Draft Supplemental Environmental Impact Statement

Waste Export System Plan for King County, Washington

King County Department of Natural Resources and Parks
Solid Waste Division

June, 16, 2006

Note:
Some pages in this document have been purposefully skipped or blank pages inserted so that this document will copy correctly when duplexed.

King County

Solid Waste Division
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June 16, 2006

Dear Environmental Impact Statement Recipient:

The King County Department of Natural Resources and Parks, Solid Waste Division has completed the Draft Supplemental Environmental Impact Statement (EIS) for the alternatives presented in the Transfer and Waste Export Facility Recommendations report. This report was prepared to implement policies adopted in the *Final 2001 Comprehensive Solid Waste Management Plan*. This draft EIS supplements the EIS prepared for the 2001 plan.

As required by Ordinance 14971, the Transfer and Waste Export Facility Recommendations report is the fourth in a series of milestone reports to examine:

- Alternatives (including the no-action alternative) for the configuration of the solid waste transfer station system
- Public-private options for ownership and operation of transfer and intermodal facilities
- Future capacity of the Cedar Hills Regional Landfill and potential for extending the life of the landfill
- Potential out-of-county disposal facilities
- Options for long-haul transport of waste once the landfill closes, as well as the need for an intermodal facility
- Scenarios for early (partial) waste export

The action alternatives for the county's transfer stations involve various combinations of station improvements, closures, and new construction. Under all scenarios, all full-service stations (serving both self-haulers and commercial haulers) and commercial hauler only stations would have solid waste compactors. Self-haul only facilities would not. The action alternatives are summarized in the table below. A no-action alternative was considered and determined to have unacceptable impacts on capacity and level of service.

Action Alternatives for the Transfer Station System

Alternative	Full-Service Facilities	Self-Haul Only	Commercial Only	Closed Facilities	Total # of Facilities*
1	New South County New Bow Lake New Factoria/Eastgate New NE Lake WA	None	None	Algona Houghton Renton	9
1A	New South County New Bow Lake New Factoria (no Eastgate) 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

* Total includes transfer stations and two drop box facilities.

Three options were evaluated for public vs. private ownership and operation of transfer and intermodal facilities: public only, public-private partnership, and private only. The outcome of the evaluation is that the public only or public-private partnership options are feasible, but the private only option (in which the public sector is not involved in any aspect of service delivery, rate setting, or long-term planning) is not feasible or allowed under current state law or county policy.

While the draft EIS discusses the potential for extending the life of the Cedar Hills landfill, more detailed technical and cost studies will need to be conducted before decisions can be made. The Solid Waste Division is requesting that the King County Council authorize a study of options for extending the life of the landfill. The benefit of fully utilizing landfill capacity is that it would delay the higher costs associated with waste export after landfill closure.

The Solid Waste Division has identified existing and permitted landfills in the western United States that could serve as disposal sites for the county's exported wastes. The decision to use one of these facilities, or a new facility that might be available when waste export begins, will be researched in more detail when the decision to implement export is made.

Rail, barge, and truck are all possible modes of transport for exporting solid waste; however, rail and truck are currently the most feasible modes. The choice of transport mode would affect

the need for and type of intermodal facility considered for the county's solid waste transfer and disposal system.

Two action alternatives, as well as a no-action alternative, were evaluated for early waste export – full and partial (approximately 20 percent of the waste stream beginning in 2010). The evaluations look at system modifications that would need to be made and associated implications and cost.

Copies of the draft EIS are available for review at King County branch libraries, the Renton Public Library, and the Seattle Public Library. An Adobe Acrobat (PDF) version is also available on the county's website at:
http://www.metrokc.gov/dnrp/swd/about/planning/documents/waste_export_EIS.pdf

Hard-copy versions of the draft EIS can also be purchased from the Solid Waste Division for $15.00 each (see contact person below).

Written comments on the draft EIS may be sent by regular mail or e-mail to:

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All comments must be received no later than 5:00 p.m. on July 17, 2006.

Sincerely,

Theresa Jennings
Division Director

Fact Sheet

Project Title

Waste Export System Plan for King County, Washington.

Nature and Location of Proposed Action

The waste export system plan is being prepared for King County's regional solid waste management system. King County's regional solid waste management system serves the citizens of all the unincorporated areas of the county as well as 37 of the 39 cities, excluding only the municipalities of Seattle and Milton. The system's service area has a population of about 1.23 million, or approximately 68 percent of King County's total population of approximately 1.8 million.

The waste export system plan is being developed to implement policies adopted in the *Final 2001 Comprehensive Solid Waste Management Plan* relating to the transfer and export of solid waste. This environmental impact statement (EIS) supplements the EIS that was prepared for the 2001 plan.

Closure of the county's only active landfill, the Cedar Hills Regional Landfill (Cedar Hills landfill), is expected when the landfill reaches capacity in approximately 2015. King County does not intend to construct another landfill to replace the Cedar Hills landfill. Therefore, the county is preparing its solid waste system to begin waste export by 2015. Actions to prepare the system include construction of new facilities and improvements to existing facilities. The first steps in that process are included in the waste export system plan. The objectives for the waste export system plan are as follows:

- Respond to County Council policy directives to conduct the necessary planning in preparation for waste export.
- Respond to issues raised by the public, advisory committees (the Solid Waste Advisory Committee, the Interjurisdictional Technical Staff Group, and the Metropolitan Solid Waste Management Advisory Committee), and the solid waste industry as part of the public involvement process for the waste export system plan.
- Design, operate, and maintain a waste export system in a manner that protects the environment and conserves energy and natural resources.
- Comply with federal, state, and local regulations governing solid waste management.

Alternatives for the Transfer Station System

This supplemental EIS evaluates six action alternatives and a no-action alternative for the improvement, closure, and/or construction of transfer facilities throughout King County. There are currently 10 transfer facilities in the county system: 8 transfer stations and 2 drop box facilities. The two drop box facilities, two recently constructed transfer stations (Vashon and Enumclaw), and one transfer station currently under construction (First Northeast) are not affected by the alternatives. Therefore, the waste export system plan and this EIS consider the five older county transfer stations (Bow Lake, Factoria, Houghton, Renton, and Algona). Up to three of the transfer stations could be permanently closed, new transfer stations could be constructed, and existing transfer stations could be improved. Up to three existing transfer stations could be converted to self-haul-only services and up to three new or existing facilities could provide commercial-haul-only services.

Alternatives for the Timing of Waste Export

- **No-action alternative:** Begin waste export when the Cedar Hills landfill reaches capacity (as recommended in the *Final 2001 Comprehensive Solid Waste Management Plan*)
- **Alternative X1 (full early export):** Close the Cedar Hills landfill before it reaches capacity and export 100 percent of the county's solid waste beginning in 2010
- **Alternative X2 (partial early export):** Keep the Cedar Hills landfill open longer and export approximately 20 percent of the county's solid waste starting in 2010.

Proponent

King County Solid Waste Division, Washington

Lead Agency and Responsible Official

Theresa Jennings, Director, Solid Waste Division
King County Department of Natural Resources and Parks

Contact Person

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Required Permits and Approvals

The waste export system plan can be approved by King County without any other approvals from outside agencies. However, construction and operation of the facilities proposed in the plan are regulated by federal, state, and local regulations, and each facility would require permits for air quality, land use, health, construction, grading and drainage, street use, and utilities.

EIS Authors

- Herrera Environmental Consultants, Inc.: primary author
- R.W. Beck: engineering support
- Heffron Transportation: transportation support
- MainLine Management: rail transport support.

Draft Supplemental EIS Issue Date

June 16, 2006.

Due Date for Comments on Draft Supplemental EIS

Comments on the draft supplemental EIS must be received by 5:00 p.m. on July 17, 2006.

Subsequent Environmental Review

The policies under consideration in this supplemental EIS will not be subject to future environmental review after the completion of the EIS. The facilities proposed in the plan would be subject to additional environmental review under the State Environmental Policy Act as required under King County Code and applicable state and local laws.

Date of Implementation

A decision from the King County Council regarding the proposed action is expected in the fall of 2006. Implementation of the plan will begin in 2007.

Availability of the Draft Supplemental EIS

The draft supplemental EIS is available for public review at the Solid Waste Division, 201 South Jackson Street, Suite 701, Seattle, Washington.

Copies of the draft supplemental EIS may be purchased from the King County Solid Waste Division. The cost for a printed copy is $15. The cost for a copy on a compact disc (CD) is $7.50. An Adobe Acrobat (PDF) version may be downloaded from the county's website at <http://www.metrokc.gov/dnrp/swd/about/planning/documents/waste_export_EIS.pdf>.

Location of Materials Incorporated by Reference

Background materials incorporated by reference in this draft supplemental EIS are available for review at the King County Solid Waste Division, 201 South Jackson Street, Suite 701, Seattle, Washington.

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Abbreviations and Acronyms

BNSF	BNSF Railway Company (formerly Burlington Northern Santa Fe Railway)
CDL	construction, demolition, and land-clearing (waste)
dBA	A-weighted decibels
EIS	environmental impact statement
KCC	King County Code
LOS	level of service
PM_{10}	particulate matter with diameter less than 10 micrometers
ppm	parts per million
SEPA	State Environmental Policy Act
WAC	Washington Administrative Code

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Glossary

airspace. Space in a landfill that is available for solid waste disposal.

business self-haulers. Self-haulers who generally bring more than a ton of waste to the transfer station and may use vehicles that are unloaded manually or mechanically. Examples of business self-haulers include a small landscaping business with a pickup truck or a school district that uses a mechanized truck to dump its load. Business self-haulers use transfer stations primarily on weekdays.

commercial customers. Customers of transfer stations who use packer and drop box vehicles with mechanized unloading capability and deliver an average of 5 tons per vehicle. Commercial customers use transfer stations most heavily on weekdays.

commercial hauler. Any person who is collecting or transporting solid waste for hire or consideration.

construction, demolition, and land-clearing waste. Recyclable or nonrecyclable waste that results from construction, remodeling, repair or demolition of buildings, roads, or other structures, or from the clearing of land for development that requires removal from the site undergoing construction, demolition, or land-clearing. Construction, demolition, and land-clearing (CDL) waste does not include clean mud and dirt, contaminated soil, asbestos-containing waste material containing more than 1 percent asbestos by weight, unacceptable waste, or any other solid waste does not meet the definition of CDL waste.

drop box facility. A facility used for the placement of a detachable solid waste container, such as a drop box, including the associated exit and entrance roadways, unloading areas, and turnaround areas. A drop box facility typically serves the general public with loose loads and receives waste from offsite. A drop box facility may also include containers for separated recyclable materials.

full-service facility. A facility that serves self-haul and commercial customers.

household hazardous waste. Leftover household products that contain corrosive, toxic, ignitable, or reactive ingredients. The disposal of products (such as paints, cleaners, oils, batteries, and pesticides) that contain potentially hazardous ingredients requires special care.

intermodal container. A reusable cargo container of a rigid construction and rectangular configuration that is fitted with devices to allow its ready handling, particularly its transfer from one mode of transport to another without its contents being rehandled. It is designed to be readily filled and emptied and transported by truck, rail, or barge.

intermodal transfer facility. A facility at which solid waste intermodal containers are transferred from one mode of transportation to another, such as truck to rail or truck to barge, without their contents being rehandled.

landfill. A disposal facility at which solid waste is permanently placed in or on land, including facilities that use solid waste as a component of fill.

long-haul transport (long-hauling). Transport to a destination out of the county of origin.

mixed municipal solid waste. Solid waste generated by residences, stores, offices, and other generators of wastes that are not industrial, agricultural, or construction, demolition, and land-clearing wastes. (see also *construction, demolition, and land-clearing waste*)

putrescible waste. Solid waste that contains material capable of being decomposed by microorganisms.

residential self-haulers. Self-haulers who use vehicles that generally require manual unloading and generally bring less than a ton of waste to the transfer station in each load. Most self-haul traffic comes to transfer stations on weekends.

self-haul customers (self-haulers). Customers of the transfer system who do not use packer and drop box vehicles. Self-haul customers fall into two categories: business and residential. (see also *business self-haulers* and *residential self-haulers*)

solid waste or wastes. All putrescible and nonputrescible solid and semisolid wastes, except wastes identified in Washington Administrative Code, Chapter 173-350, Section 020, including, but not limited to, garbage, rubbish, ashes, industrial wastes, commercial waste, swill, sewage sludge, demolition and construction wastes, abandoned vehicles or parts thereof, contaminated solid material, contaminated dredged material, discarded commodities, and recyclable materials.

special wastes. Nonhazardous wastes with special handling needs or specific waste properties that require waste clearance by either the King County Solid Waste Division or Public Health–Seattle and King County, or both. Examples of special wastes include contaminated soil, asbestos-containing materials, treatment plant grit and wastes from vactor trucks, industrial wastes, and tires.

transfer station. A permanent, fixed supplemental collection and transport facility used by individuals and route collection vehicles to deposit solid waste collected from offsite into a larger transfer vehicle for transport to a solid waste handling facility. Transfer stations may also include recycling facilities and compaction/baling systems.

visually sensitive resources. Views that have unique or highly aesthetic elements that are widely valued by the individuals who experience them.

waste to energy. The conversion of solid waste to energy, typically by incineration.

woodwaste. Solid waste consisting of wood pieces or particles generated as a byproduct or waste from the manufacture of wood products, handling, and storage of raw materials, trees, and stumps. It includes but is not limited to sawdust, wood chips, wood shavings, discarded pallets, clean dimensional lumber, bark, pulp, hog fuel, and log-sort yard waste. It does not include wood pieces or particles containing chemical preservatives, such as paint, creosote, pentachlorophenol, or copper-chrome arsenate.

Part 1 Summary

1.1 Objectives of the Proposed Waste Export System Plan

The King County Solid Waste Division is proposing that the King County Council approve a waste export system plan that will guide the county's actions as it implements waste export. The Solid Waste Division is also proposing that the County Council, as part of approving the waste export system plan, accomplish the following:

- Clarify roles of the public and private sectors.
- Identify which existing transfer stations to close, modify, or improve, and which new transfer stations to build.
- Decide when to begin waste export.
- Authorize the Solid Waste Division to study capacity at the Cedar Hills landfill.

Background

In March 2001, the King County Solid Waste Division published the *Final 2001 Comprehensive Solid Waste Management Plan* (King County 2001). The 2001 plan presents the county's 20-year strategy for managing its solid waste and recycling services.

The 2001 plan states that the Cedar Hills Regional Landfill (Cedar Hills landfill), which is the disposal location for the county's mixed municipal solid waste, is expected to reach its permitted capacity and be closed in 2012 (the current estimate is that capacity will be reached in 2015). One of the recommendations of the 2001 plan is that King County begin to export its mixed municipal solid waste to a landfill outside of the county once the Cedar Hills landfill closes.

In 2001, the King County Council adopted the 2001 plan through Ordinance 14236. By its approval of the 2001 plan, the County Council rejected alternatives to waste export, including the development of a new landfill in King County and incineration of the county's waste. Ordinance 14236 also mandated the Solid Waste Division to begin the necessary planning for waste export by developing a waste export coordination and implementation plan (or waste export system plan).

In 2004, the County Council adopted Ordinance 14971, which mandated the establishment of the Metropolitan Solid Waste Management Advisory Committee and mandated that King County Solid Waste Division staff provide reports of its findings regarding the development of the waste export system plan.

This environmental impact statement (EIS), which evaluates the proposed waste export system plan developed in accordance with the County Council's direction, supplements the EIS prepared for the *Final 2001 Comprehensive Solid Waste Management Plan* (King County 2001, Appendix H). In general, as recommended in Section 197-11-620 of the Washington Administrative Code (WAC 197-11-620), this supplemental EIS does not repeat the analyses presented in the 2001 EIS, although it does summarize pertinent conclusions of the 2001 EIS.

Objectives

The King County Solid Waste Division has developed the proposed waste export system plan to guide the county as it prepares the solid waste system for waste export. Specific objectives of the proposed waste export system plan are as follows:

- Respond to County Council policy directives to conduct the necessary planning in preparation for waste export.
- Respond to issues raised by the public, advisory committees (the Solid Waste Advisory Committee, the Interjurisdictional Technical Staff Group, and the Metropolitan Solid Waste Management Advisory Committee), and the solid waste industry as part of the public involvement process for the waste export system plan.
- Design, operate, and maintain a waste export system in a manner that protects the environment and conserves energy and natural resources.
- Comply with federal, state, and local regulations governing solid waste management.

Overall, the solid waste system, which is proposed to include waste export in the future, serves to mitigate potential significant impacts on the environment and public health that would otherwise result from improper disposal of waste. Nonetheless, certain aspects of waste export, and some of the alternatives under consideration, have the potential to result in significant impacts. The purpose of this supplemental EIS is to identify potential impacts, describe measures to mitigate the identified impacts, and draw conclusions about whether there may be any significant impacts that cannot or will not be mitigated.

This EIS is a programmatic (non-project-related) EIS that supplements the EIS prepared for the *Final 2001 Comprehensive Solid Waste Management Plan* (King County 2001, Appendix H). The level of detail of the analyses provided in this supplemental EIS is consistent with the broad programmatic issues to be resolved. Based on the analyses provided herein, the previous analyses in the EIS for the 2001 plan, as well as other relevant information and analyses in the proposed waste export system plan itself, King County will select an approach that will guide the county as it prepares the solid waste system for waste export. As actions are proposed to

implement waste export, this supplemental EIS will be used to the maximum extent possible to satisfy the environmental requirements of the State Environmental Policy Act (SEPA). However, it is expected that additional environmental review will be needed for project-specific actions, particularly those involving major capital improvements.

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1.2 Description of the Proposed Waste Export System Plan

The proposed waste export system plan addresses the following features of a potential waste export system:

- The county's transfer station system
- Public-private options for ownership and operation of transfer facilities
- Future capacity of the Cedar Hills Regional Landfill and the potential for extending its life
- Potential out-of-county disposal facilities
- Transport options for exporting waste
- Intermodal transfer facilities
- Timing of waste export.

Probable impacts associated with these aspects of waste export are addressed in this EIS. The EIS addresses alternatives only for features for which the County Council will be asked to consider two or more options. For example, in its consideration of the waste export system plan, the County Council will specifically consider and may potentially select among the six configurations of the transfer station system addressed in the waste export system plan. These six configurations are the six action alternatives addressed in this EIS. The EIS also evaluates a no-action alternative. In addition to the alternatives for the transfer station system, this EIS evaluates two action alternatives and a no-action alternative for the timing of waste export.

Although the waste export system plan considers extending the life of the Cedar Hills landfill, complex technical engineering issues need to be evaluated before formal options can be developed. This technical evaluation was not part of the development of the waste export system plan. Therefore, in its consideration of the waste export system plan, the County Council is not expected to select a specific approach for extending the life of the Cedar Hills landfill. This EIS includes a general discussion of impacts and mitigation measures related to extending the life of the landfill because actions designed to do so may be implemented as part of the county's waste export program. However, this EIS does not evaluate alternatives related to the landfill.

In developing the waste export system plan, the Solid Waste Division evaluated three general options for ownership and operation of the improved transfer stations and intermodal transfer facilities:

- Public only
- Public-private partnership
- Private only.

The outcome of the evaluation was that the public only or public-private partnership options are feasible. From a programmatic perspective, these two options would not differ in terms of their environmental impacts because policy decisions would provide for contracts that hold private parties to the same standards as public agencies. For this reason, this EIS does not address these options in the evaluation of impacts.

1.3 Description of Alternatives Evaluated in the EIS

This EIS evaluates alternatives for those features of the waste export system for which the County Council will be asked to select among various options. The County Council will be asked to select a preferred alternative among six action alternatives and a no-action alternative for the transfer station system and among two action alternatives and a no-action alternative for the timing of initiating waste export.

Alternatives for the County's Transfer Station System

No-Action Alternative

Under the no-action alternative, the County Council would not approve the waste export system plan, and the Solid Waste Division would continue to implement improvements to the county's existing transfer stations as approved in the *Final 2001 Comprehensive Solid Waste Management Plan* (King County 2001). The recommendations in the 2001 plan focus on improving the level of service to customers and preparing the transfer station system for waste export. Specific improvements in the 2001 plan related to waste export that would be implemented under the no-action alternative include the following:

- **Factoria transfer station.** Replace the station on the current site and the Eastgate property, and install a compactor in 2004.
- **First Northeast transfer station.** Rebuild or replace the station and install a compactor (no specific date).
- **Bow Lake transfer station.** Retrofit the transfer building and install a compactor in 2006.
- **Algona transfer station.** Install a compactor in 2008.
- **Houghton transfer station.** Install a compactor (no specific date). Consider possible closure.
- **Renton transfer station.** Install a compactor (no specific date).
- **NE King County transfer station.** Possibly build a new station with a compactor (no specific date).

Subsequent work prepared for the milestone reports in support of the waste export system plan indicates that some aspects of the no-action alternative are infeasible because the completion dates for specific projects have passed or the resulting facilities would have unacceptable capacity and level of service.

Action Alternatives

The action alternatives for the county's transfer stations involve various combinations of station improvements, closures, and new construction. The existing county transfer system consists of eight transfer stations and two drop box facilities. All full-service and commercial-only stations would have compactors. Self-haul-only facilities would not have compactors. The alternatives are summarized in Table 1-1.

Table 1-1. Alternatives for the transfer station system.

Alternative	Full-Service Facilities	Self-Haul-Only Facilities	Commercial-Only Facilities	Closed Facilities	Total No. of Facilities [a]
No action	New Factoria/Eastgate Reconstructed Bow Lake Reconstructed Algona Reconstructed Houghton Reconstructed Renton New NE Lake Washington	None	None	None (possibly Houghton)	11 (10 if Houghton is closed)
1	New South County New Bow Lake New Factoria/Eastgate New NE Lake Washington	None	None	Algona Houghton Renton	9
1A	New South County New Bow Lake New Factoria (no Eastgate) New NE Lake Washington	None	None	Algona Houghton Renton	9
2	New South County New Bow Lake New Factoria/Eastgate	Houghton	New NE Lake Washington	Algona Renton	10
2A	New South County New Factoria/Eastgate	Houghton Renton	New NE Lake Washington New Bow Lake	Algona	11
3	New South County New Bow Lake New NE Lake Washington	Houghton Renton Factoria (no Eastgate)	None	Algona	11
4	New Factoria/Eastgate	Algona Houghton Renton	New South County New Bow Lake New NE Lake Washington	None	12

[a] Total includes transfer stations and two drop box facilities.

All of the alternatives for the transfer system share the following features, except where noted:

- Operations at the soon-to-be improved First Northeast transfer station (improvements began in May 2006) and the four rural facilities (Vashon transfer station, Enumclaw transfer station, Skykomish drop box, and Cedar Falls drop box) would not change.

- Two new sites are required: one in south King County and one in the NE Lake Washington area, both of which would have compactors.
- No station closure or conversion (e.g., full-service to self-haul only) would occur until the replacement facilities are open, except for Alternative 1A in which Factoria would be closed to allow construction of a new transfer station.
- Project-specific documentation would be prepared to comply with SEPA for all siting of new facilities, new construction, and other major improvements.

Alternatives for the Timing of Waste Export

No-Action Alternative

Under the no-action alternative, the County Council would not approve the waste export system plan. Waste export would be implemented as directed in the *Final 2001 Comprehensive Solid Waste Management Plan* (King County 2001), that is, when the Cedar Hills landfill reaches capacity and closes, currently estimated to occur in 2015.

Action Alternatives

Alternative X1: Full Early Export

Under Alternative X1, King County would close the Cedar Hills landfill before it reaches capacity. As evaluated in this EIS, Alternative X1 involves the closure of the landfill in 2010.

Alternative X2: Partial Early Export

Under Alternative X2, a portion of King County's waste would be exported beginning in 2010. The exact percentage has not been determined but for this EIS is assumed to be approximately 20 percent. The Cedar Hills landfill would remain open after 2010 and continue to receive the remaining 80 percent of the county's waste until it reaches capacity, which would occur in approximately 2016 if 20 percent of the county's waste is exported early.

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1.4 Threshold Determination and EIS Scoping

Public involvement in determining the scope of this project is optional because it consists of the preparation of a supplemental EIS (WAC 197-11-620[1]). However, the Solid Waste Division chose to go through the scoping process and issued a determination of significance and scoping notice on April 7, 2006. The scoping notice is included as Appendix A.

The Solid Waste Division has previously involved the public extensively in preliminary planning for waste export and continues to involve the public. Therefore, no public meeting was held to receive oral comments on the scope of the supplemental EIS. Such a public meeting is optional under WAC 197-11-408(4). The public was encouraged to provide comments on the scope of the supplemental EIS by means of comments submitted in writing.

The scoping period ended on April 28, 2006. During the scoping period, the Solid Waste Division received one formal comment letter. This letter, from the Washington State Department of Transportation (WSDOT), requested that the supplemental EIS address the following issues:

- Routes to be used for both delivery and export of the waste
- Total trip volumes for both waste delivery and export
- Days and hours for waste delivery and export trips
- Estimated weight of each vehicle that will be used for waste delivery and export
- Effects of waste delivery and export trips on the operational performance of WSDOT's transportation system
- The year each alternative would begin operations
- Possible mitigation for impacts on the state transportation system.

This supplemental EIS addresses these issues in the section "Transportation" in Part 3 to the extent possible, given the programmatic nature of the analysis.

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1.5 Summary of Impacts and Mitigation Measures and Comparison of Alternatives

Alternatives for the County's Transfer Station System

At a programmatic level, the alternatives for the county's transfer station system are not dramatically different in the nature and intensity of their environmental impacts, and the impacts, in any event, are not expected to be significant at a programmatic level. However, the following differences allow for some discrimination among the alternatives:

- The existing Houghton transfer station is one of two transfer stations (the existing Factoria station being the other) that has been identified by the Solid Waste Division (King County 2005b) as being potentially incompatible with surrounding land uses (which in the case of the Houghton station are residential). Alternatives 1 and 1A, under which the Houghton station would be closed, are likely to result in lower impacts in terms of land use compatibility than the other alternatives. Under all the alternatives, the existing Factoria transfer station would be rebuilt so that the impacts associated with the Factoria station in terms of land use compatibility would be substantially similar among the alternatives.

- Under Alternative 3, both the Houghton and Factoria transfer stations would be converted to self-haul only, and commercially hauled waste that would have been handled at these stations would then be hauled primarily to the new NE Lake Washington transfer station. As a result, the relatively high volume of waste handled by the new NE Lake Washington station could lead to a concentration of traffic and other impacts in the vicinity of this station that are greater than those that would occur at individual transfer stations under any of the other alternatives.

- The expected annualized capital cost and operating costs are similar for all six of the action alternatives through 2028. However, operating costs for Alternatives 1 and 1A are considerably lower than the operating costs for the other action alternatives. Over the long term, after capital costs are paid, the comparative costs of the action alternatives are determined by their operating costs. From this long-term perspective, Alternatives 1 and 1A are the least cost alternatives, and Alternatives 3 and 4 are the highest cost alternatives (King County 2006, p. 2-27).

Alternatives for Timing of Waste Export

The differences among the alternatives for the timing of waste export reflect the basic trade-off between the higher system costs (reflected in comparatively higher user rates) and other potential environmental impacts associated with waste export versus the lower system costs (reflected in comparatively lower user rates) and impacts due to continued operation of the Cedar Hills landfill on the surrounding community. Under current operations, there are no significant impacts on the surrounding community resulting from the operations at the Cedar Hills landfill. As a result of the need to export waste, it is anticipated that an increase in rates may be necessary.

Under the no-action alternative, the Cedar Hills landfill would close in approximately 2015, and waste export would begin. Under Alternative X1, waste export would be initiated in 2010, and the county would no longer send solid waste to the Cedar Hills landfill, a change that would affect the current traffic and operational conditions associated with the landfill. At the same time, system costs and user rates would probably be higher than they would be under the no-action alternative for the 5-year period. Under Alternative X2, export of approximately 20 percent of the county's waste would begin in 2010, with full export of the county's mixed municipal solid waste beginning in approximately 2016. Impacts from both the operation of the Cedar Hills landfill and the waste export system would occur simultaneously during the period 2010 to 2016. The costs and user rate implications of Alternative X2 are not fully known but appear to be somewhat higher than those of the no-action alternative (King County 2006).

1.6 Documents Incorporated by Reference

This EIS incorporates by reference various sections of the documents listed below. The specific sections incorporated are discussed in the text of this EIS where relevant. A copy of each of these documents is available for review at the office of the King County Solid Waste Division at King Street Center, 201 South Jackson Street, Suite 701, Seattle, Washington.

- *Factoria Transfer/Recycling Station Final Environmental Impact Statement* (City of Bellevue, May 1993)
- *Final Environmental Impact Statement for Cedar Hills Regional Landfill Site Development Plan* (King County Solid Waste Division, March 1998)
- *Final Supplemental Environmental Impact Statement, City of Seattle Solid Waste Intermodal Transfer Facility* (Seattle Public Utilities, August 2005).

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1.7 Major Conclusions, Areas of Controversy, and Issues to Be Resolved

This supplemental EIS reaches the following major conclusions:

- At a programmatic level, overall approval of the waste export system plan is unlikely to result in significant unavoidable adverse impacts, except possibly for impacts on solid waste rates.

- Selection of the no-action alternative for the transfer station system (i.e. implementation of the program set forth in the *Final 2001 Comprehensive Solid Waste Management Plan*) would result in an unacceptable level of service at several transfer stations, which could constitute a significant adverse impact on the county's solid waste system.

- Implementation of full early export beginning in 2010 could result in significant impacts in terms of user rates.

- While new facilities (transfer stations and intermodal transfer facilities) have the potential to generate significant adverse impacts, careful site selection should avoid or minimize most potential impacts. Facility siting criteria developed by King County are provided in Appendix C. For those potential impacts that cannot be avoided or adequately minimized through site selection, adequate and feasible mitigation measures appear to be available.

- Long-haul transport and out-of-county disposal is not expected to result in significant adverse impacts. Long-haul transport by rail appears to be less costly than transport by barge or truck (King County 2006), and rail transport would require substantially less energy and result in lower air emissions than either barge or truck transport.

There has been little public controversy associated with the waste export system plan. One area of remaining uncertainty is the viability and cost of implementing partial waste export. Based on currently available information, it appears that partial waste export would be slightly more costly than full waste export when the Cedar Hills landfill reaches capacity and closes, but the cost of partial waste export deserves further study.

There is one issue to be resolved:

- In 2001, the King County Council adopted the 2001 plan through Ordinance 14236. By its approval of the 2001 plan, the County Council approved waste export, rejecting alternatives including the development of

a new landfill in King County and incineration of the county's waste. Recently, it has been suggested that the County Council should reconsider its 2001 decision approving waste export and consider a waste-to-energy incineration option for handling the county's mixed municipal solid waste. Approval of this waste export system plan, approval of any of the alternatives for the transfer station system, and approval of any of the alternatives for the timing of transitioning from in-county disposal in landfills to waste export would not preclude a subsequent decision by the County Council to implement a waste-to-energy option. In any case, a transfer station system is required.

