



BOLTON & MENK, INC.[®]

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MEMORANDUM

Date: February 1, 2012

To: Tim Himmer, City Engineer

From: David Martini *DM*

Subject: Water and Sanitary Sewer Study Assumptions

As a first step needed to move forward with the City's Sanitary Sewer and Water studies, it is necessary to confirm information related to the City's anticipated growth. At the City Council work session on February 6th, Bolton & Menk requests that the following information be discussed and confirmed:

- **Growth and population projections** – This discussion is needed to confirm the projected ultimate population of the City that will be served by water and sewer. This information will be used to project the ultimate demands on the water and sewer systems and will be used to determine the needed water and sewer allocations.
- **Density assumptions** – To determine appropriate sizing for facilities serving different locations within the City, it is necessary to confirm the City's density assumptions. This information will be used to ensure that the size and capacity of the infrastructure identified in the studies is adequate to accommodate the projected growth of the City.
- **Ultimate Service Area** – Since the entire City is not planned to be served by water and sewer, it is necessary to confirm the areas that will be provided with service. This information will be used to determine preliminary locations of interceptor pipes, wells, storage facilities, etc. In addition, it is necessary to estimate the timing of development in these areas. This information will be used to determine the number of new service connections or population increases for each growth area throughout the entire study period. This will be necessary for the timing of the CIP as it relates to locating new water towers, wells, lift stations, interceptors, etc.
- **Service to or from adjacent jurisdictions** – Since some of the City's growth is projected to occur near the City limits, the City should consider whether or not it will serve adjacent jurisdictions with water and sewer service in the future. Conversely, the City should consider if it would accept service from an adjacent jurisdiction if it is determined to be the most feasible way to provide service to islands of growth along the City's limits.

To assist the City Council with their discussions, we offer the following factors, which have an impact on the costs and feasibility of expansion of the water and sanitary sewer systems.

Expansion of municipal water and sanitary sewer service can be done most effectively when development occurs in stages progressing outward from areas with existing service. This allows for relatively short extension of mains to service development. The extended mains need to have capacity to service the ultimate MUSA boundary which requires planning and investment in oversizing of facilities.

Less cost effective development is to allow for leap-frog development which requires longer main extensions, some of which pass along or through properties which are not ready to develop and which do not wish to pay trunk and lateral assessments or fees. This requires an investment not only in oversizing but also requires either the City or the developer to carry the costs of the project until connection charges

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and user fees are generated to cover the costs.

Development density has an impact on the feasibility of system expansions because higher density development allows servicing more units with less length of mains thereby lowering the cost per unit. Higher density development helps provide scale economies in water and sewer trunk lines, wells, water towers, and treatment facilities. Major factors that affect density include:

- Type of development – multi-family versus single family
- Single family lot areas, setbacks, etc.
- Undevelopable area such as wetlands
- Area required for parks, storm water basins, etc.

The pace of development also impacts the long term feasibility of extending municipal water and sanitary sewer service. Fast paced development allows recovery of the investment in infrastructure whether it's paying off City assessments and fees or recovery of investment by the developer. This becomes significantly more critical with leap-frog type development with greater investment due to more infrastructure being required earlier in the development process.

Please let me know if you have any questions about this request or the information we have provided.