



**CITY OF KIRKLAND**  
**Department of Public Works**  
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## **MEMORANDUM**

**To:** David Ramsay, City Manager

**From:** Elaine Borjeson, Solid Waste Coordinator  
Daryl Grigsby, Public Works Director

**Date:** August 24, 2006

**Subject:** SOLID WASTE TRANSFER AND WASTE EXPORT SYSTEM PLAN UPDATE

### RECOMMENDATION

It is recommended that the City Council authorize Kirkland's MSWMAC Representative, Councilmember Greenway, to support the proposed recommendations contained in the draft of the "Solid Waste Transfer and Waste Export System Plan" (Attachment 1).

### BACKGROUND

In July, 2004 the King County Council adopted Ordinance 14971 which increased the awareness and importance of the regional transfer station system in planning for waste export upon the closure of the Cedar Hills Landfill, predicted to occur in 2015. Ordinance 14971 set up a process and a timeline for reporting to the King County Council and the Solid Waste Interlocal Forum (SWIF) on the progress of the evaluation of the existing transfer station system and the development of a waste export system plan. The Regional Policy Committee (RPC) of the King County Council functions as SWIF according to the terms of each city's interlocal agreement with the County.

The ordinance also established the Metropolitan Solid Waste Management Advisory Committee (MSWMAC) whose membership is open to all 37 cities with signed solid waste interlocal agreements. The function of MSWMAC is to advise the King County Executive, King County Council and SWIF in all matters relating to solid waste management and the waste export system plan. Councilmember Greenway is Kirkland's representative at MSWMAC, and Mayor Lauinger, Daryl Grigsby and Elaine Borjeson are alternates.

During the past two years since the ordinance was passed, four required milestone reports have been submitted to the King County Council which evaluate the current transfer station system, plan for the future transfer system, examine disposal options outside King County including methods of long-haul transport of waste and the public and/or private ownership options of waste handling facilities. Staffing, financing and rate impacts are also analyzed, and future facility siting and community involvement processes are discussed in these reports. The complete texts of the reports are available in the Council Study or at the following website: <http://www.metrokc.gov/dnrp/swd/about/planning/documents-planning.asp>.

The four milestone reports form the basis of the proposed recommendations in the final report which is due to the King County Council on September 28, 2006 and is heavily concentrated on the future transfer

station system. This final report is titled the "Solid Waste Transfer and Waste Export System Plan" (the Plan).

SOLID WASTE TRANSFER AND WASTE EXPORT SYSTEM PLAN: The Plan was prepared by the King County Solid Waste Division (the Division) in collaboration with MSWMAC, the Interjurisdictional Technical Staff Group (Elaine Borjeson is a member of this group), the Solid Waste Advisory Committee (Kirkland residents Ray Schlienzen and Carolyn Prentice are members of this group), the local solid waste hauling companies, labor representatives and King County Council staff. The recommendations in the Plan will inform the update of the Final 2001 Comprehensive Solid Waste Management Plan (the 2001 Solid Waste Plan) which is currently underway and scheduled for completion by December, 2007. The updated 2001 Solid Waste Plan will also examine additional waste disposal opportunities, including Waste to Energy options.

The recommendations contained in the Plan are all aimed at keeping rates as low and stable as possible, making existing facilities efficient and keeping pace with population growth and changing technology in the industry. They are also in compliance with the standards and objectives outlined in the four milestone reports. According to King County's analysis, the recommendations are technically feasible and construction of the new stations can be accomplished by 2015 when the Cedar Hills Landfill is expected to close under current conditions, if work begins no later than 2007.

The recommendations are as follows:

- Solid Waste Transfer System (more details below): Modernize the system to accommodate growth and provide efficient and cost effective service to customers
  - Construct four new transfer stations
    - Bow Lake – build on existing site plus adjacent property
    - Factoria/Eastgate or alternative site in Bellevue – King County owns property adjacent to the existing Factoria transfer station and recommends building on this site unless the City of Bellevue identifies an acceptable alternative site
    - Northeast Lake Washington – new site, undetermined location
    - South County – new site, undetermined location
  - Retain five existing transfer facilities
    - Enumclaw – built in 1993
    - First Northeast – currently being rebuilt, scheduled to reopen late in 2007
    - Vashon – built in 1999
    - Cedar Falls – rural drop box facility
    - Skykomish – rural drop box facility
  - Close three existing transfer stations
    - Algona
    - Houghton
    - Renton
- Public and/or Private Ownership and Operation of Facilities (more details below):
  - Transfer stations – maintain current practice of public ownership and operation
  - Collection and processing of solid waste and recyclables (including construction, demolition and landclearing debris)– maintain current practice of private ownership and operation

- Intermodal facility/facilities – delay decision until need and type of facility are determined, approximately five years before waste export begins
- Capacity of Cedar Hills Regional Landfill (more details below): Revise the Cedar Hills Site Development Plan to try and maximize the life of the landfill, subject to environmental constraints, relative costs, and stakeholder interests.
- Options for Long-Haul Transport of Solid Waste: At this time it appears that rail is the most cost effective method for the long-haul transport of solid waste. Market conditions are changing rapidly due to fluctuating fuel costs, and the Plan recommends waiting until five years before the start of waste export to make the final decision on whether solid waste needs to be transported by rail, barge or truck to its final destination.
- Intermodal Facility/Facilities: Full export of the County's waste is at least nine years in the future and much is changing in the field of intermodal capacity. For this reason, the Plan recommends that the decision on the need for and type of facility will be made approximately five years prior to the start of waste export. The Division will continue to monitor local intermodal capacity while retaining the property on Harbor Island as a potential option (the Harbor Island property will continue to be leased for other industrial uses in the interim).
- Early Waste Export: Exporting a portion of King County's waste while continuing to operate the Cedar Hills Landfill may be a cost effective means to extend the life of the landfill and defer the increased costs associated with full waste export. The Plan recommends issuing a Request for Proposals (RFP) to implement export of approximately 20 percent of the County's waste beginning in 2010. Comparing the actual bid prices from the RFP to disposal costs at Cedar Hills will establish whether or not partial early export is a cost-effective option.

Recommendations on the Solid Waste Transfer System: The purpose of the transfer station system is to consolidate many smaller loads of waste from the area where it is generated into fewer, larger loads for transport and disposal at a regional waste facility thereby reducing environmental and traffic impacts. King County transfer stations currently handle nearly one million transactions per year, and therefore, whether solid waste is landfilled locally, exported, or incinerated, the transfer station system provides a vital function to solid waste management. King County's existing transfer station system is aging and five of the six urban stations have been operating since the 1960's with only minimal upgrades (to meet regulatory and safety requirements). The sixth station in Shoreline (First Northeast Station) is being completely rebuilt and is expected to reopen in late 2007.

The five urban transfer stations were individually assessed on a range of criteria measuring their level of service to users, capacity to handle solid waste and recyclable materials, and the local and regional effects of each facility. These five stations fail to meet many of the standards set forth in Milestone Reports 1 and 2 and require structural improvements to address current and future capacity, service, and operational needs as well as emergency capacity and safety goals.

Milestone Report 4 contained six separate packages of transfer station system alternatives which addressed these needs and goals to varying degrees. Two of these packages were consolidated into Package #1 because the only difference between them was the location of the new transfer station in the

City of Bellevue – whether it will be built on the Factoria/Eastgate property owned by King County or another site selected by the City of Bellevue which is also acceptable to King County. Package #1 is the recommendation contained in the Plan. It is the only package of options that meets all of the criteria outlined in the milestone reports and which is also consistent with the Kirkland City Council's adopted Position Statement on the Houghton Transfer Station (Attachment 2).

The recommendations contained in the Plan reduce the current number of stations by one from ten to nine. All stations will accommodate both commercial and self-haul customers who tend to use transfer stations most heavily on alternate schedules (weekdays for commercial haulers and weekends for self-haulers). All waste will be compacted so that transfer trailers will haul approximately 27 tons of material instead of the current 18 tons resulting in more cost effective short and long-haul disposal costs. Construction costs of this alternative are the highest because of the number of new stations, but long term operating costs are the lowest among all the alternatives because there will be fewer stations to staff and maintain and all waste will be compacted.

Recommendations on the Public and/or Private Ownership and Operation of Facilities: State law requires public oversight in the planning and handling of solid waste (RCW 70.95.020). Representatives from the three major waste hauling companies in the Puget Sound region indicate that there is unlikely to be any cost savings if the transfer system is privately owned and operated because they will be required to meet the same standards and requirements as the public sector. The Plan recommends retaining the transfer system as a function of county government given the existing public infrastructure, requirements of state law and the lack of cost savings for encouraging this to become a private enterprise.

Private companies currently provide solid waste and recycling collection services to cities and unincorporated areas of King County with the exception of Enumclaw and Skykomish which operate their own systems. Private companies also process recyclable materials including construction, demolition and landclearing debris. There is no perceived advantage to changing this to a government function; therefore the Plan recommends maintaining the current practice in which the private sector collects solid waste as well as collecting and processing recyclable materials.

Many factors are changing in the intermodal area. Waste Connections, Inc. entered the intermodal services business in the Pacific Northwest in 2004 by acquiring Northwest Container Services in south Seattle which has access to both the Burlington Northern Santa Fe and the Union Pacific rail lines. King County continues to own property on Harbor Island at the site of the former Fisher Flour Mill for the purpose of a possible intermodal facility, and the City of Seattle is working toward gaining final approval of the Corgiat site in Georgetown. Because of the evolving issues with intermodal facilities, the Plan recommends waiting until five years prior to implementation of waste export to make decisions on public versus private ownership and operation of the facilities.

Recommendations on the Capacity of the Cedar Hills Regional Landfill: The Plan recommends revising the Cedar Hills Site Development Plan to seek cost effective ways to maximize the life of the landfill subject to environmental constraints and stakeholder interests. The landfill is currently the most cost effective alternative for waste disposal and more aggressive recycling programs and policies as well as natural settling and improvements in operational procedures could add another year to its capacity. For example, raising the region's recycling rate from the current 43% to 60% between 2009 and 2015 would save an estimated 1.1 million tons of waste thereby adding an addition year of capacity. Operational changes

could possibly add up to three and one-half additional years to the life of the landfill. All of these options contain implementation costs and require regulatory adjustments but the cost of using the landfill is less expensive than waste export.

A second issue related to landfill capacity is backup storage for catastrophic area emergencies. The City of Seattle and Snohomish County both export their solid waste and have not maintained extended backup capacity of their own. The Cedar Hills Landfill appears to be the best available option for long-term emergency capacity for the Puget Sound Region. The Division plans to address this issue and form a work group with interested jurisdictions in 2007.

