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WATER USE EFFICIENCY MASTER PLAN UPDATE

The Transportation and Works Committee recommends the adoption of the recommendations contained in the following report, December 19, 2005, from the Commissioner of Transportation and Works:

1. RECOMMENDATIONS

It is recommended that:

1. The Region enter into a contract with Resource Management Strategies Inc. (RMSi) in respect of completing a Water Efficiency Master Plan Update including an International Water Association (IWA) Water Audit and Water Balance in the amount not to exceed $158,659 pursuant to the sole source provisions of the Purchasing By-law.

2. The Commissioner of Transportation and Works be authorized to sign the necessary contract subject to the prior review of Legal Services.

2. PURPOSE

The purpose of this report is to obtain authorization to contract RMSi to complete an update of the Water Use Efficiency Scope of Work incorporated in the Water Supply Master Plan, last updated in July 1997, including an International Water Association (IWA) Water Audit and Water Balance encompassing the Region as a whole including all nine local municipalities.

3. BACKGROUND

York Region has embraced water use efficiency as part of the water supply solution outlined in the Water Supply Master Plan in 1997. The study, subsequently updated in March 2004 outlined a comprehensive long-term water supply strategy to serve the Region's needs to 2036.

Water for Tomorrow, York Region's water use efficiency program was a major outcome of the original Water Supply Master Plan. The program's Scope of Work, which has served as a Water Efficiency Master Plan, was approved by Regional Council in April 1998 and included six activities:

- Residential/Commercial Retrofit Program.
- Industrial/Institutional Audit Program.
- Leakage Reduction Program.
- Public Education.

- Youth Education.
- Maintenance.

Water for Tomorrow is well known to residents and businesses of York Region. Program technicians have visited over 118,000 homes, 10,400 apartments, 180 schools and 14,200 businesses. During the visits, over 245,000 water saving toilet flappers and 106,000 low flow showerheads were installed. Approximately 1,800 km of water-main has been tested in all of the area municipalities. Sixty industrial/institutional water usage audits have been completed resulting in water savings of 22.4 million litres per day.

Technology can achieve major water savings but education is necessary to meet the long term objectives. Annually, *Water for Tomorrow* has been represented at fairs, home shows, environment days and community events across the region. Twice per year bulletins distributed through the water bills and community newspaper and television advertising have all contributed to the success of the water efficiency education program.

Youth education has been a major focus of *Water for Tomorrow*. The award winning Grade 7 curriculum module developed and implemented by the *Water for Tomorrow* project team has been delivered to over 50,000 students in York Region and continues to be extremely popular with teachers and students alike.

Water for Tomorrow is viewed in the same manner as constructing and operating a new water treatment plant. Maintenance is a necessity to sustain the water savings in the long term. Ongoing maintenance is provided on the products that have been installed through the program.

The scope of the *Water for Tomorrow* program has been enhanced over the last few years with the addition of the Summer Water Use Reduction Program and the annual York Children's Water Festival.

The largest demands on a water supply system occur during the summer when outdoor uses can increase significantly during periods of prolonged dry and hot weather. Water for Tomorrow's goal is to reduce outdoor water use by encouraging water efficient garden and landscaping. Over 5,000 residents have received free landscape audits. There are also opportunities to learn about water wise gardening from the many garden demonstrations at participating garden centres, conservation areas and local college, and workshops and newspaper advertising.

Program information and services help residents beautify their lawn and gardens while lowering maintenance and watering requirements. The creation of drought tolerant gardens and the implementation of low-water lawn maintenance techniques were helpful during the mid-summer dry spell when many municipalities had implemented outdoor watering bans. To make maximum use of the program budget, the approach emphasizes

the development of program ambassadors and partners who carry the message into the community.

Over 22,000 Grade 4 and 5 students have learned about water in the out-of-doors at the annual York Children's Water Festival. Held every year at Bruce's Mill Conservation Area, 5,000 children attend the five-day event where they learn by participating in over 40 curriculum based activities about water and the environment.

Water for Tomorrow has demonstrated that water efficiency is an effective component of York Region's long term water supply strategy. Overall the program is saving approximately 22.4 million litres of water per day, enough water to supply a community of 85,000 people. The program has also contributed positively to the Region's objective to reduce greenhouse gases. Over 3,809 tonnes per year of carbon particulates and 13,947 tonnes per year of carbon dioxide is reduced as the result of Water for Tomorrow.

As one of the four components identified in the Region's Water Supply Master Plan, the selected water-use efficiency measures represent the lowest cost source of water. Aside from financial considerations, the Region's comprehensive program demonstrates to the public and to government regulators that it is taking a responsible approach to water supply by making the best use of existing resources.

Water for Tomorrow has been recognized for excellence by numerous organizations including the Ontario Water Works Association, Water Environmental Federation, FCM's Sustainable Communities Awards and the World Water Forum in Kyoto, Japan. Many of the components of Water for Tomorrow have been adopted by neighbouring municipalities and overseas in the United Kingdom and Eastern Europe.

4. ANALYSIS AND OPTIONS

4.1 Program Need

It is important to continue building upon the success of the Program. Growing communities continue to put pressure on the water supply system. Continuation of water use efficiency is recommended for the following reasons:

1. The cost of water use efficiency measures selected to date represents the cheapest "source" of water supply for the Region at about 25% of the cost of new surface water supplies.
2. Water use efficiency measures help to defer the need for major capital expenditures and can assist in reducing supply allocations for local municipalities.
3. Water use efficiency can significantly help manage the summer demand periods and help alleviate outdoor water restrictions and bans.
4. Key review and approval agencies, such as the Ministry of Environment and the Ministry of Natural Resources, are reluctant to support new capital projects without a demonstrated commitment to water use efficiency by the proponent.

