0	
	Asbestos	Educate Homeowners About Proper Identification of Contaminated Materials & Proper Methods	$15,000	Outreach/Labor
	MRW	Expanded Public Education	$15,000	Outreach/Labor
		Education on Alternative Products	$15,000	Outreach/Labor
		Use Mobile Collection Center to Target Rural Areas (HHW)	$215,000	Outreach/Labor
		Expand HHW Collection to Include Household Generated Biomedical Waste (HHW)	$50,000	Labor/Disposal
		Recognition for Environmental Achievements (Business)	$20,000	Outreach/Labor
		Business Collection Assistance	$10,000	Outreach/Labor
		Continue Enforcement Efforts	$0	
	Tank Pumpings	Continue to Allow Private Sector to Manage & Dispose of Septage	$0	0
		Assess Feasability of Dvlpg. Facility to Manage Waste If Disposal Becomes Limited	$50,000	Engineering
		Continue to Allow Private Sector to Manage & Dispose of Material	$0	1

Chapter	Title	Option	Cost	Expense
7	**Administration**	Interagency Cooperation Should Be Facilitated	$20,000	Outreach/Labor
	Enforcement	Enforcement Activities Must Be Coordinated to Attain Max. Impact W/O Duplication	$20,000	Outreach/Labor
		Improve Coordination Among Agencies/Cities Responsible for Illegal Dumping /Cleanup/ Education/Prevention Programs	$20,000	Outreach/Labor
		Develop a Coordinated Public Outreach & Education Program	$20,000	Outreach/Labor
	Other Options	Regional Composting Facilities	$50,000	Outreach/Labor
		Regional C&D Facility	$50,000	Outreach/Labor
		Modify Horn Rapids LP Permit to Allow Disposal of Friable Asbestos	$15,000	Outreach/Labor
		E-Waste	$50,000	Outreach/Labor
		Collaboration of Education/Outreach Efforts	$20,000	Outreach/Labor
		Total Cost to Implement Recommendations	$22,734,518	
		Total Cost to Continue Programs Currently in Use	$247,000	

WUTC Regulated Hauler Name: Basin Disposal, Inc.
G-permit #118

RESIDENTIAL	YR. 3	YR. 6
- # of Customers	11,001	11,760
- Tonnage Collected	24,045	26,345
COMMERCIAL		
- # of Customers	1,255	1,396
- Tonnage Collected	2,171	2,415

WUTC Regulated Hauler Name: Ed's Disposal, Inc.
G-Permit # 110

RESIDENTIAL	YR. 3	YR. 6
- # of Customers	11,778	12,590
- Tonnage Collected	25,375	27,780
COMMERCIAL		
- # of Customers	1,456	1,611
- Tonnage Collected	2518	2787

WUTC Regulated Hauler Name: Waste Management of Washington, Inc.
G-permit #237

RESIDENTIAL	YR. 3	YR. 6
- # of Customers	22,778	24,557
- Tonnage Collected	39,435	45,511
COMMERCIAL		
- # of Customers	2711	2923
- Tonnage Collected	44,231	47,379

WUTC Regulated Hauler Name: Sanitary Disposal, Inc.
G-Permit # 173

RESIDENTIAL	YR. 3	YR. 6
- # of Customers	156	168
- Tonnage Collected	1,288	1,389
COMMERCIAL		
- # of Customers	26	32
- Tonnage Collected	214	232

3.3.2 Other (non-regulated) Solid Waste Collection Programs Fill in the table below for other solid waste collection entities in your jurisdiction. (Make additional copies of this section as necessary to record all such entities in your jurisdiction.)

Hauler Name: City of Richland

	YR. 1	YR. 3	YR. 6
# of Customers	15,615	16,937	18,260
Tonnage Collected	20,319	22,039	23,760

3.4 Energy Recovery & Incineration (ER&I) Programs
(If you have more than one facility of this type, please copy this section to report them.)

