



# **2019 RECOMMENDED WATER, WASTEWATER AND STORMWATER RATE SUPPORTED BUDGET**

**December 6, 2018**

# 2019 RATE BUDGET



Performance Metrics / Statistics

2018 Highlights

Clean Harbour / Biosolids P3 Project

2018 Opportunities & Challenges

Future Outlook

State of the Infrastructure

2019 Operating Budget

# 2018 WATER FORECAST

**1 WATER TREATMENT PLANT**



**80,550 ML TREATED**  
WHICH IS EQUAL TO 29% OF HAMILTON HARBOUR



DAY-TO DAY  
OPERATIONS AND  
MAINTENANCE OF  
**13,137**  
FIRE HYDRANTS

SUPPORTING



**7** AGENCIES  
WITH  
RESEARCH

**21 WATER PUMPING STATIONS**



**4 WELL SYSTEMS**  
CARLISLE  
FREELTON  
GREENSVILLE  
LYNDEN

**13**

**RESERVOIRS**



**7**  
WATER  
TOWERS

**6** ACTIVE  
CONSTRUCTION  
PROJECTS

INCLUDING **4**  
SUBSTANTIALLY  
COMPLETED  
PROJECTS

**151,290**  
WATER METERS

**2,075 km**  
OF WATERMAINS

**262**  
WATERMAIN  
REPAIRS



**REACHED  
26,000**  
YOUTH WITH  
OUTREACH  
ACTIVITIES

**11,000**  
TESTS ON  
WATER  
TREATMENT  
PLANT SAMPLES

**17,000**  
TESTS ON  
WATER  
DISTRIBUTION  
SAMPLES



**440,000**  
PRINT PIECES

**17** WATER  
MODELLING  
EXERCISES  
EXPECTED TO  
BE COMPLETED



Hamilton

**TOTAL WATER ASSETS - \$3.22 BILLION**



# 2018 WASTEWATER/STORMWATER FORECAST

**2** WASTEWATER  
TREATMENT PLANTS

**118,110 ML TREATED**  
WHICH IS EQUAL TO 42% OF  
HAMILTON HARBOUR



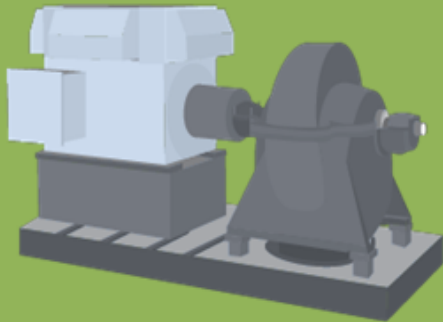
**9,615**

BACKWATER  
VALVES INSTALLED  
SINCE THE  
INCEPTION OF THE  
PROGRAM

ADDITIONAL  
SERVICES REVENUE  
**\$10,025,000**  
(69 ACTIVE  
PERMITS)



**70**  
PUMPING STATIONS



**9**

COMBINED SEWER  
OVERFLOW  
TANKS



**6,600 MWH**  
ELECTRICITY  
PRODUCED

MEGA WATT HOURS

ENOUGH TO POWER 740 HOMES PER YEAR



**6** ACTIVE  
CONSTRUCTION  
PROJECTS

INCLUDING **4**  
SUBSTANTIALLY  
COMPLETED  
PROJECTS



**1,165 km**  
SANITARY SEWER

**1,175 km**  
STORM SEWER

**575 km**  
COMBINED  
SEWER

**37,730**  
TONNES OF  
BIOSOLIDS REMOVED

**44,559**  
MANHOLES



**44,000**  
TESTS ON  
WASTEWATER SAMPLES

**14,100**  
TESTS ON  
ENVIRONMENTAL SAMPLES

ESTIMATED BIOGAS  
PRODUCTION  
**927,500 m<sup>3</sup>**

**730**  
DEVELOPMENT  
APPLICATION  
REVIEWS

**8**

SEWER  
MODELLING  
EXERCISES  
EXPECTED TO  
BE COMPLETED



# 2018 SYSTEM PERFORMANCE

## Woodward WWTP

- ❖ 113,550 ML wastewater treatment (forecast)
  - 76% capacity utilization
- ❖ 18 months continuous compliance with wastewater effluent limits
- ❖ 37,730 tonnes biosolids removed (forecast)
- ❖ 6,600 MWH of electricity generated by cogeneration facility (740 homes powered / year)
- ❖ 927,500 m<sup>3</sup> of renewable natural gas generated by the Bio-gas purification unit
- ❖ 14 Plant By-Passes during wet weather events
- ❖ 7 Odour complaints

## Dundas WWTP

- ❖ 4,560 ML wastewater treatment (forecast)
- ❖ 45 months continuous compliance with wastewater effluent limits

**COMPLIANCE**



## Water Treatment Plant

- ❖ 80,550 ML water treatment (forecast) (on par with 5 year average)
- ❖ 2 Confirmed Adverse Water Quality Incidents (AWQI's)
- ❖ YTD Global Adjustment - \$3.5M cost avoidance