Conclusion and Next Steps:

The proposed recommendations for the future transfer system in the draft of the Solid Waste Transfer and Waste Export System Plan meet the criteria and standards established in the four milestone reports submitted to the King County Council during the past two years. The recommendations also meet the Kirkland City Council's adopted Position Statement on the Houghton Transfer Station. Regardless of the manner in which solid waste is ultimately disposed of in the future (landfilled locally, exported, incinerated), a transfer system is required to consolidate the many smaller loads of garbage closer to their point of generation into fewer, larger loads for transport to a regional facility for final treatment of the waste. If approved by the King County Council, the recommendations contained in this Plan will inform the update of the 2001 Solid Waste Plan.

At the beginning of the planning process, the intent of the Plan was to present recommendations for waste export based on policies in the 2001 Solid Waste Plan. However, the analyses showed it may be possible to extend the life of the Cedar Hills Landfill beyond previous expectations, and market conditions are rapidly changing involving waste export and the technology of waste-to-energy facilities. Therefore, the Plan recommends postponing critical decisions on waste export until approximately five years prior to closure of the landfill and proceeding with updates to the transfer station system. Kirkland will continue to work together with the Division, MSWMAC, ITSG, the Solid Waste Advisory Committee and other stakeholders on the update of the 2001 Solid Waste Plan that is expected to be completed in December, 2007. The updated Solid Waste Plan will also contain a full analysis of waste-to-energy options that were not included in the four milestone reports required by Ordinance 14971.

Attachments: 1 – Solid Waste Transfer and Waste Export System Plan  
2 – Council Adopted Position Statement on the Houghton Transfer Station

***Draft***

***Proposed Recommendations***

**Solid Waste Transfer  
and Waste Export System Plan**

August 4, 2006

***Prepared by:***  
**King County Solid Waste Division**  
*in collaboration with the*  
**Solid Waste Advisory Committee**  
**Interjurisdictional Technical Staff Group**  
**Metropolitan Solid Waste Management Advisory Committee**  
**Commercial Solid Waste Hauling Companies**  
**Labor Representatives**  
*and*  
**King County Council Staff**

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## SUMMARY OF THE PROPOSED RECOMMENDATIONS

This *Solid Waste Transfer and Waste Export System Plan* (the Plan) – prepared by the Solid Waste Division of the King County Department of Natural Resources and Parks – provides a blueprint for the future of the county’s solid waste management system. It presents recommendations that will guide King County as it prepares the solid waste system for waste export, during which time the transfer system will be upgraded, a public or private intermodal facility or facilities will be added to the system, and the county’s Cedar Hills Regional Landfill will be closed.

King County Ordinance 14236 stipulated that the county prepare this waste export implementation and coordination plan. In 2004, the County Council adopted Ordinance 14971, which amended the timing for waste export planning and prioritized evaluation of the transfer station network as an integral part of the waste export system plan. It also established a process for collaborative participation by the cities in solid waste transfer and waste export system planning. This led to the formation of a cities advisory group – the Metropolitan Solid Waste Management Advisory Committee (MSWMAC) – and formalized city staff group meetings by creating the Interjurisdictional Technical Staff Group (ITSG) to advise and assist MSWMAC in its operation.

Ordinance 14971 outlined an iterative process of analysis and reporting that would culminate in a package of recommendations for the solid waste transfer and waste export system. The ordinance directed the division in collaboration with the stakeholders to, among other things:

- Evaluate the division’s current transfer stations
- Plan a future transfer station system
- Investigate disposal options outside of King County
- Evaluate rail, barge, and truck hauling options for waste export
- Review public/private ownership options
- Analyze financing, staffing, and rate impacts
- Define the facility siting processes
- Establish a means of involving interested parties in the planning process
- Develop a waste export system plan to document the planning process and explain recommendations for a future system

These comprehensive analyses resulted in four milestone reports developed in collaboration with the Solid Waste Advisory Committee (SWAC), MSWMAC, ITSG, commercial solid waste haulers, King County Council staff, the division’s labor union representatives, and division employees. These reports (discussed under *Background*) provide the foundation for the recommendations in this Plan and are contained in **Appendix X**.

Table 1 presents a brief overview of all the proposed recommendations and cites where more detailed discussion can be found in this Plan. The recommendations in this Plan will inform the next update of the *Final 2001 Comprehensive Solid Waste Management Plan* (the 2001 Solid Waste Plan) to be submitted to County Council and the cities for review and adoption by end of year 2007. Figure 1 shows the locations of existing facilities, indicating which facilities are recommended for closure, and the general areas of the county where new transfer facilities are being considered.

While the final system configuration could include more than one intermodal or disposal facility, for simplicity, this Plan refers to the siting of an intermodal and a disposal facility (singular).

Three fundamental objectives underlie all of the recommendations that follow:

- Keeping disposal fees low and stable
- Making existing facilities as efficient as possible
- Ensuring that facilities keep pace with the growth in customer base and changing technologies in the solid waste industry

**Table 1. Recommendations for the solid waste transfer and waste export system**

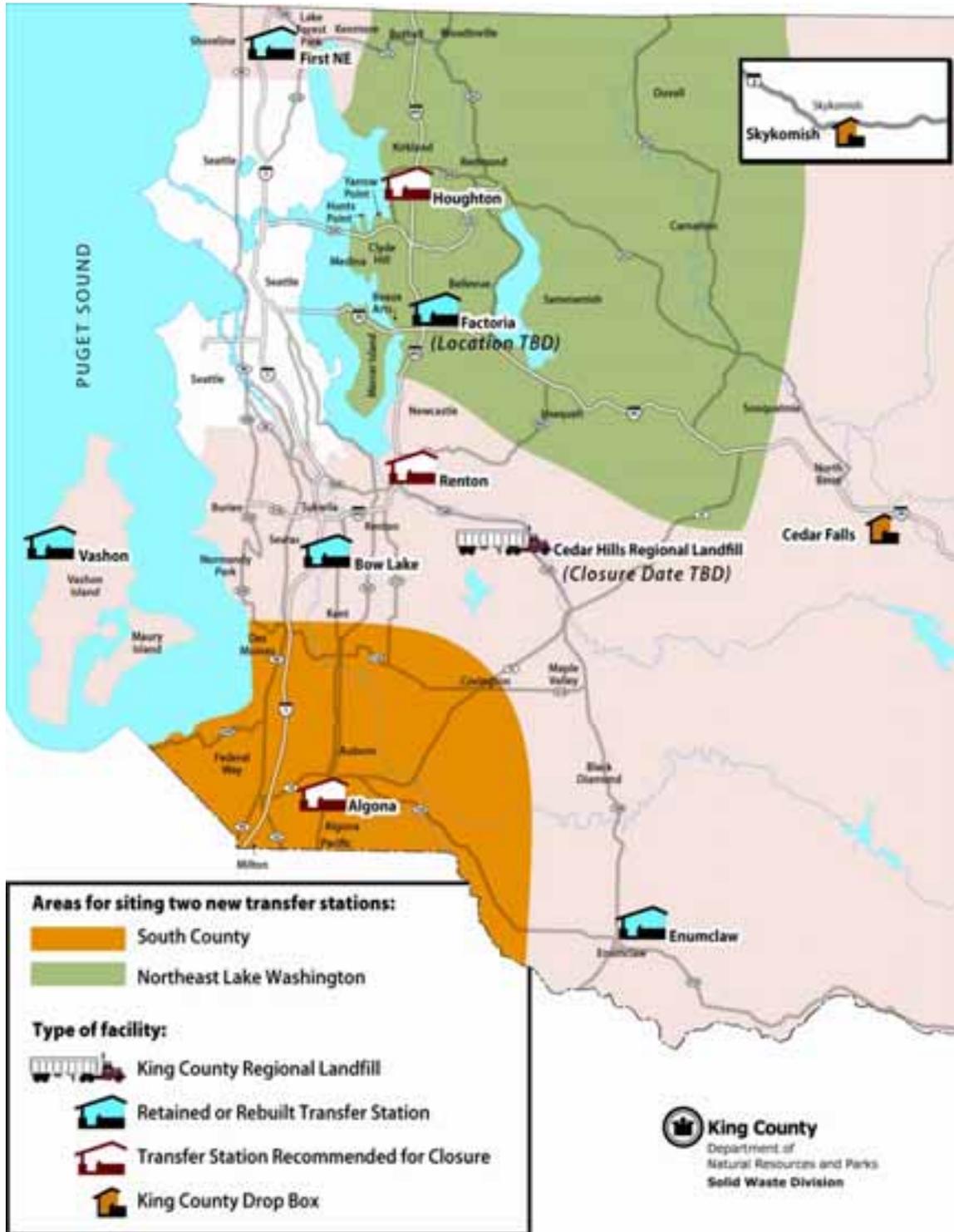
Plan Element	Recommendation	Discussion
<b>Solid Waste Transfer System</b>	<p>Modernize the transfer system to accommodate a growing population and industry changes and provide efficient and cost-effective services to customers</p> <p>Construct four new transfer stations:</p> <p><i>Bow Lake</i> – built on the existing site and adjacent property the division is negotiating to purchase from the Washington State Department of Transportation</p> <p><i>Factoria/Eastgate or alternative site in Bellevue</i> – built on the existing Factoria station site and an adjacent site owned by the division on Eastgate Way, or an alternative site located in and identified by the City of Bellevue and acceptable to King County</p> <p><i>Northeast Lake Washington</i> – built on a new site; location to be determined</p> <p><i>South County</i> – built on a new site; location to be determined</p> <p>Retain five existing transfer facilities:            Enumclaw            First Northeast (Shoreline)            Vashon            Cedar Falls (drop box facility)            Skykomish (drop box facility)</p> <p>Close three existing transfer stations (when replacement capacity is available):            Algona            Houghton (Kirkland)            Renton</p>	Page XX
<b>Public vs. Private Ownership and Operation of Facilities</b>	<p>Maintain the current mix of public and private ownership whereby:</p> <p>The private sector is the primary provider of the collection and processing of solid waste, recyclables, and construction, demolition, and landclearing debris</p> <p>The public sector is the primary provider of transfer services</p> <p>Once waste export begins, the disposal facility ownership and operation is contracted out</p> <p>The decision on the intermodal facility ownership and operation will be made when the need for and type of facility are determined</p>	Page XX

Plan Element	Recommendation	Discussion
<b>Capacity of the Cedar Hills Regional Landfill<sup>1</sup></b>	Explore opportunities for taking advantage of available landfill capacity to extend the life of this cost-effective disposal option; revise the <i>Cedar Hills Site Development Plan</i> and seek to maximize the capacity (lifespan) of the landfill, subject to environmental constraints, relative costs to operate, and stakeholder interests	Page XX
<b>Options for Long-Haul Transport (via rail, barge, or truck)<sup>1</sup></b>	Because transportation costs fluctuate with fuel prices, the decision on long-haul transport of solid waste to a disposal facility will be made no more than five years before implementation of waste export; based on current economics and local experience, rail transport appears the most feasible option	Page XX
<b>Intermodal Facility<sup>1</sup></b>	The decision on the need for and type of intermodal facility will be made no more than five years before waste export is implemented; the division will continue to monitor local intermodal capacity and retain the Harbor Island property as a potential option, while continuing to lease the property for other industrial uses	Page XX
<b>Early Waste Export – Full or Partial</b>	Issue a Request for Proposals for partial export of approximately 20 percent of the waste stream beginning in 2010 while keeping the Cedar Hills landfill operating; use the actual bid price to determine if this option is more cost effective than disposal at the Cedar Hills landfill	Page XX

Note:

1. Recent engineering studies and projections indicate that it is possible to extend the life of the landfill for three or four years beyond the currently projected closure date of 2015. Because in-county landfill disposal is less costly than full waste export, extending the life of Cedar Hills is cost effective for the region's ratepayers as well as the county. It also has the effect of extending some key decisions about waste export into the future when more is known about the market and prices for commodities and land. The actual date of closure will be based on additional engineering studies, cost analyses, and stakeholder input.

