



City of Moose Jaw

COMMUNICATION # CC-2019-0181

TITLE: Engineering Department Staffing – Construction Repair Crew

TO: City Council

FROM: Department of Engineering Services

DATE: September 19, 2019

PUBLIC: PUBLIC DOCUMENT

RECOMMENDATION

THAT the City transition six temporary staff – average of 45 weeks per year to permanent status and hire six new permanent staff positions. The net impact on the 2019 Water Works Budget is estimated at \$40,000 presuming a late year implementation.

TOPIC AND PURPOSE

The purpose of this report is to present operational data and analysis. The report will also provide recommendations on resource levels required to address the challenges facing the City's infrastructure relevant to the City Council resolution of July 9, 2018.

BACKGROUND

At the regular meeting of City Council on July 9, 2018, the following resolution was adopted:

"THAT City Administration prepare a report analyzing the financial implications of developing a Water and Sewer Capital Construction Division to aid in the delivery of the long-term Capital Project WW-17 Water Main Replacement, to increase capacity to respond to water and sewer repairs such as water breaks and valve replacements; and

THAT the analysis includes options and financial implications regarding, but not limited to:

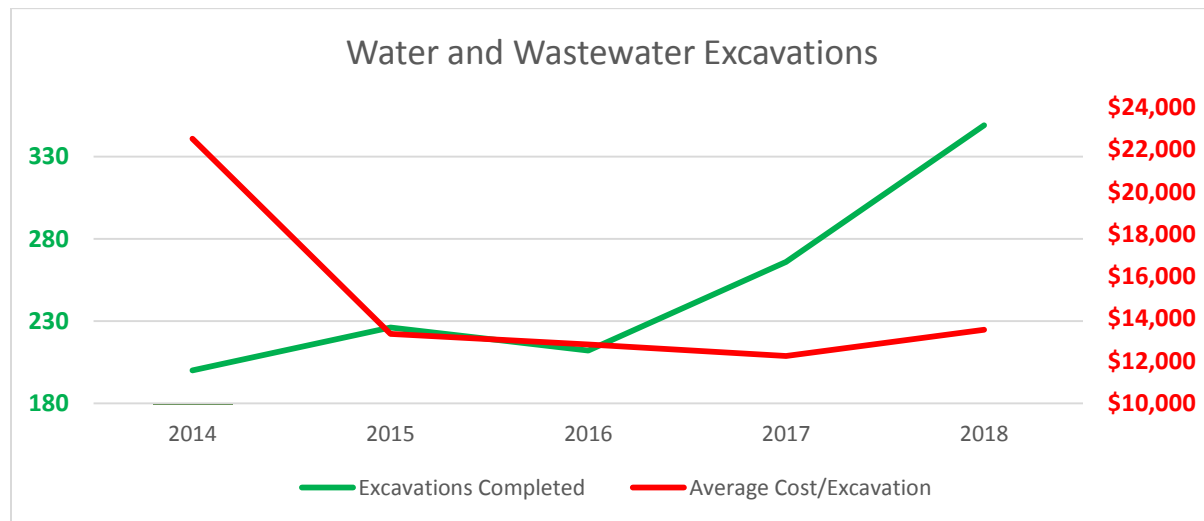
- 1. Internal Engineering Design and Project Management vs. Contracted Services;*
- 2. Equipment Requirements;*
- 3. Labour Requirements;*
- 4. Cost Benefit Analysis – Renting Equipment vs. Purchasing Equipment*
- 5. Potential Duties and Workload in Off-Season*
- 6. Potential of Hiring Seasonal Employees vs. Permanent Employees;*
- 7. Benefits/Challenges of Using Internal Resources;*

8. *Unit Cost of Using Internal vs. External Resources;*
9. *Increased Capacity to Respond to Water Breaks"*

The Department of Engineering Services has been tracking data and conducting analysis of its operations for several years. This report presents this information including an examination of existing staffing levels and duties, scope of work activities/programs being performed or not performed, workload levels based on the condition of the City's infrastructure, operational efficiency, and cost of work activities.

