

Independent, Third Party Review of the Solid Waste Transfer and Waste Export System Plan

for



King County

King County Council Washington

Submitted by:



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CAMEO SUMMARY FOR ACTION STEPS

1. Transfer Station:

- Transfer Stations Need To Be Upgraded With Improved Recycling Options
- Transfer Stations Should Be Called Materials Resource Centers
- Transfer Cost Projections Appear Excessive And Should Be Reviewed
- Increased Recycling Goals Would Not Alter Number Of Transfer Stations
- Transfer Stations Should Become Community Assets And Be A Focal Point For Increased Diversion And Environmental Education

2. Clean And Green:

- Plan Calls For Increased Recycling But Does Not Explain Programs To Achieve The Goal. Programs Must Be Defined
- Transfer Stations Should Provide Full Recycling, Reuse, And Household Hazardous Waste Options
- All Messages (Signs, Brochures) And Personnel At Transfer Stations Should Have Coordinated Environmental Message
- King County Should Develop Professional Education Program Using Enumclaw's Transfer Station As A Model
- County Should Evaluate Materials Recovery Facility To Include All Recyclables Generated Within The County

- King County Should Develop Clean Fuel Infrastructure (Stations For Fueling)
- King County Should Legislate That Private Haulers Use Cleaner Fuel
- Jurisdictions Should Implement Bulky Waste Curbside Collection To Reduce Self-Haul Traffic

3. Cedar Hills Landfill:

- Reduce Size Of Buffer To State Regulation Requirement
- Build Walls To Extend Life Of Cedar Hills Landfill

4. Intermodal:

- Intermodal Strategy Should Be To Have Access To BNSF & UP
- King County Should Export More Waste And Do It Earlier Than Stated In The Export Plan Schedule
- King County Must Strategically Separate Disposal From Rail Transport In Procurement

5. Management:

- Full Cost Management Study Should Be Performed On Solid Waste Division's Operations
- Activity Cost Management Should Be Implemented

24 **Executive Summary**

25 The consulting team of Gershman, Brickner & Bratton, Inc. (“GBB”), MSW Consultants, and R.L.
26 Banks & Associates, Inc. (collectively, the “GBB Team”) was selected to provide the independent,
27 third-party review of King County’s Solid Waste Transfer and Waste Export System Plan.

28 This Report presents the findings of the GBB Team and response to specific questions and issues
29 listed in the RFP. The review methodology, tasks, and panel of experts participating in the review
30 are shown in Appendices A and B. The GBB Team’s questions and additional analyses request to
31 King County upon review of the various planning documents and King County’s response to those
32 questions and the additional documents that were provided by King County and reviewed by the
33 GBB Team are set forth in Appendix C.

34 The following two tables provide a summary of the answers by the GBB Team to King County’s
35 questions and the commentary the GBB Team has provided to King County.

QUESTIONS	ANSWERS
<p>Q1: Projections of waste, recycling, and reduction and how they relate to transfer stations, intermodal system, and recycling, processing infrastructure.</p>	<ul style="list-style-type: none"> • Waste and population projections appear sound • Recycling projection for additional diversion has little to no support • Transfer stations need to be upgraded with improved recycling options • Intermodal is best strategy but site should have access to BNSF & UP for greatest market advantage
<p>Q2: Are there other methods that would enhance public/stakeholders' participation in the facility siting process?</p>	<ul style="list-style-type: none"> • Solid Waste Division implemented a thorough public/stakeholder process • Process for siting followed best practices • County should develop professional education program using Enumclaw's transfer station as a model
<p>Q3: Would varying the recycling assumptions alter the number or configuration of planned transfer facilities?</p>	<ul style="list-style-type: none"> • Recycling assumptions in County's plan are not a major driver • Increased recycling goals would not alter number of transfer stations but their configuration so as to improve recycling options
<p>Q4: Should future publicly owned/operated facilities have space for extended recycling activities?</p>	<ul style="list-style-type: none"> • Absolutely • Transfer stations should become community assets and be a focal point for increased diversion and environmental education
<p>Q5: Do the number and location of transfer stations recommended in the Waste Export System Plan seem appropriate for King County? What changes in demographics could affect the system as configured? Are capital cost estimates in the Plan reasonable?</p>	<ul style="list-style-type: none"> • Network of transfer stations is good approach • Capital cost projections for transfer stations appear excessive; additional value engineering is suggested to lower costs • Meaningful demographic projections were accounted for by Solid Waste Division

<p>Q6: What are alternative options for providing compensation to host cities, such as, but not limited to, one time payments, payments based on tonnage, payments based on traffic, payments based on lost revenue? To what do we benchmark host city compensation payments – for example, lost revenue from utility tax or property tax?</p>	<ul style="list-style-type: none"> • Host fees between \$1/ton and \$5/ton are industry norm • Host communities receive benefit by having facility in these jurisdiction such as reducing commercial hauler transport time which keep collection rates to customers down
<p>Q7: Should self-haul service be provided and, if so, at what levels and how should the cost be covered?</p>	<ul style="list-style-type: none"> • Self-haul service should be provided • Transaction based fee (rather than per ton) should be implemented • Jurisdictions should implement bulky waste curbside collection programs to reduce self-haul at transfer stations
<p>Q8: Understanding that analysis of WTE will take place in the Comp Plan update process – how might including WTE technologies in King County's solid waste strategy affect transfer station or waste export plan recommendations?</p>	<ul style="list-style-type: none"> • A single 3,000 tons per day WTE feasibility will not change plan for multiple transfer stations • Smaller and multiple WTE facilities placed around the County will eliminate need for one or more transfer stations
<p>Q9: Review County's economic analysis and assumptions in sensitivity analysis for early waste export and waste withdrawal.</p>	<ul style="list-style-type: none"> • Rate model and long-term cost projections are thorough • Early waste export plan assumptions are reasonable • Recommend that County analyzes exporting more waste on an earlier time table and in conjunction with other local governments, especially the City of Seattle
<p>Q10: Are there models or methods for the transfer of solid waste from the point of generation to final disposal that minimize fossil fuel consumption and air pollution?</p>	<ul style="list-style-type: none"> • Implement clean fuel fueling infrastructure • Legislate that private haulers use cleaner fuel

TOPICS OF COMMENTARY	COMMENTS
Cedar Hills Landfill	<ul style="list-style-type: none"> • Cedar Hills Landfill is a well supervised and operated facility • Reduce size of buffer to be closer to that required by state regulations and use space gained to maximize disposal capacity; • Prolong the life of the landfill by building walls to make more space for disposal • Disposal capacity for natural disasters should not be a consideration in whether to export waste
Clean and Green	<ul style="list-style-type: none"> • Plan calls for increased recycling but does not explain programs to achieve this • Transfer stations should have full recycling, reuse, and household hazardous waste options. Names of the facilities should reflect emphasis on recycling not disposal • A coordinated education plan involving all messages, signs, brochures should be developed; personnel at these centers should be trained to promote diversion and educate customers on environmentally progressive management • County should evaluate options for materials recovery facility to include all recyclables generated by the County and its member jurisdictions
Intermodal Issues	<ul style="list-style-type: none"> • King County should export waste early and in quantities that best comply with number of rail carriages rather than an arbitrary volume percent • King County must strategically separate disposal from rail transport in procurement • Rail haul distance of waste is short, revenues modest; railroads reluctant to make long term contract

36 **I. Introduction**

37 **A. The Assignment**

38 In conjunction with its component cities, King County is planning to implement solid waste export
39 once its existing landfill reaches maximum capacity, anticipated as soon as 2015-2016. In 2006,
40 King County, pursuant to Ordinance 2006-0263, issued a Request for Proposals (“RFP”) for an
41 independent, third-party review of critical issues and assumptions regarding waste export
42 identified by various stakeholder members of the federated regional waste management system.
43 The RFP included a listing of questions and issues that were to be addressed following a thorough
44 review of the planning documents for the waste export plan.

45 Ordinance 2006-0263 provides that the process for such independent, third-party review shall
46 include outreach from key stakeholders, including, at a minimum, the Solid Waste Advisory
47 Committee (“SWAC”), the Metropolitan Waste Management Advisory Committee (“MWMAC”),
48 and the Interjurisdictional Technical Staff Group (“ITSG”), as questions are developed for the
49 third-party, independent review.

50 The consulting team of Gershman, Brickner & Bratton, Inc. (“GBB”), MSW Consultants, and R.L.
51 Banks & Associates, Inc. (collectively the “GBB Team”) was selected to provide the independent,
52 third-party review. In addition, there were two reviewers from local government – a
53 representative from San Bernardino County, California, and a representative from the Sanitation
54 Districts of Los Angeles County, California.

55 This Report presents the findings of the GBB Team and response to specific questions and issues
56 listed in the RFP. King County’s Project Manager is coordinating the work of the local government
57 reviewers and their comments will be placed into this document by GBB upon receipt from King
58 County. The review methodology, tasks, and panel of experts participating in the review are
59 shown in Appendix A. The GBB Team’s questions and additional analyses request to King County
60 upon review of the various planning documents and King County’s response to those questions and
61 the additional documents that were provided by King County and reviewed by the GBB Team
62 are set forth in Appendix B.

63 **B. Background**

64 King County manages the disposal of waste streams from the unincorporated areas of the County
65 and for 37 suburban cities in the County, excluding the City of Seattle, through Interlocal
66 Agreements. In the past, some of the suburban cities believed that the system could be managed
67 more efficiently, and that rates were at higher levels than they should be, and they challenged
68 the validity of the Interlocal Agreements. However, with the significant unincorporated areas in
69 the County, the County has been able to demonstrate economies of scale in offering its services
70 and thus has been able to keep the suburban cities as part of the County system.

71 In the early 1960s, the transfer system put in place by King County was visionary. From the
72 presidency of John F. Kennedy to that of George H. Bush, no significant changes to those facilities
73 have been made. During the GBB Team’s field visit, it became apparent that this once
74 progressive infrastructure requires significant updating and/or total replacement at certain sites.
75 In addition, the self-haul milieu and free recycling structure need to be raised to a higher level,
76 and the flow of traffic changed to take into account the increase in traffic and population over
77 the last 40 years. Further, the County has grown in a manner that certain of the current sites are

78 no longer strategically located. Some are in congested areas, and some are now in residential
79 areas. A key issue regarding the transfer infrastructure is that most of the facilities lack the space
80 needed to accommodate diversion and special waste programs at the levels that are necessary to
81 be consistent with best practices and expanded functions important for the transfer stations of the
82 future, including accommodating the volume of self-haulers that use the County transfer stations.

83 The County's tipping fee is competitive when compared to neighboring jurisdictions but relatively
84 high when compared with other areas along the west coast. *Can the future system maintain that?*
85 *Will the member cities stay in the system with the revenue requirement to implement the waste export*
86 *plan included?* These questions become critical in system planning and in considering the revenue
87 effect on the County for the future system needs. The Interlocal Agreements will require term
88 extension to cover the future system the County needs to move toward.

89 There has been limited local interest to investigate waste-to-energy ("WTE") and thermal
90 processing options. Governments and authorities currently served by WTE are generally looking
91 to continue using those facilities as the economic and environmental performance has been
92 superlative since retrofits have been made as required by the Amendments to the Clean Air Act
93 ("CAA") of 1998. There are some locations (e.g. Lee County, FL; Pinellas County, FL; Hillsborough
94 County, FL) that are expanding their WTE facilities; a few others are planning expansion; while
95 certain other localities are considering implementing new WTE capacity (e.g. Frederick County,
96 MD; Harford County, MD; Palm Beach County, FL). On the other hand, there have also been a
97 few communities which have opted to close WTE facilities over the past several years because
98 they didn't want to retrofit for CAA Amendments or they had inefficient and non-compliant
99 facilities, e.g. Nashville, TN. The ones left demonstrate good performance records and
100 environmental protection controls. WTE is revitalizing itself now with recent experience and our
101 nation's current re-focus on the need for alternative/renewable energy sources.

102 Nonetheless, new WTE Facilities will be difficult to site, and will raise public fears of their
103 environmental performance, require significant capital to construct, and be expensive to operate.
104 However, with the growing positive environmental performance record of WTE, confirmed by the
105 U.S. Environmental Protection Agency, and the re-focus of our nation on critical energy needs,
106 there appears to be greater reconsideration of WTE as a disposal option that brings local
107 sustainable disposal capacity and an energy source within the region it is placed. The timeframe
108 to plan, implement, and place in operations a WTE facility is significant, in the five to seven-year
109 range or even greater. So, if this option is to be considered seriously for implementation, the
110 planning and development timelines need to be determined as soon as possible.

111 The suburban cities previously expressed significant concerns about what King County implements
112 for its future processing and disposal infrastructure. It will not be easy to site any new solid waste
113 management infrastructure. It is likely to be easier to make use of existing locations where solid
114 waste management services are currently provided, and expand and improve the functions and
115 integrity of the facilities and services at those locations.

116 The GBB Team believes the findings, responses to questions, and other commentary and
117 observations presented in this Report will be helpful to King County and the stakeholder members
118 of the regional waste management system as they further consider their options and chart their
119 course for a future solid waste management system that will meet their needs.

120 **II. Answers to the Questions for Independent, Third-**
121 **Party Review**

122 The GBB Team has provided its answers in a format for the reader's quick assessment. First, the
123 category and question are presented, followed by the answers in the following format:

124 **CAMEO ANSWER:** a brief summary of the full answer.

125 **FULL ANSWER:** a more complete answer.

126

127 **Analysis of Projections, Question 1.**

128 ***Analyze waste generation, population and waste reduction and recycling***
129 ***projections and their related impact to sizing transfer system, intermodal***
130 ***system and regional recycling processing infrastructure.***

131 **CAMEO ANSWER:**

- 132 • The methodology used to analyze waste generation and population demographics followed
133 best practices and was thorough.
- 134 • The higher the anticipated volume projections, the more competitive the rail mode is going to
135 be relative to motor carriage. Therefore, the need to plan and subsequently design an
136 intermodal terminal of sufficient size to meet the highest projected volume needs of King
137 County, ideally including that generated by the City of Seattle, through the end of this
138 century, as well as related on-site container/trailer storage as necessary to support that
139 growth, is paramount.
- 140 • Ideally, the intermodal facility site will enjoy equal access (same costs incurred and operating
141 efficiencies achieved) by Burlington Northern Santa Fe (BNSF) and Union Pacific (UP).
- 142 • Otherwise, long-term trends favoring the economics of freight railroading as compared with
143 over-the-road trucking to distant landfills will limit the competitive options available to King
144 County and tend to fill available and future rail capacity with other traffic, which will result in
145 both higher costs and poorer service.
- 146 • Due to the limited acreage on the Harbor Island site or potential alternative sites, the
147 potential disadvantages of co-locating a transfer station as well as an intermodal terminal on
148 the same site should be weighed very carefully, unless weight restrictions or other
149 considerations require compacting or further compacting of containerized waste on the site of
150 the intermodal terminal in order to maximize the efficiency of long haul transportation.
- 151 • Both ever increasing demands on the capacity of the major BNSF and UP rail lines in the
152 subject region and railroad economics will require King County to focus on an intermodal
153 system operating plan designed around the most efficient train operations (i.e., based around
154 the train length and weight deemed optimal by the handling railroad(s)), not just the number
155 of containers that equate to the average, post-recycling MSW tonnage generated daily,
156 divided by the average tons that can be compacted into a container.