Figure 1. Locations of facilities and recommended changes



## **CONSISTENCY OF RECOMMENDATIONS WITH CURRENT POLICIES**

The recommendations in this Plan are consistent with policies set forth in the 2001 Solid Waste Plan, as adopted by King County Ordinance 14236, with the following exceptions.

First, the 2001 Solid Waste Plan and ordinance broadly authorize the county to determine where new transfer facilities may be needed to efficiently serve customer needs (county policy RTS-7). While the need for a new station in south King County is identified in this Plan, the siting process and timeline for building a new facility will be more explicitly developed in the update to the 2001 Solid Waste Plan, which will be submitted to King County Council and the cities for adoption in 2007.

Second, the 2001 Solid Waste Plan incorporates the 1996 *Cedar Hills Site Development Plan* by reference. The site development plan guides the construction and operation of the landfill to comply with the permitted capacity and other regulatory requirements. The recommendation in this Plan is to revise the site development plan to extend the life of the landfill as long as possible and amend permits to allow continued operation. Increasing the capacity can be accomplished without significant environmental or community impacts, while keeping disposal fees as low as possible.

In addition, the 2001 Solid Waste Plan considered partial early waste export and concluded that it was not cost effective at the time. Because of the cost savings of extending the life of the landfill and the increased competition in the out-of-county disposal market, this Plan recommends issuing a Request for Proposals to solicit a cost commitment for early export of approximately 20 percent of the county's waste beginning in 2010. The bid prices will be evaluated to determine if partial early waste export should be implemented. Partial early export would add approximately one year to the lifespan of the Cedar Hills landfill and allow the division to test the disposal market before full waste export is implemented.

## **BACKGROUND**

The division manages solid waste transfer and disposal for approximately 1 million tons of garbage per year, which represents the waste generated by more than 1.2 million residents and 637,000 employees in King County, excluding the cities of Seattle and Milton. The division and participating cities also manage programs and services for recycling and waste reduction in the region. Solid waste management is guided by the policies in the most current adopted solid waste plan.

Currently, the county owns and operates the only remaining landfill in King County – the Cedar Hills Regional Landfill in the Maple Valley area. The 2001 Solid Waste Plan directs the division to transition the county to waste export once the Cedar Hills landfill reaches its permitted capacity and closes.

Current county policy rejects alternatives to waste export, including development of a new landfill in King County or incinerating the county's waste, and Council has directed the division to begin planning for waste export. This Plan fulfills that policy direction by considering waste export to an out-of-county landfill for future disposal of the county's solid waste; however, other disposal technologies, such as waste-to-energy (e.g., incineration, gasification, pyrolysis), will be explored in the update of the 2001 Solid Waste Plan.

In addition to the landfill, the division currently operates eight transfer stations and two rural drop boxes that accept solid waste, recyclable materials, and, in one case, household hazardous waste. Six of the division's eight solid waste transfer stations have been operating since the 1960s and have only been updated to meet regulatory requirements and to ensure the safety of our employees and customers. With increases in solid waste tonnage from the region's growing population base, some of the stations are currently operating at or over capacity. At the same time, the stations are not able to keep pace with advances in solid waste technology. Space and building constraints have also limited the division's ability to provide expanded recycling services at some stations.

In summary, the division's transfer facilities are no longer able to efficiently meet the needs of the commercial haulers and business and residential self-haulers who use them. As the facilities continue to age and the need for solid waste and recycling services grows and changes, it has become imperative to make improvements to some stations, close stations that cannot be adequately improved, and construct new transfer stations to replace the closed stations.

The analysis of the transfer system is integral to the development of the waste export system plan because an improved transfer station network will be required under any future scenario for an effective regional solid waste management system. Transfer facilities are vital to communities for the safe and efficient

handling of solid waste through nearly one million customer transactions each year.

The most important function of the stations is to consolidate many smaller garbage loads into fewer, larger loads for more efficient transport and disposal. This function will become even more critical when waste export begins. Before the Cedar Hills landfill is closed, transfer stations will need to be equipped with waste compactors to compress solid waste loads and carry more tons per trip, which will minimize traffic on the road network. Because the various components of the regional solid waste system form an integrated network, decisions about how and when to close the landfill are examined in the context of the system as a whole, from transfer stations, to a possible intermodal facility, to long-haul transport to a disposal facility.

## PROCESS FOR DEVELOPING THE PROPOSED RECOMMENDATIONS

The overarching goal in upgrading the solid waste transfer and waste export system is to maximize the efficiency of facilities and services to ensure reliable, safe, high-quality, and cost-effective service to customers. To develop alternatives and the final recommendations, four analytical milestone reports were prepared, focusing in detail on the following issues:

- Alternatives for the configuration of the solid waste transfer station system
- Public versus private options for ownership and operation of transfer, intermodal, and disposal facilities
- Future capacity of the Cedar Hills landfill and potential for extending its life
- Potential out-of-county disposal facilities
- Options for long-haul transport of waste once the landfill closes
- The need for, number of, and type of intermodal facility or facilities
- Scenarios for early (partial or full) waste export

More specifically, the four reports, included as **Appendix X**, present the following information:

- **Milestone Reports 1 and 2** identify the need to renovate the county's aging transfer facilities by developing and applying criteria and standards to evaluate the level of service to users, station capacity to handle solid waste and recyclable materials, local and regional effects of the facility, and cost. In these studies, three of the county's transfer stations were not evaluated because they are relatively new or are being rebuilt. The Enumclaw and Vashon transfer stations were constructed in 1993 and 1999, respectively. The First Northeast station in Shoreline is currently being rebuilt and is scheduled to reopen in fourth quarter 2007. These three stations meet, or will meet, all of the transfer station criteria evaluated in Milestone Report 2.

The five remaining transfer stations – Algona, Bow Lake, Factoria, Houghton, and Renton – were evaluated in this planning process. All five stations failed to meet the level-of-service standards that were established in Milestone Report 1 and need to be reconstructed or relocated. This finding is not surprising considering these facilities were constructed more than 40 years ago (see section on *Solid Waste Transfer System*).

- **Milestone Report 3** discusses options for public and private ownership and operation of solid waste and recycling facilities in King County. Recommendations based on the options presented in Milestone Report 3 were reported in Milestone Report 4. In summary, Report 4 recommends that the system retain the current mix of public-private operations. Under this scenario, the private sector would continue to be the primary provider of curbside collection of solid waste, recyclable materials, and

construction, demolition and landclearing (CDL) debris; the division would remain the primary provider of transfer system facilities; the private sector would continue to process recyclable materials and CDL; and, once waste export begins, the selected disposal facility (or multiple facilities) would be contracted out. The decision on the need for, number of, and type of intermodal facilities was deferred until no more than five years before the implementation of waste export (see section on *Public versus Private Ownership and Operation of Facilities*).

- **Milestone Report 4** identifies packaged alternatives for the configuration of the transfer station network, and decisions required to determine the capacity (or lifespan) of the Cedar Hills landfill; potential disposal locations once the landfill closes; the most feasible type of long-haul transport; the need for, number of, and type of intermodal facility or facilities; and the timing of waste export.

This Plan presents two types of proposed recommendations: 1) decisions that can be made now using existing data on the solid waste system and 2) a framework for decisions that will be made in the future, once the closure date is determined for the Cedar Hills landfill. Because of the changing marketplace and commodity prices, the final decision on when to close the landfill will be a pivotal factor in the final analysis and detailed recommendations for various components of the system.

The recommended actions set forth in this Plan will be implemented in a sequential manner to minimize disruptions to the vital solid waste management services provided to customers throughout the region. For example, some transfer stations designated as “capable of being expanded on site” by county policy RTS-12 (Ordinance 14236) are in the planning or implementation phases of reconstruction. A Facility Master Plan is being developed for replacing the Bow Lake station, while the First Northeast station in Shoreline is currently being rebuilt and is scheduled to reopen in fourth quarter 2007.

The complete package of recommendations in this Plan, as adopted, will inform the update of the 2001 Solid Waste Plan, expected to be completed by December 2007. A study of the effects of the proposed recommendation on the solid waste disposal fee is provided in a rate forecast and proposal submitted with this Plan.

The transfer station alternatives and other options presented in Milestone Report 4 were evaluated in a Supplemental Environmental Impact Statement (EIS), prepared in accordance with the State Environmental Protection Act. The EIS evaluated possible actions in terms of transportation, noise, air quality and odor, energy, land and shoreline use, and public services and utilities. The EIS did not identify any significant unavoidable adverse impacts associated with the recommendations in this Plan. The EIS is included as **Appendix X**.

## TIMELINE FOR IMPLEMENTING THE TRANSFER AND WASTE EXPORT SYSTEM RECOMMENDATIONS

The timeline for completing the siting, design, and construction of transfer stations is provided below.

Schedule for Transfer Station Completion	
New First Northeast station	November 2007
New Bow Lake station	2010
New station at Factoria/Eastgate or alternative location in Bellevue	2011
New Northeast Lake Washington station	2015
New South County station	2015

Implementing the system upgrade as a whole, as recommended in this Plan, would require the following projected timeline:

Action Items	
Adoption of this Plan by the King County Council	Fourth quarter 2006
Adoption of the county's new <i>Cedar Hills Site Development Plan</i> by the King County Council	First quarter 2008
Agreement reached on an estimated closure date for the Cedar Hills Regional Landfill based on further studies by the division and stakeholder input	By end of year 2008
Request for Proposals issued for early waste export of approximately 20% of the solid waste stream	By second quarter 2009

Pending Actions	
Decisions about the intermodal facility, long-haul transport, and disposal facility – most likely made during the procurement process based on the market and commodity prices	No more than five years before the agreed-upon date for closure of the Cedar Hills landfill (making a decision any earlier could preclude new developments in the market or fail to account for changes in commodity or land prices)

The sections that follow present recommendations for the future of the solid waste transfer and waste export system. Analyses conducted in the four milestone reports are summarized in each section to provide the framework for decisions and the policies or data used to support them. Throughout the Plan

the four milestone reports are cited for more detailed information and are provided in **Appendix X**. The timeframe for reporting requirements needed to fully implement this Plan, including development of the next update of the 2001 Solid Waste Plan, are provided in the final section of this report.