This analysis highlighted an immediate operational challenge. Resource levels are not sufficient to address infrastructure failures and repairs in a timely manner, which results in a back log of repairs accumulating. Resources are required to address repairs in a timely manner and improve the level of service. As continued capital replacement of infrastructure addresses the overall number of failures, the additional resources requested (construction crew) could be transitioned to capital construction (i.e. water main replacement).

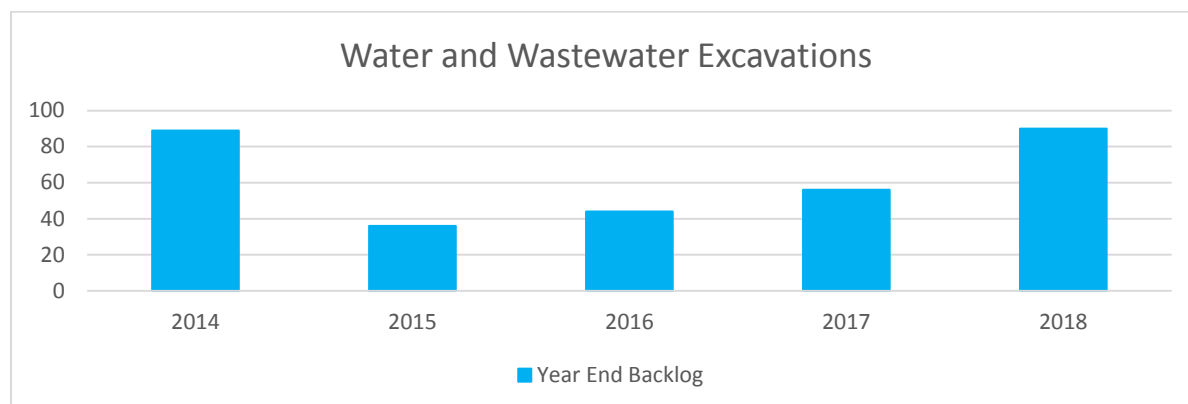
Best practice in any operation is to maximize efficiencies and control costs prior to seeking out additional resources and this has now largely been achieved. Operational repair crews have made significant strides in both responsiveness and performance thus increasing the volume of repairs made by 70% over a five-year span. Simultaneously, operational repair costs per excavation have decreased by 48% over the same time frame.



It should be noted that further preventative programs were initiated in 2017. Unfortunately, the Department of Engineering has only been able to complete less than 40% of these programs over the past two years. While staff are directly involved in repair activities to keep the infrastructure functioning, there are not enough resources to complete preventative maintenance. This is a critical function in preserving and extending the useful life of our existing and new infrastructure.

*Excavations are repair/replacement of hydrants, valves, water mains, service connections, collapsed sanitary & storm pipe, catch basins, lead lines, etc.

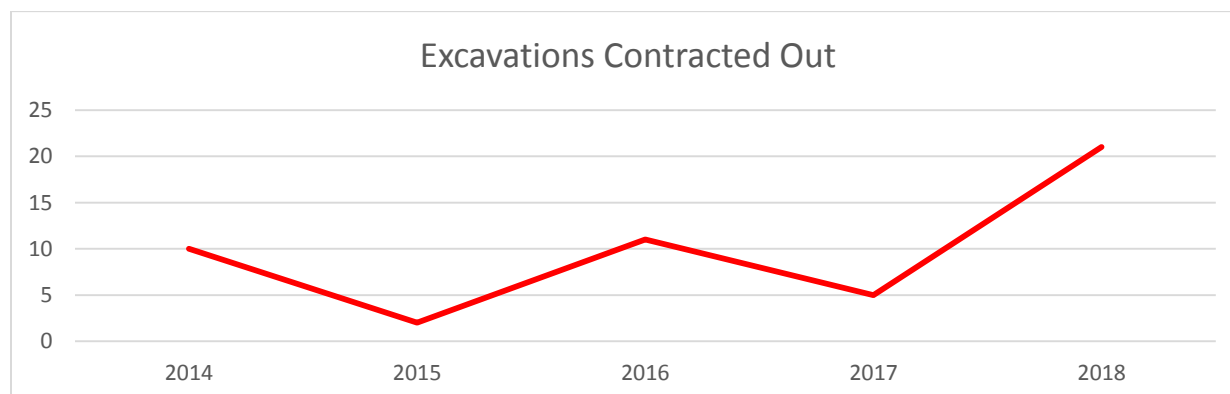
Aging linear assets have shown a steady increase in failure rates, more sharply in the last three years. It is anticipated that the repair trend will peak in approximately five years.



