



*Water Quality & Treatment / Wastewater Treatment studies, Design, Operation / Industrial Wastewater Management*  
**ESVELT ENVIRONMENTAL ENGINEERING**  
7605 E. Hodin Dr., Spokane, WA, 99212, Ph 509-926-3049 Fax 509-922-3073

Date: 8/10/09

Re: Tuscan Village DEIS  
Response to comments regarding water supply issues

By: Mark H. Esvelt, P.E.  
Esvelt Environmental Engineering

The memorandum presents responses to comments provided by the City of Chelan to the Tuscan Village Draft EIS, July 20, 2009 and July 22, 2009. The responses are numbered consistent with the City's comment letters.

### **1.1 Energy Usage – Water and Sewer.**

For water, conveyance is the primary use of energy. The following alternatives for water supply have been considered:

- a. City of Chelan
- b. Little Butte Water District
- c. Bear Mountain Water District (Lakeview Utilities source)
- d. Independent supply

With the exception of The City of Chelan source alternative, there is no quantifiable difference in conveyance costs for the alternatives, since they all border the project, static lift is nominally equal for the alternatives, and on-site infrastructure is assumed to be equal for all. For the City of Chelan alternative, there would be expected to be slightly higher conveyance costs due to the additional distance to convey. This difference is expected to be rather small, potentially as high as \$100 to \$200 per year, depending on final water line routing and sizing. At this time, there is not expected to be any quantifiable difference in the amount of energy required for treatment for any of the alternatives currently under consideration. However, the plan to utilize class A reclaimed water for irrigation uses will potentially reduce energy costs compared to using potable water, because it 1) reduces the amount of pumping required compared to drawing irrigation water from the Lake, and 2) reduces the amount of sewage pumping if the wastewater is treated off-site (if the comparison assumes equivalent treatment of wastewater if it is not re-used within the project).

### **1.2 Level of dependability redundancy – Water and Sewer.**

The water treatment facilities and distribution systems will be designed to meet all reliability and redundancy criteria outlined by the Department of Health, including narrative criteria described in the "Water System Design Manual" as well as all good Engineering practices.

### **1.3 Facility Longevity – Water and Sewer.**

The water treatment facilities and distribution systems will be designed to meet longevity criteria according to good Engineering practices and criteria of the Department of Health. Materials and construction and installation practices to assure longevity will follow the guidance in the Washington Department of Health Water System Design Manual, and American Water Works Association materials and installation specifications.

### **1.4 Manpower Requirements – Water and Sewer.**

Refer to the August 7, 2009 memo from Rick Esvelt, P.E., which includes an estimate of manpower requirements for water and sewer. Manpower estimates incorporate time for daily testing (regulatory and process monitoring) as well as equipment maintenance.

### **1.5 Construction standards – Water and Sewer.**

Construction standards will be followed consistent with DOH and DOE guidance (Water System Design Manual, Criteria for Sewage Works Design). Applicable local standards will also be adhered to. The water system components will conform to appropriate NSF 60 and NSF 61 standards and AWWA standards for materials, components and installation.

### **1.8 Level of service within the South Shore UGA – Water and Sewer.**

**I agree with AWM response:** Note that Bear Mountain/Lakeview Utilities expansion or Little Butte expansion to serve adjoining areas would not be a decision of only the WDOH and WDOE, but also (primarily?) the governing board of the water/sewer district.

### **3.3 Comparison of Capital Costs.**

3.3.1 The DEIS recognizes that a variety of options are available and as such until a specific plan is chosen, precise engineering figures are not available. The City costs used for comparison are based on a letter from the City Engineers dated February 29, 2008 and a follow up meeting at which City costs were confirmed and copied to a map on the Board. See letter to Chelan County Planning Commission dated December 15, 2008 and letter to Chelan County Board of Commissioners dated December 26, 2008, in which this issue is discussed in detail.

3.3.6 I concur with HRE response. Additionally, the water treatment and supply costs are based on valid engineering assessments, completed to the level of accuracy appropriate for the current planning state. Treatment facility costs are based on equipment selection and specific vendor quotations, as well as similar project experience, including current projects at Dover, Idaho and Ione, Washington.

### **3.26 Cost of upgrading the Bear Mountain/Lafferty System.**

The connection to the Bear Mountain Water District (BMWD) would be to the Lakeview Utilities system (part of the BMWD but not presently inter-connected with the Bear Mountain portion of the water district). The Lakeview Utilities Water Treatment Plant is a skid-mounted Diatomaceous Earth (DE) filter plant currently serving 120 ERU's.

The filter skid has space reserved on the skid for a second DE unit. Piping to connect to the second DE unit is also already in place. The second DE unit will bring total capacity to 84 gpm. Assuming an overall recovery of 90%, this would result in total daily

capacity of 109,000 gallons per day. At the established maximum design demand of 250 gpd/ERU, this would support a total of approximately 420-450 ERUs. The Tuscan Village project could utilize 200 ERUs, and there would still be 220-250 ERUs available for other growth within the Lakeview Utilities service area in BMWD.

The expansion of the existing skid would not be expected to cost more than \$25,000 installed (conservative estimate based on comparable equipment costs plus an allowance for installation contracting and potential modifications to controls system. It was reported that this particular capacity upgrade would be paid for through the District's existing assessments and charges imposed on new hookups. Note that the current assessments and fee structure for new BMWD connections were based on maintaining sufficient intake capacity, treatment capacity, and making distribution system upgrades and reservoir (storage) improvements as needed. BMWD reports that the fees and assessments are negotiable, particularly if a project such as Tuscan Village were to meet storage and fire flow needs separately from the rest of the Lakeview Utilities distribution system.

### **3.27 Ability of the Little Butte System.**

The existing Little Butte water treatment system can produce nominally 45,000 gallons per day. The maximum existing demand is 23,000 gallons per day. For no expansion in treatment capacity, there would be up to 22,000 gpd available for new connections inside the Little Butte boundaries or in any expansion of the system. At 250 gpd/ERU, this would be enough water to serve 88 ERUs with basically no expansion of the treatment plant. Another aspect of the Little Butte Alternative that has been discussed is the potential to provide the existing Little Butte service area with a separate supply for irrigation water. If this were done, then the current treatment facilities would be able to provide potable water to approximately 140 ERUs (assume the existing ERUs demand would be reduced to comparable values as are planned for the Tuscan Village project). However, it is recognized that this is not likely to be a cost effective strategy for implementation in the initial stages, but potentially at full build-out, when a new water treatment facility would be constructed to serve all of the Little Butte District and the Tuscan Village project.

The existing Little Butte intake is reported to be in good condition, but the district states that upgrades may be needed at some point in the next 5 to 10 years, whether it is serving Tuscan Village or not. The Tuscan Village Project has intakes on the lake already in place that are in excellent condition, that may be utilized in the future, and potentially could be used to replace the existing Little Butte System.

Consideration of the Little Butte system as the ultimate solution to water provision is based on utilizing existing facilities to provide water until capacity is exhausted, at which point a new water treatment plant would be constructed to serve both areas (Little Butte and Tuscan Village).