September 26, 2017

Halifax Water
Halifax Regional Water Commission

Ray Ritcey, Chair
Halifax Water
Halifax, NS

***REVISED**

The regular meeting of the Halifax Water Board will be held on Thursday, September 28, 2017 at 9:00 a.m. in the Boardroom at 450 Cowie Hill Road, Halifax.

AGENDA

In Camera Reports

1C a) Approval of Minutes of the In-Camera Meeting held on Wednesday, June 28, 2017
b) Approval of Minutes of the Special In-Camera Meeting held on Monday, July 24, 2017

2C Business Arising from Minutes
a)

3C Personnel Matter – Verbal

Regular Reports

1. a) Ratification of In-Camera Motions
b) Approval of the Order of Business and Approval of Additions and Deletions

2. Approval of Minutes of the Regular Meeting held on Wednesday, June 28, 2017

3. Business Arising from Minutes
a)

4. Operating Results for the Five Months ended August 31, 2017
5. Regional Infrastructure Plan $1,650,000
6. Financing for Replacement of Private Laterals
7. Rate Affordability and H2O Program Enhancements
8. 2017 Fall Debenture

Information Reports

1-I Operations and Financial Monthly Update
2-I Capital Budget Approvals to Date
3-I Bank Balance
4-I Stormwater Billing Update
5-I 2016/17 Corporate Balanced Scorecard Results
6-I 2016/17 Annual Report
7-I Merchant Discount Fees for RDC Credit Card Payments
8-I Halifax Regional Water Commission Employees' Pension Plan Financial Report – 2nd Quarter, 2017
9-I HRM Pension Plan Investment Performance 2nd Quarter, 2017

Original Signed by:

James G. Spurr
Secretary

HALIFAX REGIONAL WATER COMMISSION
MINUTES

June 28, 2017

PRESENT: Commissioner Ray Ritcey, Chair
Commissioner Russell Walker, Vice Chair
Commissioner Steve Streatch
Commissioner Darlene Fenton
Commissioner Lisa Blackburn

REGRETS: Commissioner Jacques Dube
Commissioner Lorelei Nicoll

STAFF: Carl Yates, General Manager, HRWC
Cathie O'Toole, Director, Corporate Services & Human Resources, HRWC
James Spurr, Legal Counsel, HRWC
Lorna Skinner, Administrative Assistant, HRWC

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CALL TO ORDER

The Chair called the regular meeting to order at 12:31 p.m. in the Board Room of the HRWC, 450 Cowie Hill Road. The Board moved In Camera at 12:31 and the regular meeting reconvened at 12:56 p.m.

1a. RATIFICATION OF IN-CAMERA MOTIONS

MOVED BY Commissioner Fenton, seconded by Commissioner Blackburn that the Halifax Regional Water Commission Board ratify the In-Camera motions.

MOTION PUT AND PASSED.

1b. APPROVAL OF THE ORDER OF BUSINESS AND APPROVAL OF DELETIONS

Commissioner Streatch asked that Item 4-I, "Federal/Provincial Infrastructure Funding" be added to the Regular Agenda. The Chair agreed to add it as Item 8.

MOVED BY Commissioner Streatch, seconded by Commissioner Fenton that the Halifax Regional Water Commission Board approve the order of business and approve additions and deletions with the above noted amendment.

MOTION PUT AND PASSED.

2a). APPROVAL OF MINUTES – March 30, 2017

MOVED BY Commissioner Fenton, seconded by Commissioner Blackburn that the Halifax Regional Water Commission Board approve the minutes of March 30, 2017.

MOTION PUT AND PASSED.

2b). APPROVAL OF MINUTES – Special Meeting, May 5, 2017

MOVED BY Commissioner Walker, seconded by Commissioner Fenton that the Halifax Regional Water Commission Board approve the minutes of Special Meeting of May 5, 2017.

MOTION PUT AND PASSED.

3. BUSINESS ARISING FROM MINUTES

a) Lead Service Line Replacement Application

Carl Yates stated the Application has been submitted to the Nova Scotia Utility & Review Board (NSUARB) and all filings have been completed in accordance with the prescribed schedule. A decision is anticipated in early August.

b) Unregulated Business Process and Authority Guidelines

Mr. Yates stated that Halifax Regional Municipality (HRM) has not yet ratified the proposed guidelines. James Spurr stated that talks are continuing with HRM in an attempt to have the Administrative Order prepared. The Chair requested that this matter be brought forward to the next Board meeting.

c) Sullivan's Pond Project Update

Mr. Yates stated that the project has received approval from the NSUARB and the tender has been awarded to Dexter Construction.

4. 2016/17 AUDITIED FINANCIAL STATEMENTS AND YEAR END RESULTS

A report dated June 15, 2017, was submitted.

Cathie O'Toole gave a brief overview of the audited financial statements and year end results. She stated that HW received a clean audit report.

MOVED BY Commissioner Walker, seconded by Commissioner Blackburn that the Halifax Regional Water Commission Board approve the March 31, 2017, Halifax Regional Water Commission's Audited Financial Statements prepared using International Financial Reporting Standards.

MOTION PUT AND PASSED.

5. CAPITAL PROJECTS

None

6. HRWC EMPLOYEES' PENSION PLAN FINANCIAL STATEMENTS FOR THE YEAR ENDED DECEMBER 31, 2016

A report dated June 16, 2017, was submitted.

Cathie O'Toole gave a brief overview of the HW Employees' Pension Plan financial statements. Halifax Water received a clean audit report. The redesign of the Pension Plan as at January 1, 2016, has resulted in a significant reduction in the deficiency of the Plan.

MOVED BY Commissioner Walker, seconded by Commissioner Fenton that the Halifax Regional Water Commission Board approve the audited financial statements for the Halifax Regional Water Commission Employees' Pension Plan (the "Plan") for the year ended December 31, 2016.

MOTION PUT AND PASSED.

7. CAPITAL PROJECT SPENDING SUMMARY – 2016/17

A report dated June 16, 2017, was submitted.

Carl Yates provided a brief background on the Capital Project Spending Summary.

MOVED BY Commissioner Fenton, seconded by Commissioner Streatch that the Halifax Regional Water Commission Board approve the individual project over expenditures as identified within Attachment 2, *"Capital Project Spending Summary, April 1, 2016 – March 31, 2017"* and direct staff to forward the subset of projects "over $250,000" to the NSUARB for information and approval.

MOTION PUT AND PASSED.

8. FEDERAL/PROVINCIAL INFRASTRUCTURE FUNDING – CLEAN WATER AND WASTEWATER FUND - UPDATE

A report dated June 22, 2017, was submitted.

Commissioner Streatch requested that this item be moved into the regular agenda. Carl Yates reminded the Board that Halifax Water applied for funding under this program for five projects; Northwest Arm Sewer, Sullivan's Pond, Peninsula Transmission Main, Lake Major Dam and JD Kline Filter Media.

HRM applied for funding for two projects; Fall River Water Service and Herring Cove Water and Sewer Servicing. With regard to the Fall River Water Service project, tenders were received at $2.7M over budget. Halifax Water staff are currently working with HRM staff in an attempt to implement the project in its entirety. Commissioner Streatch asked why the bids for construction were so much higher than the estimated budget. Mr. Yates responded that when the application for funding for this project was submitted, the scope of the project was not absolutely defined as the service boundary was still in the planning stage. Notwithstanding, based on the engineering design consultant's estimates and recommendation, tenders were expected to be within the approved budget envelope.

The next meeting is scheduled for September 28, 2017.

The meeting was adjourned at 2:00 p.m.

James G. Spurr
Secretary

Commissioner Ray Ritcey
Chair

The following Information Items were submitted:

1-I Operations and Financial Monthly Update
2-I Capital Budget Approvals to Date
3-I Bank Balance
4-I Federal/Provincial Infrastructure Funding – CWW Fund – Update (See Item 8)
5-I HRM Pension Plan Investment Performance 1st Quarter 2017
6-I Communications Strategy
7-I Seasonal Disinfection Program - Update
8-I 2016/17 Cost Containment
9-I Halifax Regional Water Commission Employees' Pension Plan Financial Report Q1
10-I Capital Cost Contribution – Financial Status Report for Fiscal Year ended Mar. 31/17

Halifax Water
Halifax Regional Water Commission

ITEM # 4
HRWC Board
September 28, 2017

TO: Ray Ritcey, Chair and Members of the Halifax Regional Water Commission Board

SUBMITTED BY: *Original Signed By:*
Cathie O'Toole, MBA, CPA, CGA, Director, Corporate Services

APPROVED: *Original Signed By:*
Carl Yates, M.A.Sc., P.Eng., General Manager

DATE: September 20, 2017

SUBJECT: **Operating Results for the Five Months Ended August 31, 2017**

INFORMATION REPORT

ORIGIN

Financial Statements

BACKGROUND

The Board is required to review periodic financial information throughout the year.

DISCUSSION

Attached are the operating results for the first five (5) months of the 2017/18 fiscal year, period ending August 31, 2017. The statements reflect direct operating costs by department and allocations among water, wastewater and stormwater for common costs shared across all the services provided by Halifax Regional Water Commission (HRWC).

HRWC is a fully regulated government business enterprise, falling under the jurisdiction of the Nova Scotia Utility and Review Board (NSUARB). The NSUARB requires that HRWC file Financial Statements and rate applications with the Board based on the NSUARB Handbook for Accounting and Reporting for Water Utilities. The Accounting Standards Board (AcSB) requires rate regulated entities to conform to International Financial Reporting Standards (IFRS). The Commission has converted the SAP financial records to IFRS for the purposes of the annual audit and consolidation of the financial statements with those of Halifax Regional Municipality (HRM).

The budget for the 2017/18 fiscal year was prepared using the NSUARB format and financial results will continue to be provided in NSUARB format.

Summary information is provided for the Balance Sheet on Page 1 and the Income Statement on Page 2. A detailed presentation of the Balance Sheet and Income Statement is provided on Pages 3 and 4. Pages 5 through 8 provide Income Statements by Service and for Regulated and Un-Regulated Services. Pages 9 and 10 provide the Balance Sheet and Income Statement in IFRS format.

Consolidated Income Statement - Page 2

Consolidated operating revenue of $58.8 million is $1.0 million greater than revenue reported for last year. Consolidated operating expenses of $42.0 million are $3.8 million higher than the same period last year.

Summarized Consolidated Operating Results				
	Actual YTD 2017/18 '000	Actual YTD 2016/17 '000	$ Change	% Change
Operating Revenue	**$58,823**	$57,864	$960	1.7%
Operating Expenses	**$41,972**	$38,141	$3,832	10.0%
Operating Profit (Loss)	**$16,851**	$19,723	($2,872)	-14.6%
Non Operating Revenue	**$1,596**	$1,299	$297	22.9%
Non Operating Expenditure	**$14,576**	$14,564	$12	0.1%
Net Surplus before OCI	**$3,871**	$6,458	($2,587)	-40.1%
OCI	**$919**	$0	$919	0.0%
Net Surplus (Deficit)	**$4,789**	$6,458	($1,669)	-25.8%

Figures used in the various tables throughout the report may contain differences due to Excel rounding.

The Net Surplus for the year is $4.7 million, a decline of $1.7 million from the prior year. The Net Surplus includes Other Comprehensive Income (OCI) of $1.0 million. The Other Comprehensive Income is primarily the unrealized gains on employee benefit programs, such as investment returns on Pension Plan investments. Excluding OCI, the Net Surplus for the year is $3.9 million, a decline of $2.6 million as compared to the prior year. The budget for the year, approved at the February 2, 2017 Board meeting, was for a loss of $6.7 million. The Forecast has been updated to reflect year to date results for the first five months and a loss of $6.0 million is now expected. It should be noted that budget managers will be asked to provide more detailed expense projections as part of the preparation of the second quarter results.

Relative to the Budget, the Net Surplus to date is a result of higher Operating Revenue, lower Operating Expenses, lower debt servicing costs, and the unrealized gains on employee benefit programs shown in Other Comprehensive Income.

Balance Sheet - Page 3

The Cash balance of $56.8 million is up $0.2 million from the prior year. A separate report has been prepared regarding the Municipal Finance Corporation's Fall Debenture and the cash flow forecast for the remainder of the 2017-18 fiscal year.

The total Accounts Receivable balance of $44.0 million is up $0.2 million. A decrease in Customer Receivables is somewhat offset by an increase in Unbilled Services Revenue. The amounts receivable from HRM of $12.6 million are up $0.7 million from the prior year. The liquidity on the balance sheet (ratio of current assets divided by current liabilities) is 2.25, up from the ratio of 2.11 at the same time last year.

Accounts Receivable		
	2017/18	2016/17
Customer Receivables	**$13,459**	$14,287
Unbilled Services	**$17,911**	$17,502
Halifax Regional Mun.	**$12,599**	$11,914
Total	**$43,968**	$43,704

Balance Sheet Liquidity (Current Ratio)		
	2017/18	2016/17
Current Assets ('000)	**$102,901**	$102,473
Current Liabilities ('000)	**$45,671**	$48,657
Current Ratio	**2.25**	2.11

Plant in Service assets, net of Accumulated Depreciation, is $1.15 billion and is $5.9 million higher than at this time last year. Capital Assets Under Construction is up $11.6 million to $43.8 million, net of external funding received under the Build Canada and Clean Water and Wastewater Fund programs. The following table highlights the major projects underway:

Capital Assets Under Construction	
	Cumulative '000
Aerotech Wastewater Treatment Facility	**$10,942**
MacDonald Bridge Transmission Main	**$6,420**
Northwest Arm Sewer Rehab	**$4,168**
CMMS	**$3,538**
All other projects	**$25,059**
Total Capital Expenditures	**$50,127**
External Funding Received	**($6,343)**
Net Assets Under Construction	**$43,783**

Current liabilities of $45.7 million are down $3.0 million from the prior year with amounts payable to HRM down $2.9 million. Other current liability amounts are on par with the prior year.

The Accrued Post Retirement Benefits, Accrued Long Service Award, Deferred Pension Liability and Supplementary Employee Retirement Plan (SERP) are on par with expected amounts. The balance of the reserve for Regional Development Charges has increased from $11.5 million to $18.7 million, which is attributable to development activity in the Halifax area.

Long Term Debt is down $13.9 million from last year, which is a net of new debt of $7.1 million, repayments of $22.5 million, and a decrease in the Current Portion of Long Term Debt of $1.5

million. The debt service ratio of 21.3% is well below the maximum 35% ratio allowed under the blanket guarantee agreement with HRM.

Long Term Debt by Service		
	2016/17	2015/16
	'000	'000
Water	**$56,844**	$60,707
Wastewater	**$130,332**	$140,621
Stormwater	**$11,297**	$11,056
Combined	**$198,473**	$212,384

Debt Servicing Ratio by Service		
	YTD Debt Servicing Cost Ratio	
	2016/17	2015/16
Water	**19.5%**	19.4%
Wastewater	**23.2%**	25.3%
Stormwater	**17.8%**	11.4%
Combined	**21.3%**	21.8%

The cumulative Operating Surplus of $7.8 million at the beginning of the fiscal year has grown to $11.7 million with the year-to-date net profit before other comprehensive income of $3.9 million.

Income Statement – All Services - Page 4

The following table compares the results with a five month pro-rated forecast for the year. Year to date results are $6.4 million better than budget with Revenue higher than budget and Expenses lower than budget.

Summarized Consolidated Operating Results				
	Actual YTD 2017/18 '000	Five Month Forecast 2017/18 '000	$ Variance	% Variance
Operating Revenue	**$58,823**	$56,561	$2,262	4.0%
Operating Expenses	**$41,972**	$44,267	($2,295)	-5.2%
Operating Profit (Loss)	**$16,851**	$12,294	$4,557	37.1%
Non Operating Revenue	**$1,596**	$1,448	$148	10.2%
Non Operating Expenditure	**$14,576**	$16,237	($1,660)	-10.2%
Net Surplus (Deficit)	**$3,871**	($2,494)	$6,365	255.2%

Customer Rates

Rates for Water and Wastewater service did not change this fiscal year, having last been adjusted on April 1, 2016. A new rate structure for Stormwater Service took effect July 1, 2017. This reset the rates, but did not increase them. The rate for many customers decreased, as shown in the Summary of Rate Change – Stormwater table below:

Summary of Rates				
	Effective April 1/16	Effective May 1/15	$ Change	% Change
Volumetric Charges (per m3)				
Water	**0.976**	0.845	0.131	15.5%
Wastewater	**1.753**	1.638	0.115	7.0%
Combined	**2.729**	2.483	0.246	9.9%
Base Charges (per year)				
Water	**Varies by meter size**		No Change	0.0%
Wastewater	**Varies by meter size**		Varies	1.1%-7.7%

Summary of Rate Change - Stormwater				
	Effective July 1/17	Effective April 1/14	$ Change	% Change
Residential - Impervious Area				
Less than 50 m2	**-**	33.39	- 33.390	-100.0%
50 to 200 m2	**14.00**	33.39	- 19.390	-58.1%
210 to 400 m2	**27.00**	33.39	- 6.390	-19.1%
410 to 800 m2	**54.00**	33.39	20.610	61.7%
Greater than 810 m2	**81.00**	33.39	47.610	142.6%
Culvert only service	**14.00**	Varied	Varies	Varies
ICI Rate per m2	**0.135**	0.149	- 0.014	-9.4%

Operating Revenue

Operating Revenue is $2.3 million ahead of the pro-rated budget with Metered Sales accounting for the difference. This reflects the seasonal pattern of consumption that is typically higher for the summer months.

Metered Sales revenue is up $0.1 million (0.7%) for Water Service and $0.8 million (2.8%) for Wastewater Service as compared to the prior year. Metered Sales consist of base and volumetric charges. Base charges are on par with budget expectations. Volumetric revenue budgets for 2017/18 were based on a 3% decrease in metered consumption. Billed water consumption is down only 0.7% compared to the prior year to date period despite higher levels of precipitation in the summer months. The extent to which the summer weather will impact consumption is not fully evident as the 13 week cycle for customer bills has covered only the early portion of the summer months and the accrued customer balances are based on consumption in previous years.

Wastewater Metered Sales also consists of a volumetric discharge component and a base charge component. For most customers, the discharge component is based on the metered water consumption, and the volumes reflect the decline in water consumption. The actual billed discharge volume increased slightly by 0.3%. Wastewater Rebates are available to large customers whose metered water does not enter the Wastewater system. Rebates are $0.6 million less than budget, which benefits Wastewater Revenue.

Stormwater Site Generated revenue is slightly below budget and the prior year. Other Services and Fees are $0.2 million ahead of budget, with increased revenue for several Wastewater services.

Operating Expenses

Operating Expenses of $42.0 million are $3.8 million higher than the prior year but $2.3 million below the pro-rated budget for the year. Most departmental expenses are below budget and forecast. Compared to the prior year, expenses are higher in Wastewater Collection, Administration and Pension, Wastewater Treatment, and Stormwater Collection. Only Administration and Pension is tracking slightly over budget for the year. This is primarily due to costs associated with implementation of the new stormwater rate structure; and the Communication Strategy.

Financial Revenue

Investment income was budgeted to decrease this year as a result of Accounting changes. Previously, investment income was earned in part through charges on Capital Assets Under Construction. This practice was eliminated for the current fiscal year but higher than anticipated cash balances and rising interest rates have mitigated the impact on revenue. Miscellaneous revenue is up $0.3 million. Miscellaneous Revenue includes various un-regulated activities such as tower leases, energy generation, consulting activities and some contracted services.

Financial Expenses

Long Term Debt costs are on par with the prior year, and less than budgeted. Debt servicing savings are a result of new debt issues having lower interest rates than older, maturing issues and no new debt required in the Municipal Finance Corporation's Spring Debenture.

The Dividend/Grant In Lieu of Taxes is paid annually to HRM. The amount is based on the net asset value of water assets and will increase this year to $4.8 million.

The following table shows operating results for each service.

Year to Date Operating Results by Service		
	2017/18	2016/17
	'000	'000
Water	**$1,153**	$2,290
Wastewater	**$2,526**	$2,867
Stormwater	**$192**	$1,301
Net Surplus (Deficit)	**$3,871**	$6,458

Water Operations - Page 5

Water Operations show a profit of $1.2 million, compared to a profit of $2.3 million for the previous year at this time. Water revenue is up $0.1 million. Operating Expenses are up $1.2 million. Administration & Pension shows the largest increase with Pension Plan Expense increased by $0.8 million.

Wastewater Operations - Page 6

Wastewater Operations show a profit of $2.5 million, down from a profit of $2.9 million in the prior year. Wastewater revenue has increased $1.0 million from the prior year, with Metered Sales and Overstrength Agreements accounting for the increase. Operating expenses have increased by $2.0 million from the previous year. Higher costs in Wastewater Collection of $1.4 million are a result of the costs associated with the recent arbitration hearing; higher salaries and benefits; higher comparative electricity costs as the prior year results included a rebate; and higher contract services costs. Higher costs in Wastewater Treatment of $0.3 million are a result of higher chemical costs.

Stormwater Operations - Page 7

Stormwater Operations show a profit of $0.2 million, a decline from the profit of $1.3 million for the same period last year.

Revenue is down $0.2 million, primarily for the Stormwater Site Generated Flow Charge. Expenses are higher for Stormwater Collection by $0.3 million and for Regulatory Services by $0.3 million. Financial Expenses are up $0.3 million, reflecting the growing capital expenditures and associated debt servicing costs for Stormwater.

Regulated and Unregulated Operations - Page 8

Activities regulated by the NSUARB show a profit of $3.0 million, a decline from the $5.9 million profit for the same period last year.

Unregulated activities show a profit of $0.9 million, ahead of the profit of $0.6 million for the prior year. The profit increase is a result of the contract to treat wastewater from the aircraft carrier that visited Halifax in the summer and the consulting contract with the Atlantic Policy Congress of First Nations Chiefs Secretariat.

Results by Activity		
	2017/18	2016/17
	'000	'000
Regulated Activities	**$2,993**	$5,904
Unregulated Activities	**$877**	$554
Net Surplus (Deficit)	**$3,871**	$6,458

Results under International Financial Reporting Standards - Pages 9 & 10

As noted previously, the AcSB requires HRWC, as a rate regulated utility, to report financial results using International Financial Reporting Standards (IFRS).

On the IFRS Balance Sheet, Accumulated Depreciation is higher producing a lower value for assets, Contributed Capital is treated as a long term liability and amortized rather than being treated as a contribution to equity, and the Operating Surplus is much higher due to changes in the Income Statement.

On the IFRS Income Statement, Operating Revenue is the same. Depreciation Expense is higher as contributed assets are depreciated and some assets are depreciated more quickly. Financial Revenue is higher as the amortization of contributed capital is treated as revenue. The most significant change is Financial Expenses are lower as there is no expense for the Long Term Debt Principal appropriation – a difference of $24.2 million for the full year.

The IFRS Net Profit for the year to date is $11.2 million.

ATTACHMENTS

Unaudited Operating Results for the five (5) months ended August 31, 2017

Report prepared by: *Original Signed By:*
Warren Brake, Manager, Accounting, B.Comm, CPA, CGA
902-490-4814

HALIFAX WATER
UNAUDITED BALANCE SHEET - CONSOLIDATED
AS OF AUGUST 31, 2017

	2018 '000	2017 '000
ASSETS		
Cash	$56,850	$56,673
Accounts Receivable	$43,968	$43,704
Materials & Supplies	$1,588	$1,646
Prepaid Expenses	$495	$450
	$102,901	$102,473
Regulatory Asset	$3,309	$3,500
Plant in Service	$1,150,214	$1,144,145
Assets Under Construction	$43,783	$32,179
	$1,197,306	$1,179,824
Unamortized Debt Discount & Issue Expense	$951	$1,089
	$1,301,159	**$1,283,386**
LIABILITIES & CAPITAL		
Trade Payables & Accrued Liabilities	$15,786	$19,301
Deposits & Unearned Revenue	$6,716	$6,162
Current Portion of Long Term Debt	$23,169	$23,195
	$45,671	$48,657
Pension & Accrued Retirement Benefits	$63,891	$59,673
RDC & Special Purpose Reserves	$19,898	$9,039
Long Term Debt	$198,473	$212,384
Total Liabilities	$327,934	$329,753
Capital Surplus, Committed Reserves, & Accumulated OCI	$961,535	$944,238
Operating Surplus	$7,819	$2,936
Excess (Deficiency) of Revenue over Expenditure - Consolidated	$3,871	$6,458
Total Capital & Surplus	$973,225	$953,632
	$1,301,159	**$1,283,386**

HALIFAX WATER
UNAUDITED INCOME STATEMENT - CONSOLIDATED
APRIL 1/17 - AUGUST 31/17 (5 MONTHS)
41.67%

ACTUAL (CURRENT MONTH) THIS YEAR '000	ACTUAL (CURRENT MONTH) LAST YEAR '000	DESCRIPTION	ACTUAL (YEAR TO DATE) THIS YEAR '000	ACTUAL (YEAR TO DATE) LAST YEAR '000	APR 1/17 MAR 31/18 BUDGET* '000	APR 1/17 MAR 31/18 FORECAST '000	% of FORECAST
$11,930	$12,108	**OPERATING REVENUE**	$58,823	$57,864	$135,587	$135,747	43.33%
$8,110	$6,927	**OPERATING EXPENSES**	$41,972	$38,141	$106,241	$106,241	39.51%
$3,820	**$5,181**	**OPERATING PROFIT**	**$16,851**	**$19,723**	**$29,346**	**$29,506**	**57.11%**
		FINANCIAL REVENUE					
$57	$65	INVESTMENT INCOME	$236	$292	$346	$526	44.89%
$167	$167	PNS FUNDING HHSP DEBT	$833	$833	$2,000	$2,000	41.67%
$97	$40	MISCELLANEOUS	$527	$174	$441	$950	55.47%
$321	**$271**		**$1,596**	**$1,299**	**$2,787**	**$3,476**	**45.93%**
		FINANCIAL EXPENSES					
$680	$733	LONG TERM DEBT INTEREST	$3,391	$3,649	$9,530	$9,530	35.58%
$1,834	$1,800	LONG TERM DEBT PRINCIPAL	$9,050	$8,884	$24,289	$24,289	37.26%
$17	$17	AMORTIZATION DEBT DISCOUNT	$85	$83	$217	$217	38.90%
$380	$382	DIVIDEND/GRANT IN LIEU OF TAXES	$1,989	$1,929	$4,827	$4,774	41.67%
$59	$10	MISCELLANEOUS	$62	$20	$19	$158	39.22%
$2,970	**$2,941**		**$14,576**	**$14,564**	**$38,882**	**$38,968**	**37.41%**
$1,171	**$2,512**	**NET PROFIT (LOSS) BEFORE OTHER COMPREHENSIVE INCOME**	**$3,871**	**$6,458**	**($6,750)**	**($5,986)**	**164.66%**
$184	$0	**OTHER COMPREHENSIVE INCOME**	$919	$0	$0	$2,204	
$1,355	**$2,512**	**NET PROFIT (LOSS) AVAILABLE FOR CAPITAL EXPENDITURES**	**$4,789**	**$6,458**	**($6,750)**	**($3,782)**	**226.63%**

HALIFAX WATER
UNAUDITED BALANCE SHEET
AS OF AUGUST 31, 2017

	2017 '000	2016 '000
ASSETS		
Cash	$56,850	$56,673
Accounts Receivable		
Customers & Contractual	$13,459	$14,287
Customers & Contractual - Unbilled Services	$17,911	$17,502
Halifax Regional Municipality	$12,599	$11,914
Materials & Supplies	$1,588	$1,646
Prepaid Expenses	$495	$450
	$102,901	$102,473
Regulatory Asset	$3,309	$3,500
Plant in Service - Water	$600,104	$584,609
Plant in Service - Wastewater	$714,184	$695,860
Plant in Service - Stormwater	$245,193	$234,169
Less: Accumulated Depreciation - Water	($174,792)	($165,900)
Accumulated Depreciation - Wastewater	($192,818)	($171,025)
Accumulated Depreciation - Stormwater	($41,656)	($33,568)
	$1,153,523	$1,147,645
Assets Under Construction	$43,783	$32,179
	$1,197,306	$1,179,824
Unamortized Debt Discount & Issue Expense	$951	$1,089
	$1,301,159	**$1,283,386**
LIABILITIES & CAPITAL		
Trade	$10,989	$11,448
Interest on Long Term Debt	$2,682	$2,886
Halifax Regional Municipality	$2,116	$4,967
Contractor & Customer Deposits	$204	$200
Unearned Revenue	$6,512	$5,961
Current Portion of Long Term Debt	$23,169	$23,195
	$45,671	$48,657
Accrued Post-Retirement Benefits	$341	$466
Accrued Pre-Retirement Benefit	$3,904	$3,656
Deferred Pension Liability	$59,646	$55,551
Special Purpose Reserves not allocated to projects	$1,222	$1,822
Regional Development Charge	$18,677	$7,217
Long Term Debt-Water	$56,844	$60,707
Long Term Debt-Wastewater	$130,332	$140,621
Long Term Debt-Stormwater	$11,297	$11,056
Total Liabilities	$327,934	$329,753
Capital Surplus	$989,039	$973,404
Committed Reserves	$2,391	$2,391
Accumulated Other Comprehensive Income	($42,274)	($43,936)
Operating Surplus used to Fund Capital	$12,380	$12,380
Operating Surplus	$7,819	$2,936
Excess (Deficiency) of Revenue over Expenditure - Consolidated	$3,871	$6,458
Total Capital & Surplus	$973,225	$953,632
	$1,301,159	**$1,283,386**

HALIFAX WATER
UNAUDITED INCOME STATEMENT - ALL SERVICES
APRIL 1/17 - AUGUST 31/17 (5 MONTHS)
41.67%

ACTUAL (CURRENT MONTH) THIS YEAR '000	ACTUAL (CURRENT MONTH) LAST YEAR '000	DESCRIPTION	ACTUAL (YEAR TO DATE) THIS YEAR '000	ACTUAL (YEAR TO DATE) LAST YEAR '000	APR 1/17 MAR 31/18 BUDGET* '000	APR 1/17 MAR 31/18 FORECAST '000	% of BUDGET*	% of FORECAST
		REVENUE						
$4,156	$4,184	METERED SALES - WATER	$19,983	$19,839	$46,610	$46,610	42.87%	42.87%
$6,116	$6,115	METERED SALES - WASTEWATER	$29,826	$29,014	$67,756	$67,756	44.02%	44.02%
$436	$574	STORMWATER SITE GENERATED SERVICE	$2,684	$2,806	$6,700	$6,700	40.06%	40.06%
$590	$590	FIRE PROTECTION	$2,948	$2,948	$7,074	$7,074	41.67%	41.67%
$309	$323	STORMWATER RIGHT OF WAY SERVICE	$1,603	$1,617	$3,881	$3,881	41.29%	41.29%
$259	$248	OTHER SERVICES AND FEES	$1,431	$1,250	$2,716	$2,896	52.68%	49.41%
$31	$41	CUSTOMER LATE PAY./COLLECTION FEES	$137	$216	$491	$461	27.82%	29.63%
$34	$34	MISCELLANEOUS	$213	$173	$358	$368	59.50%	57.89%
$11,930	**$12,108**		**$58,823**	**$57,864**	**$135,587**	**$135,747**	**43.38%**	**43.33%**
		EXPENSES						
$512	$479	WATER SUPPLY & TREATMENT	$2,749	$2,801	$8,565	$8,565	32.09%	32.09%
$740	$690	TRANSMISSION & DISTRIBUTION	$3,653	$3,538	$8,969	$8,969	40.72%	40.72%
$772	$558	WASTEWATER COLLECTION	$4,785	$3,339	$9,653	$9,653	49.57%	49.57%
$1,457	$1,392	WASTEWATER TREATMENT PLANTS	$7,453	$7,121	$19,251	$19,251	38.71%	38.71%
$295	$277	STORMWATER COLLECTION	$1,887	$1,580	$4,589	$4,589	41.13%	41.13%
$217	$213	SMALL SYSTEMS AND OTHER SERVICES	$1,076	$1,193	$3,170	$3,170	33.93%	33.93%
$158	$168	SCADA, CONTROL & PUMPING	$908	$857	$2,210	$2,210	41.10%	41.10%
$542	$548	ENGINEERING & INFORMATION SERVICES	$2,863	$2,728	$7,504	$7,504	38.15%	38.15%
$236	$250	REGULATORY SERVICES	$1,308	$1,262	$3,710	$3,710	35.25%	35.25%
$369	$351	CUSTOMER SERVICE	$1,935	$1,784	$4,626	$4,626	41.82%	41.82%
$983	$724	ADMINISTRATION & PENSION	$4,945	$3,772	$11,455	$11,455	43.17%	43.17%
$1,829	$1,278	DEPRECIATION	$8,411	$8,166	$22,538	$22,538	37.32%	37.32%
$8,110	**$6,927**		**$41,972**	**$38,141**	**$106,241**	**$106,241**	**39.51%**	**39.51%**
$3,820	**$5,181**	**OPERATING PROFIT**	**$16,851**	**$19,723**	**$29,346**	**$29,506**	**57.42%**	**57.11%**
		FINANCIAL REVENUE						
$57	$65	INVESTMENT INCOME	$236	$292	$346	$526	68.27%	44.89%
$167	$167	PNS FUNDING HHSP DEBT	$833	$833	$2,000	$2,000	41.67%	41.67%
$97	$40	MISCELLANEOUS	$527	$174	$441	$950	119.48%	55.47%
$321	**$271**		**$1,596**	**$1,299**	**$2,787**	**$3,476**	**57.29%**	**45.93%**
		FINANCIAL EXPENSES						
$680	$733	LONG TERM DEBT INTEREST	$3,391	$3,649	$9,530	$9,530	35.58%	35.58%
$1,834	$1,800	LONG TERM DEBT PRINCIPAL	$9,050	$8,884	$24,289	$24,289	37.26%	37.26%
$17	$17	AMORTIZATION DEBT DISCOUNT	$85	$83	$217	$217	38.90%	38.90%
$380	$382	DIVIDEND/GRANT IN LIEU OF TAXES	$1,989	$1,929	$4,827	$4,774	41.21%	41.67%
$59	$10	MISCELLANEOUS	$62	$20	$19	$158	322.74%	39.22%
$2,970	**$2,941**		**$14,576**	**$14,564**	**$38,882**	**$38,968**	**37.49%**	**37.41%**
$1,171	**$2,512**	**NET PROFIT (LOSS) BEFORE OTHER COMPREHENSIVE INCOME**	**$3,871**	**$6,458**	**($6,750)**	**($5,986)**	**157.35%**	**164.66%**
$184	$0	**OTHER COMPREHENSIVE INCOME**	$919	$0	$0	$2,204		
$1,355	**$2,512**	**NET PROFIT (LOSS) AVAILABLE FOR CAPITAL EXPENDITURES**	**$4,789**	**$6,458**	**($6,750)**	**($3,782)**	**170.95%**	**226.63%**

HALIFAX WATER
UNAUDITED INCOME STATEMENT - WATER OPERATIONS
APRIL 1/17 - AUGUST 31/17 (5 MONTHS)
41.67%

ACTUAL (CURRENT MONTH) THIS YEAR '000	ACTUAL (CURRENT MONTH) LAST YEAR '000	DESCRIPTION	ACTUAL (YEAR TO DATE) THIS YEAR '000	ACTUAL (YEAR TO DATE) LAST YEAR '000	APR 1/17 MAR 31/18 BUDGET* '000	APR 1/17 MAR 31/18 FORECAST '000	% of FORECAST
		REVENUE					
$4,156	$4,184	METERED SALES	$19,983	$19,839	$46,610	$46,610	42.87%
$590	$590	FIRE PROTECTION	$2,948	$2,948	$7,074	$7,074	41.67%
$66	$66	PRIVATE FIRE PROTECTION SERVICES	$353	$335	$857	$857	41.17%
$48	$41	BULK WATER STATIONS	$169	$170	$314	$314	53.85%
$16	$18	CUSTOMER LATE PAY./COLLECTION FEES	$83	$114	$212	$212	39.22%
$13	$14	MISCELLANEOUS	$85	$70	$139	$139	60.96%
$4,888	**$4,913**		**$23,620**	**$23,476**	**$55,207**	**$55,207**	**42.79%**
		EXPENSES					
$512	$479	WATER SUPPLY & TREATMENT	$2,749	$2,801	$8,565	$8,565	32.09%
$740	$690	TRANSMISSION & DISTRIBUTION	$3,653	$3,538	$8,969	$8,969	40.72%
$94	$96	SMALL SYSTEMS (inc. Contract Systems)	$451	$442	$1,073	$1,073	41.99%
$56	$65	SCADA, CONTROL & PUMPING	$323	$325	$873	$873	37.05%
$248	$245	ENGINEERING & INFORMATION SERVICES	$1,332	$1,182	$3,515	$3,515	37.88%
$52	$105	REGULATORY SERVICES	$286	$552	$1,374	$1,034	27.66%
$188	$179	CUSTOMER SERVICE	$1,074	$909	$2,357	$2,357	45.56%
$509	$371	ADMINISTRATION & PENSION	$2,856	$1,922	$5,836	$5,836	48.93%
$712	$508	DEPRECIATION	$3,401	$3,301	$9,218	$9,218	36.89%
$3,110	**$2,737**		**$16,123**	**$14,973**	**$41,781**	**$41,441**	**38.91%**
$1,778	**$2,175**	**OPERATING PROFIT**	**$7,497**	**$8,503**	**$13,426**	**$13,766**	**54.46%**
		FINANCIAL REVENUE					
$26	$29	INVESTMENT INCOME	$106	$132	$156	$236	45.08%
$92	$28	MISCELLANEOUS	$198	$142	$428	$567	34.87%
$118	**$57**		**$304**	**$274**	**$583**	**$802**	**37.87%**
		FINANCIAL EXPENSES					
$184	$203	LONG TERM DEBT INTEREST	$918	$1,027	$2,683	$2,683	34.22%
$738	$706	LONG TERM DEBT PRINCIPAL	$3,642	$3,484	$9,012	$9,012	40.41%
$8	$8	AMORTIZATION DEBT DISCOUNT	$40	$39	$98	$98	41.00%
$380	$382	DIVIDEND/GRANT IN LIEU OF TAXES	$1,989	$1,929	$4,827	$4,774	41.67%
$59	$0	MISCELLANEOUS	$59	$8	$19	$158	37.26%
$1,369	**$1,299**		**$6,648**	**$6,487**	**$16,639**	**$16,725**	**39.75%**
$527	**$933**	**NET PROFIT (LOSS) AVAILABLE FOR CAPITAL EXPENDITURES**	**$1,153**	**$2,290**	**($2,630)**	**($2,158)**	**153.41%**

HALIFAX WATER
UNAUDITED INCOME STATEMENT - WASTEWATER OPERATIONS
APRIL 1/17 - AUGUST 31/17 (5 MONTHS)
41.67%

ACTUAL (CURRENT MONTH) THIS YEAR '000	ACTUAL (CURRENT MONTH) LAST YEAR '000	DESCRIPTION	ACTUAL (YEAR TO DATE) THIS YEAR '000	ACTUAL (YEAR TO DATE) LAST YEAR '000	APR 1/17 MAR 31/18 BUDGET* '000	APR 1/17 MAR 31/18 FORECAST '000	% of FORECAST
		REVENUE					
$6,116	$6,115	METERED SALES	$29,826	$29,014	$67,756	$67,756	44.02%
$19	($8)	WASTEWATER OVERSTRENGTH AGREEMENTS	$182	$23	$0	$180	101.24%
$23	$26	LEACHATE CONTRACT	$124	$133	$389	$389	31.93%
$7	$5	CONTRACT REVENUE	$36	$31	$86	$86	41.92%
$17	$17	DEWATERING FACILITY/SLUDGE LAGOON	$87	$87	$210	$210	41.66%
$0	$0	AIRLINE EFFLUENT	$31	$28	$86	$86	35.73%
$79	$101	SEPTAGE TIPPING FEES	$449	$443	$775	$775	57.88%
$15	$17	CUSTOMER LATE PAY./COLLECTION FEES	$60	$79	$240	$240	25.12%
$12	$11	MISCELLANEOUS	$72	$62	$129	$129	55.81%
$6,289	**$6,284**		**$30,867**	**$29,900**	**$69,670**	**$69,850**	**44.19%**
		EXPENSES					
$772	$558	WASTEWATER COLLECTION	$4,785	$3,339	$9,653	$9,653	49.57%
$1,457	$1,392	WASTEWATER TREATMENT PLANTS	$7,453	$7,121	$19,251	$19,251	38.71%
$90	$94	SMALL SYSTEMS	$482	$483	$1,276	$1,276	37.78%
$12	$1	DEWATERING FACILITY/ SLUDGE MGM'T	$35	$116	$380	$380	9.32%
$0	$0	BIOSOLIDS TREATMENT	$0	$38	$101	$101	0.41%
$20	$23	LEACHATE CONTRACT	$107	$114	$341	$341	31.47%
$99	$99	SCADA, CONTROL & PUMPING	$566	$515	$1,306	$1,306	43.33%
$253	$267	ENGINEERING & INFORMATION SERVICES	$1,317	$1,363	$3,431	$3,431	38.40%
$84	$82	REGULATORY SERVICES	$458	$413	$1,094	$1,434	31.97%
$156	$148	CUSTOMER SERVICE	$740	$753	$2,064	$2,064	35.88%
$408	$304	ADMINISTRATION & PENSION	$1,797	$1,591	$4,833	$4,833	37.20%
$1,068	$721	DEPRECIATION	$4,710	$4,619	$12,465	$12,465	37.79%
$4,419	**$3,687**		**$22,452**	**$20,464**	**$56,194**	**$56,534**	**39.72%**
$1,870	**$2,597**	**OPERATING PROFIT**	**$8,415**	**$9,436**	**$13,476**	**$13,316**	**63.19%**
		FINANCIAL REVENUE					
$26	$29	INVESTMENT INCOME	$106	$132	$156	$236	45.08%
$167	$167	PNS FUNDING HHSP DEBT	$833	$833	$2,000	$2,000	41.67%
$5	$12	MISCELLANEOUS	$330	$32	$14	$384	85.88%
$197	**$208**		**$1,269**	**$997**	**$2,169**	**$2,619**	**48.45%**
		FINANCIAL EXPENSES					
$418	$479	LONG TERM DEBT INTEREST	$2,087	$2,373	$6,022	$6,022	34.66%
$1,019	$1,042	LONG TERM DEBT PRINCIPAL	$5,028	$5,142	$13,699	$13,699	36.70%
$8	$8	AMORTIZATION DEBT DISCOUNT	$40	$40	$107	$107	37.45%
$0	$10	MISCELLANEOUS	$3	$12	$0	$0	0.00%
$1,446	**$1,539**		**$7,158**	**$7,566**	**$19,828**	**$19,828**	**36.10%**
$622	**$1,267**	**NET PROFIT (LOSS) AVAILABLE FOR CAPITAL EXPENDITURES**	**$2,526**	**$2,867**	**($4,183)**	**($3,893)**	**164.89%**