3.4.1 Complete the following for each facility: N/A

Name: _____
Location: _____
Owner: _____
Operator: _____

3.4.2 What is the permitted capacity (tons/day) for the facility? N/A

3.4.3 If the facility is not operating at capacity, what is the average daily throughput?

YR.1 N/A YR.3 N/A YR.6 N/A

3.4.4 What quantity is estimated to be land filled which is either ash or cannot be processed.

YR.1 N/A YR.3 N/A YR.6 N/A

3.4.5 What are the expected capital costs and operating costs, for ER&I programs (not including ash disposal expense)?

YR.1 N/A YR.3 N/A YR.6 N/A

3.4.6 What are the expected costs of ash disposal?

YR.1 N/A YR.3 N/A YR.6 N/A

3.4.7 Is ash disposal to be: N/A _____ on-site?
_____ in county?
_____ long-haul?

3.4.8 Please describe the funding mechanism(s) that will fund the costs of this component. N/A

3.5 Land Disposal Program

(If you have more than one facility of this type, please copy this section to report them.)

3.5.1 Provide the following information for each **land disposal facility** in your jurisdiction which receives garbage or refuse generated in the county.

Landfill Name: Horn Rapids Landfill
Owner: City of Richland
Operator: City of Richland

3.5.2 Estimate the **approximate tonnage** disposed at the landfill by **WUTC regulated haulers.** If you do not have a scale and are unable to estimate tonnages, estimate using cubic yards, and indicate whether they are compacted or loose.[1]

YR.1 N/A YR.3 N/A YR.6 N/A

3.5.3 Using the same conversion factors applied in 3.5.2, please estimate the **approximate tonnage** disposed at the landfill by other contributors.

YR.1 N/A YR.3 N/A YR.6 N/A

3.5.4 Provide the cost of operating (including capital acquisitions) each landfill in your jurisdiction. For any facility that is privately owned and operated, skip these questions.

YR.1 345,423 YR.3 359,239 YR.6 373,056

3.5.5 Please describe the funding mechanism(s) that will defray the cost of this component.
Tip Fee and Collection

3.6 Administration Program

3.6.1 What is the budgeted cost for administering the solid waste and recycling programs and what are the major funding sources.

Budgeted Cost

YR.1 332,133 YR.3 360,542 YR.6 392,432

Funding Source

YR.1 Grant/County and Inter-local Contributions YR.3 Same YR.6 Same

[1] Compacted cubic yards will be converted at a standard 600 pounds per yard. Loose cubic yards will be converted at a standard 300 pounds per cubic yard. Please specify an alternative conversion ratio if one is presently in use in your jurisdiction.

3.6.2 Which cost components are included in these estimates?

Expenses included in the estimate are as follows: salaries and wages, personnel benefits, supplies, other services and charges, intergovernmental payments, and capital expenditures.

3.6.3 Please describe the funding mechanism(s) that will recover the cost of each component.

Funding mechanisms include grants: the Benton Governance Technical Advisory Committee, Solid Waste Advisory Committee and County Commissioners target grants for specific programs as determined.

3.7 Other Programs

For each program in effect or planned which does not readily fall into one of the previously described categories please answer the following questions. (Make additional copies of this section as necessary.)

3.7.1 Describe the program, or provide a page number reference to the plan. N/A

3.7.2 Owner/Operator N/A

3.7.3 Is WUTC Regulation Involved? If so, please explain the extent of involvement in section 3.8. N/A

3.7.4 Please estimate the anticipated costs for this program, including capital and operating expenses.

YR.1 N/A YR.3 N/A YR.6 N/A

3.7.5 Please describe the funding mechanism(s) that will recover the cost of this component. N/A

3.8 References and Assumptions (attach additional sheets as necessary) N/A

4. FUNDING MECHANISMS: This section relates specifically to the funding mechanisms currently in use and the ones, which will be implemented to incorporate the recommended programs in the draft plan. Because the way a program is funded directly relates to the costs a resident or commercial customer will have to pay, this section is crucial to the cost assessment process. Please fill in each of the following tables as completely as possible.

Table 4.1.1 Facility Inventory

Facility Name	Type of Facility	Tip Fee per Ton	Transfer Cost**	Transfer Station Location	Final Disposal Location	Total Tons Disposed	Total Revenue Generated (Tip Fee x Tons)
Horn Rapids Facility	Landfill	42.99	0	On-site	Horn Rapids	20,319	$873,513
BDI Transfer (Ed's and Basin Disposal)	Transfer Station	39.04	0	1721 Dietrich Rd. Franklin. County	Finley Buttes		
Waste Management	Transfer Station	73.04	0	2627 S. Ely, Kennewick, WA	Columbia Ridge	84,000	$6,135,360
Sanitary Disposal	Transfer Station	41.64	0	81144 N. HW 395 Hermiston, OR	Morrow County	1,265	$52,674

