



# King County<sup>se</sup>

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## MEMORANDUM

DATE: June 16, 2008

TO: King County Council Capital Budget Committee

FROM: Cheryle A. Broom, <sup>CB</sup> County Auditor

SUBJECT: Oversight Monitoring Consultant Review of the Brightwater Cost Update, 2008 Trend Report

Attached is the R.W. Beck (the Oversight Monitoring Consultant [OMC]) review of the Wastewater Treatment Division's (WTD) annual *Brightwater Cost Update, Current Conditions and Trends, January 2008* (2008 Trend Report). 2008 Trend Report was transmitted to the entire council by the executive on May 12, 2008. Highlights of the Beck review are complementary to and summarized in the June 2008 OMC quarterly construction status report, which will be presented to the council during the June 18<sup>th</sup> Capital Budget Committee meeting.

Briefly, the OMC report provides an analysis of the WTD's current Brightwater total program cost estimate compared to WTD's 2004 baseline budget and 2007 trend estimate. WTD's updated 2008 Trend Report estimate is \$1.802 billion. This estimate reflects a \$35 million (2 percent) increase over the 2007 trend estimate with increases in the Brightwater Treatment Plant of \$35.5 million and a \$.5 million offsetting decrease in the Conveyance costs.

The OMC review questions several elements of WTD's estimates and provides an update to its 2007 cost estimate showing overall Brightwater program costs at \$1.843 to \$1.849 billion, or \$41 to \$47 million higher than WTD's 2008 trend estimate. Based on the OMC's analysis, WTD's 2008 trend estimate likely understates the overall conveyance project costs between \$15 and \$17 million. The OMC's estimate reflects higher conveyance project contingency, staffing, and consultant costs given the risks associated with potential delays and required integration and tight sequencing of five construction contracts. The OMC also indicates that the treatment plant costs are likely to be \$26 to \$30 million higher than WTD's 2008 trend estimate due to their opinion of the need for higher treatment plant construction contingency, reduction in the buyout savings proceeds, and higher "end of job" staff and consultants expenses.

The Capital Projects Oversight staff will continue to work with the OMC and WTD to consider these factors and how they influence the total program costs during construction of the Brightwater project. Please contact Tina Rogers, the Capital Projects Oversight Manager, or me, if you have any questions or comments.

CB:TR:SB:yr

Attachment: Brightwater Project Construction Phase Oversight Monitoring Consultant Review of January 2008 Brightwater Cost Update--Current Conditions and Trends

cc: Metropolitan King County Councilmembers  
Ron Sims, County Executive  
Theresa Jennings, Director, Department of Natural Resources and Parks (DNRP)  
Christie True, Division Director, Wastewater Treatment Division, DNRP  
Bob Cowan, Budget Director, Office of Management & Budget (OMB)  
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David Jochim, Vice President, R.W. Beck, Inc.  
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Saroja Reddy, King County Council Policy Staff Director  
Mark Melroy, Senior Principal Legislative Analyst, King County Council  
Capital Budget Committee  
Beth Mountsier, Senior Principal Legislative Analyst, King County Council  
Regional Water Quality Committee

Brightwater Project Construction Phase  
Oversight Monitoring Consultant  
Review of January 2008 Brightwater  
Cost Update – Current Conditions and  
Trends

King County  
Brightwater Project Oversight Services  
Contract No. P43024



In association with





# Brightwater Project Construction Phase Oversight Monitoring Consultant Review of January 2008 Brightwater Cost Update – Current Conditions and Trends

King County  
Brightwater Project Oversight Services  
Contract No. P43024



In association with





Brightwater Project Construction Phase  
Oversight Monitoring Consultant Review of  
January 2008 Brightwater Cost Update – Current Conditions and Trends

Final as of June 16, 2008

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This report has been prepared for the use of the client for the specific purposes identified in the report. The conclusions, observations and recommendations contained herein attributed to R. W. Beck, Inc. (R. W. Beck) constitute the opinions of R. W. Beck. To the extent that statements, information and opinions provided by the client or others have been used in the preparation of this report, R. W. Beck has relied upon the same to be accurate, and for which no assurances are intended and no representations or warranties are made. R. W. Beck makes no certification and gives no assurances except as explicitly set forth in this report.