HALIFAX WATER
UNAUDITED INCOME STATEMENT - STORMWATER OPERATIONS
APRIL 1/17 - AUGUST 31/17 (5 MONTHS)
41.67%

ACTUAL (CURRENT MONTH) THIS YEAR '000	ACTUAL (CURRENT MONTH) LAST YEAR '000	DESCRIPTION	ACTUAL (YEAR TO DATE) THIS YEAR '000	ACTUAL (YEAR TO DATE) LAST YEAR '000	APR 1/17 MAR 31/18 BUDGET* '000	APR 1/17 MAR 31/18 FORECAST '000	% of FORECAST
		REVENUE					
$436	$574	STORMWATER SITE GENERATED SERVICE	$2,684	$2,806	$6,700	$6,700	40.06%
$309	$323	STORMWATER RIGHT OF WAY SERVICE	$1,603	$1,617	$3,881	$3,881	41.29%
$0	$5	CUSTOMER LATE PAY./COLLECTION FEES	($7)	$23	$39	$9	-73.08%
$8	$9	MISCELLANEOUS	$56	$41	$89	$99	56.29%
$753	**$911**		**$4,336**	**$4,487**	**$10,710**	**$10,690**	**40.56%**
		EXPENSES					
$295	$277	STORMWATER COLLECTION	$1,887	$1,580	$4,589	$4,589	41.13%
$3	$3	SCADA, CONTROL & PUMPING	$19	$17	$31	$31	60.76%
$41	$36	ENGINEERING & INFORMATION SERVICES	$214	$183	$558	$558	38.40%
$100	$63	REGULATORY SERVICES	$563	$297	$1,242	$1,242	45.36%
$25	$24	CUSTOMER SERVICE	$120	$122	$205	$205	58.60%
$66	$49	ADMINISTRATION & PENSION	$292	$259	$786	$786	37.20%
$50	$49	DEPRECIATION	$300	$246	$855	$855	35.10%
$581	**$502**		**$3,397**	**$2,704**	**$8,266**	**$8,266**	**41.09%**
$172	**$409**	**OPERATING PROFIT**	**$939**	**$1,784**	**$2,444**	**$2,424**	**38.74%**
		FINANCIAL REVENUE					
$6	$6	INVESTMENT INCOME	$24	$28	$35	$55	43.24%
$0	$0	MISCELLANEOUS	$0	$0	$0	$0	0.00%
$6	**$6**		**$24**	**$28**	**$35**	**$55**	**43.24%**
		FINANCIAL EXPENSES					
$78	$51	LONG TERM DEBT INTEREST	$386	$249	$825	$825	46.79%
$77	$52	LONG TERM DEBT PRINCIPAL	$380	$258	$1,577	$1,577	24.09%
$1	$1	AMORTIZATION DEBT DISCOUNT	$4	$4	$12	$12	34.56%
$156	**$104**		**$770**	**$511**	**$2,414**	**$2,414**	**31.90%**
$22	**$311**	**NET PROFIT (LOSS) AVAILABLE FOR CAPITAL EXPENDITURES**	**$192**	**$1,301**	**$64**	**$64**	**300.78%**

HALIFAX WATER
UNAUDITED INCOME STATEMENT - REGULATED AND UNREGULATED OPERATIONS
APRIL 1/17 - AUGUST 31/17 (5 MONTHS)
41.67%

DESCRIPTION	ACTUAL (YEAR TO DATE) THIS YEAR	ACTUAL (YEAR TO DATE) LAST YEAR	APR 1/17 MAR 31/18 BUDGET*	APR 1/17 MAR 31/18 FORECAST	% of FORECAST
REGULATED ACTIVITIES					
REVENUE					
METERED SALES	$52,493	$51,659	$121,067	$121,067	43.36%
FIRE PROTECTION	$2,948	$2,948	$7,074	$7,074	41.67%
PRIVATE FIRE PROTECTION	$353	$335	$857	$857	41.17%
STORMWATER SERVICE	$1,603	$1,617	$3,881	$3,881	41.29%
OTHER OPERATING REVENUE	$685	$566	$1,141	$1,301	52.67%
	$58,081	**$57,126**	**$134,020**	**$134,180**	**43.29%**
EXPENSES					
WATER SUPPLY & TREATMENT	$2,749	$2,801	$8,565	$8,565	32.09%
TRANSMISSION & DISTRIBUTION	$3,653	$3,538	$8,969	$8,969	40.72%
WASTEWATER & STORMWATER COLLECTION	$6,670	$4,905	$14,241	$14,241	46.84%
WASTEWATER TREATMENT PLANTS	$7,453	$7,121	$19,251	$19,251	38.71%
SMALL SYSTEMS	$926	$919	$2,324	$2,324	39.85%
SCADA, CONTROL & PUMPING	$908	$857	$2,210	$2,210	41.10%
ENGINEERING & INFORMATION SERVICES	$2,863	$2,728	$7,504	$7,504	38.15%
REGULATORY SERVICES	$1,308	$1,262	$3,710	$3,710	35.25%
CUSTOMER SERVICE	$1,920	$1,770	$4,591	$4,591	41.82%
ADMINISTRATION & PENSION	$4,924	$3,762	$11,424	$11,434	43.06%
DEPRECIATION	$8,409	$8,164	$22,538	$22,538	37.31%
	$41,782	**$37,826**	**$105,330**	**$105,340**	**39.66%**
FINANCIAL REVENUE					
INVESTMENT INCOME	$236	$292	$346	$526	44.89%
MISCELLANEOUS	$902	$857	$2,153	$2,542	35.48%
	$1,138	**$1,149**	**$2,498**	**$3,067**	**37.09%**
FINANCIAL EXPENSES					
LONG TERM DEBT INTEREST	$3,391	$3,649	$9,530	$9,530	35.58%
LONG TERM DEBT PRINCIPAL	$9,050	$8,884	$24,289	$24,289	37.26%
AMORTIZATION DEBT DISCOUNT	$85	$83	$217	$217	38.90%
DIVIDEND/GRANT IN LIEU OF TAXES	$1,989	$1,929	$4,827	$4,774	41.67%
MISCELLANEOUS	($71)	$0	$0	$0	0.00%
	$14,443	**$14,544**	**$38,863**	**$38,810**	**37.21%**
NET PROFIT (LOSS) AVAILABLE FOR CAPITAL EXPENDITURES	**$2,993**	**$5,904**	**($7,674)**	**($6,902)**	**143.37%**
UNREGULATED ACTIVITIES					
REVENUE					
SEPTAGE TIPPING FEES	$449	$443	$775	$775	57.88%
LEACHATE CONTRACT	$124	$133	$389	$389	31.93%
CONTRACT REVENUE	$36	$31	$86	$86	41.92%
DEWATERING	$87	$87	$210	$210	41.66%
AIRLINE EFFLUENT	$31	$28	$86	$86	35.73%
ENERGY PROJECTS	$62	$68	$184	$184	33.90%
MISCELLANEOUS	$16	$15	$22	$22	71.96%
	$805	**$806**	**$1,750**	**$1,750**	**45.97%**
EXPENSES					
WATER SUPPLY & TREATMENT	$6	$6	$25	$25	25.89%
WASTEWATER TREATMENT	$145	$282	$821	$821	17.64%
MISCELLANEOUS	$51	$19	$70	$70	72.89%
SPONSORSHIPS & DONATIONS	$36	$24	$66	$56	65.58%
DEPRECIATION	$2	$2	$0	$0	0.00%
	$241	**$334**	**$981**	**$971**	**24.81%**
FINANCIAL REVENUE					
MISCELLANEOUS	$447	$102	$174	$295	151.81%
	$447	**$102**	**$174**	**$295**	**151.81%**
FINANCIAL EXPENSES					
MISCELLANEOUS	$133	$20	$19	$158	84.31%
	$133	$20	$19	$158	**84.31%**
NET PROFIT (LOSS) AVAILABLE FOR CAPITAL EXPENDITURES	**$877**	**$554**	**$924**	**$915**	**95.85%**
NET PROFIT (LOSS) AVAILABLE FOR TOTAL CAPITAL EXPENDITURES (REG & UNREG)	**$3,871**	**$6,458**	**($6,750)**	**($5,986)**	**164.66%**

HALIFAX WATER
UNAUDITED BALANCE SHEET - IFRS FORMAT
AS OF AUGUST 31, 2017

	2017 '000	2016 '000
ASSETS		
Cash	$56,850	$56,673
Accounts Receivable		
Customers & Contractual	$13,459	$14,287
Customers & Contractual - Unbilled Services	$17,911	$17,502
Halifax Regional Municipality	$12,599	$11,914
Materials & Supplies	$1,588	$1,646
Prepaid Expenses	$495	$450
	$102,901	$102,473
Regulatory Asset	$3,309	$3,500
Plant in Service - Water	$600,104	$584,609
Plant in Service - Wastewater	$714,184	$695,860
Plant in Service - Stormwater	$245,193	$234,169
Less: Accumulated Depreciation - Water	($179,355)	($170,336)
Accumulated Depreciation - Wastewater	($197,523)	($175,172)
Accumulated Depreciation - Stormwater	($41,654)	($33,568)
	$1,144,257	$1,139,063
Assets Under Construction	$43,783	$32,179
	$1,188,041	$1,171,242
Unamortized Debt Discount & Issue Expense	$951	$1,089
	$1,291,893	**$1,274,803**
LIABILITIES		
Trade	$10,989	$11,448
Interest on Long Term Debt	$2,682	$2,886
Halifax Regional Municipality	$2,116	$4,967
Contractor & Customer Deposits	$204	$200
Unearned Revenue	$6,512	$5,961
Current Portion of Deferred Contributed Capital	$12,889	$12,526
Current Portion of Long Term Debt	$23,169	$23,195
	$58,560	$61,183
Accrued Post-Retirement Benefits	$341	$466
Accrued Pre-Retirement Benefit	$3,904	$3,656
Deferred Pension Liability	$59,646	$55,551
Deferred Contributed Capital	$812,089	$804,749
Long Term Debt-Water	$56,844	$60,707
Long Term Debt-Wastewater	$130,332	$140,621
Long Term Debt-Stormwater	$11,297	$11,056
Total Liabilities	$1,133,014	$1,137,989
EQUITY		
Accumulated Other Comprehensive Income	($42,274)	($43,936)
Accumulated Surplus	$190,822	$167,606
Excess (Deficiency) of Revenue over Expenditure	$10,331	$13,144
Total Equity	$158,879	$136,814
	$1,291,893	**$1,274,803**

HALIFAX WATER
UNAUDITED INCOME STATEMENT - IFRS FORMAT - ALL SERVICES
APRIL 1/17 - AUGUST 31/17 (5 MONTHS)
41.67%

ACTUAL (CURRENT MONTH) THIS YEAR '000	ACTUAL (CURRENT MONTH) LAST YEAR '000	DESCRIPTION	ACTUAL (YEAR TO DATE) THIS YEAR '000	ACTUAL (YEAR TO DATE) LAST YEAR '000	APR 1/17 MAR 31/18 BUDGET* '000	APR 1/17 MAR 31/18 FORECAST '000	% of BUDGET*	% of FORECAST
		REVENUE						
$4,156	$4,184	METERED SALES - WATER	$19,983	$19,839	$46,610	$46,610	42.87%	42.87%
$6,116	$6,115	METERED SALES - WASTEWATER	$29,826	$29,014	$67,756	$67,756	44.02%	44.02%
$436	$574	STORMWATER SITE GENERATED SERVICE	$2,684	$2,806	$6,700	$6,700	40.06%	40.06%
$590	$590	FIRE PROTECTION	$2,948	$2,948	$7,074	$7,074	41.67%	41.67%
$309	$323	STORMWATER RIGHT OF WAY SERVICE	$1,603	$1,617	$3,881	$3,881	41.29%	41.29%
$259	$248	OTHER SERVICES AND FEES	$1,431	$1,250	$2,716	$2,896	52.68%	49.41%
$31	$41	CUSTOMER LATE PAY./COLLECTION FEES	$137	$216	$491	$461	27.82%	29.63%
$34	$34	MISCELLANEOUS	$213	$173	$358	$368	59.50%	57.89%
$11,930	**$12,108**		**$58,823**	**$57,864**	**$135,587**	**$135,747**	**43.38%**	**43.33%**
		EXPENSES						
$512	$479	WATER SUPPLY & TREATMENT	$2,749	$2,801	$8,565	$8,565	32.09%	32.09%
$740	$690	TRANSMISSION & DISTRIBUTION	$3,653	$3,538	$8,969	$8,969	40.72%	40.72%
$772	$558	WASTEWATER COLLECTION	$4,785	$3,339	$9,653	$9,653	49.57%	49.57%
$1,457	$1,392	WASTEWATER TREATMENT PLANTS	$7,453	$7,121	$19,251	$19,251	38.71%	38.71%
$295	$277	STORMWATER COLLECTION	$1,887	$1,580	$4,589	$4,589	41.13%	41.13%
$217	$213	SMALL SYSTEMS AND OTHER SERVICES	$1,076	$1,193	$3,170	$3,170	33.93%	33.93%
$158	$168	SCADA, CONTROL & PUMPING	$908	$857	$2,210	$2,210	41.10%	41.10%
$542	$548	ENGINEERING & INFORMATION SERVICES	$2,863	$2,728	$7,504	$7,504	38.15%	38.15%
$236	$250	REGULATORY SERVICES	$1,308	$1,262	$3,710	$3,710	35.25%	35.25%
$369	$351	CUSTOMER SERVICE	$1,935	$1,784	$4,626	$4,626	41.82%	41.82%
$983	$724	ADMINISTRATION & PENSION	$4,945	$3,772	$11,455	$11,455	43.17%	43.17%
$5,244	$5,077	DEPRECIATION	$18,655	$16,224	$22,538	$35,063	82.77%	53.21%
$11,525	**$10,726**		**$52,217**	**$46,199**	**$106,241**	**$118,766**	**49.15%**	**43.97%**
$405	**$1,382**	**OPERATING PROFIT**	**$6,606**	**$11,665**	**$29,346**	**$16,981**	**22.51%**	**38.91%**
		FINANCIAL REVENUE						
$57	$65	INVESTMENT INCOME	$236	$292	$346	$526	68.27%	44.89%
$167	$167	PNS FUNDING HHSP DEBT	$833	$833	$2,000	$2,000	41.67%	41.67%
$2,917	$1,640	MISCELLANEOUS	$8,111	$6,034	$441	$13,086	1838.31%	61.98%
$3,141	**$1,871**		**$9,181**	**$7,159**	**$2,787**	**$15,612**	**329.43%**	**58.80%**
		FINANCIAL EXPENSES						
$680	$733	LONG TERM DEBT INTEREST	$3,391	$3,649	$9,530	$9,530	35.58%	35.58%
$17	$17	AMORTIZATION DEBT DISCOUNT	$85	$83	$217	$217	38.90%	38.90%
$380	$382	DIVIDEND/GRANT IN LIEU OF TAXES	$1,989	$1,929	$4,827	$4,774	41.21%	41.67%
$59	$10	MISCELLANEOUS	($9)	$20	$19	$158	-48.33%	-5.87%
$1,137	**$1,141**		**$5,456**	**$5,680**	**$14,594**	**$14,680**	**37.38%**	**37.16%**
$2,410	**$2,112**	**NET PROFIT (LOSS) BEFORE OTHER COMPREHENSIVE INCOME**	**$10,331**	**$13,144**	**$17,539**	**$17,913**	**58.91%**	**57.68%**
$184	$0	**OTHER COMPREHENSIVE INCOME**	$919	$0	$0	$2,204	0.00%	41.67%
$2,593	**$2,112**	**NET PROFIT (LOSS) AVAILABLE FOR CAPITAL EXPENDITURES**	**$11,250**	**$13,144**	**$17,539**	**$20,118**	**64.14%**	**55.92%**

Halifax Water
Halifax Regional Water Commission

ITEM # 5
HRWC Board
September 28, 2017

TO: Ray Ritcey, Chair and Members of the Halifax Regional Water Commission Board

SUBMITTED BY: *Original Signed By:*
Jamie Hannam, P. Eng.
Director, Engineering & Information Services

APPROVED: *Original Signed By:*
Carl Yates, M.A.Sc., P.Eng., General Manager

DATE: September 22, 2017

SUBJECT: **Regional Infrastructure Plan**

ORIGIN

2017/18 Capital Budget

RECOMMENDATION

The Halifax Water Board approve the "Regional Infrastructure Plan" project, at an estimated cost of $1,650,000.

BACKGROUND & DISCUSSION

In 2012, Halifax Water completed the Integrated Resource Plan (IRP) as well as the Regional Wastewater Functional Plan (RWWFP) that provided Halifax Water with servicing plans for regional infrastructure through the East, Central and West Region over a 30-year planning period. These plans support Halifax Water's capital infrastructure investment drivers of asset renewal, regulatory compliance and growth. Halifax Water recently completed the West Region Wastewater Infrastructure Plan (WRWIP). This project built on the IRP and RWWFP servicing strategies.

The WRWIP identified and confirmed the wastewater infrastructure servicing plan for the West Region over the next 30 years and provided conceptual designs for projects falling within the first 10 years. Historically, Halifax Water has carried out regional level planning for water infrastructure through various studies and plans. Halifax Water completed a

Water Quality Master Plan (WQMP) in 2006 with a subsequent update in 2016.
There is a need to consolidate past water studies and plans into a comprehensive regional infrastructure plan that identifies water system constraints, water supply capacity and challenges, and evaluates water system interconnectedness.

As part of the WRWIP, a Long Term Planning Framework (LTPF) was developed. The LTPF provides a process to streamline longer-term infrastructure planning needs for Halifax Water and integrate with Halifax Regional Municipality's regional planning process. Halifax Water also intends to consolidate the infrastructure planning studies to allow for a move to a single water and wastewater infrastructure plan over time. By including both water infrastructure in all regions and the remaining East and Central regions for wastewater infrastructure, the proposed Regional Infrastructure Plan is the next interim step to achieve a single infrastructure plan. This Regional Infrastructure Plan accelerates the Water and Wastewater Master Plan that was identified in the 5-year capital program and provides comprehensive information for an update of the IRP in 2018.

The scope of work for the Regional Infrastructure Plan is directed at developing a preferred water and wastewater servicing strategy for regional infrastructure while meeting the drivers of growth, regulatory compliance, and asset renewal for the next 30-year planning period. As well, the servicing strategy will consider optimizing system operability, efficiency, performance, reliability, and resiliency.

The project includes development of a new wastewater hydraulic model, using new software recently selected through a Modelling Tools Assessment Project. The Regional Infrastructure Plan will result in conceptual design plans for projects identified in the first 10 years of the preferred servicing strategy. Projects originating in the RWWFP or the 2012 IRP will be confirmed for relevancy to bring forward to the Regional Infrastructure Plan or alternative projects will be identified through the scope of this assignment.

The resulting Regional Infrastructure Plan will consider the municipality's growth projections and through the use of hydraulic modeling, the Regional Infrastructure Plan will refine the demand requirements of this growth and the proposed infrastructure necessary to support it. The plan will present preferred alignments and facility siting locations to best support the three strategic drivers for infrastructure investments (renewal, regulatory compliance, and growth). The results of the Regional Infrastructure Plan will be used to inform the next iteration of the IRP (anticipated interim IRP update completion date is fall 2018) and future Regional Development Charge (RDC) updates, and will provide the individual cost and s schedule to fit the capital projects program. The project will also include the development of a work-plan for how to adapt to future climate change

SUMMARY

The primary objectives of this project include:

- Develop the Wastewater Infrastructure Servicing Strategy for the East and Central Region Sewersheds. Integrate the output from the West Region Wastewater Infrastructure Plan to produce a seamless Regional Infrastructure Plan in a single document;
- Develop regional level capital projects required to meet the Wastewater Servicing Strategy for the East and Central Region Sewersheds including alignment and siting analysis, capacity and compliance analysis to size proposed infrastructure, and establish life cycle and capital cost estimation;
- Develop the Regional Water Infrastructure Servicing Strategy for all three of Halifax Water's operating regions;
- Develop regional level capital projects required to meet the Water Servicing Strategy including alignment and siting analysis of proposed capital projects, capacity and compliance analysis to size proposed infrastructure, life cycle and capital cost estimation;
- Develop a work-plan for how to adapt to future climate change;

The total project cost is $1,650,000 including external consulting, internal staff effort, and NSUARB regulatory consulting. (See attached cost estimate).

BUDGET IMPLICATIONS

Work in the asset management program has been focusing on filling data gaps (asset attribute information (age, material, condition), flow monitoring program, sewer inspection program), developing the Asset Management Plan, completing the West Region Wastewater Infrastructure Plan (WRWIP), and enhancing the long term planning processes. In response to current priorities, staff have reprioritized tasks and projects. Approved capital funding from a series of asset management and long term planning initiatives is available for reallocation. Table 1 shows the capital line items and the amounts available for reallocation to the Regional Infrastructure Plan.

Table 1: Proposed Reallocated Funding Sources

Capital Line Item	Approval Year	Approval Amount	Amount for Reallocation	Reason*
Sewer Condition Assessment (Year 1)	2013	$745,000	$300,000	1
AM Program Phase 2	2014	$220,000	$170,000	1
AM Program Phase 4	2015	$100,000	$35,000	2
Water Transmission Main Condition Assessment Program	2016	$75,000	$50,000	2
Water Structures – Condition Assessment Program	2016	$150,000	$125,000	2
Asset Management Program Development (2016/17)	2016	$100,000	$70,000	2
Wastewater Forcemain – Condition Assessment Program	2016	$75,000	$50,000	2
Long Term Planning Coordination Study	2017	$75,000	$75,000	1
Assess Asset Management Software and Tools	2017	$100,000	$30,000	1
Total Available for Reallocation			**$905,000**	

* Reason "1" represents work reprioritized due to resource constraints (either internal or industry resources) and reason "2" represents work being undertaken by in-house staff at a reduced cost with an adjusted schedule

In addition to the proposed reallocated funds, the balance of the required funding is available within the approved 2017/18 Capital Budget. Funding of $750,000 is available within the 2017/2018 Capital Budget (East and Central Regional WW Infrastructure Plan and Climate Change Assessment and Policy).

The reallocation of the Asset Management funds has allowed Halifax Water to delete the $100,000 allotment identified for 2018/19 within the five-year capital plan. These funds will be reallocated to priority capital projects.

Table 2 shows the available funding from both the proposed reallocated sources and the 2017/18 Capital Budget:

Table 2: Capital Budget Available

Project	Budget		
	Previous	**2017/18**	**Total**
Reallocated Funds (refer to Table 1)	$800,000	$105,000	**$905,000**
Regional Infrastructure Plan (formerly East and Central Regional WW Infrastructure Plan)		$600,000	**$600,000**
Climate Change Assessment and Policy		$150,000	**$150,000**
Total	**$800,000**	**$855,000**	**$1,655,000**

The proposed expenditure meets the "No Regrets – Unavoidable Needs" approach of the 2012 Integrated Resource Plan. The proposed work meets the NR-UN criteria of "Firm regulatory requirement", "Ensures integrity and safety", "Supports asset management implementation", "Supports wet weather management implementation", "Growth related infrastructure supported by pre-design level master plan". The project meets these criteria based on the following:

- The development of a Regional Infrastructure Plan translates growth, regulatory compliance (including wet weather management considerations) and asset renewal drivers into infrastructure projects and programs.

- The purpose of the project is to provide a next level of pre-design master planning that validates or revises the underlying design assumptions developed during the Regional Wastewater Functional Plan for the East and Central region.

ATTACHMENT

Project Cost Estimate

Report Prepared By: *Original Signed By:*
Heather Miller, P.Eng.
Project Manager – Asset Management & Planning 902-292-6469

Financial Approved by: *Original Signed By:*
Allan Campbell, B. Comm, CPA, CMA,
Manager, Finance 902-266-8655

Summary based on worksheet "Revised - Funding Approval Supp"

to nearest $10K

Task	Description	External	Internal	NSUARB Consultant	Totals by Track	Rounded by Track
4.1	**Project Administration/Management**	$ 148,640	$ 38,675	$ 28,097	$ 215,412	$ 220,000
4.2	**Baseline Review and Consultation (including population projection wkshp with HRM)**	$ 56,800	$ 11,830	$ 10,295	$ 78,925	$ 80,000
4.3	**Climate Change Assessment and Policy**	$ 52,960	$ 12,285	$ 9,787	$ 75,032	$ 80,000
4.4	**Hydraulic Model Build**	$ 244,480	$ 48,685	$ 43,975	$ 337,140	$ 340,000
4.5	**Capacity and Compliance Analysis (including growth, Flow Mgmt Study, staff workshops)**	$ 133,440	$ 27,755	$ 24,179	$ 185,374	$ 190,000
4.6	**Regional Infrastructure Plan Development**	$ 124,640	$ 10,465	$ 20,266	$ 155,371	$ 160,000
4.7	**Systems Optimization Plan**	$ 53,600	$ 9,100	$ 9,405	$ 72,105	$ 70,000
4.8	**Conceptual Design Considerations (staff workshops)**	$ 129,840	$ 6,825	$ 20,500	$ 157,165	$ 160,000
4.9	**Intrusive Testing and Field Verification**	$ 20,800	$ 910	$ 3,257	$ 24,967	$ 20,000
4.10	**Prepare Regional Master Plan Report**	$ 61,200	$ 9,100	$ 10,545	$ 80,845	$ 80,000
Totals by Resource		$ 1,026,400	$ 175,630	$ 180,305	$ 1,382,335	$ 1,380,000
15% Contingency		$ 153,960	$ 26,345	$ 27,046	$ 207,350	$ 210,000
Sub-total		$ 1,180,360	$ 201,975	$ 207,350	$ 1,589,685	$ 1,590,000
Net HST (not applicable to internal resources)		$ 50,590	$ -	$ 8,887	$ 59,477	$ 60,000
Total		**$ 1,230,950**	**$ 201,975**	**$ 216,237**	**$ 1,649,162**	**$ 1,650,000**

Halifax Water
Halifax Regional Water Commission

ITEM #6
HRWC Board
September 28, 2017

TO: Mr. Ray Ritcey, Chair and Members of the Halifax Regional Water Commission Board

SUBMITTED BY: *Original Signed By:*
Cathie O'Toole, MBA, CPA, CGA Director of Finance & Customer Service

APPROVED: *Original Signed By:*
Carl Yates, M.A.Sc., P.Eng., General Manager

DATE: September 22, 2017

SUBJECT: **Financing for Replacement of Private Laterals**

ORIGIN

August 22, 2017 NSUARB Decision M07891

RECOMMENDATION

It is recommended that the Halifax Water Board:

1. Approve the concept for development of a Private Lateral Replacement Assistance Program (PLRAP) to assist customers with the full replacement of the private portion of water, wastewater or stormwater service laterals as described in this report, where the replacement aligns with a utility objective.

2. Approve a submission to the NSUARB to enact enabling amendments to the HRWC Rules and Regulations as described in this report.

3. Reflect the new program in the proposed 2018/19 unregulated budget subject to securing necessary approvals, for implementation April 1, 2018.

BACKGROUND

HRWC's submission to the NSUARB regarding an enhanced lead service line replacement program indicated that HRWC was considering requesting that HRM establish a financing mechanism for customers, which could see the cost of the private portion of a lead service line replacement being financed through a 10 year loan through the Municipality's Local Improvement Charge;

Concurrently, the Regulatory Enforcement Committee at HRWC determined that the need for a financing mechanism for private laterals was broader than just lead service line replacements. The issue was also raised during the Rate Affordability work conducted by HRWC, as many customers have difficulty or are simply unable to deal with unanticipated out of pocket expenses regarding the private portion of laterals.

DISCUSSION

Financing the replacement private portion of service lines has been a barrier to regulatory enforcement and delivery of water, wastewater and stormwater service for a number of years. Some specific examples are provided below, where the customer is responsible for paying for the private portion of the lateral. The utility pays for the portion in the public right of way.

If the customer does not have the financial means to pay for their portion, or does not have the ability to obtain financing, then it can result in the continuation of a situation that may negatively impact public health or results in environmental regulatory non-compliance.

Full replacements are more expensive than spot repairs, and from the utility's perspective are preferable as they provide a more permanent solution and an operational benefit in terms of operation of the system such as reduced leakage, or reduced inflow and filtration.

Some examples of the situations this program would help customers address include:

No-Corrode Pipe – There are some areas that are known to have sewer laterals constructed during the late 60's and early 70's with a type of pipe known as "no-corrode" which is very susceptible to collapse, impairment or blockage by tree roots causing sewer backups. There have been instances where the utility would like to replace the public portion, but the property owner is unable or unwilling to pay for the private portion.

Cross Connections – Occasionally, properties are identified where the sanitary sewer is connected to the storm sewer, resulting in discharge of sanitary sewer into the natural environment.

Lead Service Lines – It is estimated there are 10,000-15,000 private lead service laterals and approximately 2,500 public (Halifax Water-owned) lead service laterals. These are found primarily in the Halifax peninsula and in central Dartmouth, in homes constructed prior to mid-1950. On August 22, 2017, the NSUARB approved a funding mechanism that would provide financial assistance to homeowners who replace their private side of the lead service line. This new program gives Halifax Water the ability to provide funding to homeowners for 25% of the cost, up to $2500.00, for the replacement of the private portion of the lead service. Prior to this program, Halifax Water could not provide any form of financial assistance. Often the financial aspect is the biggest barrier to homeowners when they're looking at replacing their private lead service. This program goes a long way to assisting in that effort, however, there will be some customers who are unable to afford financing the remaining 75% of the cost of the private portion of the lead service line.

Leaking Water Service Lines – Each year Halifax Water sends notices to 30 to 50 customers advising them to repair a leak on their water service on private property or face denial of service. Many of these result in full private lateral replacement. While denial of service is effective in having leaking laterals replaced, in some cases there are customers for whom replacement of the lateral is a financial hardship.

Installation of Deep Storm Sewer, Where None Previously Existed – A recent project to install a deep storm sewer in Cow Bay identified that financing the private portion was a very contentious issue. Initially, it was proposed to be funded through a Local Improvement Charge (LIC), and ultimately it was funded by the municipality through general taxes. There are other areas of the municipality prone to flooding where a deep storm sewer project may be initiated. This type of program essentially replaces a ditch and culvert system with a piped deep storm sewer system.

Municipalities have financing mechanisms such as LICs that can be used to finance public infrastructure, and are the basis for the financing approach used for the Solar Cities Program to finance the private installation of solar energy systems. Under the Solar Cities Program, property owners enter into an agreement with the municipality to access funds to offset the cost of installing a solar energy system to the property. The municipality recovers the costs under a LIC, which is collected under a Halifax Solar City LIC account, separate from the annual property tax bill. The LIC is offered over a period of 10 years at a fixed interest rate of 4.75%, however the property owner can pay the balance in full at any time without a penalty. The property owner is required to pay the balance in full if the property is sold, unless there is agreement to transfer the LIC to the subsequent property owner.

LICs are lienable charges, which reduce financing risk as the lien is attached to the property. The financing is recouped through local improvement charge payments, or through the tax sale process[1]. Halifax Water does not have the legislative authority to levy liens, but Section 34 of the HRWC Act grants the authority to the municipality to establish liens on Halifax Water's behalf.

[1] Halifax Administrative Order #18 – Revenue and Collections Policy

As part of the development of an enhanced lead service line replacement program, and also as a result of recent work conducted regarding affordability, it was determined that Halifax Water should explore a financing mechanism to fund the private portion of service laterals.

Historically, Section 34 of the HRWC Act has only be exercised to engage the municipality to establish liens for collection of outstanding accounts where no water service connection exists. HRWC is now contemplating the expanded use of liens, and has determined that if a customer is in agreement, the utility can register a lien on a property to provide financing security. If a customer is not in agreement with the lien, then HRWC would have to engage the municipality to establish the lien.

Proposed Process – Financing of Private Laterals

1) Regulatory Non-Compliance – Wastewater and Stormwater

If the Customer is cooperative and willing to enter into a repayment arrangement with a lien as security; this case will proceed under the HRWC Rules and Regulations.

Section 67 (4) gives HRWC the authority to require customers, at their sole cost and expense to fix cross connections or situations where there exists any risk of wastewater or any other liquid not authorized by the Regulations flowing into the stormwater system.

The HRWC Act gives the General Manager the authority to lawfully cause work to be done. (E.g. by HRWC, by the customer, or by a contractor.)

Section 31 of the Rules and Regulations deals with Recovery of Costs and states that HRWC may recover from a person who has violated these Regulations its costs incurred as a result of any such violation.

It is most cost effective for a customer to effect and finance the work themselves; however if they do not have the means to do so, or are willing to enter into an agreement with HRWC, HRWC could cause the work to be done after there is an executed agreement with the customer that establishes the scope of work, the requirement for a lien on the property as security, and the repayment term (not to exceed 60 months) with an interest rate of prime plus 2%. This is a less punitive interest rate than is charged on delinquent accounts, and is reasonable given the customer is working cooperatively with the utility to address a regulatory non-compliance issue.

HRWC will establish the lien.

If the Customer is NOT cooperative, and not willing to enter into a repayment arrangement with a lien as security; this case will proceed under the HRWC Act.

The HWRC Act Section 33 (2) (a) gives HRWC the authority to cause work to be done and states that a lienable event arises when:
(a) The General Manager lawfully causes work to be done upon, or for the benefit of, the property, pursuant to this Act or the Regulations, in which case the amount of the lien is the cost of the work plus interest at the rate prescribed in the Regulations calculated from the date of the work.

The interest rate is prescribed in 10 c) of the HRWC Rules and Regulations, and is 1.5% per month or part thereof, or 19.56% per annum. This is a somewhat punitive interest rate on delinquent accounts, meant to incent repayment.

The municipality establishes the lien in this instance, and Section 34 of the HRWC Act empowers the municipality to collect the lien on behalf of the Commission, if it is requested by HRWC.

2) Financing Private Portion of Lead Service Lines

It will generally be more cost effective for customers to pay for the private portion of a lead service line replacement directly, or arrange their own financing through their financial institution. In instances where a customer requires financing assistance to finance the private portion of a lead service line replacement and is unable to secure alternate financing, Halifax Water can assist if the customer is willing to enter into a repayment arrangement secured by a lien on the property.

If the Customer is cooperative and willing to enter into a repayment arrangement with a lien as security; this case will proceed under the HRWC Act. The HRWC Act gives the General Manager the authority to lawfully cause work to be done. (E.g. by HRWC, by the customer, or by a contractor)

The HWRC Act Section 33 (2) (a) gives HRWC the authority to cause work to be done and states that a lienable event arises when:

(a) The General Manager lawfully causes work to be done upon, or for the benefit of, the property, pursuant to this Act or the Regulations, in which case the amount of the lien is the cost of the work plus interest at the rate prescribed in the Regulations calculated from the date of the work.

As noted above, the interest rate is prescribed in 10 c) of the HRWC Rules and Regulations, and is 1.5% per month or part thereof, or 19.56% per annum.

The municipality establishes the lien in this instance, and Section 34 of the HRWC Act empowers the municipality to collect the lien on behalf of the Commission, if it is requested by HRWC.

Pending HRWC Board approval of the recommendations in this report, HRWC will file for an amendment to the Rules and Regulations to implement the Enhance Lead Service Line Replacement Program and will request an addition to Section 31.

Section 31 of the Rules and Regulations deals with Recovery of Costs and states that HRWC may recover from a person who has violated these Regulations its costs incurred as a result of any such violation.

With the Board's approval, HRWC will request the addition of a second clause **31 b) HRWC may recover costs and expenses from a person who has entered into a repayment arrangement to enable replacement of the private portion of a lead service line or non-compliance related to water service over a period not to exceed 60 months at an interest rate of prime plus 2%.**

This is a less punitive interest rate than is charged on delinquent accounts, and is reasonable given the customer is working cooperatively with the utility to address a regulatory issue.

HRWC will establish the lien.

If the Customer is not cooperative, and not willing to enter into a repayment arrangement with a lien as security, HRWC currently does not have authority to direct the replacement of the private portion of the lead service line.

Program Terms for Application to NSUARB

1. Financing is available (subject to program cap) for full replacements of the private portion of water, wastewater or stormwater laterals as part of programs or initiatives initiated by the utility; and where the utility agrees the full replacement is necessary.

2. Partial replacements or spot repairs due to leaks, blockages, or collapse that are normally the property owner's expense are not covered by the program.

3. Expenses for full replacements covered by property owner's insurance are not eligible for the program.

4. Only registered property owners are eligible.

5. Participants must enter into a contract with the utility, and must be willing to accept registration of lien against their property.

6. Repayment term is not to exceed five years (60 months)

7. There will be no penalty for early repayment.

8. Any outstanding balance must be paid in full at the time of sale of a property unless there is an agreement to transfer the lien and financing arrangement to the new property owner.

9. Financing interest rate will be prime plus 2%.

10. Interest on over-due accounts will be 1.5% per month or part thereof, or 19.56% per annum, consistent with 10 c) of the HRWC Rules and Regulations.

11. Suspension or Refusal of Service Section 13 of HRWC Rules and Regulations will apply. If an account remains unpaid for more than 40 days, the utility may suspend service (if a water service connection exists).

12. Section 14 HRWC Rules and Regulations will apply, which permits the utility to charge a $35 fee for each visit by Commission staff to a Customer whose payment is overdue, if in the opinion of Commission such fee is warranted.

13. Section 16 HRWC Rules and Regulations will apply regarding Dishonoured Payments. The Commission shall charge a $25 fee plus bank charges for cheques or pre-authorized payments that have been dishonoured by the Customer's bank or other financial institution.

14. The maximum financing assistance to a customer for a private lateral replacement will be $10,000.

15. Applicants will be required to provide supporting documents such as quotations and invoices as part of the application process.

16. The utility will inspect the lateral replacement to ensure the work has been completed in a satisfactory manner.

17. Halifax Water's rate regulated revenue requirements will not be increased as a result of the introduction of this program. The source of financing will initially be provided through Un-Regulated funds. An initial budget of $200,000 per year will be established, with the funding moved into a new Reserve – Private Lateral Replacement Assistance Program (PLRAP) Reserve. As the financing is repaid, the principle and interest payments will be deposited in the Reserve to help fund other replacements in future years.

18. The Private Lateral Replacement Assistance Program (PLRAP) will be available to rate regulated customers, and will be reported as a rate regulated program, with funding initially provided from un-regulated revenues.

19. Annual program funding and requirement will be reviewed and adjustment by the HRWC Board as part of the annual approval of the budget for Unregulated business.

20. If there are insufficient funds within the Reserve, the program will be adjusted or closed until the following year.

BUDGET IMPLICATIONS

HRWC will finance this program through unregulated revenues, with start-up funding of $200,000 per year, for five fiscal years – 2018/19 to 2022/23. The proposed interest revenue which will be generated by an interest rate of prime plus 2% will offset the interest income that would normally have been earned, and is also higher than HRWC's cost of borrowing. This aligns with the financing rate for LICs and aligns with the objective to provide a financing option for customers who may not have direct access to other financing alternatives.

As customers make payments on the outstanding financing balance, the payments will be will be deposited in the PLRAP Reserve. The attached reserve model demonstrates that over time the program will become self-sustaining.

ALTERNATIVES

Halifax Water could choose not to pursue development of a program to finance the replacement private portion of laterals at this time. That is not recommended, as it will continue to serve as a significant barrier to protecting the environment and public health.

ATTACHMENTS

Private Lateral Replacement Reserve Model

Report Prepared by: *Original Signed By:*
Cathie O'Toole, MBA, CPA, CGA Director of Corporate Services, 490-3685

Private Lateral Replacement Assistance Program (PLRAP)

FY Start	Unregulated Revenue	Loans to Customers	Repayments	Interest on Reserve	Reserve Net Balance	Notes
2018	$ 200,000	$ 195,000	$ 22,079	$ 271	$ 27,350	Assumes 26 loans of $7,500.
2019	$ 200,000	$ 195,000	$ 66,238	$ 712	$ 71,950	
2020	$ 200,000	$ 195,000	$ 110,397	$ 1,154	$ 116,551	
2021	$ 200,000	$ 195,000	$ 154,555	$ 1,596	$ 161,151	
2022	$ 200,000	$ 195,000	$ 198,714	$ 2,037	$ 205,751	
2023		$ 195,000	$ 220,793	$ 258	$ 26,051	
2024		$ 195,000	$ 220,793	$ 258	$ 26,051	
2025		$ 195,000	$ 220,793	$ 258	$ 26,051	
2026		$ 195,000	$ 220,793	$ 258	$ 26,051	
2027		$ 195,000	$ 220,793	$ 258	$ 26,051	
2028		$ 195,000	$ 220,793	$ 258	$ 26,051	
2029		$ 195,000	$ 220,793	$ 258	$ 26,051	
2030		$ 195,000	$ 220,793	$ 258	$ 26,051	
2031		$ 195,000	$ 220,793	$ 258	$ 26,051	
2032		$ 195,000	$ 220,793	$ 258	$ 26,051	
2033		$ 195,000	$ 220,793	$ 258	$ 26,051	
2034		$ 195,000	$ 220,793	$ 258	$ 26,051	
2035		$ 195,000	$ 220,793	$ 258	$ 26,051	
2036		$ 195,000	$ 220,793	$ 258	$ 26,051	
2037		$ 195,000	$ 220,793	$ 258	$ 26,051	
2038		$ 195,000	$ 220,793	$ 258	$ 26,051	
2039		$ 195,000	$ 220,793	$ 258	$ 26,051	
2040		$ 195,000	$ 220,793	$ 258	$ 26,051	
2041		$ 195,000	$ 220,793	$ 258	$ 26,051	

There will be variance in the number of loans and principle amount. A recent cross connection was $4,000, and lead service lines are ranging from $4,000 - $10,000

Estimated Average Cost Lead Service Line Replacement	$	10,000
Customer Portion = 75%	$	7,500
Prime		3.0%
Prime plus 2%		5.0%
Term 5 Years (60 Months)		60
Estimated Payment Amount		$141.53
Potential # of Loans		26.67
Rounded down		26
Interest on Reserve		1%

Halifax Water
Halifax Regional Water Commission

ITEM #7
HRWC Board
September 28, 2017

TO: Mr. Ray Ritcey, Chair and Members of the Halifax Regional Water Commission Board

SUBMITTED BY: *Original Signed By:*
Cathie O'Toole, MBA, CPA, CGA Director of Finance & Customer Service

APPROVED: *Original Signed By:*
Carl Yates M.A.Sc., P.Eng., General Manager

DATE: September 28, 2017

SUBJECT: **Rate Affordability and H20 Program Enhancements**

ORIGIN

- 2012 Study of an Efficient Funding Mechanism for HRWC
- 2015 Rate Hearing discussion on Affordability

RECOMMENDATION

It is recommended that the Halifax Water Board approve:

1. An increase in the income eligibility threshold for the H20 Fund to $21,000 for single income and $39,000 for family income.
2. An increase in the assistance amount to $275 within a 24 month period.
3. Allocation of $2,500 within the annual H20 Fund that could be used as a discretionary fund to assist customers who do not meet the program eligibility criteria, but have exceptional circumstances that are verifiable, and approved by the General Manager.
4. Implementation of steps to increase H20 Program funding to increase employee donations, and consider opening the program to donations from customers and external organizations.
5. Implementation of steps to increase communication and awareness of the H20 Fund with employees, customers and community groups.