Table 4.1.2 Tip Fee Components

Tip Fee by Facility	Surcharge	City Tax	County Tax	Transportation Cost	Operational Cost	Administration Cost	Closure Costs
Horn Rapids Landfill	3.6% WAST Refuse Tax	0	0	0	42.99	0	2,500,000
BDI Transfer	3.6% WAST Refuse Tax	Variable	4.5%	0	39.04	0	0
Waste Management	3.6% WAST Refuse Tax	Variable	4.5%	0	73.04	0	0
Sanitary Disposal	3.6% WAST Refuse Tax	Variable	4.5%	0	41.64	0	0

Table 4.1.3 Funding Mechanism

Name of Program Funding Mechanism will defray costs	Bond Name	Total Bond Debt	Bond Rate	Bond Due Date	Grant Name	Grant Amount	Tip Fee	Taxes	Other	Surcharge
Horn Rapids	N/A				N/A		42.99 p/T			
BDI	N/A									
Waste Management	N/A									
Sanitary Disposal	N/A									

Table 4.1.4 Tip Fee Forecast

Tip Fee per Ton by Facility	Year One	Year Two	Year Three	Year Four	Year Five	Year Six
Horn Rapids	42.99	42.99	42.99	42.99	42.99	42.99
BDI	39.04	39.04	39.04	39.04	39.04	39.04
Waste Management	73.04	73.04	73.04	73.04	73.04	73.04
Sanitary Disposal	41.64	41.64	41.64	41.64	41.64	41.64

4.2 **Funding Mechanisms** summary by percentage: In the following tables, please summarize the way programs will be funded in the key years. For each component, provide the expected percentage of the total cost met by each funding mechanism (e.g., Waste Reduction may rely on tip fees, grants, and collection rates for funding). You would provide the estimated responsibility in the table as follows: Tip fees = 10%; Grants = 50%; Collection Rates = 40%. The mechanisms must total 100%. If components can be classified as "other," please note the programs and their appropriate mechanisms. Provide attachments as necessary.

Table 4.2.1 Funding Mechanism by Percentage

Year One

Component	Tip Fee %	Grant %	Bond %	Collection Tax Rates %	Other %	Total
Waste Reduction	0	75%		25%		100%
Recycling	0	75%		25%		100%
Collection	0					100%
ER&I	0					100%
Transfer	0					100%
Land Disposal	0					100%
Administration	0	75%		25%		100%
Other	0					100%

Table 4.2.2 Funding Mechanism by Percentage

Year Three

Component	Tip Fee %	Grant %	Bond %	Collection Tax Rates %	Other %	Total
Waste Reduction	0	75%		25%		100%
Recycling	0	75%		25%		100%
Collection	0					100%
ER&I	0					100%
Transfer	0					100%
Land Disposal	0					100%
Administration	0	75%		25%		100%
Other	0					100%

Table 4.2.3 Funding Mechanism by Percentage

Year Six

Component	Tip Fee %	Grant %	Bond %	Collection Tax Rates %	Other %	Total
Waste Reduction	0	75%		25%		100%
Recycling	0	75%		25%		100%
Collection	0					100%
ER&I	0					100%
Transfer	0					100%
Land Disposal	0					100%
Administration	0	75%		25%		100%
Other	0					100%

4.3 References and Assumptions

Please provide any support for the information you have provided. An annual budget or similar document would be helpful. N/A

4.4 Surplus Funds

Please provide information about any surplus or saved funds that may support your operations. N/A

APPENDIX G

SEPA ENVIRONMENTAL CHECKLIST

SEPA ENVIRONMENTAL CHECKLIST

A. BACKGROUND

1. **Name of proposed project, if applicable:**

   Benton County Comprehensive Solid Waste Plan

2. **Name of applicant:**

   Benton County Solid Waste

3. **Address and phone number of applicant and contact person:**

   Keith Martin, Solid Waste Manager
   P. O. Box 1001
   Prosser, WA 99350
   509-786-5611
   509-786-5627 (FAX)

4. **Date checklist prepared:**

   January 30, 2007

5. **Agency requesting checklist:**

   Benton County Planning Department.

6. **Proposed timing or schedule (including phasing, if applicable):**

   2007-2011

7. **Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal?**

   Plan will be updated in 5 years.

8. **List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.**

   Environmental review will occur on a per-project basis.

9. **Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain.**

   No.