# 2018 HIGHLIGHTS

## OUR PRIORITIES



### 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 & GROWTH

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



### HEALTHY & SAFE COMMUNITIES

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



### CLEAN & GREEN

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



### BUILT ENVIRONMENT & INFRASTRUCTURE

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



### CULTURE & DIVERSITY

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



### OUR PEOPLE & PERFORMANCE

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



# 2018 HIGHLIGHTS



## Clean and Green

- ❖ Drinking Water License renewal application, Financial Plan, DWQMS re-Accreditation
- ❖ Carlisle Conservation Committee – installation of automated meter infrastructure (AMI)
- ❖ Low Impact Development (LID) Rain Garden – Simcoe Street



## Healthy and Safe Communities

### ❖ Events

- 11<sup>th</sup> Children's Water Festival
- 1<sup>st</sup> World Toilet Day

- ❖ Water and Wastewater Master Plan (2031 growth data)



# 2018 HIGHLIGHTS

## Our People & Performance

### ❖ Recruitment and Team Structure

- Senior Leadership transition
- Minor restructuring within Sections

### ❖ Our People Survey – 84.4% participation & Action Plans created

## Built Environment and Infrastructure

### ❖ CWWF and Capital Projects:

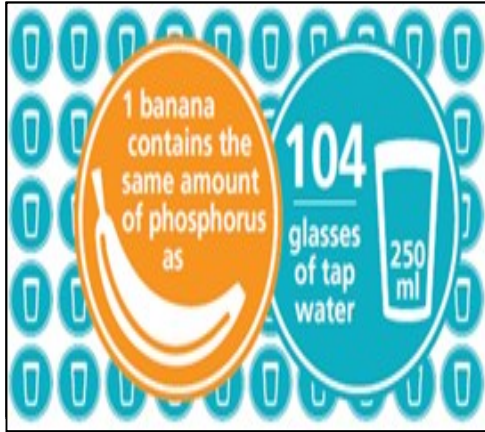
- Methane Sphere, CCP Building, Linear projects
- Binbrook SPS Upgrades and forcemain cleaning

### ❖ Inspections and Lining Program

- Smart Ball inspection for Woodward/Kenilworth transmission watermain (6km)
- 65 km watermain relined (since 2002)
- 380 km sewermain relined (since 2001)



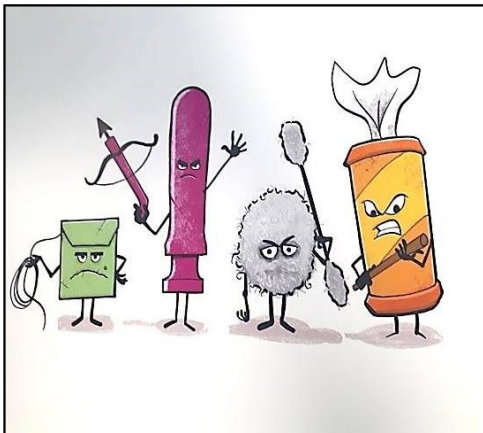
# 2018 HIGHLIGHTS



## Corrosion Control Program

- ❖ System wide approach to control lead at the tap
- ❖ Extensive outreach and education campaign for residents and businesses
- ❖ Orthophosphate addition started in November 2018
- ❖ Post implementation monitoring and reporting ongoing

## #OwnYourThrone Campaign



- ❖ Educational campaign focused on flushable and non-flushable items and the impact they have on the sewer system and the environment
- ❖ Message Delivery – billboards, bus benches, recreation facilities, social media, videos
- ❖ Audience: Hamilton residents, disposable wipes consumers, early years and childcare centres, nursing and long-term care homes and hospitals



# 2018 HIGHLIGHTS



## Healthy and Safe Communities

### ❖ Protective Plumbing Program (Backwater Valves)

- Rostered contractor model continues to be a success
- 9,615 valves installed since 2009 for a total of approximately \$22.9M

### ❖ Sewer Lateral Management Program

- Upgrade of aged residential sewer service lines
- New rostered contractor model in 2018
- 762 inspections completed YTD, spot repairs, replacement or lining
- Approximately \$3M spent in 2018



### ❖ Poor Pressure Program (Lead Service Line Replacements)

- 667 services replaced YTD, 1424 size & type inspections
- Approximately \$2.2M spent in 2018

### ❖ Lead Filters

- Available to residents replacing their lead service lines
- 628 filters/kits distributed YTD



# CLEAN HARBOUR PROGRAM







# CLEAN HARBOUR PROGRAM

For more information, visit our website at

- ❖ [www.hamilton.ca/cleanharbour](http://www.hamilton.ca/cleanharbour)
- ❖ [www.hamilton.ca/city-initiatives/our-harbour/current-projects](http://www.hamilton.ca/city-initiatives/our-harbour/current-projects)