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# Brightwater Project Construction Phase Oversight Monitoring Consultant Review of January 2008 Brightwater Cost Update – Current Conditions and Trends

Final as of June 16, 2008

## Introduction

This report is the Oversight Monitoring Consultant's (OMC) review of cost information presented in Wastewater Treatment Division's (WTD's) report titled *Brightwater Cost Update, Current Conditions and Trends, January 2008 (2008 Trend Report)*. The *2008 Trend Report* was provided for OMC review on April 30, 2008. In this report, OMC provides a revised estimate of the total project cost. In completing this review, OMC focused on the following key questions:

- For Conveyance, are reductions in Project Contingency and assumed staffing/consultant levels reasonable given the need to integrate five contracts and potential delay risk issues?
- For Treatment:
  - Is the 2008 Trend Report estimate reasonable especially the change in construction contingency for solids, buyout assumptions, and “end of job” (ramp down) estimates for staff and consultant effort?
  - Is the total amount of the Project Contingency reasonable?

The OMC review considers the *2008 Trend Report's* projections for Conveyance and Treatment separately as set forth below. First, the OMC summarize background information related to WTD's Baseline Budget and cost reporting categories.

## Background

### **BASELINE BUDGET**

WTD's Baseline Budget was developed at an overall design stage of approximately 25 to 30 percent, although certain components were at a lesser stage of design. The Baseline Budget was presented in two different forms:

- **2004 Constant Dollar Baseline (\$2004 Baseline).** In every year, annual expenditures were assumed to be priced as if they were occurring in 2004. This way of presenting engineering estimates for capital project construction is standard in the industry (i.e. estimates are prepared based on quantities and unit prices that are current at the time the estimates are prepared). However,

actual construction bids include the contractor's allowance for escalation (roughly approximated by expected escalation to the mid point of construction), and certain other costs (i.e. staffing) are not typically reported in constant year dollars. As a result, the overall Brightwater Project Baseline Budget in \$2004 (\$1.48 billion) is not directly comparable to actual expenditures that will be incurred over time.

- **Nominal Dollar Baseline** (referred to as “2004 Baseline with Inflation” in WTD reports). To arrive at a baseline that more closely approximates what actual expected costs will be in the years incurred, WTD escalated its estimated cash flow in constant \$2004 using inflation rates of three percent and five percent per year. The adopted Baseline Budget (nominal \$) was set based on a three percent escalation rate, and corresponds to what WTD thought actual expenditures would total over time assuming three percent inflation. ***For the purposes of the review of WTD’s 2008 Trend Report, the OMC have used this Nominal \$ Baseline Budget and are including costs at both three percent and five percent annual inflation rates.***

## 2007 TREND REPORT

WTD’s *Brightwater Cost Update, Current Conditions, and Trends*, January 2007 (*2007 Trend Report*). The *2007 Trend Report* contained revised cost estimates at a point when most of conveyance construction work was contracted, but most of the treatment plant construction work had not been contracted. WTD presented its estimate of actual expenditures for the entire project over time assuming three percent inflation. The cost reporting format in the *2007 Trend Report* differed from that of the Baseline Budget, and one of OMC’s 2007 recommendations was to create a revised cost reporting format and restate the baseline budget for consistency with this format. WTD revised its cost reporting format for the *2008 Trend Report*.