- 157 • The GBB Team would urge King County to hold onto the Harbor Island site, or any similarly
158 situated site obtained in exchange for that site, even if it is not needed to support the Early
159 Export option under consideration or even the full export scenario which will accompany the
160 closing or substantial cutback of operations at Cedar Hills Landfill. This is provided that it is
161 equally accessible to both major railroads and is of sufficient length and width to support
162 modern railroad freight commercial and operating practices. Such a site will only become
163 harder and harder to develop over time. It also may be appropriate to acquire nearby, off-
164 site, trailer storage if the Harbor Island or replacement site looks to be constrained as soon as
165 significant waste flows begin to be diverted from Cedar Hills.
- 166 • The Solid Waste Division provided professional evaluations of waste generation and
167 population growth, which impact the sizing of the regional transfer system.

168
169

FULL ANSWER:

170 ***Waste generation, population and waste reduction and recycling projections and their related impact***
171 ***to sizing transfer system:***

172 A review of Appendix C to the Fourth Milestone Report #4 and other documents with waste
173 projections for individual transfer stations indicates that the appropriate variables were utilized
174 as input to the projection model. The results for the baseline projection look reasonable given the
175 assumptions, such as the CDL ban and diversion levels. The model, however, was not provided in
176 the documents so no conclusions as to the algorithms used were drawn.

177 The Waste Export Plan and supporting documents discuss increasing recycling as a goal and in
178 the projections, additional recycling is forecasted to keep the waste disposal requirement at
179 approximately one million tons per year. While the GBB Project Team embraces the goal of
180 increasing the jurisdiction's recycling from 43 to 60 percent and saw it in line with other large
181 west coast jurisdictions such as Metro Portland and San Francisco, the Team is disappointed at the
182 report's absence of serious attention to details on how the County and the jurisdictions within the
183 County would meet its new goal. Measures which would achieve the increased recycling include:

184

- 185 1. Mandatory curbside recycling collection requirements with specified materials promulgated in
186 all cooperating cities and in the unincorporated areas of the County;
- 187 2. New and improved transfer stations should represent new and improved materials
188 management. They should be built to improve and expand recycling and reuse options
189 (Enumclaw appears to be a model for this);
- 190 3. The County is about to change its solid waste infrastructure for the first time in 40 years. It
191 should take this time to develop a new integrated environmental education strategy to
192 simultaneously roll out with this new infrastructure. This education policy should focus on
193 moving King County to a Cleaner and Greener environment;
- 194 4. Differential pricing by materials offered to self-haulers to promote and enhance separate
195 depositing of materials such as yard waste, clean wood, masonry, dirt, etc.;
- 196 5. Increased requirements for recycling at commercial, institutional, and governmental
197 establishments and the haulers that serve them ; and
- 198 6. Implementation of a recycling and disposal plan requirement on all construction and
199 demolition projects at the permit stage that includes a mandatory recycling level, reporting at
200 the project end, and performance bonds.

201 The number and locations of the transfer stations in the Plan appear adequate to meet the
202 receiving and transfer requirements even if the 60 percent recycling is not met, provided the size
203 and design of the individual transfer stations is sufficient to handle the waste quantities projected
204 and the resulting traffic as described. The new facility at Enumclaw and the proposed design for
205 Bow Lake provide sufficient functionality. An increase in the recycling capability and/or reduction
206 of self-haul will provide assurance for meeting the capacity requirements.

207 **Intermodal:**

208 Staff's consideration of the Early Export program and intermodal transportation, as well as the
209 purchase of a potential intermodal terminal site, make eminent sense for a variety of reasons:

- 210 1. Develops experience with such a system so as to work out bugs
211 in advance of the onslaught of higher volumes associated with
212 the phasing out of Cedar Hills Landfill as a final disposal point;
- 213 2. Phases in the higher costs and related charges to customers
214 associated with exporting waste; and
- 215 3. Preserves Cedar Hills as an emergency destination to which at
216 least King County's waste can be sent, among other reasons.



217 Provided that an operationally efficient and financially driven plan can be developed, procured
218 and executed, rail transportation is likely to be not only the most cost-effective transportation
219 solution but also the most environmentally friendly. In addition, it should yield the effect of
220 diverting tens of thousands of trucks a year from Washington State highways, for which capacity
221 will become more important as the population in Puget Sound continues to surge.

222 The GBB Team notes four concerns for King County policy makers to keep in mind as the County
223 moves forward implementing its long-term Waste Export plan:

- 224 1. The most efficient waste handling system would incorporate direct loading of waste and
225 compaction at each transfer station so that the loaded containers could be driven directly to
226 an intermodal facility, thereby minimizing the number of activities performed, and minimizing
227 the space needed, at the intermodal site. Given the difficulty of siting and expanding
228 transfer stations in King County, there is concern that the Solid Waste Division may not have
229 the space to operate fully loaded (compacted) intermodal containers between all of its
230 current and planned transfer stations and the intermodal terminal facility site;
- 231 2. The adequacy of the Harbor Island site or an alternative site is a concern. Although King
232 County should be commended for securing a site for intermodal activity, the GBB Team's
233 concern is focused on whether the length and shape of the site lend themselves to efficient
234 railroad operations. That concern would be amplified were the site also to host a transfer
235 station and/or a compaction function in addition to the on-site container and chassis parking,
236 which is part and parcel of a well planned, modern, intermodal terminal;
- 237 3. The GBB Team is concerned about the potentially higher operating costs and amortized
238 capital costs associated with the Division's construction and operation (direct or contracted) of
239 a dedicated intermodal facility for such a limited number of trains. Division representatives
240 should continue to discuss with officials at BNSF and UP whether those carriers would consider
241 handling, both in the early and long run, the County's waste in their intermodal yards. Those

242 carriers would be less inclined to handle King County's waste if such handling resulted in the
243 occupation of precious space within the existing railroad intermodal terminals. With the short
244 rail time, rail carriers will see modest revenues from trash clients thereby diminishing their
245 incentive to use up any of their needed space; and

246 4. It does not make much sense that King County and Seattle separately would acquire, permit,
247 develop and utilize intermodal terminals dedicated only to the handling of their respective
248 waste streams. In terms of rail hauling, King County is not a large customer. The tonnage
249 provided by the Division amounts only to one loaded waste train every other day. An
250 intermodal facility dedicated to servicing only King County would be vastly underutilized.
251 Combining King County's tonnage with that of the City of Seattle's makes eminent sense. The
252 carrying/financing costs of permitting and constructing an intermodal site and of the cranes
253 and other equipment necessary to operate it efficiently are so significant as to invite cost
254 sharing. King County should enter into discussions with the City of Seattle to save money for
255 each jurisdiction.

256 Even if institutional barriers prove too great to combine the waste streams of both jurisdictions
257 completely, County staff would be well served to consider mixing at least some of the waste stream
258 it controls with that handled by Seattle because it will be in the interests of both jurisdictions to
259 combine at least some of their waste as volumes increase to the point of driving the need to
260 operate additional trains. The distance between King County and the nearest rail-served landfills
261 is sufficiently short as to cause UP and BNSF to focus on the revenue/contribution per train, not per
262 car or per ton. That focus will penalize any waste generator that has to tender volumes equating
263 to less than maximum sized trains. Hence, the mixing of volumes between agencies will assume an
264 importance that will loom large if not recognized and planned for before export commencement.

265

266 **Public Process, Question 2.**

267 ***Are there other methods that would enhance public/ stakeholders'***
268 ***participation in the facility siting process?***

269 **CAMEO ANSWER:**

- 270 • King County's Solid Waste Division performed a thorough and professional process to involve
271 and enhance public and stakeholder participation in the development of this long-term Waste
272 Export Plan.
- 273 • The preliminary siting process for the Transfer Stations followed best practices.
- 274 • The County should develop a professional education program utilizing Enumclaw's Transfer
275 Station as a model.

276 **FULL ANSWER:**

277 The public process to date appears extensive and thorough in its expenditure of time and
278 resources. The siting process appears to follow best practices. Significant data have been
279 assembled on alternatives. A continuing campaign to present the data and the process appears to
280 be in place to be carried out and should be maintained. However, specific site selection has not
281 yet begun and when the review begins on a specific selected site, participation will increase and

282 very often turns negative. The Plan, in presenting alternatives that close specific transfer station
283 sites, recognizes the problem with some of the existing sites; replacing them will be an arduous
284 task.

285 Because of the time involved in public transfer station siting, the GBB Team recommends that the
286 County start immediately on key site replacement. We would suggest that Houghton is the place
287 to start.

288 Having a successful model to show is worth a thousand studies. King County's most modern transfer
289 station and convenience center is the one located in Enumclaw; if this is to be the model that is
290 replicated at other locations in the County, we would suggest adding tours of this facility to
291 interested stakeholders. In addition, we suggest developing and airing public sector television
292 programs to familiarize the general public with the need, function and aesthetics of the new
293 facilities. The overall thrust of these infomercials would be providing haulers and self-haulers an
294 appropriate place to bring their waste and recyclables, helping achieve a higher County
295 diversion goal to preserve Cedar Hills Landfill and keep a lid on solid waste management costs.

296 King County has pursued an extensive and thorough public process that follows best practices in
297 the development of the Solid Waste Transfer and Export System Plan. As noted above, specific
298 sites have not been advanced to the public. When siting a solid waste facility, a jurisdiction must
299 go above and beyond these best practices, however, in order to secure acceptance. Therefore,
300 we suggest developing and implementing an education campaign that describes where King
301 County wants to go with its waste management. This should be a theme that is easily
302 recognizable and logical. The theme will provide a uniform message in its brochures, infomercials
303 on public sector television programs, in public addresses by elected officials, in its signage at all
304 facilities and on transfer trailers, and in all other public information on the system. The private
305 companies that provide solid waste services and benefit from the County system should
306 participate in a positive manner as well.

307

308

309 **Transfer Stations Issues and Assumptions, Question 3**

310 ***Would varying the recycling assumptions alter the number or configuration***
311 ***of planned transfer facilities?***

312 **CAMEO ANSWER:**

313 • The current King County recycling rate is 43 percent. Additional increases in diversion will be
314 harder to come by because the 'low-hanging recycling fruit' has already been picked. The
315 current plans to increase efficiencies and capacity of the system are warranted.

316 • The recycling assumptions do not appear to be a major driver of the number and
317 configuration of the network of facilities, although quite possibly there are alternative
318 configurations and differential tipping fees for certain materials at each facility that would
319 improve diversion of self-hauled wastes.

320

321 **FULL ANSWER:**

322 There are actually two components to this question that should be addressed separately. The first
323 component to the question is essentially whether or not increases (or decreases) in recycled
324 material quantities would have an impact on the overall number of transfer stations. For
325 example, if diversion could be increased enough, perhaps it would be possible to close one or
326 more facilities or to delay expanding existing facilities for a longer period of time. The second
327 component to the question is whether or not the individual facility configurations should be
328 changed to improve recycling at the point of deposition. These questions are answered in turn
329 below.

330 ***Impact on Number of Planned Facilities***

331 With a network of eight transfer facilities and two rural drop boxes for a County of 2,100
332 square miles and a population of 1.8 million, that is projected to keep growing at the rate of 1.5
333 percent per year, it appears that there is a sufficient number of transfer facilities in the County to
334 handle waste and reuse/recyclables receiving needs.

335 While the equation for sizing each facility will be influenced by on-site recycling/sorting activities,
336 the County has developed extensive criteria beyond recycling diversion for determining the
337 adequacy of existing transfer facilities. With a recycling rate of 43 percent and a goal of
338 increasing to 60 percent by 2016, the Solid Waste Transfer and Export System Plan is being
339 developed with the expectation to maintain and increase recycling, and it is our opinion that the
340 range of other facility evaluation criteria developed will outweigh the recycling diversion in
341 determining the number of facilities. Jurisdictions currently committed to the Zero Waste concept,
342 such as the Canadian City Toronto and California's San Bernardino County, maintain a solid waste
343 infrastructure to handle and dispose of waste while their communities strive to pick the ever higher
344 and problematic recycling "fruit." To reach the 60 percent and higher recycling goal, it will be
345 necessary to provide space within the network of transfer stations to enable commingled loads to
346 be separated in order to maximize recycling. This creates the potentially counterintuitive
347 conclusion that heightened recycling, while reducing the amount of wastes requiring disposal, does
348 not translate into a reduction in the size of the transfer infrastructure. Rather, the transfer
349 infrastructure size stays relatively level, but the outflow of material from the transfer stations shifts
350 from predominantly wastes to be disposed to re-usable and recyclable materials sent to
351 processors and others.

352 ***Impact on Facility Configurations***

353 A review of the Second and Fourth Milestone Reports and the Solid Waste Transfer and Export
354 System Plan reveals that the County has extensively reviewed its transfer station requirements
355 and has accurately identified the need for major facility upgrades. The GBB Team visited most
356 of the transfer stations, and these observations confirm that additional recycling activities are
357 restricted by the current layouts and site size of the existing transfer stations. In short, these
358 legacy King County transfer stations are not designed to accommodate additional recycling of
359 residentially or commercially-generated recyclables or additional CDL or self-haul recycling.

360 The County has set a goal to increase the current recycling rate of 43 percent to 60 percent, to
361 be achieved primarily by adding food waste to the current curbside organics collection. The
362 removal of an additional 17 percent of the waste stream from passing through this network of
363 transfer stations will alleviate some of the pressure that is currently on this system (it was beyond

364 the scope of the GBB Team's analysis to evaluate the elements of the expanded organics
365 collection and composting that will be required). However, the material brought by the self-
366 haulers was observed to provide potential for additional recycling.

