APPENDIX 7.2
MEMO: WATER SERVICING COST COMPARISON FOR THE NINE QUARTER SECTIONS
MEMO

The City of Edmonton (City) is considering applying for the annexation of 9 quarter sections of land that were previously awarded to the Town of Beaumont (Beaumont) in the 2016 annexation application. This memo presents a high-level cost comparison between the City’s water infrastructure servicing concept and Beaumont’s, for the 9 quarter sections of land.

1.0 Existing system

Beaumont’s potable water is supplied by the Capital Region Southwest Water Services Commission, which receives water from EPCOR (City of Edmonton). An existing 750 mm diameter transmission line that runs along the west side of the Queen Elizabeth II (QE II) highway supplies Beaumont through a 400 mm diameter waterline. The 400 mm waterline, which runs from the QE II, connects into an existing distribution pumphouse located in Beaumont. Figure 1 below presents the existing water transmission lines which supply the southern part of the City and the CRSWSC system.

Figure 1: Existing water transmission lines
2.0 Proposed Water Supply

2.1 CRSWSC Future Upgrades to Meet Growth (including annexation)

Beaumont Reservoirs and Pumphouse (point of water transfer between Commission and Town) are centrally located within the Town. Any development outside of the current Town’s boundary, such as the proposed Beaumont annexation lands, including the 9 quarter sections to the north, would require major upgrades of the existing distribution system and a potential reservoir. In addition, the entire CRWSC system which services Beaumont has been identified as requiring upgrades in order to meet demand due to growth.

The CRWSC Master Plan Update (November 2013) concluded that the CRWSC’s system will reach its pipeline capacity limits by 2032. In order to service growth, including Beaumont’s annexation area, additional capacity will need to be provided by 2031. The CRWSC Master Plan Update (November 2013) identified that twinning of the transmission pipelines would be required. The total cost of twinning the entire system was estimated to be approximately $41.4 Million (2013 dollars). This would be comprised of the following:

- 1050 mm nominal diameter pipeline between the Boundary Station and the Airport Reservoir
- 600 mm nominal diameter pipeline between the Airport Reservoir and the City of Leduc
- 500mm nominal diameter pipeline from QE II to Beaumont

2.2 City of Edmonton Water Infrastructure Servicing Concept

A water supply concept has been developed based on efficient servicing of the City’s annexation areas and the surrounding municipalities. EPCOR is expected to run the City’s water supply system.

The proposed concept involves oversizing water transmission lines, both offsite and within the City’s annexation areas, to provide capacity for future growth of the surrounding municipalities such as Beaumont. It covers the growth areas defined by the Capital Region Board (CRB). The concept assumes an integrated supply system as is currently implemented throughout the City of Edmonton.

It is envisioned that EPCOR will continue to assess its current infrastructure and construct new water mains as demand dictates. The southeast annexation area water supply system within which the 9 quarter sections are located, will connect to the proposed Decoteau reservoir through a water line along Ellerslie Road in the City.

**Connection to the oversized City’s transmission lines will free up capacity in the CRWSC’s system. This capacity could be used to meet projected growth in demand from the CRWSC members (including Beaumont). The City’s approach will significantly reduce the upgrades required in the CRWSC system, which will result in savings.**
3.0 Summary of Cost Comparison

*Table 1* below presents a summary cost comparison between the City of Edmonton and the Beaumont/CRSWSC’s proposed water infrastructure servicing concepts for the 9 quarter sections. It also presents the cost differential between the two concepts.

The costs presented were estimated based on average unit rates derived from construction projects in green fields that have been completed by AE. Costs for offsite infrastructure and upgrades required to support serviceability of the 9 quarter sections were included in the estimates. This cost comparison covers the ultimate servicing concepts for the 9 quarter sections. It does not include any interim servicing.

*Figure 2 and 3* attached present the servicing concepts for the 9 quarter sections for Beaumont/CRSWSC and the City respectively. These form the basis on which the cost comparison was undertaken.