6. Changes in eligibility for H20 Fund assistance, such that there must be an outstanding balance on the customer account with Halifax Water. The amount of assistance shall not exceed the amount of the outstanding balance.

BACKGROUND

In 2012, HRWC completed a debt study (Study of an efficient funding mechanism for HRWC) which was accepted by the Halifax Water Board and Nova Scotia Utility and Review Board. An affordability measure was established to help guide Halifax Water's approach to gradualism in increasing capital funding levels to meet the level of need identified in the 2012 Integrated Resource Plan (IRP).

Since the completion of the debt study in December 2012, HRWC has updated information related to its long range financial model and implemented strategies to smooth future rate impacts. Positive developments contributing to this update include the approval of a Regional Development Charge to fund new growth related infrastructure, the approval of a gradual transition to the new Cost of Service based rates, and the announcement of infrastructure programs under the Building Canada Fund in the 2013 Federal budget [1]and recent Clean Water and Wastewater Fund in 2016.

A Rate Smoothing Strategy was approved by the Halifax Water Board on October 30, 2014. Affordability and rate smoothing work hand in hand. HRWC has also developed a plan to smooth revenue requirements and rates. One component of the Rate Smoothing Strategy is to gradually increase the capital budget until it reaches the annual level targeted in the Integrated Resource Plan. Another component is to gradually phase in depreciation on contributed capital in the revenue requirements, consistent with the NSUARB accounting and reporting handbook. These two actions, along with others, will promote rate smoothing and prevent sudden changes in rates. If current rates are considered affordable, rate smoothing can complement rate affordability as it provides HRWC customers with predictable and manageable changes in the cost of service.

Affordability of water and wastewater services in Halifax.

'Rate stability and affordability' was one of three categories used in evaluating debt strategy alternatives in the December 2012 study. At the time, the two main measures for this category were; the bill as a per cent of median household income; and the projected annual residential bill in 2042/43. These measures are helpful at the macro level but do not measure the impact on user sub groups based on income level or individual circumstances. The current study looks at affordability in more detail for various user groups.

[1] Item #7 memo on rate smoothing strategy to HRWC Board on October 30, 2014

DISCUSSION

In 2016/17, Halifax Water engaged Dr. Mark Gilbert, PhD to conduct a study of Rate Affordability and customer assistance programs. The report examined affordability from the perspective of both residential and commercial customers, and looked as best practice research around customer assistance programs (CAPS).

As part of development of the study and the recommendations to change the H20 Program, stakeholder consultation was conducted with representatives from the Consumer Advocate, the Department of Community Services, Efficiency One, Halifax Water staff, and Halifax municipality staff, the Affordable Energy Coalition, the Chamber of Commerce and the Salvation Army.

Rate Affordability Report Conclusion and Recommendations

The following conclusions and recommendations are found in the Rate Affordability Measures for Halifax Water report, in Attachment A.

At the community level, residential rates are affordable when using the standard measure of average bill as a percent of median household income (MHI). It also found that Halifax Water's rates for commercial users are in line with those of other Canadian cities and in most cases below the comparator group average.

The research identified geographic areas within the service area where median household incomes were much lower (25% or less) than the municipal average and areas where there was a combination of low household incomes and high service disconnection rates. It was noted that Halifax Water could work more closely with the community (including other essential service providers) to increase client awareness of its existing affordability programs. The report noted consideration should also be given to extending the H20 program to cover more than bi-annual emergency assistance, providing alternative billing and payment options, and program modifications to provide relief to the hard to reach. The recommendations include:

1. Enhance the existing H20 program benefits through increases in the amounts provided, changes in the qualifying income threshold, maximizing the existing sources of program funding, increased awareness through outreach and collaboration, and additional billing and collection options for low income customers. The eligibility period should also be reviewed.

2. Analyze results including the reasons for unsuccessful applications

3. Increase awareness through outreach, collaboration and various avenues of promotion as identified in the stakeholder group meetings

4. Undertake community outreach beginning with in the 8 priority census dissemination areas identified in the study

5. Work with Non-Government Organizations (NGOs) and landlords and their associations to promote conservation and customer assistance programs for the H2R (Hard To Reach).

6. Extend opportunities to donate to the H20 Fund to HW customers, NGOs and governments

7. Adjust business processes to provide billing and collection options to low income customers, provide frequent access to usage information, and the ongoing promotion of conservation programs.

8. Consider arranging the necessary authorities for two customer assistance program (CAP) options used in other North America jurisdictions that are currently restricted (through legislation, regulation or policy) which are lifeline rates and bill discounts. Of the other three commonly used CAPs; one (i.e. temporary assistance) has already been adopted by Halifax Water; and the other two (flexible terms and improved water efficiency programs) could be implemented to some extent under existing authorities.

H20 (Help to Others) Fund

Halifax Water has contributed to a water, wastewater, and stormwater assistance fund since 2010. This fund can be utilized by Halifax Water customers who are having a hard time making their water, wastewater, stormwater bill payments. The H2O (Help To Others) fund is intended to assist households in emergency situations and the maximum an approved applicant can receive in a 24 month period is $250. The Salvation Army receives, reviews, and approves applications. The program is funded in two ways. The first is a base contribution of $25,000 from Halifax Water from its non-regulated revenues. The second is from donations to the Halifax Water employee sponsored fund which are matched (to a maximum of $25,000) by Halifax Water. The program is application based and the account must be in the applicant's name. Funds provided are applied directly to the user's Halifax Water account.

The current eligibility criteria is linked to income threshold. The limit is $18,000 in annual income for a 1 person household, $20,000 for 2, and $23,000 for 3, and $3000 for each additional person in the household.

The H20 Fund has not been fully utilized. The number of accounts receiving funding through the H2O program is a small percentage (roughly 10%) of the number of accounts that are disconnected each year for non-payment. Disconnections for non-payment occur for approximately one percent of Halifax Water customers. The account holders who are disconnected for non-payment would, depending upon the circumstances, be potential applicants for an affordability program.

After discussion with the Salvation Army, it was determined there are several steps that can be taken for greater utilization of the H20 Fund, as follows:

1. The income eligibility thresholds could be increased.

2. After reviewing the impact of a change to the income threshold, if further adjustment is required consider changing bi-annual eligibility of 24 months to annual eligibility over 12 months.

3. Raise the assistance amount from the current level of $250.

4. Consider adding a mechanism to exercise discretion if there is an exceptional circumstance to permit the Salvation Army to escalate the exceptional case to Halifax Water, and have a small fixed portion of funds set aside to deal with exceptions.

5. Update the scripts and training for Customer Service Representatives so there is more promotion of the H2O Fund. Add a reference to the H2O Program to the disconnection letter. This is one of our notices that is sent by mail to customers before disconnection of service. Roughly 150 notices are issued per month.

6. Halifax Water could develop a contact list of community or advocacy groups where H2O Fund program information could be distributed. For example, community centers, churches, and MLA offices that work with low income individuals.

7. When H2O Fund program changes are made, there should be more a proactive communications plan including a press release, joint announcement, and promotion through social media, and advocacy groups.

8. Total program funding could be expanded to include donations from customers and external organizations. Halifax Water would have to explore both the administrative, legal and tax mechanisms to do this to enable issuance of tax receipts for charitable donations.

BUDGET IMPLICATIONS

No budget implication at this time.

ALTERNATIVES

Halifax Water could choose not to make changes to the H20 Program at this time.

ATTACHMENTS

Rate Affordability Mechanisms for Halifax Water

Report Prepared by: *Original Signed By:*
Cathie O'Toole, MBA, CPA, CGA Director of Corporate Services, 490-3685

Halifax Water

RATE AFFORDABILITY MEASURES FOR HALIFAX WATER SERVICES

May 27, 2017

Prepared by Mark Gilbert, PhD
In association with
Halifax Regional Water Commission Staff

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Introduction, background and research objectives

Urban areas in North America are experiencing increases in water / wastewater rates at levels well above the rate of inflation and growth in household incomes. This is a result of increased utility costs attributable to a combination of factors which include capital investments, new technologies, regulatory compliance, and the practice of covering the full cost of service through rates.

A commonly used measure of affordability adopted by utilities and regulators is one which calculates, on a community wide basis, the percent of MHI (median household income) spent, on average, on residential water consumption. Acceptable percentages are 2.5% for water and 4.5% for water and wastewater combined.[1] Halifax Water is uncertain whether the upper range of this benchmark is appropriate for Halifax, and the Halifax Water Board has approved a Rate Smoothing Strategy targeting maintaining the total average residential utility bill at 2% of median household income or less[2].

There is the potential for water / wastewater rates to disproportionally impact those with less unallocated disposal income, e.g. low income households. Researchers and utilities are now going beyond the focus of affordability at the community wide level and looking at the adequacy of financial resources for sub groups and individual customers. This report will identify ways to access the data needed to go this additional step and share the findings. It will also identify programs and processes that have been implemented or recommended in other jurisdictions to assist residents with affordability issues.

The issue of rate affordability for water, wastewater, and stormwater services provided by Halifax Water was addressed at a macro level in the Study of an Efficient Funding Mechanism, completed in December of 2012. Rate stability and affordability was one of three[3] categories used in evaluating debt strategy alternatives in the 2012 study. The two main affordability measures used in the study were; the bill as a percent of median household income (MHI) and the projected annual residential bill in 2042-2043. These measures are helpful at the macro level but do not measure the impact on user sub groups based on income or individual circumstances.

This research begins by updating the data in the financing scenario recommended in the 2012 Study to determine if, at the macro level, the community retains the ability to afford regulated services provided by Halifax Water.

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[1] Cuppett, Clements and Berahzer. “Affordability: Balancing rates with community needs” Advances in Water Research. October – December 2016. Vol 26, No 4 p.7. Water Research Foundation Publication.

[2] M08540 Exhibit H6 pages 8-13 October 30, 2014

[3] The others are long term financial sustainability (including debt ratios) and the equitable allocation of costs to current and future users.

The report identifies available sources of data that can be used to identify sub groups that may experience affordability issues and uses this data to identify users who may have affordability issues. Methods used by other utilities to assess affordability are reviewed and meetings were held with Halifax Water stakeholders to discuss the affordability issue and potential ways to address them.

The research addresses the following questions:

1. Are residential rates for water / wastewater / stormwater in the service area covered by Halifax Water affordable at the community level?
2. Are there residential sub groups in the population for which current rates place undue hardship on the user?
3. If there are such subgroups, what can be done to alleviate or reduce undue hardship?
4. Are Halifax Water service rates for commercial users in line with those in other Canadian cities?

Research approach

The research approach consists of five parts.

The first relates to research question one and involves updating the data, assumptions, and figures used in the recommended funding alternative included in the in the Study of an Efficient Funding Mechanism, completed in December of 2012.

The second part of the research involves undertaking a review of the existing rate affordability research. The results of this review are summarized in an annotated bibliography attached as an appendix to this report. The review focuses on how water / wastewater utilities identify both rate affordability issues and program alternatives. The key findings are summarized in the main body of the report.

Part three of the research focuses on identifying sub groups within HRM that may have affordability issues with respect to the percentage of income spent on Halifax Water services. Areas of focus are income, type of accommodation, and family size. Where possible income and household size data are compared with annual expenditures on water / wastewater.

The next part (four) of the research involves meetings with selected stakeholders who have an interest in rate affordability, to discuss the findings to date, identify the magnitude of the affordability issue in HRM, and discuss options and solutions.

The fifth part of the research assesses commercial user affordability. This is done by comparing the commercial rates of municipal water / wastewater services in fifteen Canadian cities. These fifteen Canadian cities are regularly used by HW to compare commercial and residential rates

and Halifax Water has been benchmarking the same 15 cities since 2011. The cities were based on the ones the municipality was using to benchmark for tax burden at that time. From a utility perspective, there is representation from all areas of the country, there are some which would be similar in size with respect to customer base, and there are some that provide all three services – water, wastewater and stormwater.

The research questions are answered in the key findings section of the report.

Update of Data and Assumptions Related to Affordability from the 2012 Study of and Efficient Finding Mechanism for Halifax Water

The "Study of an Efficient Funding Mechanism for Halifax Water Commission" dated December 2012 was undertaken for the purpose of recommending an efficient funding mechanism for the forecast $3.7 billion in capital expenditures recommended in the HRWC Integrated Resources Plan (IRP) over a period of thirty years. The projects in the IRP covered three service areas; water, wastewater, and stormwater, and fell into one of three service categories; i.e. asset renewal, growth, and compliance.

The study identified three general requirements that the recommended funding mechanism must meet in order to be considered acceptable. They are as follows:

1. It must provide rate stability and affordability to those using HRWC services.
2. It must promote HRWC long term financial sustainability as measured by general accepted financial measures and ratios, such as the debt service and debt repayment ratios that reflect industry standards and guidelines for a regulated municipal enterprise in the Province of Nova Scotia.
3. The allocation of costs to current and future users must be equitable.

As both the Efficient Funding Mechanism and Rate Affordability studies are concerned with rate affordability it is important to connect the work of this (Rate affordability) study with the data and results of the Efficient Funding Mechanism study completed in 2012.

Data from the 2012 Study

Eight funding alternatives were selected and evaluated with the aid of a modified version of the Debt Affordability Model developed by the Nova Scotia Municipal Finance Corporation. The alternative selected (number 6) ranked the highest in meeting the three study requirements presented above. It is able to achieve this through the recovery of the full cost of growth through regional development charges. Under alternative #6 the household bill as a percent of household income peaks at 1.68% during the thirty year period. This compares favorably with the results of the water / wastewater utility research which identifies 4% to 5% as an upper limit. The debt service charges as a percent of the operating budget peak at 24% under the recommended

alternative. This is well below the 35% maximum acceptable debt service ratio use in the study. The total debt to annual revenue ratio was 148% when the study was conducted in 2012, peaked at 242% in 2023-24 and was forecast to fall to 72% by the end of the thirty year period. The weighted average cost of capital (WACC) for HRWC at the time of the study was 4.62%.

Results of 2017 Data Update

Halifax Water has implemented regional development charges to finance growth and updates the alternative #6 data on an ongoing basis. The annual borrowing amounts have been updated and extended beyond 2042-43 to 2047-48 in an effort to present debt information which continues to cover future periods of thirty years or more.

The latest (April 2017) update of alternative #6 data, projects a debt service ratio (DSR) of 22.87% for fiscal 2016-17. The revised ratios continue to be below the maximum acceptable debt service ratios for Halifax Water identified in the 2012 study. The 2016/17 update identifies the 2016-17 ratio of debt outstanding to annual revenue ratio as 173%.

Bill as a percent of household income

The latest available data on median household (family) income (MHI) for the Halifax CMA is in 2014. At that time MHI was $84,560[4] and the average annual residential water/ wastewater/ stormwater bill was $725[5] in 2014/15. The bill as a percent of household income is 0.86%. The average rates increased to $759 in 2015/16 and $805 in 2016/17.

The average annual cost to Halifax Water's residential users is below the $934 average of the fifteen benchmark cities[6].

Rate Affordability Programs for Residential Customers

Review of Research on the Affordability of Water, Wastewater Services

As part of the rate affordability research, eleven studies, articles, and presentations were reviewed and summarized in the annotated bibliography provided in Appendix 1. Nine of them are dated between 2010 and 2017, there are two from the previous decade, and American sources dominate the literature. This body of knowledge focuses on identifying and assessing affordability issues for water and wastewater or identifying rate and customer assistance programs and associated best practices. The United States Environmental Protection Agency,

[4] Statistics Canada Median total income, by family type, by census metropolitan area 2010 to 2014. Retrieved from www.statcan.gc.ca/tables-tableau on February 7, 2017
[5] Taken from research on 'Annual average residential cost benchmark cities' prepared by Halifax Water
[6] Ibid

Water Research Foundation, and American Water Works Association sponsored some of the research.

Summary of points from the rate affordability literature:

1. Water / wastewater costs are increasing at rates well above the rate of inflation and growth in household incomes as a result of increased utility costs (capital investments, new technology, regulatory compliance) and a practice of covering the full cost of service through rates.
2. The overall capacity of a community / utility service area to afford water and wastewater services is measured by calculating the percent of MHI (median household income) spent on average residential water consumption. Acceptable percentages are 2.5% for water and 4.5% for water and wastewater combined. When this affordability criteria is applied system wide by using MHI and average consumption rates, most communities are able to meet these affordability guidelines.
3. There is potential for water rate increases to disproportionally impact lower income households that require a higher than community average percent of income to cover costs. In addition to focusing on affordability at the community level, researchers and utilities are looking at an individual customer's overall financial resources to meet their water / wastewater payments and other necessary expenditures.
4. The research identified alternative household affordability metrics such as (1) average bills as a percent of household incomes for each quintile and (2) the identification of vulnerable populations (3) the identification of households that spend more than a selected percentage of income on WWS payments.
5. In the Unites States, primary data for developing alternative measures of household affordability is found through data provided by the US Census Bureau American Community Survey (ACS), Integrated Public Use Microdata series, and additional national, state, and local sources. Data is also available through surveys conducted by water utilities and NGOs. Existing low income subsidy programs for other essential public services can also be used to identify customers who require assistance.
6. Affordability programs currently used or recommended are identified. The most common types of customer assistance programs (CAP) identified in the research are bill discounts, flexible terms, lifeline rates, temporary assistance, and improved water efficiency programs. Other options are a reduced fixed monthly charge, relief for renters, generating a larger portion of revenues from volumetric charges, financial counseling, and no interest loans.
7. Applying a formalized business process to a comprehensive utility program that reflects the assistance to residents with affordability issues is recommended. Three suggested program elements for improving affordability are (1) improve affordability by reducing

the size of the bills through initiatives linked to conservation, alternative billing practices, and alternative rate structures; (2) reduce the overdue caseload and arrears; and (3) reduce collection costs.

8. Constraints on funding for CPAs exist for some utilities as a result of legislation or utility cost of service policies. One method of funding CAP programs identified in the literature was to increase rate (block) and use the surplus to subsidize consumption by low income households. Where utilities are restricted from using rate revenues to provide rate reductions or subsidies, alternatives are to request donations from other water users, local governments, or NGOs and have the program administered by a third party.
9. There is a need for more research on reaching multi-family residential and other hard to reach users. Preliminary research identifies the affordability challenges faced by low income renters and other hard to reach (H2R) customers and recommends that utilities reach out to theses water users by being actively involved in the community, providing opportunities to hear from H2R customers, partner with community based organizations, industry and public housing organizations, connect with the media and specific customer segment audiences. Programs used to assist the H2R that are currently used by some utilities are partnering with a local energy utility to provide direct discounts through energy bills, vouchers for households that do not receive energy bills, working with housing agencies to pass on discounts to renters, flat rate or bill based discounts for landlords, and water conservation initiatives. Another way to reduce the H2R customers is by metering them and some utilities are promoting sub- metering on new and or existing multi - unit buildings.

Rate Affordability for Halifax Water Customers (Residential)

The main source of data for researching affordability issue in Halifax Regional Municipality is Statistics Canada. The data used for this research comes primarily from 2011 Statics Canada data and projection based on this data as there was insufficient published data available from the 2016 census at the time of this research. It is unlikely the updated census data will materially impact the results. Much of the data used was drawn from census statistical and information reports prepared by Halifax Regional Municipality and Halifax Water.

<u>Sources of data and information used for determining rate affordability for Halifax water customers include:</u>

1. Median household income (MHI) for 2014 for all census family types is $84,550 and the Halifax Water bill as a percent of household income for that year is under one percent
2. MHI for 2014 for three different categories of census family types is Couple families - $93,800; lone parent families - $40,440; and persons not in census families - $23,000.

3. Residential cost benchmark cities rate data for Y/E march 2016 provides HW rates for 2014/15 and 2015/16. The average annual residential costs for services similar to those provided by Halifax Water[7] for their latest reporting periods by the fifteen Canadian benchmark cities is $934. The average annual amount for Halifax Water residential users is currently $805. It was $725 in 2014/15 and $759 in 2015/16.
4. HRM family information from 2011 Census.

(a) Of 109.765 families 67.8% were married couple families, 15.4% common law couple families, and 16.7% lone parent families. (source: Focus on Geography series).

(b) There were 165,155 private households in HRM in 2011. The categories are: couple family with children 23.8%, couple family without children 29.7%, lone parent family households 10.2%, one person households 28.6%, multiple family households 1.4% and other households 6.4%. The combined number of families in the first 3 household categories is close to the number of families (in 1 above).

(c) The structural type of the 165,155 dwellings is broken down as: single detached house 51%, semi-detached house 6.8%, row house 3.7%, apartment building with 5 or more stories 10.7%, apartment building with fewer than 5 stories 21.4%, apartment duplex 3.8%, other single attached house 0.2% and movable dwelling 2.4%

5. A breakdown of the 81,000 + HW accounts[8] for 2187 Dissemination Block 10 digit numbers (2011 population, boundary area, number of accounts, 2015-16 consumption). Updated to provide numerical sequence for dissemination blocks.
6. HW data for 9000+ postal codes in HRM served by HW. Data for each postal code includes number of HW accounts, total consumption in cubic meters, and total land area covered). Accounts are not broken down by type or number of households (i.e. a condominium complex can be one account)
7. A breakdown of HRM household (after tax) income for private households in eleven income categories (low is under $5000 to high of over $100,000) for approximately 600 numbered (8 digits) Census Dissemination Areas.
8. Customized reports related to the 112 Census Dissemination Areas with average incomes below $40,000 which includes information on population, dwelling units, water usage, disconnection rates, income, and persons per household.
9. Digital maps with Census Dissemination block information

[7] Average billing figures for seven of the fifteen cities' rates include rates for all three services; i.e. water, wastewater, and stormwater. 7 of the cities did not report stormwater charges.
[8] Numbers and breakdown taken from 2016-17 estimates included in the HRWC Water Rate Study Worksheet W-1 November 16, 2014

10. A breakdown of HRM population (in five year increments) and household size (six categories) for approximately 600 numbered (8 digits) Census Dissemination areas.
11. CANSIM Table 202-0801 Low Income cut-offs before and after tax by community and family size, 2011 constant dollars archived" shows low income cut offs (after and before tax) for communities with populations between 100,000 and 499,999. 1 person $16,328 / $20,065; 2 persons $19,872 / $24,978; 4 persons $ 30,891 / $ 37,283.

Results of data analysis

A GIS analysis undertaken by Halifax Water identified low income areas where there were high rates of (water) service disconnections[9]. For purposes of this analysis, 112 low income areas were identified by eight digit dissemination areas (DAs) where the median household income range was below $40,000. This income threshold was selected as a starting point as it is approximately fifty percent of the MHI for the municipality and provides an opportunity to compare affordability (as defined by service disconnection rates) among lower income groupings. Six of the eleven HRM after tax income categories mentioned above were included, the lowest of which was under $5,000 and the highest was $30.000 to $39,999. There were 68,293 people, 36,398 occupied dwelling units, in the six income categories which accounted for these 112 DAs.[10]

The research also looked at areas where household income is below twenty five percent of the municipal average. The first four income categories all reflect average household incomes of less the $20,000. $20,000 is close to the income qualification limit for Halifax Water's existing H2O affordability program. There are a total of 16 DAs in the first four income categories which have a combined population of 7,688, 4,019 occupied dwellings, and 1,080 water accounts. This group accounts for approximately two percent of the HRM population served by Halifax Water.

Of the 112 lower income DAs (breakdown of the 112 DA's by median income is provided in a footnote[11]), there were eight that had disconnection rates that were over 50%. By median income range category; one of these eight DA's was in the 0-$5000 range, one in the $5000-$9,999 range, two in the $10,000 -$14,999 range, one in the $20,000 - $29,999 range, and three in the $30,000 to $39,999 range. Three of the eight DAs had family sizes that were 5% above the DA average; the other five had smaller than DA average family sizes. An analysis of the data shows that there is no significant difference in average consumption between the eight low income /

[9] The focus on the low income high disconnection rate combination may understate true affordability situations because multi units accounts with one meter are not normally disconnected and households occupied by the working poor who make a concerted effort to meet their financial commitments are often close to non-payment.
[10] There are 503 eight digit DAs in HRM with at least one water account
[11] Under $5000 = 1; $5000 - $9999 = 4; $10,000 - $14,999 = 7; $15,000 - $19,999 = 4: $20,000 - $29,999 = 36, $30,000 - $39,999 = 60 (For a total of 112)

high disconnection rate DAs and the system wide DA average. Information related to the eight selected DAs is presented in Table 1.

Table 1 Information on usage and family size for 8 low income – high disconnection rate areas

DA	Residential water accounts	Occupied dwellings	Total metered consumption cu. m	Family size[12]	Average consumption per dwelling unit[13]
1	117	176	29,310	2.9	166
2	52	258	42,094	2.6	163
3	110	103	15,914	2.9	154
4	136	340	46,240	2.5	136
5[14]	78	361	20,242	2.3	56
6	86	593	70,792	2.4	119
7	35	243	37,111	2.7	152
8[15]	238	218	451	2.9	N/A

Affordability Programs for Residential Customers

Review of research on the affordability of water and wastewater services

A summary of the key research findings as they relate to existing or potential affordability programs in Halifax Water are as follows.

1.The most common types of customer assistance programs (CAP) identified in the research are bill discounts, flexible terms, lifeline rates, temporary assistance, and improved water efficiency programs. Other options are a reduced fixed monthly charge, relief for renters, generating a larger portion of revenues from volumetric charges, financial counselling, and no interest loans.

2. Applying a formalized business process to a comprehensive utility program that reflects the assistance to residents with affordability issues is recommended. Three suggested program elements for improving affordability are (1) improve affordability by reducing the size of the bills through initiatives linked to conservation, alternative billing practices, and alternative rate structures; (2) reduce the overdue caseload and arrears; and (3) reduce collection costs.

[12] Average family size in HRM is 2.74

[13] Average annual water consumption per dwelling unit for Halifax Water residential accounts is 147 cubic meters

[14] A high percentage of dwelling units in this DA are under accounts classified as institutional. The consumption related to these accounts is not included in the consumption figure but the dwelling units are.

[15] 99% of residential water accounts are unmetered.

3. Utilities such as Halifax Water face constraints on funding for CAPs as a result of legislation or utility cost of service policies Where utilities are restricted from using rate revenues to provide rate reductions or subsidies, alternatives are to request donations from other water users, local governments, or NGOs and have the program administered by a third party.

4. There is a need for more research on programs for multi-family residential and other hard to reach users. Preliminary research identifies the affordability challenges faced by low income renters and other hard to reach (H2R) customers and recommends that utilities reach out to theses water users by being actively involved in the community, providing opportunities to hear from H2R customers, partner with community based organizations, industry and public housing organizations, connect with the media and specific customer segment audiences. Programs used to assist the H2R that are currently used by some utilities are partnering with a local energy utility to provide direct discounts through energy bills, vouchers for households that do not receive energy bills, working with housing agencies to pass on discounts to renters, flat rate or bill based discounts for landlords, and water conservation initiatives. Another way to reduce the H2R customers is by metering them and some utilities are promoting sub metering on new and or existing multi-unit buildings.

5. Rates structures that have a higher weighting of consumption charges to total charges are most likely to promote affordability among low income groups. Halifax Water's existing rate structure raises more revenue from consumption charges than from base charges.

Halifax Water existing programs (residential)

Existing rate structure

The residential rates charged by Halifax Water are approved by the Nova Scotia Utility and Review Board and posted on the utility's website. Residential customers are connected to the system with 5/8 inch meters and for water service pay a monthly fee of $13.00 and a consumption rate of $0.976 per cubic meter (220 gallons). The same customers pay a monthly wastewater fee based on water consumption at a base rate of $14 per month plus $1.753. The split between consumption and base charges for the average residential user is near 50/50 (49% base charges and 51% consumption) for water services and 37/63 for wastewater services, for a combined total of 42% base charges and 58% consumption charges. Residential customers also pay a charge of $33.39 per year based on an average impervious area.

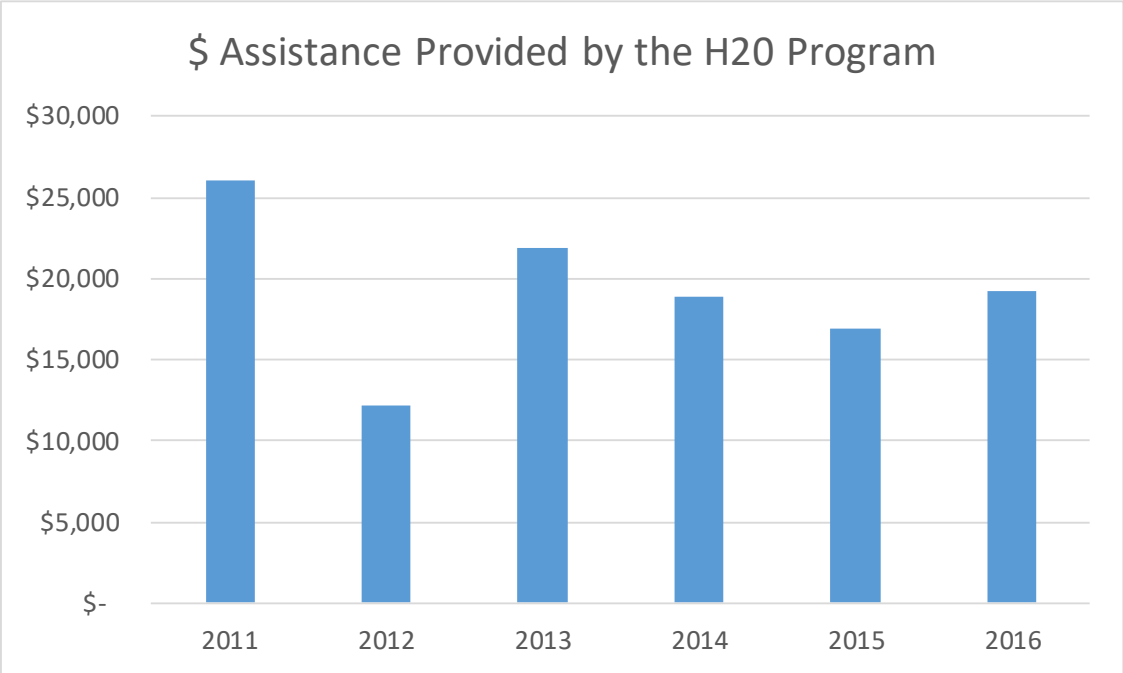
Existing Affordability Programs

Halifax Water has contributed to a water, wastewater, stormwater assistance fund since 2010. This fund can be utilized by Halifax Water customers who are having a hard time making their

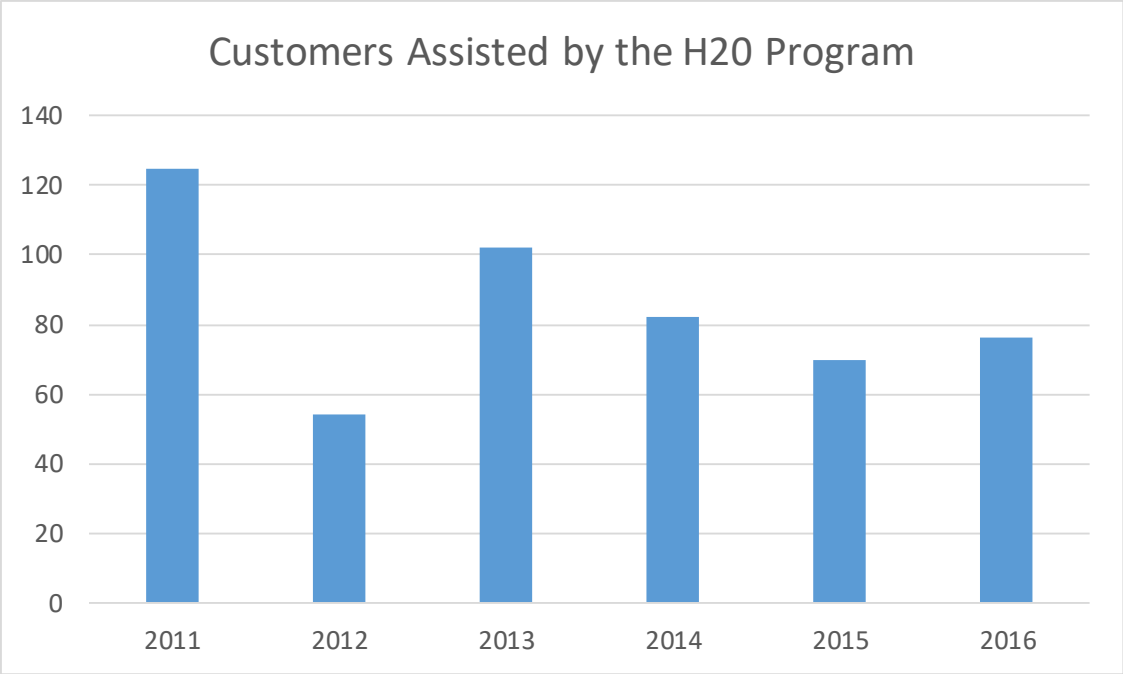
water, wastewater, stormwater bill payments. [16] The H2O (Help To Others) fund is intended to assist households in emergency situations and the maximum an approved applicant can receive in a 24 month period is $250. The Salvation Army receives, reviews, and approves applications. The program is funded in two ways. The first is a donation from Halifax Water from its non - regulated revenues. The second is from donations to the Halifax Water employee sponsored fund which are matched (to a maximum of $25,000) by Halifax Water. The program is application based and the account must be in the applicant's name. Funds provided are applied directly to the user's Halifax Water account.

The current eligibility criteria is linked to income threshold. The limit is $16,000 in annual income for a 1 person household, $18,000 for 2, $21,000 for 3, and $3000 for each additional person in the household.

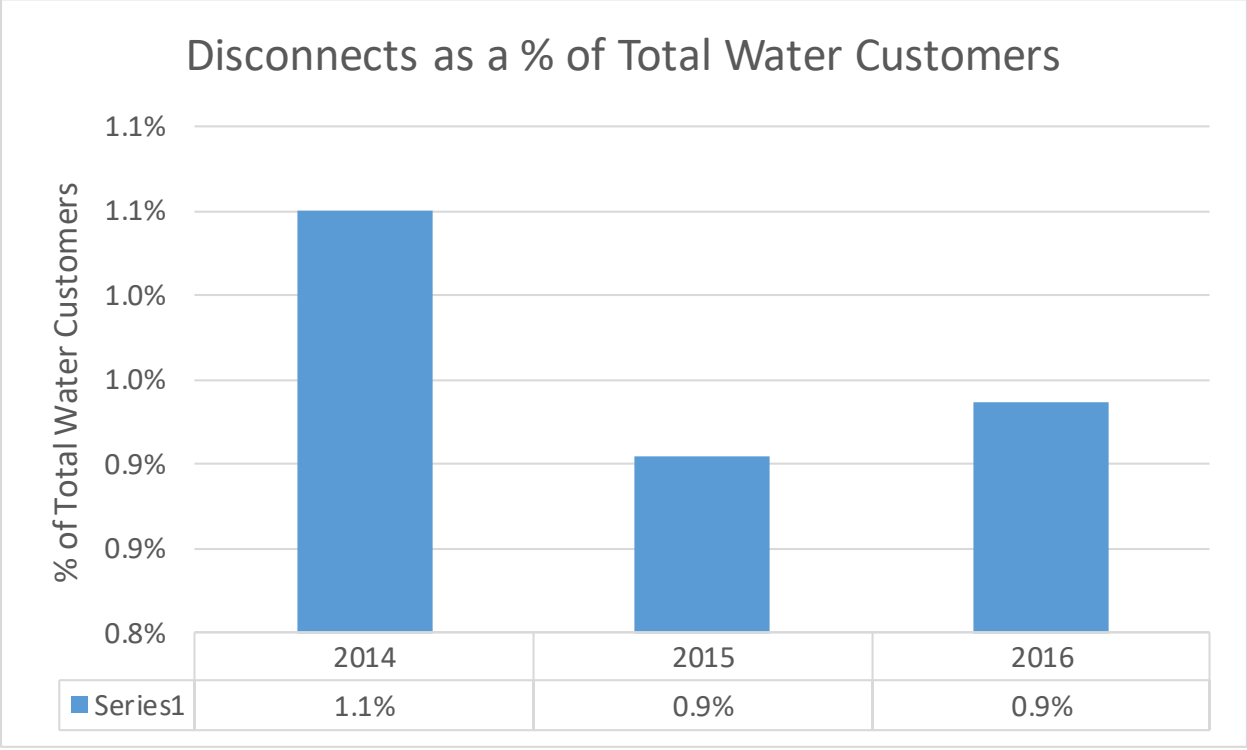
From 2011 to 2016, $115,198 was allocated to 509 customer accounts for a yearly average of $19,200 and 85 accounts. The maximum amount was provided in 2011 when $26,105 was allocated to 125 accounts. The annual amounts are provided in the charts below. 57 applications made in 2015-16 were not approved.

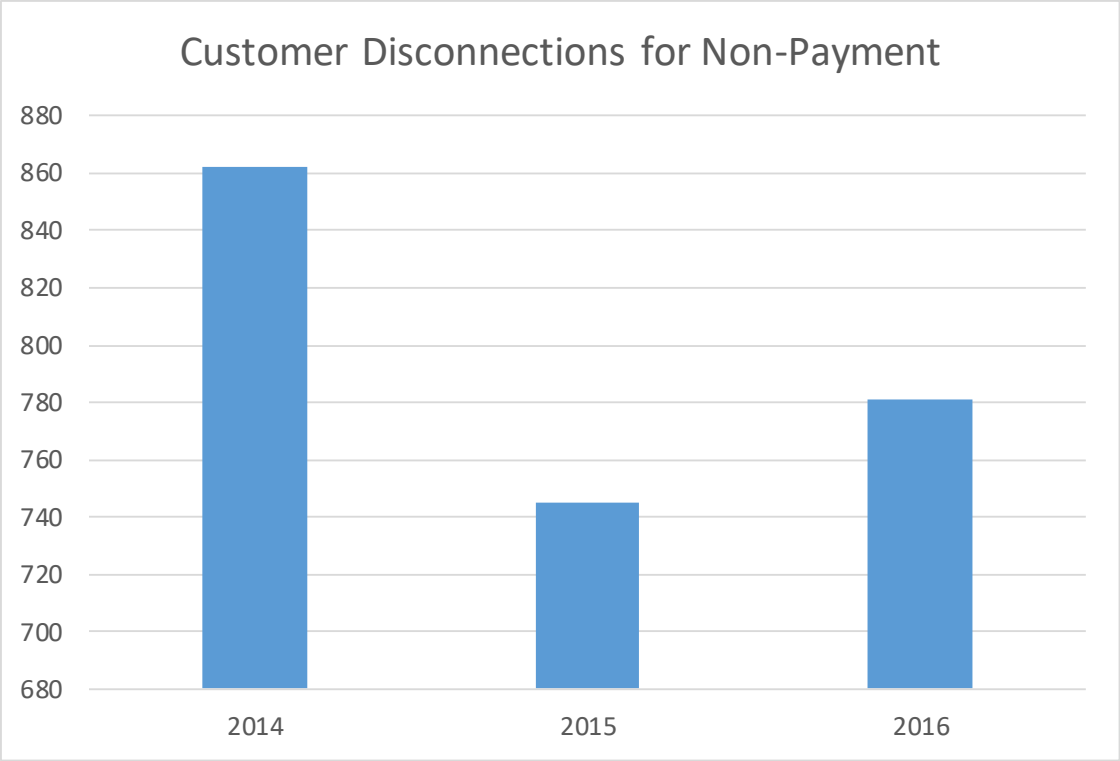


[16] Retrieved from the Halifax Water website on February 28, 2017



The number of accounts receiving funding through the H2O program is a small percentage (roughly 10%) of the number of accounts that are disconnected each year for non- payment. Disconnections for non- payment occur for approximately one percent of Halifax Water customers. The account holders who are disconnected for non- payment would, depending upon the circumstances, be potential applicants for an affordability program.





Halifax Water Affordability Program Options (residential)

There are two general sets of options to consider. One set relates to modifications to the existing H2O program. The other set relates to new programs which, at the present time, may or may not be eligible for implemented under current legislation, regulation, or policy.

Options for modification of, or enhancements to, the existing program are provided below. These options cover a number of areas including qualifying income thresholds (summarized in Table 2), the amount of assistance provided, additional sources of program funding, increasing program awareness, and alternative billing practices.

