King County

Department of Natural Resources and Parks
Wastewater Treatment Division

Responses to questions from
Engineering and Planning Subcommittee of MWPAAC
RE: 10/24/07 presentation of the
Reclaimed Water Feasibility Study Economic Framework analysis

1. **The Reclaimed Water Feasibility Study (study) illustrations describe potential projects and plans. Could you expand the illustrations to address circumstances that might occur in the future such as changes in the current ratepayer demographic or the need to build new facilities to meet changes in discharge standards?**

The study scope was limited to provide illustrations based on current information. Any future projects and scenarios to be considered will be included in the upcoming Reclaimed Water Comprehensive Planning effort. In addition, any project considered for implementation will also be subject to a more thorough analysis prior to design, as per RWSP Policies WRP – 5 and WPR – 14.

2. **Within the context of uncertain changes such as changes in the current ratepayer demographic or the need to build new facilities to meet changes in discharge standards described in the previous question, are there trends toward newer technologies that could mitigate these potential changes? Is there a particular methodology the county would use to explore new technologies?**

The Technical Assessment and Resource Recovery Section in the Wastewater Treatment Division (WTD) is responsible for identifying and pilot-testing various technologies that show promise. This method is based upon a complete engineering analysis of reliability, costs and applicability to WTD needs. Current trends in reclaimed water technologies include updating, broadening, and in some cases combining existing technologies such as reverse osmosis, fuzzy filters and MBRs.

3. **Please clarify who the potential customers are in the illustrations. What criteria did you use to identify customers?**

In the illustrations (with the exception of Marymoor Park) the customer is the local jurisdiction. Some of the end users in the Sammamish agriculture illustration are within the Woodinville Water District (WWD) but are not currently served by them. The county prefers to be a wholesaler of the reclaimed water to a local water purveyor. In cases where no current purveyor exists or the purveyor does not want to retail reclaimed water, the county may act as the retailer.

4. Is there a timeline for implementing the projects described in the illustrations?

With the exception of the Foster Links Golf Course which has been approved since 2002 and will be installed in 2008, the projects are illustrations only. They were developed to demonstrate the *WateReuse Economic Framework*. There is no timeline for implementation.

5. The illustrations assume that customers would pay 80% of potable rates for reclaimed water. What information did you use to identify customers? Are there policy guidelines the county could apply when exploring the wholesale price of reclaimed water?

There is no current King County policy requiring the 80% of potable rates. The 80% factor is an assumption based upon review of what other programs have done around the country. The pending comprehensive planning process for reclaimed water will explore this issue further.

6. Was the Nucor Steel illustration based on Class A reclaimed water application?

No. However, as was pointed out in the meeting of October 24, because employees may be exposed to the aerosols of the reclaimed water, Class A may be required. This information was noted in the analysis.

7. Does the project described in the Sammamish Valley illustration require a pump station?

Based upon hydraulic modeling, service pressures for this area will be approximately 30 psi. The assumption made in this example is that the users will need a small privately-owned pump to reach the required pressures.

- ***How did you arrive at the 2 cfs estimate?***

The 2 cfs referred to the Tributary Stream Flow Report issued as part of the Comprehensive Water Supply Planning process. Page 6 of the report states:

Category 3: Probability of Measurable Benefit/Bang for Buck

1. Predicted hydrologic response

Intended to discriminate according to stream size relative to the conceivable amount of flow that could be restored by source exchange in the short term (a few cubic feet per second in most cases); smaller streams will benefit proportionally more from restoring a few c.f.s. compared to larger streams. For comparison purposes, the Committee used a flow restoration threshold of 2 c.f.s. to estimate the percentage increase in summer low flow that would result. If a higher flow rate was used reflecting greater amounts of source exchange or substitution sources that potentially may be available in the long term, e.g., reclaimed water, the rankings for some streams would change.

Based upon the illustration's calculations regarding the amount of water that would not be withdrawn if reclaimed water was used, 2 cfs would remain in the Sammamish River and qualify for the threshold described in this report.

8. Concerning the Bothell Business Park (BBP) illustration:

- ***Did you allocate pump station sunk costs?***

No. In both examples in the BBP illustrations, pump stations are contained in the cost analysis.

- ***Please review the mgd numbers and report any differences.***

We reviewed the million gallons per day and confirmed that for illustration purposes, the numbers are correct.

