



**CITY OF HAMILTON**  
**PUBLIC WORKS DEPARTMENT**  
**Hamilton Water Division**

<b>TO:</b>	Mayor and Members General Issues Committee
<b>COMMITTEE DATE:</b>	February 27, 2017
<b>SUBJECT/REPORT NO:</b>	2017 Water, Wastewater and Stormwater Budget Staffing Requirements (PW17014) (City Wide) (Outstanding Business List Item)
<b>WARD(S) AFFECTED:</b>	City Wide
<b>PREPARED BY:</b>	Geoff Botha (905) 546-2424, Extension 1194
<b>SUBMITTED BY:</b>	Andrew Grice Director, Water & Wastewater Operations Public Works Department
<b>SIGNATURE:</b>	

**RECOMMENDATION**

- (a) That as part of the 2017 Water, Wastewater and Stormwater Budget, one Full Time Equivalent Rate Supported Staff in the position of Technologist within the Plant Maintenance and Technical Services Section be approved;
- (b) That as part of the 2017 Water, Wastewater and Stormwater Budget, one Full Time Equivalent Rate Supported Staff in the position of SCADA Technologist within the Plant Maintenance and Technical Services Section be approved;
- (c) That as part of the 2017 Water, Wastewater and Stormwater Budget, one Full Time Equivalent Rate Supported Staff in the position of Process Supervisor within the Plant Operations Section be approved;
- (d) That as part of the 2017 Water, Wastewater and Stormwater Budget, one Full Time Equivalent Rate Supported Staff in the position of Maintenance Operator within the Plant Operations Section be approved;
- (e) That as part of the 2017 Water, Wastewater and Stormwater Budget, one Full Time Equivalent Rate Supported Staff in the position of Water Distribution Supervisor within the Water Distribution and Wastewater Collection Section be approved;

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- (f) That as part of the 2017 Water, Wastewater and Stormwater Budget, one Full Time Equivalent Rate Supported Staff in the position of Administrative Secretary within the Sustainable Initiative Section be approved;
- (g) That the Outstanding Business List Item related to 2017 Recommended Water/Wastewater & Storm Budget (FCS16079) be identified as complete and be removed from the list.

**EXECUTIVE SUMMARY**

As part of the November 18, 2016 Report FCS16079 - 2017 Recommended Water, Wastewater and Stormwater Budget, Council deferred approving recommendation (p) which stated:

'That the additional 6.0 Full Time Equivalent Rate Supported Staffing be approved as per Appendix F'.

Staff was directed to report back to the General Issues Committee with a business case to support the request for additional resources. This Report provides additional background, rationale and alternatives for consideration related to the Full Time Equivalent (FTE) Rate Supported Staffing request.

The four (4) FTE's associated with recommendations (a) through (d) are directly related to addressing an increased level of effort to prepare for and support capital works related to the Woodward Upgrades Project (WUP) and other key capital projects at various sites within the domain of Hamilton Water. Many of these projects are partially funded through Federal and Provincial programs and successful project completion within allocated timeframes is necessary to secure program funding.

In 2016 Hamilton Water staff retained the services of Snowy Mountains Engineering Corporation (SMEC) to complete an operational readiness review. The review focused on the WUP and reviewed nine key elements required to prepare for large infrastructure upgrades. The review identified 67 gaps in current day-to-day operations and the operational support for the WUP. Significant findings included the lack of Standard Operating Procedures for modified plant operation during construction, inadequate Health and Safety procedures related to confined space and lock-out-tag-out, the underutilization of the Computerized Maintenance Management System (CMMS), and the lack of a preventative maintenance and spares management plan. The operational readiness review highlighted the volume of capital projects requires significant operational support and existing staffing resources are unable to provide the required level of service without placing risk on water and wastewater compliance.

As an alternative to recommendations (a) through (d) staff reviewed the option of contracting out services where applicable. Contracting out these services is more expensive and does not allow for a continuity of knowledge once the capital project is delivered.

The FTE associated with recommendation (e) is directly related to achieving regulatory compliance, realizing program efficiencies and reducing overtime costs within the Water

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Distribution and Wastewater Collection Section of Hamilton Water. An afternoon shift was implemented in January 2016 to maintain compliance with the Highway Traffic Act Hours of Service and Employment Standards Act related to Hours of Work. The implementation of an afternoon shift has provided many benefits such as afternoon customer service appointments and faster response time to emergencies while reducing the overtime hours within the Section.