1. Increase the approval amount to $275 (or more) per two year period
2. Raise the current income thresholds by $2000 for one, two , and three person households to $18,000, $20,000 and $23,000 respectively in recognition of the evidence in the literature that lower income households are the ones that find it the most difficult to absorb water / wastewater increases..
3. Adopt data from the CANSIM table 202-0801 low income cut offs before and after tax for communities with populations between 100,000 and 499,999. In before tax dollars (constant2011) these are $20,065 for one person households, $24,978 for two, and $37,283 for a four person household.

4. Adopt community services income assistance thresholds which provide a maximum of $790 per month for one person and $1080 for two, plus tax credits.
5. Adopt HRM low income thresholds used for property tax relief and the low income transit program which is currently on a sliding income scale that ends at $33,000 per household per year.
6. Engage in outreach activities in consultation with other service providers and community groups to promote the program in low income, high disconnection rate areas
7. Increase the range of program donors to include other water users, governments or NGOs.
8. Increase contributions from Halifax Water staff
9. Reduce the size of bills to low income households through alternative billing and collection practices and conservation programs.

TABLE 2 SUMMARY of Qualifying Income Threshold options

OPTION	DESCRIPTION	COMMENTS
Increase current amounts	Add $2000 to each category or another amount	
CANSIM Data on low income identification	Sets low income cut-offs by communities with populations between 100,000 and 499,999. After tax examples are $20.065 for one person and $37,283 for four persons	Higher than existing H2O threshold. Reflects a country wide perspective
NS Community Services income assistance thresholds	Provides income assistance to disabled and unemployed individuals and families	The base amounts are lower than existing H2O threshold but recipients also qualify for tax credits
HRM low income thresholds	Uses a sliding income scale (max. $33,000) for property tax relief and the low income transit program.	Higher than existing H2O threshold. Unlike the H2O program, it uses a sliding scale to determine benefit amounts.
Good Neighbour Energy Fund	Maximum assistance is $400 every two years. Qualifying thresholds similar to H2O fund	Administered by the Salvation Army. Funded through contributions from HARP and NSP

Options for new programs include:

Halifax Water does not currently have the authority to provide differential or preferential rate treatment (also referred to as social rate making) for low income customers. This is consistent with Canadian public policies and values where the state intercedes with public money to ensure the disadvantaged have sufficient financial resources to provide for the basic necessities. When the cost of necessities increase these public programs may take time to respond, leaving individuals and families in vulnerable positions.

Setting aside existing program restrictions for the purpose on examining the potential usefulness of programs identified through the research, options for new programs or additional enhancements to existing ones include:

1. Implement one or more of the five affordability programs most commonly used in other (mostly American) jurisdiction as identified in the research that are not currently offered by Halifax Water. These five programs are bill discounts, flexible terms, lifeline rates, temporary assistance, and improved water efficiency programs. Other options are a reduced fixed monthly charge, relief for renters, generating a larger portion of revenues from volumetric charges, financial counselling, and no interest loans
2. Transition from an emergency only program to one that provides ongoing support to low income clients
3. Focus on the hard to reach users (mainly those who rent) by working with landlords
4. Provide rebates to low income renters in the form of vouchers, rebates to landlords, or by subsidizing other utility bills where they deal directly with the service providers.
5. Piggyback on programs offered by other essential service providers such as the Good Neighbour Energy Fund, Heating Assistance Rebate Program, or HRM's tax relief program.
6. Consider a two tier system which includes a lifeline rate for low income customers
7. Provide financial assistance through programs that promote water conservation

Rate Affordability for Halifax Water Commercial Customers

The affordability comparison measure used for Halifax Water commercial customers is a comparison with rates levied for water, wastewater, and services in other Canadian cities.

Halifax Water provides annual updates of its spreadsheet comparison of water and wastewater rates in fifteen Canadian cities for commercial customers with 2", 6", and 10" meter connections. The results of the most recent update are shown in Appendix 5

Halifax is below average in commercial costs for 2" meters ($18,000 compared to a fifteen city average of $19,109) and 6" meters ($210,449 compared to the city average of $221,032). Halifax is above average in the 10" meter category ($127,526 compared with the $117, 246 average) mainly as a result of three of the other city utilities offering a declining tiered rate which Halifax has moved away from in 2005 for the reasons provided below.

Over the last two decades across North America, the water and wastewater industry has experienced a pronounced trend toward replacement of declining block rate structures – typically with uniform volume or various forms of inclining block structures. While the reasons for individual utility's rate structure changes vary, this trend reflects a number of key changes in the industry including a heightened focus on resource conservation and increasing costs per unit of capacity due, in part, to more stringent water quality regulations. For HRWC, the demand-related costs to provide service to larger meter size customers does not vary significantly from smaller meter size customers, particularly given limited differences in demand patterns evidenced by the Loudon report. Cost differentials are limited to meter and customer-related costs recovered through base charges. This issue was reviewed and confirmed when the declining block rate structure was eliminated with NSUARB approval in 2005, and reviewed again as part of the 2010 and 2011 General Rate Applications, in the Loudon Report (Water Demand Analysis), and in the Cost of Service Hearing in November 2011.[17]

Halifax Water had a two block declining volumetric rate structure in the past, and as part of its 2001 rate application the Board approved that it be phased out by April 1, 2005. The rationale for the elimination of the two block rate structure was to promote water conservation efforts and, at that time, there was no opposition to the move to a single volumetric rate. In addition, subsequent water demand analyses have indicated there is not sufficiently differentiated customer class demand characteristics to support the use of multi-block volumetric rates. Accordingly, all rates for water and wastewater service approved by the NSUARB for Halifax Water since 2005 have been based upon a single volumetric rate.[18]

Stakeholder Meeting results

The first 'Rate Affordability Stakeholder Workshop' was held at Halifax Water on Monday, March 27, 2017. The participants were from Energy Nova Scotia, Nova Scotia Department of Community Services, the Consumer Advocate, and Halifax Water. The workshop was co-chaired by Cathie O'Toole, HW Director of Corporate Services and Dr. Mark Gilbert, consultant.

The agenda items were identified at the beginning of a PowerPoint presentation that focused on the scope of the research, census and HW data related to income, population, rates, and affordability for lower income groups. Information on how other water / wastewater utilities were measuring affordability and the programs they use to assist their customers was provided

[17] NSUARB M05463 – Exhibit H31, page 28
[18] Taken from information contained in 2013 NSUARB 127 M05463 page 14

along with best practice information and approaches to extending programs to the hard to reach (H2R).

Seven discussion topics were identified and discussed by the participants. The discussion is summarized in appendix 4 under the following topic headings; qualifying thresholds, existing program, working with the broader community (outreach), legislative restrictions

The second 'Rate Affordability Stakeholder Workshop' was held at Halifax Water on Friday, May 26, 2017. The participants were from the Affordability Coalition, Halifax Chamber of Commerce, Halifax Regional Municipality Finance department and Halifax Water. The workshop was co-chaired by Cathie O'Toole, HW Director of Corporate Services and Dr. Mark Gilbert, consultant. The workshop agenda and format were similar to the first workshop. A summary of the discussion is included in appendix 4.

Key findings / Answering the Research Questions

The study identified four research questions that would be answered in order to determine whether Halifax Water rates for water, wastewater, and stormwater are affordable for its users.

The first research question was "Are residential rates for water / wastewater / stormwater in HRM affordable at the community level?" The research confirms that they are.

The second research question was "Are there residential subgroups in the population for which current rates place undue hardship on the user?" The number of participants in the existing H20 program demonstrates a need among HRM households experiencing affordability issues. The research identifies the existence of low income households in the area served and includes information on the annual number (approximately one percent of accounts) of residential disconnections for non-payment that occur. A number[19] of applications for assistance under the H2O program do not meet the qualifying criteria.

The third research question was "If there are such subgroups what can be done to alleviate or reduce undue hardship?" Participants at the stakeholder workshops suggested Halifax Water work more closely with the community (including other essential service providers) to increase client awareness of its existing affordability programs. Geographic areas of immediate focus have been identified through the research. The first involves the 2% of the population served who live in the 16 census dissemination areas where the median annual household earnings is under $20,000. The second involves the 8 dissemination areas that include both lower median household incomes of less than $40,000 and high water disconnection rates in excess of fifty percent over a multi-year period. Five of the DA's are common to both groups. In addition to increased awareness of the exiting emergency relief program, consideration should be given to

[19] There were 57 unapproved applications made to the H2) program in 2015-2016

non-emergency assistance programs, conservation, and measures that would assist low income clients in reducing the amount owing at any given time. Separate initiatives should be considered for the category of water users referred to as 'hard to reach' the majority of who are those lower income families living in rented accommodation who do not directly receive water bills.

The final research question was "Are Halifax Water service rates for commercial users in line with those in other Canadian cities? The research confirmed that they are in line with those of other Canadian cities and in most cases below the average rates for the fifteen cities in the comparator group.

Conclusions and Recommendations

Rates levied by water, wastewater utilities across North America have been increasing by percentages in excess of the cost of living and general wages gains. Commonly cited reasons for this rate of increase are capital investments, new technologies, regulatory compliance, and the practice of covering the full cost of service through rates. Halifax Water is one of a number of North American water utilities are looking at the impact these rate increases are having on service affordability for lower income households.

The research addresses four research questions relating to water user affordability. It found that at the community level residential rates are affordable when using the standard measure of average bill as a percent of MHI. It also found that Halifax Water's rates for commercial users were in line with those of other Canadian cities and in most cases below the comparator group average.

The research identified geographic areas within the service area where median household incomes were much lower (25% or less) than the municipal average and areas where there was a combination of low household incomes and high service disconnection rates. Both these areas warrant a closer look with respect to rate affordability. Differences in water consumption and family size were not considered to be significant at the dissemination area level. The response to the research question which asks "If there are such subgroups what can be done to alleviate or reduce undue hardship?" is that Halifax Water work more closely with the community (including other essential service providers) to increase client awareness of its existing affordability programs. Consideration should also be given to extending the H20 program to cover more than bi-annual emergency assistance, providing alternative billing and payment options, and program modifications to provide relief to the hard to reach.

Recommendations[20]:

[20] The recommendations are derived from the section on Halifax Water affordability program options for modifications or enhancements to the existing H2O program and options for new programs.

1.Enhance the existing H20 program benefits through increases in the amounts provided, changes in the qualifying income threshold, maximizing the existing sources of program funding, increased awareness through outreach and collaboration, and additional billing and collection options for low income customers. The eligibility period should also be reviewed.

2. Analyze results including the reasons for unsuccessful applications

3. Increase awareness through outreach, collaboration and various avenues of promotion as identified in the stakeholder group meetings

4. Undertake community outreach beginning with in the 8 priority census dissemination areas identified in the study

5. Work with NGOs and landlords and their associations to promote conservation and customer assistance programs for the H2R (Hard To Reach).

6. Extend opportunities to donate to the program to HW customers, NGOs and governments

7. Adjust business processes to provide billing and collection options to low income customers, provide frequent access to usage information, and the ongoing promotion of conservation programs.

8. Consider arranging the necessary authorities for two customer assistance program (CAP) options used in other North America jurisdictions that are currently restricted (through legislation, regulation or policy) which are lifeline rates and bill discounts. Of the other three commonly used CAPs; one (i.e. temporary assistance) has already been adopted by Halifax Water; and the other two (flexible terms and improved water efficiency programs) could be implemented to some extent under existing authorities.

Appendices

Appendix 1 Annotated Bibliography of rate Affordability Research

2017 Annotated Bibliography – Rate Affordability Research

Working title: Rate affordability measures for Halifax Water services

The bibliography focuses on research, publications and data relating to the study. It covers eleven studies, articles and presentations; nine of which are dated between 2010 and 2017 and two from the previous decade. Ten are American and one is Canadian. They all deal with identifying and assessing affordability issues for water and wastewater or identifying rate and customer assistance programs and associated best practices. The work consists of general research and case studies. Several of the studies were sponsored by the United States Environmental Protection Agency, Water Research Foundation, or the American Water Works Association.

L. Cuppett, J. Clements. and S. I. Berahzer, *"Affordability: Balancing rates with community needs"*, Advances in Water Research October – December 2016 Vol 26, No. 4 pp. 6-11 A Water Research Foundation Publication.

This article provides background information on why rate affordability is an ongoing issue in the United States. Fifteen percent of the population were living below the poverty line in 2014 and where there are increased funding needs for regulatory compliance and infrastructure investment. The authors discuss a definition of affordability and refer to the water professional's general reliance on costs as a percentage (4.5% is common) of median household income (MHI) for water / wastewater services. As income levels are not usually clustered around the median, affordability assessment indicators and tools are identified. The authors define relative affordability in terms of an individual customer's overall financial resources and their necessary expenditures, recognizing that water and wastewater services are just two of the many goods and services paid for by households. This definition is said to capture the tradeoffs that households must make when paying for water and wastewater. A formula is provided to calculate the relative affordability rate for the average low income household using poverty level income or the 20th income percentile. The effectiveness of the formula depends on the availability of household economic data in a given community. The paper highlights WRF past and planned research on affordability which include best practices and reference to its 'in progress' study of "Customer assistance programs for multi-family residential and other hard to reach customers". Reference is made to research undertaken by EPA's Water Infrastructure and Resiliency Finance Centre which refers to the five programs most often used to assist low income customers which are identified as bill discount, flexible terms, temporary assistance, water efficiency, and lifeline rate. The authors refer to another research project (of which WRF

was a part) led by NACWA titled "Opportunities for affordable assistance to customers of water and wastewater services".

J.E. Cromwell, J. Mobley et al. "Best practices in customer payment assistance programs" Published by Water Research Foundation, Denver Colorado, 2010. Jointly sponsored by Water Research Foundation and U.S Environmental Protection Agency.

The purpose of this report[21] is to perform a review of best practices in utility programs to assist payment - troubled customers and assemble the results into a reference guide for use by utility management teams in developing and improving such programs. The report's central finding is that while most water utilities can say they take steps to help payment – troubled customers, their programs of activity are usually ad hoc collections of practices and not well integrated with the utility's mission or other management practices and operated without clearly articulated objectives[22]. The report recommends comprehensive utility programs that reflect the deliberate intension and follow through of a business process. These are likely to function better than ad hoc programs in both good and bad economic conditions. The report presents the beneficial reasons for applying a formalized business process and a business case for customer assistance programs. It recommends strategies and practices that can be applied in the implementation of a customer assistance program which are categorized in three sequential program elements; i.e. shrink the bills; shrink the overdue caseload and arrears; shrink the cost of collection. Recommendations for improving affordability (shrinking the bill) include conservation education and assistance, alternative billing practices, bill discounts, and alternative rate structures. Suggestions for shrinking the overdue caseload and arrears are prevention before the fact, intervention after the fact, crisis assistance programs, deferred payment programs, and programs to minimize recurrences. In order to shrink the cost of collections support processes including legal support, personnel training, information technology and communications are identified.

Water Research Foundation. *"Customer assistance programs for multi-family residential and other hard to reach customers".* Draft to be released in mid- February 2017

This research will provide alternative program (both direct and indirect) strategies for assisting hard to reach customers The project will focus on how these programs can be financed by the utility while being cognizant of constraints imposed by state legislation or regulation.

In the United States about sixty percent of the low income population of utility customers receive a bill directly from the utility. The remaining forty percent live in single family, rental units, multifamily buildings or public housing and pay for their water as part of their rent or

[21] Taken from the Executive Summary p. xix
[22] Taken from Executive Summary p. xx

home maintenance fee[23] . In the case of water / wastewater utilities, 22% of households served do not directly pay a water bill or have any direct business relationship with their water services provider. Many water utilities wish to find effective ways to assist these "hard-to-reach" (H2R) consumers who face fiscal hardship because of the rapidly escalating cost of essential water related services. These costs are typically embedded in higher rents charged by landlords and higher fees charged by homeowner associations. H2R customers do not benefit from the CAPs many utilities make available to support bill-paying customers, and utilities typically do not have any in-place channels to effectively communicate and engage with the H2R. In most cases, the most effective and efficient ways for water utilities to provide support to H2R involve partnering with existing and with trusted community based organizations (CBOs) and piggy-backing onto existing programs that have a track record of successfully engaging and providing support to the H3R households in the service area.[24]

The report is divided into three components. The first covers background and characterization of the hard-to reach challenge and provides guidance related to affordability and CPAs directly related to H2R customers. Seven best practices for communication strategies that are directly relevant to the H2R are included. They are (1) be actively involved in the community, (2) provide opportunities to hear from customers, (3) partner with community based organizations, (4) partner with industry, trade, and public housing organizations, (5) make connections with the media, (6) connect with the values and communication needs of specific audience segments, (7) make the utility's customer service department approachable, positive and competent.

The second section of the report follow the Plan-Do-Check-Act steps of a business process framework for H2R assistance programs. It includes insights as to why this portion of the business process is important, descriptions of a CAP strategies that may be consider to assist H2R, and examples of programs currently being run by water utilities and entities in other sectors. Exhibit 2-2 summarized affordability objectives for four utilities and identifies the programs established to achieve them. These programs include partnering with a local energy utility to provide direct discounts via energy bills, vouchers for households that do not receive utility bills, working with housing agencies to pass on discounts to renters, flat rate per unit discounts to landlords involved in affordable housing, and bill based discounts for other landlords. Many utilities are making efforts to meter the unmetered. The reality of program legal and administrative capacity boundaries is emphasized.

[23] Taken from Executive Summary p. xxiii
[24] Taken from the key findings of the report p. xxiv

The third section of the report focuses on the implementation of strategies and tools for practitioners to help work through a screening process to assess their utility's need for and approach for reaching H2R in their community. Worksheets and slides are included.

United States Environmental Protection Agency Water Infrastructure and Resiliency Finance Centre (WIRFC). ***"Drinking Water and Wastewater Utility Customer Assistance Programs"*** **April 2016**.

The report identifies the financial pressures on water and wastewater utilities as a result of the need to invest in aging infrastructure, new technologies, regulatory requirements and a skilled workforce. Utilities have been developing household affordability programs that focus on an individual customer's ability to pay for water and wastewater services. Income is the most common criteria used to determine assistance eligibility. Select groups such as senior citizens and households experiencing short term hardship may also qualify for assistance. The programs included in the report represent innovative ways to meet specific customer needs while also meeting the utility's financial needs and obligations. The five most common types of CAP (customer assistance programs) identified in the research are bill discount, flexible terms, lifeline rate, temporary assistance, and water efficiency. (These are the same ones identified in Cuppett et al). Examples of utilities that provide CAP are provided for each of the five types. The income threshold for discounts (the most widely used CAP) is typically linked to a percentage of poverty rates or the MHI for the community. The report includes five case studies of utilities that offer CAPs. They are (with one CAP for each shown in brackets): California Water (50% discount on monthly service charge covered by a surcharge on customer bills), Northeast Ohio Regional Sewer District (40% discount to qualifying seniors in owner occupied properties), Orange Water and Sewer North Carolina (collect donations to provide rate relief), San Antonio Water (discount based on household size, household income and type of service), and Washington Suburban Sanitary Commission (relies on donations which are administered by the Salvation Army). The report identifies legal and policy barriers that result from state legislation or utility cost of service policies. CAP implementation (the report identifies basic steps), provides metrics for measuring success (e.g. participation rates, customers in arrears, service terminations), methods for reaching potential CAP participants including renters, and funding CAPs (the top three sources in the study are nonprofits, utility budgets, and customers' voluntary contributions).

U.S. Environmental Protection Agency, Region III. ***"Rate options to address affordability concerns for consideration by District of Columbia Water and Sewer Authority (WASA)."*** **Philadelphia PA December 2002**

This 2002, eleven page, report was prepared for the purpose of identifying affordability issues and rate structure and program alternatives. The report was motivated by concerns related to

the cost of implementation of a billion dollar WASA long term control plan to address problems associated with combined sewer outflows. While on a system wide basis post implementation rates were still expected to meet affordability criteria, WASA officials noted that lower income residents would be disproportionally impacted by the increased rates necessary to pay for the control measures. EPA suggested in writing that WASA consider differential wastewater rates or other assistance to mitigate the impact of rising rates. The report identifies options for income eligibility (such as percentages of MHI and federal poverty levels); identifies program objectives (bill affordability, avoiding service disconnections, reduce water usage); and identifies a number of financial mechanisms that could be adopted. They include free or reduced cost lifeline rates, credits and discounts, waiver of fixed portion of the bill, billing frequency, budget billing, reduced fixed monthly charge, conservation incentives, emergency grants, payment forgiveness, financial counselling, and no interest loans. Six sources of funding to pay for these programs are identified and include adjusting the rate structure so that assisted users are subsidized by other users or funding from other sources such as local governments, foundations, charities and user donations.

***Recommendations of the National Drinking Water Advisory Council (NDWAC) to U.S. Environmental Protection Agency on Its National Small Systems Affordability Criteria*. July 2003. Document presenting the work of the NDWAC Work Group on the national small systems affordability criteria**.

This one hundred page report (153 pages with appendices) was prepared by an eighteen member working group whose members were chosen by the NDWAC. The background section explains that EPA's affordability criteria establish national guidelines for determining when new drinking water standards are deemed "affordable" for small water systems throughout the United States. If EPA determines that a rule is unaffordable for small systems and designates a variance technology, then small water systems are eligible to request a technology variance from the system's State primary agency. The NDWAC believes that alternatives to the variance process identified by the working group are a more appropriate means to address the affordability of rates while protecting public health problem without using a two tier approach.

The report poses and then responds to six questions related to EPA's affordability requirements for small systems. The report discusses EPA's current approach to small system affordability which is based on an expenditure margin concept (the difference between an assumed maximum affordable water bill measured by MHI and the expenditure baseline), challenges its suitability, and proposes an incremental approach. It further proposes using the incremental approach to set a national affordability increment of MHI. It also recommended EPA establish differential regional affordability criteria when sufficient supporting data are available. The report includes recommendations on financial support strategies to address affordability

challenges (e.g. a low income water assistance program, changes to funding sources that benefit small systems, new funding sources). The working group also made other recommendation which were modified by the NDWAC to address funding and capacity issues, state leadership and regulatory changes, and public education.

Stratus Consulting. *"Affordability assessment tool for Federal Government water mandates"* Prepared for the United States Conference or Mayors, the American Water Works Association, and the Water Treatment Federation. Boulder, Colorado. 2013

This six chapter, thirty three page, report begins by assessing the affordability of Federal water mandates which are administered by the US Environmental Protection Agency (EPA). For many communities the capital and operating expenses associated with federal mandates are often reflected in water and wastewater bills that grow faster than household incomes and the rate of inflation. Very significant affordability challenges are often created, particularly for lower income households. [25] EPA has developed affordability criteria to indicate when mandates would cause substantial economic distress in a community and in such cases, the Agency might allow some flexibility by permitting longer compliance periods or relaxing compliance standards. The Stratus report indicates there are several critical limitations to how EPA defines affordability and applies assessment criteria. In part this is due to EPA's reliance on metrics such as MHI (median household income) which is the view of the report's authors is highly misleading as an indicator of community ability to pay. As a result, regulatory relief is not provided in many communities where it is needed. The report identifies several limitations of the EPA preliminary screening approach which relies on MHI and RI (residential indicators). These limitations include MHI not capturing impacts across diverse populations, household economic burdens, and renters. The report identified alternative household affordability metrics including average bills as a percentage of household incomes for each quintile, and the identification of vulnerable populations. The study identifies secondary screening indicators which involve community comparisons with national economic data and identify reasons why they are not appropriate indicators in determining a communities' ability to finance mandate driven expenditures.

The report presents guidance (unsolicited?) for developing EPA's residential indicator. It identifies the current three step process used by EPA which links cost per household associated with the WWT service area and MHIs to calculate residential indicators. Primary data sources[26] for developing alternative measures of household affordability are identified. Chapter Four provides guidance for analyzing socio economic indicators of household affordability in

[25] From Chapter 1 page 3

[26] US Census Bureau American Community Survey (ACS), US Census Bureau Integrated Public Use Microdata series, additional national, state and local sources.

communities under the headings of income levels, income distribution, poverty rates, household economic burdens and discretionary spending, and supplemental indicators (such as public assistance). Chapter Five provides guidance for developing alternative measures of household affordability. This begins by comparing average actual water and wastewater bills to household incomes for different types of households and across geographic areas. Income distribution information can be linked to neighborhood / type of accommodation usage to assess MHI by income category or a particular demographic. It uses data from selected American cities to demonstrate the differences in the percent of household income spent on water / wastewater by various types (e.g. elderly, owner, renter, family size, income) of households and, by implication, the unaffordability of the services for some groups. The remainder of the report focuses on the assessment of EPA standards and their application.

Carl Bodimeade and Steven Renzetti. *"Full cost rates for water and the chimera of 'affordability'"* Posted to the internet on March 1, 2013

This internet posting provides background information on the reasons (investment in infrastructure, environmental and financial sustainability) for increases in Canadian municipal water and wastewater charges. Since the mid 2000's major municipalities have increased water and wastewater rates with yearly increases well above inflation. Using Statistics Canada 2009 Survey of Household spending data, the authors show that lower income households spend a higher percentage of income on water and sewerage (4.3% for households with incomes below $20,000) and conclude that there is a potential for water rate increases to disproportionally harm lower income households. Four policy options to ameliorate the impacts of rate reform are provided. They are generating a larger portion of revenue from volumetric charges, implementing summer surcharges, base water charges for fire protection on property values rather than consumption levels, and increases in block rate prices and use the surpluses generated to subsidize consumption by low income households. The authors conclude that paying the full cost of providing these services is well within the affordability limits of most Canadian households and policy measures can be introduced to temper the impacts of rate increases for those households at risk.

J. Christian-Smith et al. *"Assessing water affordability: A Pilot study of two regions of California"*. Pacific Institute. Oakland, California. 2013

This 2013 report assesses water affordability in two regions of California; i.e. the Sacramento Metro Area (a diverse city with 21 water systems) and the Tulane Lake Basin (a poor rural area with 130 water systems). The report refers to two landmark Assembly bills passed in 2012 relating to the human right to water and a requirement for the Department of Water Resources to include an analysis of affordability and mechanisms to address lack of drinking water (and waste water services) affordability in California's Water Plan. The authors note that the state

has not adopted affordable service programs for water that are similar to those applied to energy and telecommunication that would ensure service to low income households.

The study uses a four step process to calculate affordability. The first was to calculate average monthly water bills by obtaining water rate data either by accessing AWWA data when available and conducting surveys where it was not. This data was used to calculate average monthly water bills for the use of 1500 cubic feet of water per month (or 368 gallons per day). The second step was compilation of water system boundaries. The third step was an estimation of the key demographic variables in order to calculate affordability. Data from the U.S. Census Bureau's American Community Survey (ACS) was used. The dataset contains records on median household incomes, number (and percentage) of people below the poverty level, and other socio-economic characteristics at the Census Block group level. The data represent a five year average for the period 2007-2011.

The fourth step was the calculation of affordability using different scales and measures. Five measures of water affordability are identified. The first one is dividing the average household water bill by the median household income (MHI) for all water users. The second one adds water replacement costs (to purchase non contaminated water where required) to the first formula. The third measure is the percent of median income for the census block group spent on the water bill. The fourth measure identifies the number of households that spend more than 2%[27] of annual income on drinking water service. The income data came from the American Survey (2011) which provides the number of households in a block group that fall within various income ranges. The fifth measure is the same as the fourth plus replacement costs. Formulae are provided for each measure.

Affordability results are calculated for the two pilot / case study regions. In the case of the urban Sacramento Metropolitan Area, there was no (0%) affordability issue when using system level data but when block group level MHIs were applied six percent of units had unaffordable rates. When affordability was measures on a household scale 23% of households were identified as having unaffordable rates. Unaffordability rates were higher in the rural Tulare Lake Basin area where comparable percentages were 17%, 29%, and 51% respectively.

The purpose of the California pilot study is to assess water affordability rather than recommend affordability programs. However, In the concluding section of the report it does identify a number of well= established affordability programs based on household data used to provide relief for other public services such as electricity and energy that could be replicated.

[27] The 2% of MHI is the threshold used in recent California legislation affirming a human right to water in California (AB 2334)

AWWA Webcast Program: *"Lessons learned from water utility affordability programs"* - W1213- October 2, 2012. Review of slides used for the presentations.

The webcast covers presentations from three water / wastewater utilities. The first is the Cleveland Water System, a large utility with 420,000 accounts serving a population of 1.4 million over 640 square miles. It uses a two block structure where the first block (0.6 MCF where 1 MCF = 7500 gallons) provides a lifeline rate. Bills are quarterly and there is a fixed quarterly charge based on meter size. The utility has had a Homestead Program since 1976 which is available to persons with annual incomes below $30,500 who are 65 years or older or permanently disabled. Over its life, discounts have ranged between 30% and 75%. Ironically the greater percentage discount is on the second block. 21,000 households, representing 5% of all accounts, participate in the Homestead Program. A new affordability was introduced in 2006 which targeted low income homeowners and took household size into account. The program had limited success with 2,100 households participating. A 2011 water rate increase resulted in the current affordability program for low income earners. It is based on HEAP (presumably it stands for the home energy assistance program) guidelines for household size and income and now gives a 40% discount on the entire water bill (both consumption and fixed charges). The presentation identifies a number of other affordability recommendations contained in the 2011 financial plan which include vouchers, fixture repairs, bill write-offs, monthly and budget billing, and relief for renters.

The second presentation was from the Orange Water and Sewer Authority (OWASA) and focused on its 'Taste of Hope' program. The utility is located in North Carolina and its affordability program options are constrained by statutes and contractual agreements. The affordability program is financed through customer donations through voluntary rounding up on water bills. The program is administered by a third party (Interfaith Council for Social Services). The program raises less than $8000 annually which is insufficient to cover the customer assistance provided.

The third presentation was from Cape Coral Florida and focused on how to keep utility rates affordable for its 56,000 customers when facing debt expenses for a large capital improvement program. One segment of the presentation dealt with the SHIP (State Housing Initiative) program which assists low income homeowners in accessing utility services. The program pays the meter fee, the septic and well abandonment costs and the actual cost of the line connection from the street o the house. A typical grant is from $1200 to $2000.

American Water Works Association (AWWA) *"Thinking Outside the Bill: A Utility manager's guide to assisting low-income water customers"* Second Edition. Sponsored by the American Water Works Association. Denver, Colorado. 2014

The AWWA guide was prepared to provide utility managers with tools and ideas to assist low income water customers. The guide explains that affordability is a growing issue as water service bills increase at rates higher than inflation in order to meet full cost of service pricing. At the same time, one quarter of households in the United States of America had incomes of less than $25,000 in 2012 and nationally 15% of residential water customers are low income households … are constantly at risk of payment problems … and the best customer assistance programs are ones that offer a complete approach to the problem.[28] The guide is intended as a quick reference to introduce utilities to alternative approaches to the issue of affordability.

The guide presents facts relating to customer in the USA. 28 million households have difficulty paying for their necessities. In 2011 the typical household paid $500 per year for water and wastewater services which was much less than for either telecommunications or energy. Most water utilities are unable to collect between 0.5% and 1.5% of billed revenues. When MHI is used as a measure of affordability, the result is well within USEPA affordability guidelines of 2.5% for water and 2% for wastewater. The report states that this underestimates the effect of rising water bills on low income, fixed income and renter occupied households.

To learn more about affordability in the community being served, the guide recommends answering prescribed questions about the low income segment through US Census data, where demographic profile information for communities is available on request. This data includes income, employment, housing and poverty information and sample data is provided in the appendices. Data normally available from utility records are identified and community outreach to those governments, agencies and NGOs that work with low income people is suggested.

The guide outlines several proven water affordability programs based on information published and unpublished sources. They are bill discounts[29], leak repairs, community and local government assistance programs (utility pays, other organizations implement), arrearage forgiveness, crisis funding, billing options (monthly, budget), water conservation programs and outreach[30].

Key Findings:

1. Water / wastewater costs are increasing at rates well above the rate inflation and growth in household incomes as a result of increased utility costs (capital investments,

[28] Credited to the 2010 WRF and the USEPA report 'Best practices in customer assistance programs"
[29] The bill discounts referred to are lifeline rates (low rate for a relatively small amount of water e.g. first 2000 gallons per month), discount based on income threshold, variable discount based on income, bill based on a percentage of income for low levels of usage)
[30] Working with community organizations to make customers aware of water and other programs that would provide financial relief.

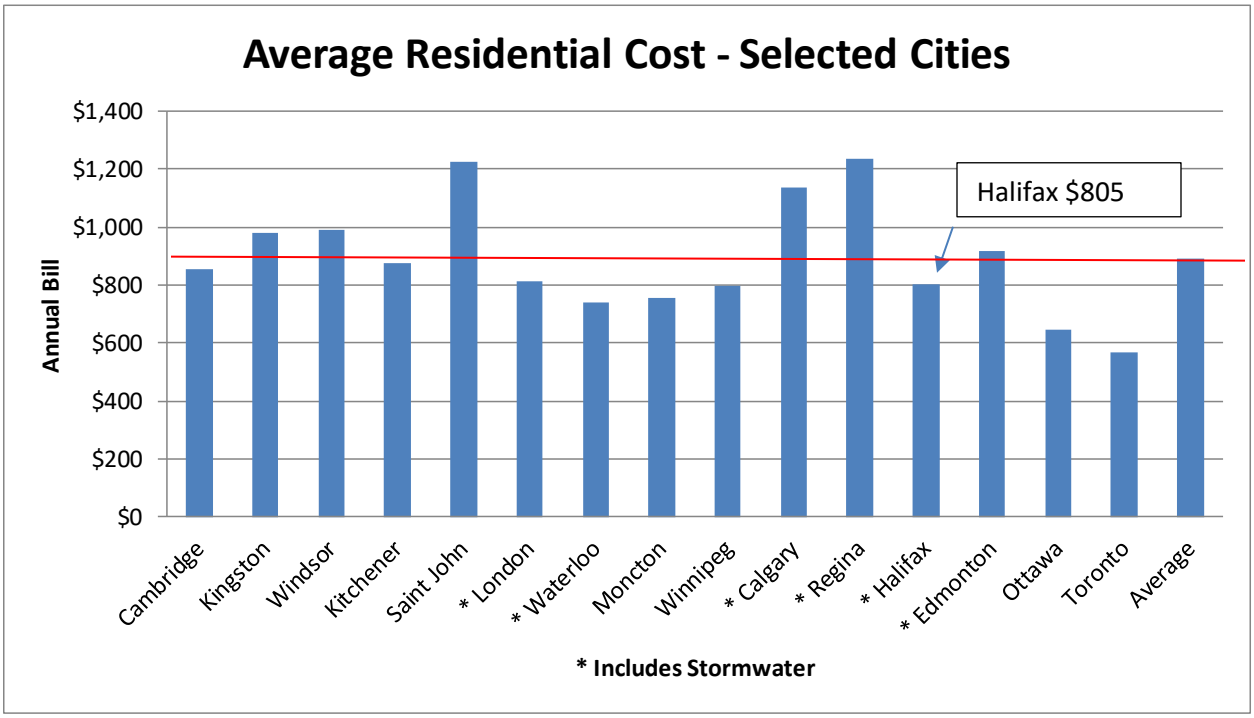
new technology, and regulatory compliance) and a practice of covering the full cost of service through rates.

2. The overall capacity of a community / utility service area to afford water and wastewater services is measured by calculating the percent of MHI (median household income) spent on average residential water consumption. Acceptable percentages are 2.5% for water and 4.5% for water and wastewater combined. When this affordability criteria is applied system wide by using MHI and average consumption rates, most communities are able to meet these affordability guidelines.
3. There is potential for water rate increases to disproportionally impact lower income households that require a higher than community average percent of income to cover costs. In addition to focusing on affordability at the community level, researchers and utilities are looking at an individual customer's overall financial resources to meet their water / wastewater payments and other necessary expenditures.
4. The research identified alternative household affordability metrics such as (1) average bills as a percent of household incomes for each quintile and (2) the identification of vulnerable populations (3) the identification of households that spend more than a selected percentage of income of WWS payments.
5. In the Unites States, primary date for developing alternative measures of household affordability is found through data provided by the US Census Bureau American Community Survey (ACS), Integrated Public Use Microdata series, and additional national, state, and local sources. Data is also available through surveys conducted by water utilities and NGOs. Existing low income subsidy programs for other essential public can also be used to identify customers who require assistance.
6. Affordability programs currently used or recommended are identified. The most common types of CAP identified in the research are bill discounts, flexible terms, lifeline rates, temporary assistance, and improved water efficiency programs. Other options are a reduced fixed monthly charge, relief for renters, generating a larger portion of revenues from volumetric charges, financial counselling, and no interest loans.
7. Applying a formalized business process to a comprehensive utility program that reflects the assistance to residents with affordability issues objectives is recommended. Three suggested program elements for improving affordability are (1) improve affordability by reducing the size of the bills through initiatives linked to conservation, alternative billing practices, and alternative rate structures; (2) reduce the overdue caseload and arrears; and (3) reduce collection costs.
8. Constraints on funding for CPAs exist for some utilities as a result of state legislation or utility cost of service policies. One method of funding CAP programs identified in the literature was to increase rate (block) and use the surplus to subsidize consumption by low income households. Where utilities are restricted from using rate revenues to

provide rate reductions or subsidies, alternatives are to request donations from other water users. Local governments, or NGOs and have the program administered by a third party.

9. There is a need for more research on reaching multi-family residential and other hard to reach users. Preliminary research identifies the affordability challenges faced by low income renters and other hard to reach (H2R) customers and recommends that utilities reach out to theses water users by being actively involved in the community, providing opportunities to hear from H2R customers, partner with community based organizations, industry and public housing organizations, connect with the media and specific customer segment audiences. Programs used to assist the H2R that are currently used by some utilities are partnering with a local energy utility to provide direct discounts through energy bills, vouchers for households that do not receive energy bills, working with housing agencies to pass on discounts to renters, flat rate or bill based discounts for landlords, and water conservation initiatives. Another way to reduce the H2R customers is by metering them and some utilities are promoting sub-metering on new and or existing multi - unit buildings

Appendix 2 Annual Average Residential Water and Wastewater Costs - Canadian Cities Comparison



All rates calculated based on a 5/8 inch customer

All rates calculated based on 164 c.m. Per year

	WATER					WASTEWATER				STORMWATER	TOTAL	Effective Date
City	Base Charge water	Consumption Rate per c.m. for Water	Water Main Replacement Levy	Consumption Charge	Total Water	Base Charge ww	Discharge Rate per c.m. for ww	Discharge Charge for ww	Total charge for ww			
Cambridge	100.08	2.0373	9.48	334.12	443.68	75.96	2.0352	333.77	409.73	-	$ 853	1/1/2016
Kingston	267.48	1.1113		182.25	449.73	366.96	1.0030	164.49	531.45	-	$ 981	1/1/2016
Windsor	202.08	0.5190	129.24	85.12	416.43	190.44	2.3500	385.40	575.84	-	$ 992	1/1/2016
Kitchener		2.0852		341.97	341.97		2.4090	395.08	395.08	137.28	$ 874	3/1/2016
Saint John	216.36	1.0116		165.90	382.26	263.94	1.2341	202.39	466.33		$ 1,224	1/1/2016
London	173.52	1.0044		164.73	338.25	147.00	0.8927	146.40	293.40	179.04	$ 811	1/1/2016
Waterloo	35.76	1.7000		278.80	314.56		2.1700	355.88	355.88	67.32	$ 738	2/1/2016
Moncton	113.52	1.6090		263.88	377.40	93.52	0.4440	72.82	166.34	210.00	$ 754	1/1/2016
Winnipeg	127.75	1.4500		237.80	365.55	56.03	2.2800	373.92	429.95		$ 795	1/1/2015
Calgary	190.20	1.7900		293.56	483.76	283.92	1.3100	214.84	498.76	156.60	$ 1,139	1/1/2016
Regina	277.40	1.8100		296.84	574.24	215.35	1.6200	265.68	481.03	182.50	$ 1,238	1/1/2016
Halifax	156.00	0.9760		160.06	316.06	168.00	1.7530	287.49	455.49	33.39	$ 805	4/1/2016
Edmonton	85.80	1.8929		310.44	396.24	46.20	0.7374	120.93	167.13	355.31	$ 919	4/1/2015
Ottawa	39.98	1.6990		278.64	318.62		1.9878	326.00	326.00		$ 645	5/1/2015
Toronto		3.45		565.80	565.80			-	-		$ 566	1/1/2016

Cambridge	853.41		Complete
Kingston	981.19		Complete
Windsor	992.27		Complete
Kitchener	874.33	Drainage	Complete
Saint John	1,224.00		Complete
* London	810.69	Drainage	Complete
* Waterloo	737.76	Drainage	Complete
Moncton	753.73		Complete
Winnipeg	795.50		Complete
* Calgary	1,139.12	Drainage	Complete
* Regina	1,237.77	Drainage	Complete
* Halifax	804.95	Drainage	Complete
* Edmonton	918.68	Drainage	Complete
Ottawa	644.62		Complete
Toronto	565.80		Complete
Average	888.92		

Appendix 3 Stakeholder Meeting Presentation

Rate Affordability Workshop

MARCH 27, 2017

Halifax Water

AGENDA TOPICS

- Reasons for the Research
- Scope and Research Approach
- Population Profile
- Current Affordability Targets
- Residential Customer Affordability
- Commercial Customer Affordability
- Customer Assistance Programs CAPS
- Best Practice Research
- Hard to Reach Customers
- Stakeholder Input

Why are we doing this research?

- Rates for W, WW, and SW service will continue to increase
- Past increases in utility rates have been higher than CPI or wage gains
- To assist with future rate and CAP program development
- To consider recent similar research in other jurisdictions
- To be proactive
- To learn more about ways to reach the H2R customer
- Halifax Water has a rate smoothing strategy, and affordability target
- Affordability also impacts acceptance of local improvement charges for the private portion of water, sewer or deep stormwater infrastructure, or for programs to address lead service lines or illegal connections

Why are we doing this research now?

- Timing is good, as other complimentary studies in other jurisdictions are being completed
- There are no increases to water, wastewater or stormwater rates planned in 2017/18
- We are updating our 5 Year Business Plan this year, and need to reflect any new or changed programs
- The resulting information will be useful for future rate applications

Why will rates continue to increase?