367 Given the high number of self-haulers who deliver wastes to the transfer stations, and given space
368 constraints at the existing facilities, there is merit to the notion that the upgraded system should
369 accommodate the self-haulers in such a way as to provide incentives for more recycling and/or
370 separation of wastes at the transfer stations. Our on-site observations identified meaningful
371 quantities of yard waste and C&D debris delivered by the self-haul generators – materials that
372 could be diverted if sufficient space and processing capacity were available. We note that
373 many transfer stations, especially in the western U.S., have evolved to have processing and
374 separation capability for various generator sectors, and that such reconfiguration of some or all
375 of the King County facilities should be taken into consideration.

376 The current network of existing and planned upgraded facilities appears to be reasonable to
377 handle the projected volume of wastes and recyclables generated within the County system.
378 Further, all indications are that King County residents would embrace additional recycling
379 programs and recycling opportunities within the network of transfer stations were such programs
380 offered in a consistent and convenient manner.

381 The following considerations are related to the question of having a reasonable number of
382 appropriately configured transfer stations:

383 *Collection System Enhancement:* We note that increasing diversion to 60 percent through food
384 waste and organics diversion will require additional collection resources as well as sufficient
385 compost facility capacity and access to manage these materials. It was beyond the scope of our
386 analysis to assess the adequacy of planned collection system enhancements and compost facility
387 development.

388 *Local Environmental Impacts:* King County's commitment to recycling reflects high environmental
389 stewardship, and landfilled quantities have been minimized from the County's waste stream.
390 Although outside the scope of our analysis to consider the composting or other management of
391 incrementally diverted food wastes and other new organics, we note that these organic wastes
392 are more susceptible to problems with odors and vectors during both collection and processing.

393

394 **Transfer Stations Issues and Assumptions, Question 4.**
395 ***Should future publicly owned/operated facilities have space for extended***
396 ***recycling activities?***

397 **CAMEO ANSWER:**

- 398 • Absolutely. While separate collection programs make sense for the traditional residential
399 sector and for much of the commercial sector, given the high degree of usage of the King
400 County facilities by self-haulers (presumably both residential and commercial/contractor) it
401 appears that the new transfer stations should have additional space and/or processing
402 capabilities to handle incremental diversion for some waste streams.

403 • Perhaps, if residents perceived that there was meaningful
404 recycling occurring at these facilities beyond pure transfer of
405 wastes, there could also be a side benefit of improving public
406 acceptance of their locations and/or support for any expansion.
407 Even something as simple as renaming them as “recycling and
408 transfer facilities” or “materials resource centers” may be
409 warranted to spread the word that the facilities serve as more
410 than just waste handling facilities and that waste reduction and
411 recycling is also occurring within the facility.



King County Facility
in operation since
early 1960s.

412 **FULL ANSWER:**

413 King County has decided not to site new landfills in the County, and
414 siting new transfer stations appears problematic for King County. In light of these dynamics,
415 increasing opportunities at transfer stations to recycle and divert material is appropriate and
416 recommended.

417 Recycling activities currently, and for the foreseeable future, will continue to be driven by the
418 separate collection programs that exist for residents and businesses. Residential curbside
419 recycling, commercial recycling, appliance pick-up, separate yard waste collection, and C&D
420 debris source separation and processing will continue to drive recycling as a whole in King
421 County. However, from the documentation provided, it appears there are still opportunities for
422 diversion at the point of deposition – i.e., for smaller self-haulers that deliver mixed loads that
423 contain significant quantities of recyclables along with wastes to
424 the transfer stations.



King County Transfer Stations are
congested and have little room.

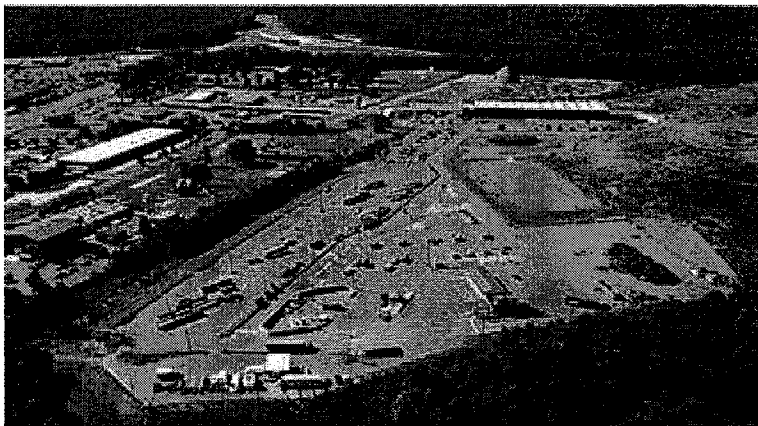
425 As an example of the benefits of providing for incremental
426 recycling within the transfer station network, self-haulers were
427 reported to have disposed of 226,000 tons in 2005 – roughly
428 one quarter of the disposed waste stream. A significant
429 fraction of self-haul wastes is clearly divertible – especially
430 yard waste, mixed scrap metals, and “other waste” which is
431 most likely C&D debris to a large extent. The prevalence of these recyclable Material
432 components in the self-haul waste stream was evident during our site visits. Table 5 below depicts
433 the potential incremental recycling assuming 25 and 50 percent diversion of the aforementioned
434 materials from the self-haul waste stream, using facility-centric separation and transfer.

Table 5. Recycling Diversion Rates

Components of Self-Haul Waste Stream	Total Tons Disposed	Recovered Tons at 25% Diversion	Recovered Tons at 50% Diversion
Yard Waste	27,120	6,780	13,560
Mixed Metals	92,660	23,165	46,330
"Other Waste" (C&D)	20,340	5,085	10,170
Total	140,120	35,030	70,060
Incremental County Recycling Rate Increase		+2%	+4%

436 Note: This table is strictly for purposes of illustrating the potential for using the transfer facility network for
 437 incremental diversion, and it was beyond our scope to validate the estimates for any specific facility. However, if
 438 given the choice between implementing incremental collection resources and programs to reduce the number of self-
 439 haulers and provide for improved recycling by self-haulers at central locations such as the transfer stations, it
 440 appears likely that greater system efficiency would be achieved by utilizing the transfer facility network for this
 441 purpose.

442 We note that many, primarily western, U.S. transfer stations – and especially those in California –
 443 integrate separation and processing of a wide range of recyclables as an integral purpose of the
 444 facility. California integrated waste management systems may serve as a good model for King
 445 County, insofar as solid waste facilities have evolved in an environment where there is a strong
 446 catalyst for change (AB 939 legislation) and aggressive "NIMBY"-ism¹. While we hesitate to
 447 make sweeping generalizations
 448 and would note that every
 449 system is different in some
 450 regards, it is reasonable to
 451 note that most transfer stations,
 452 and even some landfills, in
 453 California, have grown from an
 454 existing transfer station site
 455 (rather than sited anew) and
 456 have come to include offload
 457 areas for vegetative wastes,
 458 CDL, appliances/scrap metals,
 459 and other recoverable streams.
 460 This model would appear to be
 461 similar to the direction King County is moving.



Fairfax County, VA Convenience Center

476 The potential downside to integrating extended recycling activities into the existing facilities is
 477 that expanding or re-configuring some of the facilities with sufficient space and access for
 478 incremental separation and recycling could increase, in some cases significantly, the cost of the
 479 facility upgrades. In some cases, the available parcel of land may not be sufficient to expand,
 480 and so the acquisition of adjacent land would be necessary. Land acquisition may be costly
 481 and/or difficult under market conditions and/or zoning restrictions and in gaining the support of
 482 neighbors. **We support the County's efforts to acquire adjacent parcels of land to facilitate the**
 483 **expansion of transfer station facilities.**

¹ "NIMBY" abbreviation means "not in my backyard."

484 As a final note, expanded recycling activities within the transfer station network could provide
485 side benefits in educating the public. Clear signage and scalehouse and attendant interaction at
486 the transfer stations are opportunities to educate the public as they enter, unload, and exit the
487 facilities to inform customers of best waste management practices, local alternative
488 disposal/recycling/reuse options. For example, the facilities could serve to remind self-haulers of
489 HHW and used electronics stewardship waste handling policies and options. Signage on the
490 County's transfer trailers can also be used to message the public. The public will see this
491 commitment to environmental education and opportunities to recycle and divert as a positive.

492

493

494 **Transfer Stations Issues and Assumptions, Question 5.**

495 ***Do the number and location of transfer stations recommended in the Waste***
496 ***Export System Plan seem appropriate for King County? What changes in***
497 ***demographics could affect the system as configured? Are capital cost***
498 ***estimates in the Plan reasonable?***

499 **CAMEO ANSWER:**

500 • These three questions are fairly broad ranging, but, essentially, they seek to determine if the
501 transfer facility plan, as currently envisioned, meets the needs of the County's commercial and
502 self-haul customers (as well as host neighborhoods) based on logical facility siting and
503 reasonably efficient deployment of capital.

504 • Given roughly 2,100 square miles covered by the County, it is certainly reasonable for there
505 to be a network of transfer stations. King County has developed criteria for the placement of
506 transfer stations, one of which is for 90 percent of the users of a facility to be within 30
507 minutes travel time. By this criterion, a number of these transfer stations are out of
508 compliance. (Suggested alternative configurations, which would sacrifice certain of the 19
509 evaluation criteria and enhance other criteria and are therefore not necessarily better than
510 the current plan, are discussed below.)

511 • Similarly, the capital cost estimates in the plan derive largely from the number of facilities
512 and the required service levels the facilities need to provide. Although it was beyond the
513 scope of the GBB Team's analysis to perform a detailed engineering cost validation, our
514 professional review of the capital improvement plan and costs suggests that capital cost
515 planning has been comprehensive yet the cost estimates seem excessively high.

516 **FULL ANSWER:**

517 ***Appropriate Number and Location:***

518 Given King County's size (~2,100 square miles) and the distribution of urban and suburban areas
519 in the County, it is reasonable for there to be a fairly significant number of transfer and disposal
520 facilities. While there are no "industry standards" for transfer station (or landfill) siting, Table 6
521 below compares meaningful geographic, demographic, and facility information for King County

522 as well as for two other large counties with integrated waste management systems about which
 523 the GBB Team is familiar (all counties serve a population of between 900,000 and 1.3 million).

524

Table 6. County Comparisons

County	Sq Miles	Total Facilities [1]	People Served per Facility	Service Area per Facility (sq miles)	Population Density (persons/ sq mile)
King County (excl. Seattle)	2,042	7	167,666	292	575
Alameda County, CA	738	6	240,624	123	1,958
Montgomery County, MD [2]	496	1	873,341	496	1,763
Fairfax County, VA (3)	407	10	520,600	204	2,558

525

[1]Sum of transfer stations, landfills and WTE facilities that receive direct-hauled waste.

526

[2]Approximately 10 percent of waste is exported to facilities in surrounding counties.

527

[3]Fairfax County has a WTE, 8 recycling drop off sites, and a Transfer Facility. It also has an ash monofill not included in the total facilities above.

528

529

As shown in the table, King County covers a relatively larger area and has lower overall population density, although most of the population is concentrated in the western portion of the County, which would be expected to normalize the numbers somewhat.

530

531

532

The reports made available through this review illustrate that a thorough study has been performed for the County's system of transfer stations. Further, the process undertaken by the County to develop the range of evaluation criteria has been well thought out and documented. As a result of the process, we understand that three existing transfer stations will be closed (Algona, Houghton, and Renton); two existing transfer stations will be rebuilt (Bow Lake, Factoria); two are to be built at locations to be determined (Northeast Lake Washington, and South County); and the three relatively newer or remodeled transfer stations (Enumclaw, First Northeast, Vashon) and two drop-box facilities (Cedar Falls, Skykomish) are to be retained in the system.

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There were 19 evaluation criteria developed as part of the process that resulted in this facility configuration. These criteria can generally be summarized as covering: optimizing service to customers, minimizing impacts to host neighborhoods, and providing efficient system capacity. We make two observations about the criteria used:

541

542

543

544

1. There were no cost metric(s) among the criteria (e.g., achieving full cost-per-ton at or below some threshold). As a result, it may be possible that the current number and configuration of transfer stations does not aggressively minimize system costs (as, for example, in a system where market forces are present).

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2. Compaction technology was deemed necessary at every facility (other than drop-box facilities) rather than on a case-by-case basis depending on the use of the facility.

549

550

While it is not our role to comment on whether the criteria selected were "right" or "wrong," we note that slight changes to the criteria (or the addition or removal of a criterion) could drive different outcomes. Specifically, there may be opportunities to differentiate the roles of various facilities in the system to optimize performance and reduce costs.

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For example, compaction is currently planned for every facility. This will require incrementally larger capital costs for every facility. An argument may be made that criterion 1 (proximity to users) be relaxed for some other criteria, such as service levels (time in/time out and safety).

555

556

557 Taking the notion a step further, it may be worthwhile to look at two tiers of transfer stations, with
558 some facilities intended to serve primarily commercial collection vehicles and other facilities
559 intended to serve the self-haul generators and provide significantly enhanced recycling and
560 separation. If this strategy were followed, it would involve rethinking the need for compactors at
561 every transfer station.

562 The County could, for example, construct two or three transfer stations with compaction technology
563 and have those sites dedicated for commercial customers. The remaining transfer stations could
564 be dedicated for self-haul customers, focus on additional recycling opportunities, and use top-
565 load technology with trailers subsequently hauled to one of the commercial transfer stations for
566 final compaction into intermodal containers. Separating commercial vehicles from self-haulers will,
567 at a minimum, increase safety which is criterion 10, and would, by default, imply that additional
568 space at the facility site had been secured (criteria 4, 5, 6 and 7). This would likely sacrifice
569 criterion 1 for 30-minute proximity for 90 percent of users, but there may be some credence to
570 sacrificing location for a subset of facilities if it significantly improves the service at all facilities.
571 This idea would also reduce capital costs for a subset of the facilities that no longer need
572 compactors.