## 2008 TREND REPORT COST CATEGORIES

WTD’s 2008 Trend Report contains separate estimates for Conveyance and the Treatment Plant. Each estimate is disaggregated into several categories, as follows:

- **Construction Costs.** This represents the direct cost of developing facilities. Major categories presented under *Construction Costs* include: *Implementation / Construction Contracts*, *Contingency (Construction)*, *Sales Tax*, *Owner Furnished Equipment and Materials*, *Outside Agency Implementation / Construction*, and *Other Capital Charges*. Some notes regarding sub-categories within *Construction Costs* are below:
  - **Construction Contracts.** This is one of two subcategories of *Implementation/Construction Contracts*, and it represents the expected value of construction work (except for that associated with mitigation) at

the time of contract execution, plus the value of executed change orders through December 31, 2007. *Construction contracts* does not include non-Brightwater facilities (such as certain reclaimed water facilities) that were included in the construction bids for certain construction contracts.

- **Construction Mitigation Contracts.** The other subcategory of *Implementation/Construction Contracts*, this represents the cost of mitigation directly tied to facility construction. Examples include construction of the North Mitigation Area and construction of the Environmental Education Community Center (EECC). It also includes WTD's estimate of extra mitigation installed at the construction sites. For example, at the Treatment Plant Site, WTD is installing more extensive landscaping and surface water management facilities than are required by building code. The costs above and beyond the costs estimated to meet code requirements are budgeted under *Construction Mitigation Contracts*.
- **Construction Contingency.** This represents a percentage, applied to the estimated value for *Implementation/Construction Contracts* to cover construction-related risks on that particular contracts, changes in scope during construction and owner-assumed risks, less the value of executed change orders as of December 31, 2007.
- **Non-Implementation / Construction.** This represents all of the supporting costs associated with development of the Brightwater Project. Major budget categories included: Engineering Services, Professional and Management Services; Permitting and Other Agency Support; Rights-of-Way; Miscellaneous Services and Materials, and Staff Labor. Most of the non-implementation budget is associated with Engineering, Professional, and Consulting Services, Permitting and Other Agency Support, and Staff Labor.
- **Project Contingency.** This contingency is a separate budget category intended to cover non-construction risks and risks associated with integration of contracts..

## Conveyance

### COST COMPARISON

The following table compares the Baseline Budget, the *2007 Trend Report*, and WTD's updated estimate in the *2008 Trend Report*. Cost categories reflect those provided in the 2008 Trend Report, and the Baseline Budget and *2007 Trend Report* estimates have been restated by WTD.

**Table A-1  
Comparison of Baseline Budget with 2007 and 2008 Trend Reports –  
Conveyance**

Conveyance Project Cost Categories	Baseline Budget <sup>(1)</sup> (\$ Nominal, 3% Inflation)	Baseline Budget <sup>(1)</sup> (\$ Nominal, 5% Inflation)	2007 Trend Report <sup>(1)</sup> (\$Nominal)	2008 Trend Report (\$Nominal)
<b>Construction Costs</b>				
Construction Contracts	\$580.4M	\$630.5M	\$550.1M	\$570.4M
Construction Mitigation Contracts	\$4.8M	\$5.2M	\$6.1M	\$3.3M
Construction Contingency	\$61.9M	\$70.2M	\$72.7M	\$68.6M
Sales Tax	\$57.5M	\$62.8M	\$55.8M	\$57.2M
Owner Furnished Equipment and Mats	\$0.1M	\$0.1M	\$0.1M	\$0.7M
Outside Agency Implementation/Const.	\$0.0M	\$0.0M	\$5.1M	\$6.0M
Other Capital Charges	\$0.0M	\$0.0M	\$0.6M	\$0.2M
<b>Construction Costs Subtotal</b>	<b>\$704.8M</b>	<b>\$768.7M</b>	<b>\$707.7M</b>	<b>\$723.5M</b>
<b>Non-Construction</b>				
Engineering Services	\$87.3M	\$91.3M	\$75.5M	\$76.8M
Planning and Management Services	\$60.5M	\$63.3M	\$57.6M	\$53.8M
Permitting and Other Agency Support	\$22.1M	\$22.8M	\$13.3M	\$10.9M
Right-of-Way	\$21.2M	\$21.5M	\$18.9M	\$19.0M
Miscellaneous Services and Materials	\$4.8M	\$5.0M	\$5.3M	\$5.5M
Staff Labor	\$30.4M	\$31.8M	\$31.0M	\$31.2M
<b>Non-Construction Subtotal</b>	<b>\$226.3M</b>	<b>\$235.6M</b>	<b>\$201.6M</b>	<b>\$197.2M</b>
<b>Project Contingency</b>	<b>\$89.5M</b>	<b>\$101.1M</b>	<b>\$18.2M</b>	<b>\$6.2M</b>
<b>CONVEYANCE TOTAL<sup>(2)</sup></b>	<b>\$1,020.6M</b>	<b>\$1,105.5M</b>	<b>\$927.5M</b>	<b>\$926.9M</b>