Part 2 Proposed Plan and Alternatives

2.1 Objectives of the Proposed Waste Export System Plan

In March 2001, the King County Solid Waste Division published the *Final 2001 Comprehensive Solid Waste Management Plan* (King County 2001). The 2001 plan presents the county's 20-year strategy for managing its solid waste and recycling services. Elements of the county's solid waste system addressed in the 2001 plan include the following:

- Waste reduction, recycling, and market development
- Collection of recyclables and mixed municipal solid waste
- The regional transfer system
- Disposal of mixed municipal solid waste
- Disposal of construction, demolition, and land-clearing debris and special wastes
- Enforcement of solid waste regulations
- Solid waste system financing and rates.

The 2001 plan states that the Cedar Hills Regional Landfill, which is the disposal location for the county's mixed municipal solid waste, is expected to reach its permitted capacity and be closed in 2012 (the current estimate is that capacity will be reached in 2015). One of the recommendations of the 2001 plan is that King County begin to export wastes to a landfill outside of the county once the Cedar Hills Regional Landfill closes. The 2001 plan notes that the adoption of its recommendations would be only the first step in the county's preparation for waste export and that subsequent planning to define needed capital improvements would be necessary.

In 2001, the King County Council adopted the 2001 plan through Ordinance 14236. By its approval of the 2001 plan, the County Council rejected alternatives to waste export, including the development of a new landfill in King County and incineration of the county's waste. Ordinance 14236 also mandated the Solid Waste Division to begin the necessary planning for waste export by developing a waste export coordination and implementation plan (or waste export system plan). Ordinance 14971 mandated the establishment of the Metropolitan Solid Waste Management Advisory Committee and mandated that King County Solid Waste Division staff provide reports of its findings regarding the development of the waste export system plan.

This environmental impact statement (EIS), which evaluates the proposed waste export system plan developed in accordance with the County Council's direction, supplements the EIS prepared for the *Final 2001 Comprehensive Solid Waste Management Plan* (King County 2001, Appendix H), which evaluated various aspects of waste export.

Proponent

The King County Solid Waste Division is the proponent of the waste export system plan.

Location

The location of the proposal is the area in western Washington served by King County's regional solid waste management system, which includes all the unincorporated areas of King County, as well as 37 of the 39 cities in the county, excluding only the municipalities of Seattle and Milton.

Objectives

The King County Solid Waste Division has developed the proposed waste export system plan to guide the county as it prepares the county's solid waste system for waste export. Specific objectives of the proposed waste export system plan are as follows:

- Respond to County Council policy directives to conduct the necessary planning in preparation for waste export.
- Respond to issues raised by the public, advisory committees (the Solid Waste Advisory Committee, the Interjurisdictional Technical Staff Group, and the Metropolitan Solid Waste Management Advisory Committee), and the solid waste industry as part of the public involvement process for the waste export system plan.
- Design, operate, and maintain a waste export system in a manner that protects the environment and conserves energy and natural resources.
- Comply with federal, state, and local regulations governing solid waste management.

Effective management of the region's solid waste is an essential public service. The solid waste system, which is proposed to include waste export in the future, serves to mitigate potential significant impacts on the environment and public health that would otherwise result from improper disposal of waste. Nonetheless, certain aspects of waste export, and some of the alternatives under consideration, have the potential to result in significant impacts. This EIS was prepared (1) to identify potential impacts, (2) to describe mitigation measures that can be used (and in many cases, are currently used) to avoid such impacts or reduce them to levels that are not significant, and (3) where possible, to draw conclusions about whether there may be any significant unavoidable adverse impacts (that is, significant impacts that cannot or will not be mitigated).

This EIS is a programmatic (non-project-related) EIS that supplements the EIS prepared for the *Final 2001 Comprehensive Solid Waste Management Plan* (King County 2001, Appendix H). The level of detail of the analyses provided in this supplemental EIS is consistent with the broad programmatic issues to be resolved. Based on the analyses presented herein, the previous analyses in the EIS for the 2001 plan, as well as other relevant information and analyses in the proposed waste export system plan itself, King County will select an approach that will guide the county as it prepares the solid waste system for waste export. As actions are proposed to implement waste export, this supplemental EIS will be used to the maximum extent possible to satisfy the environmental requirements of the State Environmental Policy Act (SEPA). However, it is expected that additional environmental review will be needed for project-specific actions, particularly those involving major capital improvements.

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2.2 Description of the Proposed Waste Export System Plan

As described earlier, King County will need to begin disposing of the county's mixed municipal solid waste at a new facility when the Cedar Hills Regional Landfill (Cedar Hills landfill) reaches capacity, currently estimated to occur in 2015. To meet this need, the King County Solid Waste Division has developed a waste export system plan for consideration and approval by the King County Council.

General Description of the Waste Export System

To implement waste export, the county will need to change certain components of its solid waste system. Other components of the solid waste system will not need to change and can continue to function much as they did before the implementation of waste export. For example, commercial and self-haul customers will continue to collect and haul waste to the county's transfer stations and/or privately operated transfer stations (a small percentage of collected waste is currently hauled directly to the Cedar Hills landfill). Regardless of how the county disposes of its waste, a solid waste transfer system will be required.

The county's proposed installation of compactors in its transfer stations will result in a reduction of impacts systemwide. Compaction of solid waste will reduce the total volume, requiring fewer truck trips to transport a given tonnage of solid waste.

Currently, nonrecyclable waste received at the transfer stations is loaded onto trucks and hauled to the Cedar Hills landfill for disposal. Once waste export is implemented, nonrecyclable waste to be transported to an out-of-county disposal location would be compacted at the transfer stations and loaded onto trucks. The waste would then be trucked either directly to the out-of-county disposal location or to one or more intermodal transfer facilities in the county for loading onto trains or barges that would transport the waste to the out-of-county disposal location. An intermodal transfer facility could be developed in conjunction with transfer station facilities so that commercially collected waste could be hauled directly to the intermodal transfer facility for compaction and transfer to trains or barges. Figure 2-1 illustrates the current waste disposal handling system with in-county disposal and a future system with waste export.

To cope with potential disruptions to the transportation infrastructure used to transport waste to the out-of-county disposal location or with an abrupt and dramatic increase in the volume of solid waste (e.g., as a result of a local catastrophe), the county would prepare an emergency response plan. The emergency response plan could include the provision of back-up disposal capacity in or near the county. However, potential emergency situations are expected to be short-lived and can be handled by short-term storage and alternative modes of transportation without the need to use back-up capacity (King County 2001).

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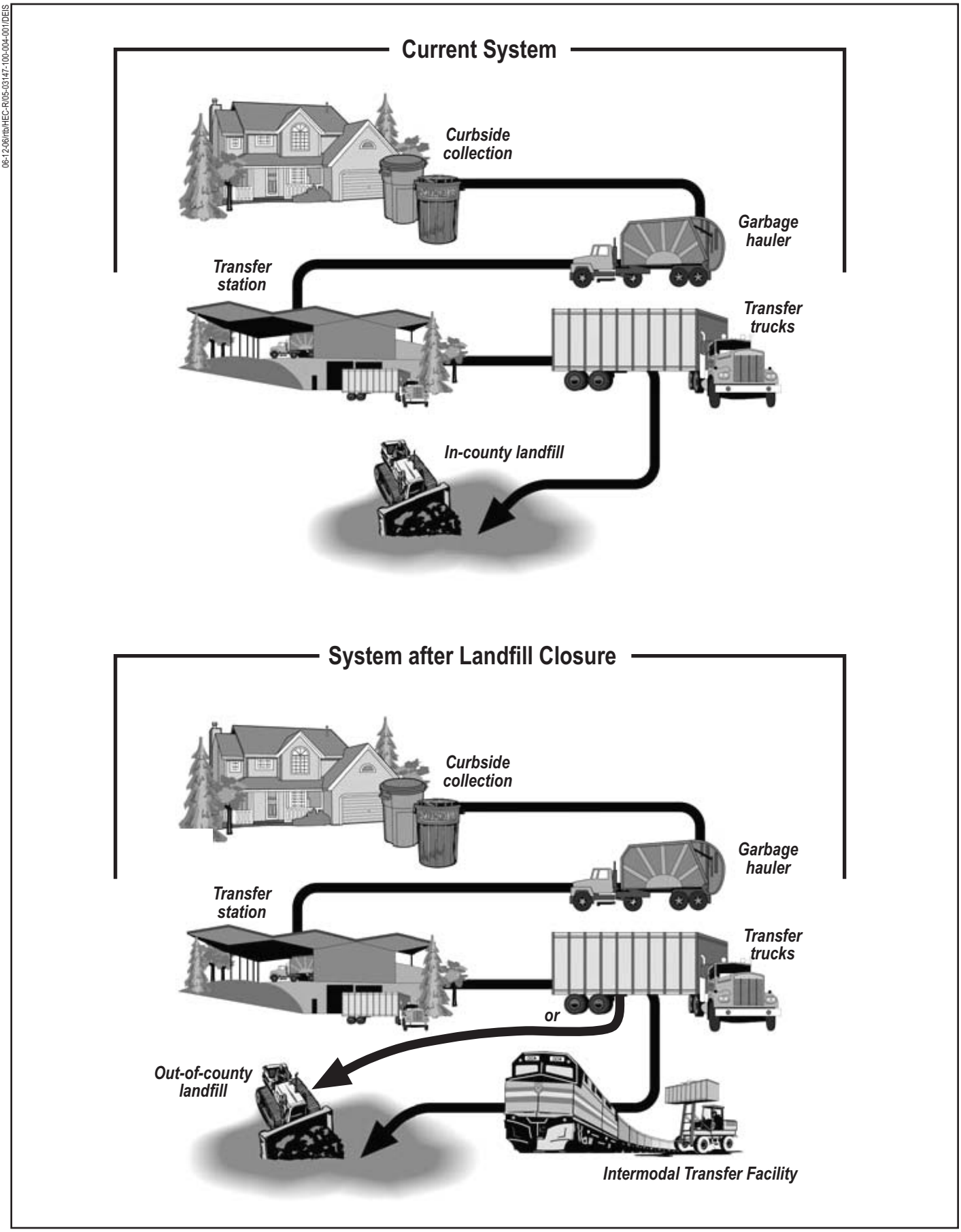


Figure 2-1. King County solid waste disposal system before and after implementation of waste export.

Proposed Waste Export System Plan

The proposed waste export system plan was developed by the Solid Waste Division to guide the county as it prepares the solid waste system to handle waste export. The County Council made the decision to proceed with waste export in 2001, when it approved Ordinance 14236 and adopted the *Final 2001 Comprehensive Solid Waste Management Plan* (King County 2001). Therefore, regardless of whether the County Council approves the waste export system plan prepared by the Solid Waste Division, waste export will be implemented.

Recently, it has been suggested that the County Council should reconsider its 2001 decision approving waste export and consider a waste-to-energy option for handling the county's mixed municipal solid waste. Approval of this waste export system plan, approval of any of the alternatives for the transfer station system, and approval of any of the alternatives for the timing of the transition from in-county landfill disposal to waste export would not preclude a subsequent decision by the County Council to implement a waste-to-energy option. Specifically, the configuration of the transfer station system and its operation for waste export would be similar to that for waste-to-energy. With either approach, mixed municipal solid waste would be hauled to the county's transfer stations by commercial and self-haul customers. At the transfer stations, the waste would be loaded into containers that could be trucked to an intermodal facility for transfer to a train or barge, trucked directly to an out-of-county landfill, or trucked to a waste-to-energy incineration facility. With a waste-to-energy facility, residual ash from the incineration process would be hauled to a disposal facility, which would likely be an out-of-county landfill or another permitted end use.

The proposed waste export system plan addresses the following features of a potential waste export system:

- The county's transfer station system
- Public-private options for ownership and operation of transfer facilities
- Future capacity of the Cedar Hills Regional Landfill and the potential for extending its life
- Potential out-of-county disposal facilities
- Transport options for exporting waste
- Intermodal transfer facilities
- Timing of waste export.

Probable impacts associated with these aspects of waste export are addressed in this EIS. However, the EIS addresses alternatives only for features for which the County Council will be asked to consider two or more options. For example, in its consideration of the waste export system plan, the County Council, will specifically consider and may potentially select among the six configurations of the transfer station system addressed in the waste export system plan. These six configurations are the six action alternatives addressed in this EIS. The EIS also evaluates a no-action alternative.

The Solid Waste Division recommends that the County Council, in conjunction with its approval of the waste export system plan, authorize the Solid Waste Division to conduct a study of options for extending the life of the landfill. Although the waste export system plan addresses extending the life of the Cedar Hills landfill, complex technical engineering issues need to be evaluated before formal options can be developed. This technical evaluation was not part of the development of the waste export system plan. Therefore, in its consideration of the waste export system plan, the County Council is not expected to select a specific approach for extending the life of the Cedar Hills landfill. This EIS includes a general discussion of impacts and mitigation measures related to extending the life of the landfill because actions designed to do so may be implemented as part of the county's waste export program. However, the EIS does not evaluate alternatives related to the landfill. If the County Council authorizes the Solid Waste Division to carry out such a study, a separate SEPA environmental review would be conducted for that study.

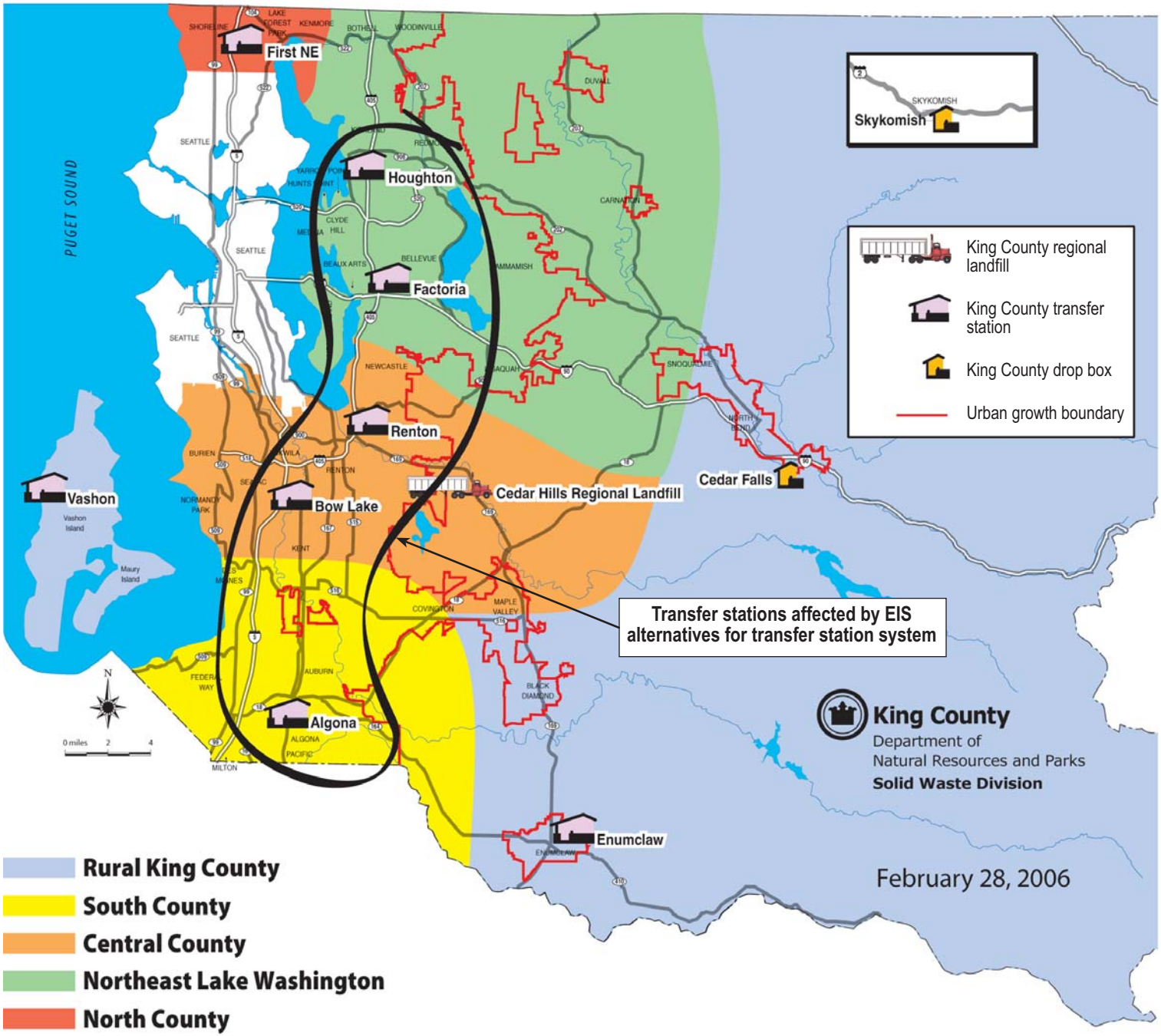
Features of the Waste Export System Included in the Proposed Plan

The features of the waste export system that are included in the proposed waste export system plan are described in the following subsections.

Transfer Station System

The county's transfer station system includes eight county-operated transfer stations and two county-operated drop boxes (Figure 2-2). All the transfer stations accept self-haul as well as commercial customers. The two transfer stations constructed in the 1990s (Vashon and Enumclaw) have operating compactors. The other six transfer stations, which were constructed in the 1960s, have no compactors, although the First Northeast station will be improved in 2006/2007 and will have a compactor installed.

To provide an adequate level of service, King County will need to make improvements to some of the transfer stations, close other transfer stations that cannot be adequately improved, and construct new transfer stations to replace the closed stations. In the milestone reports prepared to support the waste export system plan, three of the county's eight transfer stations were not evaluated because they are relatively new or are being rebuilt. The Enumclaw and Vashon transfer stations were constructed in 1999 and 1993, respectively. The First Northeast station in Shoreline is currently being rebuilt and is scheduled to reopen in the fourth quarter of 2007. These three stations meet, or will meet, all of the standards evaluated for the older transfer stations.



Source: King County 2006

Figure 2-2. Existing King County solid waste facilities by geographic area.

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All transfer stations, except self-haul only-stations, would be equipped with compactors to increase the density of waste transported from the stations by up to 50 percent, thereby decreasing the number of containers necessary for a given tonnage of waste, decreasing transportation trips, and increasing the efficiency of ultimate disposal. In preparing the waste export system plan, King County analyzed five existing transfer stations (Bow Lake, Renton, Algona, Factoria, and Houghton) and determined that three of them (Algona, Factoria, and Houghton) have insufficient space to accommodate compactors. In addition, without other improvements, vehicle and tonnage capacity at all of the existing transfer stations would be substantially reduced after the installation of compactors.

The design of improved or newly constructed transfer station facilities would vary depending on the tonnage of waste handled and the services provided and, in the absence of project-specific detail, can be described only in general terms for this programmatic EIS. The size of a typical transfer station site is approximately 10 to 20 acres. A typical modern King County transfer station could include the following:

- Interior roadways
- A small scalehouse or scalehouses, typically one story in height, or an unattended scale facility
- A main transfer building with a height up to approximately 70 to 85 feet and a footprint area of up to approximately 70,000 square feet that would encompass the following:
    - A tipping floor onto which vehicles would drive
    - An area into which waste loads would be deposited
    - A compactor or compactors to compress and transfer waste into containers
    - Odor and air quality systems
- Administration offices and employee and public facilities such as restrooms
- A recycling area or areas, covered or uncovered
- A transfer trailer/container yard to store empty transfer trailers and containers
- Utilities and stormwater management systems.

The waste export system plan includes optional configurations for the county's transfer station system that would allow for waste export. These optional configurations are described in the section "Description of Alternatives Evaluated in the EIS."

Public-Private Options for Ownership and Operation of the Transfer Stations and Intermodal Transfer Facilities

In developing the waste export system plan, the Solid Waste Division evaluated three general options for ownership and operation of the improved transfer stations and intermodal transfer facilities:

- Public only
- Public-private partnership
- Private only.

The outcome of the evaluation was that the public only or public-private partnership options are feasible, but the private only option, in which the public sector is not involved in service delivery, rate setting, or long-term planning, is infeasible because it is not allowed under current state law or county policy.

Although a public-private partnership could take various forms, private participation would be procured by the public sector through contracts with the private sector, and overall system planning would remain in the hands of the public sector. Procurement contracts with the private sector would contain performance standards, and state and local regulatory requirements would apply equally to private and public facilities. Therefore, from a programmatic perspective, a public-private partnership for ownership and operation is likely to result in similar environmental impacts as that of a public-only system. For this reason, the EIS does not distinguish between public only and public-private options in the evaluation of impacts.

Future Capacity of the Cedar Hills Regional Landfill and Potential for Extending Its Life

The *2001 Final Comprehensive Solid Waste Management Plan* (King County 2001) included the estimate that the Cedar Hills landfill would reach its permitted capacity and close operations in 2012. Based on current projections of future waste volumes and current landfilling plans and practices, the Cedar Hills landfill is currently estimated to reach its permitted capacity in approximately 2015. The current layout of the Cedar Hills landfill is shown in Figure 2-3.

Extending the life of the Cedar Hills landfill beyond 2015 would further delay the higher costs that the Solid Waste Division has determined would be associated with waste export and incurred by the county and solid waste ratepayers. Therefore, the Solid Waste Division can be expected to investigate ways to achieve further efficiencies within the constraints of existing permits and perhaps also to investigate options for expanding the capacity of the landfill that would require new construction and operating permits. Possible approaches to further extending the life of the Cedar Hills landfill include the following:

- Expanding waste reduction and recycling

- Regrading of areas recently filled, currently being filled, or to be filled at the landfill (Areas 5, 6, and 7) to use the additional airspace gained from the settling of refuse. That airspace would be used for additional

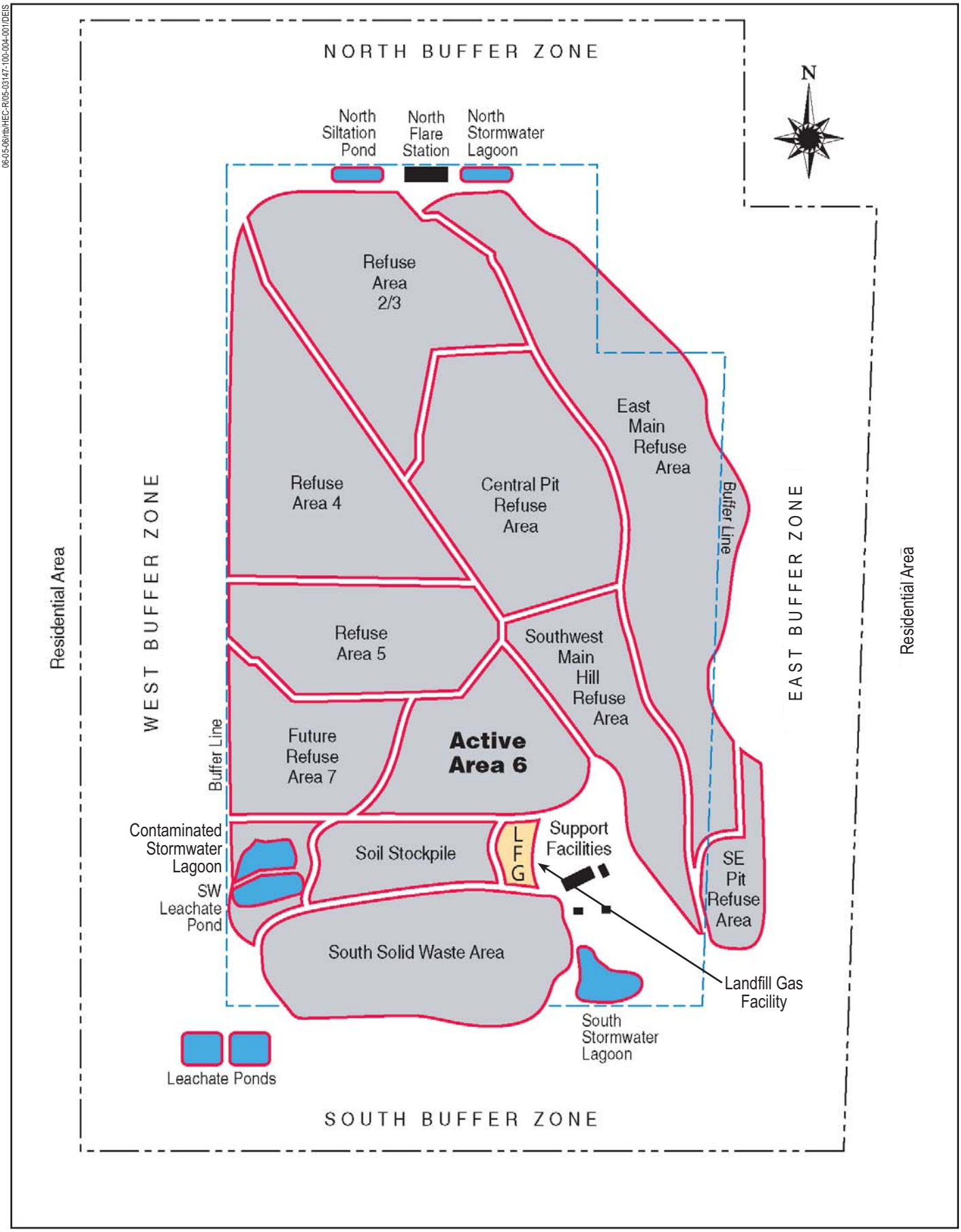

Figure 2-3. Site layout of the Cedar Hills Regional Landfill.

landfilling up to the permitted maximum elevation. These areas meet solid waste disposal regulations, and no new construction or operating permits would be required. However, the landfill plan of operations would require a modification, which would need to be approved by Public Health–Seattle and King County.

- Regrading of older filled areas at the landfill (Areas 2/3, 4, and Central Pit) to use the additional airspace gained from the settling of refuse. That airspace would be used for additional landfilling up to the permitted maximum elevation. This approach would require new construction and operating permits.

- Landfilling of waste in areas at the landfill not currently permitted for disposal. This approach would require new construction and operating permits.

The Solid Waste Division has yet to formally develop approaches for extending the life of the Cedar Hills landfill, and further study could reveal additional approaches.

Potential impacts associated with extending the life of the Cedar Hills landfill would occur regardless of which alternatives (including the no-action alternative) are selected for implementation by the County Council. As noted earlier, the County Council decided in 2001 to export the county's waste, and the County Council's decision on the waste export system plan will have no effect on that earlier decision. Because the Solid Waste Division will not be recommending specific options for extending the life of the Cedar Hills landfill to the County Council for its consideration, this EIS does not evaluate specific alternatives for the landfill. Although this EIS addresses extending the life of Cedar Hills as a consequence of the county's decision to export waste, it is likely that the Solid Waste Division would consider extending the life of the landfill even without the prospect of waste export. Because the Cedar Hills landfill is a facility fully under the control of the county, and alternative means of disposal would result in new construction and/or operating costs for the county, the Solid Waste Division could be expected to maximize the value of the Cedar Hills landfill in any event.

Potential Out-of-County Disposal Facilities

The Solid Waste Division has identified existing and permitted landfills in the western United States that could serve as the ultimate disposal site for the county's exported waste. All the identified facilities, which are shown in Figure 2-4, are located in arid areas. The identified facilities can be divided into three geographic groups:

- South-central Washington/north-central Oregon
  - Roosevelt Regional Landfill
  - Columbia Ridge Landfill and Recycling Center
  - Finley Buttes Regional Landfill.

- Idaho
  - Simco Road Regional Landfill.
- Southwestern states
  - Northeastern New Mexico Regional Landfill (referred to as the Herzog landfill)
  - Eagle Mountain Landfill
  - Mesquite Regional Landfill.

Information related to these disposal facilities is provided in Table 2-1. The County Council will not select an out-of-county disposal location as part of its consideration of the waste export system plan. Therefore, the identified out-of-county disposal locations are not addressed as proposed alternatives in this EIS. Rather, they are used as example disposal locations to provide a reasonable range of the impacts expected as a result of export and disposal of the county's waste. Additional facilities may be available for disposal when the county seeks to negotiate contracts for disposal.

Transport Options for Exporting Waste

Three modes of transport could be used to export the county's waste: rail, barge, and truck. However, for most of the identified out-of-county disposal sites, truck and rail are the primary feasible modes of transport. Finley Buttes Regional Landfill in north-central Oregon is the only location for which barge transport is currently available. Both Roosevelt Regional Landfill and Columbia Ridge Landfill and Recycling Center could be upgraded to accept waste transport by barge. Modes of transport for each of the out-of-county disposal locations are indicated in Table 2-1.

Both rail and barge would require intermodal transfer facilities where waste trucked from the county's transfer stations would be loaded onto trains or barges. If trucks are used to export waste, they could depart directly from the county's transfer stations, and no intermodal transfer facility would be necessary.

As part of its consideration of the waste export system plan, the County Council is not expected to select a mode of transport. Therefore, this EIS uses the three potential modes of transport to evaluate the range of potential impacts but does not evaluate them as proposed alternatives.

Intermodal Transfer Facilities

An intermodal facility for the transfer of waste from trucks to trains or barges would include the following general features:

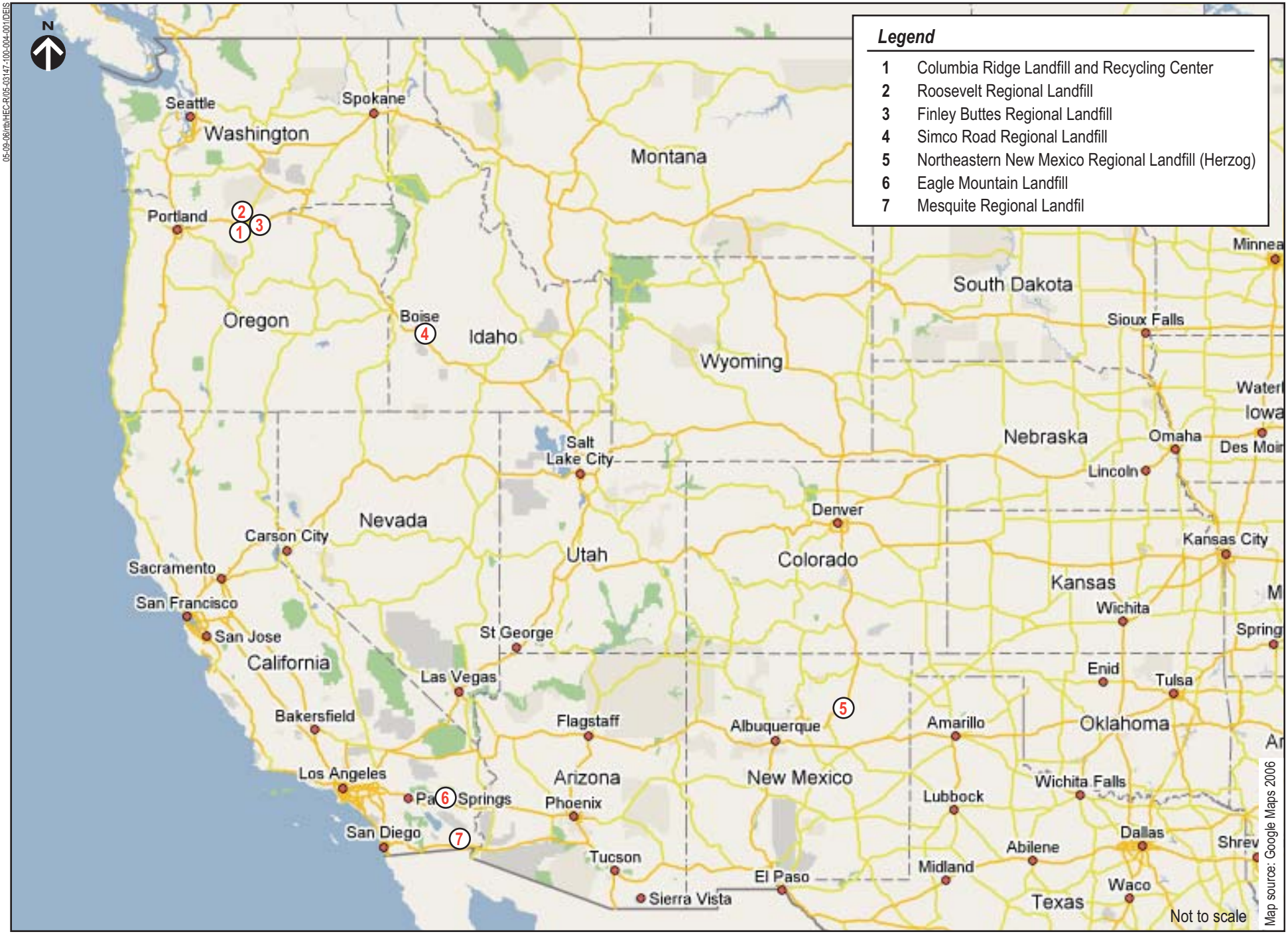

Figure 2-4. Out-of county landfills identified in the proposed waste export system plan.