# RANDLE REEF



- ❖ 3 Phase project
- ❖ All containment walls have been installed (Phase 1)
- ❖ Next Steps:
  - Dredging
  - Capping
  - Landscaping
- ❖ To be complete in 2022
- ❖ Total project cost ~ \$139 M

# WOODWARD UPGRADE PROJECT

## Contract 1 Main Pump Station



Status: Construction  
Contract Value: \$87.6M  
Completion: Q2 2021

## Contract 2 Electrical & Chlorine System

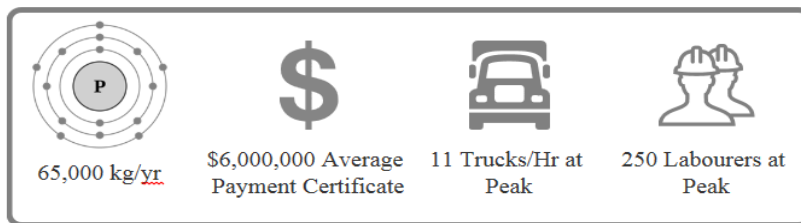


Status: Construction  
Contract Value: \$61M  
Completion: Q2 2021

## Contract 3 Tertiary Treatment Upgrade



Status: Tendering  
Contract Value: \$150M (Estimate)  
Completion: Q4 2021





# WOODWARD UPGRADE PROJECT

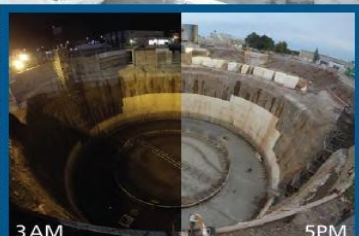
## Woodward Upgrades Project Newsletter

A part of the Clean Harbour Program

November 2018



2092m<sup>3</sup> of concrete  
1.3-1.4 metres thick



3 AM 5 PM  
14 hour continuous pour

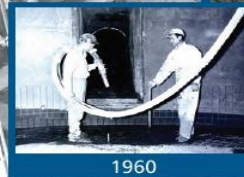
On September 27th, 2018 the WUP team achieved a major milestone in the construction of the Main Wastewater Pumping Station with the pouring of the concrete base slab. Utilizing 2,092m<sup>3</sup> of concrete, Maple Ball Joint Venture, Lafarge, and Reimar Construction placed the base slab in a single continuous pour event. The reason for a single continuous pour was to reduce impacts to plant operations, reduce owner and consultant inspection requirements, and eliminate the need for construction joints in the base slab.



240 truckloads of concrete



2018  
90 Personnel



1960

 Hamilton





# P3 BIOSOLIDS PROJECT

- ❖ PPP Canada Financial Agreement with Infrastructure Canada
- ❖ Completed demolition of old incinerator building
- ❖ Air/Noise & Sewage ECA approved
- ❖ Building construction initiated

Status: Construction

Contract Value: \$106.5M NPV

Completion: Q1 2020



# 2018 OPPORTUNITIES AND CHALLENGES

# 2018 TRENDS AND ISSUES



## Regulatory Challenges

- ❖ Lack of a Quality Management System for wastewater
- ❖ Watermain Disinfection Procedure – increased costs



## Our People & Performance

- ❖ Recruitment (Drinking Water ORO, Engineering SPM/PMs)
- ❖ Increased staff workload
  - Operational support for WUP
  - 16 Clean Water/Wastewater Fund Projects
  - Development Applications



## Built Environment and Infrastructure

- ❖ Delay in Capital rehabilitation is leading to increased operating costs
- ❖ Development pressures (Binbrook, Waterdown, Airport)

# 2019-2022 TRENDS AND ISSUES



## Clean and Green

- ❖ Above industry standard non-revenue water ratio
- ❖ Lack of dedicated stormwater funding stream
- ❖ Low Impact Development governance (public / private and enforcement)

## Healthy and Safe Communities

- ❖ Drinking water regulatory changes (i.e. lead limits)
- ❖ Climate Change – rainfall, elevated lake levels, frozen services

## Built Infrastructure & Environment

- ❖ State of the Infrastructure
- ❖ Dundas WWTP Upgrades – funding strategy
- ❖ Light Rail Transit Project



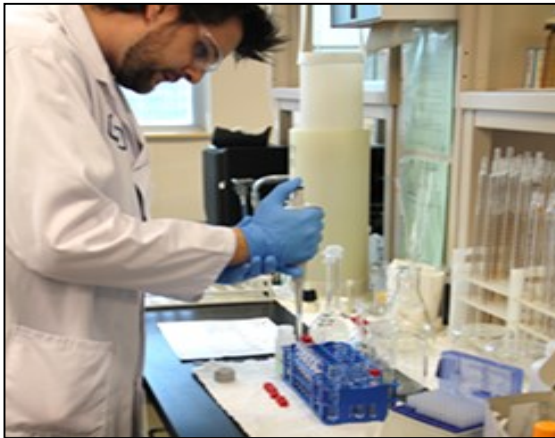
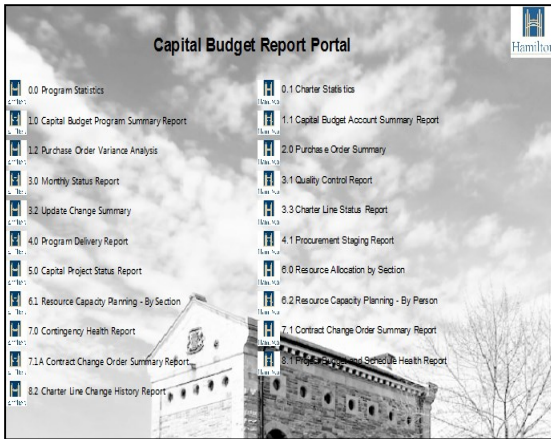