Notes:

1. Cost categories are consistent with the 2008 Trend Report and differ from the cost categories in the Baseline Budget and the 2007 Trend Report.
2. Totals may not add up due to rounding. Equals the total of conveyance costs in Table 8 of the 2008 Trend Report, and is based on data in Appendix C of the 2008 Trend Report.

WTD's *2008 Trend Report* estimate for Conveyance remained essentially unchanged. The OMC review of this estimate focused on identifying changes from the *2007 Trend Report* to the *2008 Trend Report*, and evaluating the reasonableness of WTD's assumptions regarding future expenses. Attention was focused on the following cost categories:

- Construction Contracts
- Construction Contingency
- Engineering Services, Planning, and Management Services
- Staff Labor
- Project Contingency

In aggregate, these categories account for over 85 percent of WTD's estimated conveyance project cost.

## CONSTRUCTION CONTRACT COSTS

### Changes Since 2007 Trend Report

Nearly all of the Conveyance projects are under contract for construction, representing approximately 99 percent of the Conveyance construction contract costs. The cost reported in the *2008 Trend Report* is \$20.3 million higher than the *2007 Trend Report*, primarily because of the following:

- **Influent Pump Station (IPS) construction contract.** The IPS construction bid was not included in the *2007 Trend Report*, and was approximately \$20.0 million higher than WTD's estimate in the *2007 Trend Report*.
- **Marine Outfall design-build proposal.** The design-build proposal for the Marine Outfall was approximately \$4.4 million less than WTD's estimate in the *2007 Trend Report*.
- **Executed change orders through 12/31/07.** As of 12/31/07 (the "snapshot in time" for the *2008 Trend Report*), executed Conveyance change orders totaled approximately \$5.3M. WTD included these executed change orders as construction costs and correspondingly reduced the construction contingency.

### OMC 2008 Review

The OMC thinks that WTD's construction costs in the *2008 Trend Report* are reasonable and accurately reflect the status of the construction contracts as of December 31, 2007.

## CONVEYANCE CONSTRUCTION CONTINGENCY

### Changes Since 2007 Trend Report

In its 2007 and 2008 Trend Reports, WTD estimated the construction contingency separately for each construction contract as a percent of construction cost. WTD's 2008 construction contingency ranges from 9 percent of construction for the Marine Outfall to 15 percent of construction for the IPS and Central Tunnel. WTD has applied different contingency percentages to the various pieces of construction work, reflecting WTD's estimation of the level of risk for each contract. The only change from the *2007 Trend Report* in construction contingency as a percentage of construction is a decrease in the Marine Outfall contingency from 10 percent to 9 percent.

The dollar amount of the Conveyance construction contingency in the *2008 Trend Report* is lower than in the *2007 Trend Report*. This is primarily due to the approximately \$5.3 million in executed change orders through December 31, 2007, which shifts dollars from the construction contingency category to the construction contracts category.

### OMC 2008 Review

In 2007, the OMC gave an opinion that the estimate of Conveyance construction contingencies, on a percentage basis, reasonably reflects the expected level of risk. Based on a review of project developments to date (including requested change orders where issues have been identified but final costs have not yet been negotiated), the OMC thinks that WTD's Conveyance construction contingency estimates on a percentage basis continue to be reasonable.