The FTE associated with Recommendation (f) will provide administrative support for three (3) Sections within Hamilton Water. This will allow staff to focus on their sectional mandates and optimize the utilization of staff skill and qualifications.

The recommendations contained in this report support the Mission Statement of the Public Works Business Plan 'Innovate Now' - "Provide safe, strategic and environmentally conscious services that bring our communities to life".

***Alternatives for Consideration – See Page 9***

**FINANCIAL – STAFFING – LEGAL IMPLICATIONS**

**Financial:** The financial implication of all 6.0 Full Time Equivalent Rate Supported Staffing was approved as part of the 2017 Water, Wastewater and Stormwater Budget.

**Staffing:** By approving the Recommendations, the staffing levels within Hamilton Water will increase by 6.0 Full Time Equivalents.

**Legal:** The City has a legal obligation to comply with Provincial regulations for the treatment of water and wastewater. The recommendations in this report will reduce risks to the City for non-compliance.

**HISTORICAL BACKGROUND**

Plant Maintenance and Technical Services / Plant Operations – recommendations (a) through (d):

In 2012 Council endorsed the implementation plan for the Woodward Upgrade Project (WUP) that separated water quality improvements and expansion for future growth. The water quality upgrades represent \$325M worth of capital upgrades to the Woodward Avenue Wastewater Treatment Plant (WWTP) categorized into three main subprojects:

- Main Wastewater Pumping Station
- Electrical Power Upgrades
- Tertiary Treatment Upgrades / Chlorine Contact Tank / Red Hill Creek Upgrades

The Federal and Provincial Governments have each confirmed a \$100M contribution to WUP and contribution agreements are in place with a project completion date of no later than January 31, 2022. Once the project is complete the wastewater effluent will meet the Hamilton Harbour Remedial Action Plan (HHRAP) targets and assist in de-listing the Harbour as an area of concern identified by the Government of Canada.

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As part of the 2016 Water, Wastewater and Stormwater budget deliberation process Hamilton Water identified a number of future staffing requirements associated with the WUP. More specifically, staff identified the need for a SCADA Technologist and a Data Clerk in 2018 and five Maintenance Operators, two (2) Millwrights, and two (2) Instrumentation Technicians in 2020.

In early 2016 Hamilton Water staff reviewed the WUP details and efforts required for other government supported capital works bound by timelines. Staff identified a potential gap in operational staffing resources to support the planning and implementation of the projects. In February of 2016 Hamilton Water staff retained the services of Snowy Mountains Engineering Corporation (SMEC) to complete an operational readiness review. The operational readiness review framework is based on nine key elements that include: Health and Safety, Project Management, Human Resources, Operations, Maintenance, Budget and Cost Control, SCADA System, Commissioning and finally Spares Management. The review confirmed 67 gaps related to current day-to-day operations and maintenance activities as well as operational deficiencies for supporting the WUP. Some of the high risk gaps identified in the operational readiness review include Health and Safety Procedures, Incident Reporting, Standard Operating Procedures, Computerized Maintenance Management System (CMMS), Preventative Maintenance Programs and workforce planning.

In addition to the day-to-day operation of the Water and Wastewater Treatment processes several multi-million dollar and multi-year capital projects are commencing in 2017 that require operational support. The list of Hamilton Water Capital Projects commencing in 2017 includes but is not limited to the following:

- \$330 million Woodward Upgrade Project
  - Raw Sewage Main Pumping Station
  - Plant Wide Electrical Upgrades and Standby Power Building
  - Tertiary Treatment Facility and Redhill Creek Improvements
- \$20 million Water Treatment Plant Upgrades (Phase I)
- \$3 million Corrosion Control Program
- \$4 million Methane Sphere Rehab
- \$9 million Digester Upgrades
- \$1.7 million Aeration Upgrades
- \$3.8 million Operational Deficiencies to Prepare for the WUP
- \$2.6 million Lynden Additional Water Supply
- \$1.5 million Osler Pumping Station Upgrades
- \$1.425 million Freelton Water Tower Upgrades

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Some of the above mentioned projects have been submitted under the Clean Water and Wastewater Fund (CWWF) for which the City may receive a maximum of \$32.9 million from the Federal government and Province based on 50% and 25% funding of eligible project costs respectively. Projects being completed with the CWWF framework must incur costs between April 1, 2016 and March 31, 2018 to be eligible for funding. The new staffing resources will help ensure these projects are supported and delivered successfully.