# FUTURE OUTLOOK

# 2019 MAJOR INITIATIVES

## Organizational

- ❖ By-law updates
  - Backflow Prevention Bylaw
  - Sewer Use By-Law
  - Waterworks By-Law
- ❖ Stormwater rate review
- ❖ Dundas WWTP 100 Year Anniversary Event
- ❖ Project Management Office – reporting module



## Operations

- ❖ Online backflow prevention test submissions
- ❖ Presence/Absence (Colilert) bacteria analysis test
- ❖ Consolidation of inventory and fleet management

## Planning & Capital Program

- ❖ Flooding and Drainage Master Servicing study
- ❖ Capital Projects
  - Eastport PS, Lynden, Binbrook SPS

# 2020 to 2022 MAJOR INITIATIVES



## Operations

- ❖ Expansion of Automated Metering to Industrial and Commercial sector
- ❖ Dead-end watermain flushing
- ❖ Review forcemain network and develop cleaning program
- ❖ Facility Plan for Woodward (WWTP)

## Planning & Capital Program

- ❖ Woodward Upgrade Project - operational
- ❖ Biosolids P3 Project - operational
- ❖ Woodward Water Treatment Plant upgrade
- ❖ Dundas Wastewater Treatment Plant upgrade
- ❖ Water and Wastewater Master Servicing Plans



# CONTINUOUS IMPROVEMENT HIGHLIGHTS

## Customer Oriented

### ❖ Water Bulk Fill Station Upgrade

- Terminal upgrades
- Improved Customer Service
- Online procurement

### ❖ Sewer Lateral Management Program

- Program model after Protective Plumbing Program
- Quotes replaced with pre-qualified contractors
- Improved Customer Service



## Process Oriented

### ❖ Sinkhole, Pothole & Road Cut Investigation Standard Protocol

- Clearly defined workflows and process for call centre
- Improved Customer Service

### ❖ Construction Cost Estimation Guidance Document

- Developed guidance document to provide consistency
- Resulted in smaller deviations between conceptual and detailed design estimates

# CONTINUOUS IMPROVEMENT HIGHLIGHTS

## Process Oriented / Financial Savings

### ❖ Anti-Stag Valve Project

- Existing level valves between districts historically fully open
- 37 anti-stag valves installed to control flows within pressure districts 4/8
- Flow reduced from 24/7 to less than 30 minutes per day
- Implementation in additional areas is planned for 2019
- Collaboration with the Office of Energy Initiatives