Table 2-1. Out-of-county landfills identified as potential sites for the county's exported waste.

Name	Location	Owner	Distance from Seattle (miles)	Year of Opening	Estimated Year of Closure	Remaining Capacity (tons in 2006)	Transport Options from King County
Columbia Ridge Landfill and Recycling Center	Gilliam County, Oregon	Waste Management	325	1990	2060+	205 million	Road (Interstate 84); Union Pacific Railroad
Roosevelt Regional Landfill	Klickitat County, Washington	Allied Waste Industries, dba Regional Disposal Co.	330	1998	2073+	214 million	Road (Washington Highway 14); BNSF Railway
Finley Buttes Regional Landfill	Morrow County, Oregon	Waste Connections	352	1990	2060+	98 million	Road (Interstate 84); Union Pacific Railroad; barge (Columbia River)
Simco Road Regional Landfill	Elmore County, Idaho	Idaho Waste Systems	628	2000	~2040	200 million	Road (Interstate 84); Union Pacific Railroad
Northeastern New Mexico Regional Landfill (Herzog landfill)	Mora County, New Mexico	Herzog Environmental, Inc.	1,616	2000	2100+	Uncertain	Road (Interstate 25); BNSF Railway and Union Pacific Railroad
Eagle Mountain Landfill	Riverside County, California	Los Angeles County Sanitation District	1,325	~2010	2125	560 million	Road (Interstate 10); Union Pacific Railroad
Mesquite Regional Landfill	Imperial County, California	Los Angeles County Sanitation District	1,420	~2010	2110	970 million	Road (California Highway 78); Union Pacific Railroad

- Interior roadways and off-loading areas for trucks bringing containerized waste to the facility
- Container storage and sorting areas
- Train or barge loading areas.

A truck-to-rail intermodal facility with the capacity to handle all of the county's mixed municipal solid waste would need to be at least 10 acres in size and would need to be within approximately 200 feet of one or more existing rail lines. A truck-to-barge facility could have a land area smaller than 10 acres because space for trains would not be necessary, but the site would also need to include adjoining water area sufficient for barge loading and maneuvering. An intermodal transfer facility would probably be located in an industrial area and would need good access to the regional road system.

Waste export could be handled at one or several intermodal transfer facilities, and the intermodal facilities could be stand-alone facilities or associated with transfer station facilities.

Timing of Waste Export

The waste export system plan evaluates two timing scenarios for waste export: full early export and partial early export. These two scenarios, as well as the no-action scenario of implementing waste export when the Cedar Hills landfill reaches capacity, are described in the following section, "Description of Alternatives Evaluated in the EIS."

2.3 Description of Alternatives Evaluated in the EIS

This EIS evaluates alternatives for those features of the waste export system for which the County Council will be asked to select among various options. The County Council will be asked to select a preferred alternative among six action alternatives and a no-action alternative for the transfer station system and among two action alternatives and a no-action alternative for the timing of initiating waste export. The County Council will also be asked to determine whether to extend the life of the Cedar Hills landfill.

Alternatives for the County's Transfer Station System

No-Action Alternative

Under the no-action alternative, the County Council would not approve the waste export system plan, and the Solid Waste Division would continue to implement improvements to transfer stations as approved in the *Final 2001 Comprehensive Solid Waste Management Plan* (King County 2001). The recommendations in the 2001 plan focus on improving the level of service to customers and preparing the transfer station system for waste export. Specific improvements in the 2001 plan related to waste export that would be implemented under the no-action alternative include the following:

- **Factoria transfer station.** Replace the station on the current site and the Eastgate property, and install a compactor in 2004.
- **First Northeast transfer station.** Rebuild or replace the station and install a compactor (no specific date).
- **Bow Lake transfer station.** Retrofit the transfer building and install a compactor in 2006.
- **Algona transfer station.** Install a compactor in 2008.
- **Houghton transfer station.** Install a compactor (no specific date). Consider possible closure.
- **Renton transfer station.** Install a compactor (no specific date).
- **NE King County transfer station.** Possibly build a new station with a compactor (no specific date).

Subsequent work prepared for the milestone reports in support of the waste export system plan indicates that some aspects of the no-action alternative are infeasible because the completion dates for specific projects have passed or the resulting facilities would have unacceptable capacity and level of service.

Action Alternatives

The action alternatives for the county's transfer station system involve various combinations of station improvements, closures, and new construction. The existing county transfer station system consists of 10 facilities: eight transfer stations and two drop box facilities (Figure 2-2). The action alternatives involve five of the eight existing transfer stations. These alternatives are summarized in Table 2-2.

Table 2-2. Alternatives for the transfer station system.

Alternative	Full-Service Facilities	Self-Haul-Only Facilities	Commercial-Only Facilities	Closed Facilities	Total No. of Facilities[a]
No action	New Factoria/Eastgate Reconstructed Bow Lake Reconstructed Algona Reconstructed Houghton Reconstructed Renton New NE Lake Washington	None	None	None (possibly Houghton)	11 (10 if Houghton is closed)
1	New South County New Bow Lake New Factoria/Eastgate New NE Lake Washington	None	None	Algona Houghton Renton	9
1A	New South County New Bow Lake New Factoria (no Eastgate) New NE Lake Washington	None	None	Algona Houghton Renton	9
2	New South County New Bow Lake New Factoria/Eastgate	Houghton	New NE Lake Washington	Algona Renton	10
2A	New South County New Factoria/Eastgate	Houghton Renton	New NE Lake Washington New Bow Lake	Algona	11
3	New South County New Bow Lake New NE Lake Washington	Houghton Renton Factoria (no Eastgate)	None	Algona	11
4	New Factoria/Eastgate	Algona Houghton Renton	New South County New Bow Lake New NE Lake Washington	None	12

[a] Total includes transfer stations and two drop box facilities.

All of the alternatives for the transfer station system share the following features, except where noted:

- Operations at the soon-to-be improved First Northeast transfer station (improvements began in May 2006) and the four rural facilities (Vashon

transfer station, Enumclaw transfer station, Skykomish drop box, and Cedar Falls drop box) would not change.

- All new facilities would have compactors.
- Two new sites are required: one in south King County and one in the NE Lake Washington area.
- No station closure or conversion (e.g., full-service to self-haul only) would occur until the replacement facilities are open, except for Alternative 1A in which Factoria would be closed to allow construction of a new transfer station.
- Project-specific documentation would be prepared to comply with SEPA for all siting of new facilities, new construction, and other major improvements.

Alternatives 1 and 1A

Alternatives 1 and 1A would involve the construction of four new full-service transfer stations and the closure of three existing stations (Algona, Renton, and Houghton). The Algona, Renton, and Houghton transfer stations would remain open as full-service facilities until the four new full-service facilities are constructed and operational. The total number of transfer stations would be reduced from the existing eight to seven.

The only substantive difference between Alternatives 1 and 1A is associated with the new Factoria/Eastgate station. King County currently operates the Factoria transfer station on a site in Bellevue on the north side of SE 32nd Street, east of Richards Road. In the 1990s, King County conducted a siting analysis and prepared an EIS for a new transfer station in Bellevue, which resulted in the county's purchase of a site immediately south of the existing transfer station. Under Alternative 1, both the existing site and the new site would be used by the county, allowing a new transfer station to be constructed with no rerouting of self-haul or commercial customers. Under Alternative 1A, a new transfer station would be constructed on the site of the existing transfer station, requiring rerouting of self-haul and commercial customers to the two nearest stations (Renton and Houghton).

During construction of the Bow Lake station, self-haul customers would be temporarily rerouted to the two nearest stations (Algona and Renton). The station would remain open for commercial customers.

Alternative 2

As noted for Alternatives 1 and 1A, Alternative 2 would involve the construction of four new transfer stations. However, one of those new facilities (NE Lake Washington) would service commercial haulers only. The existing Houghton transfer station, rather than being closed, would be retained and converted to serve self-haul customers only so that only two existing

stations (Algona and Renton) would be closed. The new Factoria/Eastgate station would be constructed using both sites on SE 32nd Street as in Alternative 1. The total number of transfer stations would remain at eight. Other aspects of Alternative 2 would be the same as those of Alternatives 1 and 1A.

Alternative 2A

As noted for Alternatives 1, 1A, and 2, Alternative 2A would involve the construction of four new transfer stations. However, two of these facilities (NE Lake Washington and Bow Lake) would service commercial haulers only. To service self-haul customers that would have used these two stations, the existing Houghton and Renton stations, rather than being closed as they would be under Alternatives 1 and 1A, would be retained and converted to serve self-haul customers only. Therefore, only one station (Algona) would be closed. The new Factoria/Eastgate station would be constructed using both sites on SE 32nd Street as noted for Alternatives 1 and 2. The total number of transfer stations would be increased from eight to nine.

Alternative 3

Alternative 3 would involve the construction of three new transfer stations, rather than the four that would be constructed under Alternatives 1, 1A, 2, and 2A. Under Alternative 3, a new station would not be constructed at Factoria. Instead, the existing Factoria station would be converted to service self-haul customers only, as would the Houghton and Renton stations. The commercial traffic currently accommodated at the Factoria and Houghton stations would be routed to the new NE Lake Washington station, resulting in a substantially larger station there than that under Alternatives 1, 1A, 2, and 2A. Only one station (Algona) would be closed. As for Alternatives 1, 1A, 2, and 2A, self-haul customers would be temporarily rerouted to the two nearest stations (Algona and Renton) during construction of the Bow Lake station. As for Alternative 2A, the total number of transfer stations would be increased from eight to nine.

Alternative 4

As noted for Alternatives 1, 1A, 2, and 2A, Alternative 4 would involve the construction of four new stations. However, three of these stations (South County, NE Lake Washington, and Bow Lake) would serve commercial haulers only. To serve self-haul customers that would have used these three stations, the existing Houghton, Renton, and Algona stations, rather than being closed, would be retained and converted to serve self-haul customers only. Therefore, under Alternative 4, no stations would be closed, and the total number of transfer stations would be increased from 8 to 10. The new Factoria/Eastgate station would be constructed using both county-owned sites on SE 32nd Street as in Alternative 1, 2, and 2A.

Alternatives for the Timing of Waste Export

No-Action Alternative

Under the no-action alternative, the County Council would not approve the waste export system plan. Waste export would be implemented as directed in the *Final 2001 Comprehensive Solid Waste Management Plan* (King County 2001), that is, when the Cedar Hills landfill reaches capacity and closes, currently estimated to occur in 2015.

Action Alternatives

Alternative X1: Full Early Export

Under Alternative X1, King County would close the Cedar Hills landfill before it reaches capacity, estimated to occur in 2015. In this EIS, the closure date under this alternative is assumed to be 2010.

Alternative X2: Partial Early Export

Under Alternative X2, a portion of King County's waste would be exported beginning in 2010. The exact percentage has not been determined but for the purposes of this EIS approximately 20 percent is assumed. The Cedar Hills landfill would remain open and continue to receive waste until it reaches capacity, which would occur in approximately 2016 if 20 percent of the county's waste is exported early.

Comparison of Environmental Impacts of the Alternatives

Alternatives for the County's Transfer Station System

At a programmatic level, the alternatives for the county's transfer station system are not dramatically different in the nature and intensity of their environmental impacts, and the impacts, in any event, are not expected to be significant at a programmatic level. However, the following differences allow for some discrimination among the alternatives:

- The existing Houghton transfer station is one of two transfer stations (the existing Factoria station being the other) that has been identified by the Solid Waste Division (King County 2005b) as being potentially incompatible with surrounding land uses (which in the case of the Houghton station are residential). Alternatives 1 and 1A, under which the Houghton station would be closed, are likely to result in lower impacts in terms of land use compatibility than the other alternatives. Under all the alternatives, the existing Factoria transfer station would be rebuilt so that the impacts associated with the Factoria station in terms of land use compatibility would be substantially similar among the alternatives.

- Under Alternative 3, both the Houghton and Factoria transfer stations would be converted to self-haul only, and commercially hauled waste that would have been handled at these stations would then be hauled primarily to the new NE Lake Washington transfer station. As a result, the relatively high volume of waste handled by the new NE Lake Washington station could lead to a concentration of traffic and other impacts in the vicinity of this station that are greater than those that would occur at individual transfer stations under any of the other alternatives.

- The expected annualized capital cost and operating costs are similar for all six of the action alternatives through 2028. However, operating costs for Alternatives 1 and 1A are considerably lower than the operating costs for the other action alternatives. Over the long term, after capital costs are paid, the comparative costs of the action alternatives are determined by their operating costs. From this long-term perspective, Alternatives 1 and 1A are the least cost alternatives, and Alternatives 3 and 4 are the highest cost alternatives (King County 2006, p. 2-27).

Alternatives for Timing of Waste Export

The differences among the alternatives for the timing of waste export reflect the basic trade-off between the higher system costs (reflected in comparatively higher user rates) and other potential environmental impacts associated with waste export versus the lower system costs (reflected in comparatively lower user rates) and impacts due to continued operation of the Cedar Hills landfill on the surrounding community. Under current operations, there are no significant impacts on the surrounding community resulting from the operations at the Cedar Hills landfill. As a result of the need to export waste, it is anticipated that an increase in rates may be necessary.

Under the no-action alternative, the Cedar Hills landfill would close in approximately 2015, and waste export would begin. Under Alternative X1, waste export would be initiated in 2010, and the county would no longer send solid waste to the Cedar Hills landfill, a change that would affect the current traffic and operational conditions associated with the landfill. At the same time, system costs and user rates would probably be higher than they would be under the no-action alternative for the 5-year period. Under Alternative X2, export of approximately 20 percent of the county's waste would begin in 2010, with full export of the county's mixed municipal solid waste beginning in approximately 2016. Impacts from both the operation of the Cedar Hills landfill and the waste export system would occur simultaneously during the period 2010 to 2016. The costs and user rate implications of Alternative X2 are not fully known but appear to be somewhat higher than those of the no-action alternative (King County 2006).

2.4 Benefits and Disadvantages of Delaying Implementation

The SEPA rules require that an EIS evaluate the benefits and disadvantages of delaying implementation of the proposal for some future time, as compared with possible approval at this time. Particular attention is to be given to the potential for foreclosing future options by implementing the proposal (Washington Administrative Code, Chapter 197-11, Section 440 [WAC 197-11-440]).

The only apparent benefit of delaying approval of the waste export system plan is that it would delay short-term construction impacts and operation impacts associated with improved or new facilities. The primary disadvantage associated with a substantial delay in implementation of the waste export plan is that there would be insufficient time to prepare the solid waste transfer system for efficient waste export when the Cedar Hills landfill closes. This would increase transfer and disposal costs and disrupt the county's solid waste system.

Other disadvantages of delaying implementation are discussed as adverse impacts of the no-action alternative in Part 3.

Part 3 Affected Environment, Impacts, and Mitigation

3.1 Introduction

Part 3 addresses probable significant adverse impacts of implementing waste export in terms of six environmental elements: transportation, noise, air quality and odor, energy, land and shoreline use, and public services and utilities. Alternatives for two aspects of waste export are under consideration: the configuration of the county's transfer station system and the timing of waste export. Potential impacts resulting from the various alternatives are discussed in the following sections.

Potential impacts associated with four aspects of future waste export (extending the life of the Cedar Hills landfill, intermodal transfer facilities, long-haul transport, and out-of-county disposal) are also discussed in the following sections; however, no alternatives for these aspects are currently being considered.

The following sections make reference to siting criteria for new facilities and state that use of these criteria would result in avoidance or minimization of many of the potential impacts that could result from new facilities such as transfer stations and intermodal transfer facilities. The Solid Waste Division has developed siting criteria that are included in Appendix C, and recommends that the County Council approve these criteria in conjunction with its approval of the waste export system plan.

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3.2 Transportation

Affected Environment

The final EIS for the *Final 2001 Comprehensive Solid Waste Management Plan* (King County 2001; Appendix H) contains a description of the affected environment of the central Puget Sound region in terms of traffic. In general, the density of the roadway network and the traffic volumes on individual roadways are proportional to the density and intensity of land use in the region, with the highest road densities and traffic volumes occurring in the major urban areas. Portions of major highways in the region sustain traffic volumes in excess of 100,000 vehicles per day, while roadways in the least populated peripheries of the region may experience traffic volumes of several hundred or fewer vehicles per day. Currently, portions of many roadways throughout the central Puget Sound region are inadequate to support the existing traffic demands, and improvements to inadequate roadways may be required before new development can occur.

Table 3-1 provides estimates of the current daily trips generated by King County transfer facilities (transfer stations and drop box facilities). The estimates for trip generation are based on data from the King County Solid Waste Division cashiering system database from April 2005 through March 2006. These trips do not include free recycling services that are not captured by the cashiering system. All trips represent a one-way trip, to or from the facility. The types of trips to the transfer stations include trips by commercial haulers, trips by self-haulers, deliveries of yard and woodwaste, and deliveries of large household appliances. Trips also include transfer trucks picking up materials at the transfer stations to transport them to the Cedar Hills landfill and trips by employees and visitors. The transfer facilities are generally open 7 days per week from early morning to late afternoon, with some exceptions: (1) Bow Lake is open 24 hours on weekdays, (2) Cedar Falls and Vashon are closed on Tuesday and Thursday, (3) Enumclaw is closed on Wednesday and Thursday, and (4) Factoria is open until late at night on weekdays.

The patterns of peak traffic at transfer facilities are similar to those described in the traffic section in Part 4 of the 2001 final EIS (King County 2001; Appendix H). Self-hauling activity constitutes the majority of trips at each transfer facility and peaks primarily on weekends. Commercial traffic at the transfer stations peaks primarily on weekdays. Traffic congestion and waiting times can increase when self-haul and commercial-haul trips occur at the same time and during times of heavy self-haul use, primarily on summer weekends. Traffic queues during these times may also extend into the surrounding streets. Peak traffic times for transfer facilities do not coincide with peak traffic times on the general road network.

Table 3-1. Current trip generation for transfer facilities (transfer stations and drop boxes).

Transfer Facility	Type of Traffic	Average Weekday[a]	Average Weekend Day[a]
Algona transfer station	Commercial haulers	166	1
	Self-haulers	612	1,162
	Transfer to Cedar Hills	52	18
	Employees/visitors	24	24
Algona total		**854**	**1,205**
Bow Lake transfer station	Commercial haulers	402	41
	Self-haulers	712	1,092
	Transfer to Cedar Hills	100	26
	Large household appliances	30	52
	Employees/visitors	40	40
Bow Lake total		**1,284**	**1,251**
Cedar Falls drop box	Self-haulers	80	226
	Transfer to Cedar Hills	4	11
	Yard/woodwaste	2	6
	Employees/visitors	2	2
Cedar Falls total		**88**	**245**
Enumclaw transfer station	Commercial haulers	12	0
	Self-haulers	186	614
	Transfer to Cedar Hills	4	6
	Yard/woodwaste	6	24
	Large household appliances	8	28
	Employees/visitors	10	16
Enumclaw total		**226**	**688**
Factoria transfer station	Commercial haulers	166	6
	Self-haulers	568	896
	Transfer to Cedar Hills	54	14
	Employees/visitors	28	28
	Household hazardous waste	32	72
Factoria total		**848**	**1,016**
First Northeast transfer station	Commercial haulers	36	1
	Self-haulers	526	845
	Transfer to Cedar Hills	16	14
	Yard/woodwaste	0	0
	Large household appliances	20	32
	Employees/visitors	16	16
First Northeast total		**614**	**908**
Houghton transfer station	Commercial haulers	178	6
	Self-haulers	554	952
	Transfer to Cedar Hills	56	16
	Employees/visitors	24	24
Houghton total		**812**	**997**

Table 3-1 (continued). Current trip generation for transfer facilities (transfer stations and drop boxes).

Transfer Facility	Type of Traffic	Average Weekday[a]	Average Weekend Day[a]
Renton transfer station	Commercial haulers	88	0
	Self-haulers	308	717
	Transfer to Cedar Hills	24	10
	Employees/visitors	16	16
Renton total		**436**	**743**
Skykomish drop box	Self-haulers	12	17
	Transfer to Houghton	1	1
Skykomish total		**13**	**18**
Vashon transfer station	Commercial haulers	4	0
	Self-haulers	102	224
	Transfer to Cedar Hills	2	2
	Large household appliances	4	8
	Employees/visitors	6	10
Vashon total		**118**	**244**
Total King County transfer to Cedar Hills landfill		308	106

Note: A trip represents a one-way trip, to or from the facility.

[a] For commercial haulers, self-haulers, transfer, and deliveries of large household appliances and yard/woodwaste, the number of trips is based on transactions from the King County Solid Waste Division cashiering system database, including all the transactions generated between April 2005 and March 2006. For employees, the number of trips is based on the number of employees at the transfer facility per shift. For deliveries of household hazardous waste at Factoria, the number of trips is based on transactions from the cashiering system database between November 2004 and October 2005.

The traffic section in Part 5 of the 2001 final EIS provides information on daily trip generation for the Cedar Hills landfill for 1999 and estimated traffic for 2010. In 1999, the average number of weekday trips generated by the landfill was 738 one-way trips, and the average number of weekend trips was 454 one-way trips. The major component of truck traffic to and from the landfill is King County transfer trucks originating at King County transfer stations. Current trip generation data indicate approximately 308 transfer truck trips to and from the Cedar Hills landfill (154 trucks to and 154 trucks from the site) on an average weekday and approximately 106 transfer truck trips (53 trucks to and 53 trucks from the site) on an average weekend day. Additional truck trips are made by commercial haulers, regional direct haulers, special waste haulers, and other visitors. The remaining trips to the landfill are made by employees, contractors, and vehicles delivering materials for the construction of additional disposal areas. For all of the vehicle trips, Cedar Grove Road is the access road to the landfill.

Table 3-2 shows the current primary travel routes between each transfer station and the Cedar Hills landfill. These routes are used by transfer trucks that are transporting waste from the transfer stations to the landfill. As listed, most of the transfer trucks travel primarily on interstate highways and state highways, except in the vicinity of the transfer station and the landfill.

Table 3-2. Current primary transfer truck routes between the existing transfer stations and the Cedar Hills landfill.

Destination	Route
All transfer stations	228th Avenue SE to Cedar Grove Road to SR 169
First Northeast, Houghton, Factoria, Vashon, and Bow Lake	SR 169W to I-405
First Northeast	I-405S to I-5N to NE 175th Street to Meridian Avenue NE to NE 165th Street to station; reverse to landfill
Houghton	I-405N to NE 70th Street to 116th Avenue NE to NE 60th Street to station; reverse to landfill
Factoria	I-405N to Coal Creek Parkway to Factoria Boulevard SE, which becomes Richards Road north of I-90, to SE 32nd Street to station; reverse to landfill
Vashon	I-405S to I-5N to West Seattle bridge to Fauntleroy Way SW to Fauntleroy Ferry Terminal; Vashon Highway SW to SW Cemetery Road to Westside Highway SW to station; reverse to landfill
Bow Lake	I-405S to I-5S to Orillia Road South to station or I-405S to SR 167S to S 212th Street to Orillia Road South to transfer station entrance; reverse to landfill
Renton	SR 169W to SR 900E to NE Third Street to Jefferson Avenue NE to station; reverse to landfill
Algona	SR 169E to SE 231st Street to SR 18 to SR 167S to 15th Street SW to West Valley Highway to station; reverse to landfill
Enumclaw	SR 169E to SE 416th Street to 284th Avenue SE to SE 440th Street to station; reverse to landfill

Note: There are alternative truck routes that if used during certain times could increase efficiency and distribute potential impacts.

Impacts

Probable Impacts under All Alternatives

Extending the Life of the Cedar Hills Landfill

Given the current operations at the Cedar Hills landfill, it is estimated to reach capacity in 2015. One option being considered to accommodate future waste disposal is extending the life of the landfill. This could be accomplished by changing operations so that the onsite capacity is increased. This could extend the life of the landfill up to 7 years (to 2022). The primary potential transportation impact resulting from this option would be that vehicle trips associated with landfill operations would continue for a longer period.

According to the King County cashiering system database, there currently are approximately 308 transfer truck trips to and from the Cedar Hills landfill on an average weekday. Depending on the alternative, the number of transfer truck trips will be reduced in the future because of the county's plan to equip some or all of the transfer stations with compactors. The use of compactors will allow more material to be placed in each transfer truck, thereby reducing the

number of trips necessary to transport the waste. The potential transportation impacts resulting from extending the life of the Cedar Hills landfill to 2022 would be similar to those described in the 1998 final EIS for the Cedar Hills landfill site development plan (King County 1998).

The 1998 final EIS for the Cedar Hills landfill site development plan (King County 1998) concluded none of the alternatives would have a significant impact on the analyzed transportation network. The background traffic (that is, traffic unrelated to the landfill) will cause future congestion in the analyzed transportation network, with or without landfill traffic. Traffic associated with continued operation of the landfill would result in no significant difference in future traffic conditions.

Intermodal Transfer Facilities

Another option being considered for waste export is the development of an intermodal transfer facility for waste export. If an intermodal transfer facility is constructed as part of the solid waste transfer system, instead of transporting waste between the county transfer stations and the Cedar Hills landfill, trucks would transport waste from the county transfer stations to the new intermodal facility or facilities. The result would be a reduction in traffic on haul routes to the landfill and a commensurate increase in truck trips on roads leading to the intermodal transfer facility(ies). Up to 300 daily transfer truck trips could be involved in this redistribution—an average of 308 one-way transfer truck trips currently occur each weekday, and 274 are estimated for 2015. If the county develops one centralized intermodal transfer facility to handle all of the county's mixed municipal solid waste to be exported, the facility would likely be located in south Seattle or south of Seattle in the vicinity of the existing BNSF Railway Company (BNSF) and Union Pacific Railroad tracks or along the Elliott Bay/Duwamish River waterfront if barge transport is involved. Roads in the vicinity of the intermodal facility would be traveled by the redistributed transfer truck traffic.

The Solid Waste Division developed a set of criteria to rank the suitability of potential sites. Application of the criteria is likely to result in a high rank for sites that have direct access to arterials and other major roadways. The county's siting process for an intermodal facility would also be accompanied by documentation to comply with SEPA. The SEPA documentation would identify likely operational transportation impacts and would describe feasible measures to mitigate significant potential transportation impacts. In addition, construction of an intermodal facility would create a short-term increase in traffic due to trips by construction workers and deliveries of construction material.

Long-Haul Transport

Long-haul transport is another option for waste export. It could occur by truck primarily on interstate highways and major state highways; by rail on established rail lines; or by barge through Puget Sound, the Strait of Juan de Fuca, the Pacific Ocean, and the Columbia River.

King County's Fourth Milestone Report on transfer and waste export facilities (King County 2006) estimated that truck transport would add up to 160 trucks per day (320 one-way truck

trips) on the region's interstate highways and major state highways in 2015. This estimate is similar to the 308 one-way transfer truck trips that occur currently and the 274 one-way transfer truck trips that are estimated for 2015. Seven out-of-county landfills accept waste via truck. All of the landfills are accessed via major interstate highways or state highways. Transport would occur on well-traveled routes with relatively high volumes of existing truck traffic. The addition of up to 320 new truck trips per day associated with long-haul transport of King County waste is not expected to result in any significant impacts on interstate or state highway systems.

King County's Fourth Milestone Report also estimated that rail transport would add up to four trains per week (eight train trips) on either the BNSF or Union Pacific rail systems (the two rail lines serving the West Coast). Six of the landfills under consideration are served by Union Pacific, and two are served by BNSF. Both the Union Pacific and the BNSF lines are well-traveled routes that have relatively high existing rail traffic. The Fourth Milestone Report indicates that both the Union Pacific and BNSF systems have adequate mainline capacity available to export the region's waste through a 20-year planning horizon (King County 2006). Therefore, the addition of four new trains per week associated with long-haul transport of King County waste is not expected to result in significant impacts on the rail systems or rail service.

King County's Fourth Milestone Report also estimated that barge transport would add two to three barges per day (four to six barge trips) to the waterway system. The roundtrip travel time, including passage through three sets of locks on the Columbia River, is 11 days. The U.S. Army Corps of Engineers, which manages barge traffic on the Columbia River and through the locks, indicates that the locks are closed for 2 weeks every year for maintenance, which would require an alternate mode of waste transport during this time. Given the capacity of the waterways and the locks, it is unlikely that barge transport of the county's waste would result in significant transportation impacts or stress on the barge system.

Out-of-County Disposal

Traffic-generating activities associated with out-of-county disposal would include operations at the intermodal transfer facility receiving the long-hauled waste, truck transfer from the intermodal facility to the out-of-county landfill, and disposal operations at that landfill. The 2001 final EIS (King County 2001; Appendix H) briefly describes the transportation associated with these activities for private landfills, stating that disposal of King County's waste would increase traffic at intermodal facilities used in conjunction with barge and rail transport. All of the transport options could add up to 320 truck trips per day on local roads that provide access to the out-of-county landfill.

In general, whether the incremental traffic increase associated with disposal of the county's waste is significant would depend on background traffic levels at the time the out-of-county disposal occurs. If significant traffic impacts appear likely at a particular disposal location, the county could reduce its contribution to those traffic levels by contracting with more than one out-of-county landfill.

Transfer System Alternatives

A transfer system by its very nature serves to mitigate some solid waste handling impacts. It reduces travel time, distance, and energy requirements by consolidating many smaller loads into fewer, larger loads. That should also reduce collection costs. Currently, 948,686 annual trips into the system are consolidated into 50,549 loads out.