Hamilton Water staff developed a resourcing strategy to address the gaps identified in the operational readiness review. This strategy was presented as part of the 2017 Water, Wastewater and Stormwater budget process. Staff recommended moving four Full Time Equivalent (FTE) staff originally identified in the 2020 staffing outlook forward to 2017 to support the implementation of the WUP and other capital upgrades. The remaining staffing requirements forecasted for future years associated with the WUP and other capital projects remains unchanged. More specifically, three (3) resources are forecasted in 2018 to support project implementation and four (4) resources are forecasted for 2020 to maintain and operate new infrastructure and processes.

Water Distribution and Wastewater Collection – recommendation (e):

In October 2015 an afternoon shift was implemented in the Water Distribution & Waste Water Collection (WD&WWC) section to comply with the Highway Traffic Act Regulations regarding Hours of Service, and also the Employment Standards Act regulations regarding Hours of Work. To support the afternoon shift a 7<sup>th</sup> Water Distribution Supervisor was implemented on a temporary basis and has ensured compliance with applicable Hours of Work legislation, improved customer facing services and reduced overtime costs.

This position has been filled since January 2016 on a temporary basis and the recommendation contained within this report seeks to make the position permanent.

Sustainable Initiatives / Capital Delivery / Infrastructure Planning and Systems Design – recommendation (f):

Administrative support is an essential requirement to maintain business operations. In 2015 a temporary Administrative Secretary was implemented to support three (3) Sections within Hamilton Water to reduce project staff time spent on administrative functions. The recommendation contained within this reports seeks to make this position permanent.

While the 2017 Water, Wastewater and Stormwater Rate Budget was approved in November 2017 Council deferred approving recommendation (p) of Report FCS16079 which stated:

'That the additional 6.0 Full Time Equivalent Rate Supported Staffing be approved as per Appendix F'.

Staff was directed to report back to the General Issues Committee with a business case to support the request for additional resources.

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## **POLICY IMPLICATIONS AND LEGISLATED REQUIREMENTS**

There are no impacts to Policy or Legislative requirements should Council approve the proposed Recommendations.

## **RELEVANT CONSULTATION**

The Financial Planning, Administration & Policy Division, Finance & Administration section was consulted in the development of this report.

## **ANALYSIS AND RATIONALE FOR RECOMMENDATION**

The following section provides the analysis and rationale for each of the recommended FTEs:

Plant Maintenance and Technical Services / Plant Operations – recommendations (a) through (d):

The involvement of operational staff varies depending on the complexity of the project. A typical capital project includes operational support in the form of maintenance operators, millwrights, electricians, instrumentation technicians, quality assurance technicians, and Supervisory Control and Data Acquisition (SCADA) support.

In general, the day-to-day duties of the operations staff fill an entire shift and for that reason new staff are required to support capital project related work. Currently staff are supporting the increased capital works projects utilizing overtime (for eligible staff) and extra hours of work for supervisory staff. While operations staff strive for sensational service the support of a multi-year project like the WUP cannot be sustained through overtime and extra hours of work.

The risks associated with not addressing the operations staffing resources include: contract delays, contractor claims, and missing documentation for commissioning (manuals, drawings, process control narratives). Furthermore, regulatory compliance is directly related with the continuous and reliable operations of the SCADA system and any issues with system integration or Site Acceptance Testing (SAT) could have major consequences with regulatory agencies.

In addition, once the capital projects are complete, staff are required to operate and maintain the facilities and processes.

Recommendation (a) – Technologist:

The Technologist will be a resource to support the Plant Maintenance & Technical Services (PMATS) team so they can sustain day-to-day operations and eliminate the gaps identified the operational readiness review to provide the necessary resources to capital upgrades.