**\$90,000 Capital Investment**

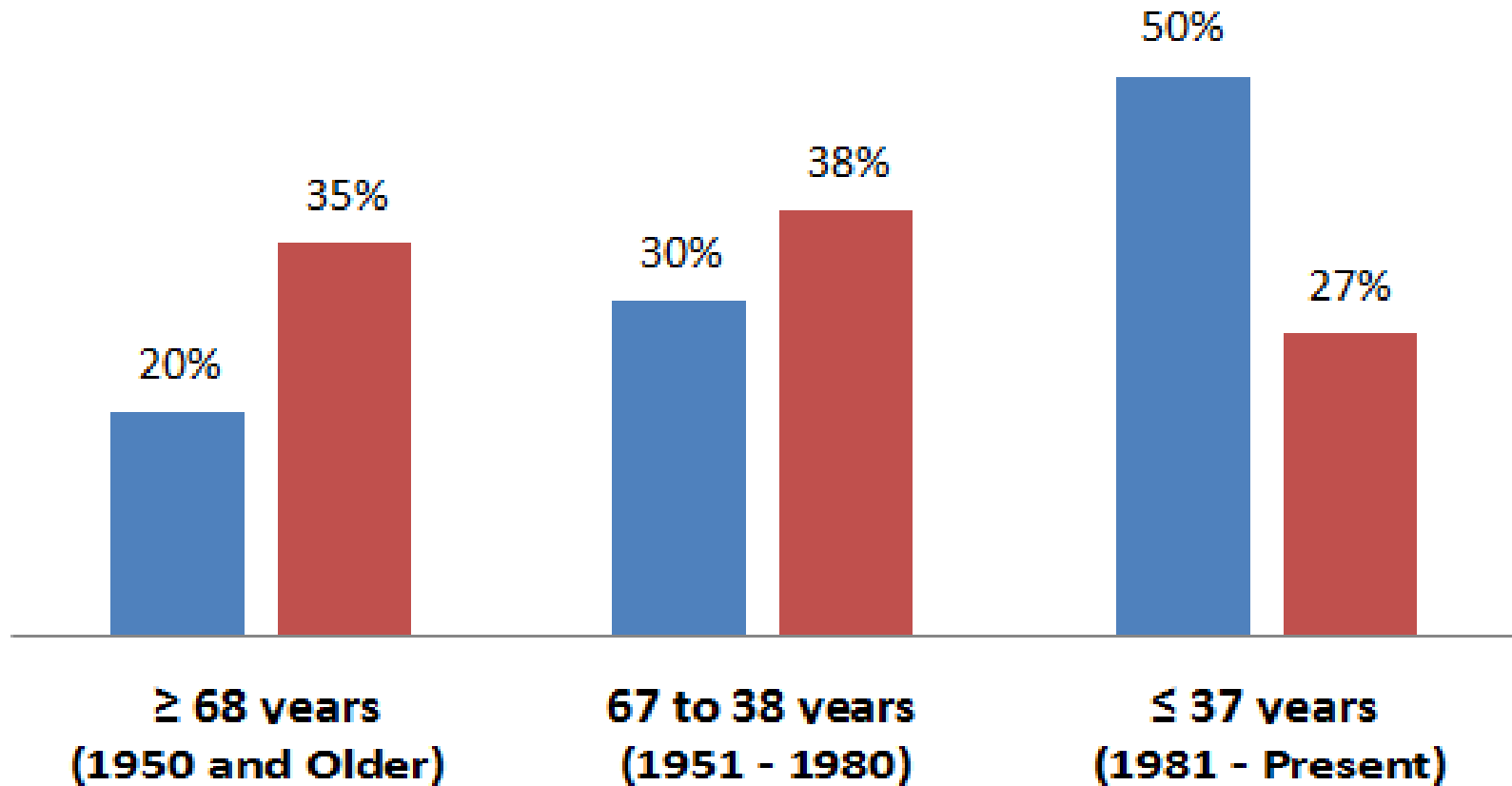
**\$225,000 Annual Energy Savings**



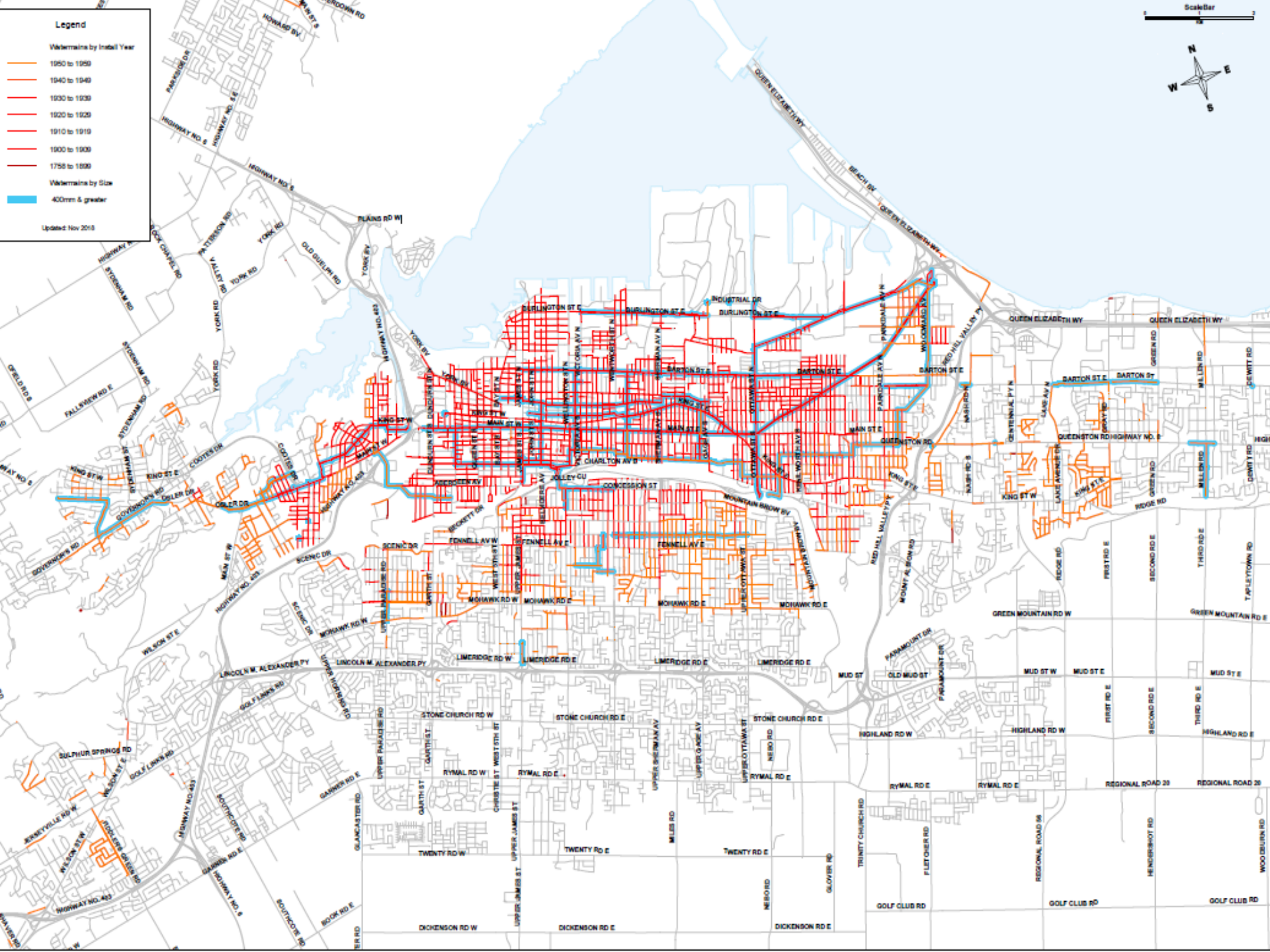
# STATE OF THE INFRASTRUCTURE

# WATERMAIN AGE PROFILE

■ Local Watermain (% of assets) ■ Transmission Watermain (% of assets)



9% of the Distribution Network is Transmission Watermain (450mm and larger)

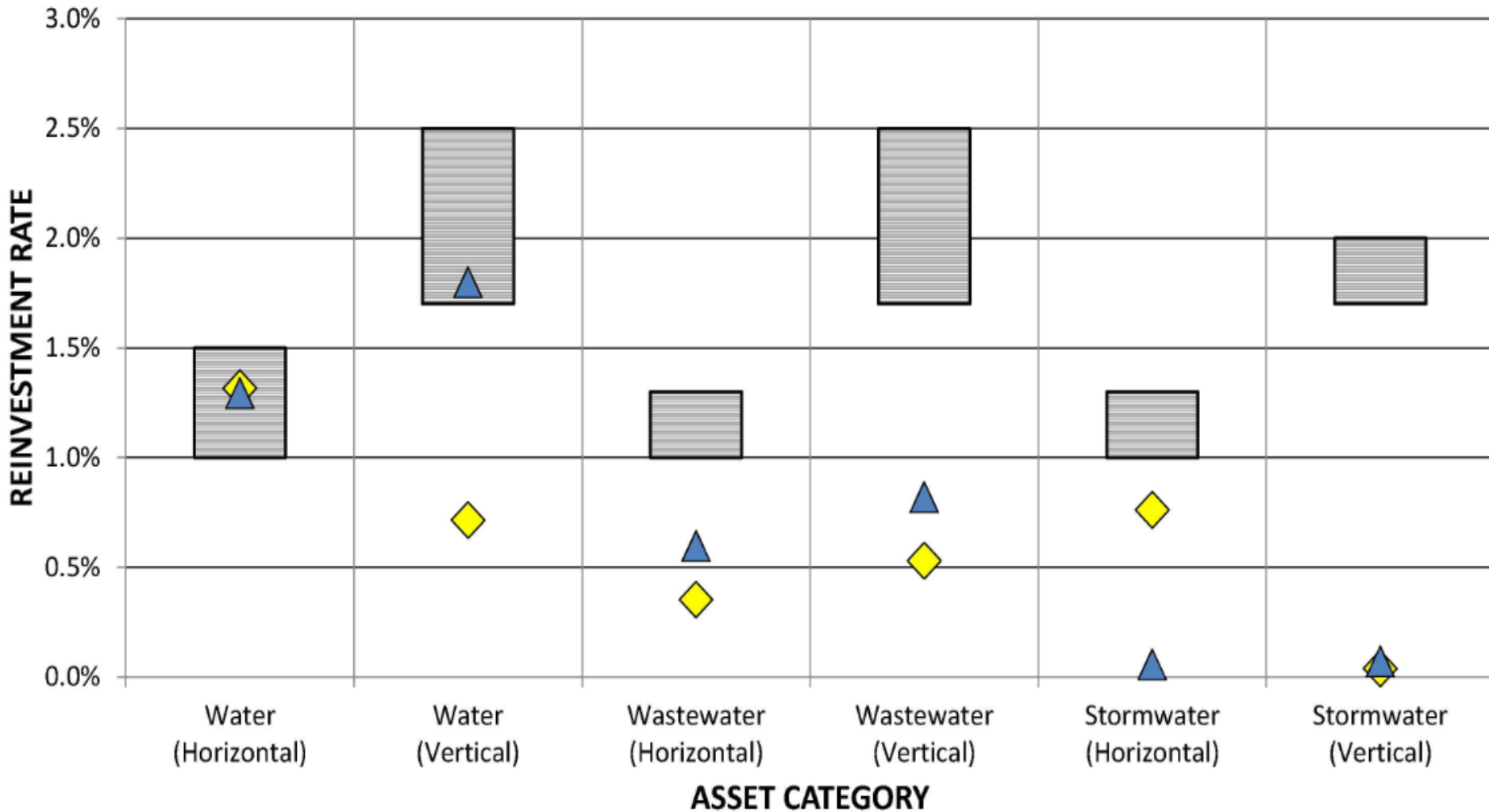


# INFRASTRUCTURE REINVESTMENT RATE COMPARISON

■ Municipalities Target Range (CIRC)