No-Action Alternative

The no-action alternative for the transfer station system consists of continued implementation of the *Final 2001 Comprehensive Solid Waste Management Plan* (King County 2001). The 2001 plan includes level-of-service improvements such as instituting special self-haul hours at some transfer stations and facility improvements such as installing compactors and expanding or constructing new transfer stations. Subsequent work prepared for the milestone reports in support of the waste export system plan indicates that some aspects of the no-action alternative are infeasible because the completion dates for specific projects have passed or the resulting facilities would or have unacceptable capacity and level of service.

The potential transportation impacts resulting from level-of-service improvements are described in Part 4 of the final EIS for the 2001 plan (King County 2001, Appendix H). The final EIS concluded that while the success of level-of-service improvement programs intended to reduce self-haul traffic is unknown, hypothetical scenarios predict a 20 percent reduction in self-haul traffic at county transfer stations. In addition, the projections in the final EIS are that the installation of facility compactors would result in transfer truck trips in 2010 that are similar in number to those in 1999. The programs aimed at reducing self-haul traffic would also tend to reduce potential delays for commercial haulers. The final EIS concluded that no significant unavoidable transportation impacts would result from implementation of the level-of-service improvements detailed in the 2001 plan.

The potential transportation impacts resulting from major facility improvements are also summarized in Part 4 of the final EIS for the 2001 plan (King County 2001; Appendix H). The final EIS indicates that during construction of the replacement for the Factoria transfer station and major improvements to the Bow Lake and First Northeast transfer stations, a short-term increase in traffic may result from construction worker trips, construction-related deliveries, and potential street closures related to construction in the vicinity of those sites. All three facilities would remain open during construction, minimizing the potential for displacement of vehicles that might otherwise result in transportation impacts on other King County transfer stations.

Construction of the new NE Lake Washington transfer station would result in short-term construction traffic impacts in the vicinity of the site, which has not yet been selected, and in traffic increases associated with a full-service transfer station.

With the exception of the Enumclaw and Vashon transfer stations, the 2001 plan also calls for additional minor improvements at all the transfer stations. These improvements include efficiency improvements for onsite traffic and the installation of compactors at stations that do

not have them. The installation of compactors at all transfer stations subsequently proved to be undesirable because the improvement would result in an inadequate level of service. The final EIS for the 2001 plan concluded that these improvements could result in short-term increases in construction and operation traffic in the vicinity of these sites. Short-term transportation impacts could be mitigated in part by scheduling construction activities at nonpeak times for commercial hauling activity.

The final EIS for the 2001 plan concluded that both the major and minor improvements to transfer stations would tend to reduce transportation impacts associated with ongoing operations at these facilities for the following reasons:

- Onsite traffic flow would be improved, which would result in fewer and shorter offsite vehicle queues.
- The installation of compactors would result in higher load weights per transfer truck trip and correspondingly fewer transfer truck trips in the vicinity of the transfer facility.

The final EIS for the 2001 plan also concluded that the improvements would tend to result in the following:

- A decrease in commercial-haul trips in the vicinity of the two private transfer stations in Seattle (estimated to be approximately 390 daily one-way trips in 2010)
- A reduction in transfer truck traffic to the Cedar Hills landfill over time
- A reduction in the number of transfer truck trips to private intermodal transfer facilities, the number of rail cars or trains necessary for long-haul transport of waste, and the number of truck trips from receiving intermodal facilities to out-of-county disposal facilities due to the installation of compactors at transfer stations.

The issuance of permits for major improvements to transfer stations would be preceded by documentation to comply with SEPA. The SEPA documentation would identify likely transportation impacts and describe feasible measures to mitigate significant transportation impacts.

Under the no-action alternative, potential impacts on the transportation system in the vicinity of the new NE Lake Washington transfer station would be expected because the new facility is expected to absorb as much as half of the daily trips from the nearby Houghton transfer station, if it remains open. The change in daily traffic will occur as customers of the Houghton transfer station switch to the NE Lake Washington transfer station. This corresponds to an immediate increase of approximately 406 average weekday trips and 500 average weekend day trips on the roadways in the vicinity of the new NE Lake Washington station. The new NE Lake

Washington station would also result in a decrease in traffic of the same magnitude in the general vicinity of the Houghton transfer station.

The Solid Waste Division developed a set of criteria to rank the suitability of potential sites. Application of the criteria would likely result in a high rank for sites in industrial areas where the levels of truck traffic are already high. Through this type of siting process, significant traffic impacts on residential or low-volume areas are likely to be avoided or minimized. The county's siting process for a new transfer station would be accompanied by documentation to comply with SEPA. The SEPA documentation would identify potential transportation impacts and describe feasible measures to mitigate significant transportation impacts. As a result of the application of siting criteria and the development of mitigation measures through the associated SEPA process, transportation impacts resulting from new transfer facilities are unlikely to be significant.

Long-term traffic impacts in the vicinity of the transfer stations, on roads leading to the Cedar Hills landfill, or on roads associated with waste export would be expected to increase or decrease in proportion to the tonnage of disposed waste transported to each facility.

Action Alternatives

Under any of the action alternatives, the types of potential transportation impacts associated with improvement, construction, and operation of the transfer stations would be similar to those of the no-action alternative. However, three of the most site-constrained existing facilities (Algona, Renton, and Houghton) would either be closed or converted to self-haul only under each of the action alternatives. These changes would result in either the elimination of all traffic related to transfer stations or the generation of less traffic at these locations compared to the traffic resulting from the no-action alternative under which these stations would be retained as full-service facilities. None of the action alternatives would result in any change in the transportation impacts associated with the First Northeast, Vashon, and Enumclaw transfer stations and the Cedar Falls and Skykomish drop boxes.

Alternatives 1 and 1A

From an overall programmatic perspective, Alternatives 1 and 1A would include two additional transfer stations (South County and NE Lake Washington) and the closure of three existing transfer stations (Algona, Renton, and Houghton), resulting in one less transfer station compared to the no-action alternative. Therefore, the potential transportation impacts would affect fewer locations, although the potential impacts at some of these locations would be incrementally greater because the transfer system would handle the same systemwide volume of waste as the volume under the no-action alternative.

Potential transportation impacts associated with the construction and operation of the new Bow Lake and Factoria/Eastgate transfer stations and two new transfer stations (NE Lake Washington and South County) would be similar to those generally described in the 2001 final EIS (King County 2001, Appendix H) and the 1993 EIS for the replacement of the Factoria transfer station (Bellevue 1993). Potential impacts include those due to construction vehicles and workers,

deliveries of construction materials, road closures during construction and long-term impacts on roadways in the vicinity of the transfer station associated with their operation. The site selection process and mitigation measures developed by the county for the new sites would minimize significant transportation impacts associated with the new facilities.

The new transfer facilities would be sized to accommodate the increase in daily traffic in order to maximize the efficiency of onsite traffic flow and to minimize offsite queues and potential impacts on general traffic conditions in the immediate vicinity. The facilities would also be designed to account for the increased traffic associated with the projected increase in disposed tonnage and recycling activities for the 20-year planning horizon.

Under Alternative 1, the construction of the Factoria/Eastgate transfer station would involve the use of both the existing Factoria transfer station site and an adjacent Eastgate site purchased in the 1990s for the development of a new transfer station. The use of both sites would allow construction to occur without the need to reroute self-haul or commercial customers, which would result in lesser transportation impacts on the Factoria/Eastgate site, in the vicinity of the site, and throughout the system.

Under Alternative 1A, construction related to the new Factoria transfer station would require the temporary rerouting of customers to the Renton and Houghton transfer stations. The Conditional Use permit issued for the Factoria transfer station stipulates that transfer trucks entering or leaving the facility shall use Eastgate Way to access I-90 at the 150th Avenue SE interchange. It is assumed that half of the displaced customers would use the Renton station, and the other half would use the Houghton station. On the basis of the data in the King County cashiering system database, Alternative 1A could result in an immediate increase of 424 average weekday trips and 508 average weekend day trips at each station (Table 3-1). Relative to the existing traffic at these stations, these additional trips correspond to increases ranging from 68 to 97 percent at the Renton station and 50 to 52 percent at the Houghton station. The increases in traffic at the Renton and Houghton stations could potentially result in significant short-term increases in waiting times, queues that extend offsite, and congestion in the immediate vicinity of both stations.

During the construction related to the new Bow Lake transfer station, self-haul customers would be temporarily rerouted to the two nearest stations (Algona and Renton). It is assumed that one-third of displaced customers would use the Algona station and two-thirds would use the Renton station, both of which would remain open during the construction of the Bow Lake station. Under either Alternative 1 or Alternative 1A, the new Bow Lake transfer station could result in an immediate increase of 237 average weekday trips and 364 average weekend day trips at the Algona station. Relative to the existing traffic at the Algona station, these additional trips correspond to increases ranging from 31 to 39 percent. Similarly, the construction of the Bow Lake station could result in an immediate increase of 475 average weekday trips and 728 average weekend day trips at the Renton station. Relative to the existing traffic at the Renton station, these additional trips correspond to increases ranging from 101 to 154 percent. The increases in traffic at the Algona and Renton stations during the construction of the Bow Lake station could

potentially result in significant short-term increases in waiting times, queues that extend offsite, and congestion in the immediate vicinity of the stations.

During the construction related to the new Bow Lake transfer station, commercial-haul customers will continue to use the facility.

After the completion of the Bow Lake station, the Renton transfer station would be closed. The closure of the Renton station would benefit the road network by eliminating trips associated with transfer station operations. Currently, the number of trips at the Renton transfer station is 436 on an average weekday and 743 on an average weekend day (Table 3-1). Most of these trips would likely be transferred to the roads providing access to the new Bow Lake transfer station, resulting in up to approximately a 35 percent increase in average weekday trips, and approximately a 60 percent increase in average weekend trips at that facility. Increases at the Bow Lake station due to the closure of the Renton station could potentially result in significant short-term increases in waiting times, queues that extend offsite, and congestion in the immediate vicinity of the station.

Once the construction of the new South County transfer station is completed and the facility is operational, the Algona transfer station would be closed. The closure of the Algona station would benefit the surrounding road network by eliminating trips associated with transfer station operations. Currently, the number of trips at the Algona transfer station is 854 on an average weekday and 1,205 on an average weekend day (Table 3-1). These trips would most likely be transferred to the roads providing access to the new South County transfer station. However, the location of this facility and the roads that could be affected are currently unknown.

The closure of the Houghton transfer station would benefit the surrounding road network by eliminating trips associated with transfer station operations. Currently, the number of trips at the Houghton station is 812 on an average weekday and 997 on an average weekend day (Table 3-1). Most of these trips would likely be transferred to the roadways providing access to the new NE Lake Washington transfer station. However, the location of this facility and the roads that could be affected are currently unknown.

The site selection process and mitigation measures developed by the county for the selection of sites for the new transfer stations are expected to minimize significant transportation impacts due to the new South County and NE Lake Washington transfer stations.

Alternative 2

Alternative 2 differs from Alternatives 1 and 1A in that the Houghton transfer station would be retained as a self-haul-only facility rather than being closed, and the new NE Lake Washington transfer station would handle commercial haulers only. Similar to the no-action alternative and Alternative 1, Alternative 2 would include the use of both the existing Factoria transfer station site and the adjacent Eastgate site purchased in the 1990s for development of a new transfer station.

Under Alternative 2, overall potential transportation impacts associated with the Houghton transfer station would be greater than those of Alternatives 1 and 1A (Houghton closed) but less than those associated with the no-action alternative (Houghton full-service). Alternative 2 would eliminate commercial truck trips that would occur at the Houghton station under Alternatives 1 and 1A (approximately 178 weekday trips and 6 weekend day trips) (Table 3-1). However, the self-haul trips would still occur at the Houghton station (approximately 554 weekday trips and 952 weekend day trips). Therefore, the potential transportation impacts that would occur at the Houghton station on weekend days, when the majority of residential self-hauling takes place, would continue under Alternative 2.

Under Alternative 2, potential transportation impacts at the new NE Lake Washington transfer station would be less than those associated with the no-action alternative, Alternative 1, and Alternative 1A, alternatives under which the new transfer station would be a full-service facility. Under Alternative 2, only commercial trucks would use the NE Lake Washington transfer station. The new NE Lake Washington station would accommodate the commercial traffic that would have been handled by the Houghton station (approximately 178 truck trips on an average weekday and 6 on an average weekend day) and a proportionate number of transfer truck trips corresponding with the accepted commercial waste tonnage. However, the Houghton station would still accommodate the self-haul trips described in the preceding paragraph and a proportionate number of transfer truck trips corresponding with the accepted self-haul waste tonnage.

As with Alternatives 1 and 1A, potential transportation impacts related to the Algona and Renton transfer stations that would occur under the no-action alternative would not occur under Alternative 2.

Overall impacts on the transportation system resulting from the replacement of the Factoria transfer station would be similar to those described for the no-action alternative and Alternative 1.

Alternative 2A

In addition to retaining the Houghton transfer station as a self-haul-only facility as in Alternative 2, Alternative 2A would retain the Renton transfer station as a self-haul-only facility. The Bow Lake transfer station would act as a commercial-haul-only facility under Alternative 2A as opposed to a full-service station under Alternative 2.

Overall transportation impacts associated with the Renton station would be potentially greater than those associated with the no-action alternative. Although Alternative 2A would eliminate commercial truck trips from the Renton station (approximately 88 weekday trips) and a proportionate number of transfer truck trips corresponding with the diverted commercial waste tonnage, it would divert the self-haul trips from the Bow Lake station (approximately 712 weekday and 1,092 weekend day trips) to the Renton station, along with a proportionate number of transfer truck trips corresponding with the accepted self-haul waste tonnage. Under Alternative 2A, transportation impacts at the Renton station would also be greater than those

resulting from Alternatives 1, 1A, or 2. The transportation impacts at the Renton station would continue to be concentrated on weekend days, when the majority of residential self-hauling takes place.

Under Alternative 2A, potential transportation impacts associated with the Bow Lake station would be less than those associated with all the other alternatives, including the no-action alternative. Eliminating self-haul trips from the Bow Lake station would significantly reduce the number of vehicles using this station. The proportion of trucks would increase, but the overall number of vehicles would decrease. Trips at the Bow Lake station would peak on weekdays, when the majority of commercial self-hauling takes place.

Alternative 3

Under Alternative 3, the Renton station would be retained as a self-haul-only station (as with Alternative 2A), but the Bow Lake station would be a full-service facility. The self-haul traffic that would have been diverted to the Renton station under Alternative 2A would continue to be handled by the Bow Lake station under Alternative 3. Therefore, under Alternative 3, potential transportation impacts at the Renton station would be less than those resulting from Alternative 2A (self-haul plus self-haul traffic from Bow Lake) as well as those associated with the no-action alternative (full-service). Under Alternative 3, potential transportation impacts on the roadways in the vicinity of the Renton station would be greater than those resulting from Alternatives 1, 1A, and 2, under which the station would be closed.

Under Alternative 3, potential transportation impacts at the Bow Lake station would be greater than those associated with the no-action alternative because of the additional commercial-haul trips from the Renton station (approximately 88 weekday trips). Under Alternative 3, potential transportation impacts at the Bow Lake station would be greater than those resulting from Alternative 2A because self-haul trips at this station would be retained (approximately 712 weekday and 1,092 weekend day self-haul trips). Under Alternative 3, potential transportation impacts at the Bow Lake station would be less than those resulting from Alternatives 1, 1A, and 2 because the Renton station would remain open and would continue to accommodate self-haul trips.

Under Alternative 3, the Houghton station would be retained as a self-haul-only station (as with Alternative 2 and 2A), but the NE Lake Washington station would be a full-service facility (as with Alternatives 1 and 1A). Therefore, under Alternative 3, potential transportation impacts at the Houghton station would be less than those resulting from Alternatives 2 and 2A because a portion of the self-haul trips that would be handled by the Houghton station under Alternatives 2 and 2A would be handled by the NE Lake Washington station under Alternative 3. Under Alternative 3, potential transportation impacts at both the Houghton and Factoria transfer stations (both self-haul only) would be less than those associated with the no-action alternative, under which both stations would accommodate self-haul and commercial trips. Under Alternative 3, potential transportation impacts at the Houghton transfer station would be greater than those resulting from Alternatives 1 and 1A, under which the Houghton station would be eliminated.

Also, with Alternative 3, the Factoria station on the existing site would be converted to a self-haul-only facility. The resulting transportation impacts would be potentially less than those associated with the no-action alternative and would be concentrated on weekend days. Because both the Houghton and Factoria stations would be self-haul-only facilities, the new NE Lake Washington station would handle more commercial-haul traffic under Alternative 3 than under any of the other alternatives, and transportation impacts would be concentrated on weekdays, when most commercial hauling occurs. Reducing the number of facilities serving commercial customers to only one in the NE Lake Washington area could mean that, on average, commercial customers would travel longer distances than they would under the other alternatives.

Generally, the reapportionment of self-haul and commercial-haul trips among the transfer stations would affect the number of transfer trailers necessary to haul the waste from the transfer stations because self-hauled loads weigh considerably less on average than commercially hauled loads.

Alternative 4

Alternative 4 would have potential transportation impacts similar to those of Alternative 2A, with two exceptions: (1) Algona would be retained as a self-haul-only facility, and (2) the new South County station would be a commercial-haul-only facility. Therefore, the same transportation trade-offs would occur with the Algona transfer station and the new South County transfer station under Alternative 4 that were described for the Houghton and NE Lake Washington stations and the Renton and Bow Lake stations under Alternative 2A.

Alternatives for Timing of Waste Export

These alternatives would primarily affect the duration and intensity of potential transportation impacts associated with the Cedar Hills landfill and the timing of any potential transportation impacts associated with intermodal transfer facilities, long-haul transport, and out-of-county disposal of waste.

No-Action Alternative

Under the no-action alternative, waste disposal would continue at the Cedar Hills landfill until the facility reaches capacity, at which time waste export would begin. The transportation impacts associated with construction and operations at the Cedar Hills landfill would continue until approximately 2015 (or later if the life of the landfill is extended). Transportation impacts associated with the Cedar Hills landfill are described in the 1998 final EIS for the Cedar Hills landfill site development plan (King County 1998) and the 2001 final EIS for the *Final 2001 Comprehensive Solid Waste Management Plan* (King County 2001, Appendix H). The 1998 EIS describes transportation impacts associated with the Cedar Hills landfill in terms of trip generation, traffic volumes, and level of service. Trips generated by the Cedar Hills landfill include waste haul trips, employee and visitor trips, and construction-related trips. All trips represent a one-way trip, to or from the facility. Traffic volumes represent the average number

of weekday and weekend vehicles on the roadways along the primary and emergency access roadways to the landfill. Level of service is used to describe the operating conditions at intersections, freeway ramp junctions, and along roadway sections. Level of service is expressed as a letter grade (LOS A through LOS F, where A is best and F is worst) reflecting increasing delays (in seconds) at the location that is analyzed.

The 1998 EIS concluded that cumulative traffic on Cedar Grove Road near the landfill could be at the threshold of significance during peak hours of truck traffic associated with the landfill. However, the 1998 EIS also concluded that none of the alternatives (which included continued operation of the landfill through 2017) would have a significant impact on the analyzed transportation network. The EIS also concluded the following:

- Background traffic (traffic unrelated to the landfill) would cause future traffic congestion in the analyzed transportation network with or without landfill traffic.
- Traffic associated with continued operation of the landfill would result in no significant difference in future traffic conditions.
- Under all of the alternatives, the additional truck trips associated with increased tonnage of disposed waste could contribute to the physical deterioration of the roadway surfaces, but this could be mitigated by the application of a portion of truck licensing fees to roadway resurfacing or maintenance in the vicinity of the landfill.

The 2001 final EIS for the 2001 plan projected that a major component of truck traffic to and from the landfill (King County transfer trucks) would decrease over time after the installation of compactors at the transfer stations (King County 2001, Appendix H). Area 7, which is the last area to be constructed, is scheduled for construction starting in 2007. The 2001 final EIS also described construction-related transportation impacts to be approximately 400 trips per day during active construction. Construction-related traffic would constitute a short-term impact on the roadways around the landfill.

The 2001 final EIS for the 2001 plan states that after the landfill closes, currently estimated to be in 2015, average daily traffic associated with the landfill would decrease by about 62 percent, and average daily truck traffic associated with the landfill would decrease by about 75 percent. Ongoing trips associated with postclosure activities would include an average of approximately 76 daily transfer truck trips and 220 daily employee and visitor trips. There would also be additional trips associated with construction of the final cover for Area 7.

Alternative X1 Full Early Export

Under Alternative X1, the Cedar Hills landfill would undergo early closure in approximately 2010, and potential transportation impacts associated with the landfill would decrease. For example, the 2001 final EIS (King County 2001, Appendix H) states that after the landfill closes,

average daily trips generated by the landfill would decrease by about 62 percent and average daily truck trips generated by the landfill would decrease by about 75 percent. Reductions in potential transportation impacts specific to the roadways in the vicinity of the Cedar Hills landfill would be of the same magnitude whether closure takes place at the planned closure time or under full early export.

Although transportation impacts at the Cedar Hills landfill would be reduced earlier under Alternative X1 than under the no-action alternative, potential transportation impacts associated with the intermodal transfer facility, long-haul transport, and out-of-county disposal would begin earlier under Alternative X1 than under the no-action alternative. Thus, a trade-off between Alternative X1 and the no-action alternative in terms of potential transportation impacts would occur during the period 2010 (early closure of the Cedar Hills landfill) to 2015 (current estimated closure date for the Cedar Hills landfill).

The 1998 EIS for the Cedar Hills landfill site development plan (King County 1998) and the 2001 final EIS for the 2001 plan (King County 2001, Appendix H) concluded that potential transportation impacts associated with continued operation of the landfill through 2017 are not likely to be significant. However, implementation of full early export (beginning in 2010) would shift transfer truck trips away from the Cedar Hills landfill either to a private intermodal facility or to roadways leading directly to an out-of-county landfill. Waste would be transported uncompacted until compactors are installed at transfer stations where feasible (as under the no-action alternative). More transfer truck trips are generally required to transport uncompacted waste than to transport the same amount of waste after compaction.

In the long term, appropriate siting decisions, incorporation of mitigation into site designs, and mitigation of transportation impacts associated with the ongoing operation of transfer stations, intermodal transfer operations, long-haul transport, and out-of-county disposal are all expected to result in less significant transportation impacts than those associated with continued use of the Cedar Hills landfill. Therefore, the overall transportation impacts associated with Alternative X1 are expected to be somewhat less than the transportation impacts associated with the no-action alternative.

Alternative X2: Partial Early Export

Under Alternative X2, a portion of the county's solid waste (assumed for the purposes of this EIS to be approximately 20 percent of the total volume of mixed municipal solid waste) would be exported beginning in 2010. The remainder of the county's waste would be landfilled at the Cedar Hills landfill until the facility reaches capacity, which would occur in approximately 2016. Under Alternative X2, potential transportation impacts associated with the Cedar Hills landfill and potential transportation impacts associated with intermodal transfer, long-haul transport, and out-of-county disposal would both occur during the 6-year period between 2010 and 2016.

During the period 2010 to 2015 under Alternative X2, the potential transportation impacts associated with the Cedar Hills landfill would be less than those described for the no-action alternative because of the reduction in waste disposed of at the landfill and correspondingly

fewer truck trips. About one-fifth of the transfer truck trips would no longer need to travel to the landfill for waste disposal (a reduction of about 62 weekday transfer truck trips and 21 weekend day transfer truck trips). During the same period under Alternative X2, the potential transportation impacts associated with the Cedar Hills landfill would be more than those described for Alternative X1, because about four-fifths of the transfer truck trips would continue to travel to the landfill for waste disposal (about 246 weekday transfer truck trips and 85 weekend day transfer truck trips).

However, during the period 2015 to 2016, potential transportation impacts associated with the Cedar Hills landfill under Alternative X2 would generally be greater than those associated with the no-action alternative and Alternative X1, because the ability of the landfill to continue to accept waste would result in the continuation of truck trips to the landfill for that purpose. The 1998 EIS for the Cedar Hills landfill site development plan (King County 1998) and the 2001 final EIS for 2001 plan (King County 2001) concluded that transportation impacts associated with continued operation of the landfill through 2017 are not likely to be significant. These conclusions were based on a larger number of truck trips than the number expected with partial early export. Therefore, it is unlikely that Alternative X2 would result in transportation impacts that have not already been identified and for which mitigation has not been discussed in the 2001 final EIS.

Under Alternative X2, long-term transportation impacts associated with operation of the county's transfer stations would be similar to those discussed for each of the transfer system alternatives. Early export of waste would not affect the number of incoming waste-hauling trips or outgoing trips by transfer trailers/intermodal containers (unless the county decides to use intermodal containers with a higher capacity than transfer trailers, in which case the resulting number of outgoing trips by transfer trucks would be fewer).

Under Alternative X2, transportation impacts associated with the intermodal transfer facility, long-haul transport, and out-of-county disposal would begin at the same time as the impacts resulting from Alternative X1. The major difference with Alternative X2 during this period is that the number of truck trips on roadways associated with intermodal transfer facility, long–haul transport, and out-of-county disposal would be one-fifth those described for Alternative X1. This would translate into less transportation-related impacts at the intermodal transfer facility, although the specific site and access roads are unknown at this time under Alternative X2. One-fifth the number of intermodal containers (or trailers) and correspondingly fewer truck, train, or barge trips would be required to handle waste exported over federal and state highways, Union Pacific or BNSF rail lines, or waterways of the United States.

Mitigation Measures

At a programmatic level, no specific significant adverse transportation impacts have been identified; therefore, no specific mitigation is proposed for any of the alternatives. Siting criteria developed by the county for new facilities assign a high rank to sites that are served by a road

network that would accommodate traffic generated by the new facility without resulting in significant congestion. In addition, traffic impact fees may be required by local municipalities to mitigate impacts. Specific SEPA transportation analyses should be conducted for the preferred alternative, including estimates for trip generation, transportation operational analysis, identification of construction and operation impacts in the vicinity of the transfer stations and/or intermodal facility, and mitigation for the impacts.

Significant Unavoidable Adverse Impacts

At a programmatic level, no significant unavoidable adverse transportation impacts were identified.

3.3 Environmental Health—Noise

Sub-elements of Environmental Health Not Addressed in This EIS

Approval of the proposed waste export system plan and implementation of waste export are not expected to result in significant adverse impacts related to two sub-elements of environmental health: risk of explosion, and releases or potential releases to the environment affecting public health, such as toxic or hazardous materials. Waste export will not involve the handling of materials with a significant risk of explosion or materials that are toxic or hazardous. The potential for emissions of landfill gas that may contain toxic constituents associated with landfill disposal is addressed in the section "Air—Air Quality and Odor" in Part 3.

Affected Environment

The final EIS for the *Final 2001 Comprehensive Solid Waste Management Plan* (King County 2001, Appendix H), for which this EIS is a supplement, includes a description of the potentially affected environment related to noise. The noise section in Attachment A of the 2001 final EIS describes the general noise environment of the Puget Sound region, noting that ambient noise levels are typically 60 A-weighted decibels (dBA) or higher in urban areas and near roadways, on construction sites, and in other noisy locations, whereas noise levels in rural areas can be 50 dBA or lower. The noise section in Part 5 of the 2001 final EIS includes an additional description of noise associated with the existing Cedar Hills landfill, existing private intermodal transfer facilities, and the existing Roosevelt Regional Landfill in south-central Washington.

Noise levels from operations at the Cedar Hills landfill are below the allowable daytime noise limit of 57 dBA specified in King County Code, Chapter 12.88 (KCC 12.88). Backup alarms on vehicles and equipment may be audible at some nearby residences at times. The noise of these alarms is exempt from noise limits in the King County Code. Noise from all traffic on Cedar Grove Road (the road providing access to the landfill) is approximately 67 to 68 dBA during the peak hour for landfill truck traffic (King County 1998). The Federal Highway Administration noise abatement criterion is 67 dBA for residential areas.

Impacts

Probable Impacts under All Alternatives

Extending the Life of the Cedar Hills Landfill

The potential primary noise impact resulting from extending the life of the Cedar Hills landfill would be the extension of noise from operations and landfill truck traffic further into the future, beyond 2015. Preliminary estimates developed by the Solid Waste Division suggest that the life

of the landfill could be extended up to 7 years, to 2022. Backup alarms could continue to be heard at some nearby residences, and traffic noise along Cedar Grove Road associated with landfill activities would continue. The extent to which noise impacts on residences adjacent to the landfill would result from extending the life of the Cedar Hills landfill is uncertain. Options for extending the landfill's life have not been developed by the Solid Waste Division. If the County Council authorizes the Solid Waste Division to prepare a study of options for extending the life of the landfill, potential noise impacts would be addressed in the studies associated with the SEPA documentation. The 1998 final EIS for the Cedar Hills landfill site development plan (King County 1998) concluded that extending the duration of landfilling activities to 2017 could result in significant noise impacts on some residents due to truck traffic at some surrounding residences. The extent to which this conclusion would be applicable to any options that the county may consider in the future for extending the life of the landfill is uncertain and would be addressed in future SEPA documentation on those options.

Intermodal Transfer Facilities

In 2005, the City of Seattle prepared a supplemental EIS for a city-operated solid waste intermodal transfer facility (Seattle 2005). The 2005 supplemental EIS evaluated potential impacts, including noise impacts, from an intermodal transfer facility at four alternative industrial sites in south Seattle. One of those sites was larger than the other three and was assumed to support a facility sized to handle both the city's waste and King County's waste. All alternative sites were assumed to include container storage, loading and unloading capabilities for truck and rail, and facilities to compact and load waste into containers. The 2005 supplemental EIS is incorporated herein by reference.

The City of Seattle's 2005 supplemental EIS included a noise study that addressed noise from traffic generated by the intermodal transfer facility, noise from construction of the facility, and noise generated during operation of the facility. The study proposed standard mitigation measures for potentially significant construction noise. These measures included limitations on hours of work and muffling stationary generators or compressors with temporary barrier walls. With implementation of the standard mitigation measures proposed for construction, the study concluded that both construction and post-construction noise impacts would not be significant at any of the sites. Key factors supporting that conclusion were the sites' locations in industrial areas where ambient noise from traffic and other activities is relatively high and the lack of sensitive noise receptors near the sites.

In selecting a site for an intermodal transfer facility, the Solid Waste Division developed a set of criteria to rank the suitability of potential sites. Application of the criteria is likely to result in a high rank for sites in industrial areas where ambient noise levels are high and for sites with no sensitive noise receptors nearby. Through this type of siting process, significant noise impacts are likely to be avoided or minimized.

The county's siting process for an intermodal facility would be accompanied by documentation to comply with SEPA. The SEPA documentation would identify likely noise impacts and describe feasible measures to mitigate impacts that could be significant. As a result of the

application of the siting criteria during site selection and the development of mitigation measures through the associated SEPA process, noise impacts from an intermodal transfer facility are unlikely to be significant.

Long-Haul Transport

Long-haul transport will occur by truck primarily on interstate highways and major state highways, by rail on established rail lines, or by barge through Puget Sound, the Strait of Juan de Fuca, the Pacific Ocean, and the Columbia River. Barge transport generates little noise and transport of the county's waste through this mode would not lead to significant impacts.