10. **List any government approvals or permits that will be needed for your proposal, if known.**

Dept. of Ecology: This SEPA Checklist and Washington Utilities and Transportation Commission,

11. **Give brief, complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page. (Lead agencies may modify this form to include additional specific information on project description.)**

Per RCW 70.95, Benton County and jurisdictions therein, are required to review their Solid Waste Plan every five years. The attached plan is the best effort at projecting Benton County's goals for meeting statewide expectations for the handling of solid waste over the next five years.

12. **Location of the proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and section, township, and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity map, and topographic map, if reasonably available. While you should submit any plans required by the agency, you are not required to duplicate maps or detailed plans submitted with any permit applications related to this checklist.**

Encompasses entire Benton County, excluding Hanford site.

B. ENVIRONMENTAL ELEMENTS

1. Earth

a. **General description of the site (circle one): Flat, rolling, hilly, steep slopes, mountainous, other:**

Benton County includes all of the above terrains.

b. **What is the steepest slope on the site (approximate percent slope)?**

N/A

c. **What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any prime farmland.**

Benton County includes all of the above soil types.

d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe.

Does not apply.

e. Describe the purpose, type, and approximate quantities of any filling or grading proposed. Indicate source of fill.

Does not apply.

f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe.

Does not apply.

g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?

Does not apply.

h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any:

Does not apply.

2. Air

a. What types of emissions to the air would result from the proposal (i.e., dust, automobile, odors, industrial, wood smoke) during construction and when the project is completed? If any, generally describe and give approximate quantities if know.

Does not apply.

b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe.

Does not apply.

c. Proposed measures to reduce or control emissions or other impacts to air, if any:

Does not apply.

3. **Water**

a. **Surface:**

1) Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into.

The major bodies of water in Benton County include: Yakima River and Columbia River; various creeks and streams flow into these rivers.

2) Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans.

Does not apply.

3) Estimate the amount of fill and dredge material that would be placed in or removed from surface water, or wetlands, and indicate the area of the site that would be affected. Indicate the source of fill material.

Does not apply.

4) Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities if known.

Does not apply.

5) Does the proposal lie within a 100-year floodplain? If so, note location on the site plan.

Does not apply.

6) Does the proposal involve any discharge of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge.

Does not apply.

b. **Ground:**

1) Will ground water be withdrawn, or will water be discharged to ground water? Give general description, purpose, and approximate quantities if known.

Does not apply.

2) Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (for example: Domestic sewage, industrial, containing the following chemicals. . . , agricultural, etc.). Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve.

Does not apply.

c. Water Runoff (including storm water):

1) Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe.

Does not apply.

2) Could waste materials enter ground or surface waters? If so, generally describe.

Does not apply.

d. Proposed measures to reduce or control surface, ground, and runoff water impacts, if any:

Does not apply.

4. Plants

a. Circle types of vegetation found on the site: deciduous tree: alder, maple, aspen, other; evergreen tree: fir, cedar, pine, other; shrubs; grass; pasture; crop or grain; wet soil plants: cattail, buttercup, bulrush, skunk cabbage, other; water plants: water lily, eelgrass, milfoil, other types of vegetation:

Benton County includes all of the above

b. What kind and amount of vegetation will be removed or altered?

Does not apply.

c. List threatened or endangered species known to be on or near the site.

Does not apply.

d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any:

Does not apply.

5. **Animals**

a. **Circle any birds and animals which have been observed on or near the site or are known to be on or near the site: birds: hawk, heron, eagle, songbirds; other mammals: deer, bear, elk, beaver, other; fish: bass, salmon, trout, herring, shellfish, other:**

Does not apply.

b. **List any threatened or endangered species known to be on or near the site.**

Does not apply.

c. **Is the site part of a migration route? If so, explain.**

Does not apply.

d. **Proposed measures to preserve or enhance wildlife, if any:**

Does not apply.

6. **Energy and Natural Resources**

a. **What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc.**

Does not apply.

b. **Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe.**

Does not apply.

c. **What kinds of energy conservation feature are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any:**

Does not apply.

7. **Environmental Health**

a. **Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste that could occur as a result of this proposal? If so, describe.**

Benton County has one landfill, which includes a Moderate Risk Waste facility; City of Richland personnel operate it. The facility incorporates required waste containment measures. Materials at the Moderate Risk Waste facility are stored temporarily on-site in enclosed containers; exposure to the general public is limited.