◆ Average Past Reinvestment Rate (with Grants)

▲ Average Future Reinvestment Rate (with Grants)





# MAJOR WATER DISTRIBUTION EVENTS



**Kenilworth Reservoir Break**  
**\$ 74,698**



**May 31, 2018 – Upper Ottawa Corridor**  
**6 Watermain Breaks - \$201,000**



**Upper Paradise Rd & Rymal Rd W**  
**\$169,948**



**Delbrook Crt & Stroud Rd**  
**\$ 150,000 (estimate)**



# MAJOR WATER DISTRIBUTION EVENTS



Highway 403 & Southcote Rd



Grace & Dunn Ave



Clappison Ave and Dundas St E \$55,115

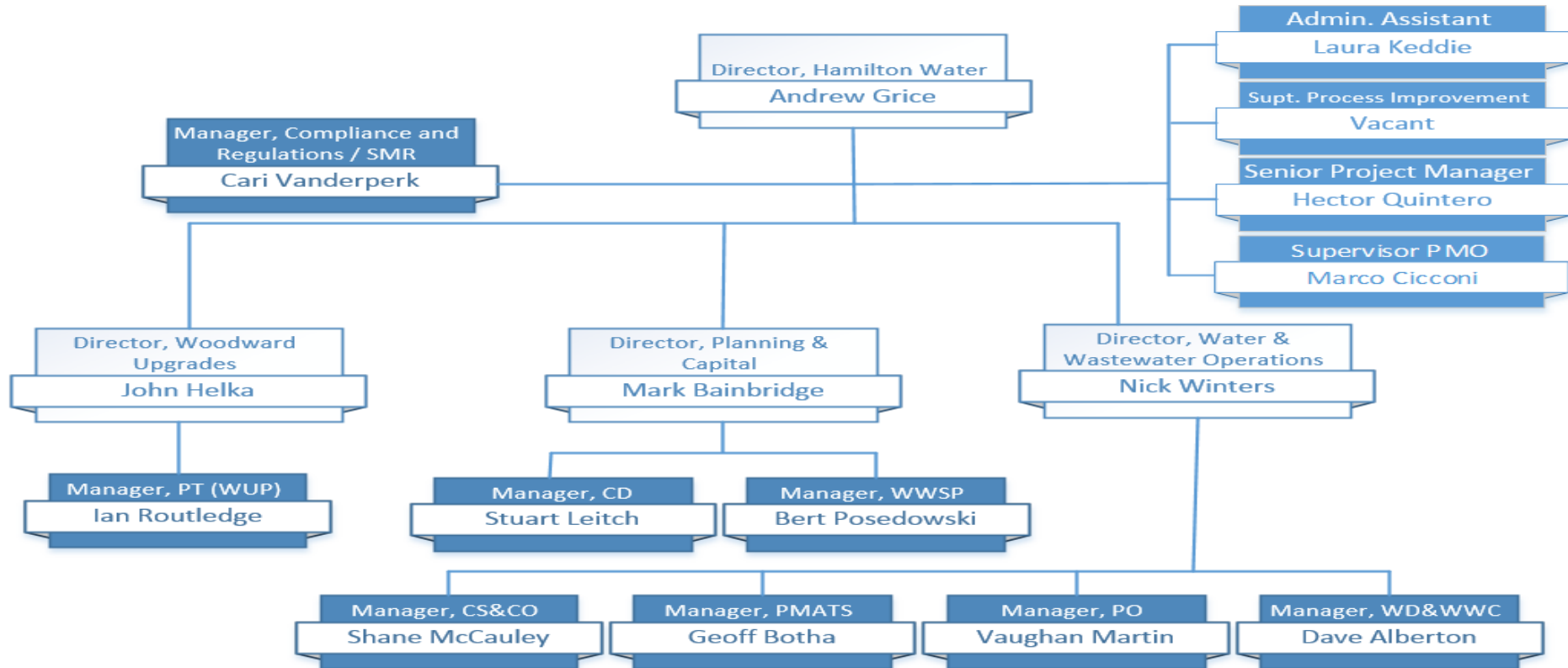


Mohawk Rd W & Southlea Dr

# 2019 OPERATING BUDGET

## Hamilton Water

# ORGANIZATIONAL CHART

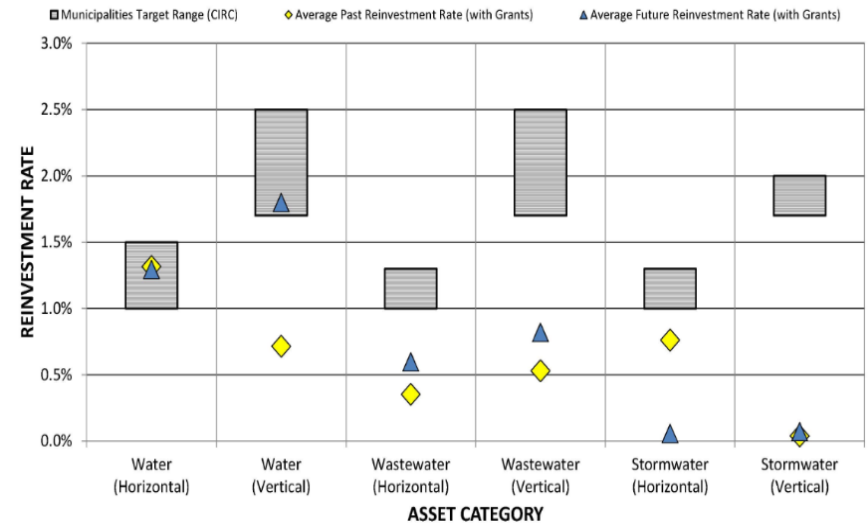


Complement (FTE)	Management	Other	Total	Staff to Mgt Ratio
2017	12	290.25	302.25	25.19
2018	12	288.65	300.65	25.05
2019 (Proposed)	12	295.65	307.65	24.64
Change	0	7	7	

# 2019 BUDGET DRIVERS

Item	Cost (\$)
Hydro	(1.13 M)
Protective Plumbing Program	(750 K)
Locates Contract	1.4 M
Operational Studies – Water Distribution	650 K
Employee Related Expenditures	400 K
Water Loss Program	300 K
Water Distribution Repair Parts	250 K
Corporate Security	250 K
HVAC	235 K

***Proposed combined 4.66% Rate Increase is driven largely by increased capital expenditures.***



# OPERATING IMPACTS FROM GROWTH



- ❖ Woodward Upgrade Project
- ❖ Waterdown Tower
- ❖ Corrosion Control Program
- ❖ Centennial Storm Water station
- ❖ Eastport Wastehauler Station
- ❖ General growth of the system
  - Hydrants
  - Valves
  - Sewers
  - Watermains
  - Electricity Costs
  - Chemical Costs



# 2019 RESOURCE REQUEST

SECTION		Last Years 2019 Request	2019 Request	2020 Forecast	2021 Forecast	2022 Forecast	2023 Forecast
WUP Office		0	0	0	0	0	0
WUP Operations		1	1	7	0	0	0