In addition, supporting appendices are provided with the Plan for easy reference. Each appendix is listed below with a summary of additional information it provides.

- *Appendix X: Four Milestone Reports* – contains the four analytical reports used to develop this Plan
- *Appendix X: Supplemental Environmental Impact Statement* – presents an environmental analysis of the alternatives developed in Milestone Report 4, including a responsiveness summary from the public review process
- *Appendix X: Ordinance 14971, Section 5B, Response* – addresses additional issues as required by King County Ordinance 14971 (referred to as a Business Plan in the ordinance)
- *Appendix X: Solid Waste Facility Siting Plan* – outlines the process and criteria for siting solid waste management facilities
- *Appendix X: Recycling and Waste Export White Paper* – discusses the effects of a more aggressive recycling goal in extending the life of the Cedar Hills landfill
- *Appendix X: Agreement Between the King County Solid Waste Division and the City of Bellevue on Replacement of the Factoria Transfer Station* – agreement on a process for determining whether to build a new Factoria transfer station on the existing site and adjacent property owned by the division, or an alternative site located in and identified by the City of Bellevue

The rate forecast and proposal accompanies this Plan as a separate document, along with legislation for Council adoption.

## SOLID WASTE TRANSFER SYSTEM

**Recommendation:** Modernize the transfer system to accommodate a growing population and industry changes and provide efficient and cost-effective services to customers

Construct four new transfer stations:

*Bow Lake* – built on the existing site and adjacent property the division is negotiating to purchase from the Washington State Department of Transportation

*Factoria/Eastgate or alternative site in Bellevue* – built on the existing Factoria station site and an adjacent site owned by the division on Eastgate Way, or an alternative site located in and identified by the City of Bellevue and acceptable to King County

*Northeast Lake Washington* – built on a new site; location to be determined

*South County* – built on a new site; location to be determined

Retain five existing transfer facilities:

Enumclaw  
First Northeast (Shoreline)  
Vashon  
Cedar Falls (drop box facility)  
Skykomish (drop box facility)

Close three existing transfer stations (when replacement capacity is available):

Algona  
Houghton (Kirkland)  
Renton

As discussed under *Background*, regardless of how the county disposes of its solid waste, an improved transfer station network will be required. One of the primary drivers in designing an efficient and effective network of facilities is to ensure that stations are dispersed strategically throughout the county to serve both self-haul and commercial customers. Each facility generally serves the urban or rural areas that surround it, but these areas are not rigidly defined. In general, solid waste systems are most cost-effective when transfer stations are distributed to minimize the time commercial collection trucks spend traveling from their garbage collection routes to the transfer sites, which helps keep the cost of curbside collection as low as possible. When transfer stations are well located, costs for labor, fuel, and vehicle maintenance are reduced. Well-sited facilities also mitigate environmental, infrastructure, and traffic issues.

The proposed recommendation for the transfer station system assumes the most current recycling rate of 43 percent. As discussed in the recycling and waste export study in **Appendix X**, even if a recycling rate of 60 percent were achieved between 2009 and 2015, the transfer system would still be needed to process a minimum of one million tons of solid waste per year. The future recycling goals will be developed during the update of the 2001 Solid Waste Plan.

## **Assessment of the Transfer Stations**

Milestone Reports 1 and 2 (**Appendix X**) provide an evaluation of the existing transfer system. The stations were assessed using 16 criteria that fall into the following categories:

- Level of service to users
- Station capacity to handle solid waste and recyclables
- Local and regional effects of the facility

The ultimate goal of assessing the existing stations was to allow the county to determine when a transfer station needs to be upgraded in place, when a station needs to be relocated to a more appropriate location, or when additional transfer stations need to be built to adequately serve the region's growing population.

Three of the division's eight transfer stations were not evaluated because they are either relatively new or are in the process of being rebuilt. These three stations meet, or will meet, all the standards established for evaluation of the older transfer stations. The Enumclaw and Vashon stations are newer stations that already meet the criteria. The First Northeast station in Shoreline is currently being rebuilt and is scheduled to reopen in fourth quarter 2007.

As shown in Table 2, assessment of the remaining transfer stations yielded a yes/no finding for the evaluation criteria (i.e., the station does or does not meet the standard set for the criterion). Although the evaluation concluded that the existing stations fail to meet many of the standards, through mitigation measures at the operational level, the facilities do meet all local and state health and safety requirements.

**Table 2. Level-of-service criteria applied to existing transfer stations**

		Algona	Bow Lake	Factoria	Houghton	Renton
1. Estimated time to a transfer facility within the service area for 90% of users	< 30 min=yes	YES	YES	YES	YES	YES
2. Time on site meets standard for 90% of trips						
	< 16 min=yes	NO	YES	NO	NO	NO
a. commercial vehicles						
	< 30 min=yes	YES	NO*	NO*	NO*	YES
b. business self haulers						
	< 30 min=yes	YES	NO*	YES	YES	YES
c. residential self haulers						
<i>* Meets criterion on weekdays, but not weekend days</i>						
3. Facility hours meet user demand	YES/NO	YES	YES	YES	YES	YES
4. Recycling services ...meet policies in 2001 Solid Waste Plan						
a. business self haulers	YES/NO	NO	NO	NO	NO	NO
b. residential self haulers	YES/NO	NO	NO	NO	NO	NO
5. Vehicle capacity						
a. meets current needs	YES/NO	NO	YES	NO	NO	YES
b. meets 20-year forecast needs	YES/NO	NO	NO	NO	NO	NO
6. Average daily handling capacity (tons)						
a. meets current needs	YES/NO	NO	NO	YES	NO	YES
b. meets 20-year forecast needs	YES/NO	NO	NO	NO	NO	YES
7. Space for 3 days' storage						
a. meets current needs	YES/NO	NO	NO	NO	NO	NO
b. meets 20-year forecast needs	YES/NO	NO	NO	NO	NO	NO
8. Space exists for station expansion						
a. inside the property line	YES/NO	NO	YES	YES	YES	YES
b. on available adjacent lands through expansion	YES/NO	YES	YES	YES	NO	NO
9. Minimum roof clearance of 25 feet	YES/NO	YES	YES	NO	NO	YES
10. Meets facility safety goals	YES/NO	NO*	NO*	NO*	NO*	NO*
<i>* The presence of these physical challenges does not mean that the stations operate in an unsafe manner. It does mean that it takes extra effort by staff and management, which reduces system efficiency, to ensure the facilities are operated safely.</i>						
11. Ability to compact waste	YES/NO	NO	NO	NO	NO	NO
12. a. Meets goals for structural integrity	YES/NO	YES	YES	YES	YES	YES
b. Meets Federal Emergency Management Act immediate occupancy standards	YES/NO	YES	NO	NO	NO	YES

		Algona	Bow Lake	Factoria	Houghton	Renton
13. Meets applicable local noise ordinance levels	YES/NO	YES	YES	YES	YES	YES
14. Meets Puget Sound Clean Air Agency standards for odors	YES/NO	YES	YES	YES	NO*	YES
<i>* One complaint on Houghton was verified within the previous two years. No citation was issued.</i>						
15. Meets goals for traffic on local streets						
a. meets Level of Service standard	YES/NO	YES	NO	YES	YES	YES
b. traffic does not extend onto local streets 95% of time	YES/NO	NO*	NO*	NO*	YES	YES
<i>* Meets criterion weekdays, but not weekend days. Yes or no rating based on evaluating all days within study period.</i>						
16. 100-foot buffer between active area & nearest residence	YES/NO	YES	YES	YES*	NO	YES
<i>* Meets 100 ft from residence criterion, but businesses are within 100 ft.</i>						
17. Transfer station is compatible with surrounding land use*	YES/NO	YES	YES	NO**	NO***	YES
<i>* See Milestone Report 4, Chapter 2 (Appendix X), for more details.</i>						
<i>** Factoria station is a 30+ year old facility in need of maintenance that has been deferred over the years. It is visible on the approach to adjacent businesses. This is a close call as the neighborhood is primarily commercial/industrial. Meets criterion weekdays, but not weekend days. Yes or no rating based on evaluating all days within study periods.</i>						
<i>*** Houghton station is a 30+ year old facility in need of maintenance that has been deferred over the years. It is in a residential/recreational area and clearly visible from the road. One verifiable odor complaint was received in the last two years. Transfer station parking is located within 100 feet of nearest residence.</i>						

The results shown in Table 2 indicate that the current network of stations is efficiently distributed throughout King County with adequate service hours that meet the needs of our customers. However, most stations require improvements to address current capacity, service, and operational needs. In addition, structural changes are necessary to improve emergency response and operational efficiency, as well as meet desired safety goals.

## Development of Transfer System Alternatives

From the results in Table 2, action alternatives were developed for the transfer system in Milestone Report 4 (**Appendix X**). The alternatives were developed based on the following assumptions:

- They can be financed while still meeting the Executive's rate commitment that per ton disposal fees at the Cedar Hills landfill will not be increased by more than the rate of inflation (base year 1999 – the last time rates were changed). *Note: Once waste export begins, the county will have less control over disposal costs.*
- Construction can be accomplished by 2015 assuming that work begins no later than 2007.
- They are technically feasible.
- Two new sites are required, one in the Northeast Lake Washington area and one in South King County.
- Station closures or conversions would not occur under any alternative until replacement facilities are open.
- The impact of the transfer station alternatives on both collection costs (garbage collection by private haulers) and short-haul costs (cost of transporting waste between transfer stations and disposal or intermodal facility), as well as the potential impact on disposal fees, will vary depending on the location of the selected new sites.
- They directly address the five urban transfer stations that are covered in Milestone Reports 1 and 2. The First Northeast facility and the four rural facilities (two transfer stations and two drop boxes) are excluded from this analysis. Proposed operations will remain the same at the First Northeast facility currently being rebuilt, and current operations at the four rural facilities will not change.
- All new facilities proposed will include the installation of one or more waste compactors so that solid waste can be transported efficiently.
- Additional studies will be necessary to ensure that level-of-service criteria will be met at all new, rebuilt, and retained facilities. The division recognizes that traffic is a particular concern at all sites in King County, and will perform studies and work with stakeholders to mitigate for traffic as necessary.