Despite the rapid and significant increase in the volume of repairs completed, the backlog of repairs has grown (4) four straight years to a new high. This backlog negatively affects customers and increases risks due to failed components in our distribution and collection systems, most notable in the area of fire protection.

Public requests for service have increased 25% over the 3-year average and the amount of capital infrastructure renewal has increased significantly (almost doubling year over year). While this means a higher level of service for customers, it also increases pressure on crews, technical staff, and administrative assistants.

The City has engaged contractors to a varying degree over the years to assist in repair activities:



There are barriers to this practice. Sourcing contractors to perform smaller, one-off repairs with the proper training and regulatory compliance is challenging. Ultimately, the City of Moose Jaw is responsible for the quality control of its distribution system and there is a direct cost implication in using contractors of an additional \$4,000 - \$10,000 per excavation.

This report will address the request for additional staff that would consist of a construction crew which would be responsible to respond to watermain breaks and address infrastructure repairs, as well as, an Executive Assistant to support this new crew and the in-house Engineering Design team. The additional resources would help address the

backlog of outstanding repairs (approximately 125) that have accumulated. These repairs include service connections, hydrant repairs and valve repairs. This current backlog wait list is approximately six to eight months.

DISCUSSION

The Water and Wastewater Utility has insufficient resources to be able to address infrastructure repairs. The back log of uncompleted repairs is increasing. Current estimates are that it may be another (5) five years before Capital Investment and Preventative Maintenance (assuming annual completion of programs) will result in reduced infrastructure failures and repairs.

The Department is requesting (6) six new permanent staff plus the transition of (6) six temporary staff to permanent staff to deliver the operational programs (repairs and preventative maintenance). Completion of these programs is essential to reducing long term operating costs while simultaneously providing the benefit of increasing the lifespan of the infrastructure resulting in decreased capital investment.

In order to complete the required workload, both repairs and preventative maintenance, the City needs (2) two full-time functioning repair/construction crews and (2) two full-time hydro-vac trucks with qualified operators.

Staff request break down:

- (4) four temporary staff on the water area moving to permanent status (most currently working 50 weeks per year) plus (3) three new permanent staff would enable (2) two full repair/construction crews on a full-time year-round basis.
- (2) two requested permanent staff members would be to work on the valve, hydrant and uni-directional flushing preventative maintenance programs as skilled labourer positions.
- An Executive Assistant permanent position is requested to address and coordinate enhanced customer service, provide administrative support to capital projects, capital design team and provide confidential administrative support to the Department.
- (2) two of the temporary staff requested to move to permanent staff are from the Wastewater area. This would be contingent on two items:
 - The approval and purchase of a second hydro-vac.
 - Council finalizing their motion on discontinuance of the residential sewer block program currently awaiting bylaw revision.

Hydro-vac requirements for daylighting utilities have increased over the last few years as regulatory policy has changed from Provincial Utilities. The steady increase in the number of excavations is necessitating increased hydro-vac demand. In addition, the City has no redundancy when its single unit fails. Flushing trucks can be difficult to come by to clear sewer main blocks and the City has had to borrow a hydro-vac truck from another municipality in the recent past. Finally, the introduction of the Flush and Drag Preventative Maintenance Program requires a hydro-vac full-time for eight months each

year in order to successfully complete the maintenance on the City pipe network. The City has contracted additional hydro-vac units for all activities over the last (3) three years at a total cost of \$773,941.

A concept that received initial approval to study further in the 2019 Budget was to fund these additional resources through the creation of a new line of business being an in-house Design team. It is estimated that in the 1st year the Design Team would save an estimated \$500,000 in consulting fees. In comparison, an in-house Design Team, which has been created through the 2019 Budget can complete this engineering for \$395,000.