Potential noise impacts from truck or rail transport of the county's waste are discussed in Part 5 of the 2001 final EIS (King County 2001, Appendix H), which concluded that noise impacts are unlikely to be significant. Transport would occur on well-traveled routes that have relatively high ambient noise levels due to existing truck or rail traffic. The addition of new truck or rail trips associated with long-haul transport of King County's waste may contribute to noise levels on these routes but is unlikely to result in significant noise impacts because the new trips associated with the county's waste would probably be a fraction of the total vehicle or train trips on these routes.

Out-of-County Disposal

Noise-generating activities associated with out-of-county disposal include operations at the local intermodal transfer facility receiving the long-hauled waste, truck transport from the intermodal facility to the out-of-county disposal landfill, and disposal operations at that landfill. All three activities have the potential to generate significant noise impacts. For example, the 2001 final EIS (King County 2001, Appendix H) describes noise associated with these activities for the Roosevelt Regional Landfill in south-central Washington, stating that cumulative noise levels associated with landfill and other traffic can be significant based on criteria established by the Federal Highway Administration and the U.S. Environmental Protection Agency. In general, whether the incremental noise increase associated with the disposal of the county's waste would be significant would depend on background noise levels at the time that waste export occurs.

Transfer System Alternatives

No-Action Alternative

The no-action alternative for the transfer station system consists of continued implementation of the *2001 Final Comprehensive Solid Waste Management Plan* (King County 2001). The impacts, including noise impacts, resulting from the continued implementation of the 2001 plan are described in Part 4 of the final EIS for the plan (King County 2001, Appendix H). The final EIS concluded that during the construction of improvements to transfer stations or the construction of new transfer stations, construction equipment and trucks would generate short-term increases in noise that could be significant. The final EIS states that construction noise could be mitigated in part by means of the following:

- Restrictions on the hours that construction could take place
- Use of electric rather than diesel- or gas-powered equipment
- Use of noise mufflers on equipment
- Mixing of concrete offsite and use of precast-concrete for buildings
- Keeping noisy equipment away from site boundaries
- Use of portable noise barriers
- Routing of construction traffic away from residential areas.

Improvements to existing transfer stations would tend to reduce noise impacts associated with operations at these facilities. The improvements would have the following beneficial effects:

- Onsite traffic flow would be improved, leading to fewer and shorter offsite vehicle queues.

- Some currently unenclosed operations could be enclosed, thereby reducing noise levels in the outside area.

Additional mitigation measures that could reduce operational noise include the following:

- Use of noise mufflers on equipment working in the waste collection pit

- Limitation on the height from which objects are dropped into the waste collection pit

- Onsite noise monitoring

- Minimization of the use of reverse gear alarms.

The overall conclusion of the 2001 final EIS is that construction noise associated with transfer station improvements could be significant in some cases, although temporary in duration. However, the 2001 final EIS does describe a specific noise impact. That specific impact was described in the 1993 EIS for the replacement of the Factoria transfer station (Bellevue 1993) as a potential significant operational noise impact that would be associated with vehicles traveling up the graded access road leading to a facility on the preferred Eastgate site.

The issuance of permits for major improvements to transfer stations would be preceded by documentation to comply with SEPA. The SEPA documentation would identify likely noise impacts and describe feasible measures to mitigate impacts that could be significant.

In selecting sites for new transfer stations, the Solid Waste Division developed a set of criteria to rank the suitability of potential sites. Application of the criteria is likely to result in a high rank for sites in areas where ambient noise levels are high and for sites that have no sensitive noise receptors nearby. Through this type of siting process, significant noise impacts are likely to be avoided or minimized.

The county's siting process for a new transfer station would be accompanied by documentation to comply with SEPA. The SEPA documentation would identify likely noise impacts and describe feasible measures to mitigate impacts that could be significant. As a result of the application of siting criteria and the development of mitigation measures through the associated SEPA process, noise impacts from new transfer facilities are unlikely to be significant.

Equipping transfer stations with compactors would reduce the number of transfer trailers leaving facilities that currently have no compactor (currently only Vashon and Enumclaw have compactors; First Northeast will have a compactor in 2007) and would result in marginally less noise from truck traffic in the vicinity of those stations.

Action Alternatives

Under any of the action alternatives, the types of noise impacts associated with construction and operation of transfer stations would be similar to those described for the no-action alternative. However, three of the most site-constrained existing facilities (Algona, Renton, and Houghton) would be either closed or converted to self-haul only under each of the action alternatives. This would result in lower noise impacts at these locations compared to the no-action alternative in which these stations would be retained as full-service facilities. None of the action alternatives would result in any change in the potential noise impacts associated with the First Northeast, Vashon, and Enumclaw transfer stations and the Cedar Falls and Skykomish drop boxes.

Alternatives 1 and 1A

From an overall programmatic perspective, Alternatives 1 and 1A would result in a reduction in the number of transfer facilities compared to the no-action alternative. Therefore, potential noise impacts would affect fewer locations, although impacts at some of these locations would be incrementally greater because the transfer system under these alternatives would handle the same systemwide volume of waste as the volume under the no-action alternative. The closure of the Algona, Renton, and Houghton transfer stations would benefit the surrounding communities by eliminating noise impacts currently affecting those areas. Potential noise impacts would be associated with the construction and operation of the new South County and NE Lake Washington transfer stations, but the locations of these facilities and the noise receptors that could be affected are not known. Nonetheless, the county site selection process, as well as mitigation measures developed during the SEPA process associated with that site selection process, would minimize significant noise impacts from these new facilities.

Alternative 1 may result in slightly greater operational noise impacts at the Factoria transfer station than Alternative 1A if under Alternative 1, access to a new facility on the Eastgate site is provided from SE 32nd Street. In that case, additional noise would be generated by truck traffic on the graded access road into the facility.

Alternative 2

Alternative 2 differs from Alternative 1 in that the Houghton transfer station would be retained as a self-haul-only facility rather than being eliminated, and the new NE Lake Washington transfer station would serve commercial haulers only. Therefore, under Alternative 2, overall noise impacts associated with the Houghton transfer station would be lower compared to those of the no-action alternative, but they may be greater than those of Alternative 1. The noise impacts that would continue to occur at the Houghton station would be concentrated on weekend days when most of the residential self-hauling takes place. Under Alternative 2, noise impacts at the new NE Lake Washington transfer station would be marginally less than those under Alternative 1. Most of the noise reduction compared to Alternative 1 would occur on weekend days when less commercial hauling occurs. As with Alternatives 1 and 1A, noise impacts related to the Algona transfer station would be eliminated.

Alternative 2A

As with Alternative 2, Alternative 2A would retain the Houghton transfer station as a self-haul-only facility. Alternative 2A would also retain the Renton transfer station as a self-haul-only facility. The Bow Lake transfer station as well as the NE Lake Washington transfer station would serve commercial haulers only. Therefore, the same trade-off of noise impacts would result for the Renton and Bow Lake stations as that described under Alternative 2 for the Houghton and NE Lake Washington stations. Noise impacts related to other facilities under Alternative 2A would be the same as those resulting from Alternative 2.

Alternative 3

As with Alternative 2A, Alternative 3 would retain the Renton transfer station as a self-haul-only facility, but the Bow Lake transfer station would be a full-service facility. A portion of the self-haul traffic that would be handled by the Renton station under Alternative 2A would be handled by the full-service Bow Lake station under Alternative 3. Therefore, under Alternative 3, noise impacts at the self-haul-only Renton station would be marginally less than those resulting from Alternative 2A, and impacts at the Bow Lake station would be correspondingly greater than those resulting from Alternative 2A.

Also, under Alternative 3, the Factoria transfer station would be rebuilt on the existing site and would be a self-haul-only facility. The noise impacts at that location would be correspondingly less than those resulting from Alternatives 1, 1A, 2, and 2A, and they would be concentrated on weekend days. Because both the Houghton and Factoria transfer stations would be self-haul only, the majority of commercially hauled waste that would have been handled by these stations would be handled by the new NE Lake Washington transfer station. The new NE Lake Washington station would therefore handle more commercially hauled waste under Alternative 3 than under any of the other alternatives, and the noise impacts associated with that station would be correspondingly greater.

Alternative 4

Alternative 4 would result in similar noise impacts as those resulting from Alternative 2A, with the exception that Alternative 4 retains the Algona transfer station as a self-haul-only facility rather than closing it, and includes the new South County transfer station as a commercial-only facility. Therefore, the same trade-off of noise impacts would occur for the Algona and new South County stations that was described for Alternative 2A for the Houghton and NE Lake Washington transfer stations and the Renton and Bow Lake transfer stations.

Alternatives for Timing of Waste Export

These alternatives would primarily affect the duration and intensity of noise impacts associated with the Cedar Hills landfill and the timing of any noise impacts associated with intermodal transfer facilities and the long-haul transport and out-of-county disposal of waste.

No-Action Alternative

Under the no-action alternative, waste disposal would continue at the Cedar Hills landfill until the facility reaches capacity at which time waste export would begin. The noise impacts associated with construction of new landfill cells and landfilling operations at the Cedar Hills landfill would continue until approximately 2015 (or later if the life of the landfill is extended). Noise impacts associated with the Cedar Hills landfill are described in the 1998 final EIS for the Cedar Hills landfill site development plan (King County 1998), which is incorporated herein by reference. The 1998 final EIS describes noise impacts associated with the Cedar Hills landfill as resulting from landfill traffic that generates noise on nearby roadways and construction and landfilling activities that generate noise for nearby properties. The 1998 EIS concluded that cumulative traffic noise (noise from background traffic and landfill traffic) on Cedar Grove Road near the landfill could be at the threshold of significance during peak hours for landfill truck traffic. The 1998 EIS also acknowledged that backup alarms on equipment at the landfill might be audible at some nearby residences, although they are not subject to noise regulations.

Alternative X1: Full Early Export

Under Alternative X1, the Cedar Hills landfill would close in approximately 2010, and noise impacts associated with the landfill would decrease. For example, the 2001 final EIS (King County 2001, Appendix H) states that after the landfill closes, average daily traffic associated with the landfill would decrease by about 62 percent and average daily truck traffic associated with the landfill would decrease by about 75 percent. While noise impacts at the Cedar Hills landfill would be reduced earlier under Alternative X1 than under the no-action alternative, potential noise impacts associated with the intermodal transfer facility, long-haul transport, and out-of-county disposal would begin earlier under Alternative X1 than under the no-action alternative. Thus, a trade-off between Alternative X1 and the no-action alternative with respect to noise impacts would occur during the period from 2010 (early closure of the Cedar Hills landfill under Alternative X1) to 2015 (estimated closure date for the Cedar Hills landfill under the no-action alternative). Although the 1998 EIS for the Cedar Hills landfill site development

plan (King County 1998) did not conclude that noise impacts associated with the landfill are necessarily significant, it identified impacts experienced by nearby residents. Siting decisions and mitigation incorporated into the design, noise impacts associated with intermodal transfer operations, long-haul transport, and out-of-county disposal have a lesser likelihood of being significant than noise impacts associated with the Cedar Hills landfill. Therefore, the overall noise impacts associated with Alternative X1 are likely to be somewhat less than the noise impacts of the no-action alternative.

Alternative X2: Partial Early Export

Under Alternative X2, a portion of the county's waste (assumed for the purposes of this EIS to be approximately 20 percent of the total volume of mixed municipal solid waste) would be exported beginning in 2010. The remainder of the county's waste would be landfilled at the Cedar Hills landfill until the facility reaches capacity, which would occur in approximately 2016. Under Alternative X2, noise impacts associated with the Cedar Hills landfill and potential noise impacts associated with intermodal transfer, long-haul transport, and out-of-county disposal would both occur during the 6-year period between 2010 and 2016. However, under Alternative X2 from approximately 2010 to 2015, the impacts associated with the Cedar Hills landfill would be less than those of the no-action alternative and, from 2015 to 2016, the impacts associated with the landfill would be greater than those of the no-action alternative. Conversely, potential noise impacts associated with intermodal transfer, long-haul transport, and out-of-county disposal would occur from approximately 2010 to 2015 under Alternative X2, but no noise impacts associated with these activities would occur under the no-action alternative during the same period. From approximately 2015 to 2016, potential noise impacts associated with intermodal transfer, long-haul transport, and out-of-county disposal under Alternative X2 would be somewhat less than the noise impacts associated with those activities under the no-action alternative.

Mitigation Measures

The 2001 final EIS (King County 2001, Appendix H), which this EIS supplements, and the documents incorporated herein by reference (King County 1998; Bellevue 1993; Seattle 2005) all discuss measures to mitigate noise impacts that can result from activities associated with waste export. Many of the measures are typical of those implemented on other public infrastructure projects and include the following:

- For new facilities that could generate significant noise impacts, selecting sites that have no sensitive noise receptors, such as residences and schools, nearby
- Limiting hours of construction

- Providing temporary sound barriers for localized, temporary noise sources, such as construction generators and compressors
- Providing mufflers for construction and operation equipment
- Providing routine maintenance to keep all equipment in good working order
- Enclosing or constructing sound barriers around activities that could generate significant operational noise
- Requiring construction and operation trucks to use travel routes that minimize residential exposure to noise generated by the trucks
- Minimizing the use of reverse-gear alarms on construction and operation equipment.

Significant Unavoidable Adverse Impacts

In general, significant adverse noise impacts can be avoided by the implementation of typical noise mitigation measures on a site-specific basis. Implementation of projects designed to prepare the county's solid waste system for export is likely to be accompanied by proposals to extend the life of the Cedar Hills landfill. Extending the life of the landfill would extend the duration of some of these potential noise impacts associated with its operation. Some of these potential impacts, particularly cumulative traffic noise along the Cedar Grove Road of which noise from landfill traffic is a substantial component, could be significant.

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3.4 Air—Air Quality and Odor

Affected Environment

The final EIS for the *Final 2001 Comprehensive Solid Waste Management Plan* (King County 2001, Appendix H), which this EIS supplements, provides a general description of the climate and air quality in the Puget Sound region, which is summarized here. Weather in the Puget Sound region is characterized by sunny, mild days in the summer and cloudy, wet days in the winter. January is typically the coldest month and July is usually the warmest month, with average temperatures in Seattle of 44.5 degrees Fahrenheit (°F) and 75.1°F, respectively. Average nighttime temperatures range from the lower 30s in the winter to the mid-50s in the summer. The prevailing winds are predominantly from the west and southwest.

In the Puget Sound region, seasonal meteorological conditions, topography, and land uses largely control air quality by enhancing or preventing the dispersion of air contaminants. Air contaminants that may be present at significant levels in urban areas include carbon monoxide, ozone, sulfur dioxide, nitrogen oxide, and particulate matter. Approximately 90 percent of the carbon monoxide in urban areas is produced by motor vehicles. Ozone is formed when volatile organic compounds and nitrogen oxides react chemically. Sulfur dioxide is produced primarily by industrial activities. Nitrogen dioxide is formed from high-temperature fuel combustion and subsequent atmospheric reactions. The greatest sources of particulate matter are wood smoke, windblown dust, and industrial emissions.

In compliance with the 1990 Clean Air Act amendments, in 1991 Washington state adopted the Washington Clear Air Act, which is administered in the central Puget Sound region by the Puget Sound Clean Air Agency. The Washington Clean Air Act includes ambient air quality standards for *criteria air pollutants* (a group of common air pollutants that are widely distributed in the United States and regulated by the U.S. Environmental Protection Agency on the basis of information on the health and/or environmental effects of pollution). In 2004, the most recent year for which data are available, criteria air pollutants in the central Puget Sound region were below federal standards (PSCAA 2005).

Impacts

Probable Impacts under All Alternatives

Extending the Life of the Cedar Hills Landfill

The primary air quality issues at landfills that accept mixed municipal solid waste, such as the Cedar Hills landfill, are the potential for odor and the potential for emissions of toxic air pollutants, or “air toxics” (chemical compounds that are known or suspected of causing adverse human health effects at high enough concentrations and with long enough exposure times). Air

toxics are trace constituents of landfill gas, which is produced at landfills as a result of the decomposition of solid waste. Landfill gas at the Cedar Hills landfill is controlled by means of an active landfill gas control system. Federal and state regulations establish strict operational criteria for landfill gas control systems, including a requirement that concentrations of methane, a major constituent of landfill gas, cannot exceed 500 parts per million (ppm) at the surface of the landfill. In addition to odor and air toxics, fugitive dust emissions may also be an important air quality issue at some landfills (King County 2001, Appendix H).

Substantial documentation and data related to air quality at the Cedar Hills landfill are available, and ongoing monitoring of odor and landfill gas emissions at the landfill continuously produces additional data. As a part of its monitoring program, the Solid Waste Division maintains a 24-hour staffed hotline to receive neighbors' complaints related to the landfill and to provide immediate response. The Solid Waste Division has had few odor complaints in recent years (15 in 2004, 5 in 2005, and 1 in 2006 through May).

An analysis of landfill gas emissions in 1999 concluded that the potential maximum offsite concentrations of four air toxics found in landfill gas would be well below their respective odor thresholds and well below the state standards designed to protect public health (King County 2001, Appendix H). In addition, the 1998 final EIS for the Cedar Hills landfill site development plan concluded that the concentration of inhalable particulate matter (particles with a diameter of less than 10 micrometers [PM_{10}]) in fugitive dust at the landfill is well below the standards designed to protect human health and welfare (King County 1998). The overall conclusion of both the 1998 final EIS and the 2001 final EIS is that the continued operation of the Cedar Hills landfill would not result in significant offsite odors, offsite concentrations of air toxics, or fugitive dust impacts. Routine inspections by the Puget Sound Clean Air Agency and Public Health–Seattle and King County ensure compliance with air quality standards. In addition, the Solid Waste Division conducts daily odor monitoring to minimize odor impacts.

If the life of the Cedar Hills landfill is extended, potential impacts related to air quality and odor will continue past the current estimated closure year of 2015. However, these impacts are not likely to be significant.

Intermodal Transfer Facilities

In 2005, the City of Seattle prepared a supplemental EIS for a city-operated solid waste intermodal transfer facility (Seattle 2005). The 2005 supplemental EIS evaluated potential impacts, including air quality and odor impacts, from an intermodal transfer facility on four alternative industrial sites in south Seattle. One of those sites was larger than the other three and was assumed to support a facility sized to handle both the city's waste and King County's waste. All of the alternative sites were assumed to include container storage, loading and unloading capabilities for truck and rail, and facilities for compacting and loading waste into sealed containers. The 2005 supplemental EIS is incorporated herein by reference.

The City of Seattle's 2005 supplemental EIS included an air quality study that addressed air quality impacts due to traffic generated by the intermodal transfer facility and odor impacts due

to the handling of solid waste. On the basis of the study results, mitigation measures were proposed for potentially significant air quality impacts during construction and operation. Intermodal facilities that handle only waste in sealed containers are unlikely to generate odor impacts.

Measures to mitigate air quality impacts during construction that were identified during the study included the following:

- Treating the construction site with water or chemical stabilizers to limit dust generation
- Covering or wetting truck loads of earth and cleaning vehicle tires and undercarriages before vehicles leave the site
- Sweeping streets adjacent to the construction site
- Installing paved exit aprons or exit aprons covered with riprap
- Maintaining construction machinery in good working order.

Measures to mitigate air quality impacts during operation that were identified during the study included the following:

- Reducing vehicle idling and queuing
- Periodically washing down or sweeping container storage areas
- Monitoring for the presence of strong odors so that sources can be eliminated.

With implementation of the proposed mitigation measures, the study concluded that both construction and postconstruction air quality and odor impacts would not be significant.

As a result of constructing an intermodal transfer facility and implementing waste export, truck trips would be shifted from haul routes leading to the Cedar Hills landfill to haul routes leading to the intermodal facility. If haul routes leading to the intermodal facility include congested intersections where air quality is near or at the regulatory thresholds for air quality, the additional truck traffic at those intersections could degrade air quality sufficiently to result in impacts that are considered significant. Potential mitigation measures include adjusting haul routes to avoid congested intersections or improving affected congested intersections to improve traffic flow and using low-sulfur or biodiesel fuels.

To select a site for an intermodal transfer facility, the Solid Waste Division would rank the suitability of potential sites by evaluating them according to a set of criteria. Although the criteria are unlikely to directly address air quality and odor, the county's siting process for an

intermodal facility would be accompanied by documentation to comply with SEPA. The SEPA documentation would identify likely air quality impacts and describe feasible measures to mitigate impacts that could be significant. These mitigation measures are likely to be similar to those described above. As a result of the development of mitigation measures through the associated SEPA process, the air quality and odor impacts resulting from an intermodal transfer facility are unlikely to be significant.

Long-Haul Transport

Long-haul transport of waste would result in emissions from trucks, trains, or barges. Long-haul transport by rail would generally result in substantially lower emissions of the four emission products than transport by truck or barge and would therefore have the least overall impact on air quality. Long-haul transport by barge would result in the highest overall impact on air quality. However, localized air quality impacts could vary substantially from this pattern. For example, truck and rail transport would take place on relatively heavily traveled interstate highways and state routes where the air quality may already be adversely affected by other vehicles or trains, whereas barge traffic would occur on open waterways. The calculations of fuel use and emissions generated by the three modes of waste transport are provided in Appendix B.

Out-of-County Disposal

The final EIS for the *Final 2001 Comprehensive Solid Waste Management Plan* (King County 2001, Appendix H) discusses air quality impacts associated with out-of-county disposal and concludes that significant adverse impacts could be avoided. The 2001 final EIS states that out-of-county disposal would contribute to the potential for odor and emissions of air toxics at the out-of-county landfill and because the out-of-county landfills are located in arid, potentially windy areas, their use would contribute to the potential for fugitive dust emissions.

If rail or barge transport is used for long-haul transport, emissions will be generated in hauling the county's waste from an intermodal transfer facility in the vicinity of the out-of-county landfill to the landfill itself. These emissions would likely occur in rural areas where ambient levels of air contaminants associated with vehicle emissions, such as carbon monoxide, are low; therefore, significant adverse impacts are unlikely to occur (King County 2001, Appendix H).

Transfer System Alternatives

No-Action Alternative

The final EIS for the *Final 2001 Comprehensive Solid Waste Management Plan* (King County 2001, Appendix H) discusses air quality impacts associated with the county's transfer stations. The 2001 final EIS concluded that while traffic associated with transfer stations emits carbon monoxide and other air contaminants and could contribute to violations of air quality standards at congested intersections, these impacts are unlikely to be significant because traffic associated with transfer stations is a minor component of the total traffic in the region.

The 1993 EIS for the Factoria transfer/recycling station (Bellevue 1993), which is incorporated herein by reference, discusses air quality and odor. The discussion of odor in the 1993 EIS, in particular, is detailed and includes the following mitigation measures for reducing potential odors that would affect adjacent properties:

- Emptying the waste pit at the transfer station on a regular basis
- Rejecting odorous waste loads
- Storing waste in trailers onsite rather than in the transfer building waste pit
- Emptying yard waste containers regularly
- Cleaning and deodorizing transfer trailers regularly
- Maintaining transfer trailer doors and seals
- Constructing wind baffles at doors exposed to the prevailing winds.

With implementation of these mitigation measures, the 1993 EIS concluded that air quality and odor impacts resulting from the operation of the Factoria transfer station are unlikely to be significant. These mitigation measures could also be applied at other transfer stations in the county system, and it is unlikely that odor impacts at these other locations would be significant.

In general, making improvements to older transfer stations would improve traffic flow and odor control at these facilities, resulting in an overall improvement in air quality and odor compared to existing conditions.

Action Alternatives

Under any of the action alternatives, air quality and odor impacts are unlikely to be significant for the reasons provided in the discussion of the no-action alternative above. Nonetheless, at a programmatic level, there could be slight differences in potential impacts among the alternatives. In general, a more centralized system with fewer transfer stations would tend to concentrate traffic in fewer locations, resulting in a slightly higher potential for air quality impacts. From this perspective, all of the action alternatives would result in a slightly higher potential for air quality impacts than the no-action alternative because with fewer transfer stations, longer trips would be necessary to transport the waste. Under Alternative 3, the new NE Lake Washington transfer station would create the potential for air quality impacts due to its large size and comparatively high associated traffic volumes. Also, because the new NE Lake Washington transfer station would draw commercial customers from a large geographic area, the average trip length would be relatively long and regional air quality impacts would be correspondingly greater.

In general, making improvements to or closing older transfer stations would improve air quality and odor at these locations, resulting in an overall improvement in air quality and odor compared to existing conditions. The use of compactors at some or all stations would reduce odor impacts because fully sealed compactor-loaded containers are less likely to release odors than tarpaulin-covered containers.

Alternatives for Timing of Waste Export

These alternatives would primarily affect the duration and intensity of air quality and odor impacts associated with the Cedar Hills landfill and the timing of any air quality and odor impacts associated with intermodal transfer facilities and the long-haul transport and out-of-county disposal of waste.

No-Action Alternative

Under the no-action alternative, waste disposal would continue at the Cedar Hills landfill until the facility reaches capacity, at which time waste export would begin. The potential air quality and odor impacts associated with construction and operations at the Cedar Hills landfill, which are described in the section "Probable Impacts under All Alternatives," under "Extending the Life of the Cedar Hills Landfill," would continue until approximately 2015 (or later if the life of the landfill is extended). After the Cedar Hills landfill closes, these impacts would decrease. Air quality and odor impacts associated with the operation of an in-county intermodal transfer facility, long-haul transport of waste, and out-of-county disposal would begin when waste export begins; however, as described above, these impacts are unlikely to be significant.

Alternative X1: Full Early Export

Under Alternative X1, the Cedar Hills landfill would close in 2010, and potential air quality and odor impacts associated with the landfill would decrease, while the air quality and odor impacts associated with the operation of an in-county intermodal transfer facility, long-haul transport of waste, and out-of-county disposal would begin. Although, as concluded above, air quality and odor impacts associated with the Cedar Hills landfill are not significant, the fact that the Solid Waste Division receives occasional odor complaints suggests that there may be some degree of impact on nearby residents. By contrast, because of siting decisions and mitigation incorporated into the design, significant air quality and odor impacts associated with intermodal transfer operations, long-haul transport, and out-of-county disposal are less likely to occur. Therefore, the overall air quality and odor impacts associated with Alternative X1 are likely to be somewhat less than the air quality and odor impacts of the no-action alternative.

Alternative X2: Partial Early Export

Under Alternative X2, a portion of the county's waste (assumed for the purposes of this EIS to be approximately 20 percent of the total volume of mixed municipal solid waste) would be exported beginning in 2010. The remainder of the county's waste would be landfilled at the Cedar Hills landfill until the facility reaches capacity, which would occur in approximately 2016. Under Alternative X2, potential air quality and odor impacts associated with the Cedar Hills landfill and air quality and odor impacts associated with intermodal transfer, long-haul transport, and out-of-county disposal would both occur during the 6-year period between 2010 and 2016. However, under Alternative X2 from 2010 to 2015, the potential impacts associated with the Cedar Hill landfill would be slightly less than those of the no-action alternative, and from 2015 to 2016, the potential impacts associated with the landfill would be slightly greater than those of

the no-action alternative. Conversely, potential air quality and odor impacts associated with intermodal transfer, long-haul transport, and out-of-county disposal would occur from 2010 to 2015 under Alternative X2, but no significant air quality and odor impacts associated with these activities would occur under the no-action alternative during the same period. From 2015 to 2016, potential air quality and odor impacts associated with intermodal transfer, long-haul transport, and out-of-county disposal under Alternative X2 would be somewhat less than the air quality and odor impacts associated with those activities under the no-action alternative

Mitigation Measures

The 2001 final EIS (King County 2001, Appendix H), which this EIS supplements, and the documents incorporated herein by reference (King County 1998; Bellevue 1993; Seattle 2005) all discuss measures to mitigate air quality and odor impacts that can result from activities associated with waste export. Some of these measures have been described above. Some of the measures are typical of those implemented on other public infrastructure projects, and others are specific to solid waste handling facilities. The measures for use during construction and operation generally include the following:

Construction

- Covering or wetting exposed dirt in stockpiles and trucks or on truck undercarriages and tires
- Sweeping adjacent streets
- Installing pavement or riprap on areas that are heavily used by trucks and equipment
- Limiting the time that trucks and equipment are idling
- Maintaining construction machinery in good working order.

Operation

- Limiting the length of time that solid waste is exposed outside of sealed containers
- Regularly cleaning and deodorizing containers that hold solid waste
- Maintaining seals and doors on waste containers in good condition
- Maintaining all equipment in good working order

- Limiting air transfer between the interior of buildings where solid waste is handled and adjoining exterior spaces
- Limiting the time that vehicles and equipment are idling.

Significant Unavoidable Adverse Impacts

In general, significant unavoidable adverse air quality and odor impacts that may exist can be minimized by the implementation of the mitigation measures described above. Implementation of projects designed to prepare the county's solid waste system for export is likely to be accompanied by proposals to extend the life of the Cedar Hills landfill. While potential air quality and odor impacts resulting from landfill operations are not considered to be significant, extending the life of the landfill would extend the duration of the limited potential air quality and odor impacts that could be experienced by the surrounding community.

3.5 Energy and Natural Resources—Energy

Sub-elements of Energy and Natural Resources Not Addressed in This EIS

The handling of solid waste involves a potentially large expenditure of energy, much of it derived from nonrenewable petroleum products. It is expected that energy used for transporting solid waste is the largest expenditure of energy in the county's handling of mixed municipal solid waste; therefore, this section of the EIS focuses on the use of energy associated with transporting waste. Approval of the proposed waste export system plan and implementation of waste export would not result in significant impacts on the other sub-elements of energy and natural resources, on conservation, or on renewable resources.

Affected Environment

From an overall perspective, the existing solid waste system has two major transportation links related to mixed municipal solid waste: vehicles bringing the waste to the transfer stations and transfer trailers taking the waste to the Cedar Hills landfill. Vehicle trip counts at transfer stations allow for a systemwide accounting of vehicle trips associated with both major transportation links (Table 3-3).

Table 3-3. Current vehicle trips associated with King County transfer stations.

	Average Weekday	Average Weekend Day
Self-haul customers	3,660	6,744
Commercial-haul customers	1,054	56
Transfer trailers	308	106
Employees and visitors	164	174
Other	74	162
Total	**5,260**	**7,240**

Note: All trips represent a one-way trip, to or from the facility.

Currently, the majority of trips to transfer stations (approximately 78 percent) are made by self-haul customers. Trips by commercial-haul customers constitute approximately 13 percent of the total trips. Because the average number of miles driven for each self-haul trip is unknown, determining the actual cumulative fuel use for vehicles bringing waste to transfer stations is difficult. By contrast, although the number of trips associated with hauling waste from transfer stations to the Cedar Hills landfill is comparatively small (approximately 4 percent of the total trips), the number of miles driven by transfer trailers hauling waste from transfer stations to the Cedar Hills landfill is known, and cumulative fuel use for this major transportation link of the

current system can be estimated (Table 3-4). Table 3-4 does not capture all fuel used in hauling waste to the Cedar Hills landfill. Fuel use for regional direct hauling and any direct hauling from drop boxes to the Cedar Hills landfill (which is minor compared to fuel use for hauling from transfer stations) is not known; therefore, it is not included in Table 3-4.

Table 3-4. Fuel used in hauling mixed municipal solid waste from King County transfer stations to the Cedar Hills landfill.