A summary of the action alternatives is presented in Table 3. After Milestone Report 4 was submitted, Alternative 1, the recommended alternative, was amended through an agreement between the City of Bellevue and the division. Under the agreement, the city is seeking an alternative site for the Factoria station in the City of Bellevue that would be readily developable for a full-service transfer and recycling facility. If a suitable site cannot be found, the division intends to rebuild on the developable portions of the Factoria property with the Eastgate Way expansion, as originally proposed (see agreement between the division and the City of Bellevue in **Appendix X**).

**Table 3. Action alternatives for the transfer station system**

<b>Alternative</b>	<b>Full-Service Facilities</b>	<b>Self-Haul Only</b>	<b>Commercial Only</b>	<b>Closed Facilities</b>	<b>Total # of Facilities (including drop boxes)</b>
<b>1</b> <i>Recommended Alternative</i>	New South County New Bow Lake New Factoria/Eastgate (or alternative site located in and identified by the City of Bellevue and accepted by the county) New NE Lake WA	None	None	Algona Houghton Renton	9
2	New South County New Bow Lake New Factoria/Eastgate	Houghton	New NE Lake WA	Algona Renton	10
2A	New South County New Factoria/Eastgate	Houghton Renton	New NE Lake WA New Bow Lake	Algona	11
3	New South County New Bow Lake New NE Lake WA	Renton Houghton Factoria (no Eastgate)	None	Algona	11
4	New Factoria/Eastgate	Algona Houghton Renton	New South County New Bow Lake New NE Lake WA	None	12

**Benefits of Alternative 1**

Alternative 1 would provide for the construction of four new full-service transfer facilities and the closure of three existing facilities. The total number of transfer facilities in the King County system would be reduced by one – from a total of 10 to 9. It would provide a new transfer station in the Northeast Lake Washington area to accommodate the projected population growth in the north, replacing the Houghton station in Kirkland, as well as a new transfer station in South King County, replacing the Algona station. The Renton station was recommended for closure, with no replacement, because it receives only seven percent of the overall solid waste tonnage in the region and because of its proximity to the Bow Lake and Factoria stations.

Alternative 1 is the only alternative that meets all of the level-of-service criteria detailed in Milestone Reports 1 and 2 (Table 2). The result is a proposed network that would consist of full-service stations strategically dispersed throughout the region to minimize traffic on the road network. Alternative 1 is the only alternative that does not recommend either self-haul-only or commercial-

only facilities. Under Alternative 1, all stations serve both types of customers. Division analyses used in preparing the milestone reports show that commercial hauling trucks use transfer stations most heavily on weekdays. Self haulers can be divided into two distinct groups: business self haulers, such as school districts and landscaping businesses, and residential self haulers. Business self haulers use the stations primarily on the weekdays, and residential self haulers use the stations mostly on weekend days (**Appendix X**, Milestone Report 4, Chapter 2).

Because station use by the various types of customers differs between weekdays and weekends, building stations that serve only one customer type would lead to overall system inefficiencies, particularly with regard to staffing. A self-haul-only station would be underutilized during the week when residential use is significantly lower, while a commercial-only facility would see little use on weekends. Because the new full-service facilities are larger and more flexible, the division can address concerns such as traffic issues associated with combined commercial and residential use through station design (e.g., separating commercial and self-haul traffic, to the extent possible, using different queuing lanes and other measures).

Alternative 1 has the highest initial capital costs, but the lowest long-term operating costs of all the alternatives. Although Alternative 1 has the fewest facilities, the initial capital costs are higher because all stations are new, full-service facilities. However, while the upfront capital costs are higher, long-term operating costs are the lowest among the options because there are fewer facilities and therefore lower staffing and other operating costs. In addition, it provides a system where all waste is compacted, resulting in the most cost-effective short- and long-haul disposal costs (**Appendix X**, Milestone Report 4, Chapter 2).

Construction at all four new or rebuilt stations will be phased to minimize disruption to customers. The Algona, Renton, and Houghton stations will remain open as full-service facilities until their replacement facilities are fully constructed. The Bow Lake station will be rebuilt at its current location. If the Factoria/Eastgate facility is rebuilt on site, there would be minimal disruption to self-haul or commercial customers. If constructed at an alternative site, the current site will remain open until the new facility is completed.

The two new facilities, South County and Northeast Lake Washington, will require siting at an as yet undetermined location within each geographic area. This process will require siting studies that consider environmental impacts, community interests, and cost. It is possible that a site could be identified that would serve the dual purpose of a transfer station and intermodal facility. A dual-purpose site would have to meet the following requirements:

- A parcel large enough to allow for both transfer and intermodal operations

- A site that would be accessible by the selected long-haul transport mode, such as rail

South County is the only area where a newly planned station could have access to rail lines.

In summary, the primary benefits of this recommended alternative over the others studied include:

- A transfer system that is well dispersed throughout the county, maximizing station capacity for both self-haul and commercial users
- Stations built or improved to meet the level-of-service requirements evaluated in the milestone reports, including the flexibility to provide a range of solid waste and recycling services at the stations; improved traffic queuing; cost-effective, state-of-the-art technologies; ability to accommodate population growth and industry changes in the region; and waste compactors as needed to compress solid waste loads and reduce truck traffic on the road network
- A fiscally responsible package that has a greater initial capital investment but lower operating costs over the long term
- Disposal fees that continue to be low and stable

## **PUBLIC VERSUS PRIVATE OWNERSHIP AND OPERATION OF FACILITIES**

**Recommendation:** Maintain the current mix of public and private ownership whereby:

- The private sector is the primary provider of the collection and processing of solid waste, recyclables, and construction, demolition, and landclearing debris
- The public sector is the primary provider of transfer services
- Once waste export begins, the disposal facility ownership and operation is contracted out
- The decision on the intermodal facility ownership and operation will be made when the need for and type of facility are determined

The current solid waste system is a mixture of publicly and privately owned facilities and services. Three options were evaluated for public versus private ownership and operation of transfer, intermodal, and disposal facilities: public only, public-private partnership, and private only. Figure 2 shows the current and recommended future mix of public- and private-sector services for each component of the solid waste management system.

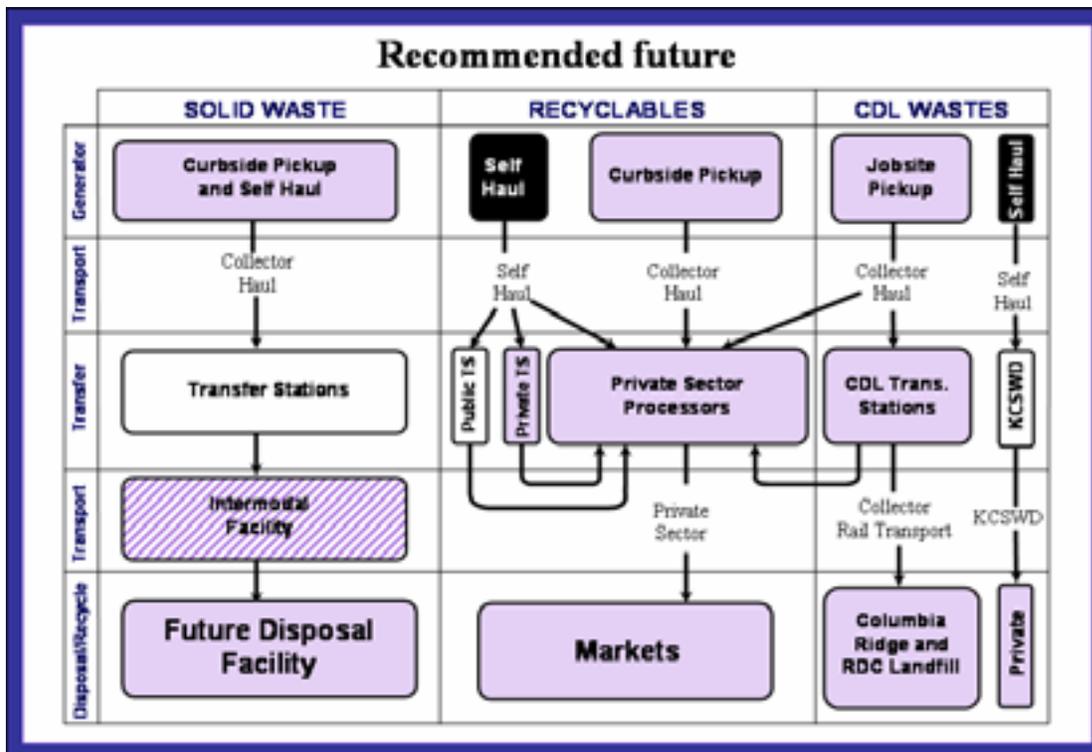
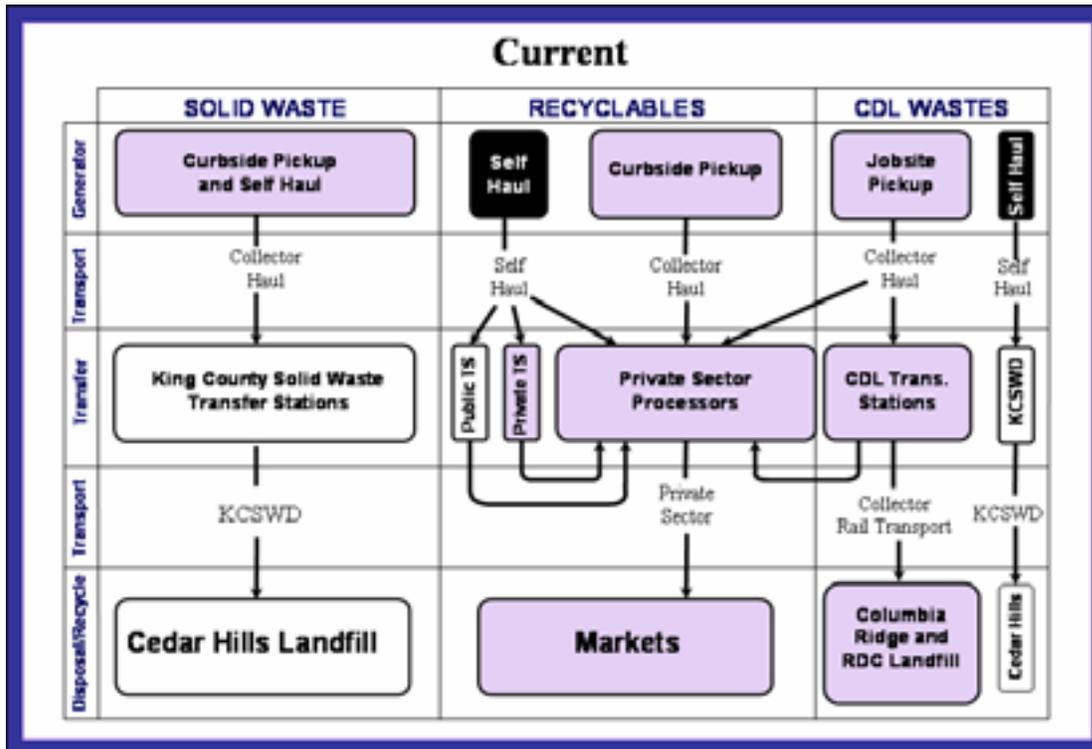
### **Collection of Solid Waste and Recyclable Materials**

State law (RCW 81.77 and 36.58) prohibits counties from collecting solid waste or regulating collection companies. Commercial hauling companies provide collection services through contracts with the cities and franchises granted by the Washington Utilities and Transportation Commission. Two cities, Enumclaw and Skykomish, operate their own collection systems. For recyclable materials and CDL debris, the collection, processing, and final disposal are also provided by the private sector.