Some of the responsibilities for this position as identified in the operational readiness review include:

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- Developing site wide Health and Safety policies and procedures for construction activities and updating existing policies that do not meet industry standards (Lock-Out-Tag-Out, Confined Space);
- Develop a framework for incident investigation and reporting during capital upgrades;
- Update the existing Computerized Maintenance Management System (CMMS) with accurate asset information and development of a maintenance plan and schedule for new assets and processes;
- Analyse supply chain and develop a spares management strategy to ensure effective and efficient operation and maintenance of assets.

Recommendation (b) – SCADA Technologist:

The SCADA Technologist will deliver and support technology solutions to all parts of Hamilton Water. In addition, it will be required to openly communicate plans and strategies to overcome system specific problems and potential threats to the SCADA network. The SCADA Technologist is an essential component in the integration and commissioning of any capital project.

Some of the responsibilities for this position to support capital projects include:

- Human Machine Interface (HMI) and Programmable Logic Controller (PLC) programming;
- Verifying and testing external programming to ensure compliance with City's standards and provide direction when necessary;
- Application development including integration of data across multiple networks;
- Review and document hardware logs, events, alarms, key indicators and metrics;
- Support electrical, instrumentation and automation installation;
- System commissioning support;

Currently, the support of capital projects is shared amongst SCADA staff. However, the demand to support capital upgrades and prepare the existing system for new infrastructure has hindered the team's ability to maintain existing processes correlated to operational compliance of the Water and Wastewater Treatment Plants. The additional resource will focus on day-to-day operations allowing a dedicated SCADA resource to support the impeding capital upgrades ensuring consistency with design standards and the knowledge gained during project implementation stays within the Hamilton Water team.

Recommendation (c) – Process Supervisor:

There are currently six Process Supervisors within the Plant Operations Section of Hamilton Water. Five of these supervisors are on rotating shifts to provide 24/7/365 operation of the water and wastewater treatment processes. The sixth Process Supervisor is responsible for the Dundas Wastewater Treatment Plant (WWTP) and operates on an 8am – 4pm Monday to Friday schedule. The responsibilities of the Process Supervisor include monitoring, controlling/adjusting, and administrating

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changes to plant operating conditions on the basis of calculations, information provided by operators, plant operating data, laboratory test results and the SCADA control system.

In addition to supervising and administrating the operation of the above mentioned facilities to ensure an effective treatment and service distribution, other duties of this position are to direct and supervise Water/Wastewater Operators in the performance of their duties.

Due to the size and complexity of the WUP and other capital projects it is necessary to have dedicated supervisory support to coordinate construction activities with contractors and consultants while minimizing disruption to the treatment process and maintaining operational compliance.

Some of the responsibilities of the Process Supervisor as identified in the operational readiness review include:

- Development of an commissioning plan and strategy including shutdown, integration logistics and start-up of tertiary process
- Development of an operating plan and process control methodology to maintain wastewater treatment operations during construction
- Development of a recruitment strategy for new processes and training plan
- Approve standard operating procedures
- Support and supervise operational staff dedicated to the WUP and other capital upgrade projects

Recommendation (d) – Maintenance Operator:

An operator is required to carry out plant shut downs and drain tanks to support the capital works. The operator will also be involved in the commissioning, start up and integration during construction. Furthermore, the operator will assist with the adjustment, inspection and evaluation of equipment during construction to verify functionality and optimize treatment systems.

The recommended position corresponds to a day shift operator to ensure continuity in the support provided and knowledge gained. The Operator will be responsible for the day-to-day operation of the new assets and processes once the capital projects are complete and transitioned to the City.

Water Distribution & Wastewater Collection – recommendation (e):

The WD&WWC afternoon shift was implemented to ensure consistent compliance with the provisions of the Highway Traffic Act and Employment Standards Act. The afternoon shift consists of multiple front-line staff and a single Water Distribution Supervisor. While it was possible to staff the afternoon shift with front-line staff by moving resources, it was necessary to add an additional Water Distribution Supervisor. This position was filled on a temporary basis in January 2016.

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It is critical to note that staff calculations identify that the implementation of the afternoon shift has resulted in savings for the City, despite the addition of the 7<sup>th</sup> Water Distribution Supervisor. This savings is the result of a significant reduction in standby overtime hours within the WD&WWC section (>2,400 fewer overtime hours in 2016 vs. the 5 year average).