1) **Describe special emergency services that might be required.**

City of Richland and Benton County Fire Department personnel would respond to emergencies at the landfill and MRW facility.

2) **Proposed measures to reduce or control environmental health hazards, if any:**

The facility incorporates required waste containment measures. Materials at the Moderate Risk Waste facility are stored temporarily on-site in enclosed containers

b. Noise

1) **What types of noise exist in the area which may affect your project (for example: traffic, equipment, operation, other)?**

Does not apply.

2) **What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other)? Indicate what hours noise would come from the site.**

Does not apply.

3) **Proposed measures to reduce or control noise impacts, if any:**

Does not apply.

8. Land and Shoreline Use

a. What is the current use of the site and adjacent properties?

Does not apply.

b. Has the site been used for agriculture? If so, describe.

Does not apply.

c. Describe any structures on the site.

Does not apply.

d. Will any structures be demolished? If so, what?

Does not apply.

e. What is the current zoning classification of the site?

Does not apply.

f. What is the current comprehensive plan designation for the site?

Does not apply.

g. If applicable, what is the current shoreline master program designation of the site?

Does not apply.

h. Has any part of the site been classified as an "environmentally sensitive" area? If so, specify.

Does not apply.

I. Approximately how many people would reside or work in the completed project?

Does not apply.

j. Approximately how many people would the completed project displace?

Does not apply.

k. Proposed measures to avoid or reduce displacement impacts, if any:

Does not apply.

l. Proposed measures to ensure the proposal are compatible with existing and projected land uses and plans, if any:

Does not apply.

9. **Housing**

a. **Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing.**

Does not apply.

b. **Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing.**

Does not apply.

c. **Proposed measures to reduce or control housing impacts, if any:**

Does not apply.

10. **Aesthetics**

a. **What is the tallest height of any proposed structures(s) not including antennas; what is the principal exterior building material(s) proposed?**

Does not apply.

b. **What views in the immediate vicinity would be altered or obstructed?**

Does not apply.

c. **Proposed measures to reduce or control aesthetic impacts,if any:**

Does not apply.

11. **Lights and Glare**

a. **What type of light or glare will be the proposal produce? What time of day would it mainly occur?**

Does not apply.

b. **Could light or glare from the finished project be a safety hazard or interfere with views?**

Does not apply.

c. **What existing off-site sources of light or glare may affect your proposal?**

Does not apply.

d. **Proposed measures to reduce or control light and glare impacts, if any:**

Does not apply.

12. **Recreation**

a. **What designated and informal recreational opportunities are in the immediate vicinity?**

Does not apply.

b. **Would the proposed project displace any existing recreational uses? If so, describe.**

Does not apply.

c. **Proposed measures to reduce or control impacts or recreation, including recreation opportunities to be provided by the project or applicant, if any:**

Does not apply.

13. **Historic and Cultural Preservation**

a. **Are there any places or objects listed on, or proposed for, national, state, or local preservation registers known to be on or next to the site? If so, generally describe.**

Does not apply.

b. **Generally describe any landmarks or evidence of historic, archeological, scientific, or cultural importance known to be on or next to the site.**

Does not apply.

c. **Proposed measures to reduce or control impacts, if any:**

Does not apply.

14. **Transportation**

a. **Identify public streets and highways serving the site, and describe proposed access to the existing street system. Show on site plan, if any.**

Does not apply.

b. **Is the site currently served by public transit? If not, what is the approximate distance to the nearest transit stop?**

Does not apply.

c. **How many parking spaces would the completed project have? How many would the project eliminate?**

Does not apply.

d. **Will the proposal require any new roads or streets, or improvements to existing roads or streets, not including driveways? If so, generally describe (indicate whether public or private).**

Does not apply.

e. **Will the project use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe.**

Does not apply.

f. **How many vehicular trips per day would be generated by the completed project? If know, indicate when peak volumes would occur.**

Does not apply.

g. **Proposed measures to reduce or control transportation impacts, if any:**

Does not apply.

15. Public Services

a. **Would the project result in an increased need for public services (for example, fire protection, police protection, health care, schools, etc.)? If so, generally describe.**

Does not apply.

b. **Proposed measures to reduce or control direct impacts on public services, if any.**

Does not apply.

16. Utilities

a. **Circle utilities currently available at the site: electricity, natural gas, water, refuse service, telephone, sanitary sewer, septic system, other.**

Does not apply.

b. **Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity, which might be needed.**

Does not apply.