### **Transfer of Solid Waste**

Through Interlocal Agreements between King County and each of the 37 cities participating in the county's regional solid waste management system, the division is responsible for operation of the public transfer facilities. The division is also responsible for the state-mandated comprehensive solid waste management plan that establishes policies for transfer, disposal, and waste reduction and recycling.

Figure 2. Ownership of current and future components of the system



**Legend:**    Public -     Private -     Public Or Private -

State law RCW 70.95.020 mandates public oversight and authority for the planning for and handling of solid waste. For the private sector to provide transfer services, companies would need to operate under contract to the county. Pursuant to state law and county policy, those contracts would require that the private sector meet the same standards and requirements as the public sector for the handling and transfer of solid waste. Examples include requirements for public involvement during facility siting and design and the provision of service to self haulers. Given the requirements and the fact that the division already has an infrastructure in place, representatives of the major private solid waste management companies in the region (Waste Management, Allied/Rabanco, and Waste Connections) agreed with the division's assessment that there would be no cost advantage to private-sector ownership and operation of the transfer system. (More detailed discussion is provided in **Appendix X**, Milestone Report 4, Chapter 3.) Based on analysis and consensus with area haulers, the recommendation is to maintain a primarily public-sector transfer system.

### **Disposal of Solid Waste**

The Cedar Hills landfill is the only active landfill remaining in King County. County policy DSW-2 (Ordinance 14236) states that “the county should not seek to site a replacement landfill for the Cedar Hills regional landfill in King County.” The disposal policies direct the county to contract for long-term disposal at an out-of-county landfill. In keeping with this policy direction, once the Cedar Hills landfill closes and the county transitions to waste export, disposal services will be procured by contract. This option will present opportunities for the county to contract for the provision of long-haul transport and a disposal facility.

Table 4 provides a list of the landfill sites owned by different companies potentially available and close enough to compete for King County's waste after Cedar Hills closes (recognizing that additional landfills or other disposal options may be available by the time Cedar Hills closes). This list does not imply a preference for any landfill or company – the information is included to indicate the robust market for the county's waste. As the table shows, substantial capacity for landfill disposal is available for consideration well into the future.

**Table 4. Potential locations for out-of-county landfill disposal**

Landfill Name	Location	Owner	Miles from Seattle	Total Permitted Capacity (tons)	Remaining Capacity (2006)	Opening Year	Estimated Closure
<b>Active Landfills</b>							
1 Columbia Ridge Landfill and Recycling Center	Gilliam County, OR	Waste Management	325	221,875,000	205,000,000	1990	2060+
2 Roosevelt Regional Landfill	Klickitat County, WA	Allied Waste Industries dba Regional Disposal Co.	330	244,600,000	214,200,000	1998	2073+
3 Finley Buttes Regional Landfill	Morrow County, OR	Waste Connections	352	101,250,000 (See Note 1)	98,750,000	1990	2060+
4 Simco Road Regional Landfill	Elmore County, ID	Idaho Waste Systems	628	210,000,000 (See Note 2)	200,000,000+	2000	~2040
5 Herzog Environmental, Inc.	Mora County, NM	Herzog Environmental, Inc.	1,616	"unlimited" (See Note 3)	(See Note 3)	2000	2100+
<b>Landfills Permitted, Not Operating</b>							
6 Eagle Mountain Landfill	Riverside County, CA	L.A. County Sanitation Dist.	1,325	560,000,000	560,000,000	~2010	2125
7 Mesquite Regional Landfill	Imperial County, CA	L.A. County Sanitation Dist.	1,420	970,000,000	970,000,000	~2010	2110

Notes:

1. Finley Buttes has the potential to expand to a permitted capacity of 400,000,000 tons.
2. Simco Road Regional Landfill is currently expanding to a permitted capacity of 420 million tons.
3. Herzog Environmental Inc.'s company representative describes its annual capacity as "virtually unlimited."

**Intermodal Transfer**

A decision on the public versus private ownership and operation of an intermodal facility will be made no more than five years before the implementation of waste export (discussed under *Intermodal Facility*).

## Capacity of the Cedar Hills Regional Landfill

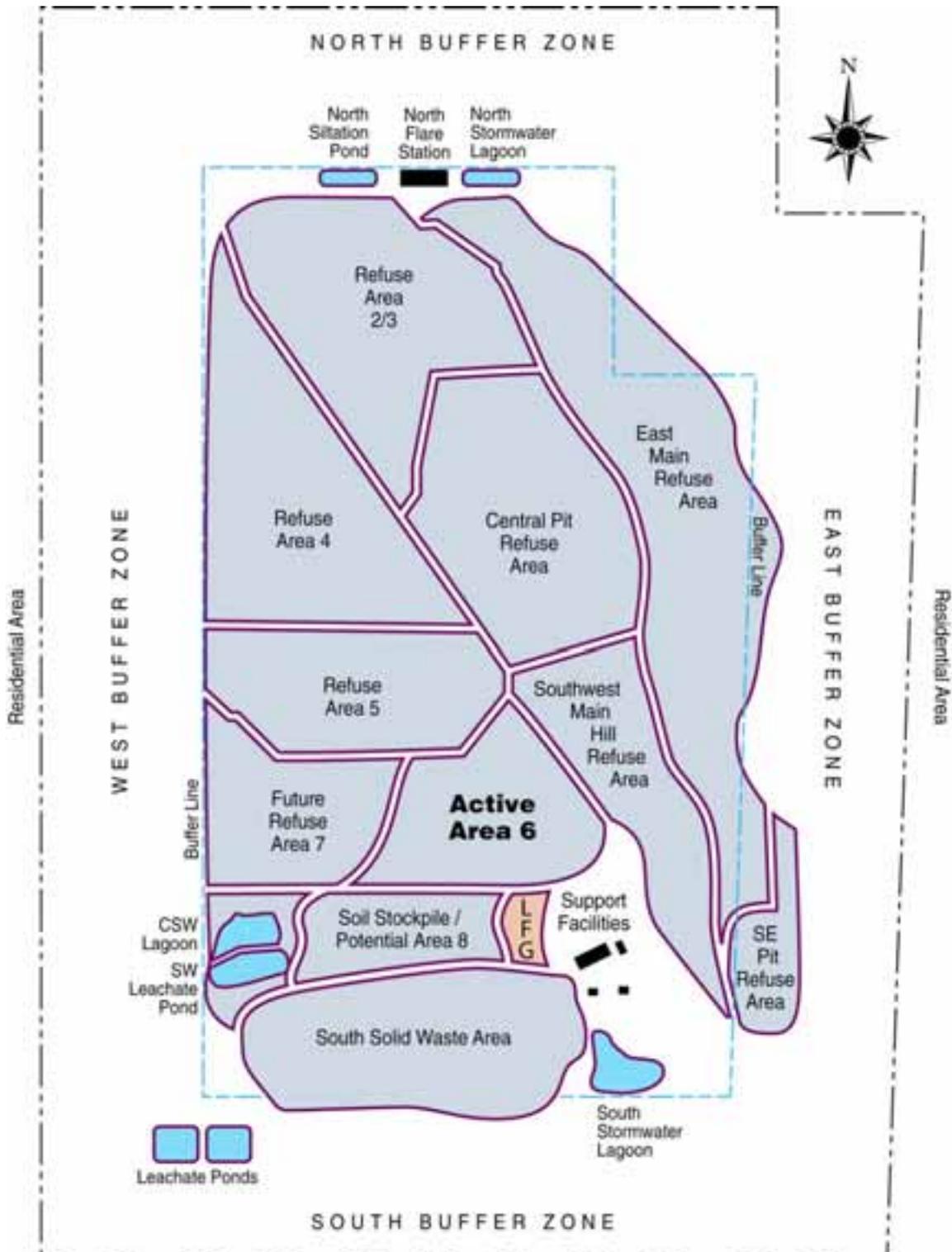
**Recommendation:** Explore opportunities for taking advantage of available landfill capacity to extend the life of this cost-effective disposal option; revise the *Cedar Hills Site Development Plan* and seek to maximize the capacity (lifespan) of the landfill, subject to environmental constraints, relative costs to operate, and stakeholder interests

Operation of the Cedar Hills landfill is significantly less expensive than the projected cost of closing the landfill and transitioning to full waste export. There are methods for extending the life of the landfill that could delay closure, keeping costs lower for the ratepayer as long as possible. A number of development scenarios were identified on the basis of preliminary engineering studies and costs in Milestone Report 4 (**Appendix X**, Chapter 4). It is important to note, however, that while it may be technically feasible to further develop certain portions of the landfill, regulatory permitting processes and community input could affect how practical some options would be to implement.

The calculated capacity of the landfill is defined as the volume of space available based on height, footprint, and slopes of the refuse cells, as defined in the *Cedar Hills Site Development Plan*. The capacity, or life, of the landfill is based on the amount of incoming solid waste and the density and consolidation of materials in the landfill over time. Both internal and external influences can affect overall landfill capacity. For example, successfully implementing more aggressive recycling programs and policies could add another year to the life of the landfill.

The 2001 Solid Waste Plan estimated that the Cedar Hills landfill would reach its permitted capacity in 2012. Based on incoming tonnage projections and the landfill density achieved to date (and expected in the future), it is currently estimated that the landfill will reach its permitted capacity in late 2015, three years beyond the earlier forecast. This extension is possible while staying within currently permitted constraints on the height and footprint of the site, and without encroaching upon the 1,000-foot buffer zone, which is the area between the active solid waste handling area and the boundary of the site. Figure 3 shows the current layout of the landfill. As the figure shows, Area 6 is the only currently active area at the landfill.