573 In practice, we note that more detailed analysis is required to validate the notion that only some
574 of the facilities have full compaction. Intuitively, double-handling of wastes would appear to be
575 less, not more, cost-effective. However, the real answer is not so clear-cut for two reasons. First,
576 compactors used for loading intermodal containers require more space than a conventional top-
577 load pit. Although King County is pursuing adjacent parcels at some of the transfer stations, it is
578 not certain that additional land will be acquired, nor is it certain that all of the existing facilities
579 can be meaningfully expanded. If space limitations remain tight at certain facilities, those
580 facilities immediately become candidates for self-haulers only. Second, self-haul waste is shown
581 to contain C&D debris and bulky items that do not compact as well as mixed municipal solid
582 waste (MSW). A transfer station dedicated to self-haul waste might therefore struggle to achieve
583 target densities for intermodal transfer. However, self-haul wastes could be top-loaded and
584 transferred to intermodal loading transfer stations, where they would be emptied and mixed with
585 MSW to achieve target densities. Once again, these scenarios would need to be analyzed
586 further for verification of applicability and feasibility, and it may still be the case that compactors
587 should be constructed at every facility.

588 As a final note, King County has made impressive – and necessary – efforts at creatively
589 expanding currently permitted transfer station sites. Lessons from higher density areas across the
590 country suggest that making the best use of existing facilities is necessary and possibly the only
591 way to expand integrated solid waste management systems.

592 ***Impact on System of Changes in Demographics***

593 The primary demographic changes that could affect the system involve continued increases in
594 population throughout the County and especially in the south-County area. Based on population
595 and employment projections through the year 2040, that were provided by the County and were
596 incorporated into the system modeling, it appears that the meaningful demographic changes have
597 been integrated.

598 ***Reasonable Capital Costs and Other Cost Considerations***

599 The capital cost estimates in the plan derive largely from the number of facilities and the required
600 service levels the facilities need to provide. Engineering cost estimates for facility construction
601 and/or renovation have been developed based on current year dollars and escalated
602 appropriately to the year of construction, and associated financial modeling appears to
603 adequately capture these costs. Although it was beyond our scope to perform a detailed
604 engineering cost validation, our professional review of the capital improvement plan and costs
605 suggests that capital cost planning has been comprehensive but resulting in a high estimated cost
606 for the transfer stations. The "2006 Facility Master Plan Update" states the construction cost of
607 the proposed Bow Lake Transfer/Recycling Station to be \$44,200,000. Although this includes the
608 acquisition of WSDOT property and the demolition of the existing facility, the projective cost
609 appears high. The GBB Team which recommends that the Solid Waste Division review these
610 figures as implementation nears.

611 In addition to the capital costs, it would be informative to obtain current, or else projected, full
612 cost-of-service data for each of the individual facilities. In the competitive marketplace, market
613 forces would be expected to drive larger facilities that can operate on a lower unit cost basis. In
614 the King County system, it may be informative to have facility-specific cost metrics as an
615 additional variable to evaluate the system.

616 In the absence of a cost-related metric such as facility-specific full costs and projected facility
617 throughput, it is difficult to validate that capital is being distributed most efficiently. System
618 efficiency could be better evaluated, and possibly the range of facility evaluation criteria
619 improved, if some metric associated with projected full cost per ton were available. Further,
620 given that the County is able to manage the entire network of facilities as a "system" that does
621 not benefit by competitive market forces, such facility-specific cost data would be expected to
622 further enhance the evaluation of individual facilities.

623 Alternatively, King County may benefit from having a customer base that is avidly pro-recycling
624 and willing to pay for greater diversion and lower facility intrusion into local neighborhoods than
625 is possible in other regions of the country. It may be that lack of a cost-related metric is not
626 meaningful in King County. It also may be the case that the evaluation of privatization within the
627 King County system, which was reported by the County to have been evaluated with input from
628 both municipal and commercial stakeholders, further supported the current facility configuration
629 and reduced the importance of cost as an evaluation criterion.

630 As a final note, the total system cost to the ultimate customer – households and businesses –
631 encompasses collection, transfer, transport, and disposal (processing). Evaluating the cost of the
632 transfer, transport, and disposal in a vacuum from collection may not result in an optimized
633 system, which would entail minimizing the sum of collection, transfer, transport and disposal. It
634 was beyond the scope of our analysis to conduct such a "full system cost" review. However, it was
635 reported by the County that industry representatives on the Solid Waste Advisory Committee
636 (SWAC) did participate in such a system planning process. The SWAC argued for one additional
637 new transfer station and opposed one proposed closure (Renton Transfer Station) because of their
638 own economic interests in reducing their driver's "windshield time" on routes. The SWAC was also
639 reported to have expressed interest in commercial development of large transfer stations:
640 provided that there might be a need for public subsidy; self-haulers (roughly one-quarter of King
641 County volume) would not be accepted and facilities would meet minimum zoning codes. After
642 robust debate, it was reported by the County that hauler representatives voted to support the

643 proposed plan. Given the complexity of such a system planning process, King County should be
644 commended for undertaking such an effort and evidently achieving support from diverse public
645 and private stakeholders.

646

647 **Transfer Stations Issues and Assumptions, Question 6.**

648 ***What are alternative options for providing compensation to host cities, such***
649 ***as, but not limited to, one time payments, payments based on tonnage,***
650 ***payments based on traffic, payments based on lost revenue? To what do we***
651 ***benchmark host city compensation payments – for example, lost revenue***
652 ***from utility tax or property tax?***

653 **CAMEO ANSWER:**

- 654 • There are numerous possible methods by which host compensation could be established; GBB
655 believes the most common mechanism for host fees is a strict tonnage-based payment,
656 typically in the \$1 to \$5 per ton range.

657 **FULL ANSWER:**

658 Host municipality fees are in wide practice in the solid waste industry, for obvious reasons. No
659 matter where in the country one lives, it is likely that having a landfill, transfer station, or other
660 waste management facility located within the jurisdictional border will be perceived negatively
661 for a variety of reasons: increases in traffic congestion, wear-and-tear on local roads, potential
662 for groundwater contamination, litter, demands on local wastewater treatment utility, and the list
663 goes on. Especially if a facility is accepting wastes that were generated beyond the borders of
664 the host municipality, host fees are a conceptually justified and time-tested means of
665 compensating the local jurisdiction for hosting undesirable uses. A partial list of the basis for
666 charging (or the stated uses of) host fees includes: roadway upkeep, litter control, hazardous
667 waste management, groundwater monitoring, recycling funding, conservation funding, pollution
668 prevention, disincentives for waste import, and there are likely many others. In the case of
669 private companies seeking a site for a large regional landfill, host fees may represent a
670 significant economic boon to a smaller jurisdiction.

671 King County seeks feedback on the alternatives for implementing a host fee that may be paid to
672 the incorporated jurisdictions within the County that host transfer stations. Conceptually, there are
673 many alternatives, and, hypothetically, a host fee structure could be based on virtually any basis,
674 whether measured or negotiated. With over 3,000 counties and roughly 25,000 municipalities in
675 the country, the GBB Project Team cannot claim to have compiled a comprehensive list of the host
676 compensation mechanisms in place. In practice, we believe it is fair to say that per-ton host fees
677 are the most common and conceptually among the simplest to understand and implement, and the
678 range of \$1 to \$5 per ton has been experienced by the project team on recent projects.² Per ton

² Note that the \$1 to \$5 range may represent the sum of multiple host fees and surcharges added to tip fees by various state and local regulatory bodies. For example, all wastes in Ohio are charged one fee that is payable to the state Department of Natural Resources; one fee that is payable to the Solid Waste Management District (a single

679 host fees are ongoing over the life of the facility, vary in exact proportion to waste deliveries,
680 and are reasonably thought to correlate to roadway usage, litter generation, traffic congestion,
681 and other negative impacts that come from the local solid waste facility.

682 We note that there may already be an indirect financial benefit to jurisdictions by hosting
683 transfer stations. All customers pay a uniform tip fee no matter what transfer station they use.
684 Since direct haul of wastes in compactor trucks is the most costly form of waste transport and since
685 longer travel times result in less time on route actually collecting set outs, the ability of commercial
686 haulers to unload within the local area keeps their costs down. The residential and commercial
687 collection systems within host municipalities benefit from shorter travel time and mileage to the
688 disposal location compared to surrounding municipalities, and, in theory, their collection rates
689 could reflect this (although it was beyond the scope of our analysis to consider the collection
690 system in detail).

691 It is worth mentioning that there may be some contradiction to the notion of host fees in King
692 County's current "system". Specifically, the County has established the policy that the tip fee will
693 be uniform at all of the transfer stations in the system. This disposal fee uniformity is in spite of
694 the fact that the actual full costs to transfer and dispose of wastes at each facility may differ
695 from facility to facility. In an open market, wastes tend to flow to the least cost combination of
696 transfer, transportation, and disposal. In the absence of local pricing variations, some
697 municipalities may receive greater or lesser benefits from a host fee due to the artificially level
698 system tip fee; especially those municipalities that do not host a transfer station are likely to
699 object to the internal transfer of monies to another member of the "system".

700 Many host fees – especially those that have been established at the state regulatory level – are
701 tagged for specific environmental programs. In King County, it may be necessary not only to
702 establish host fees, but also to establish the allowable uses for host fees as a true mitigation for
703 the local facility, rather than as a general fund contribution for municipalities that happen to host
704 a transfer station.

705 Public perception of host fees is generally positive for the residents and businesses within the host
706 municipality, especially if the proceeds from the fee can be applied in a manner that visibly
707 demonstrates the benefit. Conversely, host fees are generally considered to be negative by the
708 hauling community and/or waste generators in surrounding areas – either because they are
709 perceived as yet another tax or because they are perceived to artificially drive up the cost of
710 disposal.

711 As a final question (but one with limited bearing on our response), we understand that there are
712 one or more private transfer stations either in the County unincorporated area or else in one of
713 the member jurisdictions that primarily move C&D debris. It would be of interest to know if a host
714 fee has been negotiated with any of these private facilities.

county or multi-county authority formed to oversee waste management locally); one fee for the host city or township which truly is a "host fee" and further enables the local county and township to negotiate an additional fee that resembles the mitigation concept as described in King County. Although the GBB Team has not undertaken a comprehensive study, aggregate fees that sum close to \$10 per ton are probably not out of the realm of possibility. In King County, the development of a host fee structure should take into consideration that wastes passing through both a regular transfer station and the intermodal (or other rail loading) facility may incur two separate host fees, or else a single system-average host fee could be developed, which seems to be consistent with other financial policies in place in King County.

715

716 **Transfer Stations Issues and Assumptions, Question 7.**

717 ***Should self-haul service be provided and, if so, at what levels and how***
718 ***should the cost be covered?***

719

720 **CAMEO ANSWER:**

721 • King County residents and businesses will almost certainly demand that they be provided with
722 the ability to self-haul their wastes.

723 • Self-haulers are shown in the range of documents provided to create operational challenges
724 at the King County network of transfer stations.

725 • The County will most likely need to continue providing this service, **and it is reasonable to**
726 **consider implementing a transaction-based fee as discussed in Chapter 10 to the**
727 **Comprehensive Plan.**

728 • We note that in many other parts of the country, especially where both collection and
729 disposal are under unified control, offering a scheduled or call-in residential bulky waste
730 collection service can greatly reduce the volume of self-haulers at local transfer and disposal
731 facilities.

732 **FULL ANSWER:**

733 Ultimately, the “right” to self-haul is typically considered very important by a local population,
734 and given that King County has historically provided an outlet for self-haulers, it would be
735 expected to be an uphill battle to significantly reduce or eliminate this service without some
736 concession or other replacement service provided. For this reason alone, the GBB Team thinks that
737 such a service should continue to be provided.

738 However, given the well documented (and verified during our site observations) operational
739 challenges (and corresponding transaction costs) that the volume of self-haulers places on the
740 network of transfer stations, we also believe that conversion to a transaction-based fee structure
741 as described in Chapter 10 of the Comprehensive Plan is reasonable and, in fact, desirable. This
742 fee structure acknowledges the legitimate burden a high volume of small haulers places on the
743 system. Although the per-ton rate is higher for self-haulers under this structure, this essentially
744 translates to a “convenience premium” – which, if the market demands it, could even be provided
745 at a market-supported rate (rather than a rate established by King County based strictly on a
746 full-cost model). We note that there is strong precedent within the solid waste industry to use rate
747 setting strategies to induce desirable waste and recycling behaviors – one of the most common
748 being volume-based pricing on waste collection (such as the program offered by the City of
749 Seattle). If self-haulers put pressure on the system, adjusting the rates to self-haulers
750 proportionately upwards may reduce the volume of self-haulers. Of course, significant increases in
751 the proportional rates paid by self-haulers would likely be perceived negatively by the self-
752 haulers (who would cite an unfair bias) and be supported by commercial haulers.

753 As a related matter, any significant rate increases to self-haulers would be best implemented in
754 conjunction with making sure that the collection infrastructure (both County unincorporated as well
755 as incorporated municipalities) could accommodate collection of bulky wastes from residents and
756 businesses. Nationally, many municipalities provide for bulky item collection for residents either
757 through municipal or contracted curbside collection (crews will collect everything placed at the
758 curb) or through a special bulky item collection system. Special bulky item collection can be
759 performed under various time frames such as scheduled monthly, quarterly, semi-annual or annual
760 service, or on-call scheduled collection where the resident calls the municipality to schedule a pick-
761 up.

762 Information regarding the collection system among the member jurisdictions was not provided as
763 part of the review package and is outside the scope of services for this review. However, in King
764 County, the self-haul volume was high enough to suggest that bulky waste collection is either
765 limited or else not provided at all (making special call-ins to a private hauler especially
766 expensive because there is no such service readily available). There is a wide range of strategies
767 available to provide cost-effective bulk waste collection, even extending into rural areas, that
768 would be expected to reduce the reliance on self-haul. Implementation of such bulk waste
769 collection services, in conjunction with using the self-hauler fee structure to modify customer
770 behavior, would likely benefit the County's transfer station network.

771 If the self-haul deliveries were reduced, this also implies that bulk waste collection and
772 transportation infrastructure has increased, or else the potential for illegal dumping has increased
773 (especially from small repair and construction contractors). If bulk waste collection is expanded,
774 municipalities that do not currently offer any bulky waste collection through their current curbside
775 refuse collection program would see an impact on their collection and disposal cost for their
776 contracts. Individual subscription customers may see an increase in cost if contractors are required
777 to collect bulky items at the curb. Perhaps, there is a solution that involves the County reducing tip
778 fees for confirmed commercial bulky waste deliveries (would require coordination with each
779 member municipality), as such deliveries imply that some volume of self-hauling has been shifted
780 to a bulk waste collection program.