Transfer Station	Truck Trips	Miles per Round Trip	Fuel Used (gallons)
Algona	8,511	41	102,032
Bow Lake	15,334	33	147,960
Enumclaw	996	44	12,814
Factoria	8,156	36	85,853
First Northeast	3,115	73	66,490
Houghton	8,796	48	123,453
Renton	3,950	24	27,719
Vashon	441	76	9,800
Total			**576,121**

Note: Average fuel economy for trucks is assumed to be 3.42 miles per gallon based on county records.

To provide some perspective on the fuel use shown in Table 3-4, the following text summarizes information related to fuel consumption in the nation and in Washington state. The United States uses a vast amount of energy. Approximately 130,000,000 gallons of diesel fuel and 370,000,000 gallons of motor gasoline are consumed on average each day in the United States. Approximately 2 percent, or 26,000,000 gallons of diesel fuel and 74,000,000 gallons of motor gasoline, are consumed in Washington state on an average day (EIA 2006).

Impacts

Probable Impacts under All Alternatives

A comparison of transportation fuel use with the county's existing solid waste system and with waste export is provided in Table 3-5.

Extending the Life of the Cedar Hills Landfill

Extending the life of the Cedar Hills landfill would reduce the fuel use that would otherwise be necessary to export mixed municipal solid waste. For every year that the life of the Cedar Hills landfill is extended, at least approximately 490,000 gallons of fuel for transporting waste would be saved. This 490,000-gallon savings represents the difference between the fuel used for truck transport to the Cedar Hills landfill each year (576,121 gallons) and the fuel that would be used to transport waste to an intermodal transfer facility by truck (478,757 gallons) and then to an out-of-county landfill by rail (587,000 gallons), a total of 1,065,757 gallons each year (Table 3-5).

Table 3-5. Annual fuel use for waste export based on current waste tonnages compared to annual fuel use under existing system.

	Existing System (gallons)	Waste Export by Truck (gallons)	Waste Export by Rail (gallons)	Waste Export by Barge (gallons)
Hauling to Cedar Hills landfill	576,121	NA	NA	NA
Hauling to intermodal transfer facility[a,b]	NA	NA	478,757	478,757
Long-haul transport[c]	NA	4,226,000	587,000	4,046,000
Total	**576,121**	**4,226,000**	**1,065,757**	**4,524,757**

NA = not applicable
[a] Location of intermodal transfer facility assumed to be in south Seattle.
[b] Assumes all compacted loads.
[c] Location of out-of-county disposal facility assumed to be in south-central Washington or north-central Oregon. Average fuel economy for long-haul transport trucks is assumed to be 7.26 miles per gallon.

Intermodal Transfer Facilities

Hauling mixed municipal solid waste from the county's transfer stations to an intermodal transfer facility would require approximately 478,757 gallons of fuel per year, assuming that a single intermodal transfer facility located in the south Seattle vicinity handles all of the county's mixed municipal solid waste. A decentralized intermodal system with two or more geographically distributed intermodal transfer facilities would reduce the overall system fuel use by reducing the total number of miles driven by trucks between county transfer stations and intermodal transfer facilities.

Long-Haul Transport

Long-haul transport requires substantially more fuel than transport to the Cedar Hills landfill (Table 3-5). Waste export via either barge or truck transport requires approximately four times as much fuel per year as rail transport (including fuel used to transport waste between transfer stations and an intermodal transfer facility).

Out-of-County Disposal

Energy consumption for local transport and disposal activities at an out-of-county disposal facility is expected to be relatively minor compared to energy consumption for long-haul transport.

Transfer System Alternatives

Energy use associated with the transfer station system is assumed to be predominantly associated with transportation rather than waste handling activities at the transfer stations. Most vehicle trips in the county transfer station system are made by self-haul customers and commercial-haul

customers. Therefore, differences among the alternatives in terms of energy use would likely be determined by the difference in the total number of miles driven by self-haul and commercial-haul customers.

Alternatives with a more geographically centralized system of transfer stations would probably result in more energy use than alternatives with a system that is more geographically dispersed. Under the no-action alternative, there would be nine transfer stations serving both self-haul customers and commercial-haul customers. Under all of the action alternatives, with the exception of Alternative 3, there would be seven transfer stations serving self-haul customers and seven transfer stations serving commercial-haul customers. Under Alternative 3, there would be nine transfer stations serving self-haul customers and six transfer stations serving commercial-haul customers. Compared to the no-action alternative, Alternatives 1, 1A, 2, 2A, and 4 would probably result in slightly more energy use, because of the greater travel distances for some self-haul and commercial-haul customers due to fewer transfer stations. Alternative 3, with the same number of transfer stations serving self-haul customers and fewer transfer stations serving commercial-haul customers, would probably result in more energy use than the no-action alternative but less than the other action alternatives. On the other hand, compared to the action alternatives, the no-action alternative would result in longer waiting times for customers, resulting in more engine idling and additional fuel use. The exact magnitude of the differences among the alternatives is unknown.

Differences among the alternatives in terms of energy use by King County transfer trucks would depend on whether compactors are installed at the facilities. A transfer station with a compactor generally generates fewer truck trips than the same station without a compactor.

Alternatives for Timing of Waste Export

Any alternative that postpones the initiation of waste export would result in a reduction in energy use, and any alternative that accelerates the initiation of waste export would result in an increase in energy use, compared to that of the no-action alternative.

No-Action Alternative

Under the no-action alternative, annual fuel use associated with transporting the county's mixed municipal solid waste would increase by approximately 491,000 gallons or more when waste export is initiated, currently estimated to occur in 2015.

Alternative X1: Full Early Export

Compared to the no-action alternative, Alternative X1 would result in the use of approximately 490,000 more gallons of fuel per year (with rail transport) to approximately 3,800,000 more gallons per year (with truck or barge transport) to transport the county's mixed municipal solid waste. During the period from approximately 2010 to 2015 under Alternative X1, total additional fuel use would be between 2,500,000 gallons (with rail transport) and 20,750,000

gallons (with truck or barge transport). Fuel use under both the no-action alternative and Alternative X1 would be the same after approximately 2015.

Alternative X2: Partial Early Export

Compared to the no-action alternative, Alternative X2 would result in more fuel use during the period from approximately 2010 to 2015 (when no waste export would be occurring under the no-action alternative) and less fuel use during the period from approximately 2015 to 2016 (when full waste export would be occurring under the no-action alternative). Overall, Alternative X2 would result in the use of approximately the same total amount of fuel to transport the county's mixed municipal solid waste between approximately 2010 and 2016.

Mitigation Measures

To minimize the use of energy in implementing waste export, the county could maximize the life of the Cedar Hills landfill and select rail transport for waste export. Selecting a geographically dispersed alternative for the transfer station system would also probably lead to reduced energy use. Use of energy-efficient and well-maintained vehicles, and renewable fuels, by the county would provide some additional energy savings.

Significant Unavoidable Adverse Impacts

Waste export would involve an increase in energy use, primarily for long-haul transport. While the energy expenditure (as expressed in fuel use) would be large, it is a minute fraction of the total energy consumed regionally. For example, the approximately 1,065,757 gallons of fuel required annually to transport the county's waste by rail to a landfill in south-central Washington or north-central Oregon would be considerably less than 1/100 of 1 percent of the total amount of fuel used each year in Washington state.

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3.6 Land and Shoreline Use—Relationship to Existing Land Use Plans and Aesthetics

Sub-elements of Land and Shoreline Use Not Addressed in This EIS

Approval of the proposed waste export system plan and implementation of waste export are not expected to result in significant adverse impacts related to four sub-elements of land and shoreline use: housing, recreation, historic and cultural preservation, and agricultural crops. Improvements to existing facilities and construction of new facilities are not expected to influence the overall supply of housing in King County.

Two existing transfer stations (First Northeast and Houghton) are located adjacent to existing parks. At neither station would approval of any of the alternatives result in significant adverse impacts compared to existing conditions. All the alternatives include improvements that are currently underway at the First Northeast transfer station. Under all of the action alternatives, the Houghton station would be either eliminated or converted to a self-haul facility. If Houghton is converted to a self-haul facility, the result would be a reduction in activity at the existing site. If Houghton is eliminated, activity at the site would cease. The Solid Waste Division developed a set of criteria to rank the suitability of potential sites. Based on the criteria, new facilities are likely to be sited away from existing recreational facilities that could be adversely affected by waste transfer activities.

Major improvements to existing facilities and construction of new facilities are unlikely to have significant impacts on historic or cultural resources because known historic and cultural resources are not adversely affected by the existing facilities, and the application of siting criteria would likely avoid or minimize impacts due to new facilities.

The existing solid waste facilities in King County have no impacts on agricultural crops, and the application of siting criteria would likely avoid or minimize impacts due to new facilities.

Affected Environment

The final EIS for the *Final 2001 Comprehensive Solid Waste Management Plan* (King County 2001, Appendix H), for which this EIS is a supplement, includes a description of the affected environment related to land use, which is summarized in this section.

The land use section in Attachment A of the 2001 final EIS describes the general land use patterns of the central Puget Sound region, noting the distinction between the higher intensity urban areas that support most of the region's population and industrial and commercial activities, and the lower intensity rural areas that are located along the western and eastern peripheries of

the region. The visual character of the central Puget Sound area occurs in a pattern that generally coincides with the overall land use pattern. Light and glare and human-made visual elements that are dominated by regular geometric forms are far more evident in urban areas compared to rural areas in the Puget Sound region.

The Cedar Hills landfill is located in unincorporated King County, south of Issaquah and east of Renton. The surrounding area is primarily residential, although there are some nonresidential commercial and industrial uses, primarily south of the landfill. The Cedar Hills landfill operates under an existing special use permit issued by King County. The landfill, a large open area that occupies high ground relative to the local surrounding area, is visible from many surrounding viewpoints.

Private landfills that have been identified as potential out-of-county disposal locations are located in rural areas with limited residential development. Several of the landfills are located in areas supporting low-intensity agricultural activities.

Of the county's existing transfer stations, six (all but Vashon and Enumclaw) were constructed 30 or more years ago and are zoned for nonconforming land uses that require a special land use permit for any major improvements. The more recently constructed Vashon and Enumclaw transfer stations operate under special land use permits and are consistent with existing zoning and land use plans. The Bow Lake, Factoria, Renton, and Algona stations are located in commercial/industrial areas and have no adjacent residential uses. By contrast, the First Northeast and Houghton stations both are adjacent to residential and park uses.

Impacts

Probable Impacts under All Alternatives

Extending the Life of the Cedar Hills Landfill

The land use and aesthetic impacts resulting from extending the life of the Cedar Hills landfill are uncertain. If the life of the Cedar Hills landfill is extended, the height of the landfill would not extend above the currently permitted elevation, which the 1998 final EIS concluded would not result in significant unavoidable adverse visual impacts. However, in other respects, the nature of options that would be considered to extend the landfill's life are unknown, pending detailed study by the Solid Waste Division.

Intermodal Transfer Facilities

In 2005, the City of Seattle prepared a supplemental EIS for a city-operated intermodal transfer facility for solid waste (Seattle 2005). The 2005 supplemental EIS evaluated potential impacts, including land use and visual impacts, from an intermodal transfer facility on four alternative industrial sites in south Seattle. The 2005 supplemental EIS is incorporated herein by reference.

Siting the City of Seattle facility in an industrial area avoided impacts in terms of land use compatibility. The proposed transfer station is an allowed use in industrial zones, and the alternative sites evaluated in the 2005 supplemental EIS had no immediately adjacent incompatible land uses. However, during the comment period for the draft supplemental EIS, an issue related to land use consistency was raised. Two of the four sites were located on Harbor Island adjacent to the Elliott Bay shoreline, and comments on the draft supplemental EIS suggested that a truck-to-rail transfer facility was not a water-dependent use; therefore, such a facility at either site would be inconsistent with existing shoreline policies.

The 2005 supplemental EIS noted that the visual character of the proposed intermodal transfer facility was similar to that of other industrial uses surrounding the four alternative sites. The discussion also pointed out that visual impacts associated with the four sites varied because of their different locations in relation to visually sensitive resources, although the supplemental EIS concluded that a transfer station on any of the alternative sites would not result in significant adverse visual impacts.

In selecting a site for an intermodal transfer facility, the Solid Waste Division developed a set of criteria to rank the suitability of potential sites. Application of the criteria is likely to result in a high rank for sites whose zoning would support an intermodal transfer facility and for sites in areas that support compatible land uses and activities. Therefore, an intermodal transfer facility would be unlikely to result in significant adverse land use and visual impacts.

The county's siting process for an intermodal facility would be accompanied by documentation to comply with SEPA. The SEPA documentation would identify likely land use and visual impacts and describe feasible measures to mitigate impacts that could be significant. Incorporating standard mitigation measures into the facility design, such as shielded lighting, muted color schemes for building surfaces, and perimeter fencing and landscaping, can also minimize land use compatibility and visual impacts. As a result of the application of the siting criteria and the development of mitigation measures through the associated SEPA process, land use and visual impacts from an intermodal transfer facility are unlikely to be significant.

Long-Haul Transport

Long-haul transport, whether by truck, rail, or barge, will occur on established travel routes and is not expected to require new transportation facilities such as roads or rail lines. For this reason, no significant land use or visual impacts are expected to result from long-haul transport using any of the potential transportation modes.

Out-of-County Disposal

The identified out-of-county disposal facilities are located in rural areas with surrounding land uses that are generally compatible and not visually sensitive. Any out-of-county disposal facility with which King County would contract would be operating under required state and local permits; therefore, it would be an authorized land use. Consequently, significant unavoidable

adverse land use and visual impacts are unlikely to be associated with out-of-county disposal activities.

Transfer System Alternatives

No-Action Alternative

In the milestone reports prepared to support the waste export system plan, three of the county's eight transfer stations were not evaluated because they are relatively new or are being rebuilt. The Enumclaw and Vashon transfer stations were constructed in 1999 and 1993, respectively. The First Northeast station in Shoreline is currently being rebuilt and is scheduled to reopen in the fourth quarter of 2007. These three stations meet, or will meet, all of the standards evaluated for the older transfer stations.

The no-action alternative for the transfer station system consists of continued implementation of the *2001 Final Comprehensive Solid Waste Management Plan* (King County 2001). The impacts, including land use and visual impacts, resulting from the continued implementation of the 2001 plan are described in Part 4 of the final EIS for the plan (King County 2001, Appendix H). The final EIS concluded that short-term impacts on adjacent land uses could occur during construction due to dust, erosion and sedimentation, noise, and traffic congestion, although mitigation measures are available to reduce the severity of these impacts.

The 2001 final EIS concluded that because all transfer station improvements and new construction would require environmental review and special land use permits, land use impacts would be limited. The construction of new transfer stations would also be preceded by a site selection process that would result in a high rank for sites that would not be associated with issues of land use compatibility and regulatory and policy consistency.

The 2001 final EIS states that potential adverse visual impacts could be mitigated through the following mitigation measures:

- Architectural design of buildings
- Use of shielded or directional lighting
- Incorporation of art work as required by the King County Code
- Installation of landscaping.

The 2001 final EIS concluded that improvements to existing stations and construction of new transfer stations are unlikely to result in significant unavoidable adverse land use and aesthetic impacts. The discussion in the 2001 final EIS suggests that long vehicle queues could interfere with the use of affected roadways by general traffic and could affect access to nearby land uses. To the extent that these situations occur, changes to an existing transfer station that improve traffic flow through the facility would tend to have a beneficial effect on adjacent land uses.

Action Alternatives

None of the action alternatives for the transfer station system is likely to result in significant adverse impacts related to land use or aesthetics. As stated in the section "Probable Impacts under All Alternatives," site selection, environmental review, and the acquisition of required land use permits are likely to avoid land use and aesthetic impacts and the imposition of conditions requiring the mitigation of potential impacts.

Although none of the action alternatives is likely to result in land use and aesthetic impacts that are more adverse than existing conditions or impacts that are adverse compared to the no-action alternative, the action alternatives differ in the extent of programmatic land use and aesthetic impacts. The First Northeast transfer station is currently being improved and would not be affected by any of the action alternatives. The Houghton station would either be closed (Alternatives 1 and 1A) or converted to a self-haul-only facility (Alternatives 2, 2A, 3, and 4). Whereas converting the Houghton facility to self-haul only would reduce the level of activity at the facility and lessen land use compatibility and aesthetic impacts that may be affecting nearby residences and Bridle Trails State Park, closing the facility altogether would eliminate any impacts that may be occurring. Therefore, from an overall system perspective, Alternative 1 or Alternative 1A would result in fewer land use and aesthetic impacts in the future than the other action alternatives.

Alternatives for Timing of Waste Export

The alternatives for the timing of waste export would primarily affect the duration and intensity of land use and aesthetic impacts associated with the Cedar Hills landfill and the timing of any land use and aesthetic impacts associated with intermodal transfer facilities and the long-haul transport and out-of-county disposal of waste. As described in preceding sections, significant land use or aesthetic impacts associated with the intermodal transfer facility, long-haul transport, and out-of-county disposal are unlikely to result from any of the alternatives.

No-Action Alternative

Under the no-action alternative, waste disposal would continue at the Cedar Hills landfill until the facility reaches capacity, at which time waste export would begin. The land use and aesthetic impacts associated with operation of the Cedar Hills landfill, to the extent that they exist, would continue until approximately 2015 (or later if the life of the landfill is extended). Land use and aesthetic impacts associated with the Cedar Hills landfill are described in the 1998 final EIS for the Cedar Hills landfill site development plan (King County 1998), which is incorporated herein by reference. As discussed in the section "Probable Impacts under All Alternatives," under "Extending the Life of the Cedar Hills Landfill," the 1998 final EIS concluded that adverse land use and aesthetic impacts associated with the Cedar Hills landfill are not significant.

Alternative X1: Full Early Export

Under Alternative X1, the Cedar Hills landfill would close in approximately 2010, and potential land use and aesthetic impacts associated with the active operations of the landfill would diminish during the postclosure period.

Alternative X2: Partial Early Export

Under Alternative X2, a portion of the county's waste (assumed for the purposes of this EIS to be 20 percent of the total volume of mixed municipal solid waste) would be exported beginning in approximately 2010. The remainder of the county's waste would be landfilled at the Cedar Hills landfill until the facility reaches capacity, which would occur in approximately 2016. Under Alternative X2, land use and aesthetic impacts associated with the active operations of the Cedar Hills landfill, although not considered significant, would extend until approximately 2016. Although the reduced level of landfilling at the Cedar Hills landfill after 2010 would moderate the land use and aesthetic impacts slightly between 2010 and 2015 compared to the no-action alternative, the overall effect of Alternative X2 would be that the land use and aesthetic impacts would extend for a longer period of time than under the no-action alternative and Alternative X1.

Mitigation Measures

The 2001 final EIS (King County 2001, Appendix H), which this EIS supplements, and the documents incorporated herein by reference (King County 1998, Bellevue 1993; Seattle 2005) all discuss measures to mitigate land use and aesthetic impacts that can result from activities associated with waste export. Many of the measures are typical of those implemented on other public infrastructure projects and include the following:

- Incorporation of criteria related to land use, aesthetics, and site size into the site selection process for new facilities to avoid or minimize impacts
- Incorporation of conditions related to land use, aesthetics, and site size into the land use permit.
- Architectural design of buildings
- Location of buildings, roadways, and other facility components to take advantage of existing topography or otherwise maximize the effective separation of the facility from nearby sensitive uses
- Use of shielded or directional lighting
- Incorporation of art work as required by the King County Code
- Installation of fencing and landscaping.

Significant Unavoidable Adverse Impacts

In general, significant unavoidable adverse impacts related to land use and aesthetics can be avoided or minimized by the implementation of the mitigation measures described above. The implementation of projects designed to prepare the county's solid waste system for export is likely to be accompanied by proposals to extend the life of the Cedar Hills landfill. While land use and aesthetic impacts from landfill operations are not considered significant, extending the life of the landfill would extend the duration of land use and aesthetic impacts associated with active operation of the landfill that are experienced by the surrounding community.

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3.7 Public Services and Utilities—Solid Waste

Sub-elements of Public Services and Utilities Not Addressed in This EIS

Modifications to the county's solid waste system to accommodate waste export and the subsequent implementation of waste export would be unlikely to result in significant adverse impacts on most public services and utilities, including fire and police services; schools, parks and other recreational facilities; and maintenance, communications, water and stormwater, and sewer services. Modifications to the county's solid waste system would result in costs for capital improvements and changes in the cost of system operation and maintenance, all of which would affect the rates paid by the system's customers.

Affected Environment

The King County Solid Waste Division provides a full range of solid waste services in the region. All municipalities in King County, except Seattle and Milton, are served by the county system. Through contracts with cities and Washington Utilities and Transportation Commission franchises, three private companies provide most of the solid waste collection in the county. Waste Management, Inc., and Rabanco provide about 99 percent of the collection services in the county. Waste Connections, Inc., provides services on Vashon Island. Enumclaw and Skykomish provide their own solid waste collection.

Impacts

Probable Impacts under All Alternatives

Extending the Life of the Cedar Hills Landfill

The Cedar Hills landfill is expected to reach capacity in 2015 under current operations. Because disposal at the Cedar Hills landfill is the lowest cost disposal option for the county, an extension of the life of the Cedar Hills landfill would keep rates lower for a longer period by delaying the implementation of waste export.

Intermodal Transfer Facilities

Construction of one or several intermodal transfer facilities would require a capital expenditure and result in operation and maintenance costs for the new facility(ies). Capital costs for a new intermodal facility to handle the county's waste have been estimated to be approximately $25 million to $30 million.

Long-Haul Transport

Capital investment costs for long-haul transport have been estimated to be the following:

- Barge (including the capital cost of containers, equipment, and the necessary intermodal transfer facility): approximately $55 million to $60 million
- Truck: approximately $40 million for containers and equipment
- Rail (including the capital cost of containers, equipment, and the necessary intermodal transfer facility): approximately $50 million to $55 million.

Operating costs for each mode of long-haul transport (assuming a disposal site in south-central Washington or north-central Oregon) have been estimated to be the following (assuming 1.3 million tons of waste per year):

- Barge: more than $35/ton or more than $45.5 million per year
- Truck: $35/ton or $45.5 million per year
- Rail: $10/ton or $13 million per year.

The three modes of transportation differ in terms of their reliability. Barge transport along the Columbia River is unavailable for 2 weeks each year, when the locks on the river are closed for maintenance. This 2-week period exceeds the maximum 3 days of storage proposed for the county's transfer stations and intermodal transfer facility; therefore, alternate truck transport would be required during the 2-week period. Trucks are more vulnerable to adverse weather-related road conditions than the barge or rail modes. The county will develop an emergency response plan to address potential breakdowns in long-haul transport. An element of the plan could be the development of backup capacity, perhaps by retaining residual capacity at the Cedar Hills landfill. However, experience in other jurisdictions that export their waste (e.g., Snohomish County) suggests that backup capacity would rarely, if ever, be needed because most system disruptions are short term and can be handled by storage capacity that is built into the system.

Out-of-County Disposal

The costs associated with disposal at an out-of-county landfill are variable and would be subject to negotiation; therefore, the exact costs are unknown at this time. As an example, Snohomish County's export costs for transport and disposal are $46.25/ton. Seattle's costs are similar.

Transfer System Alternatives

Under any of the alternatives, new capital costs would be incurred to modernize the transfer station system and prepare it for waste export.

No-Action Alternative

To date, capital and operating costs have not been developed for the no-action alternative. However, this alternative would not result in an acceptable level of service (King County 2005a). After the installation of compactors, several of the older transfer stations (Algona, Factoria, and Renton), would have inadequate maneuvering room for trailers, which would result in a reduction of through-capacity and longer vehicle queues.

Action Alternatives

The estimated total annual capital and operating costs of the various action alternatives are similar (Table 3-6). The costs associated with the alternatives are equal, given the degree of uncertainty in the numbers. However, over the long term, after capital costs are paid, the comparative cost of the alternatives is determined by their operating costs, which differ substantially. From this long-term perspective, Alternatives 1 and 1A are the least cost alternatives, and Alternatives 3 and 4 are the highest cost alternatives.

Table 3-6. Cost information through 2028 for transfer station system alternatives.

Alternative	Average Annual Net Capital Cost (2006–2028)	Annual Operating Cost (2005 dollars)	Total Annual Net Capital Cost and Annual Operating Cost
1	$5,200,000	$4,300,000	$9,500,000
1A	No cost data available [a]	$4,300,000	No capital cost data available
2	$4,700,000	$4,700,000	$9,400,000
2A	$4,500,000	$4,800,000	$9,300,000
3	$3,900,000	$5,200,000	$9,100,000
4	$3,900,000	$5,200,000	$9,100,000

[a] Construction of the new Factoria transfer station under Alternative 1A is expected to require costly but undetermined mitigation measures. Until mitigation measures are determined, it is not possible to determine the capital cost of Alternative 1A.

Because of the higher operating costs, Alternatives 3 and 4 are more sensitive to inflation than the other alternatives. Therefore, while Alternatives 3 and 4 are estimated to result in slightly lower costs than the other action alternatives, the uncertainty associated with their costs is greater than that of the other action alternatives.

Alternatives for Timing of Waste Export

Implementing full early export (Alternative X1) would be substantially more costly than implementing the no-action alternative, because the higher costs associated with waste export would be incurred 5 years earlier. Furthermore, a substantial increase in the annual contribution to the legally required Landfill Reserve Fund would be necessary because there would be fewer

years available to make fund payments. Implementing partial early export (Alternative X2) could be somewhat more costly than implementing the no-action alternative.

Mitigation Measures

Actions to expand the capacity of the Cedar Hills landfill or otherwise extend the life of the landfill would delay the higher costs of waste export for the county. The Solid Waste Division would develop an emergency response plan to provide waste services in the event of a local catastrophe or a breakdown in the long-haul transport system. This plan could include backup landfill capacity, perhaps at the Cedar Hills landfill.

Significant Unavoidable Adverse Impacts

Under any of the alternatives, system costs, which are borne by the system's customers, would increase with the implementation of waste export.

3.8 Environmental Elements Not Addressed in This EIS

Earth

The construction of new facilities and improvements to existing facilities (transfer stations and intermodal facility[ies]) necessary for waste export would require excavation and perhaps some filling. Site selection for new facilities would strongly favor relatively flat sites with minor topographic relief features; therefore, the amount of excavation and filling and the resulting modifications in topography are likely to be moderate. Some new or improved facilities may be located in areas of poor soils where special, but not unique, foundation designs and construction techniques may be necessary. All new and improved facilities would comply with current seismic requirements.

Continued development of the Cedar Hills landfill, whose life could be extended beyond the current estimated closure date of 2015, involves substantial topographic changes at the landfill site. However, the 1998 EIS for the Cedar Hills landfill site development plan (King County 1998) concluded that these and other earth impacts were not significant.

From an overall program perspective, earth impacts as a result of implementing waste export are unlikely to be significant, and the minor differences in earth impacts among the alternatives would not affect the selection of the preferred alternative. Individual projects related to the implementation of waste export would require project-specific SEPA compliance. The SEPA processes for these projects may result in the identification of significant earth impacts that cannot be specifically identified through this programmatic EIS. If such impacts are identified, the SEPA documents for the particular project would propose measures to mitigate the impacts.

Water

The construction of new facilities and improvements to existing facilities (transfer stations and intermodal facility[ies]) necessary for waste export would result in the removal of vegetation and the disturbance of soil, with the resulting potential for erosion and sedimentation. In addition, construction of new and improved facilities would result in new impervious surface area with consequent effects on the volume, rate, and quality of stormwater runoff. All construction activities at new facilities would be required to comply with the stormwater management regulations of King County or the municipality within whose jurisdiction the facility is located. These local stormwater management regulations are, in every case, at least as stringent as the stormwater management guidelines of the Washington State Department of Ecology. The implementation of best management practices would be required during construction, and the installation of permanent stormwater management facilities would be required to control and treat runoff from the completed facility. In addition, washwater or other runoff from areas where

solid waste is handled (e.g., the waste pit within transfer stations) would be routed to the sanitary sewer and not handled as stormwater runoff.

Because of the extensive regulatory controls on stormwater runoff, from an overall program perspective, impacts on water quality and quantity as a result of implementing waste export are unlikely to be significant, and the minor differences in receiving water impacts among the alternatives would not affect the selection of the preferred alternative. Individual projects related to the implementation of waste export would require project-specific SEPA compliance. The SEPA processes for these projects may result in the identification of potentially significant impacts on receiving waters that cannot be specifically identified through this programmatic EIS. If such impacts are identified, the SEPA documents for the particular project would propose measures to mitigate the impacts.

Plants and Animals

The construction of new facilities and improvements to existing facilities (transfer stations and intermodal facility[ies]) necessary for waste export would involve site grading that could result in the removal of vegetation and/or other modifications of habitat. Some of the modified habitat may be wetlands or other habitat in which development activities are regulated and for the loss of which compensatory mitigation is required. The improvements to existing facilities would involve construction on sites that have been heavily modified as a result of the construction of the original facility so that required habitat modification is unlikely to be extensive. Site selection for new facilities is likely to favor sites where the modification of regulated habitat that would be necessary during construction is limited. Nonetheless, the construction of new facilities and improvements to existing facilities are likely to result in some impacts on plants and animals because of their widespread presence in King County. Because of the mitigation that would be required, significant impacts on plants and animals resulting from implementation of waste export can be avoided, and the differences among the alternatives would not affect the selection of the preferred alternative. Individual projects related to the implementation of waste export would require project-specific SEPA compliance. The SEPA processes for these projects may result in the identification of potentially significant impacts on plants and animals, for example the loss of wetlands, that cannot be specifically identified through this programmatic EIS. If such impacts are identified, the SEPA documents for the particular project would propose measures to mitigate the impacts.

Part 4 References and Distribution List

4.1 References

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PSCAA. 2005. 2004 Air Quality Data Summary. Puget Sound Clean Air Agency, Seattle, Washington. July 2005.

Seattle, City of. 2005. Final Supplemental Environmental Impact Statement, City of Seattle Solid Waste Intermodal Transfer Facility. Seattle Public Utilities, Seattle, Washington. August 2005.

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4.2 Distribution List

Federal Agencies

U.S. EPA, Region 10

State of Washington

Department of Ecology, Environmental Review Section
Department of Ecology, SEPA Section
Department of Transportation, Northwest Region

Regional Agencies

Puget Sound Clean Air Agency
Puget Sound Regional Council
Suburban Cities Association

King County

Ron Sims, Executive
County Council
- Bob Ferguson, District 1
- Larry Gossett, District 2
- Kathy Lambert, District 3
- Larry Phillips, District 4
- Julia Patterson, District 5
- Jane Hague, District 6
- Pete von Reichbauer, District 7
- Dow Costantine, District 8
- Reagan Dunn, District 9

Public Health–Seattle and King County, Environmental Health Division

Local Jurisdictions

City of Algona
City of Auburn
City of Bellevue
Town of Beaux Arts Village
City of Black Diamond
City of Bothell
City of Burien
City of Clyde Hill
City of Covington
City of Des Moines
City of Duvall
City of Enumclaw:
City of Federal Way
Town of Hunts Point
City of Issaquah
City of Kenmore
City of Kent
City of Kirkland
City of Lake Forest Park
City of Maple Valley
City of Medina
City of Mercer Island
City of Newcastle
City of Normandy Park
City of Pacific
City of Redmond
City of Renton
City of Sammamish
City of SeaTac
City of Shoreline
City of Shoreline
City of Skykomish
City of Tukwila
City of Woodinville
City of Yarrow Point

Organizations

Metropolitan Solid Waste Management
Advisory Committee
Jean Garber, Chair

Solid Waste Advisory Committee
David Allison
Carolyn Armanini, 2006 Chair
William A. Beck
Robert Beckwith
Joe Casalini
Don Freas
Steve Goldstein
Jerry Hardebeck, 2006 Vice-Chair
Joan McGilton
Chris Paulson
Max L. Pope
Carolyn Prentice
Ray Schlienz
Relaena Sindelar
Judy Stenberg
Joe Tessier
Dave Whitley

Private Utilities

Allied Waste Industries
Waste Connections, Inc.
Waste Management, Inc.