Figure 3. Layout of the Cedar Hills Regional Landfill



## Scenarios for Extending the Life of the Landfill

The capacity or life of a landfill can be affected by a number of factors, including natural settling, operational procedures, and successful waste reduction and recycling programs and services.

Consistent with the recent reporting of nationwide trends, the natural settling of refuse, along with new operating practices, is extending the capacity of landfills more than previously anticipated (see more details in **Appendix X**, Milestone Report 4, Chapter 4). Refuse in landfills is simply settling more over time, resulting in more space available in each refuse area.

In addition, new landfilling methods continue to increase the life of the Cedar Hills landfill. Late in 2005, the division began using tarps over portions of the active fill area as alternative daily cover, rather than the previous daily application of six inches of compacted soil. The tarps are placed over a small portion of the active fill area at the close of daily operations and taken up at the next day's start of operations. Use of this alternative daily cover saves space and thereby extends the life of the landfill. Because the use of tarps is a pilot project that has only recently begun, the division is not yet able to calculate how much extra capacity this practice will add to the landfill.

Efforts to increase waste reduction and recycling would affect the tonnage reaching the landfill. Tonnage projections are based on forecasts using the current recycling rate of approximately 43 percent. A higher recycling rate is possible through more aggressive recycling programs, disposal bans on certain materials, and increased curbside recycling services. All of these options are under consideration by the division and will be explored in the update of the 2001 Solid Waste Plan. If the region could achieve a 60 percent recycling rate between 2009 and 2015, an additional 1.1 million tons of material would be diverted from the landfill, adding one year to the landfill's life.

The division has identified several scenarios (below) for extending the life of the Cedar Hills landfill. Each would entail a different level of additional engineering and environmental studies, permitting, and public involvement process to complete. The following scenarios could be implemented singly or in combination, depending on the results of more extensive study:

1. **Regrade Areas 5, 6, and 7 to the permitted elevation when Area 7 is close to capacity** – This scenario would use the projected airspace gained from the settlement of these refuse areas. It includes only refuse areas that have the type of bottom liners required by current regulations. Final cover on these areas would not be placed until they reach their permitted height. Changes in existing design criteria are not anticipated. This scenario is projected to add one year to the life of the landfill at no

additional cost to the ratepayer and would likely require minor modifications to the existing operating permits.

2. **Regrade Areas 2, 3, 4, and the Central Pit to the permitted elevation –** This scenario would fully utilize existing airspace gained from past settlement of these refuse areas. It considers only refuse areas that have bottom liners, but the bottom liners in these areas were installed under an earlier, less stringent set of regulations. This scenario may require addition of liners between the old cover and new garbage that are compliant with current regulations. Changes in existing design criteria are not anticipated. This alternative is projected to add up to two and one-half years to the life of the landfill and would require new construction and operating permits.
3. **Develop Area 8 –** Area 8 is currently used for stockpiling soil. This scenario would fully utilize the existing soil stockpile area for landfill development, which could include:
  - Maximizing the use of alternative daily cover
  - Some importing of soil
  - Acquiring and operating an offsite source for soil
  - Stockpiling soil over closed refuse areas
  - A combination of all four actions

This scenario is projected to add up to two and one-half years to the life of the landfill. It would require new operating permits and environmental review.

Each scenario described above involves costs to implement and assumes that landfill development and operating plan modifications will be approved by regulatory authorities. Offsetting the costs, however, are the savings realized by extending the life of Cedar Hills and delaying the move to waste export.

The resulting lifespan of the landfill under one or a combination of the scenarios above, and their associated savings when compared with the cost of waste export, are shown in Table 5.

**Table 5. Net savings associated with scenarios for extending the life of the Cedar Hills landfill compared with full waste export**

Scenario	Extension of Landfill Life	Savings Per Ton from Delaying Full Waste Export (present value) <sup>1</sup>	Total Savings through Landfill Closure Date (present value) <sup>1</sup>
Regrade Areas 5, 6, & 7	Through 2016	\$0.48	\$ 14,000,000
Regrade Areas 5, 6, & 7 plus Areas 2, 3, 4, & Central Pit	Through 2019	\$1.03	\$ 30,000,000
Regrade Areas 5, 6, & 7 and develop Area 8	Through 2019	\$1.75	\$ 51,000,000
Regrade Areas 5, 6, & 7 plus Areas 2, 3, 4, & Central Pit and develop Area 8	Through 2022	\$3.85	\$113,000,000

Note:

1. Present value is the dollar amount of savings in each year of additional landfill life adjusted to its equivalent value as of 2006 (at five percent interest).

Additional studies and an assessment of stakeholder interests will determine which of these or other scenarios would be most feasible.

### **Backup Landfill Capacity**

Another issue associated with landfill capacity is backup storage in the event of a long-term emergency in the region, such as extended transportation interruption or catastrophic natural disaster. In general, there is limited backup capacity in western Washington. Neither Seattle nor Snohomish County has maintained backup capacity of their own, and both rely on their waste export contractors to provide backup to their primary hauling and disposal systems.

When interviewing local jurisdictions about their experiences exporting waste, a number of them spoke about the need for backup disposal capacity in this region. Exporting jurisdictions described the operational impacts of occasional rail service disruptions they have experienced and shared their concerns about what would happen if there were an extended problem. Everyone identified the Cedar Hills landfill as the best available option for long-term emergency backup for the Puget Sound region. Within each jurisdiction, short-term disruptions can be handled with the use of additional sealed containers.

The division plans to convene a working group of interested jurisdictions in 2007 to explore the feasibility of a cost-sharing arrangement to secure the needed backup capacity for the region's solid waste. A work program will be jointly developed to cover all of the aspects of a potential agreement.

## OPTIONS FOR LONG-HAUL TRANSPORT

**Recommendation:** Because transportation costs fluctuate with fuel prices, the decision on long-haul transport of solid waste to a disposal facility by rail, barge, or truck will be made approximately five years before implementation of waste export; studies indicate that rail will likely be the most feasible method of transport

The division looked at rail, barge, and truck as possible modes of transport for the long-haul of solid waste once waste export begins (see **Appendix X**, Milestone Report 4, Chapter 5). Each option was examined for differences in travel time, reliability, and capital and operating costs.

There are currently at least five landfills in the western United States that could accept the county's solid waste (Table 6). All are accessible by railway and truck. Only one of the five, Finley Buttes, is currently accessible by barge. Two additional landfills, Eagle Mountain and Mesquite, are expected to open around 2010 and will be accessible by rail and truck.

**Table 6. Landfill access in the western United States**

Landfill Name/Location	Rail Access	Truck Access	Barge Access
Columbia Ridge Landfill Gilliam County, Oregon	Union Pacific	I-84	No
Roosevelt Regional Landfill Klickitat County, Washington	BNSF	WA SR 14	No
Finley Buttes Regional Landfill Morrow County, Oregon	Union Pacific	I-84	Yes
Simco Road Regional Landfill Elmore County, Idaho	Union Pacific	I-84	No
Herzog Environmental Inc. Mora County, New Mexico	BNSF Union Pacific	I-25	No
Eagle Mountain Landfill Riverside County, California	Union Pacific	I-10	No
Mesquite Regional Landfill Imperial County, California	Union Pacific	CA SR 78	No

Each mode of transport has distinguishing characteristics that help determine the most feasible and cost-effective transport option for exporting the county’s solid waste. Table 7 illustrates the relative costs and merits of rail, truck, and barge transport options.

**Table 7. Comparison of transport options**

	<b>Rail</b>	<b>Truck</b>	<b>Barge</b>
Travel distance (one way) <sup>1</sup>	350 miles	260 miles	800 miles
Travel time (round-trip)	3 days	2 days	11 days
Minimum containers needed (not including spares or emergency backup capacity)	480	320	1,760
Number and frequency of transports	4 trains per week	160 trucks per day	2 to 3 barges per day
Minimum other equipment (not including spares)	3 to 5 locomotives per train Rail cars (120 wells per train)	320 trucks	30 custom barges plus short haul-trucks at destination
Facility needs	Intermodal facility	NA (would leave from transfer stations)	Intermodal facility with dock
Factors affecting system reliability and dependability	Rail service interruptions	Weather, road conditions	Lock closures, storm delays
Impact on competition	Limited to 2 rail providers, access to multiple landfills	Multiple transport providers	Limited to one landfill, more than one maritime provider
Impact on infrastructure	Negligible increase in overall rail traffic	Traffic and roadway congestion	NA
Relative capital costs	Medium	Medium	High
Relative operating costs	Low	High	Medium

Note:

1. The three closest landfills to King County are within 30 miles of each other on the Columbia River. Travel distance is estimated using the average distance to those landfills, but does not imply that is where the county’s waste would be disposed.

At this time, it appears that rail transport is the most feasible option. Once the timeframe for waste export is decided, these study results will be reevaluated in the light of market conditions at that time.

## INTERMODAL FACILITY

**Recommendation:** The decision on the need for and type of intermodal facility will be made no more than five years before waste export is implemented; the division will continue to monitor local intermodal capacity and retain the Harbor Island property as a potential option, while continuing to lease the property for other industrial uses

An intermodal facility is a location where cargo, in this case solid waste, is transferred from one mode of transportation to another. Sealed waste containers are trucked to an intermodal facility and lifted onto railcars or barges. The containers are transported to a landfill, emptied, and then hauled back to the intermodal site. The county will need to use an intermodal facility as part of its solid waste management system after the Cedar Hills landfill closes.

Approximately 850,000 tons of waste is currently exported annually from King County, consisting of the City of Seattle's solid waste stream and Seattle and King County's construction, demolition, and landclearing debris. When King County begins exporting its solid waste, approximately 2.3 million tons of waste will be exported from the county each year, an increase of 170 percent over current levels.

Reliable waste export depends on consistent, long-term intermodal handling capacity to move these volumes of waste. The *Business Case for a County-Owned Intermodal Facility*, published by the division in 2003, concluded that there is limited intermodal truck-to-rail capacity in the region and the prospects are for greater competition for this limited resource in the years ahead. However, Waste Connections has purchased Northwest Containers in South Seattle and expressed an interest in handling solid waste. In addition, the City of Seattle has plans to build an intermodal facility in south Seattle. Given recent and potential future changes in the market, the amount of intermodal capacity available when the county begins waste export will be determined as part of the procurement process for waste export services.

Because full export of King County's waste is at least nine years away, it is premature to decide whether the county is going to develop or contract for an intermodal facility and where it would be located. The Harbor Island property, purchased by the division in 2003 as a possible site for an intermodal facility, will be retained as a potential option. Until the time for a decision is closer, the division will continue leasing parts of the property for other industrial uses. If a decision is made to contract with the private sector for intermodal services, the Harbor Island property will be sold.