Although the 2008 Trend Report is based on data through December 31, 2007, OMC reviewed change order data through March 31, 2008 in preparing its review. Through March 31, 2008, Conveyance construction progress is approximately 33 percent (measured as percent of contract value earned by contractors) while executed Conveyance change orders are approximately 12 percent of WTD's construction contingency.

## ENGINEERING, PLANNING, AND MANAGEMENT SERVICES

### Changes Since 2007 Trend Report

Although reported separately by WTD, Engineering Services and Planning and Management Services are combined for this analysis because combined, they represent the professional services required during design, construction, and startup.

Conveyance Engineering, Planning, and Management Services costs in the 2008 Trend Report are approximately \$2.5 million (or 1.9 percent) lower than the

2007 Trend Report. To arrive at its 2008 estimate, WTD prepared an estimate of remaining Engineering Services costs. The reasons for this change are not explicitly reported in the 2008 Trend Report, but appear to be primarily related to:

- Update of planning-level estimates that appeared in past WTD estimates with actual costs incurred to date.
- Decrease in legal services during construction
- Some additional 2011 expenses to accommodate anticipated delays in collection system construction.

### OMC 2008 Review

OMC believes there is a risk that Engineering, Planning, and Management Services costs will be higher than projected by WTD. This reflects that the OMC thinks that WTD likely underestimated end-of-job costs for consultants.

## **KING COUNTY STAFF**

### Changes Since 2007 Trend Report

2008 Trend Report estimate is less than one percent higher than the estimate in the 2007 Trend Report.

### OMC 2008 Review

OMC believes that WTD has likely underestimated end-of-job staff costs for the completion of construction, testing, and startup, based on current schedule projections.

## **CONVEYANCE PROJECT CONTINGENCY**

### Changes Since 2007 Trend Report

WTD has reduced the project contingency from \$18.2 million to \$6.2 million. In the 2008 Trend Report, WTD notes the Project Contingency would cover changes in future non-construction costs, and additional construction contingency if needed.

### OMC 2008 Review

In 2007, the OMC concluded that WTD's \$18.2 million contingency was reasonable given risks associated with integration of the various construction contracts, the potential for extreme events during tunneling that would not be covered by the construction contingencies, and other risks associated with property acquisition and permitting.

With the exception of permitting, these risk factors, especially given the current schedule situation with the three tunnel contracts and the IPS, continue. Specifically, the cost associated with the Paramount Property is not yet known, and there is remaining uncertainty over specific mitigation funding sources for implementing the terms of WTD's settlement agreement with the Lake Forest Park Water District. WTD intends to balance any increased mitigation costs associated with this settlement with a reduction in mitigation costs elsewhere, but has not yet identified the specific reduction in other mitigation costs. Therefore, the OMC believes it would be prudent not to reduce the Conveyance project contingency at this time.

## **CONCLUSIONS – CONVEYANCE COSTS**

Overall, Brightwater Conveyance has tracked very closely with the Baseline Budget (excluding contingencies) and the 2007 Trend Report estimates. Based on the OMC opinion that the 2007 project contingency remains prudent, the OMC currently believes that the 2008 Trend Report likely understates Conveyance costs by \$15 to \$17 million. OMC's estimate of Conveyance project costs based on review of WTD's 2008 Trend Report is between \$942 million and \$944 million.

## Treatment Plant

### **COST COMPARISON**

Table A-2 compares the Baseline Budget, the *2007 Trend Report*, and WTD's updated estimate in the *2008 Trend Report*. Cost categories reflect those provided in the 2008 Trend Report, and the Baseline Budget and *2007 Trend Report* estimates have been restated by WTD.