DIR Office		0	0	0	0	0	0
C&R		1	1* <sup>TEMP</sup>	0	1	0	0
PMO		0	0	1	0	0	0
P&C	CD	0	3	0	0	0	0
	WWSP	0	0	0	2	0	0
Operations	PMATS	0	0	1	2	0	0
	PO	0	0	0	0	1	0
	CS&CO	1	0	0	0	0	0
	WDWWC	2	2	1	0	2	0
TOTALS		5	6/ 1* <sup>TEMP</sup>	10	5	3	0
			25				

# 2019 RESOURCE REQUEST

## **(3) Project Managers, *Capital Delivery***

- ❖ Lead the delivery of capital projects to support growth (i.e. Airport)
- ❖ Ensure timely execution of Clean Water/Wastewater Fund projects

## **(1) Temporary WWQMS Technologist, *Compliance & Regulations***

- ❖ Development of Wastewater Quality Management System
- ❖ Proactive approach planning for Ministry changes to regulatory framework

## **(1) Maintenance Operator, *Plant Maintenance & Technical Services***

- ❖ Woodward Upgrades Project operational support
- ❖ Work with contractors to isolate treatment processes during construction

## **(2) Project Managers, *Water Distribution & Wastewater Collections***

- ❖ To support the Sewer Lateral Cross Connection Program
- ❖ Coordinates and assists with wastewater maintenance capital projects

# WOODWARD UPGRADES PROJECT PAST RESOURCE REQUESTS

## Original 2016 WUP Request

- 2 FTE in 2018
- 9 FTE in 2020



Total Request: 11 FTEs

1 SCADA Technologist  
1 Data Clerk  
5 Maintenance Operators  
2 Millwrights  
2 Instrumentation Technicians

## 2017 WUP Request

Advanced FTE requests as temporary positions to assist in the delivery of the project

- 4 FTE in 2017
- 3 FTE in 2018
- 4 FTE in 2020



Total Request: 11 FTEs

1 SCADA Technologist  
1 Process Supervisor  
1 Process Technologist  
1 Maintenance Operator

*3 FTE approved during 2017 budget*

## 2019 WUP Request

- 1 FTE in 2019
- 7 FTE in 2020



Total Request: 8 FTEs (+ 3 FTEs Approved in 2017 = 11 FTEs)