781 As a final exercise on this subject if the majority of County residents were provided a built-in
782 bulky waste collection system with their regular refuse and recycling collection, self-haul traffic at
783 the transfer stations could be reduced by an estimated 6,358 loads per week (See Table 7).
784 Reducing this many loads in the transfer station system may even impact the configuration of the
785 transfer facilities, or conversely, may enable some operating cost savings by reducing the hours of
786 operation that are currently required to support self-haulers. There would, however, be an
787 increase in commercial hauling to the transfer stations because of the bulky collection but this
788 would be significantly less in number than the self-haul because of the compaction of the material.

789

Table 7. Self-Haul Transactions

Self-Haul Loads Per Day	Weekdays	Weekend Days	Total Loads
Total Daily Loads	3,660	6,745	
Total Weekly loads	18,300	6,745	25,045
Reduce for Bulky Item collection	20%	40%	
Reduced number of loads	3,660	2,698	6,358

790

791

792 **Waste to Energy, Question 8.**

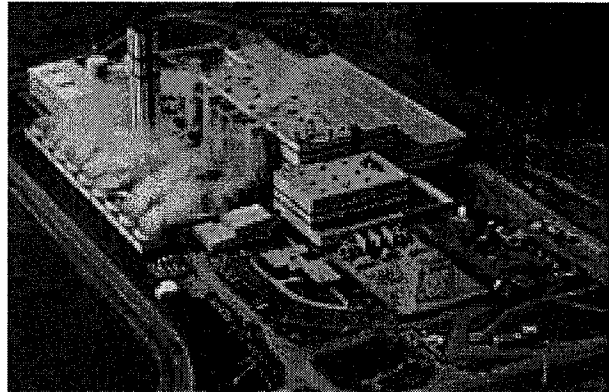
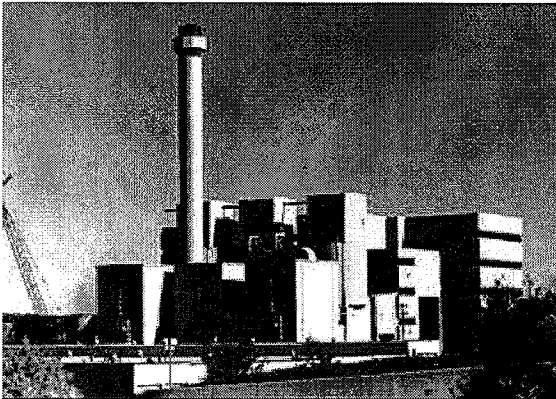
793 ***Understanding that analysis of WTE will take place in the Comp Plan update***
794 ***process – how might including WTE technologies in King County’s solid***
795 ***waste strategy affect transfer station or waste export plan***
796 ***recommendations?***

797 **CAMEO ANSWER:**

- 798 • It depends on type and size, location, and number of WTE facilities.
- 799 • A single WTE facility with capacity of one million tons per year (3,000 tons per day) located
800 on the Cedar Hills Landfill site would mean no change to the plan for transfer stations and
801 potential elimination of the need for exporting waste. In such a circumstance, King County
802 would need to provide for backup landfill capacity in case the WTE facility needs to divert as
803 well as provide for disposal of ash not otherwise beneficially used at a double-lined landfill.
- 804 • If smaller sized WTE facilities are implemented and not at Cedar Hills, a transfer station could
805 be eliminated for each one implemented, but the exportation of waste would continue.
- 806 • WTE disposal cost for a 3,000 TPD facility would be approximately \$75 per ton, before ash
807 disposal and electricity revenues.

808 **FULL ANSWER:**

809 There are two approaches to the analysis of WTE in the new King County Comprehensive Plan:
810 (1) utilization of proven technology and (2) evaluation of innovative technologies. The proven
811 WTE technology has two types, mass burn incineration and refuse derived fuel (RDF), which
812 combined have a total of 89 facilities operating in the United States. A single WTE facility to
813 process the County waste (one million tons annually) would be a 3,000 TPD plant. This would be
814 similar to the facilities in Fairfax County, VA; Pinellas County, FL; and Miami Dade, FL. The first
815 two are mass burn facilities and the last is an RDF facility.



Covanta Alexandria, VA, WTE Facility (975 Tons Per Day)

Fairfax County, VA, WTE Facility

816
817

818 A single facility using proven technology sized to process the projected 3,000 TPD would cost
819 approximately \$460 and 520 million³ and require 10 to 20 acres of land depending on
820 buffering, neighbors, etc. If placed on the Cedar Hills site, no disruption of the existing collection
821 and transport network would be required. Because WTE ash has a volume of approximately 10
822 percent of the MSW burned, and assuming that WTE facility operation started on, or before
823 2011, no export would be required except possibly for bypass and non-combustible materials.
824 The resulting disposal cost would be in the neighborhood of \$75 per ton before ash disposal and
825 electricity revenues. Cedar Hills Landfill could be the depository for ash which is much more
826 stable a product than Municipal Solid Waste and therefore less expensive to handle. The facility
827 could be built in the time before the Cedar Hills Landfill is expected to close.

828 A WTE facility would generate 65 to 70 Mw of electricity, which could satisfy a portion of the
829 electricity requirements for King County and reduce the emissions from fossil fueled alternatives.
830 A number of smaller WTE facilities could replace one or more transfer stations with an even
831 greater reduction in emissions resulting from truck transport. Based on the projections in the Plan,
832 four of the existing transfer stations or their replacements (Algona, Bow Lake, Factoria and
833 Houghton) would have sufficient waste to achieve a scale necessary to be considered viable. The
834 GBB Team regards that threshold to be 500 TPD. If one or more of the WTE facilities were close
835 enough to steam customers, then they could serve industrial customers or, perhaps, a district
836 heating/cooling arrangement similar to Seattle Steam. The sale of steam to interested customers
837 would generate revenue at a higher level than electricity, due to the low prevailing electricity
838 value in the King County area.

839 In terms of diesel fuel consumed in transporting waste out of the County versus processing it in a
840 WTE facility, some 600,000 to four million gallons would be saved depending upon destination
841 points. Additionally, there will be savings in landfill emissions and operating landfill equipment
842 by diverting the MSW to the WTE, although this will have to be further examined.

³ "Comparative Evaluation of Waste Export and Conversion Technologies Disposal Options," R.W. Beck, June 2007.

843 **Financial Assumptions, Question 9.**

844 ***Review County's economic analysis and assumptions in sensitivity analysis***
845 ***for early waste export and waste withdrawal.***

846

847 **CAMEO ANSWER:**

848 • The County's overall rate model and economic analysis is thorough and appears to
849 adequately capture the full system costs but does so in a manner that does not illustrate the
850 full cost of specific activities.

851 • While it was beyond the scope of our analysis to validate the engineering cost estimates, our
852 review suggests that the County has comprehensively projected its long-term system costs
853 under a variety of alternatives.

854 • The waste export scenarios selected – full early export, partial early export, and partial
855 withdrawal – appear to be reasonable, although a fourth scenario that contemplates
856 predominant waste export with perhaps 15 percent of the waste stream continuing to be
857 delivered to the Cedar Hills Landfill may be of interest (such strategies have been
858 implemented elsewhere). However, many of the assumptions that would be needed to
859 complete the economic analysis were not readily available in the documentation; hence the
860 answers are burdened from a lack of data.

861 **FULL ANSWER:**

862 The County's overall rate model and economic analysis is impressively thorough and appears to
863 adequately capture the full system costs. Facility operating costs, landfill closure and post-closure
864 costs, capital improvement planning, debt service, management and administration, other County
865 programs, and allocated indirect costs (legal, financial) are all accommodated in the model.
866 Although no further detail was provided beyond the summary economic model outputs, and while
867 it was beyond the scope of our analysis to validate the engineering cost estimates, our review
868 suggests that the County has comprehensively and conservatively projected its long-term system
869 costs under a variety of alternatives.

870 The waste export scenarios selected – full early export, partial early export, and partial
871 withdrawal – appear to be reasonable. However, insufficient information was provided to
872 validate the results, and we have several comments.

873 For all of the scenarios, it appears that a relatively simplified assumption of applying Snohomish
874 County's transport and disposal costs was used to represent the likely cost of these elements for
875 King County. The GBB Team is not familiar with the regional (i.e., Washington and Oregon)
876 markets for landfill disposal, and because of this unfamiliarity may be asking the question
877 unnecessarily, but at some point, if it has not already been performed, we recommend that the
878 County conduct a true regional disposal market study to determine the expected negotiated tip
879 fees for long-term disposal agreements at the range of landfills within reasonable distance from
880 King County that have excess capacity. With the guaranteed waste flow that King County could
881 provide, there may even be credence to the notion of procuring new disposal capacity from the
882 private marketplace in a closer-in landfill to be developed specifically for King County.

883 Milestone Report 4 defined full early export as including the closure of the Cedar Hills Landfill at
884 the time early export commences. This indeed would accelerate the Closure and Post-Closure
885 fund accrual burden and therefore increase costs immediately to some extent (although post-
886 closure funding has been achieved already). However, there was no mention of the alternative of
887 keeping the Cedar Hills Landfill open and operational on a reduced basis to serve as
888 overflow/emergency disposal. Similar strategies have been implemented elsewhere in the nation
889 and may be worth evaluating in King County. It is not surprising that the cost of full early export
890 is higher than the current cost under the assumptions that were used.

891 Partial early export is cited as the most cost-effective of the options, but is still higher than the
892 current system. The notion of partial early export has been implemented in several county
893 integrated waste management systems in Maryland counties in the Baltimore-Washington
894 metropolitan area. Conventional wisdom in these counties is that it will not be possible to expand
895 the existing landfill and/or site a new in-county landfill. However, with long-haul transportation
896 via road as the only current transportation option, there is an acknowledged shortage of
897 transportation capacity for various reasons, and the in-county disposal facilities have had to
898 remain open to handle 10 to 15 percent of all wastes generated that cannot be accommodated
899 in the export system. This situation (predominant export of waste with the local in-county landfill
900 remaining open for overflow and emergencies only, and with a goal of prolonging closure date
901 indefinitely) was not evaluated in King County, but may alleviate the problems associated with
902 accelerating closure and post-closure funding.

903 The withdrawal scenario does not provide sufficient information to verify. The write-up mentions
904 that withdrawal would "result in operating cost savings," which is certainly expected. However, it
905 is not clear from the write-up if this scenario contemplated additional reduction in this size of the
906 system, for example the elimination of one or more transfer stations. It would seem unlikely that
907 any except a geographically contiguous group of municipalities would decide to exit the system
908 (geographically spread-out jurisdictions would lose any ability to capitalize on centralized
909 infrastructure), which would suggest that one or more regions of the County's service area may be
910 eliminated. Further, given the dearth of landfill capacity near King County, the only way it would
911 make economic sense for withdrawal would be for a large enough fraction of the total waste
912 generation to be carved out to lure viable, economically attractive transfer and disposal.⁴

913 While the Solid Waste Division's cost and revenue numbers for its operations are comprehensive
914 they seem not to be geared toward the management of specific activities. When managers of
915 operations have access to the full cost of their operations and are held accountable to those costs,
916 the perspective of these managers change from "get the job done" to "get the job done in a cost-
917 efficient manner." If upper management empowers and encourages its managers and supervisors
918 to reduce costs, then they often will make suggestions that save the jurisdiction significant sums of
919 money. To understand the costs of each activity, these managers will have to have access to the
920 cost data for them. It is recommended that the County use full cost management techniques to drill
921 down to a cost per ton for each transfer station.

⁴ Seattle and Milton represent other jurisdictions that could join together with any jurisdictions that fracture off of the King County system. It would seem conceivable that 20 percent of King County waste generators adjacent to Seattle could break away and join with the Seattle system if the opportunity presented itself and it was possible to negotiate more favorable transport and disposal through that system.

922 **Sustainability, Question 10.**

923 ***Are there models or methods for the transfer of solid waste from the point of***
924 ***generation to final disposal that minimize fossil fuel consumption and air***
925 ***pollution?***

926 **CAMEO ANSWER:**

- 927 • Put in place an infrastructure whereby collection vehicles can operate with cleaner fuel.
928 • Legislate standards by which collection vehicles must operate using cleaner fuel.

929 **FULL ANSWER:**

930 Diverting any significant amount of material out of the solid waste transfer system at any point
931 prior to ultimate disposal will lower its fuel use and emissions. Achieving 60 percent recycling is
932 therefore a desirable and sustainable goal. It is a reasonable assumption that recyclable
933 materials will be processed locally, and even if shipped overseas from the Port, will have lower
934 fuel use per ton. King County has significant barriers to achieving this goal, not the least of which
935 is the institutional or jurisdictional structure resulting from the need for the County and 37
936 cooperating cities to act in concert. The County needs to adopt aggressive sustainability goals
937 and provide leadership for the entire community to achieve these goals and reduce the
938 environmental footprint of the solid waste system.

939 Optimizing the collection vehicle routes using GIS and routing models coupled with GPS and on-
940 line collection and transfer vehicle monitoring and communication will minimize fossil fuel
941 expended. Call-in bulk and yard waste collection will also eliminate unnecessary truck travel.
942 The efficiencies gained through these techniques typically improve efficiency by 10 to 25 percent,
943 which would be reflected in the lower consumption of diesel fuel and resulting emissions. These
944 technologies are in widespread application in the waste industry both in public and privately
945 operated systems. Further, commercial delivery fleets such as UPS and Federal Express have
946 used them for years.

947 Conversion of collection and transfer
948 vehicles to natural gas, either LNG or
949 CNG, reduces the air pollution
950 resulting from the use of diesel fuel.
951 Conversion to natural gas-fueled
952 trucks from diesel-fueled trucks will
953 significantly lower CO₂, sulfur, and
954 particulate emissions and will
955 potentially lower NO_x. There is a
956 potential maintenance savings
957 available from natural gas-fueled
958 engines. These natural gas fuels are
959 in daily use in solid waste collection
960 fleets in California and elsewhere.



Quick fueling compressed natural gas (CNG) in Santa Monica, CA

962 A longer range method to lower
963 emissions is to convert the collection vehicle fleet to hybrid technology. The U.S. Department of
964 Energy's Oak Ridge National Lab ("ORNL") points out that the stop and go nature of waste

965 collection is particularly suited to efficiency gains through the application of hybrid technology.
966 ORNL estimates the fuel usage efficiency gain in collection is 140 percent when hybrid technology
967 is employed. Kenworth and Peterbilt have medium duty hybrid trucks in their 2008 models and
968 other manufacturers are planning to add hybrid trucks in the near future. As hybrid trucks are
969 coming on the market, a coordinated multi-year purchase agreement for all collection vehicles
970 used in King County could provide a significant incentive to truck manufacturers to advance the
971 roll-out of this equipment.