C. SIGNATURE

The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

Signature:_____

Print Name Ross B. Dunfee, P.E.
Public Works Director/County Engineer

Date Submitted:_____

D. SUPPLEMENTAL SHEET FOR NON PROJECT ACTIONS
(do not use this sheet for project actions)

Because these questions are very general, it may be helpful to read them in conjunction with the list of the elements of the environment.

When answering these questions, be aware of the extent the proposal, or the types of activities likely to result from the proposal would affect the item at a greater intensity or at a faster rate than if the proposal were not implemented. Respond briefly and in general terms.

1. **How would the proposal be likely to increase discharge to water; emissions to air; production, storage, or release of toxic or hazardous substances; or production of noise?**

   Does not apply.

2. **How would the proposal be likely to affect plants, animals, fish or marine life?**

   Does not apply.

3. **How would the proposal be likely to deplete energy or natural resources?**

   Does not apply.

4. **How would the proposal be likely to use or affect environmentally sensitive areas or areas designated (or eligible or under study) for governmental protection; such as parks, wilderness, wild and scenic rivers, threatened or endangered species habitat, historic or cultural sites, wetlands, flood plains, or prime farmlands?**

   Does not apply.

5. **How would the proposal be likely to affect land and shoreline use, including whether it would allow or encourage land or shoreline uses incompatible with existing plans?**

   Does not apply.

6. **How would the proposal be likely to increase demands on transportation or public services and utilities?**

   Does not apply.

7. **Identify, if possible, whether the proposal may conflict with local, state or federal laws or requirements for the protection of the environment.**

The Benton County Solid Waste Management Plan has been prepared in compliance with local and state laws and regulations governing solid waste management. The following state codes were incorporated into the Plan update: RCW 35.21.120-158, RCW 36.58, RCW 36.58A, RCW 39.34, RCW 43.19A, RCW 43.70.190, RCW 46.55, RCW 70.05.060, RCW 70.93, RCW 70.95, RCW 70.95A, RCW 70.95C, RCW 70.95F, RCW 70.95I, RCW 70.95K, RCW 70.105, RCW 70.105D, RCW 81.77, RCW 82.19, RCW 82.21, ESSB 6203, WAC 173.300, WAC 173.303, WAC 173.304, WAC 173.308, WAC 173.350, WAC 173.312, WAC 173.351, WAC 480.70, E-Waste Interim Enforcement Policy (publication 02-04-017)

BENTON COUNTY
20-YEAR SOLID WASTE HANDLING NEEDS ESTIMATE

Program	Activity	Year	County Cost per Year	Revenue	Total Cost per Year
Public Education & Outreach	Bilingual Outreach Materials	2008-2026	$7,000	$0	$7,000
	Direct Mailing Newsletter	2008-2026	$20,000	$0	$20,000
	Phone Book Section Insert	2008-2026	$2,518	$0	$2,518
	Website	2008-2026	$1,000	$0	$1,000
	Technical Assistance to Schools and Businesses	2008-2026	$8,500	$0	$8,500
Waste Reduction	Procurement of Recycled Products	2008	$10,000	$0	$10,000
	Environmentally Preferable Purchasing	2008	$10,000	$0	$10,000
	County/City Waste Reduction Policies	2008	$2,500	$0	$2,500
	Methods to Measure Waste Reduction Results	2008-2026	$20,000	$0	$20,000
	ReUse and Swap Shops	2008	$45,000	$10,000	$35,000
Recycling	Internal Recycling Program	2006-2026	$22,000	$0	$22,000
	Special Event Recycling	2008-2026	$10,000	$0	$10,000
	Expanded Recycling Drop-Box Program	2008-2026	$5,000	$1,000	$4,000
	Rewards Program For Residential Recyclers	2008-2026	$10,000	$0	$10,000
	Recognition for Commercial Waste Reduction and Recycling Successes	2008-2026	$10,000	$0	$10,000
	Business Education	2008-2026	$10,000	$0	$10,000
	Commercial Waste Audit Assistance	2006-2026	$10,000	$0	$10,000
Organics	Expand Yard Waste Chipping Program	2008-2026	$490,000	$30,000	$460,000
	Food Waste Management	2008-2026	$45,000	$0	$45,000
	Biomass Processing	2007-2026	$45,000	$0	$45,000
	Regional Composting Facilities	2009	$50,000	$0	$50,000
Collection Systems	Change Service Levels to Capture More Households	2008	$160,000	$0	$160,000
Transfer & Disposal	Expand Horn Rapids Landfill to Ensure In-County Disposal Capacity	2009	$0	$0	$0
	Assess Long-Haul of MSW Out of City		$0	$0	$0
	Expand Local Transfer Station Capacity	2008	$0	$0	$0
	Modify Horn Rapids LP Permit to Allow Disposal of Friable Asbestos	2009	$0	$0	$0