**Table A-2  
Comparison of Baseline Budget with 2007 and 2008 Trend Reports – Treatment Plant**

Treatment Plant Project Cost Categories	Baseline Budget <sup>(1)</sup> (\$ Nominal, 3% Inflation)	Baseline Budget <sup>(1)</sup> (\$ Nominal, 5% Inflation)	2007 Trend Report <sup>(1)</sup> (\$Nominal)	2008 Trend Report (\$Nominal)
<b>Construction Costs</b>				
Construction Contracts	\$296.5M	\$323.4M	\$390.7M	\$409.3M
Construction Mitigation Contracts	\$31.1M	\$33.0M	\$23.7M	\$25.8M
Construction Contingency	\$31.6M	\$35.7M	\$38.3M	\$33.1M
Sales Tax	\$24.9M	\$27.2M	\$30.2M	\$35.4M
Owner Furnished Equipment and Matls	\$0.0M	\$0.0M	\$31.2M	\$28.5M
Outside Agency Implementation/Const.	\$0.0M	\$0.0M	\$4.6M	\$6.8M
Other Capital Charges	\$0.0M	\$0.0M	\$2.7M	\$2.5M
<b>Construction Costs Subtotal</b>	<b>\$384.1M</b>	<b>\$419.4M</b>	<b>\$530.7M</b>	<b>\$550.9M</b>
<b>Non-Construction</b>				
Engineering Services	\$50.3M	\$54.5M	\$66.2M	\$76.5M
Planning and Management Services	\$23.4M	\$24.1M	\$26.3M	\$27.7M
Permitting and Other Agency Support <sup>(2)</sup>	\$24.7M	\$25.6M	\$84.5M	\$84.3M
Right-of-Way	\$103.3M	\$104.5M	\$107.3M	\$105.3M
Miscellaneous Services and Materials	\$4.7M	\$4.9M	\$4.5M	\$4.7M
Staff Labor	\$25.9M	\$27.3M	26.8M	\$27.0M
<b>Non-Construction Subtotal</b>	<b>\$235.0M</b>	<b>\$240.9M</b>	<b>\$315.7M</b>	<b>\$325.6M</b>
<b>Project Contingency</b>	<b>\$31.2M</b>	<b>\$35.3M</b>	<b>\$4.0M</b>	<b>\$2.0M</b>
<b>Credits and Revenues</b>	<b>-\$10.8M</b>	<b>-\$11.3M</b>	<b>-\$10.6M</b>	<b>-\$3.2M</b>
<b>TREATMENT PLANT TOTAL<sup>(3)</sup></b>	<b>\$639.6M</b>	<b>\$684.4M</b>	<b>\$839.8M</b>	<b>\$875.3M</b>

Notes:

1. Cost categories are consistent with the 2008 Trend Report and differ from the cost categories in the Baseline Budget and the 2007 Trend Report.
2. Includes mitigation payments, which are estimated in the 2008 Trend Report to total \$74.3 million.
3. Totals may not add up due to rounding. 2007 Trend Report value equals the total of treatment plant costs in Table 7 of the 2008 Trend Report, and is based on data in Appendix B of the 2008 Trend Report.

WTD's 2008 Trend Report estimate for the Treatment Plant represents an increase of \$35.5 million (+4.2 percent). The OMC review of this estimate focused on identifying changes from the 2007 Trend Report to the 2008 Trend Report, and evaluating the reasonableness of WTD's assumptions regarding future expenses. As with Conveyance, attention was focused on the following cost categories:

- Construction Contracts
- Construction Contingency
- Engineering Services, Planning, and Management Services
- Staff Labor
- Project Contingency
- Credits and Revenues

In aggregate, these categories account for approximately two-thirds of WTD's estimated Treatment Plant project cost. Other significant project costs elements are for permitting and right-of-way (land purchases/easements) which total approximately \$190 million (21.7 percent of Treatment Plant project cost) and have already largely been expended.