**Table 1: Summary of Cost Comparison**

<table>
<thead>
<tr>
<th>Beaumont/CRSWSC Conceptual Water Servicing for the 9 Quarter Sections</th>
<th>Pipe sizes and Offsite Services</th>
<th>Total capital cost of water servicing</th>
<th>Percentage of capacity available to the 9 Qtrs*</th>
<th>Capital costs for (9 Qtrs sections)**</th>
</tr>
</thead>
<tbody>
<tr>
<td>500mm ND pipeline from QE II to Beaumont</td>
<td>$5,120,000.00</td>
<td>43%</td>
<td>$2,200,000</td>
<td></td>
</tr>
<tr>
<td>1050 mm ND pipeline between the Boundary pump station and the Beaumont tie in</td>
<td>$7,200,000.00</td>
<td>5%</td>
<td>$360,000</td>
<td></td>
</tr>
<tr>
<td>400 mm from 500 mm line to 9-quarter sections</td>
<td>$2,400,000</td>
<td>100%</td>
<td>$2,400,000</td>
<td></td>
</tr>
<tr>
<td>Total Cost Beaumont/ACRWC Concept</td>
<td>$14,720,000</td>
<td></td>
<td>$4,960,000**</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>City of Edmonton Conceptual Water Servicing for the 9 Quarter Sections</th>
<th>Pipe sizes and Offsite Services</th>
<th>Total capital cost of water servicing</th>
<th>Percentage of capacity available to the 9 Qtrs*</th>
<th>Capital costs for (9 Qtrs sections)**</th>
</tr>
</thead>
<tbody>
<tr>
<td>600 mm</td>
<td>$8,354,700</td>
<td>11%</td>
<td>$920,000</td>
<td></td>
</tr>
<tr>
<td>750 mm</td>
<td>$2,204,800</td>
<td>11%</td>
<td>$240,000</td>
<td></td>
</tr>
<tr>
<td>PRV Station</td>
<td>$2,000,000</td>
<td>11%</td>
<td>$220,000</td>
<td></td>
</tr>
<tr>
<td>Booster station</td>
<td>$5,000,000</td>
<td>11%</td>
<td>$550,000</td>
<td></td>
</tr>
<tr>
<td>Total Cost City of Edmonton Concept</td>
<td>$17,559,500</td>
<td>11%</td>
<td>$1,930,000**</td>
<td></td>
</tr>
<tr>
<td>COST DIFFERENTIAL</td>
<td></td>
<td></td>
<td></td>
<td>$3,030,000</td>
</tr>
</tbody>
</table>

* At this stage it has been assumed that capital costs contributions for shared transmission lines will be based on the estimated percentage of pipe capacity available to or provided for the 9 quarter sections.
** Costs have been rounded off to the nearest $10,000. Operational costs for booster pump stations have not been included in the above comparison. These were deemed to be comparable between the two servicing concepts.
Memo To: Lindsey Butterfield, RPP, MCIP  
May 14, 2017

4.0 Conclusions

The capital cost for the City servicing concept for the 9 quarter sections is approximately $3,030,000 lower than that for Beaumont/CRSWSC. Full servicing of the 9 quarter sections through the Beaumont/CRSWSC concept will involve twinning of the existing 400 mm line with a 500 mm ND pipeline from the QE II highway to Beaumont.

5.0 Assumptions

The assumptions made in preparing this memo are as follows:

1. Beaumont’s servicing concept is based on the upgrades identified in the CRWSC Master Plan Update (November 2013).
2. Capital costs contributions for shared transmission lines have been based on the estimated percentage of pipe capacity available to or provided for the 9 quarter sections.
3. Operational costs for booster pump stations have not been included in this comparison. These were deemed to be comparable between the two servicing concepts.
4. For the Beaumont concept, the capacity requirement/cost contribution for the 9 quarter section to the proposed 500 mm ND twinning were based on the proportion of the area serviced (9/21 quarter sections = 43%).
5. Beaumont’s consumption constitutes 22% of the CRSWSC’s total demand (CRWSC Master Plan Update - November 2013).
6. The 9 Quarter sections have been estimated to contribute 5% of the capital costs for the 1050 mm ND pipeline between the Boundary Station and the Beaumont tie in (22% x 9/37 qtr sections).
7. The 9 qtr sections have been assumed to contribute 11% of the total cost of water supply servicing of the City’s southwest annexation area (576/5213 ha = 11%).
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May 14, 2017

ATTACHMENTS