BENTON COUNTY
20-YEAR SOLID WASTE HANDLING NEEDS ESTIMATE

Program	Activity	Year	County Cost per Year	Revenue	Total Cost per Year
Construction & Demolition Debris	Provide Education Programs for Contractors	2007	$10,000	$0	$10,000
	Establish C&D and Inert Waste Diversion Specifications	2007	$45,000	$0	$45,000
	Use Recycled Content Building Specifications For Projects	2007	$1,000	$0	$1,000
	Develop Disaster Management Plan for Benton	2008	$45,000	$0	$45,000
	Establish Locations for Staging & Temporary Storage of Debris Generated by Natural Disasters	2008	$45,000	$0	$45,000
	Regional C&D Facility	2009	$50,000	$0	$50,000
Wood Wastes	Facility Diversion	2008	$45,000	$0	$45,000
	Public Education	2007-2026	$15,000	$0	$15,000
Industrial Wastes	Cont. Monitor & Regulate Industrial Solid Waste Handling/Disposal & Provide Assistance to Waste Generators	2006-2026	$100,000	$0	$100,000
Agricultural Wastes	Committee Could Be Formed to Discuss Opportunities For Alternatives	2007-2026	$20,000	$0	$20,000
Tires	County/City Purchasing Programs for Recycled. Tire Products	2008	$20,000	$0	$20,000
	County/City Programs to Reduce Tire Waste	2008-2026	$45,000	$0	$45,000
	Public Education Programs	2007-2026	$15,000	$0	$15,000
				$0	$0
Biomedical Wastes	Educational Materials for Correct Management. Of Medical Waste Generated by Residents	2007-2026	$15,000	$0	$15,000
	Collection of Sharps & Outdated Pharmaceuticals at Household Hazardous Waste Collection Sites	2006-2026	$45,000	$0	$45,000
Petroleum Contaminated Soils	Private Sector to Cont. to Manage and Dispose of Contaminated Soils	2006	$0	$0	$0
Asbestos	Educate Homeowners About Proper Identification of Contaminated Materials & Proper Methods	2007-2026	$15,000	$0	$15,000

BENTON COUNTY
20-YEAR SOLID WASTE HANDLING NEEDS ESTIMATE

Program	Activity	Year	County Cost per Year	Revenue	Total Cost per Year
MRW	Expanded Public Education	2007-2026	$15,000	$0	$15,000
	Education on Alternative Products	2007-2026	$15,000	$0	$15,000
	Use Mobile Collection Center to Target Rural Areas (HHW)	2006-2026	$215,000	$0	$215,000
	Expand HHW Collection to Include Household Generated Biomedical Waste (HHW)	2008-2026	$50,000	$0	$50,000
	Recognition for Environmental Achievements (Business)	2008-2026	$20,000	$0	$20,000
	Business Collection Assistance	2009-2026	$10,000	$0	$10,000
	Continue Enforcement Efforts	2006-2026	$0	$0	$0
Tank Pumpings	Continue to Allow Private Sector to Manage & Dispose of Septage	2006-2026	$0	$0	$0
	Assess Feasibility of Developing. Facility to Manage Waste If Disposal Becomes Limited	2009-2026	$50,000	$0	$50,000
	Continue to Allow Private Sector to Manage & Dispose of Material	2006-2026	$0	$0	$0
Electronic Waste	Identify opportunities and establish relationships	2008-2026	$50,000	$0	$50,000
					$0
Administration	Interagency Cooperation Should Be Facilitated	2007-2026	$20,000	$0	$20,000
Enforcement	Enforcement Activities Must Be Coordinated to Attain Max. Impact W/O Duplication	2007-2026	$20,000	$0	$20,000
	Improve Coordination Among Agencies/Cities Responsible for Illegal Dumping /Cleanup/ Education/Prevention Programs	2007-2026	$20,000	$0	$20,000
	Develop a Coordinated Public Outreach & Education Program	2007-2026	$20,000	$0	$20,000