972 Emissions and greenhouse gas calculations should be done to compare the Export Plan to a WTE
973 alternative; see comments above.

974 Approximately half of the delivery of waste and recyclable materials to the transfer stations is
975 accomplished in generator-owned vehicles, i.e., "self-haul." This reliance in King County on self-
976 haul increases the number of vehicle trips to deliver these materials to the transfer stations. We
977 suggest that the County review emissions and traffic impacts resulting from self-haul waste
978 collection and quantify the alternatives of increased collection by commercial collection
979 companies. Further, the County should review the policies that promote and encourage self-haul.
980 In the answer to the Projection Question, the GBB Team has identified specific recycling actions
981 that it believes will achieve the reduction of self-haul and all the associated impacts it has on the
982 transfer and disposal system.

983 **III. Commentary**

984 The members of the GBB Team have read through the documents, interviewed stakeholders and
985 staff, made site visits, and discussed King County's solid waste system at length. Although not an
986 explicit task of the Third Party Review Project, the Team determined it would be helpful to the
987 County to comment on topics in addition to questions answered by the Team. These comments are
989 segregated by topics for quick reference:

991 **Cedar Hills Landfill**

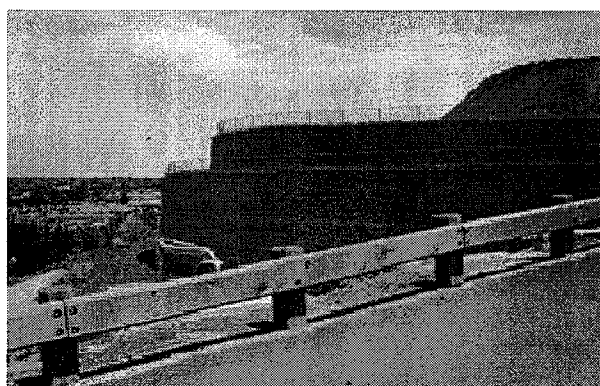
993 *Maximize Space:* King County should maximize
995 the space it has so as to keep long-term costs
997 down. Members of the GBB Project Team have
999 discussed with staff two scenarios to prolong the
1001 life of this facility.

1003 First is to maximize space by constructing
1005 engineered walls that will allow the County to fill
1007 out further along the sides of the landfill. This
1009 would change the current slope of 3:1 to a 1:3
1011 ratio. One example of where this is done is in the
1013 Town of Babylon, New York.

1015 Second is to take advantage of the 900-feet of
1017 extra buffer zone around the Cedar Hills Landfill's
1019 perimeter and especially along the south side of
1021 the Landfill which the County is not currently using.
1023 A Buffer zone means that part of a facility which
1025 lies between the active area and the property
1027 boundary. Washington State's requirement of a
1029 buffer zone distinguishes between residential
1031 and non-residential neighbors. For non-
1033 residential, Washington State's requirement is a
1035 buffer zone of 100 feet. The buffer zone for
1037 residential neighbors is 250 feet.⁵ The Cedar
1039 Hills Landfill, however, is designed with a 1,000-
1041 foot buffer. The GBB Team understands that the
1043 County had promised the community to provide
1045 extended buffer area where the landfill is
1047 adjacent to residential homes. Even so, 1,000-
1049 feet is more than generous. On the south side of
1051 the facility, however, the neighbor is a



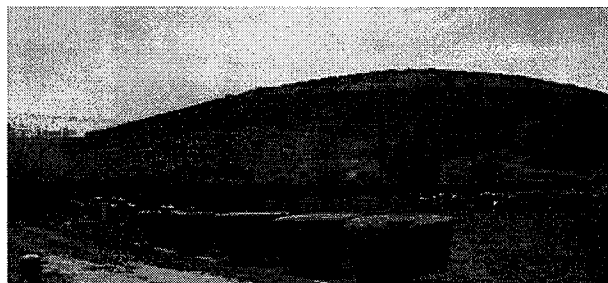
Cedar Hills Landfill currently operates with a 1,000 foot buffer leaving up to 900 feet of usable space.



Town of Babylon uses walls on its landfill to maximize space.

⁵ Criteria For Municipal Solid Waste Landfills: Chapter 173-351-200, 140(3-b): "So that the active area is any closer than one hundred feet (thirty meters) to the facility property line for land zoned as nonresidential or for unzoned lands, except that the active area shall be no closer than two hundred fifty feet (seventy-six meters) to the property line of adjacent land zoned as residential, existing at the time of the purchase of the property containing the active area."

1053 Superfund site which processes organics, rather
1055 than a residential abutter. There seems to be
1057 no operational reason why this land cannot be
1059 used to maximize space, keep disposal costs
1061 lower to King County's tax payers for a longer
1063 period of time, and keep the site operational
1065 and thereby a community resource for a
1067 longer period of time.



New York Landfill Walls

1069 *Planning for Natural Disasters:* While the GBB
1071 Team intuitively understands that there may be
1073 some benefit to reserving "emergency
1074 disposal" capacity at Cedar Hills Landfills, in general, the Team believes that the Waste Export
1075 System Plan and associated planning for the closure of Cedar Hills should proceed without
1076 influence from the emergency management process or potential future disaster debris disposal
1077 capacity. Major natural disasters bring with them federal and state financial reimbursement
1078 which would likely cover between 75 to 100 percent of the cost to process, transport, and
1079 dispose/recycle disaster debris.

1080 The GBB Team does recommend that the County's Solid Waste Division provide the Landfill,
1081 whether closed or active, to the County's emergency management organization as a
1082 staging/processing site in the event of a natural disaster.

1083 *Operations at Cedar Hills Landfill:* The GBB Team members to a person were impressed with the
1084 current supervision and operations of the Cedar Hills Landfill. The compaction being achieved,
1085 clean operations, and care for details showed a level of professional management not always
1086 found at landfills.

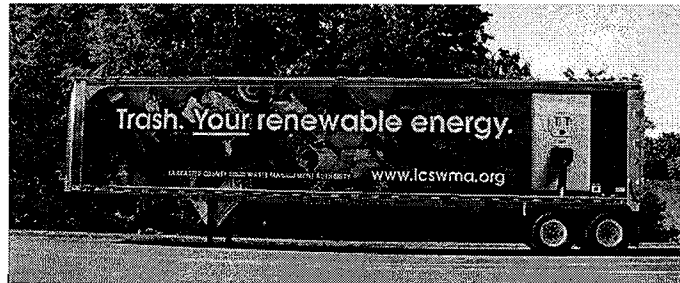
1087 **Clean and Green**

1088 The GBB Team strongly agrees with the Solid Waste Division that the transfer stations need a
1089 make-over. These facilities have been the center piece of a progressive waste management
1090 system that has functioned well for the County since the thousand days of the Kennedy
1091 Administration. The County would be remiss if it did not make these transfer stations the
1092 centerpiece of a new and updated progressive waste management system.

1093 The Waste-Export Plan currently provides little definition and emphasis to designing these
1094 facilities so as to increase diversion, promotes environmental awareness, and separate commercial
1095 from self-haul customers. The new transfer stations should, as an ultimate goal, provide self-
1096 haulers with ample opportunity to separate material for diversion. This should include all the
1097 traditional recyclables (e.g. glass, plastics 1&2, aluminum, all paper) as well as household
1098 hazardous waste, e-waste, textiles, and construction and demolition debris. Self-haulers should
1099 become so accustomed to the options before disposal that they begin to pack their vehicles with
1100 reusables to be unloaded first, recyclables second, and finally refuse.

1101 The County's representatives should be trained and vigilant about spotting and encouraging best
1102 practices among their customers as well as be knowledgeable about other local options for
1103 materials (e.g. Habitat for Humanity). The County should look into partnering with organizations
1104 such as Goodwill and Habitat for Humanity to divert reusables such as textiles, books, and
1105 building materials.

1106 All facilities should have a coordinated
 1107 education that integrates messages,
 1108 information, and color in its signage,
 1109 brochures, call centers, public meetings,
 1110 and public service announcements. The
 1111 message of keeping King County Clean
 1112 and Green should be emphasized.
 1113 Each facility should have a kiosk of
 1115 environmental information that
 1117 customers can use and the employee
 1119 knows. Signage on transfer trailers
 1121 should also be added.



Messages should be integrated and attractive.
 Lancaster County, PA transfer trailer

1122 Since these facilities would be at the center of a new waste management movement, garbage
 1123 should not be the emphasis. These are more “Materials Resource Centers” than “Transfer Stations.”

1124 By placing an emphasis to divert waste to reusable and recyclable ends at its Materials Resource
 1125 Centers and given the United States Supreme Court’s
 1126 recent ruling in the case of *United Haulers Association
 1127 Inc. Et Al. v. Oneida-Herkimer Solid Waste
 1128 Management Authority Et Al.*, which upholds the
 1129 counties’ flow-control ordinances, King County should
 1130 evaluate the prospects of controlling its own material
 1131 and the material generated by its 37 member
 1132 jurisdictions through a Materials Recovery Facility. The
 1133 ramifications of this recent court decision are not fully
 1134 fleshed out, but an opportunity may exist for King
 1135 County that should be fully evaluated.



Office Paper Systems, Inc., Gaithersburg, MD

1136 **Intermodal Issues**

1137 Early Export: King County would benefit in a number of ways by exporting a greater percentage
 1138 of the waste earlier than currently suggested in the Waste-Export Plan. Specifically, it would give
 1139 King County the opportunity to:

- 1140 • Ramp up and refine operations over time, based on experience gained;
- 1141
- 1142 • Postpone, potentially, the need to build an intermodal facility to accommodate a lower
 1143 volume;
- 1144
- 1145 • Spread out capital costs over time (particularly containers);
- 1146
- 1147 • Phase in higher charges to residents of member communities;
- 1148
- 1149 • Go through another procurement for the balance of the volume if the County was not
 1150 satisfied with handling of the tonnage procured as part of the Early Export program; and
 1151
- 1152 • Use the Cedar Hills Landfill longer as a back-up destination in the event preferred
 1153 disposal methods could not be accomplished for brief periods of time. In light of the

1154 paucity of such options likely to be available in the future, the Cedar Hills reserve should
1155 give King County tremendous negotiating leverage with its member jurisdictions as well as
1156 with the City of Seattle, in the event King County determines that it is in its interest to
1157 combine all County waste flows to obtain lower rates and/or better service from its
1158 transportation and disposal providers.
1159

1160 The amount of MSW chosen to export should be based on a volume which equates to an efficient
1161 mode/carrier operating plan. This amount should maximize the use of all assets to be acquired,
1162 not just a volume which equates to a specific, even numbered percentage of the County's then
1163 current waste volume. The cost per ton of operating the Cedar Hills Landfill does not vary nearly
1164 as significantly as volume changes by 10 to 20 percent as will the unit charges assessed by a rail
1165 freight carrier as volume varies. King County should focus on ramping up the volume exported in
1166 increments that equate to maximizing the volume that can be efficiently handled by the fewest
1167 number of heavily loaded trains and containers.

1168 Long Haul Transportation: Railroad negotiations are difficult and must be approached with an
1169 objective to minimize capital cost and multiple sites and ensure rail reliability. The following
1170 points are offered:

- 1171 • Railroad negotiations will be difficult and take a long time to consummate. It is imperative
1172 to split transportation from disposal procurement, at least initially, so that the project cost
1173 elements can be compared and contrasted to inform the Division's negotiating team.
1174 Transportation and disposal can always be combined into one contract with one party
1175 after the Division has achieved its negotiating objectives;
1176
- 1177 • Capital costs can be minimized by avoiding/postponing the construction and operation of
1178 a dedicated, intermodal facility or by sharing the capital costs of any such dedicated,
1179 intermodal facility with another party facing the same capital cost challenge i.e. the City
1180 of Seattle and other unaffiliated jurisdictions;
1181
- 1182 • Multiple intermodal sites only should be considered as necessary to effect competition in
1183 the long haul transportation of waste-by-rail;
1184
- 1185 • Rail transportation is reliable provided it is viewed through the prism of a sufficiently long
1186 time frame. While the freight systems (infrastructures, signal systems, dispatching
1187 protocols, etc.) of the UP and BNSF are sufficiently robust, especially in the Pacific
1188 Northwest, the subject waste-by-rail haul lengths are sufficiently short and the associated
1189 freight revenue to the carriers will be viewed by them as sufficiently modest to result in the
1190 Division's trains likely receiving a low priority dispatch. As a result, the waste will not
1191 move over the rail system like clockwork. Initially, the impact may be limited to the
1192 Division having to supply more containers and chassis than should be necessary. As
1193 volumes grow significantly, or should waste flows be combined with those of Seattle, the
1194 cost and other consequences of inconsistent rail transportation performance will be far
1195 more pronounced; and
1196
- 1197 • Because of its newfound confidence in its general competitive advantage in handling the
1198 commodities it seeks to transport, the railroad industry is increasingly reluctant to make
1199 long term rate and/or service commitments, as manifest in contracts. Therefore, the

1200 Division would be well advised to expect to incur additional capital and operating costs
1201 associated with a waste-by-rail intermodal system.
1202
1203 Rail transportation, with its private rights-of-way, presents a very different competitive
1204 environment than does trucking or water carriage, which utilize public highways and waterways.
1205 In addition, railroad rates are designed to yield whatever the market will bear. The rail carrier
1206 pricing calculus considers the costs incurred in providing transportation, the market value of the
1207 commodity to be transported, and competitive transport options. As a result, shippers of high
1208 volume, low value bulk commodities such as MSW are well advised to take a strategic approach
1209 to potential contracting with railroads. King County, or for that matter any prospective railroad
1210 customer, must recognize that there exists a window of opportunity which, if seized, can impact
1211 future cash flows significantly over the entire economic life of any project it develops or operates.
1212 Once the window of opportunity closes, any railroad customer's leverage to negotiate will decline
1213 significantly while that of its serving railroad(s) will increase.