- Revenues are declining, while expenses are increasing, meaning that periodically rates need to be adjusted to allow the utility to continue to provide the same level of service
- Consumption is decreasing each year, meaning revenues decline
- Aside from normal inflation, some of commodities like chemicals, electricity, and heating oil typically increase at rates greater than CPI
- Infrastructure spending must increase to maintain aging assets
- The number of customers is increasing

Scope

- The research addresses five questions:
  - Are W, WW, SW rates in HRM affordable at the community level?
  - Are there residential subgroups in the population that face undue hardship under current rates?
  - What can be done to alleviate or reduce undue hardship if it exists?
  - How can Halifax Water and the broader community can work together to reach those in need?
  - Are HW rates for commercial users in line with those in other Canadian cities?

Research Approach in 5 parts

- 1. Update data from debt strategy
- 2. Review existing affordability research
- 3. Identify residential subgroups within HRM that may have affordability issues
- ***4. Meet with stakeholders to discuss the issue and options and solutions prior to making recommendations***
- 5. Assess commercial services affordability

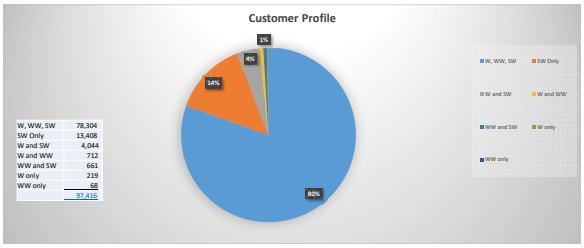
Population Profile - 2011

- Family formation – 109,565 families
  - 67.9% married couple
  - 15.4% common law
  - 16.7% lone parent
- Income by family category
  - All families $84,560; couples $93,900; lone parents $40,440, not in census families $23,900
  - Average residential WWS bill = $759
- Income by bracket - 165,150 households
  - Under $5000 = 5090 $5000 - $9999 = 4925
  - $10,000 - $14,999 = 5075 $15,000 - $19,999 = 7760
  - $20,000 – 29,999 = 17150 $30,000 - $39,999 = 19575
  - 14% of households have incomes under 20K, 24% under 30K, 36% under 40K

Population Profile - 2011

- Dwelling type – 165,155 private households
  - Couple with children 23.8%
  - Couple without children 29.7%
  - Lone parent 10.2%
  - One person 28.6%
  - Multiple family 1.4%
  - Other 6.4%
- Housing type
  - Single detached 51%
  - Semi detached 6.8%
  - Row house 3.7%
  - Apartments with more than 5 stories 10.7%
  - Apartment with less than 5 stories 21.4%
  - Apartment duplex 3.8%
  - Other single attached / movable 2.6%

Halifax Water Customers

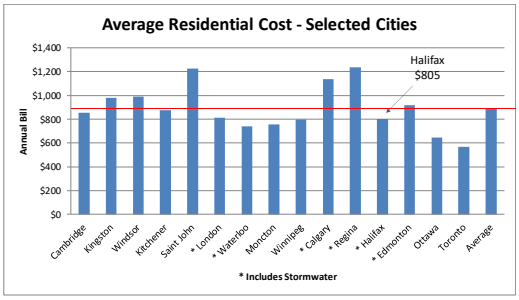


Affordability targets from the Debt Strategy

Residential Rates

- Bill as a % of income
  - On average less than 1%
- Comparison with other Canadian cities
  - At $804.95 in 2016/17, Halifax is well below the $888.92 average
- In October 2014 the Halifax Water Board approved a Rate Smoothing Strategy that took into consideration the principles of Affordability, Rate Continuity, and Gradualism
- Through good long range planning we can control and smooth the amount and frequency of rate increases

Average Residential Cost



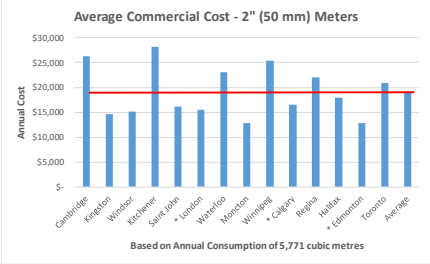
Identifying communities in need from census and HW data

- This is the first time Halifax Water has looked at this
- We have plotted the location of disconnects and income levels within communities in our GIS system

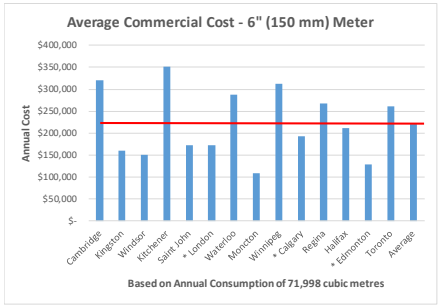
Commercial rate comparisons (annual)

- Average 2" meter customer Halifax $18,004, which is 6% less than the 15 comparison city average of $19,109
- Average 6" meter customer Halifax $210,499, which is 5% less than the 15 comparison city average of $221,032
- Average 10" meter customer HRM $127,526, which is 9% more than the 15 comparison city average of $117,246
  - Some of the cities use decreasing block rate structures for economic development reasons

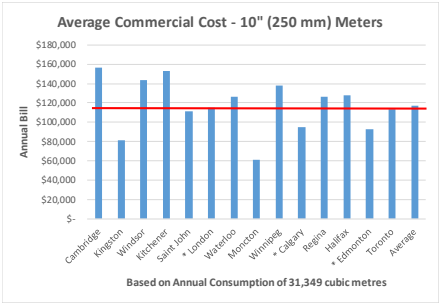
2" Meters



6" Meters



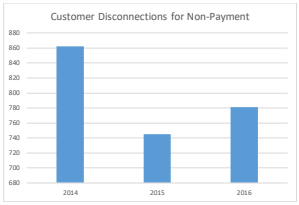
10" Meters

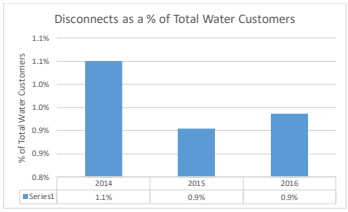


HW Disconnections and applications for assistance

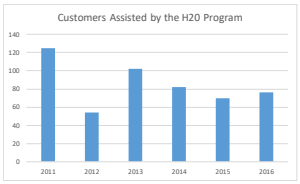
- Number of water accounts 83,374
- Disconnections (per year 2014-2016) 745 to 862
- Disconnections as a % of accounts 0.9% to 1.1%
- H2O recipients (annual 2014-2016) 70 to 82
- H20 recipients as a percent of water accounts – less than 0.1%
- H20 recipients numbers compared to number of disconnections – 10%
- Take Away; Most disconnected customers either do not apply for or do not qualify for H20

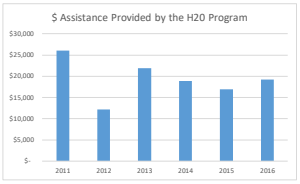
Disconnections for Non-Payment





H2O Fund Assistance





Customer Assistance Programs

- Income based - identify vulnerable populations
- Data in US gathered through census and other government sources, surveys, and existing subsidy programs for other essential public services
- Most common types of CAP are
  - Bill discounts
  - Flexible terms
  - Lifeline rates
  - Temporary assistance
  - Improved water efficiency programs

Customer Assistance Programs

- Other CAP options
  - Reduced fixed monthly charge
  - Relief for renters
  - Higher % of revenue from consumption
  - Financial counciling / no interest charges
- Partnerships used
- Hard to reach customers
- Jurisdictional constraints on funding assistance programs

Customer Assistance Program – Halifax Water

- H20 (Help to others) since 2010
- For emergency situations
- Accessible once in a 24 month period
- HW allocates $25K per year + matches employee donations to a max.
- Income thresholds apply
- Average annual activity since inception $19,200 to 85 accounts
- Administered by the Salvation Army

- Conservation – capital expenditure based assistance

Other assistance programs with income thresholds available in HRM

- HARP (Heating assistance rebate program) – through PNS
  - $200 per year for net incomes under $25K (1 person) and $40K (more than 1) plus sliding scale ending with a $100 rebate. Budget $10.2 million; 51,000 applications
- Good Neighbour Energy Fund
  - For emergency situations once every two years. Max amount is $400 (average is $355). $800K from HARP plus NSP contributions. Threshold $16K 1 person, $18K for 2, $3K for each additional. Administered by the Salvation Army.
- PNS Basic Income Assistance Rates
  - 1 person maximums $825 / month; 3 persons $1141 – 1385 /mo. depending on age
- Other

Best practice research on CAPS

- The research literature includes best practice recommendations for formalized processes for WWS utilities to use when designing CAP programs
- They involve processes to limit the amount owing, improve the collecting rate, and reduce collection costs.

Literature on Hard to Reach (H2R)customers

- Those who don't receive a WWS bill directly – mainly renters
- Recommends utilities reach out through active community involvement and provide opportunities to hear from H2R customers and their advocates
- Programs used to provide relied include direct discounts through energy (other utility) bills, vouchers for households, flat rate or bill based discounts for landlords, water conservation initiatives.

Discussion Topics

- Qualifying thresholds
- How can the success and adequacy of the H20 program be measured
- Should the program go beyond emergency assistance
- Outreach activities
- Ways to assist hard to reach customers
- Working with other programs to determine eligibility or provide financial relief
- Legislative / policy restrictions and financial realities

Appendix 4 Stakeholder Meeting Summaries

Two Stakeholder meetings were held. The first was on March 27th from 9 AM to noon and the second on May 26th from 3:00 – 5:00 PM.

The first Rate Affordability Stakeholder Workshop was held at Halifax Water on Monday March 27, 2017. The participants were from Energy Nova Scotia, Nova Scotia Department of Community Services, the Consumer Advocate, and Halifax Water. The workshop was co-chaired by Cathie O'Toole, HW Director of Corporate Services and Dr. Mark Gilbert, consultant.

The agenda items were identified at the beginning of a PowerPoint presentation (see Appendix 3) that focused on the scope of the research, census and HW data related to income, population, rates, and affordability for lower income groups. Information on how other WWS utilities were measuring affordability and the programs they use to assist their customers was provided along with best practice information and approaches to extending programs to the hard to reach (H2R).

Seven discussion topics were identified and discussed by the participants. The topics were qualifying thresholds, measuring the success and adequacy of the H2) program, should the program be expanded to go beyond emergency assistance, outreach activities, ways to assist hard to reach customers, working with other customer assistance programs to determine eligibility r provide financial relief, and current legislative, policy, and financial restriction. The discussion is summarized using topic headings.

<u>Qualifying thresholds</u>

The current practice of using set income tests / thresholds was discussed and other practices such as using a percentage of income or linking it to the qualifications of other organizations' assistance programs were identified. It was mentioned that the criteria for conservation programs could differ from the criteria for the H20 program. One participant mentioned that aside from affordability, stability, predictability and gradualism and important.

Discussion of the existing program and other ways of assisting clients with affordability issues

It was suggested that HW review qualification thresholds for the H2O program, set objectives and measure success. We need to look at the percent of unsuccessful applicants and why they are unsuccessful in receiving assistance from the H2) fund. The average rate of disconnections is ten times higher than the average number of accounts that receive relief through the H20 program. One participant noted that fifty percent of low income households rent and that it is important that the program reach renters and other hard to reach water users.

Working with the broader community (outreach) and other essential service providers

The participants stressed the importance of working with the broader community to increase awareness of the program and facilitate application on from those households in need. It was suggested that the stakeholder group should be broadened to groups advocating on behalf of low income customers and mentioned Byrony House, Adsum House, ACORN, and soup kitchens. Credit Unions were identified as a good source of outreach as well as providing copies of the H2) program information to Efficiency One, Housing NS, Community Services and other organizations who deal directly with these customers, as well as constituency offices.

It was suggested that HW is in a unique position to lead a collaborative effort with the rental community to provide education on reduced usage and water conservation. IPONS and apartment superintendents were also identified as a potential community partners in this collaborative effort.

Legislative, policy and financial restrictions

The presentation included information on existing program restrictions and the lack of authority for HW to become involved in social rate making. The only current source of funding available to the HW program are revenues from unregulated services and voluntary contributions by individuals. It was suggested that HW help apartment building owners finance water conservation programs and explore amendments to health related legislation regards the use of grey water for conservation.

The second Rate Affordability Stakeholder Workshop was held at Halifax Water on Friday May 26, 2017. The participants were from were from the Affordability Coalition, the Halifax Chamber of Commerce, Halifax Regional Municipality Finance department, and Halifax Water. The workshop was co-chaired by Cathie O'Toole, HW Director of Corporate Services and Dr. Mark Gilbert, consultant.

The agenda items were identified at the beginning of a PowerPoint presentation (see Appendix 3) that focused on the scope of the research, census and HW data related to income, population, rates, and affordability for lower income groups. Information on how other WWS utilities were measuring affordability and the programs they use to assist their customers was provided along with best practice information and approaches to extending programs to the hard to reach (H2R).

Seven discussion topics were identified and discussed by the participants. The topics were qualifying thresholds, measuring the success and adequacy of the H2) program, should the program be expanded to go beyond emergency assistance, out-reach activities, ways to assist hard to reach customers, working with other customer assistance programs to determine

eligibility or provide financial relief, and current legislative, policy, and financial restriction. The discussion is summarized using topic headings.

Qualifying thresholds

The current practice of using set income tests / thresholds was discussed. Other practices such as using a percentage of income or linking it to the qualifications of other organizations' assistance programs were identified. The benefits of verifying income through existing information such as the GST assessment were discussed. Several participants suggested adopting federal LICO (low income cut offs) as the low income threshold. A LICO is an income threshold below which a family will likely devote a larger share of its income to the necessities of food, shelter and clothing than an average family would. One of the participants mentioned that aside from affordability, stability, predictability and gradualism and important.

Discussion of the existing program and other ways of assisting clients with affordability issues

It was suggested that HW review qualification thresholds for the H2O program, set objectives and measure success. We need to look at the percent of unsuccessful applicants and why they are unsuccessful in receiving assistance from the H2) fund. One participant noted that many low income households rent and that it is important that the program reach renters and other hard to reach water users.

Working with the broader community (outreach) and other essential service providers

The participants stressed the importance of working with the broader community to increase awareness of the program and facilitate application on from those households in need. It was suggested that the stakeholder group should be broadened to groups advocating on behalf of low income customers. Representative of the Affordable Energy Coalition suggested the coalition's member organization organizations would be in a good position to promote the H2O program as they are in touch with many of the community members who are potential applicants.

Legislative, policy and financial restrictions

The presentation included information on existing program restrictions and the lack of authority for HW to become involved in social rate making. The only current source of funding available to the HW program are revenues from unregulated services and voluntary contributions by individuals. One of the participants talked about social rate making by utilities providing electricity and informed the group that many electric utilities in the United States and a few in Canada (Ontario and Manitoba) were now offering ongoing (rather than emergency) affordability programs to low income users.

Alternative ways to increase funding for the existing program (where HW contributions are limited to the use of unregulated revenues) were discussed and included volunteer donations through the water bills and soliciting donations through retail networks outlets.

One of the participants was reluctant to support the idea of a lifeline rate (currently restricted by legislation in Nova Scotia) as it applies to all and can result in low income families subsidizing higher income families who may have more water conservation technology in their homes.

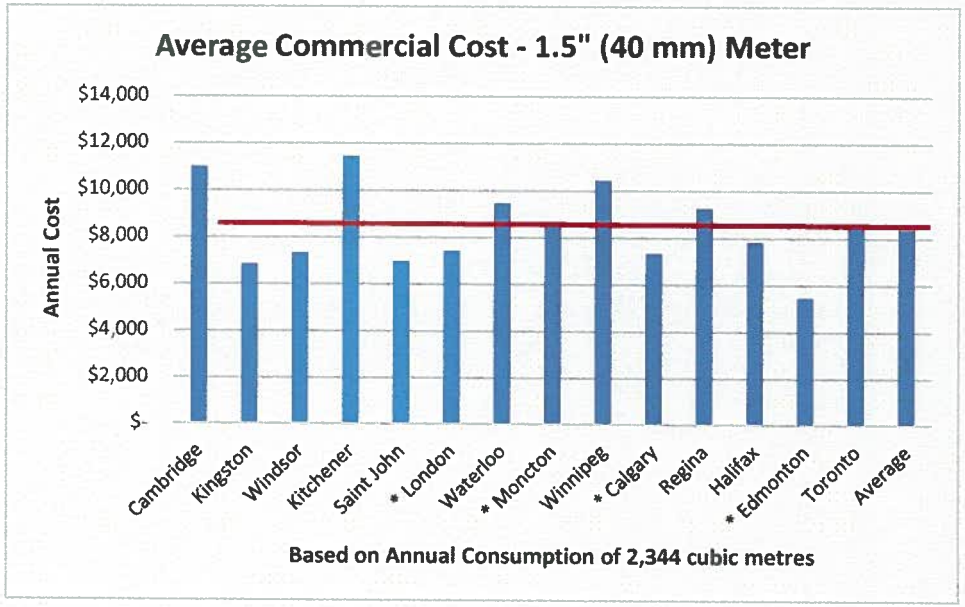
It was suggested that HW focus on assistance to home owners to finance upgrades and invest in water conservation.

Appendix 5 Commercial Water Wastewater Costs - City Comparison

All rates calculated based on a 1.5 inch customer
All rates calculated based on 2343.75 c.m. Per year

City	WATER Base Charge water	Consumption Rate per c.m. for Water	Water Main Replacement Levy	Consumption Charge	Total Water	WASTEWATER Base Charge ww	Discharge Rate per c.m. for ww	Discharge Charge for ww	Total charge for ww	TOTAL
Cambridge	519.72	2.16	31.32	5,056.64	5,607.68	404.16	2.12	4,979.77	5,383.93	$ 10,992
Kingston	796.20	0.99		2,314.92	3,111.12	1,217.28	1.07	2,515.31	3,732.59	$ 6,844
Windsor	844.44	0.56	967.46	1,305.47	3,117.37	2,265.24	0.83	1,945.31	4,210.55	$ 7,328
Kitchener		2.24		5,248.83	5,248.83		2.65	6,199.45	6,199.45	$ 11,448
Saint John	951.12	0.93		2,183.91	3,135.03	1,160.40	1.14	2,664.37	3,824.77	$ 6,960
London	893.76			3,057.09	3,950.85	756.24		2,716.67	3,472.91	$ 7,424
Waterloo	135.36	1.74		4,078.13	4,213.49		2.24	5,250.00	5,250.00	$ 9,463
Moncton	2,250.00	1.62		3,796.88	6,046.88	1,350.00	0.46	1,066.41	2,416.41	$ 8,463
Winnipeg	229.95	1.78		4,171.88	4,401.83	57.00	2.55	5,976.56	6,033.56	$ 10,435
Calgary	712.60			2,867.06	3,579.67	300.76	1.48	3,463.13	3,763.89	$ 7,344
Regina	518.30	1.88		4,406.25	4,924.55	401.50	1.68	3,937.50	4,339.00	$ 9,264
Halifax	660.00	0.98		2,287.50	2,947.50	768.00	1.75	4,108.59	4,876.59	$ 7,824
Edmonton	296.88			3,258.00	3,554.88	49.80	0.79	1,861.88	1,911.68	$ 5,467
Ottawa										$ -
Toronto		3.62		8,490.23	8,490.23			-	-	$ 8,490

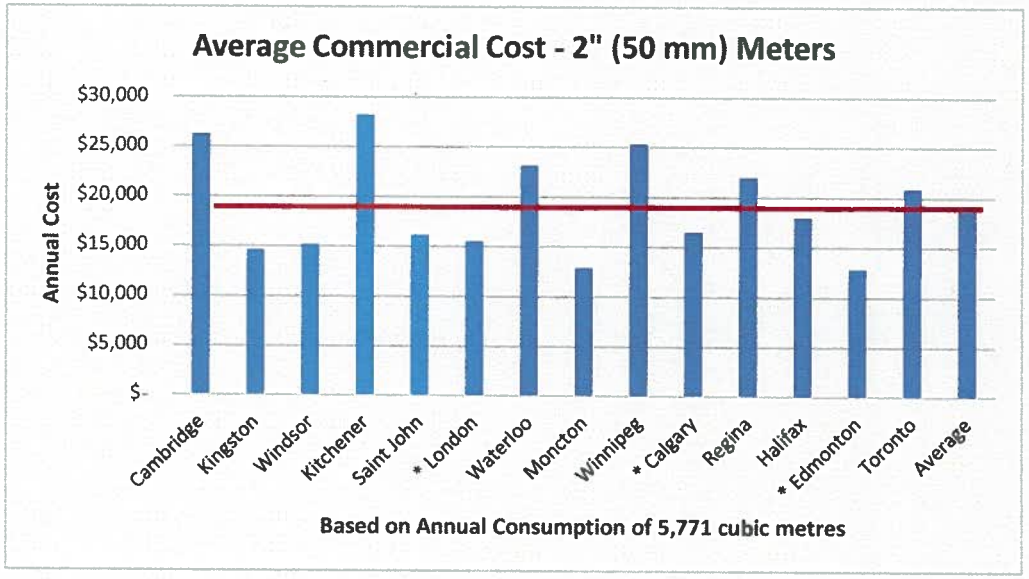
Cambridge	$ 10,992	
Kingston	$ 6,844	
Windsor	$ 7,328	
Kitchener	$ 11,448	
Saint John	$ 6,960	
* London	$ 7,424	Declining Tiered Rate
Waterloo	$ 9,463	
* Moncton	$ 8,463	Declining Tiered Rate
Winnipeg	$ 10,435	
* Calgary	$ 7,344	Declining Tiered Rate
Regina	$ 9,264	
Halifax	$ 7,824	
* Edmonton	$ 5,467	Declining Tiered Rate
Toronto	$ 8,490	
Average	$ 8,410	



All rates calculated based on a 2 inch customer
All rates calculated based on 5770.68 c.m. Per year

WATER						WASTEWATER				TOTAL
City	Base Charge water	Consumption Rate per c.m. for Water	Water Main Replacement Levy	Consumption Charge	Total Water	Base Charge ww	Discharge Rate per c.m. for ww	Discharge Charge for ww	Total charge for ww	
Cambridge	831.48	2.16	50.40	12,450.24	13,332.12	646.68	2.12	12,260.96	12,907.64	$ 26,240
Kingston	926.40	0.99		5,699.70	6,626.10	1,774.68	1.07	6,193.09	7,967.77	$ 14,594
Windsor	1,409.64	0.56	2,080.76	3,214.27	6,704.67	3,781.32	0.81	4,674.25	8,455.57	$ 15,160
Kitchener		2.24		12,923.44	12,923.44		2.65	15,264.03	15,264.03	$ 28,187
Saint John	1,897.44	0.93		5,377.12	7,274.56	2,314.92	1.14	6,560.09	8,875.01	$ 16,150
London	1,430.04			6,833.11	8,263.15	1,209.96		6,072.18	7,282.14	$ 15,545
Waterloo	169.56	1.74		10,040.98	10,210.54		2.24	12,926.32	12,926.32	$ 23,137
Moncton	525.00	1.62		9,348.50	9,873.50	375.00	0.46	2,625.66	3,000.66	$ 12,874
Winnipeg	299.30	1.78		10,271.81	10,571.11	57.00	2.55	14,715.23	14,772.23	$ 25,343
Calgary	970.29			6,703.55	7,673.84	300.76	1.48	8,526.76	8,827.52	$ 16,501
Regina	835.85	1.88		10,848.88	11,684.73	646.05	1.68	9,694.74	10,340.79	$ 22,026
Halifax	1,020.00	0.98		5,632.18	6,652.18	1,236.00	1.75	10,116.00	11,352.00	$ 18,004
Edmonton	395.76			7,824.77	8,220.53	49.80	0.79	4,584.23	4,634.03	$ 12,855
Ottawa										$ -
Toronto		3.62		20,904.29	20,904.29			-	-	$ 20,904

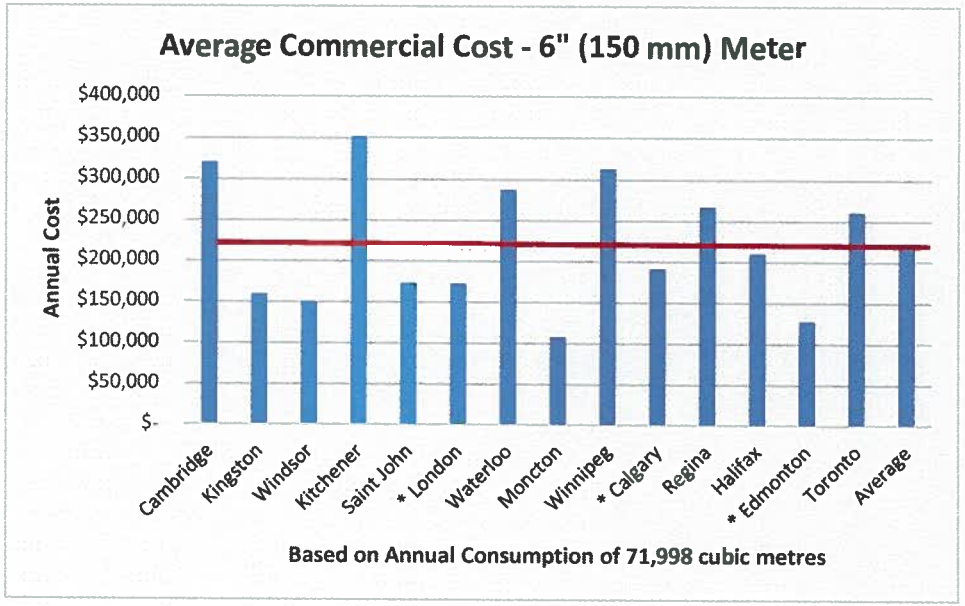
Cambridge	$ 26,240	
Kingston	$ 14,594	
Windsor	$ 15,160	
Kitchener	$ 28,187	
Saint John	$ 16,150	
* London	$ 15,545	Declining Tiered Rate
Waterloo	$ 23,137	
Moncton	$ 12,874	
Winnipeg	$ 25,343	
* Calgary	$ 16,501	Declining Tiered Rate
Regina	$ 22,026	
Halifax	$ 18,004	
* Edmonton	$ 12,855	Declining Tiered Rate
Toronto	$ 20,904	
Average	$ 19,109	



All rates calculated based on a 6 inch customer
All rates calculated based on 71998.32 c.m. Per year

WATER						WASTEWATER				TOTAL
City	Base Charge water	Consumption Rate per c.m. for Water	Water Main Replacement Levy	Consumption Charge	Total Water	Base Charge ww	Discharge Rate per c.m. for ww	Discharge Charge for ww	Total charge for ww	
Cambridge	6,495.96	2.16	443.88	155,336.38	162,276.22	5,052.36	2.12	152,974.83	158,027.19	$ 320,303
Kingston	3,040.56	0.95		68,045.61	71,086.17	10,161.36	1.09	78,132.58	88,293.94	$ 159,380
Windsor	8,191.44	0.56	21,732.53	40,103.06	70,027.03	21,973.56	0.81	58,318.64	80,292.20	$ 150,319
Kitchener		2.24		161,240.24	161,240.24		2.65	190,442.76	190,442.76	$ 351,683
Saint John	10,776.48	0.93		67,088.03	77,864.51	13,147.32	1.14	81,847.40	94,994.72	$ 172,859
London	12,511.80			79,094.09	91,605.89	10,586.64		70,286.50	80,873.14	$ 172,479
Waterloo	881.40	1.74		125,277.08	126,158.48		2.24	161,276.24	161,276.24	$ 287,435
Moncton	2,250.00			76,692.73	78,942.73	1,350.00		27,836.15	29,186.15	$ 108,129
Winnipeg	1,430.80	1.78		128,157.01	129,587.81	57.00	2.55	183,595.72	183,652.72	$ 313,241
Calgary	4,549.13			80,845.39	85,394.52	300.76	1.48	106,384.72	106,685.48	$ 192,080
Regina	6,055.35	1.88		135,356.84	141,412.19	4,675.65	1.68	120,957.18	125,632.83	$ 267,045
Halifax	6,324.00	0.98		70,270.36	76,594.36	7,692.00	1.75	126,213.05	133,905.05	$ 210,499
Edmonton	2,686.20			79,402.85	82,089.05	49.80	0.79	46,048.17	46,097.97	$ 128,187
Ottawa										$ -
Toronto		3.62		260,813.91	260,813.91			-	-	$ 260,814

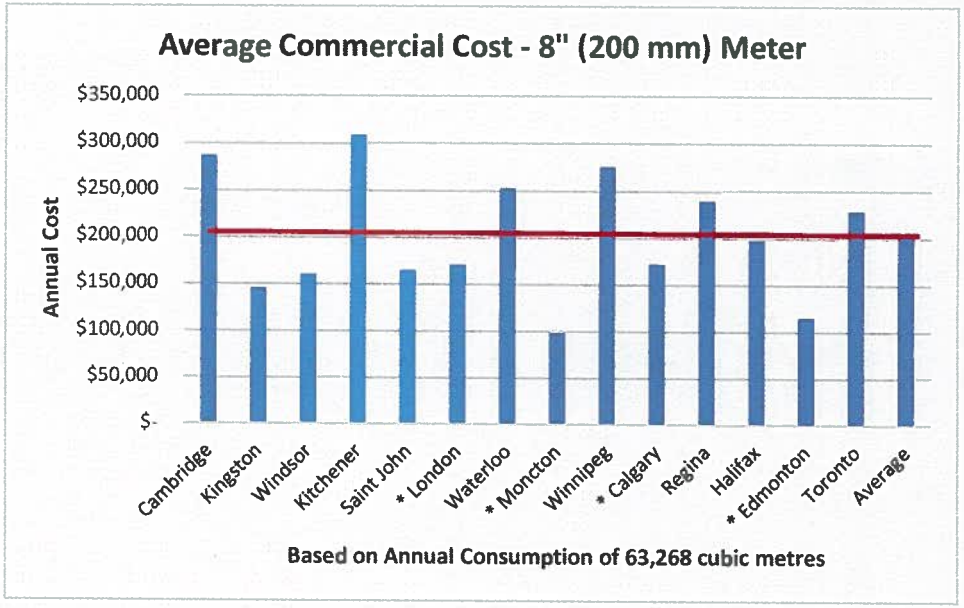
Cambridge	$ 320,303	
Kingston	$ 159,380	
Windsor	$ 150,319	
Kitchener	$ 351,683	
Saint John	$ 172,859	
* London	$ 172,479	Declining Tiered Rate
Waterloo	$ 287,435	
Moncton	$ 108,129	
Winnipeg	$ 313,241	
* Calgary	$ 192,080	Declining Tiered Rate
Regina	$ 267,045	
Halifax	$ 210,499	
* Edmonton	$ 128,187	Declining Tiered Rate
Toronto	$ 260,814	
Average	$ 221,032	



All rates calculated based on a 8 inch customer
All rates calculated based on 63267.89 c.m. Per year

WATER						WASTEWATER				TOTAL
City	Base Charge water	Consumption Rate per c.m. for Water	Water Main Replacement Levy	Consumption Charge	Total Water	Base Charge ww	Discharge Rate per c.m. for ww	Discharge Charge for ww	Total charge for ww	
Cambridge	8,314.80	2.16	760.44	136,500.47	145,575.71	6,467.04	2.12	134,425.29	140,892.33	$ 286,468
Kingston	5,619.00	0.95		59,794.48	65,413.48	11,555.52	1.09	68,658.31	80,213.83	$ 145,627
Windsor	13,648.56	0.56	21,999.95	35,240.21	70,888.72	36,612.24	0.83	52,512.35	89,124.59	$ 160,013
Kitchener		2.24		141,688.44	141,688.44		2.65	167,349.90	167,349.90	$ 309,038
Saint John	15,484.80	0.93		58,953.02	74,437.82	18,891.48	1.14	71,922.68	90,814.16	$ 165,252
London	21,448.44			69,568.26	91,016.70	18,148.44		61,821.43	79,969.87	$ 170,987
Waterloo	1,330.56	1.74		110,086.13	111,416.69		2.24	141,720.07	141,720.07	$ 253,137
Moncton	2,250.00			69,882.96	72,132.96	1,350.00		24,955.09	26,305.09	$ 98,438
Winnipeg	1,930.85	1.78		112,616.84	114,547.69	57.00	2.55	161,333.12	161,390.12	$ 275,938
Calgary	7,316.32			71,071.62	78,387.94	300.76	1.48	93,484.63	93,785.40	$ 172,173
Regina	8,362.15	1.88		118,943.63	127,305.78	6,456.85	1.68	106,290.06	112,746.91	$ 240,053
Halifax	11,352.00	0.98		61,749.46	73,101.46	13,848.00	1.75	110,908.61	124,756.61	$ 197,858
Edmonton	4,267.44			70,194.82	74,462.26	49.80	0.79	40,682.45	40,732.25	$ 115,195
Ottawa										$ -
Toronto		3.62		229,187.93	229,187.93			-	-	$ 229,188

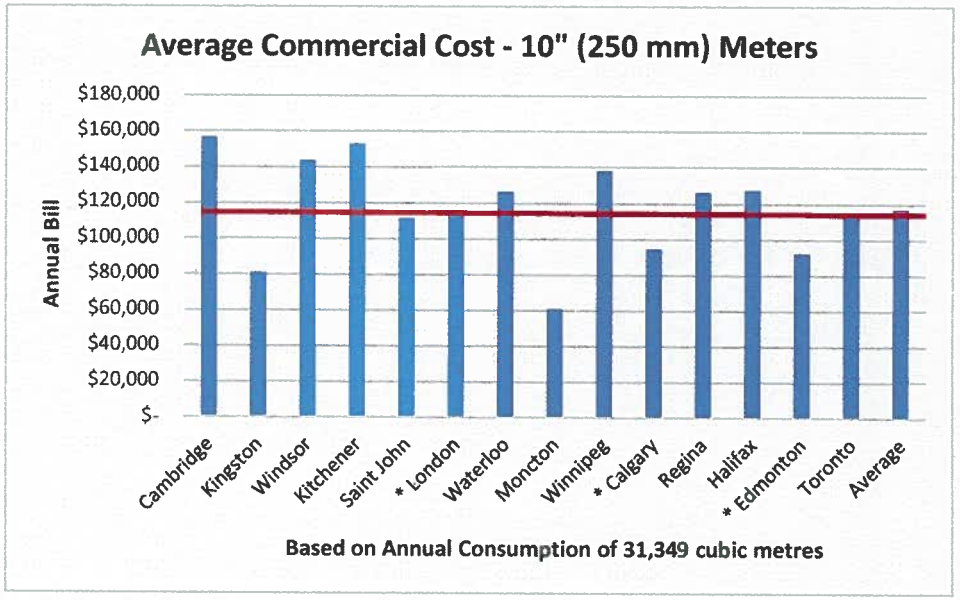
Cambridge	$ 286,468	
Kingston	$ 145,627	
Windsor	$ 160,013	
Kitchener	$ 309,038	
Saint John	$ 165,252	
* London	$ 170,987	Declining Tiered Rate
Waterloo	$ 253,137	
* Moncton	$ 98,438	Declining Tiered Rate
Winnipeg	$ 275,938	
* Calgary	$ 172,173	Declining Tiered Rate
Regina	$ 240,053	
Halifax	$ 197,858	
* Edmonton	$ 115,195	Declining Tiered Rate
Toronto	$ 229,188	
Average	$ 201,383	



All rates calculated based on a 10 inch customer
All rates calculated based on 31348.56 c.m. Per year

	WATER					WASTEWATER				TOTAL
City	Base Charge water	Consumption Rate per c.m. for Water	Water Main Replacement Levy	Consumption Charge	Total Water	Base Charge ww	Discharge Rate per c.m. for ww	Discharge Charge for ww	Total charge for ww	
Cambridge	11,952.60	2.16	1,204.32	67,634.52	80,791.44	9,296.40	2.12	66,606.29	75,902.69	$ 156,694
Kingston	5,640.00	0.95		29,627.52	35,267.52	11,683.92	1.09	34,019.46	45,703.38	$ 80,971
Windsor	22,484.16	0.56	17,975.39	17,461.15	57,920.70	60,313.80	0.81	25,392.33	85,706.13	$ 143,627
Kitchener		2.24		70,205.10	70,205.10		2.65	82,920.08	82,920.08	$ 153,125
Saint John	20,971.92	0.93		29,210.59	50,182.51	25,585.80	1.14	35,636.92	61,222.72	$ 111,405
London	26,812.08			34,741.14	61,553.22	22,691.88		30,872.49	53,564.37	$ 115,118
Waterloo	1,769.40	1.74		54,546.49	56,315.89		2.24	70,220.77	70,220.77	$ 126,537
Moncton	2,250.00			43,635.25	45,885.25	1,350.00		13,596.32	14,946.32	$ 60,832
Winnipeg	2,434.55	1.78		55,800.44	58,234.99	57.00	2.55	79,938.83	79,995.83	$ 138,231
Calgary	11,832.60			36,345.53	48,178.14	300.76	1.48	46,320.63	46,621.39	$ 94,800
Regina	8,362.15	1.88		58,935.29	67,297.44	6,456.85	1.68	52,665.58	59,122.43	$ 126,420
Halifax	18,900.00	0.98		30,596.19	49,496.19	23,076.00	1.75	54,954.03	78,030.03	$ 127,526
Edmonton	9,972.48			36,529.55	46,502.03	49.80	0.79	46,048.17	46,097.97	$ 92,600
Ottawa										$ -
Toronto		3.62		113,560.16	113,560.16			-	-	$ 113,560

Cambridge	$ 156,694	
Kingston	$ 80,971	
Windsor	$ 143,627	
Kitchener	$ 153,125	
Saint John	$ 111,405	
* London	$ 115,118	Declining Tiered Rate
Waterloo	$ 126,537	
Moncton	$ 60,832	
Winnipeg	$ 138,231	
* Calgary	$ 94,800	Declining Tiered Rate
Regina	$ 126,420	
Halifax	$ 127,526	
* Edmonton	$ 92,600	Declining Tiered Rate
Toronto	$ 113,560	
Average	$ 117,246	



Appendix 6 Bibliography of additional references

Material provided by Halifax Water

'Annual average residential cost benchmark cities' prepared by Halifax Water

'Annual average commercial rate and cost benchmark cities' prepared by Halifax Water

Breakdown of the 81,000 + HW accounts[31] for 2187 Dissemination Block 10 digit numbers (2011 population, boundary area, number of accounts, 2015-16 consumption). Updated to provide numerical sequence for dissemination blocks.

HW data for 9000+ postal codes in HRM served by HW. Data for each postal code includes number of HW accounts, total consumption in cubic meters, and total land area covered). Accounts are not broken down by type or number of households (i.e. a condominium complex can be one account)

2016-17 estimates included in the HEWC Water Rate Study Worksheet W-1 November 16, 2014

"Study of an Efficient Funding Mechanism for Halifax Water Commission" dated December 2012. Prepared by Mark Gilbert in association with HRWC staff.

Statistics Canada Median total income, by family type, by census metropolitan area 2010 to 2014. Retrieved from www.statcan.gc.ca/tables-tableau on February 7, 2017

Statistics Canada CANSIM Tables and Summary Tables from the 2011 census

HRM Statistics Office: Breakdown of HRM household (after tax) income for private households in eleven income categories (low is under $5000 to high of over $100,000) for approximately 600 numbered (8 digits) Census Dissemination areas. Have requested access to geographic identification of numbered areas. 2011 census data.

[31] Numbers and breakdown taken from 2016-17 estimates included in the HEWC Water rate Study Worksheet W-1 November 16, 2014

Halifax Water
Halifax Regional Water Commission

ITEM # 8
HRWC Board

September 28, 2017

TO: Mr. Ray Ritcey, Chair and Members of the Halifax Regional Water Commission Board

SUBMITTED BY: *Original Signed By:*
Cathie O'Toole, MBA, CPA, CGA Director of Finance & Customer Service

APPROVED: *Original Signed By:*
Carl Yates M.A.Sc., P.Eng., General Manager

DATE: September 28, 2017

SUBJECT: **2017 Fall Debenture**

ORIGIN

Halifax Water (HW) participation in the Fall 2017 Municipal Finance Corporation (MFC) Debenture issue to secure debt financing for 2017/18 additions to utility plant in service.

RECOMMENDATION

It is recommended that the Halifax Water Board:

1. Approve the financing of $10,000,000 for a 10 year term with a twenty year amortization schedule and an all-inclusive rate not to exceed 5.5%.

BACKGROUND

The HRWC is legally required to borrow through the MFC. The borrowing proposed in this report is consistent with the Five Year Business Plan, and the Approved Operating and Capital Budgets for 2017/18, and the approved rates.

DISCUSSION

Long term debt issued for water and wastewater projects is traditionally amortized for a period of 20 years based on the life of the asset being financed. Traditionally the market for 20 year financing in Canada has been significantly more expensive than 10 year financing so 20 year amortized debt is usually financed for 10 years and the balloon payment refinanced for the remaining 10 years.

The 2017/18 Capital and Operating Budgets were prepared based on a projection that HRWC will be required to issue $48,761,199 million of debt in 2017/18 to finance water, wastewater and stormwater additions to utility plant in service, and potentially an additional $1,600,000 in debt for the District Energy System depending upon timing of that project. HRWC does not require the full amount of debt at this time, based on current cash flow projections, status of capital projects, and capital spending year to date.

The debt being issued in the Fall Debenture is required to fund 2017/18 additions to Utility Plant in Service. As at the end of August, $20.4 million dollars in capital has been expended. The $10.0 million will be applied to Water, Wastewater, and Stormwater assets based on pro-ration of actual expenditures, as follows:.

		Fall Debenture	2017/18 Planned/Approved Debt
Water Assets -	35%	$3,500,000	$24,874,122
Wastewater Assets -	61%	$6,100,000	$19,217,093
Stormwater Assets -	4%	$400,000	$6,269,984

The final amount, timing of the debt issuance and interest rates, will not be known with certainty until the formal debenture process concludes.

HRWC's debt is covered by a blanket guaranteed approved by HRM Council in September 2014. The blanket guarantee will apply to all HRWC debt with a condition that HRWC must maintain a debt service ratio of 35% or less. HRWC's debt service ratio is 21.3% as of August 31, 2017.