Local Libraries

King County Library System
Renton Public Library
Seattle Public Library

APPENDIX A

Determination of Significance and Request for Comments on the Scope of the Environmental Impact Statement for the King County Waste Export System Plan

Determination of Significance and Request for Comments on the Scope of the Environmental Impact Statement for the King County 2006 Waste Export System Plan

Proponent, Location, and Description of Proposal

In 2001, The King County Department of Natural Resources and Parks, Solid Waste Division, published the *Final 2001 Comprehensive Solid Waste Management Plan*. An environmental impact statement (EIS) was prepared to evaluate alternatives related to the management of the county's solid waste; the EIS was included as an appendix to the 2001 solid waste management plan. The *Final 2001 Comprehensive Solid Waste Management Plan* contains policies that include beginning the export of King County's solid waste to an out-of-county landfill when the Cedar Hills Regional Landfill reaches its design capacity, now estimated to occur in 2015. This policy decision has led to the need for the development of the 2006 waste export system plan, which is the subject of this EIS. The objectives of the waste export system plan are the following:

- To determine the configuration for the urban area transfer system for the next 20 years, including which of the existing transfer stations should remain, which ones should be rebuilt, which ones should be reprogrammed, and which ones should be closed.

- To determine the general timing for beginning the export of solid waste to an out-of-county landfill.

- To determine whether the Solid Waste Division should conduct a study on the feasibility and desirability of extending the life of the Cedar Hills Regional Landfill

The alternatives that King County Solid Waste Division proposes to evaluate in this EIS for the 2006 waste export system plan fall into two categories:

- Transfer system alternatives

- Alternatives for the timing of waste export.

These categories of alternatives are described in the following subsections, along with the alternatives in each category.

Transfer System Urban Area Alternatives

The transfer system alternatives will consist of six action alternatives and a no-action alternative for the upgrade, closure, and/or construction of transfer facilities throughout King County. The no-action alternative would implement the current Plan. There are currently 10 transfer and drop box facilities in the King County system. Included in the six action alternatives are a range of options. Up to three facilities could be permanently closed, and up to four new facilities could be constructed. Up to three existing facilities could be changed to self-haul only, and up to three new or existing facilities could become commercial-haul only.

Alternatives for the Timing of Waste Export

- No-action alternative: initiation of waste export when the Cedar Hills Regional Landfill reaches capacity. This is consistent with the current plan.

- Alternative X1: full early export (close the Cedar Hills Regional Landfill before it reaches capacity and export 100 percent of the county's solid waste)

- Alternative X2: partial early export (export a portion of the county's solid waste before the Cedar Hills Regional Landfill reaches capacity; when the Cedar Hills Regional Landfill reaches capacity, export of all the county's solid waste would begin.)

The timing of initiation of full or partial early export under Alternatives X1 or X2 is uncertain, but could occur between 2010 and 2014. Under Alternative X2, the portion of the county's solid waste that would be exported is likely to be between 20 and 60 percent.

The alternatives for the timing of waste export could affect the life of the Cedar Hills Regional Landfill, the level of activity onsite and the traffic to the site. For this EIS, it is assumed that any changes to the life of the Cedar Hills Regional Landfill would occur within the limitations imposed by the existing land use permits under which the landfill operates. As a result of its consideration of the waste export plan, the County may study options for extending the life of the landfill. If such a study is performed, the Solid Waste Division would prepare appropriate environmental documentation to comply with SEPA requirements at the time that the study is conducted.

Requirement for EIS

As the lead agency for the environmental review process under the State Environmental Policy Act, King County Solid Waste Division has determined that at least one of the alternatives under consideration has the potential to result in adverse impacts on the environment. In accordance with *Revised Code of Washington*, Section 43.21C.030(2)(c), and *King County Code*, Chapter 20.44, an EIS will be prepared.

King County Solid Waste Division has identified the following environmental elements for a detailed evaluation in the EIS:

- Transportation
- Noise
- Air quality and odor
- Energy and natural resources
- Land and shoreline use
- Services and utilities

The following environmental elements, which are unlikely to result in significant adverse impacts, will be evaluated in limited detail:

- Earth
- Water
- Plants and animals
- Hazardous materials
- Aesthetics and visual quality
- Recreation
- Historic and cultural resources

Potential impacts on earth (geohazard areas and soil erosion), water (pollutants and runoff rates), plants and animals (threatened and endangered species, stream corridors, and wetlands), and hazardous materials (preexisting pollutants onsite and handling of hazardous materials) are closely regulated in King County, and compliance with regulations should reduce all related impacts to a level that is below the level of significance. The siting criteria for new facilities to be included in the waste export system plan will prevent most impacts on recreational, aesthetic, cultural, and historic resources. Compliance with zoning and land use regulations will also reduce the potential aesthetic impacts of any facility. New individual facilities considered in the plan will also undergo additional environmental review as required under the State Environmental Policy Act.

Comments on Scope of EIS

Agencies, affected tribes, and the public are invited to comment on the scope of the EIS. Comments on the alternatives, mitigation measures, probable significant adverse impacts, and required licenses or other approvals are welcome. Written comments on the scope of the EIS may be sent to the contact person indicated below and must be postmarked ON OR BEFORE April 28, 2006.

Contact Person

Theresa Koppang, Lead Planner
King County Solid Waste Division
201 South Jackson Street, Suite 700
Seattle Washington 98104
Telephone: 206-296-4360

Responsible Official

Theresa Jennings, Director
King County Solid Waste Division
201 South Jackson Street, Suite 700
Seattle Washington 98104

Date of Determination of Significance

April 7, 2006.

APPENDIX B

Fuel Use and Emission Calculations for Long-Haul Transport

Fuel Use and Emissions Calculations for Long-Haul Transport

This appendix includes calculations of fuel use and emissions for the three long-haul transport options: barge, truck and rail. Emissions of three air pollutants for which regulatory criteria have been promulgated are estimated here: nitrogen oxides, carbon monoxide, and particulate matter with a diameter of less than 10 microns (PM_{10}). Carbon dioxide is used as a measure of greenhouse gas emissions. Table B-1 presents the relative distances, haul times, haul capacities, and fuel use for each mode of transport. Table B-2 presents emissions estimates as pounds of pollutants per ton of waste for each mode of transport. The estimates of emissions take into account travel distance, travel time, fuel use, and engine efficiency.

The results of the analysis indicate that rail transport would produce the lowest emissions per ton of waste for each of the air pollutants listed above and carbon dioxide. Rail transport would also use the lowest absolute amount of fuel.

Table B-1. Distances, hauling times, hauling capacities, and fuel use for each mode of solid waste transport.

Waste Hauling Variables	Barge	Truck	Rail
Waste hauled per year (short tons) [a]	1,300,000	1,300,000	1,300,000
Days of hauling per year [a]	362	362	362
One-way travel distance (miles) [a, b]	800	260	350
Travel time (round trip) (days) [a]	11	2	3
Minimum number of containers needed (not including spares or emergency backup capacity) [a]	1,760	320	480
Number and frequency of transports per day [a]	2 to 3	163	0.6
Number of trips per year	905	59,006	207
Tons per round trip	1,436	22	6,285
Ton-mile per gallon fuel efficiency	514	163	1,550
Average fuel economy (miles/gallon)	0.36	7.26	0.25
Diesel weight conversion (pounds/gallon)	9.24	9.24	9.24
Gallons of diesel fuel used per round trip	4,471	72	2,838
Weight of diesel fuel used per round trip (metric ton)	19	0.3	12
Gallons of diesel fuel used per year [c]	4,046,255	4,226,325	587,466

[a] Source: King County (2006).
[b] Assumed travel distance to a facility in south-central Washington or north-central Oregon.
[c] Actual values may differ slightly due to rounding.

Table B-2. Emissions estimates per ton of waste, for each mode of transportation.

Pollutant	Factor (grams pollutant/gallon)	Pollutant Emissions (grams/round trip)	Pollutant Emissions (pounds/round trip)	Pollutant Emissions (pounds/waste ton)
BARGE				
Nitrogen oxides	315.39	1,410,257	3,109	2.164
Carbon monoxide	17.34	77,530	171	0.119
Carbon dioxide	10,084	45,090,440	99,407	69.203
Particulate matter	7.13	31,895	70	0.049
TRUCK				
Nitrogen oxides	58.53	4,193	9	0.420
Carbon monoxide	7.99	572	1.261	0.057
Carbon dioxide	10,084	722,270	1,592	72.275
Particulate matter	0.94	68	0.149	0.007
RAIL				
Nitrogen oxides	163.7	464,609	1,024	0.163
Carbon monoxide	27.4	77,766	171	0.027
Carbon dioxide	10,084	28,620,157	63,007	10.040
Particulate matter	5.7	16,178	36	0.006

The assumptions, methodology, and source information for the estimates in Table B-2 are provided in the following subsections.

Barge

- A total weight of 1.3 million tons of solid waste annually was used as the basis for calculations.
- A line-haul tug will be used for barge transport.
- Average horsepower (hp) for a line-haul tug is 4,000 hp (Koi 2006).
- Fuel efficiency is 1 gallon per ton per 514 miles (USDA 2004). This figure was used for both the loaded trip and the unloaded return trip.
- The three landfills closest to King County (Columbia Ridge, Roosevelt, and Finley Buttes) are within 30 miles of each other on the Columbia River. Although this general location was used for the analysis of emissions for this transport option, it will not necessarily be used for the disposal of King County's waste.

- Tugs will be required to make a round trip, and the return trip was assumed to be a deadhead load; all emissions from the round trip were based on the tonnage of waste transported to the landfill.

- Pollutant factors and factors for greenhouse gas emissions, expressed as kilograms of pollutant per metric ton of fuel used, were obtained from two sources (Rideout 1998; Carlton et al. 1975).

- Standard conversions were used: 9.24 pounds per gallon of heavy diesel; 1 U.S. (short) ton = 2000 pounds; 1 metric ton = 2,205 pounds.

- The Code of Federal Regulations, Title 40, Section 600.113 (40 CFR 600.113) provides a value of 2,778 grams of carbon content per gallon of diesel. The U.S. Environmental Protection Agency estimates carbon dioxide emissions from fuel from the heat content of the fuel and carbon content coefficients in terms of carbon content per quadrillion British thermal units (BTU). The Intergovernmental Panel on Climate Change guidelines for calculating emissions inventories require that an oxidation factor of 99 percent be applied to the carbon content to account for a small portion of the fuel that is not oxidized into carbon dioxide. To calculate the carbon dioxide emissions from a gallon of diesel fuel, the carbon emissions are multiplied by the ratio of the molecular weight of carbon dioxide to the molecular weight of carbon, or 44/12. The carbon dioxide emissions factor is calculated as follows: 2,778 grams x 0.99 x (44/12) = 10,084 grams/gallon.

Truck

- A total weight of 1.3 million tons of solid waste annually was used as the basis for calculations.

- A heavy-duty truck with a gross vehicle weight of less than 105,000 pounds will be used for truck transport.

- Fuel efficiency is 1 gallon per ton per 163 miles (USDA 2004). This figure was used for both the loaded trip and the unloaded return trip.

- The three landfills closest to King County (Columbia Ridge, Roosevelt, and Finley Buttes) are within 30 miles of each other on the Columbia River. Although this general location was used for the analysis of emissions for this transport option, it will not necessarily be used for the disposal of King County's waste.

- Trucks will be required to make a round trip, and the return trip was assumed to be a deadhead load; all emissions from the round trip were based on the tonnage of waste transported to the landfill.

- Pollutant factors, expressed as grams of pollutant per mile, were obtained from *Assessing the Effects of Freight Movement on Air Quality at the National and Regional Level, Final Report* (FHWA 2005).

- The Code of Federal Regulations, Title 40, Sections 600.113 (40 CFR 600.113) provides a value of 2,778 grams of carbon content per gallon of diesel. The U.S. Environmental Protection Agency estimates carbon dioxide emissions from fuel from the heat content of the fuel and carbon content coefficients in terms of carbon content per quadrillion BTU. The Intergovernmental Panel on Climate Change guidelines for calculating emissions inventories require that an oxidation factor of 99 percent be applied to the carbon content to account for a small portion of the fuel that is not oxidized into carbon dioxide. To calculate the carbon dioxide emissions from a gallon of diesel fuel, the carbon emissions are multiplied by the ratio of the molecular weight of carbon dioxide to the molecular weight of carbon, or 44/12. The carbon dioxide emissions factor is calculated as follows: 2,778 grams x 0.99 x (44/12) = 10,084 grams/gallon.

Rail

- A total weight of 1.3 million tons of solid waste annually was used as the basis for calculations.

- Three locomotives (each with 4,000 hp) producing 1.6 horsepower to trailing tonnage (hptt) will be required for each train. Emissions data are per train.

- Fuel efficiency generally averages 1 gallon per ton per 1,550 miles (Lyman 2006).

- The three landfills closest to King County (Columbia Ridge, Roosevelt, and Finley Buttes) are within 30 miles of each other on the Columbia River. Although this general location was used for the analysis of emissions for this transport option, it will not necessarily be used for the disposal of King County's waste.

- Trains will be required to make a round trip, and the return trip was assumed to be a deadhead load; all emissions from the round trip were based on the tonnage of waste transported to the landfill.

- Pollutant factors, expressed as grams of pollutant per mile, were obtained from *Assessing the Effects of Freight Movement on Air Quality at the National and Regional Level, Final Report* (FHWA 2005).

- The Code of Federal Regulations (40 CFR 600.113) provides a value of 2,778 grams of carbon content per gallon of diesel. The U.S. Environmental Protection Agency estimates carbon dioxide emissions from fuel from the heat content of the fuel and carbon content coefficients in terms of carbon content per quadrillion BTU. The Intergovernmental Panel on Climate Change guidelines for calculating emissions inventories require that an oxidation factor of 99 percent be applied to the carbon content to account for a small portion of the fuel that is not oxidized into carbon dioxide. To calculate the carbon dioxide emissions from a gallon of diesel fuel, the carbon emissions are multiplied by the ratio of the molecular weight of carbon dioxide to the molecular weight of carbon, or 44/12. The carbon dioxide emissions factor is calculated as follows: 2,778 grams x 0.99 x (44/12) = 10,084 grams/gallon.

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APPENDIX C

Solid Waste Facility Siting Plan

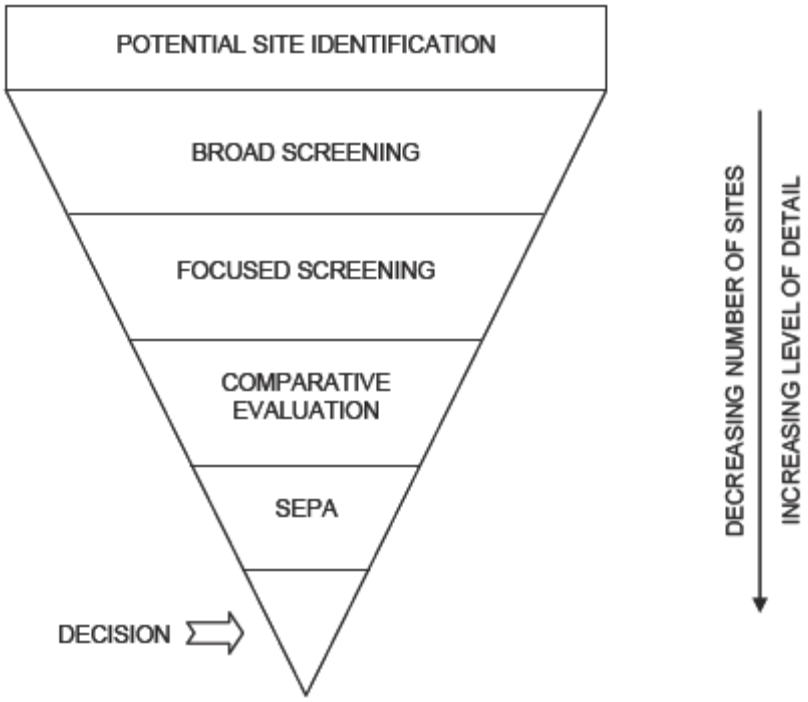
Solid Waste Facility Siting Plan

INTRODUCTION

Siting and Facility Implementation

Selection of a site for a solid waste facility is often the most public and controversial step in the overall facility development process. However, the other steps leading up to selection are also vitally important. Figure 1 outlines the steps in implementing a solid waste facility. The siting process is preceded by at least two steps. First, the Comprehensive Solid Waste Management Plan establishes the service needs and identifies the area of intended service, whether local or regional. Then, the county makes budget decisions concerning the scope and schedule of the project

Figure 1 Site evaluation process



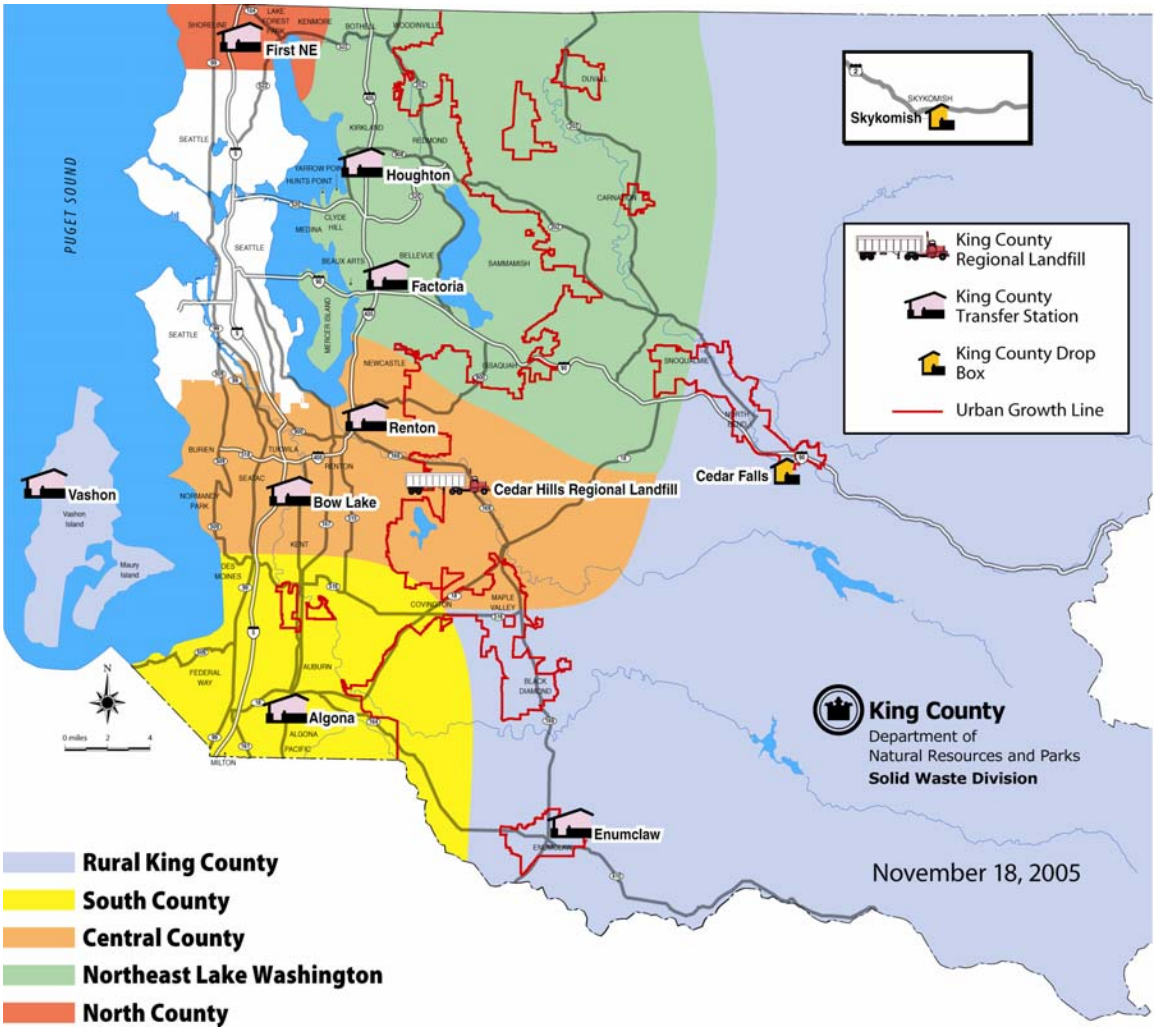
About the Siting Process

Why And How Often Must King County Find Solid Waste Sites?

Under state and federal law, King County is given solid waste management planning authority. In addition to the facilities provided by private operators, the county may develop its own facilities to meet solid waste management needs identified through its planning efforts. Sites may be needed both for new types of facilities that do not exist in

King County's solid waste management system (e.g., waste export transfer facilities and Waste to Energy (WTE) facilities) and for replacing current facilities that may be operating at or beyond permitted site capacity (e.g. older transfer stations). Facilities such as transfer stations and recycling facilities may be upgraded to meet changing needs. Sites of sufficient size and proper location can serve indefinitely if land use and transportation patterns persist. Solid waste facilities are essential public facilities but are not viewed as desirable neighbors. They provide valuable service to a large area, while their potential impacts may be felt only by their nearest neighbors. See Figure 2 for a map of existing facilities.

Figure 2 Locations Of Solid Waste Facilities By Geographic Area



Why Is A Siting Plan Needed And What Should It Do?

Solid waste facilities are each unique in setting and function. Although the fundamental process used to find sites for these facilities is fairly well established, individual siting processes employ different procedures. This is in large part due to differences in

community and neighborhood values, local permitting requirements, and the physical setting of each facility. A general siting plan can unify the management approach to the siting process and help ensure that it attains the standards set by the County.

The public must be given an opportunity to understand and participate in the process. This will be made easier if the process conforms to a recognizable pattern. Elected officials, who must make decisions, may hear comments favoring or opposing the siting of a facility. A plan will allow differentiation between criticism of the siting process and concerns about a specific site.

In summary, the purpose of the siting plan is threefold:

1. It serves as a guide for the Solid Waste Division as it conducts facility siting efforts.
2. It provides a reasoned and evenhanded process to be used in selecting sites for what are often locally very unpopular facilities; it also shows where and how the public can provide input into the siting process.
3. For elected officials the plan communicates policy guidance to county staff and provides a tool for assessing the quality of individual siting recommendations that are developed.

How Specific Should The Plan Be?

In the next 20 years, the solid waste management system may site a variety of facility types and sizes throughout King County. In the near term, the Solid Waste Export System Plan considers siting of several transfer stations. This plan outlines the siting process as it would apply to other solid waste facilities including processing, intermodal, and waste to energy (WTE) facilities. Current county policy states that WTE will not be an option for solid waste management. Policy also states that another landfill will not be sited in King County. If these policies change, this siting process also would apply to a landfill or WTE facilities.

Solid waste facilities present unique siting problems due to their disposal and handling processes, site size requirements, and potential environmental impacts. The general facility siting plan must also apply to facility siting efforts that will be carried out over a number of years. These factors emphasize the need for the siting plan to focus on those elements of facility siting that can and should be common to all solid waste siting efforts.

BACKGROUND

Description of Facility Types

This section briefly describes the major features of the solid waste facilities for which this siting plan has been developed. It does not attempt to address all features or potential impacts of these facilities. Such matters would be addressed in detail in the environmental review process associated with a facility-specific siting study.

Transfer Stations and Materials Recovery Facilities:

A transfer station is used to combine the solid waste loads of many smaller-capacity vehicles into a smaller number of large, highly compacted loads for transport to a disposal site. Passenger cars, light trucks, and collection packer vehicles deposit waste into a covered receiving area or directly into large transfer trailers. The trailers are then transported off-site for ultimate disposal.

Recycling processing may also occur at a transfer station. Recyclables may be separated from waste or may be prepared for market. At a materials recovery facility (MRF), various parts of the waste stream are separated out for recycling and the remainder is either disposed or further processed; for example, to produce refuse-derived fuel (RDF). A transfer station or MRF may also incorporate facilities for composting the organic portion of the waste stream.

Truck and car traffic and their related impacts are the primary concerns when siting a transfer station or MRF. Odor concerns can be a primary concern with a transfer station. Dust generation can be a primary concern with a MRF.

Solid Waste Intermodal Facility:

A solid waste intermodal facility is a location where sealed containers containing solid waste are transferred from one mode of transportation to another. The most common local example of this type of facility takes containers of solid waste from trucks and loads them onto trains. An intermodal facility could also move containers from trucks or trains and place them onto barges for water transport. Solid waste is not handled at an intermodal facility; containers are moved but not opened. The intermodal function may be co-located with a transfer facility. An intermodal facility must have access to two or more modes of transportation.

Traffic is the dominant impact of an intermodal facility.

Waste to Energy Facility (WTE)

The most common type of WTE facility accepts unprocessed or preprocessed mixed solid waste and, through incineration, produces an energy product, usually steam or electricity, which is used by a utility or industry. The primary purpose of this facility type is to reduce the volume and weight of waste and to alter the characteristics of the waste by oxidizing it. This oxidization process produces air emissions and an ash residue which must be disposed of in an incinerator ash landfill. High-efficiency air cleaning equipment is provided to filter the air emissions to ensure compliance with air quality requirements.

Traffic and air emissions are the dominant impact of a WTE facility.

Siting Location Constraints

The siting of a solid waste facility site is governed by both the location of the identified service area and specific siting location constraints imposed by the county. The service area determination recognizes a solid waste management need within a specific area.

A siting area constraint is a policy decision that limits the area in which a prospective facility is to be located.

Siting constraints for smaller local service facilities are usually functions of service need, land use and transportation patterns, zoning, and land availability. For example, a transfer station will serve best if it can be located within its intended service area. If it cannot be located near the center of waste generation, use may be inconvenient, may result in higher collection costs, and the facility may be underutilized.

For large regional service facilities—such as landfills and WTE—legal, political, and cost issues form the basis of site location constraints. The location of a landfill may be restricted to a portion of the regional service area or outside of the service area entirely.

The county has the greatest degree of legal and political control in the unincorporated area of the county. Within incorporated areas, the county has to obtain land use permits from the host jurisdiction. While there may be some additional challenges associated with working with another jurisdiction, there may also be offsetting advantages as citizens may feel their interests are better protected by an independent government.

Without an interlocal agreement, the county is severely limited in its ability to site and permit a solid waste facility. A jurisdiction in another county or a private developer could perform the siting and permitting functions for the county. However, before the county could transport waste to the facility, an interlocal agreement with the host community would be necessary.

Based on experience gained elsewhere, it may be anticipated that the solid waste facility siting process for major disposal and handling facilities will likely generate independent site offers from outside the service area. Thus, a siting process that is initially constrained to a local service area or to the county as a whole can evolve into a process of negotiating for solid waste facility capacity in a facility outside of the county.

SITING CRITERIA

This section defines siting criteria and describes how they are developed for use in facility-specific siting studies. General criteria categories are discussed for each type of facility included in the siting plan, as called for in the *Guidelines for the Development of Local Solid Waste Management Plans and Plan Revisions* (WDOE 99-502.).

Introduction

When solid waste facilities are sited and constructed there may be unavoidable adverse impacts on the natural and built environments. A goal of the siting process is to select sites that allow impacts to be reduced, eliminated, or mitigated. Sites are sought that achieve the above stated goal by virtue of their setting and onsite features. Solid waste siting criteria are developed to serve as the tests by which potential sites are analyzed

to determine their suitability. The impacts and requirements of the different types and sizes of solid waste facilities vary significantly. Those of a rural drop-box facility can be substantially different from those of a complex waste processing and incineration facility. The criteria used in judging the suitability of a site will therefore be different for each facility type. The purpose of siting criteria is to allow differentiation between sites, to distinguish those sites that are more suitable, and to help identify those that are unacceptable. The siting criteria will usually set forth a standard of acceptability and measure positive or negative divergence from this standard.

There are many desirable features of an ideal site. Most of these would not, if absent, constitute a reason for rejecting a site; they may be made up for by other attributes of a site or they may simply indicate that the site is not perfect. These features form the basis for developing relational criteria to compare different sites. “Physical exclusionary criteria” are criteria that define conditions under which it would be impossible to construct and operate a facility.

Siting Criteria Categories

The process of developing facility-specific siting criteria will involve development of tests that identify desirable features of sites, differentiate between sites, and identify features that make a site unacceptable. To help direct the development of these tests, criteria may be organized into categories. One example of the various framework systems that can be utilized is the classification of elements of the environment set forth in the State Environmental Policy Act (Figure 3). Subcategories could be combined and further breakdown added where appropriate.

Figure 3 SEPA Elements of the Environment (WAC 197-11-444)

(1) Natural Environment
- (a) Earth
  - (i) Geology
  - (ii) Soils
  - (iii) Topography
  - (iv) Unique Physical Features
  - (v) Erosion/Enlargement of Land Area (Accretion)
- (b) Air
  - (i) Air Quality
  - (ii) Odor
  - (iii) Climate
- (c) Water
  - (i) Surface Water Movement/Quantity/Quality
  - (ii) Runoff/Absorption
  - (iii) Floods
  - (iv) Groundwater Movement/Quantity/Quality
  - (v) Public Water Supplies
- (d) Plants and Animals
  - (i) Habitat for and Numbers or Diversity of Species of Plants, Fish, or Other Wildlife
  - (ii) Unique Species
  - (iii) Fish or Wildlife Migration Routes
- (e) Energy and Natural Resources
  - (i) Amount Required/Rate of Use/Efficiency
  - (ii) Source/Availability
  - (iii) Nonrenewable Resources
  - (iv) Conservation and Renewable Resources
  - (v) Scenic Resources

(2) Built Environment
- (a) Environmental Health
  - (I) Noise
  - (ii) Risk of explosion
  - (III) Releases or Potential Releases to the Environment Affecting Public Health, such as Toxic or Hazardous Materials
- (b) Land and Shoreline Use
  - (i) Relationship to existing Land Use Plans and to Estimated Population
  - (ii) Housing
  - (iii) Light and Glare
  - (iv) Aesthetics
  - (v) Recreation
  - (vi) Historic and Cultural Preservation
  - (vii) Agricultural Crops
- (c) Transportation
  - (i) Transportation Systems
  - (ii) Vehicular Traffic
  - (iii) Waterborne, Rail, and Air Traffic
  - (iv) Parking
  - (v) Movement/Circulation of People or Goods
  - (vi) Traffic Hazards
- (d) Public Services and Utilities
  - (i) Fire
  - (ii) Police
  - (iii) Schools
  - (iv) Parks or Other Recreational Facilities
  - (v) Maintenance
  - (vi) Communications
  - (vii) Water/Stormwater
  - (viii) Sewer/Solid Waste
  - (ix) Other Governmental Services or Utilities

The Washington State Solid Waste Management Reduction and Recycling Act (RCW 70.95) lists the following categories of criteria for siting solid waste disposal facilities:

- Geology
- Groundwater
- Soil
- Flooding
- Surface water
- Slope
- Cover material
- Capacity
- Climatic factors
- Land use
- Toxic air emissions
- All other factors as determined by the department

The following section will review the siting considerations of solid waste transfer stations and WTE facilities.