## CONSTRUCTION CONTRACTS

### Changes Since 2007 Trend Report

Total construction contracts (excluding mitigation construction) have increased from the 2007 Trend Report estimate of \$390.7 million to \$409.3 million. This increase is primarily the result of the following factors:

- **Liquids Guaranteed Construction Cost (GCC).** In 2007, the GCC was negotiated with the General Contractor/Construction Manager (GC/CM) Contractor (Hoffman). The GCC was higher than estimated by WTD in its 2007 Trend Report.
- **Subcontractor Buyout Results.** Subcontractor buyout is a step in the GC/CM process where construction work is competitively bid to subcontractors. To date, subcontractor buyout is nearly 90 percent complete and the results have been favorable to WTD. That is, the cumulative subcontractor bids are below the negotiated GCC with Hoffman by about \$28 million. The County's GC/CM contract with Hoffman specifies that after 90 percent of the subcontractor buyout is complete, Hoffman will transfer 90 percent of the buyout savings to the County and retain up to ten percent of the buyout savings. Upon contract completion, they will transfer the remaining buyout savings to the County. WTD assumed 100 percent of the current savings would be returned to the County.
- **Solids Bid Results.** Construction services for the Solids facilities were bid and awarded in 2007. The contract amount was approximately \$11.5 million higher than estimated by WTD in its 2007 Trend Report.

- **Executed change orders through 12/31/07.** As of 12/31/07, (the “shapshot in time” for the 2008 Trend Report) executed Treatment Plant change orders totaled approximately \$2.3M. WTD included these executed change orders as construction costs and correspondingly reduced the construction contingency.

## OMC 2008 Review

The OMC's opinion is WTD's construction costs in the *2008 Trend Report* are generally reasonable and accurately reflect the status of the construction contracts as of December 31, 2007. However, WTD's assumption that 100 percent of current buyout savings return to the County may be optimistic given the existing contract language.

## CONSTRUCTION CONTINGENCY

### Changes Since 2007 Trend Report

In its 2007 and 2008 Trend Reports, WTD estimated the construction contingency separately for liquids and solids as a percent of construction cost. The Liquids construction contingency in the *2008 Trend Report* is approximately 8.3 percent of construction cost (equal to GCC after buyout savings returned to the County). On a percentage basis, this is unchanged from the *2007 Trend Report*.

The Solids construction contingency has been reduced from approximately 10.7 percent of construction in the *2007 Trend Report* to 7.5 percent of construction in the 2008 Trend Report. WTD staff report that this reduction is because site work completed to date has reduced the risks of unforeseen site conditions for the solids construction contractor.

The total dollar amount of the Treatment Plant construction contingency (liquids and solids) in the *2008 Trend Report* is approximately \$5.2 million lower than in the *2007 Trend Report*. This is primarily due to (1) the reduction in the Solids construction contingency, and (2) the executed change orders of approximately \$2.5 million through December 31, 2007 which WTD considers construction costs.

As of March 31, 2008, Treatment Plant construction progress is approximately 15 percent (measured as percent of contract value earned by contractors) while executed Treatment Plant change orders are approximately 4 percent of WTD's construction contingency.

## OMC 2008 Review

As noted by WTD, a substantial amount of the site work has already been completed, and some reduction in the construction contingency is appropriate. However, at this point, OMC recommends maintaining Solids construction contingency of 8 percent to 10 percent.

## ENGINEERING, PLANNING, AND MANAGEMENT SERVICES

### Changes Since 2007 Trend Report

Similar to Conveyance, Engineering Services and Planning and Management Services costs are combined for this analysis. Treatment Plant Engineering, Planning, and Management Services costs in the *2008 Trend Report* are approximately \$11.7 million (or 12.6 percent) higher than the *2007 Trend Report*. To arrive at its 2008 Trend Report estimate, WTD prepared an estimate of remaining Engineering Services costs through completion of the project. The reasons for this change are not explicitly reported in the *2008 Trend Report*, but appear to be primarily related to:

- WTD's 2008 estimate for engineering services during construction is based on a negotiated contract and is higher than its 2007 estimate which was made prior to contract negotiation.
- Decrease in legal services during construction
- Some additional 2011 expenditures to accommodate expected delays in Treatment Plant startup and commissioning.

### OMC 2008 Review

As with Conveyance, OMC believes that Engineering, Planning, and Management Services costs will be higher than projected by WTD. This reflects the OMC's opinion that WTD likely underestimated the level of effort that will be required at the end-of-job.