5. Water use efficiency is a required component of Watershed Plans required under the Oak Ridges Moraine Conservation Plan.
6. Water use efficiency is a required component of the Ministry's recently revised Permit to Take Water Program.

The Water Supply Master Plan which was approved initially by Regional Council in April 1998, incorporated a water efficiency strategy. Significant components of this program will be concluding on June 30, 2006. In recognizing the significant benefits of this program, Council authorized continuation of the education components in September 2003 which will continue until December 31, 2008.

Considering the pending conclusion of the current water efficiency program, now is an appropriate time to inventory existing water demand and water loss conditions and complete an updated Water Efficiency Master Plan, to establish future directions.

4.2 Program Components

The key components of the Water Efficiency Master Plan would be:

- Data collection, research review and technical evaluations.
- Water audit and water balance activities.
- Public consultation and documentation.

The first component will include a review of progress from 1998, undertaking of an extensive interview process, and identification and evaluation of appropriate water efficiency measures. This component includes such elements as telephone surveys, door to door water audits, focus groups, and best practice review. These investigations will culminate into a comprehensive list of measures that will undergo a financial feasibility analysis to predict net benefits of the various strategies.

The second component is a review of existing municipal water infrastructure conditions. This would be accomplished by the completion of an International Water Association (IWA) Water Audit and Water Balance study. The study would encompass the region as a whole based on the conditions within the nine local municipalities. The IWA methodology has been recognized by the National Research Council and the Federation of Canadian Municipalities as a best practice for sustainable municipal infrastructure. Some features of this type of study are:

- a methodology that ensures no water is un-accounted for. This is achieved through consistent definitions of the major forms of water consumption and water loss encountered in municipal water systems.
- A cost is determined for each water use component to assess financial impacts and identify opportunities for improvement.

This will benefit the region and the local municipalities since current practices for water budget calculations are inconsistent among the municipalities making Regional comparisons difficult to assess.

With completion of a water audit and water balance, focus can be placed on specific strategies for further reducing water loss including water efficiency, leak detection and repair, pressure management, infrastructure renewal, water tariffs, SCADA systems and others.

The data collected and the outcome of an IWA Water Audit and Water Balance study would be used in the development of the Water Efficiency Master Plan update. The purpose of the update would be to provide a plan for the next ten years for water efficiency activities. This update would also be a useful resource for subsequent updates to the Regional Water Master Plan.

4.3 Consideration for Sole Sourcing Project

Consideration for sole sourcing this assignment is based on recognizing clear benefits for the Region. In this case, the benefits identified for sole sourcing RMSi are summarized as follows:

- Staff from RMSi have been involved with York Region's water use efficiency program since its inception in 1998.
- RMSi and its predecessors have established a credible track record of delivering projects on time and within scope while remaining within original project budgets.
- Cost savings have been used to develop new initiatives which reflect RMSi's ability to provide additional value added services within existing budget constraints.
- RMSi has been operating as an "in-house" service provider which affords them a unique understanding and knowledge base of Regional operations and priorities.
- RMSi has developed a world renowned program for the Region and have become renowned experts in water efficiency.
- The IWA approach to water audit and water balance is relatively new to North America and is expected to be adopted by the American Water Works Association in the next year. The RMSi project team includes an IWA expert who has completed these types of studies for global world class utilities including those in Bulgaria, Edinburgh, Poland, Estonia and Manchester

Considering the history, track record, experience and knowledge being offered by RMSi, staff is certain that sole sourcing for this assignment will benefit the Region by providing a quality product at a significant cost savings based on the current knowledge base within RMSi.

5. FINANCIAL IMPLICATIONS

The present value unit cost to expand water and wastewater supply infrastructure in York Region, Peel Region, Durham Region and the City of Toronto ranges from $1.12 to $5.47 per litre per day. Water provided through water efficiency measures costs between $0.44 and $0.90 per litre per day. Considering current water savings of 22.4 million litres per

day, the *Water for Tomorrow* program has saved this Region in the range of $15 -$100 million over the next best alternative of securing new water supplies. Future planning of water use efficiency activities will ensure that the Region continues to provide the most cost effective water supply options to its residents by maximizing conservation opportunities.

The cost to complete the Water Efficiency Master Plan Update is $148,279.00 plus GST. The cost of this activity has been included in the 2006 budget and 10 year capital plan and will be funded 80% from development charges and 20% from water rates.

6. LOCAL MUNICIPAL IMPACT

Continued implementation and future planning of water use efficiency activities will ensure the availability of a secure, cost effective supply of water to the local municipalities to meet future demands. The IWA Water Audit and Water Balance will be completed for each individual local municipality and will provide them with a resource tool identified as a best management practise by National Research Council and the Federation of Canadian Municipalities. As an international standard, local municipalities will be able to benchmark their performance against world class utilities in Canada and globally.

7. CONCLUSION

Water for Tomorrow, York Region's water efficiency program is currently saving 22.4 ML/d. Ongoing education programs over the next three years will assist in not only sustaining the water savings but increasing them. A Water Efficiency Master Plan Update including an IWA Water Audit and Water Balance will assist the Region in providing a cost effective water supply into the future.

It is recommended that RMSi is retained as sole source provider for services to complete a Water Efficiency Master Plan Update for an upset limit of $158,659 including GST.

The Senior Management Group has reviewed this report.