The Department of Engineering is requesting an increase in staffing in order to manage the workload that currently exists in the City. The estimated annual cost to transition the (6) six temporary staff to permanent status and hire (6) six new permanent staff positions is \$597,000. This cost can be offset and addressed by:

- The \$100,000 in direct costs saved from owning a 2nd Hydro-Vak unit; and,
- The \$ 500,000 in direct costs saved from removing the need to hire External Consultants to complete cast-iron design by having the In-House Design Team already in the Budget complete this work.

There will be an increase in funding for the 2019 Budget of approximately \$ 40,000 for start-up and labour costs.

Equipment Reserve

Vactor

Truck

\$500,000

To be funded from Eng control Acct

This option provides the best value to the City. Preventative maintenance programs would be able to be addressed through this option. It would also allow for one construction crew to transition to capital replacement in approximately (5) five years as repairs decrease. There are numerous other benefits to this model that are listed below.

- Improved customer service through timely repair of infrastructure failures.
- Reduction of insurance risk with respect to private property damage (fire coverage, sanitary back ups, etc.) through elimination of repair backlog.
- Completion of preventative maintenance programs leading to reduced customer disruptions and lower long-term operating and capital costs.
- More resilient staffing model to respond to emergencies (quantity and cross training).
- Reduced cost of repairs.
- City crew with intimate knowledge of City infrastructure able to transition into more Capital program delivery.
- Two hydro-vac units with flushing capability allows for reliable emergency response on sanitary linear assets.
- Reduction of staff fatigue and burnout due to high number of after hour call outs.

- Transition from reactive maintenance to planned, proactive maintenance.

OPTIONS TO RECOMMENDATION

- 1) THAT the City engage contractors for a period of approximately (5) five years at an annual cost of \$712,000. (no preventative maintenance or Capital replacement)
- 2) THAT the City hire (3) three more temporary staff to fill in for construction crew shortages at an annual cost of \$549,000. (limited preventative maintenance)

FINANCIAL IMPLICATIONS

At this time, the construction crew will be undertaking repairs and could not be directly allocated to Capital. It is anticipated that there will be an over-all cost savings in Year Two. As the construction crew transition to Capital replacement, the costs would be allocated direct to Capital.

PRESENTATION

VERBAL: Administration from the Department of Engineering Services will be in attendance to provide a verbal overview of the report.

REPORT APPROVAL

Written by: Darrin Stephanson, Manager of Utilities
Reviewed by: Josh Mickleborough, Director of Engineering Services
Tracy Wittke, Assistant City Clerk
Myron Gulka-Tiechko, City Clerk/Solicitor

Approved by: Jim Puffalt, City Manager

City Manager Comments

The creation of the in-house Design Team to complete engineering for the Cast Iron Program, a new line of business, would enable the City to create the Construction Crews at minimal cost to address this backlog of repairs required as well as being able to transition to a Construction Crew in the future.

It is important to note that for the foreseeable future that the City would use both internal forces as well as Contractors to continue the Repair Program and the Cast Iron Program.

Other items that will be considered if approved include:

- *Re-purposing 2 surplus city buses to construction crew buses that would include supplies, inventory, warm-up and break area to enable crews to stay on site during construction, increasing productivity and reducing downtime.*

Finally, the City will operate as much as possible as private contractors recognizing our labour obligation and other benefits. The city can be competitive with contracted prices is that there is no profit on top of overhead allocated, the City does not pay any

corporate income tax nor is required to make a profit as our intent is to break even and complete more work for the same budget.

To be completed by the Clerk's Department only.

Presented to Regular Council or Executive Committee on _____.

No. _____

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Report Approval Details

Document Title:	Engineering Department Staffing - Construction Repair Crew - CC-2019-0181.docx
Attachments:	
Final Approval Date:	Oct 8, 2019

This report and all of its attachments were approved and signed as outlined below:

No Signature - Task assigned to Josh Mickleborough was completed by workflow administrator Maureen Latta

Josh Mickleborough



Tracy Wittke



Jim Puffalt

No Signature - Task assigned to Fraser Tolmie was completed by workflow administrator Maureen Latta

Fraser Tolmie