HRWC's outstanding debt at March 31, 2017 was $226.0 million, and debt is projected to be $214.4 million by March 31, 2018.

The Municipal Finance Corporation has implemented an on-line electronic debenture process in 2017, and this will be Halifax Water's first time using it.

BUDGET IMPLICATIONS

HRWC has budgeted for $34.0 million in debt servicing in 2017/8; a 7.3% increase from 2016/17. Halifax Water's capital financing strategy is designed to maintain a debt service ratio of 35% or less; and to use a mixture of infrastructure funding, development related charges (reserves), depreciation, and debt.

ALTERNATIVES

Halifax Water could choose to forgo participation in the 2017 Fall Debenture and defer issuance of debt until spring 2018, however this introduces additional risk with respect to rising interest rates.

ATTACHMENTS

1. Borrowing Resolution
2. Cash Flow Model for 2017/18 based on approved Operating and Capital Budgets

Report Prepared by: *Original Signed By:*
Cathie O'Toole, MBA, CPA, CGA Director of Corporate Services, 490-3685

HALIFAX REGIONAL WATER COMMISSION
BORROWING RESOLUTION

WHEREAS the Halifax Regional Water Commission, (the Commission) is incorporated under the provisions of the *Halifax Regional Water Commission Act*, Ch. 55 of the Acts of 2007 (The Act);

AND WHEREAS the Act provides that the Commission has power to borrow such sums as may be authorized and approved by the Board of the Commission for the purposes of the Commission, subject to the approval of the Nova Scotia Utility and Review Board;

AND WHEREAS the Commission wishes to borrow for the purpose of financing regular Additions to Utility Plant in Service for a 20 year amortization period;

AND WHEREAS a blanket guarantee for Halifax Regional Water Commission Debt was approved by the Halifax Regional Municipality on September 23, 2014;

BE IT THEREFORE RESOLVED

THAT under the authority of Section 16 of the Act the Commission borrow from the Municipal Finance Corporation, for the purpose set forth above, a sum or sums not exceeding $10,000,000 for a 10 year term amortized over a 20 year amortization period at an all-inclusive rate not to exceed 5.5% percent;

THAT the sum be borrowed by the issue of debentures of the Commission to such an amount at the Commission deems necessary and that the debentures be arranged with the Nova Scotia Municipal Finance Corporation, with interest to be paid semi-annually and principal payments made annually;

THAT this resolution remains in force for a period of not more than 12 months from the passing of this resolution.

I certify the above to be a true copy of a Resolution approved at a meeting of the Halifax Regional Water Commission held on September 28, 2017.

_____
James G. Spurr
Corporate Secretary and Legal Counsel

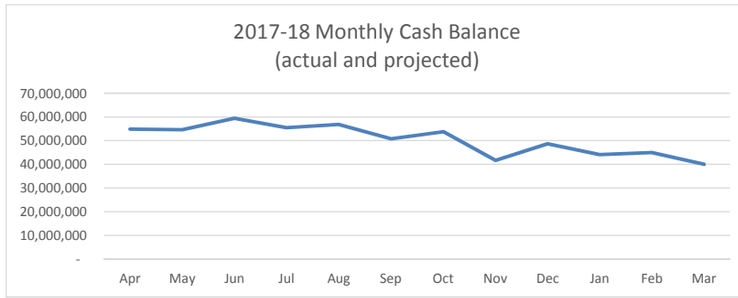
ITEM #8
HRWC Board
September 28, 2017
ATTACHMENT 2

Cash Flow Model for 2017-18
Updated monthly

	Original Budget	Forecast	Adjustments for Cash Flow	Cash Flow	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Total
Operating Revenue	135,527,684	135,527,684	(34,797)	135,492,887	9,711,546	10,486,669	10,554,746	12,475,149	11,032,081	10,880,992	19,878,670	10,380,992	10,380,992	10,080,992	10,080,992	12,004,297	137,948,118
Operating Expenses	(82,008,573)	(82,008,573)	4,358,210	(77,650,363)	(5,105,359)	(6,067,396)	(7,790,583)	(6,263,805)	(5,678,477)	(6,254,197)	(6,254,197)	(7,554,197)	(6,254,197)	(6,254,197)	(6,254,197)	(6,254,197)	(75,984,998)
Non Op Revenue	2,845,961	2,845,961	-	2,845,961	73,457	76,255	75,124	79,282	85,125	2,070,497	70,497	70,497	70,497	70,497	70,497	70,497	2,882,721
Non Op Expenses	(63,114,797)	(63,114,797)	28,761,922	(34,352,875)	(41,417)	(3,792,686)	(464,121)	(2,076,995)	183,700	(6,776,150)	(2,206,315)	(8,105,451)	(123,627)	(4,066,518)	(1,250)	(5,961,245)	(33,432,076)
Operations Total	(6,749,725)	(6,749,725)	33,085,335	26,335,610	4,638,228	702,842	2,375,166	4,213,631	5,622,428	(78,858)	11,488,655	(5,208,159)	4,073,665	(169,226)	3,896,042	(140,648)	31,413,766
Capital Expenditures (incl CCC projects)	(109,507,501)	(110,338,776)	(27,702,047)	(138,040,823)	(1,516,471)	(2,633,279)	(4,302,650)	(4,617,318)	(7,344,559)	(10,259,602)	(13,658,625)	(13,442,571)	(13,706,772)	(12,003,108)	(9,099,909)	(7,984,949)	(100,569,813)
New Long Term Debt	50,361,199	51,079,747	(27,496,757)	23,582,990	-	-	-	-	-	-	-	-	10,000,000	-	-	-	10,000,000
Other Incoming Cash (Build Can, RDC, etc)	37,152,861	37,152,861	13,880,083	51,032,944	1,654,415	1,223,345	2,847,588	688,895	4,329,407	4,288,670	5,151,134	6,457,228	6,763,670	7,563,335	6,022,590	3,194,773	50,185,052
Changes in working capital	-	-	-	-	(5,814,166)	498,084	3,902,985	(4,267,312)	(1,230,180)	-	-	-	-	-	-	-	(6,910,589)
Net Cash Flow	(28,743,166)	(28,855,894)	(8,233,386)	(37,089,280)	(1,037,994)	(209,008)	4,823,090	(3,982,103)	1,377,096	(6,049,791)	2,981,165	(12,193,502)	7,130,562	(4,608,999)	818,723	(4,930,824)	(15,881,584)
Opening Cash Balance				55,878,875	55,878,875	54,840,881	54,631,873	59,454,963	55,472,860	56,849,956	50,800,166	53,781,331	41,587,829	48,718,391	44,109,392	44,928,115	55,878,875
Ending Cash Balance				18,789,596	54,840,881	54,631,873	59,454,963	55,472,860	56,849,956	50,800,166	53,781,331	41,587,829	48,718,391	44,109,392	44,928,115	39,997,291	39,997,291
Actual reconciled month end cash balance					54,840,881	54,631,873	59,454,964	55,472,861	56,849,957	-	-	-	-	-	-	-	-
Variance					- 0	- 0	- 0	- 0	0	-	-	-	-	-	-	-	-

Notes

- Debt principle and interest payments are included in the Non Operating Expenses category
- Capital Expenditures includes the 2017-18 Capital Budget projects, projects carried over from 2016-17, and additional CCC project payments
- The 2017-18 Capital Budget anticipated new Long Term Debt of $50.4m, including $1.6m for the DES project
- The new Long Term Debt anticipated in this forecast is for just $10.0m and does not include the $1.6m for DES
- Other Incoming Cash includes $40.6 m in Build Canada and CWWF funding



TO: Ray Ritcey, Chair and Members of the Halifax Regional Water Commission Board

SUBMITTED BY:

Original Signed By:
Cathie O'Toole, MBA, CPA, CGA, Director, Corporate Services

Original Signed By:
Reid Campbell, P.Eng., Director, Water Services

Original Signed By:
Susheel Arora, M.A.Sc., P.Eng., Director, Wastewater & Stormwater Services

Original Signed By:
Kenda MacKenzie, P.Eng., Director, Regulatory Services

APPROVED: *Original Signed By:*
Carl D. Yates, M.A.Sc., P.Eng., General Manager

SUBJECT: **Financial and Operations Information Report**

INFORMATION REPORT

ORIGIN:

Regular update.

This report provides a high level overview of financial and operational performance for the utility. Financial results are presented first, followed by indicators and statistics for water and wastewater.

FINANCIAL

HALIFAX WATER
UNAUDITED FINANCIAL INFORMATION
APRIL 1/17 - AUGUST 31/17 (5 MONTHS)
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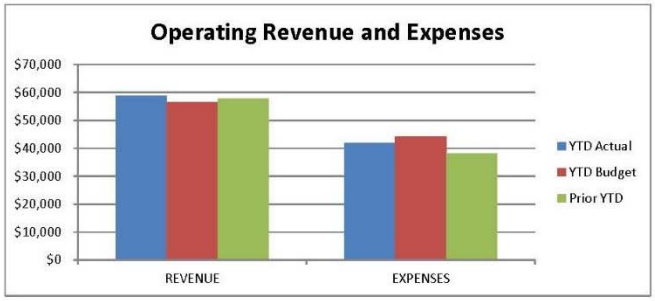
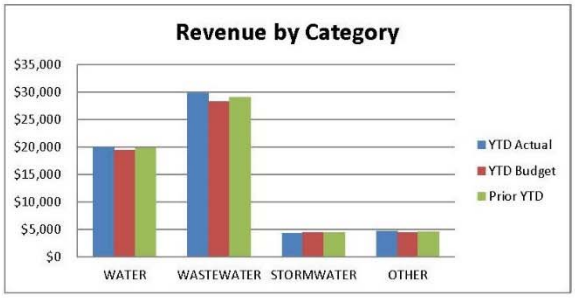


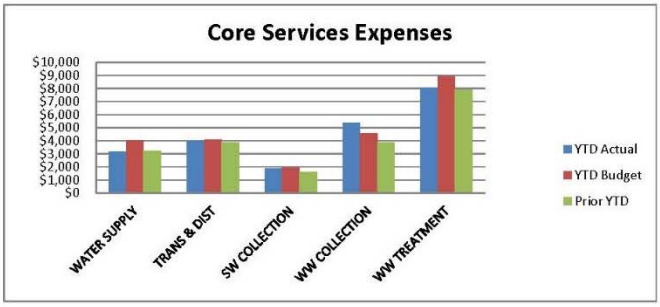


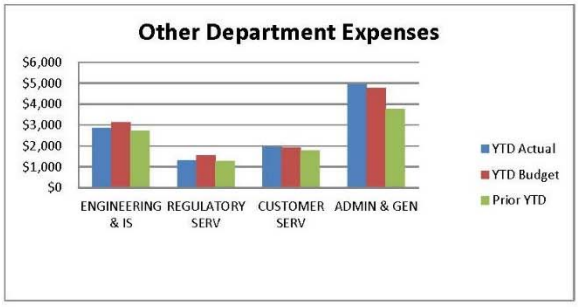
OPERATING REVENUE AND EXPENSES

	YTD Actual	YTD Budget	Prior YTD	% of Budget
REVENUE	$58,823	$56,495	$57,864	43.38%
EXPENSES	$41,972	$44,267	$38,141	39.51%
	$16,851	**$12,227**	**$19,723**	**57.42%**

REVENUE BY CATEGORY

	YTD Actual	YTD Budget	Prior YTD
WATER	$19,983	$19,421	$19,839
WASTEWATER	$29,826	$28,232	$29,014
STORMWATER	$4,287	$4,409	$4,423
OTHER	$4,728	$4,433	$4,587
	$58,823	**$56,495**	**$57,864**



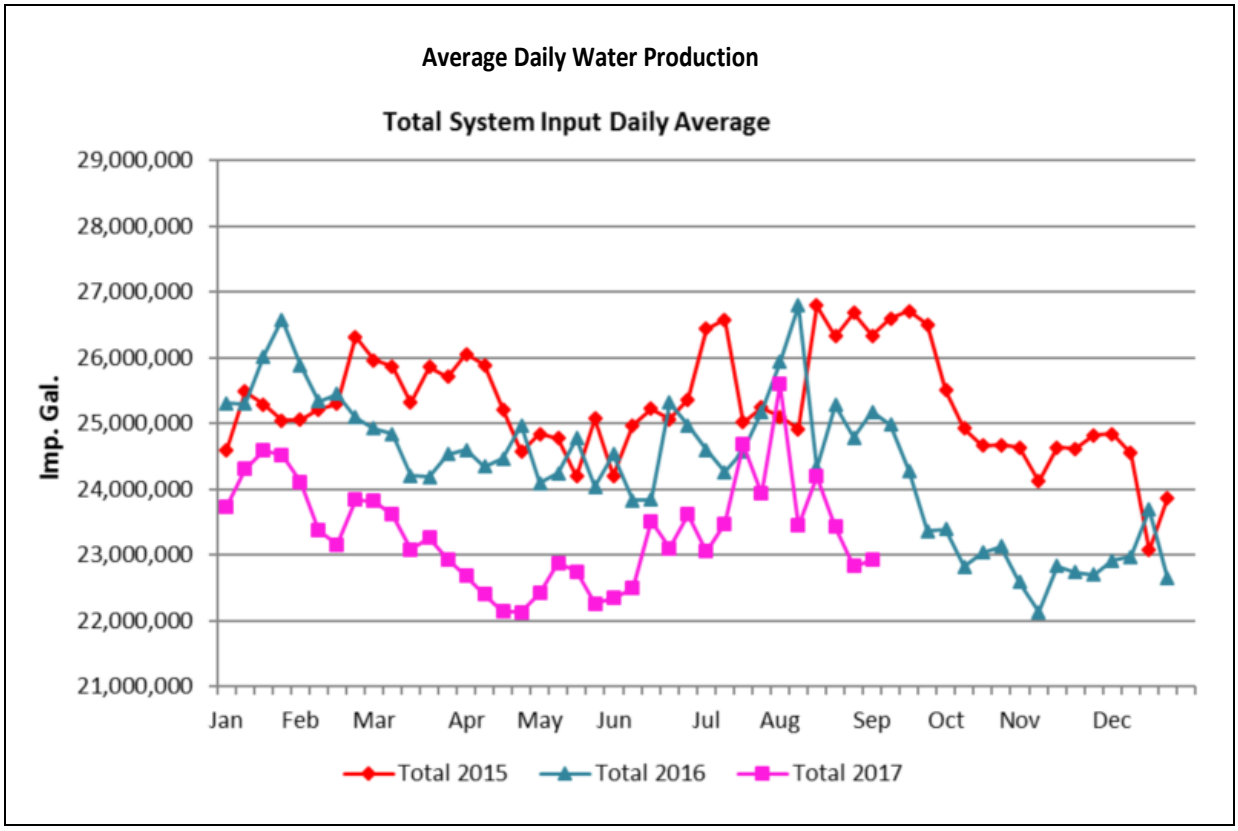


CORE SERVICES EXPENSES

	YTD Actual	YTD Budget	Prior YTD	% of Budget
WATER SUPPLY	$3,199	$4,016	$3,242	33.19%
TRANS & DIST	$3,976	$4,101	$3,863	40.40%
SW COLLECTION	$1,906	$1,925	$1,597	41.26%
WW COLLECTION	$5,351	$4,566	$3,854	48.83%
WW TREATMENT	$8,078	$8,895	$7,872	37.84%
	$22,510	**$23,503**	**$20,428**	**39.91%**

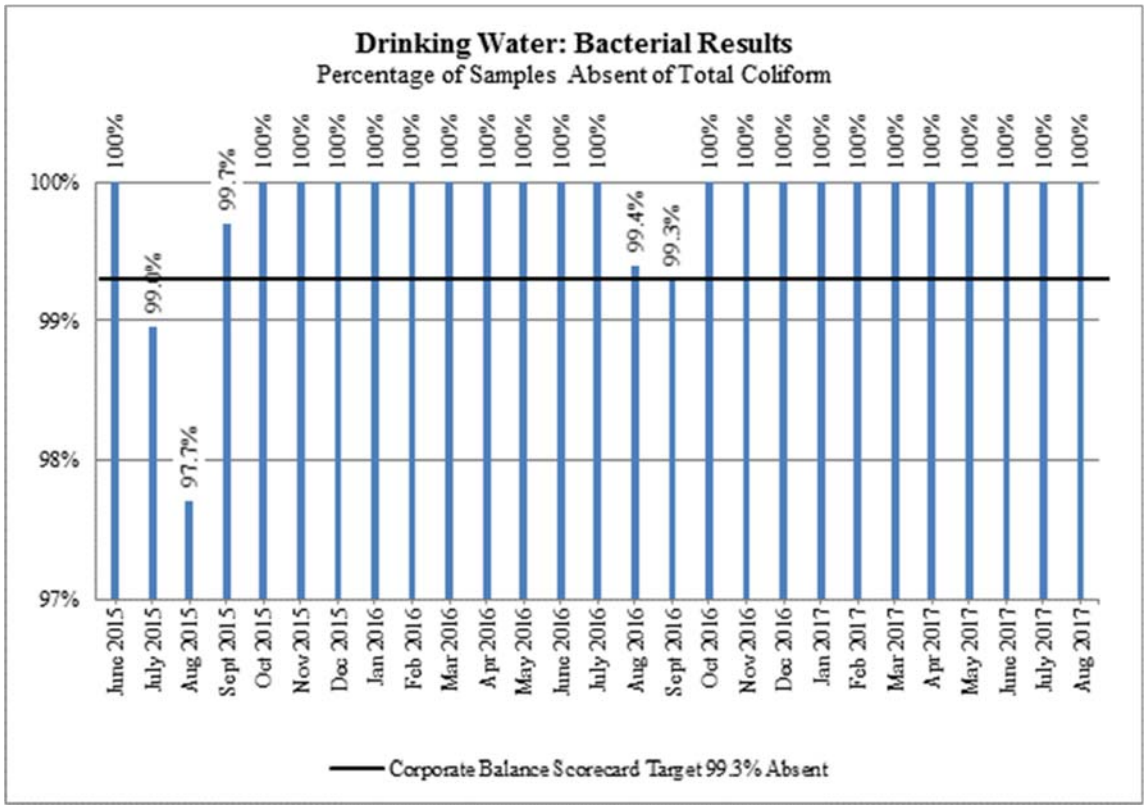
OTHER DEPARTMENT EXPENSES

	YTD Actual	YTD Budget	Prior YTD
ENGINEERING & IS	$2,863	$3,127	$2,728
REGULATORY SERV	$1,308	$1,546	$1,262
CUSTOMER SERV	$1,935	$1,928	$1,784
ADMIN & GEN	$4,945	$4,773	$3,772
	$11,051	**$11,373**	**$9,546**



Regional Water Main Break/Leak Data		
Year	**Total Breaks/Leaks**	**Current 12 Month Rolling Total *(up to August 31/17)***
2015/16	226	212
2014/15	210	
2013/14	213	
2012/13	262	
2011/12	205	
Total	**1116**	
Yr. Avg.	**217.6**	

Water Accountability
Losses per Service Connection/Day (International Water Association Standard)
Period Ending March 31, 2017
Real Losses: 207 litres CBS Target: 180



Water Quality Master Plan Objectives 2017-2018 Q1				
Objective	Total Sites	% of Sites Achieving Target	All Sites: 90th Percentile < 15 µg/L	CBSC Awarded Points
Disinfection	64	94%	---	14
Total Trihalomethanes	25	100%	---	20
Haloacetic Acids	21	95%	---	16
Particle Removal	5	100%	---	20
Corrosion Control*	69	---	6.1	20
TOTAL				90

Score: 90/100

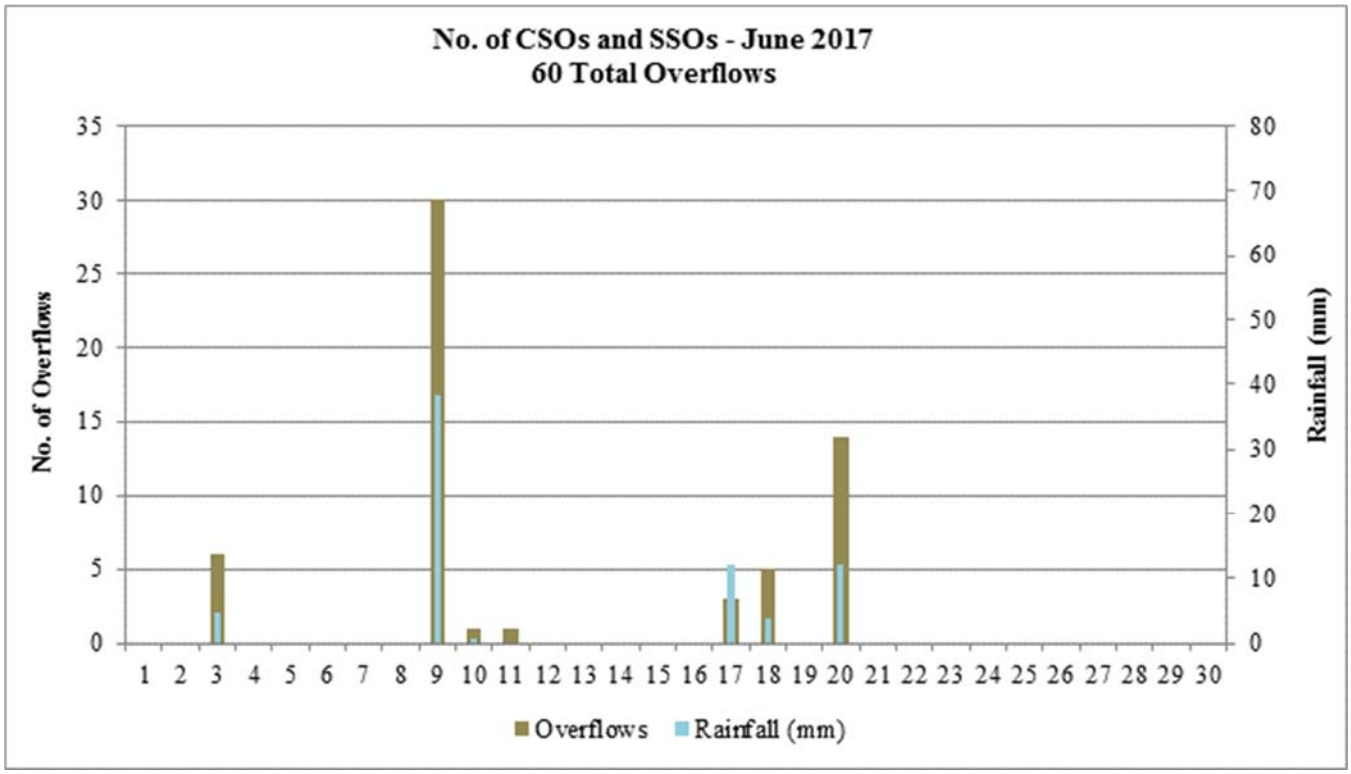
In this report each facility is assessed using monthly or quarterly averages, depending on the averaging period specified in its Approval to Operate.

Wastewater Treatment Facility Compliance Summary
Rolling Averages - June, July and August 2017

Wastewater Treatment Facility	$CBOD_5$ (mg/L)		TSS (mg/L)		E. coli (counts/ 100mL)		pH		Ammonia (mg/L)		Phosphorous (mg/L)		TRC (mg/L)		Dissolved Oxygen (mg/L)		Toxicity	Trend
	NSE Limit	Avg.	NSE Limit	Avg.	NSE Limit	Avg.	NSE Limit	Avg.	NSE Limit	Avg.	NSE Limit	Avg.	NSE Limit	Avg.	NSE Limit	Avg.		
Halifax	50	27	40	29	5000	2461	6-9	6.7	-		-		-		-		Lethal	Declined
Dartmouth	50	34	40	18	5000	2012	6-9	6.6	-		-		-		-		Not acutely lethal	Continued
Herring Cove	50	31	40	30	5000	801	6-9	6.8	-		-		-				Not acutely lethal	Continued
Eastern Passage	50	6	40	7	5000	60	6-9	6.7	-		-		-		-		Not acutely lethal	Continued
Mill Cove	25	11	25	16	200	52	6.5-9	6.7	-		-		-		-		Not acutely lethal	Continued
Springfield	20	4	20	14	200	21	6-9	7.3	-		-		-		-		Not acutely lethal	Continued
Frame	20	3	20	1	200	10	6-9	7.1	-		-		-		-		-	Continued
Middle Musq.	20	6	20	14	200	26	6-9	7.5	-		-		-		-		-	Improved
Uplands	20	21	20	20	200	292	6-9	6.8	-		-		-		-		-	Improved
Aerotech	5	5	5	7	200	21	6-9	6.8	5.7 W 1.2 S	3.8	0.5	1.0	-		6.5	6.0	Not acutely lethal	Declined
North Preston	10	5	10	2	200	10	6-9	6.6	3	0.1	1.5	0.1	-		-		-	Continued
Lockview	20	3	20	3	200	10	6.5-9	7.2	8.0 S	2.9	1.2 S	0.3	-		-		-	Continued
Steeves (Wellington)	20	5	20	1	200	10	6.5-9	7.2	14.4 S	0.1	1.0 S	0.1	-		-		-	Continued
BLT	15	5	20	22	200	12	6-9	6.9	5 W 3 S	2	3 W 1 S	2	0.02	0.10	5	6.8	Not acutely lethal	Declined
Avg. of all Facilities	12		13		414		6.9		1.7		0.6		0.18		6.4			

NOTES & ACRONYMS:
$CBOD_5$ - Carbonaceous 5-Day Biochemical Oxygen Demand
TSS - Total Suspended Solids
TRC - Total Residual Chlorine
W / S - Winter / Summer compliance limits
NSE requires monthly averages be less than the NSE Compliance Limit for each parameter (Dartmouth, Eastern Passage, Halifax, Herring Cove, Mill Cove)
NSE requires quarterly averages be less than the NSE Compliance Limit for each parameter (Aerotech, Lockview, Mid. Musq., Frame, BLT, Uplands, North Preston, Steeves, Springfield)
Continued - All parameters remain essentially unchanged since the last report
Improved - One or more parameter(s) became compliant since the last report
Declined - One or more parameters(s) became non-compliant since the last report

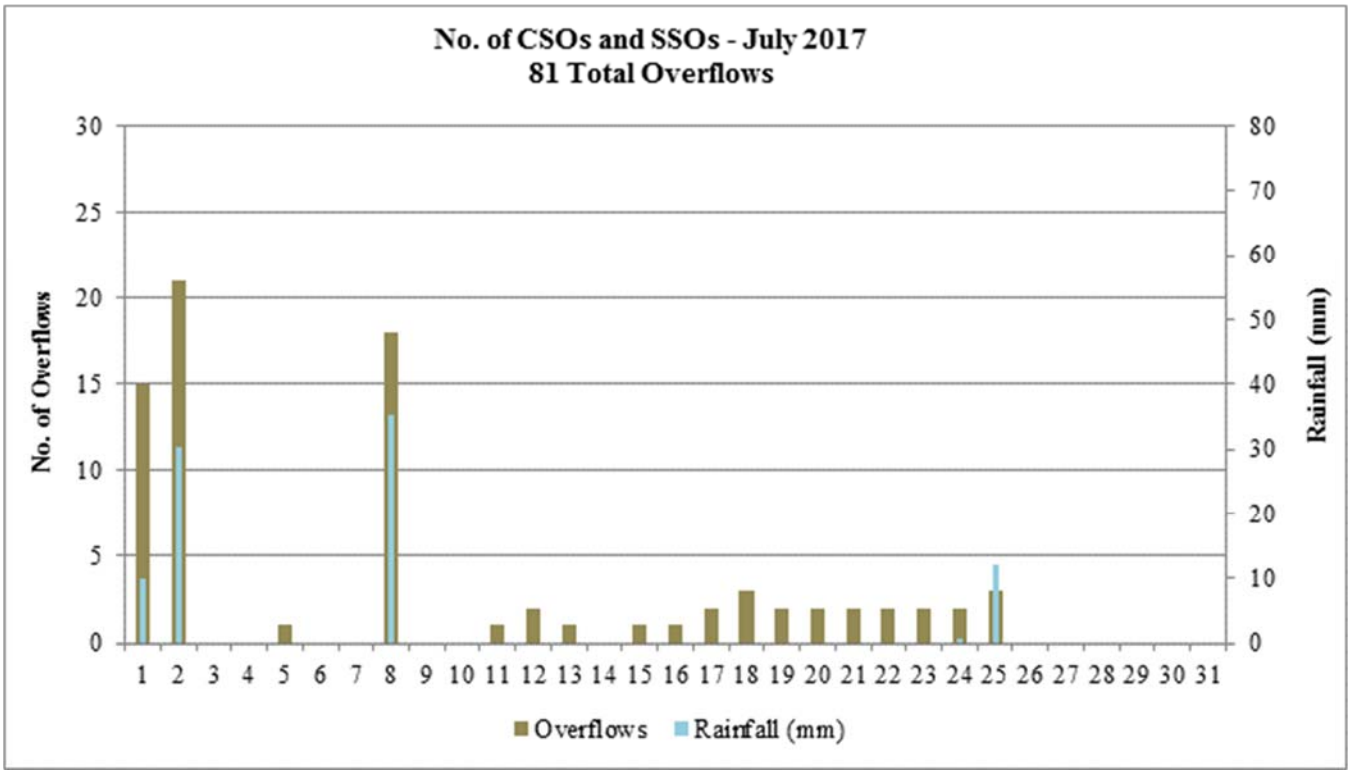
LEGEND
NSE Compliant
NSE Non-Compliant



NOTES & ACRONYMS: CSO - Combined Sewer Overflow SSO - Sanitary Sewer Overflow

- Rainfall data is from Halifax Water's rain gauge at the Halifax WWTF.
- There was one overflow on a day when there was no recorded rainfall, as follows:

    1. June 11: The CSO at the Wallace St CSO was due to a blockage caused by debris.



NOTES & ACRONYMS: CSO - Combined Sewer Overflow SSO - Sanitary Sewer Overflow

- Rainfall data is from Halifax Water's rain gauge at the Halifax WWTF.
- There were twenty-two overflows on days when there was no recorded rainfall, as follows:

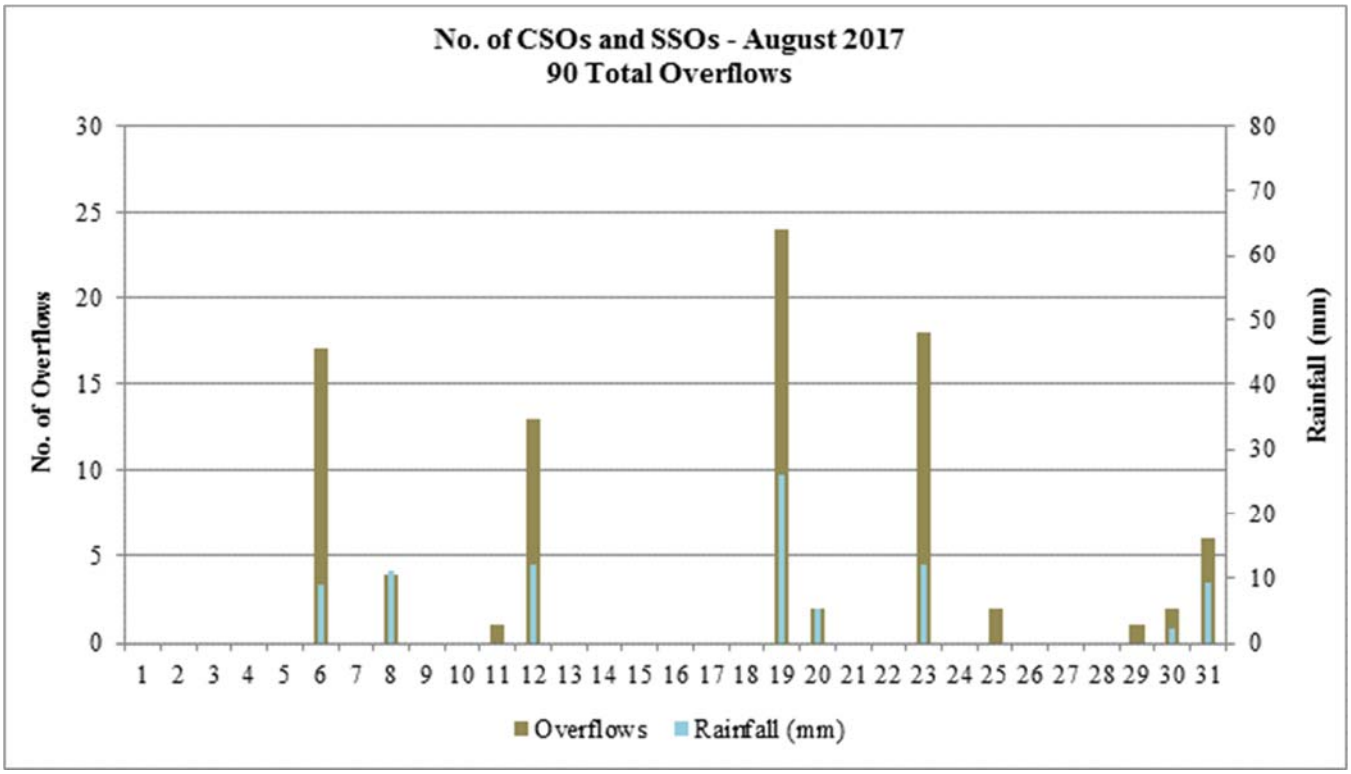
1. July 5: The SSO at the Stuart Harris Drive PS was caused due to a blockage caused by debris.

2. July 11 to 13: The CSOs at the Chain Rock PS & CSO were a direct result of the work being performed on the Northwest Arm Sewer Project.

3. July 15 to 17: The CSOs at the Upper Water St CSO were the result of a blockage caused by debris.

4. July 18: The CSOs at the Upper Water St CSO were the result of a blockage caused by debris. The CSO at the Old Ferry Rd PS & CSO was caused due to a pump inhibit initiated by Tech Services working on the Scada system.

5. July 19 to 23: The CSOs at the Upper Water St CSO were the result of the partial failing of the inflatable plug that is located in the opening of the CSO, allowing sea water intrusion at high tide. NSE was made aware of this issue.



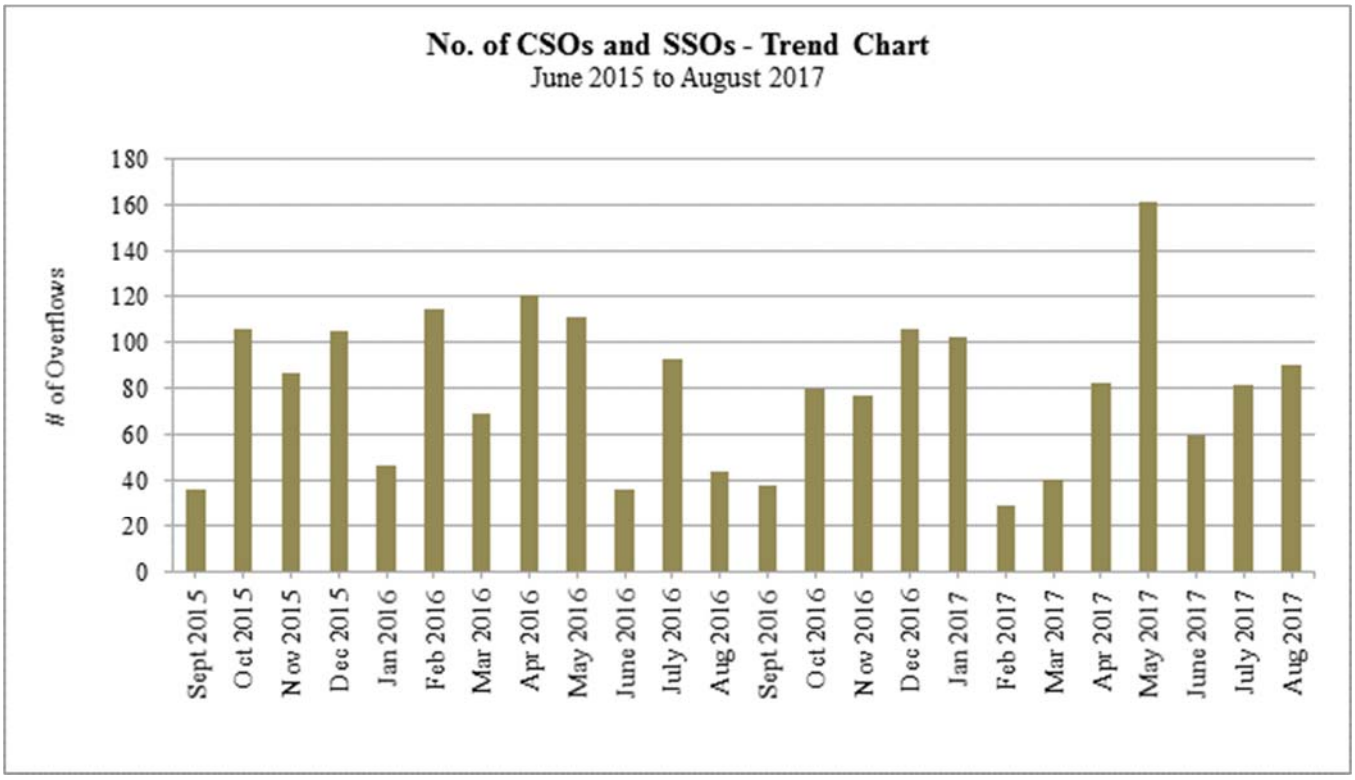
NOTES & ACRONYMS: CSO - Combined Sewer Overflow SSO - Sanitary Sewer Overflow

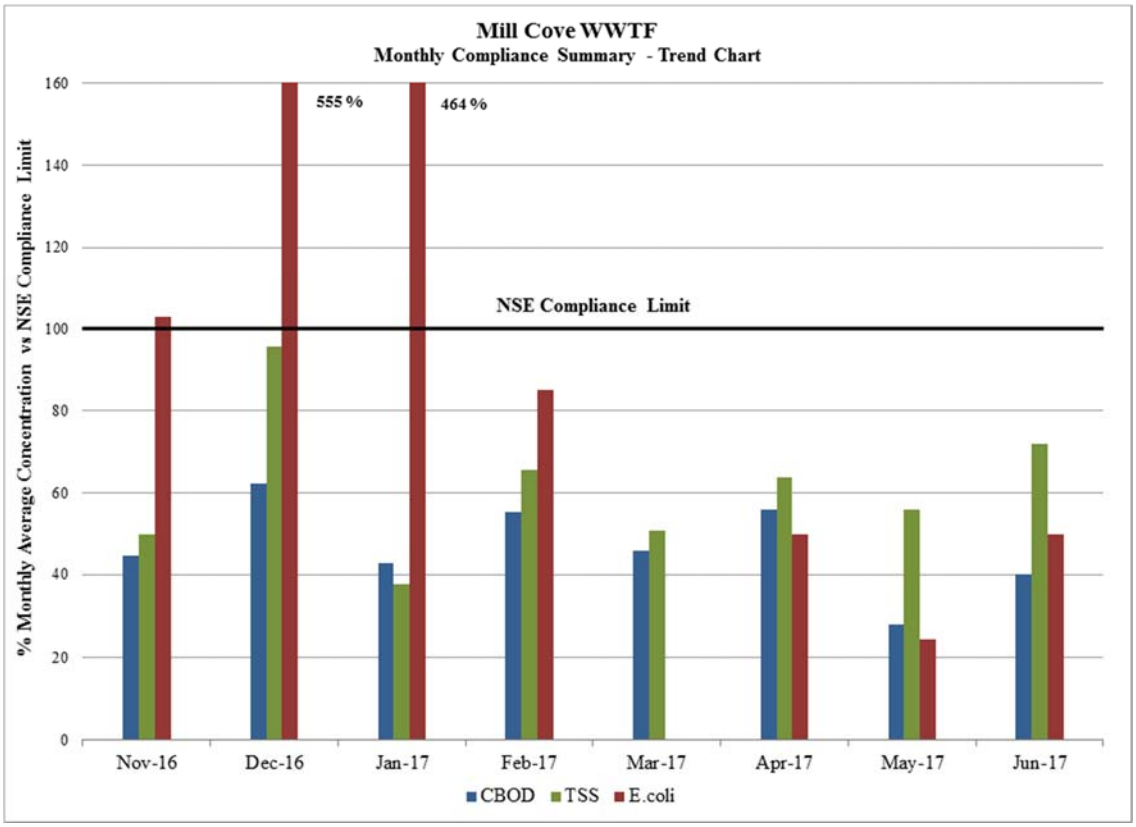
- Rainfall data is from Halifax Water's rain gauge at the Halifax WWTF.
- There were four overflows on days when there was no recorded rainfall, as follows:

    1. August 11: The SSO at the Stuart Harris Drive PS was due to a blockage caused by debris.

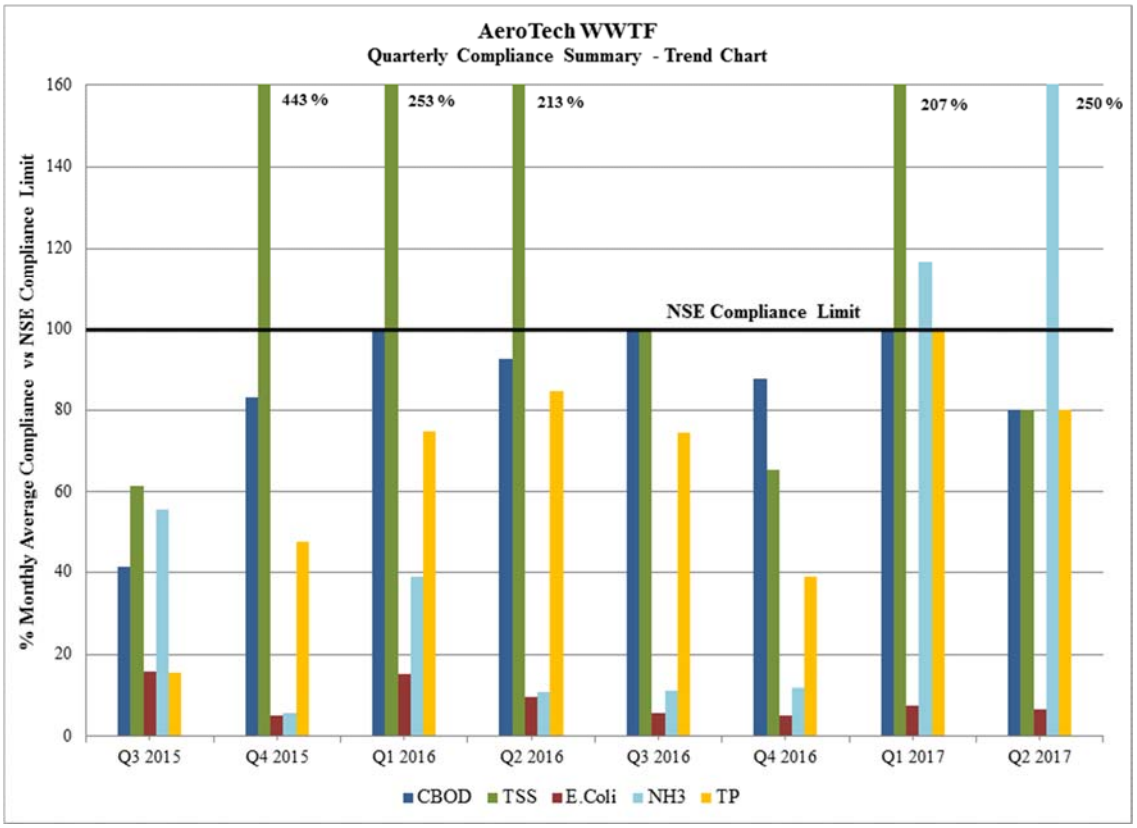
    2. August 25: The CSO at the Chain Rock PS & CSO was a direct result of the work being performed on the Northwest Arm Sewer Project. The CSO at the Sackville St CSO was caused by a valve blockage caused by debris.