1214 The freight railroad industry's pricing power has not been this strong since the build up to World
1215 War II and shows no sign of abating between now and any potential commencement date of
1216 MSW export, early or otherwise. Freight railroads are so confident of their competitive
1217 advantages compared with other modes and so sure that motor carriers, in particular, face such
1218 growing and daunting challenges in the future that they are increasingly reluctant to sign the kind
1219 of long-term contracts that typically would be the manifestation of good public policy, assuming a
1220 truly competitive and competent, multimodal procurement had run its course. Therefore, it is
1221 incumbent upon King County to give early, thorough and flexible consideration to the potential
1222 procurement of railroad freight services. Because railroads do not operate in nearly as
1223 competitive an intramodal marketplace as do motor carriers, they quite simply cannot be
1224 expected to respond as quickly to a Request for Proposals as King County's Solid Waste Division
1225 might expect or be accustomed to.

1226 Given that the rail mode emerged as the potential low cost mode in the County's analysis, it is
1227 incumbent upon King County to make sure it builds sufficient time into its procurement calendar to
1228 ensure that both UP and BNSF submit bids. The County also should engage the carriers, helping
1229 them as necessary to ensure that they understand the County's needs and schedule. Thorough
1230 procurement considerations extend both in the direction of considering a joint procurement with
1231 the City of Seattle if it is in both parties' interest to do so and to go to the extra effort to solicit
1232 the provision of the transportation and disposal functions separately, even if King County decides
1233 ultimately to contract with one party for both functions. Flexible procurement considerations
1234 require the recognition that facts and preferences are likely to change significantly between now
1235 and 2028, and even more after that. The railroads may be able to accommodate King County's
1236 MSW at their intermodal yards over the foreseeable future, but eventually price the handling of
1237 MSW through their yards at charges that would justify King County building its own intermodal
1238 yard or sharing one with the City of Seattle. For these and similar reasons, King County would be
1239 well advised to try to keep its options open, which could include leasing out the Harbor Island or
1240 an alternative site until such time as it were needed by the County.

1241 The economics of railroad transportation are such that the higher the volume of MSW to be
1242 tendered within King County, the more competitive the rail mode will be as compared with
1243 trucking, and likewise, the higher the volume, the lower the average unit costs incurred by any
1244 freight railroad. However, the extent to which those lower unit costs get passed on by BNSF or
1245 UP to King County depends upon two principal factors:

1246 1. The degree to which the rail carriers perceive (or can be persuaded to believe) that King
1247 County has a realistic transport option at a lower price over the term of the contract; and

1248 2. The degree to which each rail carrier believes it can make more money for the same or
1249 less effort hauling traffic generated by other customers.

1250 While both railroads have and will continue to have almost an unlimited ability to make such
1251 capital improvements as necessary to increase capacity in small increments, each attempts to
1252 maximize the revenue it can generate at each given level of capacity, as could be expressed in
1253 the number of loaded and empty trains they could handle in each direction each day. King
1254 County and its residents may come to believe that the railroads are seeking to charge too much
1255 per ton, especially given how relatively short the haul would be. However, the railroads look at it
1256 a completely different way. From the railroads' perspective, if there are only so many slots they
1257 can fill in a day, at a given level of capacity, a rail carrier wants to maximize the revenue
1258 generated by each slot (train) whether a train goes 300 miles or 1,500 miles. So, the relatively
1259 short distance that King County's MSW might move over BNSF or UP is essentially competing for
1260 "shelf space" with international intermodal traffic moving between Chicago and Tacoma or grain
1261 moving between Minnesota and Seattle; much greater distances.

1262 It is true that long haul transportation of waste by motor carriers outside of King County traffic
1263 will result in only a negligible increase in overall highway congestion, but sending waste through
1264 the high traffic density Seattle area will cause concern (and upward pricing) on the part of the
1265 railroad(s).

1266 Were multiple intermodal facilities to be used within King County, it would be ideal to build a
1267 transfer station immediately adjacent to a BNSF intermodal facility and another transfer station
1268 immediately adjacent to a UP intermodal facility, particularly if weight restrictions limited the
1269 ability of King County's Solid Waste Division from maximizing the full utility inherent in
1270 compacting MSW. All else equal, the Division should consider the potential advantages of
1271 choosing intermodal facilities at some distance from each other so as to minimize the number of
1272 miles that would be necessary to connect all transfer stations with all intermodal facilities.

IV. Appendices

- 1273 A. Review Methodology and Expert Panel
- 1274 B. Organizational Chart and Experts' Résumés
- 1275 C. GBB Team Questions and Additional Analysis Requests, County Response, and
1276 Additional Documents Provided and Reviewed

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Appendix A

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Review Methodology and Expert Panel

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Ordinance 2006-0263 established a process for an independent, third-party review of critical issues and assumptions identified by various stakeholder members of the federated regional waste management system, and this methodology is responsive to that directive. The RFP identified this review as a high-priority, short timeline project and clearly identified the key questions and data to be reviewed, tasks to be performed, and project communications and local support required to achieve a successful outcome.

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The tasks associated with the review and analysis of King County's system, to render the consensus professional opinion on the Waste Export Plan and the range of questions posed by the County, are delineated in the following paragraphs.

1288

Assemble Panel of Experts

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Table 1 below presents the third-party review panel of experts with a mapping of each to their lead area(s) of expertise for the review project. Brief résumés of these parties are included at the end of this Appendix.

1292

Table 1. Project Team Panel of Experts

Harvey Gershman, GBB	GBB Officer-In-Charge, Quality Control and Client Management
Chace Anderson, GBB	Project Management, Public Education
Tim Bratton, GBB	Rate Analysis, Capital Plan, and Quality Control
Frank Bernheisel, GBB	Recycling Operations, Transfer Station Facility Operations, Waste-to-Energy
Walt Davenport, MSW	Collection Systems
John Culbertson, MSW	Solid Waste System Financial Analysis
Charles Banks, RLB	Waste-by-Rail, Long Haul, Economics
Bob Brickner, GBB	Recycling and Diversion Analysis

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One of the primary strengths of the GBB Team is certain overlap of expertise in the review panel and the willingness of all to engage one another in spirited debate about key issues.

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During the contract negotiations for the third-party review, King County stakeholders suggested the addition of two more experts drawn from municipalities of similar size and similar situation that would add the local government perspective, improve the credibility of the review panel,

1299 and secure an outcome that would achieve consensus. GBB identified the experts shown in Table 2
 1300 from local jurisdictions and approached them about participation. It was decided that these
 1301 experts would be retained directly by the King County Council in order to maintain independence
 1302 and avoid either the appearance or the actuality of any conflict of interest.

1303 **Table 2. Local Jurisdiction Review Experts**

1304 King County officials requested that GBB find two public managers to act as referees on the
 1305 report. King County's Project Manager is coordinating the work of these local government
 1306 reviewers, and their comments will be placed into this document by GBB upon receipt from King
 1307 County.

Gerald M. Newcombe	Associate Administrative Officer and former Director of the Division of Solid Waste Management San Bernardino County, California
Janet Coke, P.E.	Waste-by Rail Division Engineer Solid Waste Management Department Sanitation Districts of Los Angeles County, California

1308

1309 **Review Documents**

1310 The Waste Export Plan is the result of a four-year process, which is documented in an extensive
 1311 range of documents. These documents needed to be reviewed to adequately bring the review
 1312 panel up the curve on King County's transfer and waste export plans. The review panel took a
 1313 two-fold strategy to the review of these documents as part of its analysis. First, four experts
 1314 (Messrs. Gershman, Bratton, Bernheisel and Anderson) were assigned to review all of the
 1315 documents from a global perspective in order to provide overall continuity to the review. Second,
 1316 one or two individual experts were assigned to each document with specific responsibility for
 1317 distilling and drafting an opinion/analysis on the document. These assignments are shown in Table
 1318 3.

1319 **Table 3. Assignment of Documents for Review**

Document	Assigned Expert
Ordinance 14971	Frank Bernheisel, GBB and Charles Banks, RLB
Milestone Report #1	Bob Brickner, GBB
Milestone Report #2	Bob Brickner, GBB
Milestone Report #2 Addendum	Bob Brickner, GBB
Milestone Report #3	Frank Bernheisel, GBB
Milestone Report #4	Frank Bernheisel, GBB

Document	Assigned Expert
Ordinance 2006-0263	Frank Bernheisel, GBB
Draft Supplemental Environmental Impact Statement	Frank Bernheisel, GBB
Rate Forecast and Proposal for the Solid Waste Transfer and Waste Export System	John Culbertson, MSW
Business Plan for the Solid Waste Transfer and Waste Export System	Frank Bernheisel, GBB and Charles Banks, RLB
Solid Waste Facility Siting Plan	Frank Bernheisel, GBB
Recycling and Waste Export Presentation	John Culbertson, MSW
Draft Waste Export System Plan	Frank Bernheisel, GBB and Charles Banks, RLB
Financial Policies	John Culbertson, MSW

1320

1321 The next step entailed four members of the review panel (Messrs. Gershman, Bernheisel,
1322 Davenport and Anderson) making a five-day visit to King County to tour existing transfer station
1323 facilities, the Cedar Hills Landfill, other solid waste facilities, and other solid waste/recycling
1324 points of interest. Direct observation of these facilities, and of the local geography and
1325 neighborhood characteristics, greatly enhanced the review panel's understanding of the King
1326 County solid waste system. During the site evaluations, the Team made presentations to the
1327 Regional Policy Committee, Solid Waste Advisory Committee, the Metropolitan Solid Waste
1328 Management Advisory Committee, and met with members of the King County Solid Waste staff to
1329 learn more about the Division's organization and function. Prior to arriving in King County, an
1330 email was sent to every member of the Solid Waste Advisory Committee ("SWAC") and the
1331 Metropolitan Waste Management Advisory Committee ("MWMAC") making our Team available
1332 for interviews both during the weekday and weekend as well as by phone. Members of the
1333 Team also made site visits to the facilities of local private waste companies.

1334 **Review Questions**

1335 Our strategy for answering the questions is comparable to that used for our review of the related
1336 documents. Table 4 shows the questions to be answered in this report.

Table 4. Questions

Topic	Questions/Issues
Analysis of Projections	1. Analyze waste generation, population and waste reduction and recycling projections and their related impact to sizing transfer system, intermodal system and regional recycling processing infrastructure.
Public Process	2. Are there other methods that would enhance public/stakeholders' participation in the facility siting process?
Transfer Stations Issues and Assumptions	<p>3. Would varying the recycling assumptions alter the number or configuration of planned transfer facilities?</p> <p>4. Should future publicly owned / operated facilities have space for extended recycling activities?</p> <p>5. Do the number and location of transfer stations recommended in the Waste Export System Plan seem appropriate for King County? What changes in demographics could affect the system as configured? Are capital cost estimates in the Plan reasonable?</p> <p>6. What are alternative options for providing compensation to host cities, such as, but not limited to, one time payments, payments based on tonnage, payments based on traffic, payments based on lost revenue? To what do we benchmark host city compensation payments – for example, lost revenue from utility tax or property tax?</p> <p>7. Should self-haul service be provided and, if so, at what levels and how should the cost be covered?</p>
Waste to Energy	8. Understanding that analysis of WTE will take place in the Comp Plan update process – how might including WTE technologies in King County's solid waste strategy affect transfer station or waste export plan recommendations?
Financial Assumptions	9. Review County's economic analysis and assumptions in sensitivity analysis for early waste export and waste withdrawal.
Sustainability	10. Are there models or methods for the transfer of solid waste from the point of generation to final disposal that minimize fossil fuel consumption and air pollution?

1340 **Stakeholder Interviews**

1341 As previously mentioned, four members of the review panel were in King County for the week of
1342 May 7, 2007. During this time, members of the panel conducted face-to-face interviews with key
1343 stakeholders and Solid Waste Division staff. This contributed to an enhanced understanding of
1344 the County objectives and issues for export of solid waste on the part of the review panel
1345 members. These interviews resulted in the identification of additional documents that the review
1346 panel members felt were germane to the review process. Because all of the experts were not
1347 present in King County for the interviews and facility tour, the documents collected, pictures taken
1348 and impressions were shared through conference calls and email.

1349 Site visits by team members to both King County transfer stations and local private facilities were
1350 made to gain a visible sense of the on-the-ground conditions of the solid waste infrastructure King
1351 County implemented and works within.

1352 **Meeting Support**

1353 During the week of May 7, 2007, four members of the Team made presentations to the Regional
1354 Policy Committee, Solid Waste Advisory Committee, and the Metropolitan Solid Waste
1355 Management Advisory Committee. The RFP requires the GBB Team to be available to provide
1356 support for these meetings as it pertains to the intentions of this contract.

1357 **Direct Staff on Additional Analyses**

1358 The members of the review panel identified a number of areas that they felt required additional
1359 analysis. These were formulated as questions or requests and submitted to King County staff.
1360 Specific responses and additional documents were delivered to the review panel and reviewed
1361 by the appropriate panel member or members. The questions and additional analysis request by
1362 the GBB Team and the County staff response, along with the list of additional documents
1363 delivered by the King County staff to the review panel, are provided in Appendix B.

1364 **Reporting**

1365 This task includes the preparation of a draft and final report, summarizing the findings of all
1366 previous tasks. The report is to be written in 'white paper' format with key findings for review by
1367 a wide audience, using bullets, summary paragraphs, and references to more detailed analyses
1368 and/or source documents that were reviewed as part of the project.

1369 The GBB Team will prepare and deliver an electronic copy of a draft report for review by the
1370 County. Upon receipt of comments, the GBB Team will incorporate comments and deliver 10 hard
1371 copies and an electronic copy of the final report in an appropriate format to be determined
1372 jointly by the Consultant and the Metropolitan King County Council project manager.

1373 **Presentations**

1374 Up to three members of the GBB Team will be available for up to three meetings to discuss the
1375 final report. For budgeting purposes, this task allows for the delivery of a final presentation at
1376 up to three meetings (elected officials, SWAC, etc.) to summarize key findings of the project.