## KING COUNTY STAFF

### Changes Since 2007 Trend Report

The 2008 Trend Report estimate is less than one percent higher than the estimate in the 2007 Trend Report.

### OMC 2008 Review

OMC believes that WTD has likely underestimated end-of-job staff costs for the completion of construction, testing, and startup, based on current schedule projections.

## **TREATMENT PLANT PROJECT CONTINGENCY**

### Changes Since 2007 Trend Report

WTD has reduced the Treatment Plant project contingency from \$4.0 million to \$2.0 million. In the 2008 Trend Report, WTD notes the Project Contingency would cover changes in future non-construction costs and additional construction contingency, if needed.

### OMC 2008 Review

In 2007, OMC stated it would be prudent to increase the Treatment Plant project contingency from WTD's 2007 estimate of \$4 million to \$22 million to cover site coordination, instrumentation and control systems integration, and other risks. In the OMC's opinion, these risks remain, and the delay risks associated with Treatment Plant startup and commissioning are increasing due to delays in the three tunnel contracts. In addition, in 2007, WTD entered into an agreement to purchase the membrane equipment directly from the vendor instead of purchasing the equipment through the GC/CM contractor. WTD's agreement with the vendor provides the vendor to recover inflationary cost increases between April 1, 2008 and the date of equipment delivery, based on changes in the Producer Price Index. Given these risks, the OMC continues to recommend this higher project contingency.

## **CREDITS AND REVENUES**

### Changes Since 2007 Trend Report

The Brightwater Project cost includes credits and revenues associated with the purchase and relocation of the Stockpot Soup Company. In 2007, WTD estimated that revenues from property rental and sale of production equipment would be approximately \$10.6 million. WTD's 2008 Trend Report estimate of this revenue has been decreased by \$7.4 million to \$3.2 million, resulting in a corresponding increase in Treatment Plant costs of \$7.4 million. WTD reports that this change is due to lower than expected revenues from the sale of Stockpot production equipment.

### OMC 2008 Review

No adjustments to WTD's 2008 Trend Report estimates of Credits and Revenues has been made.

## **CONCLUSIONS – TREATMENT PLANT COSTS**

Overall, WTD's cost estimate in the 2008 Trend Report captures changes in construction cost estimates as major portions of the treatment plant enter the construction phase. OMC believes that the 2008 Trend Report likely underestimates Treatment Plant costs by approximately \$26 million to \$30 million.

OMC's estimate of Treatment Plant costs based on review of WTD's 2008 Trend Report is between \$901 million and \$905 million.

## Revised OMC Cost Estimate

Table A-3 summarizes the revised OMC cost estimate for the Brightwater Project, based on review of WTD's 2008 Trend Report. The estimated total project cost is \$1,843 million to \$1,849 million, which is approximately \$41 million to \$47 million higher than WTD's 2008 Trend Report estimate.

**Table A-3  
Estimated Project Costs (nominal \$M)**

	WTD 2004 Baseline 3% Infl. 5% Infl.	WTD 2007 Trend	WTD 2008 Trend	OMC Estimate Based on Review of 2007 Trend (2)	OMC Draft Estimate Based on Review of 2008 Trend (2)
Conveyance	\$1,021 - \$1,106	\$ 928	\$ 927	\$ 946 - \$952	\$942 - \$944
Treatment Plant	\$ 640 - \$ 684	\$ 840	\$ 875	\$ 882 - \$ 911	\$901 - \$905
<b>Total (1)</b>	<b>\$1,660 - \$1,790</b>	<b>\$1,767</b>	<b>\$1,802</b>	<b>\$1,827 - \$1,862</b>	<b>\$1,843 - \$1,849</b>

Note:

1. All costs are shown in millions of nominal dollars.
2. This estimate includes actual contract values for portions of the project contracted in 2007.

OMC's estimate is within the range of its 2007 estimate. The primary reason that OMC's estimate of costs has narrowed is that bidding risk on the project has been virtually eliminated, and uncertainty over the Treatment Plant buyout savings has been reduced.