If the siting process for the new South County station results in the identification of a parcel capable of serving as both a full-service transfer station and

intermodal facility, such an option will be considered. South County is the only area where a newly planned station might have access to rail lines. If such a site is found, it would have the advantage of eliminating short-haul transport costs for that facility. As discussed earlier, however, siting a dual-purpose facility would require a siting process that considers environmental impacts, community interests, and cost. There is no requirement that the new South County station serve as both a transfer station and intermodal facility.

Milestone Report 4 (**Appendix X**) discussed three ownership/operation options for the intermodal facility:

- Public ownership and operation
- Public ownership and private (contracted) operation
- Private ownership and operation (contracted services)

The benefits and drawbacks of these options are described below.

### ***Public Ownership and Operation***

#### Benefits:

- A publicly owned and operated intermodal facility would provide the county with maximum flexibility to coordinate all elements of the county's solid waste system.
- The county would have guaranteed intermodal capacity under its exclusive control.
- The county would be in a better position to change its disposal arrangement if it is not tied to a long-term contract for intermodal facility operation.
- Future competition in the region could be encouraged by maintaining a public presence in all aspects of waste export and disposal.

#### Drawbacks:

- The county does not have any experience operating a truck-to-rail intermodal facility.
- The county would have the responsibility for siting the intermodal facility.
- The county would be responsible for the capital cost of the facility.
- The county would be responsible for the maintenance cost of the facility.
- The county would work directly with the serving railroads to negotiate long-term service contracts and to deal with day-to-day issues, such as delay in return of trains and containers.
- The county would have to arrange for backup service through other contracts if the primary train-haul system is disrupted.
- The county's union work rules would likely restrict the county's flexibility to work around unexpected fluctuations in workload at the facility compared to a private operator. For example, a private contractor might be more

able to shift its labor force and/or use contract labor to cope with changing work demands at the facility.

- Public-sector labor restrictions in Washington State could be an obstacle to privatizing the system in the future.

## **Public Ownership and Private Operation**

### Benefits:

- The county would have considerable flexibility to coordinate all elements of the solid waste system.
- The county would have guaranteed intermodal capacity under its exclusive control.
- The county would have the benefit of competitively bidding operating services and could expect this to keep costs down.
- The county could contract with an entity experienced in operating an intermodal facility.
- The county would benefit from a contractor's experiences in negotiations with the railroads.
- If operation of an intermodal facility is bundled with long-haul responsibility, the county could require the operating contractor to provide backup transportation and reserve containers in the event of a rail system disruption.

### Drawbacks:

- If the Harbor Island site is not used, the county would have the responsibility for siting the intermodal facility unless it procured the facility under a design-build-operate (DBO) alternative delivery method that tasked the DBO contractor with siting responsibility.
- The county would have the responsibility for the capital costs of the facility unless it procured the facility under a design-build-own-operate-transfer (DBOOT) alternative delivery method that made the DBOOT contractor responsible for the capital cost. Under a DBOOT approach those costs would, however, be reflected in the cost of service.
- The county would be more likely to rely on a single, vertically integrated company to handle all aspects of waste export and disposal, which could discourage future competition in the region.

## **Private Ownership and Operation**

### Benefits:

- The county would avoid up-front capital costs of developing the intermodal facility. Those costs, however, would still be reflected in the cost of service to ratepayers.
- The county would not be responsible for siting of the intermodal facility.

- The county would expect the cost-competitive bundling of services between the intermodal facility operation and long-haul and disposal to drive down costs to the lowest possible level.
- If operation of the intermodal facility is bundled with long-haul responsibility, the county could require the operating contractor to provide backup transportation and reserve containers in the event of a rail system disruption.
- The contractor would have the responsibility for facility maintenance.
- The contractor would work directly with the serving railroad.

Drawbacks:

- The county would lack the guaranteed intermodal capacity under its exclusive control and could find itself without such service or access to the rail system in the future.
- The county would have much less flexibility to coordinate all elements of the solid waste system and would need to rely on contract terms to ensure that its interests and waste export needs are addressed.
- The county could very likely enable a single, vertically integrated company to handle all aspects of waste export and disposal, which could discourage future competition in the region.

As discussed above, the decision on the need for and type of intermodal facility will depend on several key decisions affecting waste export. An early decision could preclude other options that may become available in the future.

## EARLY WASTE EXPORT – FULL OR PARTIAL (SENSITIVITY ANALYSIS)

**Recommendation:** Issue a Request for Proposals for partial export of approximately 20 percent of the waste stream beginning in 2010 while keeping the Cedar Hills landfill operating; use the actual bid price to determine if this option is more cost effective than disposal at the Cedar Hills landfill

At the currently projected disposal rate, the Cedar Hills landfill is expected to reach its permitted capacity and close in approximately 2015, at which time waste export could begin. There are, however, landfill practices and changes in disposal behaviors (such as increased waste reduction and recycling) that could extend the life of the landfill substantially.

At the request of MSWMAC, the division conducted a sensitivity analysis of three options for the timing of waste export:

1. *Full early export:* Cedar Hills is closed before reaching capacity and 100 percent of the county's solid waste is exported beginning in 2010.
2. *Partial early export:* Cedar Hills remains open and 20 percent of the county's solid waste is exported starting in 2010.
3. *Partial withdrawal:* 20 percent of the county's solid waste becomes part of another solid waste system in 2010.

Option 1 would increase the cost of disposal by approximately \$5.06 per ton. Option 2 would slightly increase the cost of disposal by approximately \$0.71 per ton. And Option 3 would increase costs by \$6.15 per ton, primarily due to the loss in revenue from a 20 percent decrease in disposal fees. The cost of a jurisdiction(s) leaving the county system before their Interlocal Agreement for disposal with the county expires in 2028 would be borne by that jurisdiction.

From the results of this analysis, Option 2 for partial waste export appeared to be only slightly more costly than current practices. In addition, partial waste export would extend the life of the landfill for approximately one year and defer the eventual increase in disposal fees that would occur with full waste export. Partial early export would also allow the division to test the disposal market before full waste export is implemented.

The division recommends issuing a Request for Proposals to implement partial export of approximately 20 percent of the county's solid waste stream beginning in 2010. A comparison of the bid prices with the cost of disposal at Cedar Hills will determine whether partial early export is the more cost-effective option.

## **NEXT STEPS**

The division recognizes that the original intent of this Plan was to present recommendations for implementing waste export. However, in the course of the analyses it became evident that it was possible to extend the life of the Cedar Hills landfill well beyond previous projections. Because market conditions are continually changing, it seemed premature to make critical decisions involving procurement of waste export facilities and services until approximately five years before landfill closure. Decisions on waste export will be based on additional engineering studies, cost analyses, and stakeholder input.

When the planning process began, the cities requested that the transfer system network be analyzed as an integral part of the waste export system plan. As a result, the Plan focuses on upgrades to the transfer system and a timeline for decisions required to implement waste export. As the planning process continues, the final recommendations for implementing waste export will build upon the recommendations made in this Plan.

In the interim, the division will continue to collaborate with the SWAC, MSWMAC, ITSG, commercial solid waste haulers, King County Council staff, the division's labor union representatives, and division employees on the update of the 2001 Solid Waste Plan, which is scheduled for completion in 2007. It is also anticipated that additional interim reports on policy-related issues will be required during the development of the next solid waste plan and before out-of-county disposal is implemented.

The division, in collaboration with stakeholders, will determine what future reports will be needed in order to analyze the following issues:

- Waste Reduction and Recycling
- Lifespan of the Cedar Hills Landfill
- Disposal Options
- Long-Haul Transportation/Intermodal Issues

City of Kirkland

**Revised Houghton Transfer Station Position Statement**

Adopted by City Council on November 16, 2004

The County's relationship with cities is governed by the Solid Waste Interlocal Agreement, the Forum Interlocal Agreement, the King County 2001 Comprehensive Solid Waste Management Plan, and the King County Charter that establishes the Regional Policy Committee. City and County staff formed a working group in April, 2004 to determine County legislation for the County's Solid Waste Division waste export system plan. The result was King County Ordinance Number 14971 passed July 26, 2004 by the King County Council. Ordinance Number 14971 created a new Metropolitan Solid Waste Management Advisory Committee (MSWMAC) to facilitate ongoing communication between cities and the county on all solid waste management issues.

In August, 2004, King County passed the 2<sup>nd</sup> Quarter Capital Omnibus Ordinance which added a proviso that encumbers the \$1.7 million appropriation for replacing the 40-year old roof on the Houghton Transfer Station until a Memorandum of Understanding is executed between the City of Kirkland and King County agreeing to site mitigation.

CITY OF KIRKLAND POSITION – HOUGHTON TRANSFER STATION

Kirkland's goal is closure of the Houghton Transfer Station. Until such time as closure is accomplished, it is agreed that the station will remain open. Mitigation measures shall be taken by King County to transform the transfer station into a less objectionable neighbor. Kirkland reserves the right to require further mitigation if there is no measurable improvement from the mitigation measures. Kirkland reserves the right to require further mitigation if the transfer station remains open beyond 2014.

Kirkland shall work with King County to begin implementation of the following mitigation measures:

- Reduce solid waste at the Houghton Transfer Station to a maximum annual tonnage of 135,000 tons/year over a ten year period.
- Prohibit commercial waste haulers from passing Ben Franklin Elementary School (12434 NE 60<sup>th</sup> ST) and from using 122<sup>nd</sup> AVE NE, a neighborhood street, en route to or from Houghton Transfer Station.
- Prohibit any overnight parking of full or partially full trailers at the transfer station. The only exception would be the trailer located in the tipping area at the end of regular business hours.
- King County shall pay for equestrian/ADA compliant pathway construction on the north side of NE 60<sup>th</sup> ST from 116<sup>th</sup> AVE NE to 120<sup>th</sup> AVE NE.
- Shade existing luminaries that spill light into residential areas.
- Construct a sound barrier wall to mitigate noise from the transfer station into the residential neighborhood. Sound absorption material must be applied on the east side of the wall to avoid reflecting noise into the residential neighborhood to the east.
- Landscape around the Houghton Transfer Station to reduce the visual impacts of the solid waste facility. Landscaping shall be non-deciduous.
- King County shall honor the Comprehensive Solid Waste Management Plan policy RTS-3, which states: "The county should focus capital investment in part to expand, relocate, or replace, or any combination thereof, transfer stations when safety, efficiency, capacity, or customer services needs cannot be met by existing transfer facilities."
- Cities that host County transfer stations provide value to the entire region and should be provided opportunities for compensation.
- If there are legitimate safety concerns or operational efficiencies that mitigate the impacts of the operation of this facility on this neighborhood, such improvements should be made. However, no capital improvements to this facility should lead to increased capacity.