    3. August 29: The CSO at the North St CSO was caused due to a possible blockage caused by debris.





Lower numbers represent better performance.



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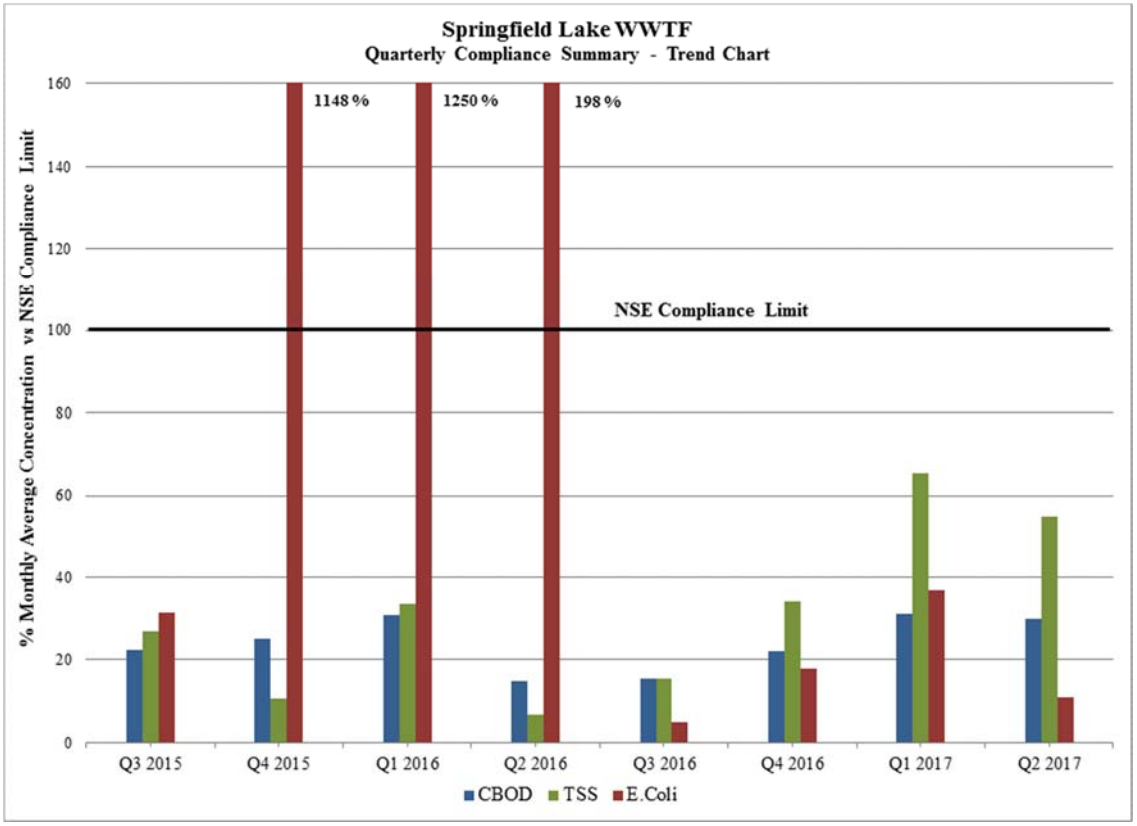

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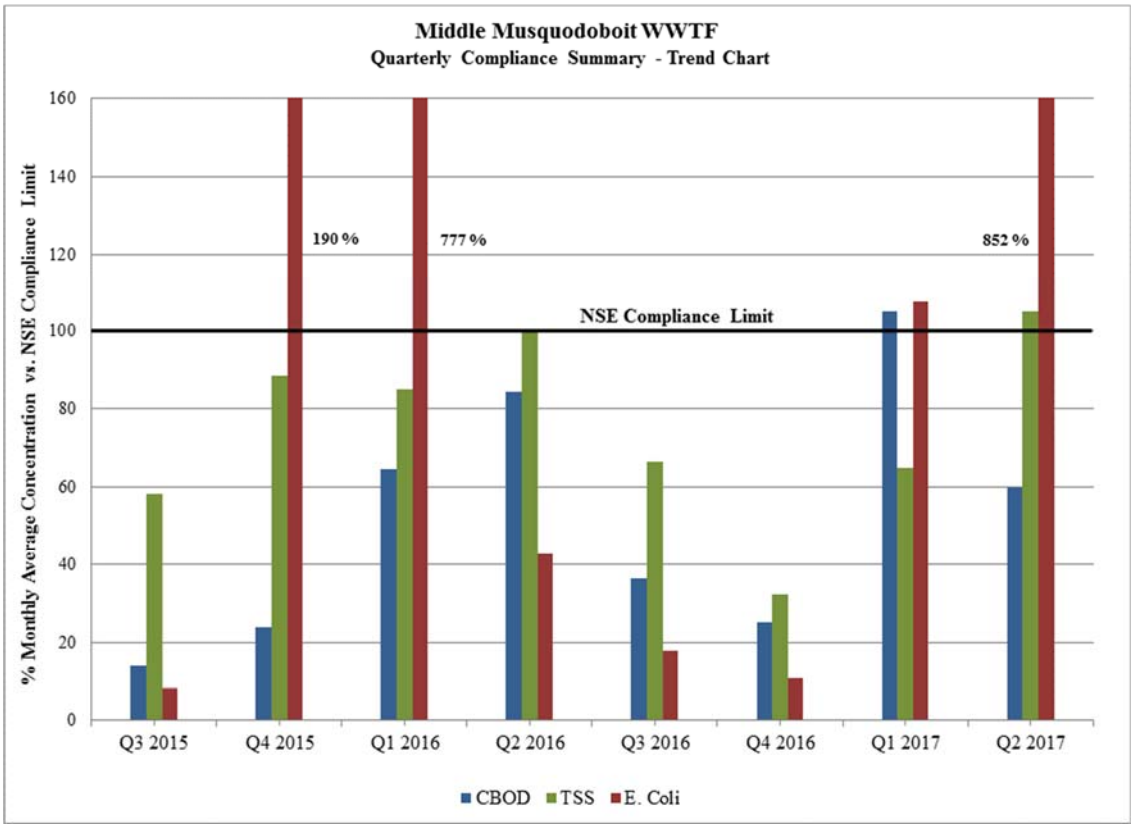

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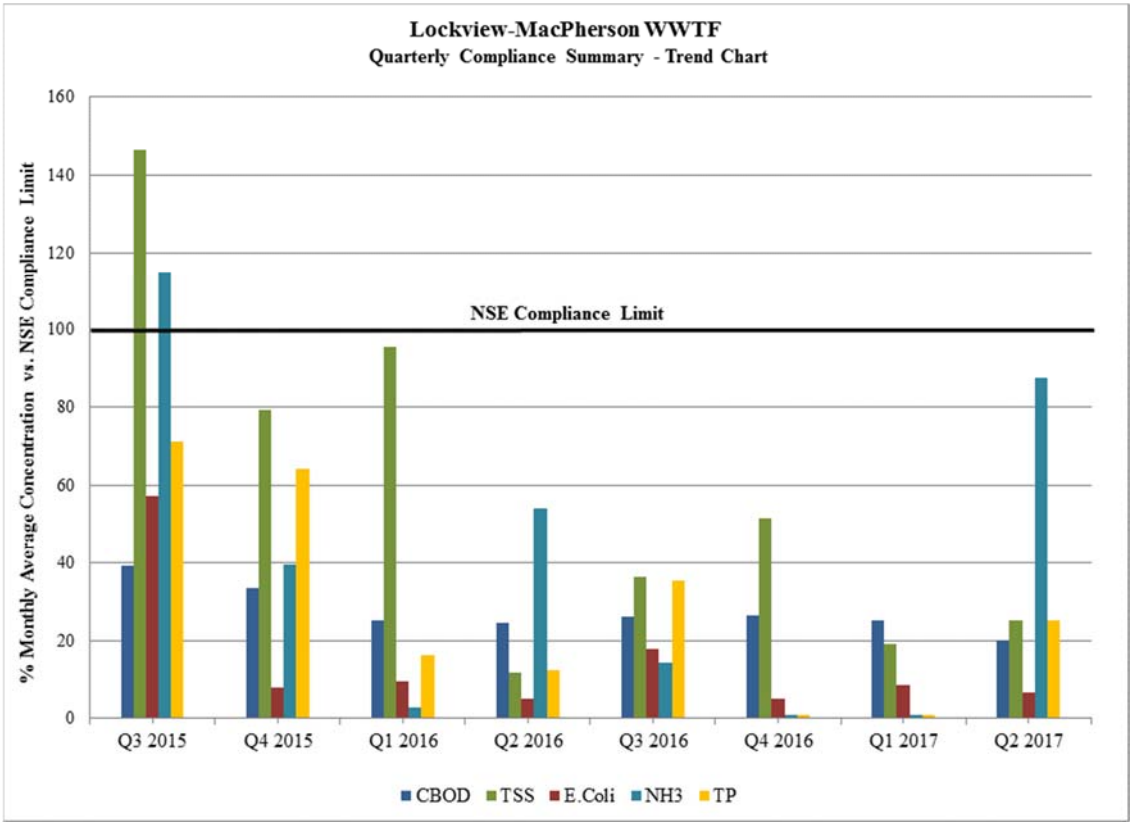

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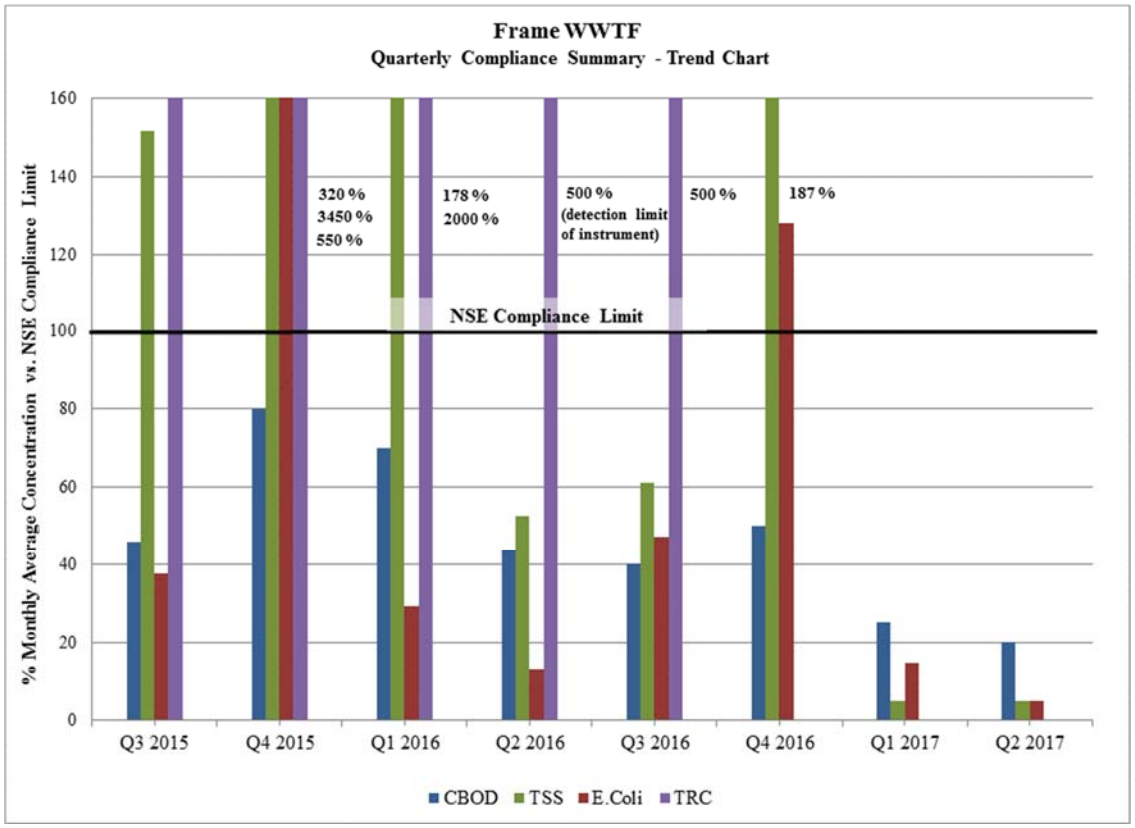

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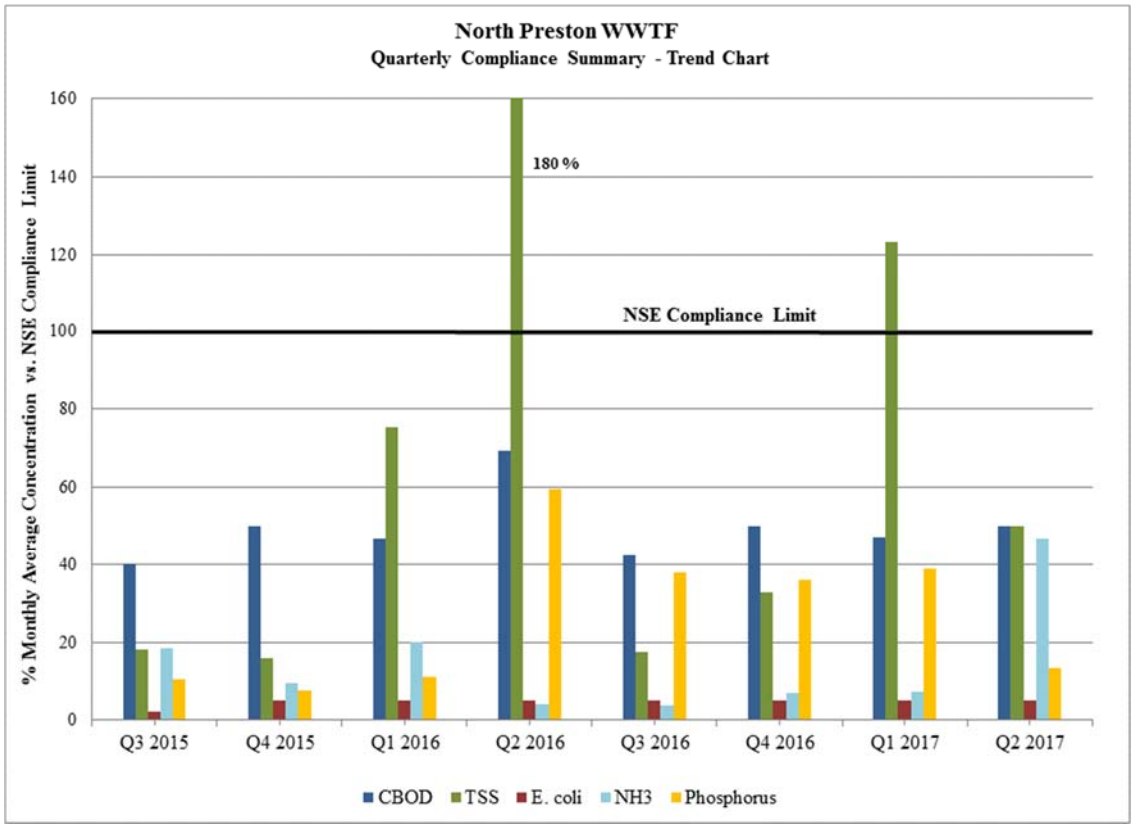

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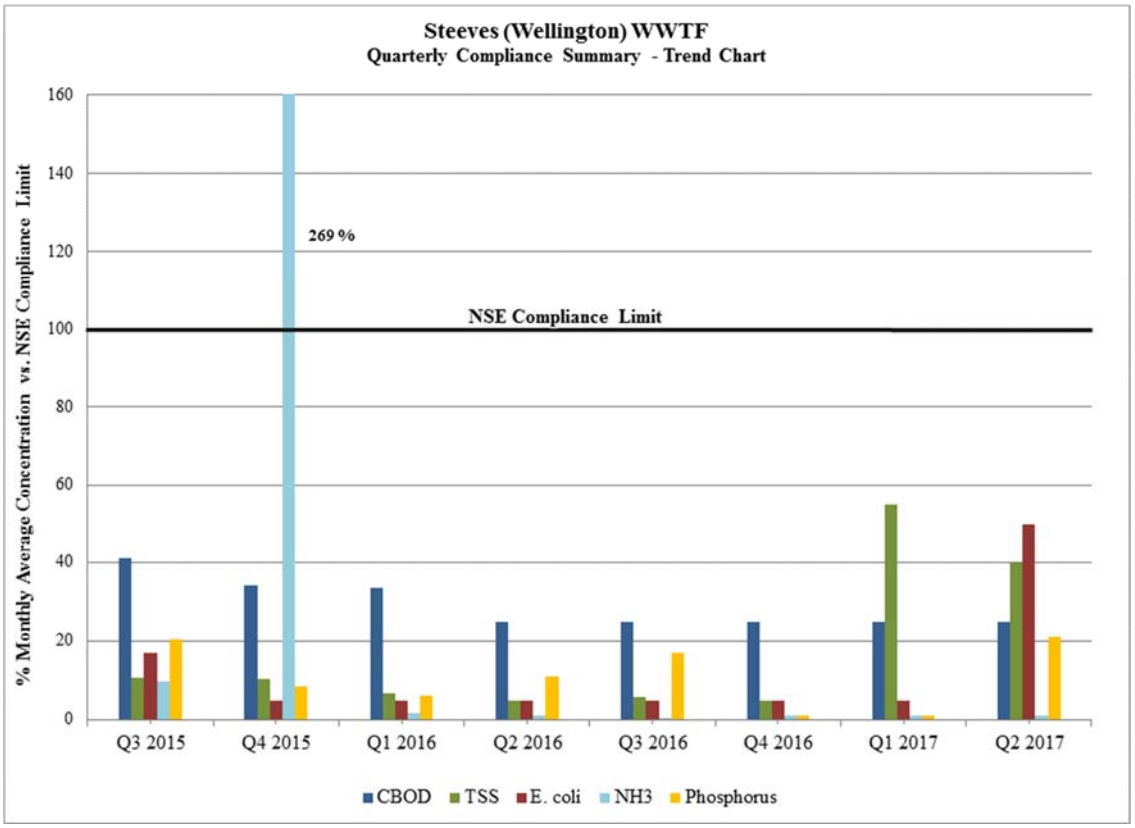

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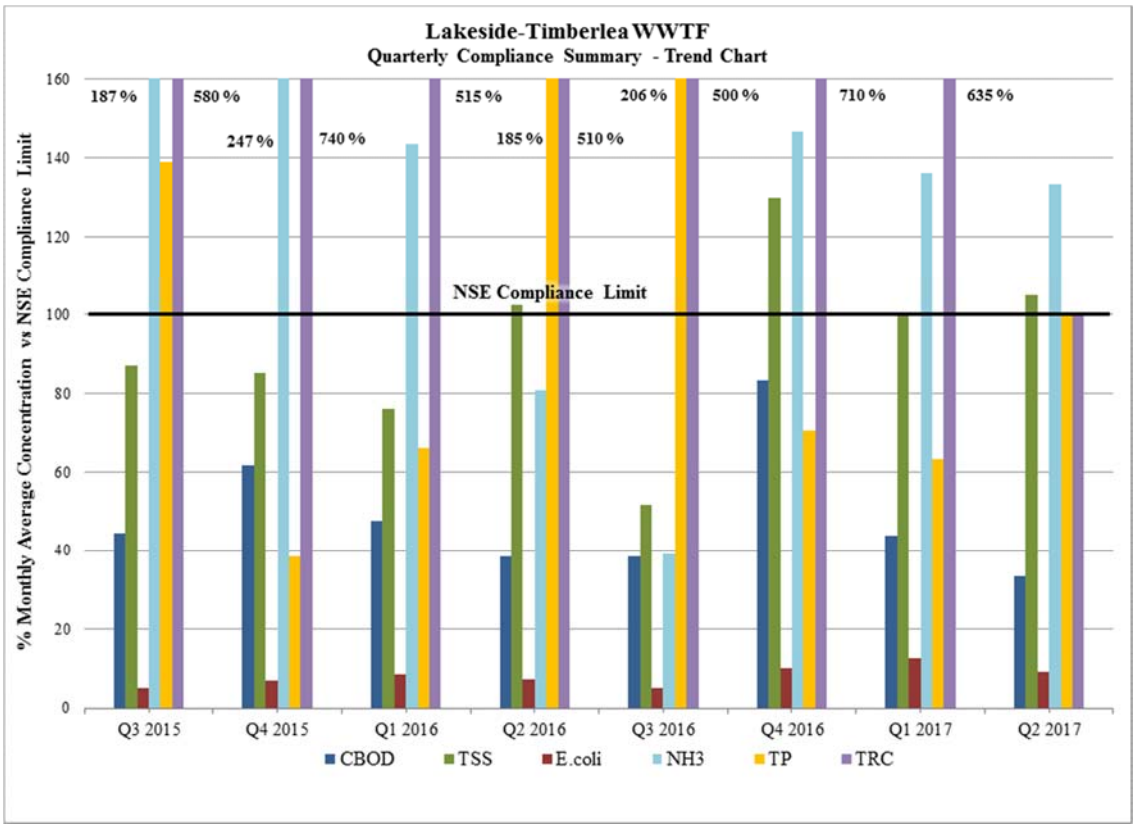

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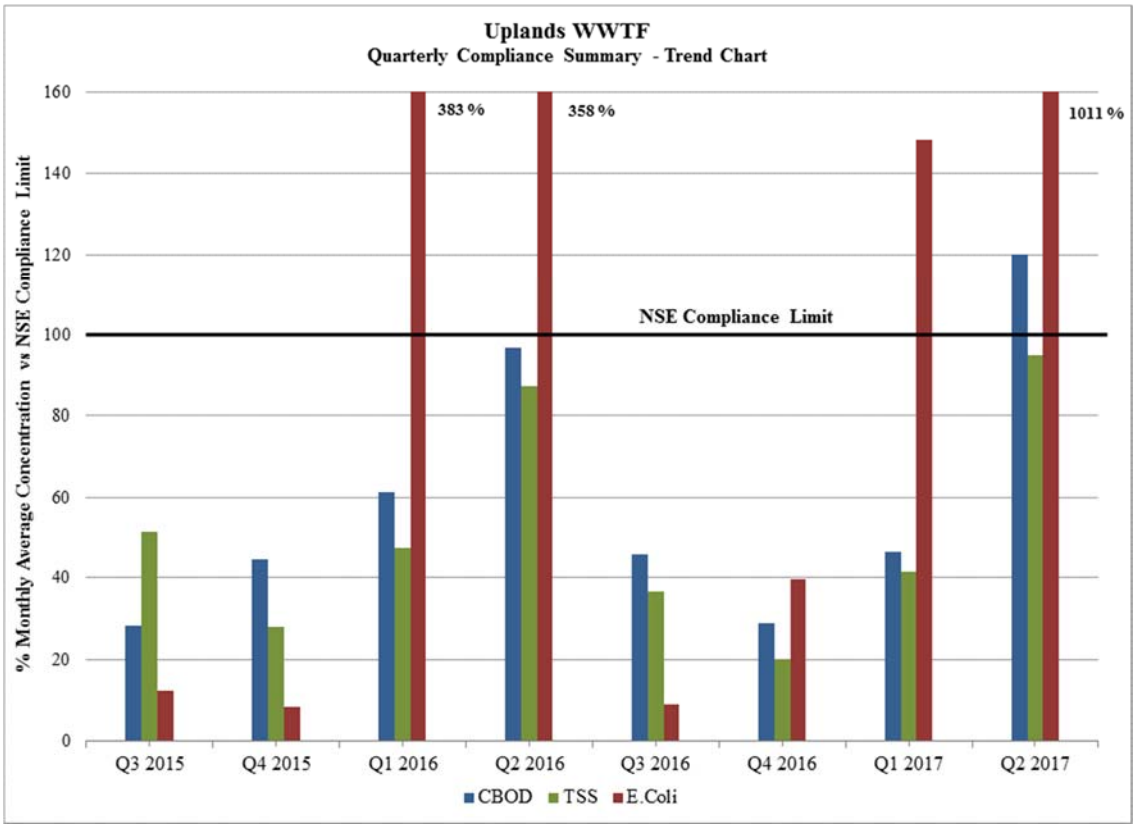

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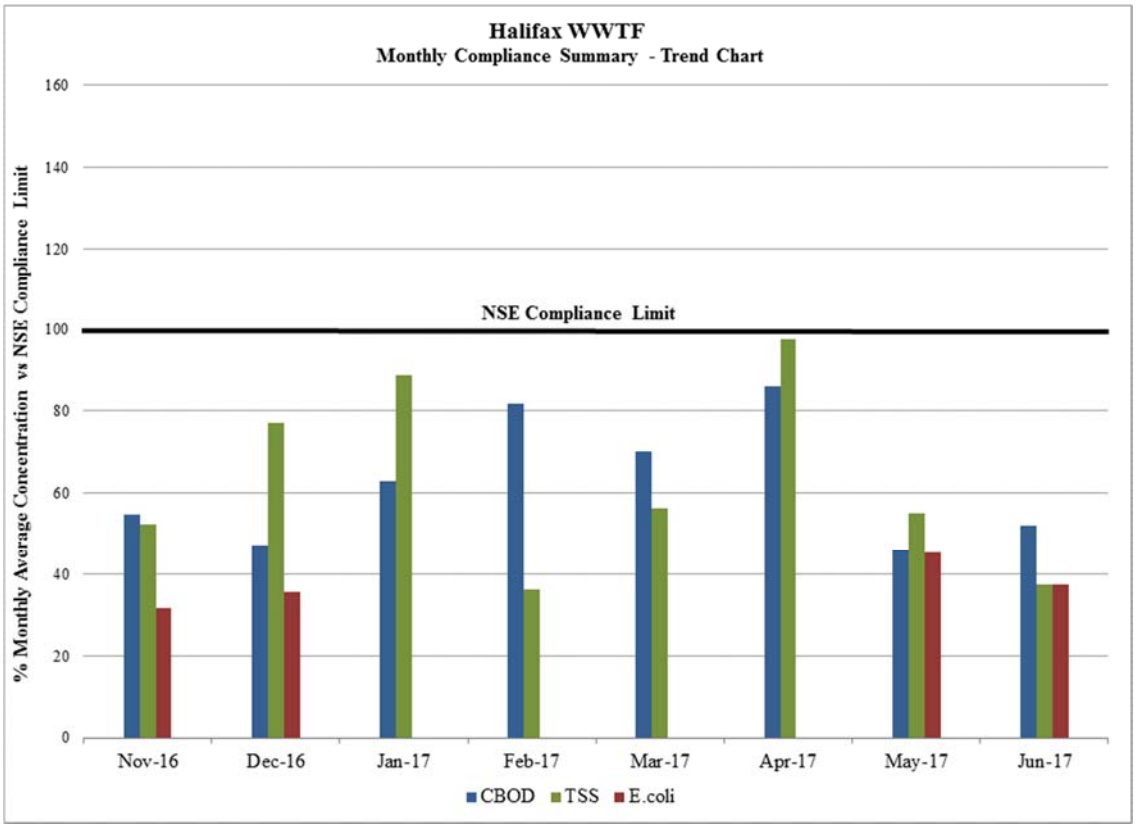

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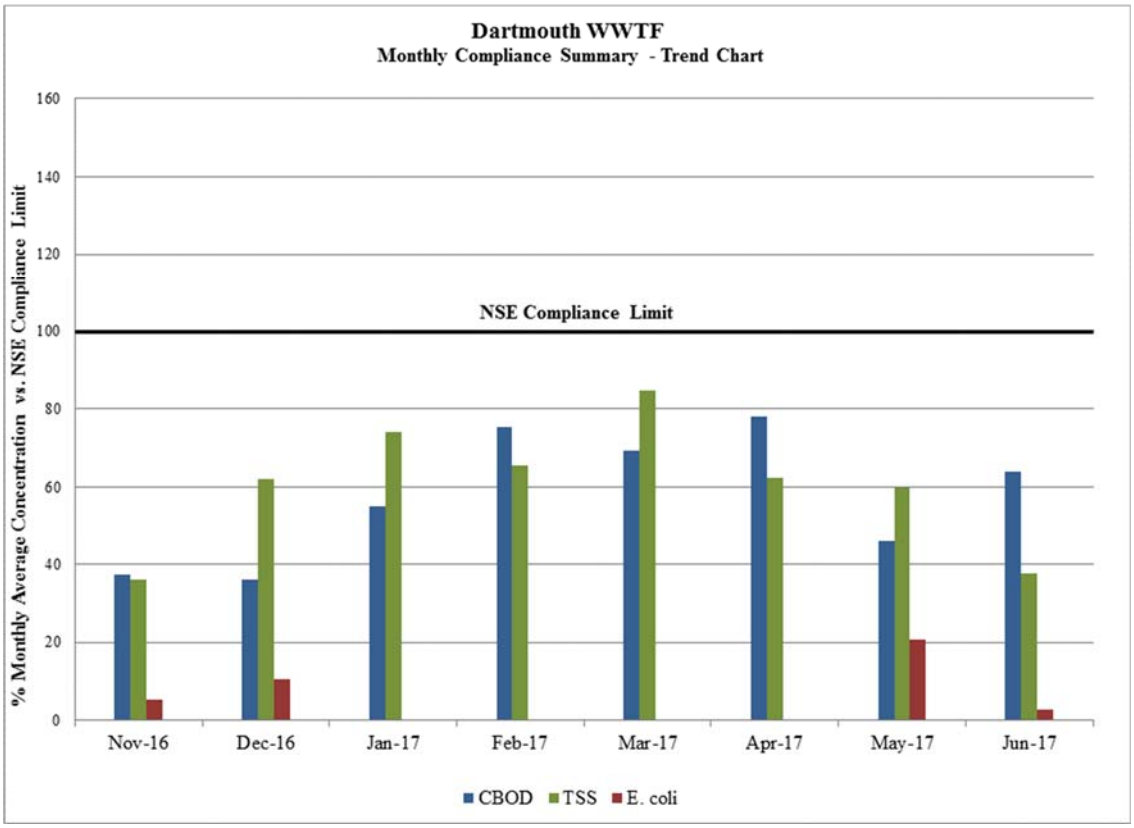

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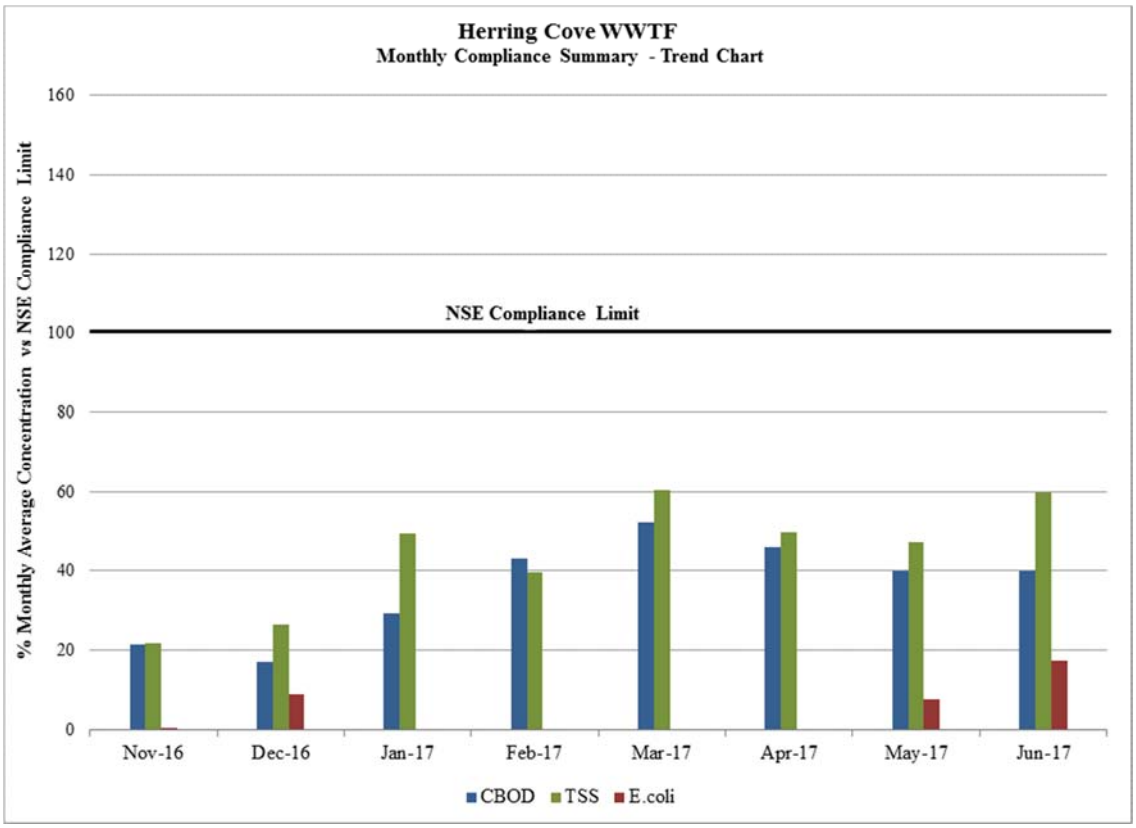

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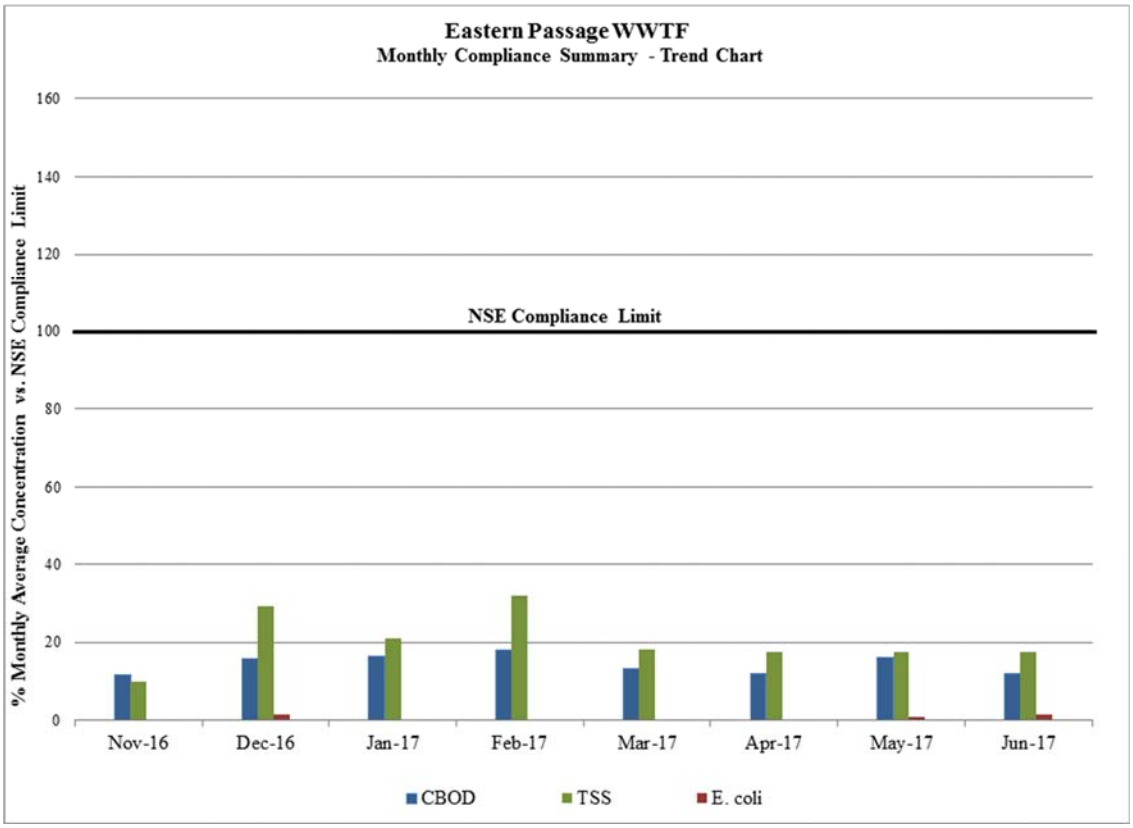
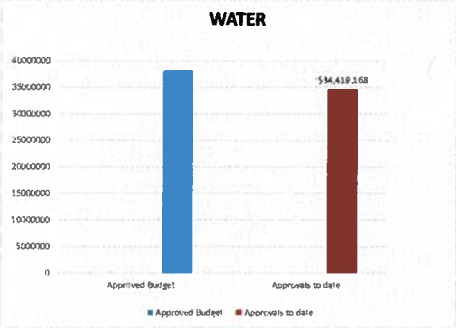


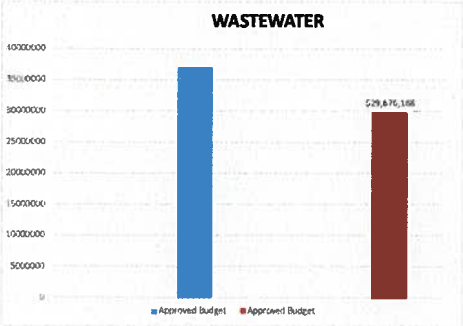
Lower numbers represent better performance.