1377

Appendix B

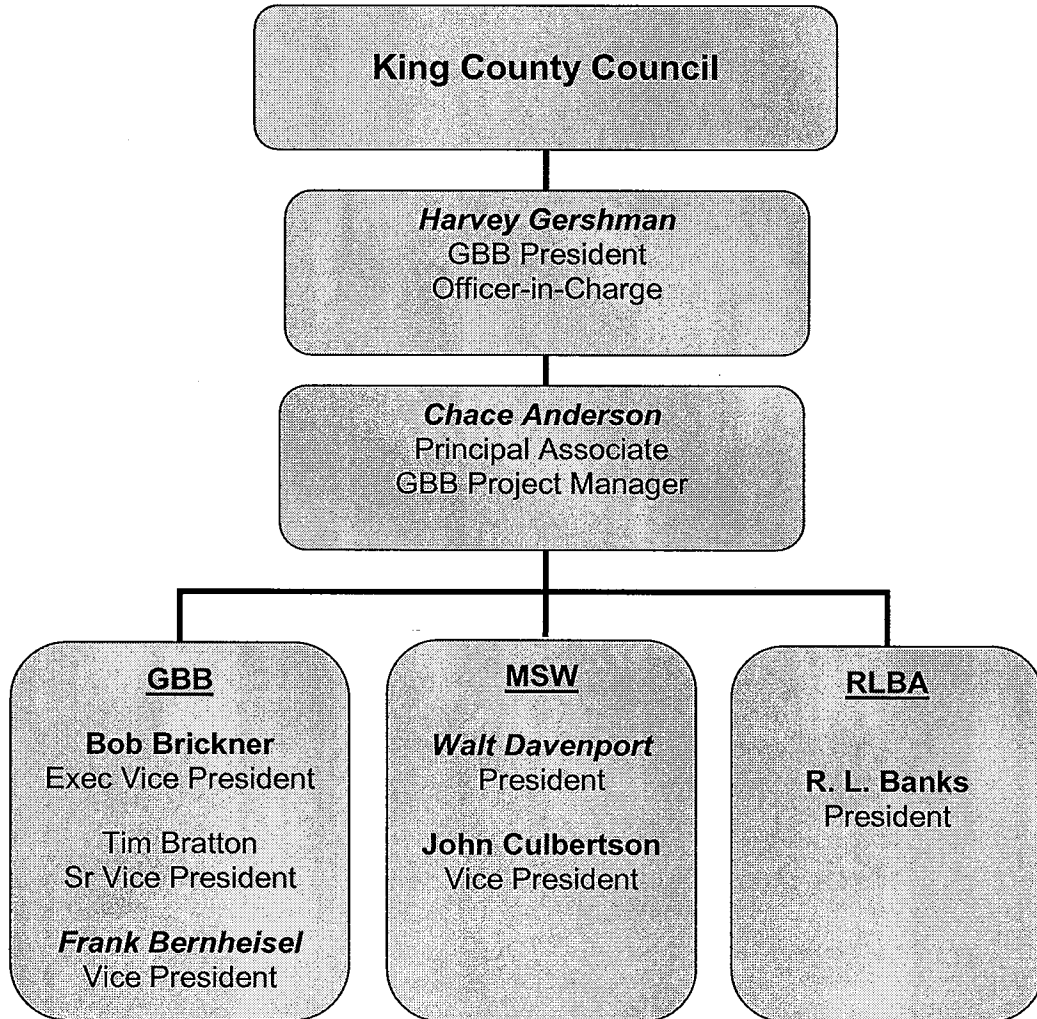
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Organizational Chart, Expert Firms and Experts' Résumés

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The chart below illustrates the organizational structure for the GBB Team. Those names highlighted were members of the site tour in King County during the week of May 7, 2007.

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1382 **Gershman, Brickner & Bratton, Inc., (GBB)**

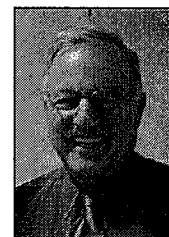
1383 GBB's professional staff includes engineers, planners, economists, environmental scientists, and policy
1384 specialists. Our commitment to excellence, the highest quality work products, and years of proven
1385 experience offer our clients the best results. When making recommendations, GBB maintains its
1386 objectivity by avoiding situations that could create a conflict of interest. GBB is independent of
1387 technology, financing, construction, and operational interests. We have earned our solid reputation by
1388 understanding our clients' needs, and working hard to achieve their goals. Our corporate resources are
1389 committed to implementing economically sound and environmentally sustainable solid waste
1391 management systems. Areas of expertise include the
1393 following:

- 1395 • Solid Waste Management Planning and
1397 Implementation
- 1399 • Landfill Management
- 1401 • Collection and Routing
- 1403 • Full Cost Management
- 1405 • Municipal, Commercial, and Industrial Recycling
- 1407 • Construction Waste and Demolition Debris Recycling
- 1408 • Markets Analysis
- 1409 • Procurement, Evaluation, and Construction, Acceptance, and Operations Monitoring
- 1410 • Community Information, Technical Assistance, and Training
- 1411 • Administrative and Management Evaluations
- 1412 • Waste-To-Energy Project Development
- 1414 • Waste Composition and Quantity Analysis



1416 **Harvey Gershman, President**

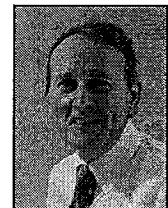
1418 With over thirty years of experience, Mr. Gershman provides strategic advice
1420 on all aspects of waste management including Waste To Energy, Recycling
1422 Operations and Education, and Full Cost Management. His work has been
1424 instrumental in providing successful outcomes in City of Alexandria/Arlington
1425 County, VA; City of Fort Worth Texas; City/Parish of Baton Rouge, LA; Town of Babylon, NY, to
1426 name a few. Mr. Gershman coordinated the development and negotiations for a 975 TPD waste-
1427 to-electricity project to serve the City of Alexandria and Arlington County, Virginia. He
1428 conducted the preparation of a strategic plan of these Jurisdictions relationship with its WTE
1429 contractor, Ogden Martin Systems of Alexandria/Arlington, Inc. Mr. Gershman was the
1430 management consultant to the Northeast Maryland Waste Disposal Authority for its procurement
1431 and development of the 2,250 TPD cogeneration plant to replace the former Pyrolysis Plant in
1432 Baltimore, Maryland. Mr. Gershman was Project Manager on a project leading to the
1433 development, implementation, and management of a District Energy System for the Metropolitan
1434 Area of Nashville and Davidson County, Tennessee. He led not only the strategic planning,
1435 business development, but negotiations with Governor Bredesen's Administration, the Mayor's
1436 Office, a forty-member City Council, and private owners of the major buildings receiving heating
1437 and cooling from this new system.





1438 **Bob Brickner, Vice President**

1439 As with Mr. Gershman, Mr. Brickner is one of the three founders of the organization.
1440 Mr. Robert Brickner, GBB Executive Vice President, has more than 34 years of
1441 experience in the solid waste management field. He is an expert in solid waste
1442 handling systems, including collection and processing equipment, especially equipment costs and
1443 systems analysis. Mr. Brickner is well versed in cost allocation methods and economic/financial
1444 modeling, and life-cycle costing. Mr. Brickner has served as the lead evaluator for GBB on many
1445 systemwide evaluations and vendor solicitations, and as lead negotiator on numerous projects that
1446 have been financed. He has authored independent reports for bond sales and has made
1447 supportive presentations to rating agencies on Wall Street. Mr. Brickner has presented expert
1449 witness testimony at arbitration proceedings and permit hearings on waste-related programs.



1451 **Tim Bratton, Senior Vice President**

1453 Timothy Bratton is a Senior Vice President and co-founder of GBB in 1980. Mr.
1455 Bratton brings substantial expertise in resource recovery and solid and hazardous
1457 waste management to the firm: over 30 years' experience in project planning,
1459 procurement, economic analysis, and financing. He has managed and directed
1460 numerous recycling, resource recovery, and landfill feasibility studies; comprehensive solid waste
1461 management plans, full cost accounting studies, privatization evaluations, and independent cost
1462 analyses; due diligence investigations and environmental site assessments for facility acquisition;
1463 served as a key adviser in the planning and procurement of several modern waste management
1464 facilities now in operation; trained many solid waste professionals; and authored and co-
1466 authored numerous papers, studies, guides, and a book.



1468 **Frank Bernheisel, Vice President**

1470 Frank Bernheisel, GBB Vice President, has over 29 years experience in solid waste
1472 and resource recovery planning and development using the technologies of
1474 recycling, composting, materials recovery, and waste-to-energy. He has managed
1475 a wide range of projects, including program and business planning, feasibility studies, contract
1476 development and negotiation, and engineering. He has extensive experience in the marketing of
1477 products resulting from recovery. Mr. Bernheisel has published extensively and made
1478 presentations to elected officials and professional staff members of federal, state, and local
1479 governments, as well as senior executives of major industrial corporations. In addition, Mr.
1480 Bernheisel has a wide range of experience in many facets of business planning, marketing, and
1481 operations analysis. Prior to his association with GBB, Mr. Bernheisel was Vice President for
1482 Planning of Telemet America, Inc.; Director of Demonstration Programs for the National Center for
1484 Resource Recovery, Inc.; and a scientific staff member of The MITRE Corporation
1486 and Booz-Allen Applied Research, Inc.
1488



1490 **Chace Anderson, Project Manager**

1491 Mr. Anderson has nearly 20 years experience in the solid waste management field from owning
1492 his own recycling collection company to being a Director of Solid Waste and Heavy Equipment
1493 Garage for the Metropolitan Government of Nashville and Davidson County. There he managed
1494 the development and implementation of a solid waste management plan valued at
1495 approximately \$80 million. This plan lowered the annual operating budget from \$33 to \$24
1496 million while also increasing services to the jurisdiction.

1497 **MidAtlantic Solid Waste**

1498 MidAtlantic Solid Waste (MSW) Consultants was formed in 1992 as a direct result of the waste
1499 industry consolidation that took place among private sector waste management companies. Walt
1500 Davenport established the company with an objective to help public and private sector solid
1501 waste organizations intelligently evolve with the industry, meet administrative and financial needs,
1502 improve efficiency, establish effective contracts and apply best practices to their solid waste
1503 management systems. The firm specializes in collection efficiency, collection contract and franchise
1504 procurement services, waste composition and generational analysis, recycling, and financial
1505 analysis.

1506 **Walt Davenport, President**

1507 For over 30 years, MSW Consultants founder and President, Mr. Walt Davenport, has worked in
1508 the public and private sectors of the solid waste management industry as a team leader, technical
1509 expert, operations specialist, and problem solver. His early career in the private sector was
1510 characterized by his ability to increase productivity and profitability, improve customer and
1511 employee satisfaction, and negotiate and manage contracts. Since the early 1990s, Mr.
1512 Davenport has shifted his consulting focus by assisting dozens of state, county, and city clients
1513 across the nation while working as a subcontractor to larger national consulting firms.

1514 **John Culbertson, Vice President**

1515 For 14 years, Mr. Culbertson has provided waste management and information management
1516 consulting services to federal, state, county and city governments and organizations across the
1517 nation. His expertise encompasses all aspects of the waste management industry, including
1518 collection efficiency and routing; transfer and long-haul logistics; solid waste system planning and
1519 strategic analysis; financial analysis and system funding; procurement assistance and contract
1520 negotiations; MRF operations and efficiency; waste stream and waste generation analysis; and a
1521 wide range of information management and statistical analysis. Mr. Culbertson was the lead
1522 database architect and data manager for several large-scale national information management
1523 projects targeting solid waste industry issues, and he has managed technical staff in the design,
1524 development, and implementation of numerous data-intensive and statistical projects.

1525 **R.L. Banks & Associates, Inc.**

1526 R.L. Banks & Associates, Inc., has 50 years of nationwide, railroad economics, cost analysis,
1527 operations planning and engineering analysis and counsel. The firm has significant waste-by-rail
1528 feasibility and implementation experience in San Diego, Salt Lake City, Los Angeles, San
1529 Francisco, Northeast Maryland Waste Disposal Authority, Northern New Jersey, and GE's Hudson
1530 River Superfund Site.

1531 **Charles H. Banks, President**

1532 Mr. Banks has been president since 1985 and has provided passenger service implementation
1533 and railroad line access counsel to more than a dozen clients. On behalf of seven public sector
1534 clients including the Los Angeles, Orange and Riverside County Transportation Commissions, and
1535 the Maryland MTA, Mr. Banks has completed or is presently undertaking or directing prospective
1536 line sale tasks including evaluating alternative access arrangements, valuations and title research.
1537 In the eleven years before joining RLBA, Mr. Banks was responsible for intercity, commuter rail
1538 and joint terminal operations at the United States Railway Association, and worked in the
1539 Strategic Planning and Finance Departments at Conrail, the Executive Department at SP and two
1540 other carriers.

Appendix C

GBB Team Questions and Additional Analysis Requests, County Response, and Additional Documents Provided and Reviewed

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1546 **ADDITIONAL DOCUMENTS EVALUATED:** When the GBB Project Team made site visits in early
1547 May 2007, it requested further documents from the Solid Waste Division. These documents were
1548 distributed to team members and reviewed for inclusion in the answers to King County's ten
1549 questions. These documents were:

- 1550 • Solid Waste Rate Study, 2005-2006 March 2004
- 1551 • "Fund Balance" (pages)
- 1552 • "A Practical solid Waste Tipping Fee Development Model" Thomas T. Karton
- 1553 • "Houghton Transfer Station History" – May 2007
- 1554 • Executive Proposed: Solid Waste Disposal Fees 2008-2010
- 1555 • Solid Waste Division 2007 Adopted Budget January 2007
- 1556 • 2006 Facility Master Plan Update Bow Lake Transfer/Recycling Station February 2007
- 1557 • D.9. Rate Forecast/Proposal – Waste Trans & Waste Ex. System
- 1558 • D.8. Draft Supplemental Environmental Impact Statement
- 1559 • Final 2001 Comprehensive Solid Waste Management Plan 2001
- 1560 • D.12. Recycling & Waste Export System Plan
- 1561 • D.11. Solid Waste Facility Siting Plan
- 1562 • Final Supplemental Environmental Impact Statement Sept 2006
- 1563 • D.1. Ordinance 14971
- 1564 • D.2. Milestone Report #1
- 1565 • D.3. Milestone Report #2
- 1566 • Black River Recycling and Transfer Station rate schedule
- 1567 • Solid Waste Transfer and Waste Export System Plan Sept 2006
- 1568 • D.4. Milestone Report #2 Addendum
- 1569 • D.4. Milestone Report #3
- 1570 • D.6. Milestone Report #4
- 1571 • D.7. Ordinance 2006-0263
- 1572 • Estimated Per Ton Cost
- 1573 • Solid waste division financial Plan
- 1574 • Solid waste rate comparison
- 1575 • "Rabanco Brochure"

1576 • Monitoring Program: Construction and Demolition Waste Characterization and Recycling
1577 Industry Profile
1578

1579 **COUNTY RESPONSE:** Upon reviewing the documents and visiting the sites, a list of questions was
1580 provided to King County's Solid Waste Division. The Solid Waste Division responded to the
1581 questions in the memorandum on the following pages.