General Criteria Review

The review included in this siting plan is general and intended to be a guide for initiating a full-scale siting study for a specific facility. Some of the location-specific standards discussed require evaluation of very detailed or widely-dispersed information and are

not appropriate for evaluating the county on a regional scale. These criteria are site-specific and would be used when evaluating sites during a facility-specific siting study. Other criteria can be evaluated on the regional scale.

Both regional and site-specific criteria are discussed below with emphasis placed on regional criteria. Also addressed are criteria that are important to solid waste facility siting in King County but which are not addressed in state regulations.

Transfer Station/Recycling Processing Centers/Intermodal Facilities

Solid waste transfer stations and recycling processing centers are not subject to the siting criteria set forth in RCW 70.95.165. These facilities are intermediate solid waste handling facilities that are sited based on determination of local service area needs. Intermodal facilities are also not subject to the referenced criteria. They are regional facilities, potentially serving several transfer stations and potentially a single facility may serve the entire county. Because transfer stations, recycling processing centers and intermodal facilities are not subject to the broad regulatory locational constraints of landfills, and since local conditions and needs drive the siting of such facilities, countywide or regional mapping of siting criteria is not fruitful. The approach here is to discuss, for each category of criteria listed previously, the features that will tend to make a site more suitable for development Throughout the discussion, when the term transfer station is used it refers to either a transfer station/recycling processing center combination facility or to a separate recycling processing center.

Geology and Soil

The geology of subsurface materials is important in determining foundation stabilities for roadways and building structures. The best situation would occur if existing soil conditions were suitable for the foundation of the facility. Sites with unstable foundation materials will be very difficult and expensive to develop for transfer station use. The worst situations would be where there is substantial bedrock or subsurface drainage, high potential for earthquake potential or landslide, or hazard of coal mine shafts or sinkholes.

Groundwater

Sites with shallow water tables have a high potential for flooding waste pit and transfer truck loading areas. Shallow water tables may be diverted with underdrains in some areas. If diversion is impossible, the entire building structure may require construction on a large manmade embankment. Sites with deeper water tables would be more desirable than sites with higher water table levels.

Flooding

The flood hazard category is important for solid waste transfer operations. Since floods can produce excessive amounts of debris requiring disposal, it is important that waste disposal facilities remain operable. Sites within the 100-year floodplain are less preferable to sites located outside of it.

Surface Water

As local service facilities, transfer stations are located where service need dictates. With the rare exception of facilities requiring access to barge haul, facilities do not require siting within close proximity to surface water bodies. It is also true that a transfer station can be sited within proximity to water bodies if shoreline management designations permit.

Slope

Site topography is important because of excavation-to-fill ratios and site access. Sites on flat terrain may have good access for truck traffic but require excessive filling for construction. Sites located on hillsides may have excellent excavation-to-fill ratios but have grades too steep for truck access. Excavation-to-fill ratios and access must be considered together for each site.

Site Capacity

The size and shape of a site will determine the layout of transfer station facilities such as buildings and roads. A potential site must be large enough to contain all facilities and also small enough to reduce wasted land area. Parcels that are irregularly shaped are more difficult to develop than those that are rectangular. Required parcel size will depend on the planned vehicle and tonnage capacities, buffer requirements, on-site queuing capacity, and onsite recycling and processing facilities.

Climatic Factors

A transfer station may be a partially enclosed facility depending on climatic factors. Facilities generally are not subject to siting constraints due to wind, rain, snow, and freezing weather conditions. However, a site must be served by an all-weather road.

Land Use

Critical Habitat. The nature of terrestrial habitat on or adjacent to a potential site is an important consideration because it is an indication of the extent of potential impacts on wildlife. The least preferable situation would be a site where transfer station construction and operation could significantly impact high-value habitat supporting endangered or threatened species. A better situation would be a facility site within an area of low-value habitat.

Designation by the U.S. Fish and Wildlife Service or the Washington Department of Fish and Wildlife as critical habitat for threatened or endangered species of plants, fish, and wildlife should be considered an exclusionary siting criterion. At this time the active breeding sites and surrounding areas are protected for several fish and wildlife species found in King County. A critical area review is required prior to development of a proposed site.

Zoning. The most advantageous situation would occur if the use of a site for a transfer station were consistent with that site's zoning. Consistency with zoning would increase the probability of obtaining necessary land use permits and minimize land use impacts.

In most jurisdictions transfer stations are considered an unclassified use because they are sited infrequently. However, transfer stations are most compatible with light industrial or commercial uses and least compatible with residential uses.

State or National Parks. Transfer stations should be located no closer than 1,000 feet to any state or national park.

Residential Neighbors. A transfer station is a light industrial or commercial use facility and has substantial transportation-related needs. Transfer stations have been located in many types of settings; most commonly in commercial, industrial, or rural areas. Depending on land use patterns, these areas may be in proximity to residential areas.

Vicinity land use is an important consideration because some land uses are associated with activities that are more susceptible to impacts from a transfer station than others. An industrial land use would be most compatible with a transfer station. The least compatible land uses would be residential land; land uses with sensitive receptors, such as schools, nursing homes or hospitals; and recreational land. The type of recreational use that would be sensitive in this context is activity-oriented recreation with concentrated use patterns. Potential sites that impact these uses would be considered less desirable.

Access

Road Development. Access refers to the road system to be used in transporting solid waste from collection points to the transfer station. If county roads are used, any required improvements to bring the roads up to required capacity and safety standards must be included as project costs. Proximity to a state highway system would potentially reduce road improvement costs and would be preferable.

Traffic Impact. This criteria category would compare sites based on the potential traffic impacts from collection trucks. It is anticipated that the transport of wastes could have potential secondary impacts on safety, air quality, and noise. The most desirable sites in this category would be those that would be accessed through low-density areas.

Rail Access. This criterion's purpose is to compare the ease with which a site may be served by rail. Consideration should be give whether a site has access to Burlington Northern Santa Fe (BNSF), Union Pacific (UP), or both.

Air Emissions

The major air quality concerns of these facilities relates to traffic-generated air emissions and their impacts on areas through which solid waste is transported. Preferable sites would be situated in such a way as to reduce both the level and impacts of such emissions.

Waste to Energy Facilities

As interim solid waste handling facilities, WTE facilities are not subject to the locational standards set forth in RCW 70.95.165. The approach here is to discuss, for each category of criteria listed previously, the features that will tend to make a site more suitable for WTE development.

Geology and Soils

Soils and geology of potential sites are considerations because they affect facility design and, therefore, cost. The equipment and structures of a WTE facility are usually heavy, requiring stable soils for foundations. Soils with inadequate bearing capacity to support the large structures and heavy equipment loads require the construction of pile foundations. The best situation would occur if existing soil conditions were suitable for the foundation of the facility. The worst situations would be where there is substantial bedrock or subsurface drainage, high potential for earthquake or landslide, or hazard of coal mine shafts or sinkholes.

Groundwater

Sites with shallow water tables have a high potential for flooding. Shallow water tables may be diverted with under-drains in some areas. If diversion is impossible, the entire building structure might require construction on a large manmade embankment. Sites with deeper water tables would be more desirable than sites with higher water table levels.

Flooding

The flooding criteria category is important for WTE facility operations. It is important that a WTE facility remain operable during floods. Sites located outside the 100-year floodplain would be more desirable than facilities within the floodplain.

Surface Water

WTE facilities are industrial type activities and may be located next to major water bodies if barge access is desired. Shoreline management master programs can have a significant effect on the length of time required to obtain permits for facilities. Some shoreline areas are protected from industrial types of use. With the exception of barge access there appears to be no overriding need to site a WTE facility within close proximity of surface water bodies. There also appears to be no reason to avoid industrial sites close to water bodies if shoreline management requirements can be met.

Slope

While some slight slopes are acceptable and can be accommodated in the design of a WTE facility, a flat site is most desirable for ease of construction and operation. Excessively steep slopes would make the development of such a facility infeasible. Some large sites may have very steep slopes and not be dropped from consideration if there is sufficient flat land that is appropriately shaped for the facility. Thus, site topography must be evaluated in conjunction with site size and site shape in order to

determine if the site has an appropriately shaped flat area that is large enough to efficiently accommodate the structures and activities at the WTE facility.

Site Capacity

The size and shape of a site will determine the layout of facilities such as building and roads. A potential site must be large enough to contain all facilities and also small enough to reduce wasted land area. Site parcels that are irregularly shaped are more difficult to develop than those that are rectangular. Required site size will depend on the WTE facility's tonnage capacity; the specific equipment utilized; onsite vehicle queuing and staging; buffers; and public access for visiting and for waste drop-off facilities, if provided.

Climatic Factors

In the Pacific Northwest, a WTE facility would be totally enclosed. The only climatic siting constraints that would apply to such a facility would apply to the transportation system that delivers solid waste to the facility. Based on the need to maintain delivery of solid waste under all conditions, sites subject to excessive snow and freezing weather would be less preferable than sites without such constraints.

Land Use

Airports. The Federal Aviation Administration (FAA) has developed criteria that define situations in which a structure would pose a potential hazard to navigation. Given a maximum structure height for a WTE facility, these criteria can be converted into criteria based on linear distance to runways of various lengths. If a site falls within one of these distance criteria, the FAA considers that a potential hazard to aircraft navigation exists and examines the specific situation in greater detail to determine if an actual hazard exists. Although the FAA has no specific regulatory authority in this regard, such a determination that a hazard exists would reduce the likelihood that permits for the facility would be approved.

Critical Habitat. The nature of terrestrial habitat on or adjacent to a potential site is an important consideration because it is an indication of the extent of potential impacts on wildlife. The least preferable situation would be a site where WTE facility construction and operation could significantly impact high-value habitat supporting endangered or threatened species. A better situation would be a facility site within an area of low-value habitat.

Designation by the U.S. Fish and Wildlife Service or the Washington Department of Fish and Wildlife as critical habitat for threatened or endangered species of plants, fish, and wildlife should be considered an exclusionary siting criterion. At this time the active breeding sites and surrounding areas are protected for several fish and wildlife species found in King County. A critical area review is required prior to development of a proposed site.

Zoning. The most advantageous situation would occur if the use of a site for a WTE facility is consistent with that site's zoning. Consistency with zoning would increase the probability of obtaining necessary land use permits and minimize land use impacts.

In some jurisdictions, a WTE facility is considered an unclassified use and can potentially locate in any zone. However, WTE facilities are most compatible with heavy industrial uses and least compatible with residential uses.

State or National Parks. WTE facilities should be located no closer than 1,000 feet to any state or national park.

Residential Neighbors. WTE facilities have an industrial nature and have substantial transportation-related needs. WTE facilities have been located in industrial and heavy commercial business areas. Depending on land use patterns, these areas may be in proximity to residential areas. Potential sites that impact these uses would be considered less desirable.

Vicinity land use is an important consideration because some land uses are associated with activities that are more susceptible to impacts from a WTE facility than others. An industrial land use would be most compatible with a WTE facility. The least compatible land uses would be residential land; land uses with sensitive receptors, such as schools, nursing homes or hospitals; and recreational land. The type of recreational use that would be sensitive in this context is activity-oriented recreation with concentrated use patterns.

Access

Location Relative to Waste Source. Hauling costs will constitute a substantial portion of total disposal costs. Potential WTE sites would be best located as close as possible to the center of waste generation.

Road Development. Access refers to the road system to be used in transporting solid waste from collection points to the WTE facility. If county roads are used, any required improvements to bring the roads up to required capacity and safety standards must be included as project costs. Proximity to a state highway system would potentially reduce road improvement costs and would be preferable.

Traffic Impact. This category would compare sites based on the potential impact that transport of solid waste from the transfer stations and/or areas of collection would have on areas through which trucks would be required to travel. It is anticipated that the transport of wastes could have potential secondary impacts on safety, air quality, and noise. The most desirable site in this category would be one that would be accessed through low-density areas.

Air Emissions

Air quality impacts are greatly influenced by terrain and local meteorological conditions. The proximity of terrain either above or at the final plume height (stack height plus plume rise) of a facility may result in air quality impact modeling predictions far higher than for a site in flat terrain. Sites without elevated terrain nearby would be preferable to sites with such adjacent terrain.

Attainment Status. If a site were in or near an area recognized by air quality permitting agencies as not meeting air quality standards (non-attainment areas) obtaining a permit for the WTE facility could be more difficult

Availability of Data. An air permit for a WTE facility will require considerable detailed data on local meteorological conditions. Because these data are time consuming to gather, sites with suitable data would be more desirable than sites without data.

Equitable Distribution of Solid Waste Facilities

This section addresses the distribution of facilities and impacts in King County. Various means of attempting equitable distribution are discussed.

The King County Code, in section 10.08.030, requires that the siting plan provide for equitable distribution of solid waste facilities throughout King County. Equitable means just and fair; reasonable, not extreme. It is important to note that *equitable* distribution does not mean *equal* distribution. The Metropolitan King County Council has established a goal that the impacts associated with solid waste facilities sited within King County's jurisdiction should be equitably distributed. KCC10.08.030 is included below:

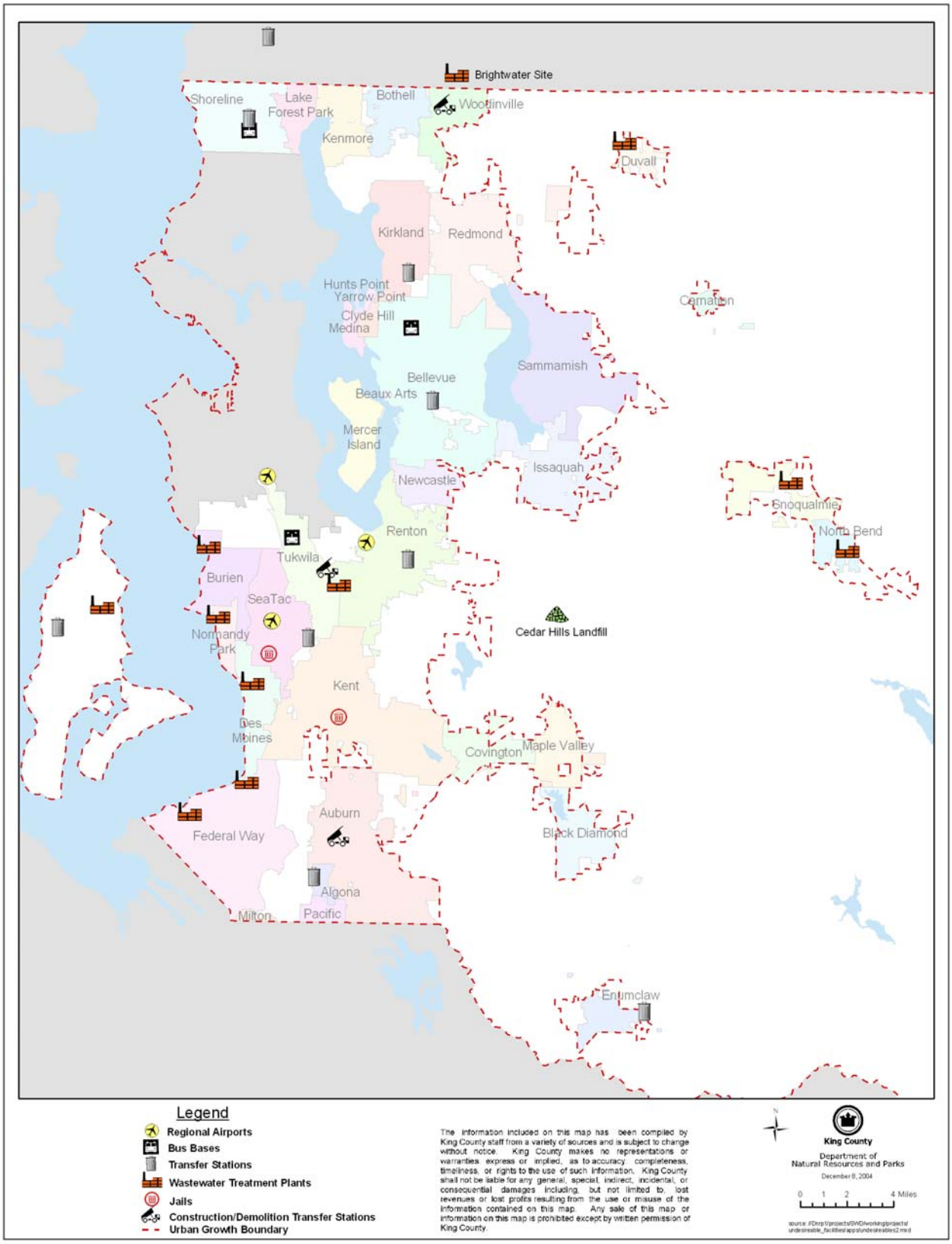
> **10.08.030 Acquisition of solid waste disposal facilities.** The county may acquire by purchase, lease, contract with private parties or other necessary means, disposal facilities which are needed for disposal of solid waste generated and collected in King County and other jurisdictions with which an interlocal agreement exists, pursuant to K.C.C. 10.08.130. Selection of such disposal facilities shall be consistent with the King County Comprehensive Plan and all federal, state, and local requirements, including, but not limited to, comprehensive land use planning, fire protection, water quality, air quality, and the consideration of aesthetics. ***To the extent practicable, solid waste disposal facilities shall be located in a manner which equalizes their distribution around the county, so that no single area of the county will be required to absorb an undue share of the impact from these facilities.*** (emphasis added) More than one alternative must be considered and evaluated in the siting of planned solid waste disposal facilities. The county may acquire disposal facilities on a continuing basis, as is required by the volume of solid waste generated and collected within the county. (Ord. 8891 § 9, 1989: Ord. 8069, 1987: Ord. 7708 § 1 (part), 1986).

The potential impacts of the various types of solid waste disposal facilities can be quite different. Traffic and aesthetics are often primary concerns when siting a solid waste transfer station,while a WTE facility may present unique air quality issues.

The siting constraints of solid waste facilities also differ substantially. A transfer station will require a small site (approximately 20 acres) and require location in an urban or suburban service area. The purpose of a transfer station will dictate that it be sited near where solid waste is generated, often in the more densely populated areas of the county. Transfer stations will, by their nature, be distributed within the county, but that distribution will be heavily weighted to the more developed areas. An intermodal facility will require access to both modes of transportation chosen. A WTE facility will serve a regional need, and will draw refuse from a much wider area. It is likely more than one WTE facility would be required if the county choose this method for handling a significant portion of its waste. To attempt equitable distribution, the council could choose to limit the area in which a required WTE facility could be located. They could ensure that two facilities would not be located within a specified number of miles of another facility.

More logically, the siting criteria can be constructed to give advantage to sites that are distant from other waste handling and disposal facilities. See Figure 4 for the location of existing solid waste, hazardous waste, sewage treatment, and other public facilities. Correspondingly, scores can be decreased for sites located within proximity to a waste facility. However, this procedure would not ensure equitable distribution of facilities or impacts since many factors would be reflected in the criteria.

Figure 4 Existing Waste Handling and Other Public Facilities



Focusing strictly on facility distribution as a means of achieving equitable distribution of solid waste facility impacts in King County is limiting in that it addresses only part of the solid waste management system, the handling and disposal. It does not address the generation and collection elements.

An example of system-wide distribution of impacts in King County is the disposal rate policy established by the Metropolitan King County Council to distribute the economic impacts of solid waste management equally throughout the system. Even though the unit cost of service for smaller rural facilities may be higher than that for larger urban transfer facilities, customers in each area of the county pay the same for solid waste disposal. Through this policy, urban area residents help offset the economic impacts brought about by modern solid waste disposal practices.

The participation of urban and suburban area residents and businesses in waste reduction and recycling (WR/R) programs is an example of a system-wide program that can help achieve equitable distribution of impacts. WR/R activities in the urban and suburban areas result in a reduction of impacts created when facilities are sited elsewhere in the county. However, the link between urban/suburban action and a resulting decrease in impacts elsewhere will be delayed in time and will be somewhat difficult to quantify.

Detailed Evaluation Criteria and Rating

Detailed siting criteria form the basis by which prospective sites are tested to evaluate their suitability. A rating system is developed to record the degree to which a site meets specific criteria. Since not all criteria will be of equal importance, there must be a way to incorporate their relative value in the scoring process. Citizen advisory committees shall be used to reflect the values of host communities as an effective means of weighting criteria.

Criteria Development

Criteria must relate to the type of facility being sited. Evaluation categories should match the purpose of criteria. Criteria scoring of a site must be able to be accomplished with accuracy and with a reasonable amount of effort. Although some overlap in criteria is acceptable and to be expected, the criteria should not measure the same thing.

Numerical Scoring System for Site Comparison

A numerical scoring system will usually be developed to compare sites. The scoring system will often use two separate numerical indicators for each criterion: a site characteristic rating and a criterion weighting. The site characteristic rating is used to numerically compare alternative sites in relation to a single criterion. The criterion weight is used to compare the importance of a given criterion in relation to other criteria.

<u>Site Characteristic Rating.</u> Specific criteria are proposed to evaluate how well sites are naturally suited for their use as facility sites. Each detailed criterion includes a range of

characteristics that are given numerical scores. The characteristics that are the best for a facility have a high rating, while the features that are not as good receive a lower rating. The rating may range from "10" for the best rating to "1" for the worst rating. Different ratings are assigned to each site for each criterion, based on how well the site is suited for a given type of facility.

Each criterion would have a description of different features and a rating to these features. For some criteria, it is impossible for ranges of acceptability to totally describe all possible site situations. It might be necessary in these cases to interpolate between the defined site ratings during site evaluation. As an example, where ratings of 4 and 6 are defined for a certain criterion, a rating of 5 might be given to a site where it is felt that the actual site condition falls between the described ranges of acceptability for the 4 and 6 ratings.

Criteria Weighting. Giving more weight to some criteria than others would be a way of showing that some criteria used for siting are more important than other criteria. Criteria are considered most important when they are related to significant environmental impacts that could be irreversible or difficult to mitigate.

THE SITING PROCESS

Goals of the Siting Process

The primary goal of the solid waste facility siting process is to provide policy makers with a choice of sites from among candidates that are environmentally acceptable and feasible from an engineering perspective. Secondary goals are: (1) to reduce the chance of having to repeat steps in the siting process; and (2) to produce site alternatives that can be permitted within a reasonable time frame.

Overview of Siting Process

The siting process is subject to time and budget constraints. Since a great deal of information must be developed and processed, a phased process involving several steps should be employed to make efficient use of resources by focusing time and energy on sites that present a greater likelihood of being selected.

The process begins by developing facility-specific site screening criteria. Possible sites are then identified and undesirable sites are dropped from consideration. This leads to detailed feasibility and environmental evaluation of a reduced number of sites that hold a greater chance of becoming recommended alternatives.

Role of SEPA in Siting Decisions

Under the State Environmental Policy Act (SEPA), the county must conduct an environmental review before recommending siting actions. In the case of new solid waste disposal and handling facilities, this will usually require completion of a SEPA checklist and could require development of an environmental impact statement (EIS).

An EIS is an excellent vehicle to use in developing and presenting the environmental information needed to assess the comparative merits of sites in the event no *one* site is selected through the comparative evaluation. Selection of several candidate sites, which would then be evaluated through the EIS process, would occur during the last steps of the siting process.

Steps in the Siting Process

In general, the approach is to evaluate identified sites using those criteria that pertain to general characteristics of the sites, eliminate the inappropriate sites, and then apply the more site-specific criteria to the remaining sites. Overall, there are six steps in the siting process:

- Step 1 – Site Identification
- Step 2 – Broad Site Screening
- Step 3 – Focused Site Screening
- Step 4 – Comparative Site Evaluation
- Step 5 –Environmental Review Process
- Step 6 – County Decision-making

The first three steps in the siting process deal with identification and screening of potential sites using site selection criteria specifically developed for locating a particular type of solid waste facility in King County. Once Steps 1, 2, and 3 are completed and potential sites have been ranked, the highest ranking sites (the top six or eight) can be assessed on a comparative basis in Step 4, and the most desirable site(s) identified for investigation in Step 5. The fifth step involves detailed site review through the environmental review process, and the final step is the decision-making process during which a site is selected by the county. The steps are summarized in Figure 1.

The overall site selection process is designed to be an objective evaluation of potential sites. Numerical ranking of sites is a key feature in the site selection process. If a site receives a low ranking, it may be eliminated from further consideration. The objective and comparative ranking procedure allows for inclusion of the next-highest-scored site as an additional (or substitute) site alternative at each step in the analysis.

Site Identification

The purpose of this step is to produce a number of possible sites with which to begin the site screening and selection process. The level of effort involved in this step will depend on the size and type of facility being sited, as well as the nature of the service area. The concepts presented will presume a large facility serving the entire county. Smaller local service facilities may not require such measures in order to develop a list of possible sites.

Considerable effort should be made to inform county citizens that the county is looking for a new facility site and that the Solid Waste Division will be accepting nominations for possible sites. In particular, the following actions may be taken to solicit site nominations:

- *Advertisements.* Advertisements can be placed in county newspapers.
- *Letters.* Letters of inquiry can be sent to persons or firms on the County Assessor's list of major taxpayers or other lists that may be appropriate. Letters of inquiry can be sent to county taxpayers with individual land parcels of a specified number of acres as appropriate, or carrying a specific zoning designation. Letters of inquiry and a site-selection criteria report can be sent to real estate firms identified as dealing in parcels of the approximate size in the area of service need.
- *Direct Contact.* Direct contacts can be made with major landholders, including the county, the cities, the state, and major commercial enterprises.
- *Other Sources of Potential Sites.* Other sources of potential sites are site alternatives from previous siting studies, former and present solid waste sites, aerial surveys and inventories, and countywide listing of sites and parcels.

During Step 1, the strategy is to evaluate sites using basic descriptions of the site and the siting criteria available for the general area. Exclusionary criteria of critical significance should be considered first so that any sites that will be disqualified can be eliminated from further analysis. This step should culminate in a list identifying potential sites.

Broad Site Screening

The purpose of Step 2 is to identify those sites from Step 1 that for one or more reasons are not appropriate for development as a site for a particular type of facility. These reasons may include regulatory, environmental or developmental constraints, or other situational problems associated with a site.

During Step 2, the county will produce a list of disqualified sites and a prioritized list of remaining sites. Depending on the distribution of weighted scores, a decision may be made to drop the lowest rated group of sites from subsequent analysis, since they will be the least appropriate sites at this stage.

Focused Site Screening

Step 3 is designed to rank the qualified sites from Step 2 according to basic location requirements for development of a particular type of facility. Some regulatory considerations, such as the presence of endangered species and cultural resources, are also part of the Step 3 evaluation. Finally, county locational constraint policy directions for waste management facilities would be included in the evaluation. Only the top ranked sites (perhaps the six or eight sites with the highest scores) need to be carried forward into the Step 4 analysis.

Comparative Site Evaluation

The purpose of Step 4 is to assess the ranked sites from Step 3 from a comparative perspective, especially with respect to their ability to satisfy operational requirements for a particular type of facility. In addition, criteria that focus on potential impacts on the

surrounding area from operation of the project facility would be included in the factors to be examined. Site visits are an integral part of the evaluation in this step.

Step 4 is somewhat more subjective than the two prior portions of the analysis. Once the sites have been evaluated and ranked numerically, the highest rated sites should be re-examined in an interdisciplinary team setting to do a final feasibility appraisal from environmental, operational, and policy perspectives. At this point the criteria should not be evaluated individually. Instead, the cumulative and interactive impacts not explicitly measured by the criteria would be assessed. This final portion of Step 4 would consider environmental, operational, and policy attributes together.

Environmental Review Process

. Environmental review will be conducted in accordance with state law and the permitting jurisdiction's regulations. A preferred alternative would be identified and recommended to the County Executive.

County Decision Making

The County Executive reviews the recommendation and approves, modifies, or rejects the recommended site.

County action may initiate negotiations leading to purchase of a site or, alternatively, initiation of adverse condemnation proceedings. If the site is owned by another jurisdiction, the county may begin negotiation of an interlocal or site lease agreement.

Various state, local, and federal permits are required for solid waste facilities. A difficulty in obtaining a permit could arise during the site screening, acquisition, and permitting processes. If a site is unobtainable, then the second or third alternative can be pursued.

For sites located in the unincorporated area, the Metropolitan King County Council would issue a Use Permit after a hearing is conducted by a hearing examiner. In the event that the decision was appealed, the appeal would likely be sent to the Metropolitan King County Council and the council would serve as the ultimate decision-making body regarding the acceptability of the site.

For sites located in incorporated areas, the decision making would be more complex and would include the legislative body of the jurisdiction as well as the Metropolitan King County Council

PUBLIC INFORMATION AND INVOLVEMENT PROGRAM

A sound public information and involvement program is vital to successful siting efforts. The elements of the program are early notification regarding siting plans and

procedures, regularly updated information about the siting process, and ample opportunities for public input in all phases. The objectives of a public involvement program are as follows for the siting steps:

- *Site Identification.* Ensure that all feasible sites are identified and the public has an opportunity to assist in identifying them.
- *Site Screening.* Ensure that community concerns are adequately addressed.
- *Comparative Site Evaluation.* Incorporate local issues into evaluative criteria and provide for public input in establishing those criteria.
- *Environmental Review.* Identify all community impacts, create broad public awareness, and provide diverse opportunities to participate in the review and to provide community input to mitigation measures.
- *County Decision-making.* Give community stakeholders adequate notice and opportunity to express their opinions and preferences.

There are three major components to public involvement and information:

1. *Information Gathering and Issue Identification.* Activities could include review of literature; interviews with community leaders to gather baseline information, summarize key issues, and identify groups to be involved; surveys to quantify public preferences (e.g. random sample telephone surveys, random sample or community-wide mail surveys, or handout questionnaires at meetings); and focus groups to obtain more in-depth qualitative information about public perceptions and opinions.
2. *Information Dissemination.* Elements could include media relations activities (e.g. news releases, press conferences, press packets); dissemination of targeted information to elected officials, public agency staff, community organizations, individuals, neighbors or neighborhood organizations, and businesses; and dissemination of general information through brochures and fact sheets, advertisements and public notices, public service announcements, newspaper inserts, and community organizations.
3. *Public Involvement and Consensus Building.* These activities could include enlisting the services of citizen advisory committees and task forces; encouraging dialogue through community leader forums; conducting community workshops; employing structured consensus building processes when needed (e.g., third party mediation); and holding public input forums to allow individual comment for the record (e.g., public meetings and hearings).