Furthermore, additional benefits of the afternoon shift implementation include: consistent service after-hours, faster response to emergencies, allows time for staff to complete work that is better left to off-hours (performing leak detection when there is less traffic) without reliance on overtime, allows for customer service appointments after-hours, and increases the focus on continual improvement work.

Sustainable Initiatives – recommendation (f):

Three Sections within Hamilton Water (Sustainable Initiatives, Capital Delivery and Infrastructure Planning & System Design) require a permanent Administrative Secretary to reduce the involvement of staff in administrative tasks that overloads and impacts the efficiency of their current work. These Sections of Hamilton Water play a critical role in the City's open for business mandate, asset management strategy, capital delivery and the Administrative Secretary plays an ongoing and key support role.

**ALTERNATIVES FOR CONSIDERATION**

Staff evaluated a number of alternatives in developing the business case for additional FTEs.

Plant Maintenance and Technical Services / Plant Operations – recommendations (a) through (d):

For the positions identified to support the WUP and increased capital works activity, staff considered contracting out works were applicable.

The Process Supervisor and the Maintenance Operator position require a valid Water or Wastewater Treatment Licence and are unionized positions. Therefore, contracting out these positions is not an ideal solution. There are external vendors that can provide the services associated with the Technologist and SCADA Technologist. However, in both cases the cost associated with procuring these services externally is 50% more expensive than utilizing internal resources. In addition, utilizing internal resources will ensure the knowledge and expertise gained during project implementation can be utilized in maintaining and operating the assets over their life span and therefore staff does not recommend this option.

It is important to note the WUP and other significant capital upgrade projects have created a body of work that requires increased levels of operational support. Should Council not support the additional staffing request the funding attributed to these positions that has already been approved as part of the 2017 Water, Wastewater and Stormwater Rate Budget should be reallocated to operating budget accounts in order to pay for this alternative to engage consulting and contractual service providers.

Recommendation (e) - Water Distribution Supervisor:

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Council could choose to eliminate the 7<sup>th</sup> Water Distribution Supervisor; however, the position is needed to ensure compliance with the Highway Traffic Act and the Employee Standards Act and has resulted in a significant reduction in overtime.

Therefore, staff does not recommend this alternative.

Council could choose to approve the 7<sup>th</sup> Water Distribution Supervisor as a temporary position; however, recruiting a licenced Water Distribution Supervisor on a temporary assignment is challenging and it increases the likelihood of staffing turnovers. Staff do not anticipate any changes in legislation that would eliminate the need for the 7<sup>th</sup> Water Distribution Supervisor and therefore do not recommend this option.

Recommendation (f) - Administrative Secretary:

A temporary Administrative Secretary is currently supporting the Sustainable Initiatives, Capital Delivery, and Infrastructure Planning and Systems Design Sections. Should Council choose not to approve the position this would result in no administrative support for three (3) Sections providing valuable services that support the City's open for business mandate and support infrastructure renewal. Council could also choose to approve the Administrative Secretary as a temporary position but temporary positions increase the likelihood of staffing turnovers. Staff does not recommend these options.

**ALIGNMENT TO THE 2016 – 2025 STRATEGIC PLAN**

**Community Engagement & Participation**

*Hamilton has an open, transparent and accessible approach to City government that engages with and empowers all citizens to be involved in their community.*

**Economic Prosperity and Growth**

*Hamilton has a prosperous and diverse local economy where people have opportunities to grow and develop.*

**Healthy and Safe Communities**

*Hamilton is a safe and supportive city where people are active, healthy, and have a high quality of life.*

**Clean and Green**

*Hamilton is environmentally sustainable with a healthy balance of natural and urban spaces.*

**Built Environment and Infrastructure**

*Hamilton is supported by state of the art infrastructure, transportation options, buildings and public spaces that create a dynamic City.*

**Culture and Diversity**

*Hamilton is a thriving, vibrant place for arts, culture, and heritage where diversity and inclusivity are embraced and celebrated.*

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**Our People and Performance**

*Hamiltonians have a high level of trust and confidence in their City government.*

**APPENDICES AND SCHEDULES ATTACHED**

N/A