- ***Does the BBP illustration consider Backbone sunk costs? We would also like to see the Backbone recovery costs included in the BBP power point slide.***

Yes. (See *Draft White Paper, Brightwater Reclaimed Water Backbone*, King County, March 2006).

9. We understand the feasibility study is a first step toward gathering information for a probable comprehensive study of reclaimed water in the near term. Describing the parameters and extent of the study within this context would be beneficial to reviewers.

The Feasibility Study is designed to report on the items outlined in WRP-2. The Executive has directed staff to proceed with development of a Reclaimed Water Comprehensive Plan over the next 3 years that will report on alternatives for the production, distribution and application of reclaimed water in the region that enhances the natural environment and is supported by internal and external stakeholders. The comprehensive plan is referenced in the Feasibility Study executive summary.

10. Feasibility studies often define a problem to be solved and an exploration of how to achieve resolution. Will the feasibility study follow this format? Are there plans to include additional relevant options to attain the goals (or drivers) identified in the seven illustrations?

The study is designed to follow the format identified in WRP-2 (*see previous question*). It does not include additional options of using other water sources to obtain the same goals for the seven illustrations.

11. Aesthetics has emerged as a potential goal to meet through using reclaimed water. How would you place a value on aesthetics and what part will aesthetics play when exploring potential reclaimed water projects?

The *WateReuse Economic Framework* used in the study provides one methodology to assess values like aesthetics by using environmental and full social cost accounting, and an economic analysis identifying values that are important to the community or the region are considered. In assessing potential future reclaimed water projects, the value of aesthetics will be examined per environmental and social benefits.

12. Reclaimed water programs are currently operating or being planned in other parts of the country. Are there similarities between King County and these other projects and programs – such as climate, water supply, geography? What are the social and environmental drivers and what opportunities have these other areas had to use reclaimed water? Who defines what these drivers are?

While all reclaimed water programs have unique aspects based upon geographic location, climate, proximity to water supply, there are some overlapping similarities. Following is a list of states with active reclaimed or recycled water programs:

- California
- Oregon
- New Jersey
- Virginia
- Washington
- New York
- Colorado
- Florida
- Texas
- Arizona
- Nevada
- New Mexico
- Maryland
- Hawaii

Some of these states are in arid areas or import their potable water from long distances and thereby have environmental and social drivers different from King County. Others such as Florida, Hawaii and Maryland are responding to drivers such as the potential for more stringent wastewater discharge regulations, rapid growth, saltwater intrusion into aquifers, climate change concerns and wildlife habitat issues.

Each of these jurisdictions identified the drivers and opportunities based upon public input and planning processes. In the case of King County, efforts to develop a reclaimed water program are based on increasingly stringent wastewater discharge regulations, potential climate change impacts and rapid development leading to concerns over the health of Puget Sound, and wildlife habitat issues.

13. Chapter 8 of the King County Comprehensive Plan addresses reclaimed water. How will the study findings fit with comp plan recommendations and policies?

Chapter 8 of the proposed draft 2008 King County Comprehensive Plan states in Section H under Water Supply:

Moreover, the county produces ((~~reclaims~~)) reclaimed water from its existing wastewater treatment plants and will produce reclaimed water at the future Carnation Treatment Plant and Brightwater Treatment Plant. Reclaimed water can be used for many purposes, such as irrigation and industrial uses, which currently utilize potable water sources. In addition, the production and use of reclaimed water can help offset the potential impacts of climate change on summer stream flows and water supplies. King County will continue to encourage and explore additional opportunities to increase the use of reclaimed water in accordance with Chapter 90.46 RCW, the Regional Wastewater Services Plan, the county's Climate Plan and Executive Orders to Reduce Global Warming. *(The proposed draft changes are included via strikeout or underlining)*

The Reclaimed Water Feasibility Study is designed to comply with this Section of the King County Comprehensive Plan.

14. The study references the potential to explore state and federal grant money opportunities. Will the county apply these potential funds program-wide or project-specific?

Depending upon the grant source and intent, some may be used for actions that are programmatic in nature. These might include expenses related to establishing a reuse program such as salaries, supplies, and other costs. Other grants such as the 2007 Department of Ecology's Reclaimed Water grants were earmarked for project-specific applications, e.g., construction of distribution systems where?. WTD assisted the City of Tukwila and the City of Bothell in applying for grants from this program. WTD intends to pursue any viable grant opportunities, especially those with the opportunity to continue partnerships with interested water purveyors, jurisdictions and customers, as well as establishing new ones.