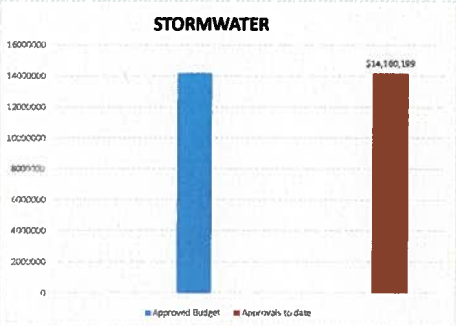
Halifax Water
Halifax Regional Water Commission

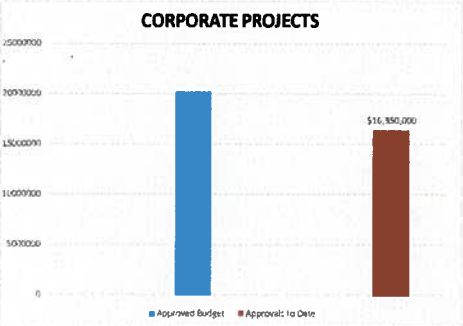
ITEM 2-I
HRWC Board
September 28, 2017

CAPITAL BUDGET APPROVALS TO DATE - 2017/18









WATER

Approved Budget	**$38,091,520**	**90%**
Approvals to date	**$34,419,168**	

WASTEWATER

Approved Budget	**$36,965,981**	**80%**
Approvals to date	**$29,676,168**	

STORMWATER

Approved Budget	**$14,213,000**	**100%**
Approvals to date	**$14,160,199**	

CORPORATE PROJECTS

Approved Budget	**$20,237,000**	**81%**
Approvals to date	**$16,350,000**	

Total Budget: **$109,333,000**
Total To Date: **$94,605,535**

Total % to date **87%**

Sept 22/17

Report Approved: **Date**
Jamie Hannam

HRWC Board Report 2I - Capital Budget Approvals to Date - September 28, 2017

Category	Total Approval	Net Impact on 17/18 Capital Budget	Final Approval
Water			
Treatment Plants			
Lake Major WSP Waste Residual Management Study	$78,000	$0	3/30/2017
Treatment Facilities			
Purchase of PID No. 40149668 Bennery Lake	$75,000	$0	8/14/2017
Transmission			
Bedford Connector 750mm Replacement Phase 3	$4,569,717	$4,569,717	3/31/2017
Peninsula Low South Transmission Main Rehabilitation	$8,500,000	$8,500,000	4/10/2017
St. Margaret's Bay and Layton Drive water main renewal project funding increase	$295,000	$0	6/26/2017
Structures			
Leiblin Drive Booster Station Fire Pump Replacement Design	$50,000	$0	3/30/2017
Blue Mountain Meter Replacement	$20,000	$20,000	3/30/2017
Crestview Booster Station PRV Conversion	$57,000	$57,000	3/30/2017
Geizer 158 Reservoir Drainage Improvements	$53,000	$53,000	3/30/2017
Geizer 158 Reservoir Floor Replacement	$2,750,000	$2,750,000	7/6/2016
Lake Major Dam Replacement	$7,789,391	$7,789,391	4/10/2017
Pratt & Whitney PRV Communications Upgrade	$10,000	$10,000	3/30/2017
Silverside Booster Station - Control Panel Replacement	$50,000	$50,000	3/30/2017
Security			
Security Upgrade Program	$150,000	$150,000	8/17/2017
Facilities			
450 Cowie Hill - New DR7000 for Lab	$14,000	$14,000	3/30/2017
Bennery Lake WSP: Culvert Replacement	$20,000	$20,000	3/30/2017
Bennery Lake WSP: New Chlorine Analyzer	$14,000	$14,000	3/30/2017
Bennery Lake WSP: New Low Lift VFD Pump Replacement Program	$110,000	$110,000	3/30/2017
Bennery Lake WSP: New Magnetic Flow Meters	$29,000	$29,000	3/30/2017
Bennery Lake WSP: Post Filter Chemical Addition Optimization	$62,000	$62,000	3/30/2017
Bennery Lake WSP: Replace Sludge Pumps and Valve Replacements	$53,000	$53,000	3/30/2017
Chlorine Analyzer Relocation - Geizer 158 Reservoir	$33,000	$33,000	3/30/2017
Inline Zeta Potential Meters for Water Plants	$100,000	$100,000	3/30/2017
JD Kline WSP: Effluent Valve Actuator Replacement Program	$50,000	$50,000	3/30/2017
JD Kline WSP: Filter Media and Underdrain Replacement Program	$5,747,060	$5,747,060	4/13/2017
JD Kline: Ampgard III to Vacuum Contactor Conversion	$40,000	$40,000	3/30/2017
JD Kline: Bench-top Turbidimeters	$6,000	$6,000	3/30/2017
JD Kline: Chorine Storage Room - System Modifications	$70,000	$70,000	3/30/2017
JD Kline: pH Meter Replacements	$10,000	$10,000	3/30/2017
JD Kline: Raw Water Pumping Station Ladder Extension and Fall Protection Equipment	$9,000	$9,000	3/30/2017
JD Kline: Roof Replacement	$220,000	$220,000	3/30/2017
JD Kline: Slide Gate Actuators to Lagoons	$44,000	$44,000	3/30/2017
JD Kline: Turbidity Meters	$50,000	$50,000	3/30/2017
JD Kline: Westinghouse Electrical Panels Replacement	$5,000	$5,000	3/30/2017
JD Kline:VTS Alarm System Upgrade	$7,000	$7,000	3/30/2017
Lake Major WSP: Bench Top Turbidimeters	$6,000	$6,000	3/30/2017
Lake Major WSP: Blower Vent	$35,000	$35,000	3/30/2017
Lake Major WSP: Butterfly valve replacement program	$100,000	$100,000	3/30/2017

Category	Total Approval	Net Impact on 17/18 Capital Budget	Final Approval
Lake Major WSP: Carbon Dioxide Feed System	$215,000	$215,000	4/13/2017
Lake Major WSP: Dry Polymer Feed System Replacement	$75,000	$75,000	6/28/2017
Lake Major WSP: Filter Media Replacement	$200,000	$200,000	3/30/2017
Lake Major WSP: MCC Contactors Replacement	$34,000	$34,000	3/30/2017
Lake Major WSP: Treatment Train Isolation	$222,000	$222,000	3/30/2017
Equipment			
Miscellaneous Equipment Replacement			
Mobile Event Trailer "The Shed"	$60,000	$0	6/6/2017
Purchase portable acoustic listening equipment	$15,000	$0	5/17/2017
Distribution			
Automated Flushing Program	$20,000	$20,000	3/30/2017
Bulk Fill Stations - Site Work Improvements	$110,000	$110,000	3/30/2017
Distribution System Chlorine Residual Analyzer Upgrade Program	$100,000	$100,000	4/4/2017
Hydrant Renewals	$75,000	$75,000	4/13/2017
Lead Service Line Replacement Program	$400,000	$400,000	4/13/2017
Re-Chlorination Stations - Sampson and Stokil Reservoirs	$30,000	$30,000	4/3/2017
Service Line Renewals	$100,000	$100,000	4/13/2017
Valve Renewals	$125,000	$125,000	4/13/2017
Water Distribution - Main Renewal Program	$1,900,000	$1,900,000	3/21/2017
Water Sampling Station Relocation Program	$30,000	$30,000	3/30/2017
Water Total	**$34,992,168**	**$34,419,168**	
Wastewater			
Treatment Facilities			
Dartmouth WWTF: Odour Control Study (Cancelled - consulted with OPSno longer desired because damper repair fixed the problem)	$40,000	$40,000	8/21/2017
Eastern Passage Wastewater Treatement Facilities Process Optimization	$70,000	$0	7/25/2017
Eastern Passage WWTF: Control Building HVAC Upgrade	$8,000	$8,000	5/23/2017
Halifax WWTF: Ductwork Replacement	$41,000	$41,000	9/13/2017
Halifax WWTF: Screenings Compactor Replacement (Cancelled Ops came up with alternative solution)	$200,000	$200,000	9/13/2017
Herring Cove WWTF: Overhead Door (as per SA this will be done by operations staff)	$20,000	$20,000	9/13/2017
Herring Cove WWTF: Window Installation for Natural Light	$20,000	$20,000	7/25/2017
HSP Plants - Carbon Replacement	$285,000	$285,000	8/9/2017
Mill Cove WWTF	$750,000	$750,000	3/27/2017
Roach's Pond Pumping Station Trash Rack	$50,000	$0	8/1/2017
Structures			
Emergency Pumping Station Pump replacements	$250,000	$250,000	4/25/2017
Hines Road Sewer - Odour Management:	$150,000	$150,000	3/28/2017
Prince Albert Road WW IP	$21,000	$0	7/22/2017
Shipyard Road Pumping Station Upgrade	$175,000	$175,000	6/28/2017
Security			
Security Upgrade Program	$200,000	$200,000	8/17/2017
Forcemains			
Kearney Lake Road Forcemain Extension	$260,000	$260,000	7/3/2017
Equipment			
I&I Reduction (SIR) Program Flow Meters and Related Equipment	$25,000	$25,000	4/13/2017
Miscellaneous Equipment Replacement	$70,000	$70,000	4/13/2017
Energy			
Dartmouth WWTF: Ventilation Air Heat Recovery	$250,000	$250,000	6/21/2017
Collections			
Percy Street Storm Sewer Replacement	$20,000	$0	5/10/2017

Category	Total Approval	Net Impact on 17/18 Capital Budget	Final Approval
Post Construction Consulting - Wastewater System Trenchless Rehabilitation Program	$6,500	$0	5/15/2017
Collection System			
Balsam/Monroe Subdivision Sewer Upgrade	$165,000	$165,000	5/9/2017
Corporate Flow Monitoring Program	$1,000,000	$1,000,000	5/9/2017
Hines Road Rider Sewer Extension	$50,000	$50,000	3/8/2017
Integrated Wastewater Projects - Program	$1,000,000	$1,000,000	3/21/2017
Lateral Replacements (non-tree roots)	$1,300,000	$1,300,000	
Lateral Replacements (tree roots)			
Leiblin Pumping Station Gravity Sewer	$3,495,000	$3,495,000	3/30/2017
Manhole Renewals	$29,000	$29,000	
Sewer Condition Assessments	$300,000	$300,000	5/9/2017
Wet Weather Management Program	$100,000	$100,000	4/25/2017
Northwest Arm Sewer Rehabilitation	$19,493,168	$19,493,168	3/8/2017
Wastewater Total	**$29,843,668**	**$29,676,168**	
Stormwater			
Ditches and Culverts			
First Lake Drive Culvert Replacement Project	$155,000	$0	4/3/2017
Stormwater Total	**$155,000**	**$0**	
Stormwater			
Structures			
Ellenvale Run Retaining Wall System Replacement	$1,535,000	$1,535,000	5/17/2017
Riverwood Drive SW IP	$220,000	$0	7/22/2017
Pipes			
Catchbasin Renewals	$36,000	$36,000	
Integrated Stormwater Projects Program	$1,060,000	$1,060,000	3/21/2017
Lateral Replacements	$15,000	$15,000	
Manhole Renewals	$24,000	$24,000	
Storm Sewer Condition Assessment	$150,000	$150,000	5/9/2017
Sullivan's Pond Storm Sewer System Replacement Phase 1	$9,581,199	$9,581,199	5/17/2017
Ditches and Culverts			
Blue Hill Road (near #77)	$130,000	$130,000	3/1/2017
Cobequid Road (#510)	$160,000	$160,000	3/1/2017
Cole Harbour Road (near #1560)	$210,000	$210,000	3/1/2017
John Cross Drive (near #40)	$200,000	$200,000	3/1/2017
Kipawa Crescent (near #14) (project did not proceed)	$213,000	$213,000	7/21/2017
Lucasville Road (near #1419)	$170,000	$170,000	3/1/2017
Montague Road (near #1044)	$155,000	$155,000	3/1/2017
Softwind Lane (near #31)	$105,000	$105,000	3/1/2017
Terradore Lane (near #7)	$96,000	$96,000	3/1/2017
Waverley Road (near #4132)	$115,000	$115,000	3/1/2017
Yankeetown Road (near #16)	$205,000	$205,000	3/1/2017
Collections			
Baker Drive 2016 Stormwater Integrated Project (SWIP)	$9,700	$0	4/25/2017
Stormwater Total	**$14,389,899**	**$14,160,199**	

Category	Total Approval	Net Impact on 17/18 Capital Budget	Final Approval
Corporate Projects			
Information Technology			
Desktop Computer Replacement Program	$290,000	$290,000	4/13/2017
AMI Meter System Upgrades (50/50 w/ww)	$11,685,000	$11,685,000	4/15/2016
Computerized Maintenance Management System Phase 2	$2,000,000	$2,000,000	10/15/2015
IT Strategic Plan Additional funding	$110,000	$0	4/6/2017
Network Infrastructure Upgrades	$220,000	$220,000	4/13/2017
Fleet			
Fleet Upgrade Program Stormwater	$280,000	$280,000	4/13/2017
Fleet Upgrade Program Wastewater	$1,120,000	$1,120,000	4/13/2017
Fleet Upgrade Program Water	$505,000	$505,000	4/13/2017
Facility			
Heating/Ventilation Upgrades in new phase of 450 Cowie Hill Road	$100,000	$100,000	6/6/2017
Assets			
Asset Management Program Development	$150,000	$150,000	4/13/2017
Corporate Projects Total	**$16,460,000**	**$16,350,000**	
Grand Total	**$95,840,735**	**$94,605,535**	
Water Total	**$34,992,168**	**$34,419,168**	
Wastewater Total	**$29,843,668**	**$29,676,168**	
Stormwater Total	**$14,389,899**	**$14,160,199**	
Corporate Projects Total	**$16,460,000**	**$16,350,000**	

Item 3-I

20-Sep-17

FINANCIAL REPORT

Consolidated balance of the four operating accounts maintained by the Commission as of:	20-Sep-17	$58,964,248
Rate of interest on the above balance - Investment Rate of Return	9.900%	$58,964,247.65

ITEM # 4-I
HRWC Board
September 28, 2017

TO: Ray Ritcey, Chair, and Members of the Halifax Regional Water Commission Board

SUBMITTED BY: *Original Signed By:*
Cathie O'Toole, MBA, CPA, CGA, Director, Corporate Services/CFO

APPROVED: *Original Signed By:*
Carl Yates M.A.Sc., P.Eng., General Manager

DATE: September 20, 2016

SUBJECT: **Stormwater Billing Update**

ORIGIN

NSUARB Stormwater Rate Hearing Decision M07731 – April 12, 2017

BACKGROUND

HRWC filed an application on October 30th, 2015 to amend the Stormwater section of the Cost of Service (COS) Manual, and a public hearing was held on February 15 – 17th, 2016. The NSUARB approved a revised Cost of Service Model for Stormwater in the Decision from hearing M07147, and an updated COS Manual in September 2016. An application to adjust the stormwater rates to reflect the new Cost of Service Model for Stormwater was filed on October 31, 2016, and a public hearing took place February 15, 2017. The NSUARB released a Decision on April 12, 2017 (M07731) approving some changes in the structure of rates for stormwater service.

DISCUSSION

Implementation of Rate Structure Changes

The changes to the stormwater rate structure approved by the NSUARB came into effect on July 1, 2017.

Following release of the Board Decision, Halifax Water initiated an implementation plan that included direct communication with customers explaining the impact of the changes on their account.

The letters to customers are being sent in five batches to coincide with billing cycles, and to help manage the potential increase in call volumes to Customer Care as a result of the letters. The fourth batch of stormwater communications will be issued September 23rd, and the fifth and final batch will be issued to stormwater only customers in January, in advance of the annual billing to stormwater only customers.

To date, the implementation has gone well with no significant increase in call volume or complaints.

HRM Stormwater Right of Way Charge

On September 5, 2017, Regional Council approved a new billing approach for the municipality's Stormwater Right-of-Way Charge. In the future, all properties (both residential and commercial) that currently pay for stormwater services on the Halifax Water bill will be charged a flat rate of $39 per year on the utility bill. The municipality's Stormwater Right-of-Way Charge will no longer be included in the municipal property tax bills.

Communication materials and the implementation plan were developed jointly by Halifax Regional Municipality and Halifax Water staff. Halifax Water will be making configuration changes in the billing system early in October, and the HRM ROW charge will begin to appear as a separate line item on Halifax Water bills by the end of October. The format of the HRM ROW charge on the bill has been modified since 2014/15 when Halifax Water last billed the ROW charge for HRM, as a result of direction received from the Nova Scotia Utility and Review Board. A sample bill is attached.

Collection of Outstanding Stormwater Bills

After implementation of the HRM Stormwater ROW charge, Halifax Water staff will be working with municipality staff to initiate collection activities on stormwater only accounts that are significantly in arrears. These accounts will be transferred to the municipality as lienable charges, pursuant to the HRWC Act and will enter the municipality's collection process as specified in Administrative Order #18.

Rate Structure, Credits, and Complex Non-Residential Accounts

Some complex properties such as pits, quarries and refineries which were previously exempted because they had "stormwater management facilities" on the property, are now included in billable impervious area. These properties will be treated like any other property, meaning that each will be considered to be exempt or not based upon the specific circumstances on or near the property. The NSUARB approved the concept of treating all properties the same, with exemptions based on the specific circumstances, including when part of a non-residential property does not drain to Halifax Water infrastructure.

Non-Residential Properties shall pay a Site Related Flow Charge based on a rate per 10 m^2 of Chargeable Impervious Area on the Property. If a part of a property is located outside HRWC's Stormwater Service Boundary and watershed, that part of the property is exempt from the charge. As Non-Residential Customers are billed on the basis of actual impervious area and the properties in question are often large, this mechanism will enhance equity.

Through the summer months Halifax Water staff have initiated a review of some complex properties. Communication with customers, and site visits will commence in the fall, with stormwater billing commencing retroactive to July 1, 2017 once it has been determined how to equitably treat these properties.

There are some properties with significant impervious area involved and the resulting bills will be large. It is possible that some of these accounts will result in appeals to the Dispute Resolution Officer, and then possibly the NSUARB.

BUDGET IMPLICATIONS

There are no budget implications associated with this report with all projected revenues and expenses taken into consideration in the budget process.

ATTACHMENTS

Sample Customer Bill

Halifax Water

Questions or Comments:
Contact our Customer Care Centre
Weekdays 8am – 8pm
902–H20–WATR (902–420–9287)
CustomerService@halifaxwater.ca

24 hour emergency service:
902–H20–WATR (902–420–9287)

Head Office:
450 Cowie Hill Road, Halifax
Weekdays 8:30am – 4:30pm
www.halifaxwater.ca

Mailing Address:
P.O. Box 8388, RPO CSC
Halifax, N.S. B3K 5M1

ITEM # 4-I
HRWC Board
September 28, 2017
ATTACHMENT

Notice of rate increase:

Effective July 1, 2017 there are new rates for stormwater services, as approved by the Nova Scotia Utility and Review Board. There are no rate changes to water and wastewater services.

Bills have been pro–rated for the rate change before and after July 1.

Stormwater rates for the residential customer is now based on a tiered rate system:

Tier	Impervious Area Range	Rate
T1	Less than 50 Sq. Mt.	$0
T2	50 – 200 Sq. Mt.	$14
T3	210 – 400 Sq. Mt.	$27
T4	410 – 800 Sq. Mt.	$54
T5	Greater than 810 Sq. Mt.	$81
Driveway Culvert		$14

Stormwater rate for non–residential customer has reduced from $0.149 to $0.135 per Square Metre of impervious area.

Impervious area will be measured in Increments of 10 Square Metres.

Detailed rate information can be found on our website at:
http://www.halifax.ca/HalifaxWater
(Billing, Payments and Rates section)

Customer: [redacted]
Service Location: [redacted]
Water Account: [redacted]
Ref. No.:

Assessment No.: [redacted]
Invoice No.: [redacted]
Invoice Date: [redacted]
Invoice Amt: $480.86

TOTAL AMOUNT DUE BY 06 Jun 2017

Account Summary

Account Summary	
PREVIOUS BALANCE	$156.84
PAYMENTS THANK YOU!	–$156.84
ADJUSTMENTS	$0.00
CURRENT CHARGES	$480.86
TOTAL AMOUNT	$480.86

FINAL BILL

REMITTANCE PORTION – PAYABLE AT MOST FINANCIAL INSTITUTIONS

Halifax Water

Customer: [redacted]
Service Location: [redacted]
Water Account: [redacted]

TOTAL AMOUNT DUE BY 06 Jun 2017

Invoice No.: [redacted]
Invoice Date: [redacted]
Invoice Amt: $480.86

Payment Amt:

CYC01-000001

[redacted]

000000574269 0000000048086

⑆05578⑈900⑆ 96

Meter No	Meter Size	Reg.	Current Reading	Date	Previous Reading	Date	Diff.	Mult.	Consump.	UM
[redacted]	3/4"	001	E/ 312	31 May 2017	303	28 Feb 2017	9	1	9	M3

* A/ = Actual reading E/ = Estimated reading UM = Units of measure RT = Read Type (A or E) CYC01–000001

Consumption History

(1M³ = 1000 Litres or 220 gallons)

Read Date	RT	M3	Days	l/day
31 May 2017	E	9	93	97
27 Feb 2017	A	4	32	125
26 Jan 2017	A	5	29	172
28 Dec 2016	A	5	30	167
28 Nov 2016	A	5	32	156
27 Oct 2016	A	5	31	161
26 Sep 2016	A	3	31	97
26 Aug 2016	A	7	30	233
27 Jul 2016	A	4	30	133
27 Jun 2016	A	3	31	97
27 May 2016	A	3	30	100
27 Apr 2016	A	2	29	69
29 Mar 2016	A	3	29	103

PID: 40060386 – 10020.00 Sq. Mt.

Approved rate per Square Metre of Impervious Area: $ 0.135

Driveway Culvert: $14

Account details

PREVIOUS BALANCE				$156.84
DETAIL OF PAYMENTS AND ADJUSTMENTS				
Incoming Payment 29 Mar 2017				–$156.84
DETAIL OF CURRENT CHARGES				
Base Charge Water				$55.80
Water Consumption	9.00	M3	@ 0.9760	$8.78
Wastewater Discharge	9.00	M3	@ 1.7530	$15.78
Base Charge Wastewater				$62.00
Stormwater PID 40060386				$116.48
Stormwater PID 40060386				$218.49
TOTAL CURRENT HALIFAX WATER CHARGES new				$477.33
* HRM Right of Way new				$3.53
TOTAL AMOUNT DUE BY 06 Jun 2017 new				**$480.86**

Interest on overdue accounts is calculated at 1.5% per month or part thereof (19.56% per annum).
Interest is applied at the time of invoicing.

* The HRM Right of Way Charge, levied by Halifax Regional Municipality, is being collected by Halifax Water on their behalf. new

Make cheques payable to Halifax Regional Water Commission and include your account number.

Teller: Place PAID Stamp Here

ITEM # 5-I
HRWC Board
September 28, 2017

TO: Ray Ritcey, Chair, and Members of the Halifax Regional Water Commission Board

SUBMITTED BY: *Original Signed By:*
James Campbell, Public Relations & Communications Coordinator

APPROVED: *Original Signed By:*
Carl Yates M.A.Sc., P.Eng., General Manager

DATE: September 21, 2017

SUBJECT: **2016/17 Corporate Balanced Scorecard Results**

INFORMATION REPORT

ORIGIN

Ongoing reporting requirements associated with the expanded Corporate Balanced Scorecard approved by the Halifax Water Board on March 6, 2008, with specific targets for 2016/17.

BACKGROUND

Halifax Water has been utilizing a corporate balanced scorecard (CBS) to measure performance since 2001. With the merger in 2007, Halifax Water developed an expanded CBS to include wastewater and stormwater measurements. As well, this provided an opportunity to refine measurements related to water service delivery. This report provides a reconciliation of final results for the 2016/17 fiscal year.

DISCUSSION

As part of the CBS refinement in 2007, staff developed new mission and vision statements, as follows:

Our Mission:

- To provide world-class services for our customers and our environment.

Our Vision:

- We will provide our customers with high quality water, wastewater and stormwater services.
- Through the adoption of best practices, we will place the highest value on public health, customer service, fiscal responsibility, workplace safety and security, asset management, regulatory compliance, and stewardship of the environment.
- We will fully engage employees through teamwork, innovation, and professional development.

With the vision statement entrenched, Halifax Water staff defined eight Critical Success Factors (CSFs) derived from the vision statement as follows:

1. High Quality Drinking Water
2. Service Excellence
3. Responsible Financial Management
4. Effective Asset Management
5. Workplace Safety and Security
6. Regulatory Compliance
7. Environmental Stewardship
8. Motivated and Satisfied Employees

Under each of the CSFs, staff developed organizational indicators to track performance and allow for the establishment of targets. The following lists the CSFs and corresponding results for the organizational indicators under each category.

High Quality Drinking Water

Under the category of High Quality Drinking Water, we are continuing to seek adherence to five key objectives associated with our Water Quality Masterplan. Performance was measured through our ability to maintain a disinfection residual throughout the distribution system, control disinfection byproducts like trihalomethanes and haloacetic acids, ensure particle removal through our filtration systems, and ensure corrosion control in the distribution system, as measured by the level of lead at the customers' taps. Our results in these five categories scored 0.94 out of a total maximum score of 1.00, a significant increase from last year's result of .85.

As for water safety, our bacteriological test results were 99.9%, a slight increase from last year's 99.7%, and above our target of 99.3% of our samples free of total coliform for the fiscal year.

Results from our annual customer survey indicate that 88% of our customers rated their drinking water quality as good to excellent, consistent with last year's figure of 89%, and exceeding the target of 85%. On March 31, 2017 The Halifax Water Board approved a new target for this OI for the next fiscal year. This target has been set at 80%-85%, up from 75%-85%.

Service Excellence

Under the Service Excellence CSF, the annual customer survey indicated that 95% of our customers are satisfied or very satisfied with our overall service, surpassing the target of 90%, and on par with last year's result of 94%. On March 31, 2017 The Halifax Water Board approved a new target for this OI for the next fiscal year. This target has been set at 85%-95%, up from 80%-90%.

In terms of service outage for water and wastewater services, overall results were down compared to last year, particularly for water, with outages of 149 connection hours per 1,000 customers this year compared to 225 connection hours per 1,000 customers for water service last year, with a target of 200. Wastewater results were up slightly from 2.36 to 4.6 connection hours per 1,000 customers, as compared to a target of 8 connection hours per 1,000 customers, still well below the target.

Also under Service Excellence, our call centre had an average call wait time of 51 seconds, compared with the target of 90 seconds. This is a significant improvement from last year's number of 74 seconds, particularly in light of the fact that the Customer Care Centre is now the first point of customer contact for water, wastewater and stormwater calls. On March 31, 2017 The Halifax Water Board approved a new target for this OI for the next fiscal year. This target has been set at 80 seconds, down from 90 seconds. Although the target is well above last years results, there is an expectation of increased activity with the Call Centre as a new stormwater rate structure is implemented, the Customer Connect project and the revised Lead Service Line Replacement program.

Responsible Financial Management

Under Responsible Financial Management, the expense to revenue ratio was recorded as 0.669, compared to the benchmark of 0.732 for the fiscal year. For 2017/18 the new target is 0.748. Also tied to the theme of Responsible Financial Management is the annual cost per connection for water and wastewater service. For water, the annual cost per connection dropped to $407 from $421 in 2015/16, compared to a target of $439. For wastewater, the annual cost also dropped to $625 from $632 per connection, as compared to a target of $664. For 2017/18 the new target for water is $458, with wastewater at $667.

Effective Asset Management

The leakage performance measure for 2016/17 was 227 litres per service connection per day, a decrease from 268 last year but still short of the ultimate target of 180 litres per connection per day.

On the wastewater side, it is recognized that reduction of inflow and infiltration is a key measurement of performance, and as such, 904 inspections were carried out on private property, up from 764 last year, and in comparison to a target of 500 inspections. This target will increase to 600 inspections for 2017/18.

Updating our GIS database is crucial to our Asset Management Program. Results for this OI were excellent last year with 96.9% of linear infrastructure embedded in GIS compared to a target of 92-93%. The Target range for 2017/18 is 98-99%.

Also under Effective Asset Management is Capital Budget Expenditures, recognizing that we need to maximize the annual funds approved by the NSUARB. For this year 46% of funds were spent. This can be attributed to multi-year projects such as the Aerotech WWTF, MacDonald Bridge Transmission Main, Computer Maintenance Management System and Corporate Flow Monitoring. On March 31, 2017 The Halifax Water Board approved a new target for this OI for the next fiscal year. This target has been set at 80%-90%, down from 85%-95%.

Workplace Safety and Security

Under the theme of Workplace Safety and Security, the organization saw one labour infraction resulting in a written warning compared to the maximum target of two. This is consistent with last year and continues to indicate that a culture of safety remains embedded and implemented into every aspect of our operation.

With regard to lost-time accidents, which are a key indicator for workplace safety, the organization saw 3.4 accidents per 100 employees as compared to a target of 3.0-4.0 (with a maximum of 4.5) per 100 employees, which is an increase from the 2015/16 figure of 3.0. This OI is a Gateway Indicator for the Organizational Performance Award program.

Halifax Water has a large fleet to delivery its services. Accordingly, the organization tracks the number of traffic accidents per million kilometers driven. For 2016/17, 4.84 traffic accidents per million km were recorded. This is an increase over 2015/2016's number of 3.52, and falls within the target range of 4 (maximum of 5).

Regulatory Compliance

Under the critical success factor of Regulatory Compliance, 2016/17 saw zero written warnings from NS Environment. This is the same figure as that for 2015/2016 and a credit to all Halifax Water employees and confirms that staff are focused on operations that have an impact on the environment we protect. The target for this Indicator is a maximum of two.

Also under regulatory compliance, we tracked the percentage of wastewater treatment facilities meeting discharge requirements of their operating permits for the 2016/17 fiscal year. Our wastewater treatment facilities met their discharge requirements 91.4% of the time, up from 86% and exceeding the target range of 85-90%. Compliance with federal wastewater system effluent regulations [WSER] is a key aspect of our strategic plan. The outcome for water supply plants meeting regulations was 100% last year. This OI was removed for 2016/17 as the utility is consistently achieving the target of 100% compliance.

Environmental Stewardship

During the 2016/17 fiscal year, our Pollution Prevention division of Regulatory Services inspected 528 businesses in the Halifax municipality, a marked increase from 442 in 2015/16. The target for this OI was 400.

We also continued to improve on energy management associated with our water and wastewater treatment facilities with an energy reduction of 3.8% in 2016/2017 with associated capital projects, compared to a target of 2.0%. This represents an improvement over the 2015/16 number of 2.4%. As of the Utility's largest expenses, these on-going energy reductions represent real savings, as well as reduction in our environmental foot print.

Under biosolids residuals handling, we are pleased to report that 99.4% of the biosolids residuals met the desired solids concentration, as compared to a target of 97%. This result is consistent with the 2015/2016 figure of 99%.

Motivated and Satisfied Employees

There are several organizational indicators under this category, including filling jobs with Halifax Water incumbents. For the 2016/17 fiscal year, 71% of jobs were filled from within as compared to a target of 80%. This is a slight reduction from the 2015/16 figure of 76%.

To promote harmonious labour management relations, an organizational indicator was chosen to recognize the number of grievances and arbitrations throughout the fiscal year. There were a total of 18 grievances filed during the 2016/17 fiscal year, with 0 arbitrations. This represents an improvement over the 2015/16 numbers of 23 grievances and 1 arbitration.

The Corporate Balanced Scorecard also includes an indicator of employee satisfaction which is derived from a survey that is carried out in the fall of the year. The 2016/17 survey result was a B. The target for this OI is an A-.

The number of days of absenteeism for employees is also a measure of satisfaction and motivation. Accordingly, the average number of days that an employee was absent this year stood at 7.51, up marginally from 7.3 in 2015/16, and just above the target of less than 7 days. This result compares favourably with the private sector.

Organizational Award Program

Similar to previous years, 12 organizational indicators were incorporated into an Organizational Award Program. The selected organizational indicators are determined to be the most objective and outward looking to the customers and environment we serve. The following is a summary of our organizational indicators and corresponding award point values for the 2016/17 fiscal year:

Organizational Indicator	**2016/17 Results**
Water Quality Master Plan Objectives	0.94
Customer Water Quality Survey Results	1.0
Customer Service Survey Results	1.0
Operating Expense/Revenue Ratio **(Gateway Indicator)**	1.0
Water Loss Control Reduction	0.0
Inflow & Infiltration Reduction	1.0
Percentage of Network on GIS	1.0
# of Lost Time Accidents per 100 Employees **(Gateway Indicator)**	0.6
# of Accidents per 1,000,000 kms driven	0.2
Percentage of WWTFs Compliant with NS Environment Permits	1.0
Energy Management - Water & Wastewater	1.0
Biosolids Residuals Handling	1.0
***TOTAL SCORE**	**9.74**

*The maximum attainable score is 12.0

In accordance with the Organizational Award Program criteria, eligible employees received $874 each in recognition of the good performance.

BUDGET IMPLICATIONS

With the operating expense-to-revenue ratio less than the target, funds were available within the 2016/17 operations budget for the Organizational Award Program.

ATTACHMENT

2016/17 Corporate Balanced Scorecard 12 Month Results

ITEM #5-I
HRWC Board
September 28, 2017
ATTACHMENT

2016/17
Corporate Balanced Scorecard
12 Month Results

Note: *Organizational Indicators marked with* * *are tied to the Organizational Award Program.*

Halifax Water

CSF: High Quality Drinking Water

Organizational Indicator: *

- Adherence with 5 objectives from the Water Quality Master Plan for all water systems; we must own system for one year to include results.

Objective	Total Sites	Result to March 31/17 (% of Sites Achieving Target)	Target	Distrib. Pts.
Disinfection – Chlorine Residual	**65**	**98.5%**	**80 – 100%**	**19/20**
Disinfection By-products (THMs)	**24**	**100%**	**< 80 ug/l**	**20/20**
Disinfection By-products (HAAs)	**25**	**95%**	**< 60 ug/l**	**15/20**
Particle Removal	**5**	**100%**	**<0.2 &< 1.0 NTU**	**20/20**
Corrosion Control	**n/a**	**6.1 ug/L**	**Lead; <15 ug/l**	**20/20**
Summary Total				**94/100**

Disinfection – Achieve 0.2 mg/L at all sites (100% of sites achieving residual of 0.2 on 95% of tests)
THMs – Annual Avg. of < 80 ug/L at all THM sampling sites
HAAs - Annual Avg. of < 60 ug/L at all HAA sampling sites
Particle removal – Surface water plant achieves turbidity of <0.2 NTU 95% of the time and <1.0 100% of the time
Corrosion Control – Achieve 90th percentile standing lead sample of <15 ug/L for all sample sites

Halifax Water

CSF: High Quality Drinking Water

Organizational Indicator:

- Bacteriological tests [monthly target of 99.3% free of Total Coliform]

	% Samples Free of Coliform	Target
2016/17	99.9%	99.3%

Halifax Water

CSF: High Quality Drinking Water

Organizational Indicator: *

- Customer satisfaction about water quality [Target of 85% rating water quality as good to excellent]

	Survey Results (actual)	Target
From Fall 2016 Survey	88%	75% - 85%

New target approved by Board March 30/17

2017/18 Target
80% - 85%

Halifax Water

CSF: Service Excellence

Organizational Indicator: *

- Customer satisfaction with service [Target of 90% satisfied or very satisfied]

	Survey Result (actual)	Target
From Fall 2016 Survey	95%	80% - 90%

**New target approved by Board March 30/17*

2017/18 Target
85% - 90%

Halifax Water

CSF: Service Excellence

Organizational Indicator:

- Service outages of water [# connection hours / 1000 customers]

	Hours (actual)	Target
2016/17	149	200

Halifax Water

CSF: Service Excellence

Organizational Indicator:

- Service outages of wastewater [# connection hours / 1000 customers]. (N.B. the clock starts after we know it is our problem)

	Hours (actual)	Target
2016/17	4.6	8

Halifax Water

CSF: Service Excellence

Organizational Indicator:

- Average call wait time over the year

	Seconds	Target
2016/17	51	90

**New target approved by Board March 30/17*

2017/18 Target
80

Halifax Water

CSF: Responsible Financial Management

Organizational Indicator: *

- Operating Expense/Revenue Ratio [based on annual operating budget]

	Exp/Rev ratio (actual)	Target
2016/17	0.669	0.732

*New target approved by Board March 30/17

2017/18 Target
0.748

Halifax Water

CSF: Responsible Financial Management

Organizational Indicator:

- Annual Cost per Customer Connection [Water]

	Cost/connection	Target
2016/17	$407	$439

*New target approved by Board March 30/17

2017/18 Target
$458

Halifax Water

CSF: Responsible Financial Management

Organizational Indicator:

- Annual Cost per Customer Connection [Wastewater]

	Cost/connection	Target
2016/17	$625	$664

**New target approved by Board March 30/17*

2017/18 Target
$667

Halifax Water

CSF: Effective Asset Management

Organizational Indicator: *

- Water Loss Control; target leakage allowance of 190 Litres/Service Connection/Day

	Leakage Actual	Target
2016/17	227	180 - 190

Note: Target adjusted in 2015/16 to be consistent with the latest IWA/AWWA methodology.

Halifax Water

CSF: Effective Asset Management

Organizational Indicator: *

- Inflow and Infiltration [I&I] Reduction; # of inspections on private property in relation to discharge of stormwater into the wastewater system.

	I&I Inspections	Target
2016/17	904	500

*New target approved by Board March 30/17

2017/18 Target
600

Halifax Water

CSF: Effective Asset Management

Organizational Indicator: *

- % of Water, Wastewater and Stormwater Network Available on GIS

	% Available	Target
2016/17	96.9 %	92% - 93%

*New target approved by Board March 30/17

2017/18 Target
98.0% - 99.0%

Halifax Water

CSF: Effective Asset Management

Organizational Indicator

- Capital Budget Expenditures – Maximize annual funds approved by NS Utility and Review Board by March 31, 2017

	Maximize Annual Capital Budget Expenditures	Target
2016/17	46.0 %	85% to 95% approved

**New target approved by Board March 30/17*

2017/18 Target
80% - 90% spent

Halifax Water

CSF: Workplace Safety & Security

Organizational Indicator:

- # of Incidents with written Compliance Orders received from NS Labour and Advanced Education

	Labour Infractions	Target
2016/17	1	0 - 2 (max.)

Halifax Water

CSF: Workplace Safety & Security

Organizational Indicator: *

- Lost Time Accidents [# of accidents resulting in lost time per 100 employee (FTE pro-rated)]

	Lost time accidents	Target
2016/17	3.4	3.0 – 4.0 per 100 employees (with a maximum of 4.5)

Note: This is a gateway indicator with an award program contingent on results of <4.5 lost time accidents per 100 employees

CSF: Workplace Safety & Security

Organizational Indicator: *

- # of Traffic Accidents per 1,000,000 km

	Traffic Accidents / 1,000,000 Kms	Target
2016/17	4.84	4.0 per 1,000,000 km (maximum of 5)

CSF: Workplace Safety & Security

Organizational Indicator:

- Employees are retrained or recertified before due date

	% of Employees Retrained or Recertified Before Due Date	Target
2016/17	81%	80% - 90%

Halifax Water

CSF: Workplace Safety & Security

Organizational Indicator:

- Supervisors complete weekly or bi-weekly safety talks

	% of Completed Safety Talks	Target
2016/17	80%	80% - 90%

Halifax Water

CSF: Regulatory Compliance

Organizational Indicator:

- # of public health and environmental regulatory infractions resulting in an Environmental Warning Report, Summary Offence Ticket, Ministerial Order or prosecution.

	Public Health & Env. Infract.	Target
2016/17	0	0 - 2 (max.)

Halifax Water

CSF: Regulatory Compliance

Organizational Indicator: *

- % of WWTFs complying with NSE approval permits.

	% of WWTF samples meeting NSE discharge limits	Target
2016/17	91.4%	85% - 90%

Halifax Water

CSF: Environmental Stewardship

Organizational Indicator:

- # of ICI properties in HRM inspected by Pollution Prevention [P2] Section each year

	Actual Inspected	Target
2016/17	528	400

Halifax Water

CSF: Environmental Stewardship

Organizational Indicator: *

- Energy Management [kwh/m3] ; % energy reduction associated with capital projects

	% Energy Reduction	Target
2016/17	3.8 %	2%

Halifax Water

CSF: Environmental Stewardship

Organizational Indicator: *

- Bio-solid Residuals Handling; % of sludge meeting solids concentration target - 96% of samples meet a minimum solids concentration of:
  - ✓ **25% from HHSP plants**
  - ✓ **18% from Aerotech Dewatering Facility**

	% Meet Solids Concentration Target	Target
2016/17	99.4%	97 %

Halifax Water

CSF: Motivated and Satisfied Employees

Organizational Indicator:

- # of arbitrations divided by total # of grievances.

	Arbitrations/Grievances	Target
2016/17	0/18	0 Arbitrations

Halifax Water

CSF: Motivated and Satisfied Employees

Organizational Indicator:

- % of jobs filled from within Halifax Water [excluding entry level jobs].

	% Jobs filled within	Target
2016/17	71%	80%

Halifax Water

CSF: Motivated and Satisfied Employees

Organizational Indicator:

- Employee satisfaction survey. [2009 was the benchmark year with a B result].

	Survey Result (actual)	Target
Survey in 2016	B	A-

Halifax Water

CSF: Motivated and Satisfied Employees

Organizational Indicator:

- Average number of days of absenteeism

	Avg. No. of days absenteeism	Target
2016/17	7.51	< 7 days

Halifax Water

2016/17 Organizational Award (**Actual** Results)

Organizational Indicator	2016/17 Results
Water Quality Master Plan Objectives	0.94
Customer Water Quality Survey Results	1.00
Customer Service Survey Results	1.00
Operating Expense/Revenue Ratio *[Gateway Indicator]*	1.00
Water Loss Control Reduction	0.00
Inflow & Infiltration Reduction	1.00
Percentage of Network on GIS	1.00
Energy Management – Water & Wastewater	1.00
Biosolids Residual Handling	1.00
# of Lost Time Accidents per 100 Employees *[Gateway Indicator]*	0.6
# of Traffic Accidents per 1,000,000 km	0.2
Percentage of WWTFs Compliant with NS Environment Permits	1.0
TOTAL SCORE	9.74

Halifax Water

Summary

- The track record of the CBS at Halifax Water has been very positive; it has made us a better utility.
- The CBS process continues to be an inclusive and consensus building exercise for employees.
- Staff obtains Board approval of the Organizational Award Program on an annual basis
- Organizational Award Program funding is available by meeting the Operating Expense to Revenue Ratio Target.
- The Organizational Award Program is not a given; the organization must score at least 7.0 to have an award.
- Financial targets are consistent with approved annual operating budget.

Halifax Water
Halifax Regional Water Commission

ITEM # 6-I
HRWC Board

September 28, 2017

TO: Ray Ritcey, Chair, and Members of the Halifax Regional Water Commission Board

SUBMITTED BY: *Original Signed By:*
James Campbell, Public Relations & Communications Coordinator

APPROVED: *Original Signed By:*
Carl Yates M.A.Sc., P.Eng., General Manager

DATE: September 20, 2017

SUBJECT: **2016/2017 Annual Report**

INFORMATION REPORT

ORIGIN

Ongoing operational requirement.

BACKGROUND/DISCUSSION

Staff are pleased to present the Annual Report for the 2016/2017 fiscal year. The theme of the 2016/2017 Annual Report is "A Decade of One Water" in recognition of the tenth anniversary of the Utility's mandate to provide water, wastewater and stormwater services. Responsibility for an integrated approach to water follows the transfer of Halifax Regional Municipality's wastewater and stormwater assets on August 1, 2007.

With responsibility for the full water cycle, Halifax Water has invested over $500 million in infrastructure across all three services to support its three strategic drivers of asset renewal, regulatory compliance and facilitation of growth. Of particular note, in 2007, only two of fifteen plants were compliant with regulations. All plants are now compliant or on track to meet federal wastewater system effluent regulations [WSER] by next year. Other key highlights include:

- Implementation of a seasonal disinfection program for wastewater treatment facilities discharging to the harbour with triple bottom line results.

- A wet weather management program to mitigate inflow and infiltration into the wastewater system, thereby reducing instances of treatment plant process upsets and wastewater overflows into the environment.
- A continued focus on water loss control in the distribution system, having recaptured 40 million litres/day of leakage as a result of these efforts. The utility was the first in North America to adopt the International Water Association (IWA) methodology, garnering a world class reputation.
- Implementation of an environmental management system for water and wastewater treatment facilities, certified to ISO 14001 standards. Halifax Water is the only utility in Atlantic Canada with this certification.
- A partnership with Dalhousie University through the Natural Science and Engineering Research Council (NSERC) Chair in Water Quality and Treatment the NSERC Chair has been in place since 2007. This partnership, which was recently renewed for an additional five years, has helped make Halifax Water an international leader in water research.
- Implementation of an environmental management system for water and wastewater treatment facilities, certified to ISO 14001 standards. Halifax Water is the only utility in Atlantic Canada with this certification.
- Establishment of a comprehensive emergency management program with a focus on response through the Incident Command System.
- Mitigation and adaptation programs in response to climate change for a more resilient utility into the future.

With regards to a key highlight from last year, the utility launched “Customer Connect”, our advanced metering infrastructure project. Customer Connect includes the upgrade or replacement of all 83,000 water meters to enhance customer service.

Responsible financial management remains top of mind with a focus on cost containment including a program on energy management across the utility to reduce our costs to the ultimate benefit of our customers.

In that regard, we continue to be held in high regard by our customers as measured through the annual survey conducted by Corporate Research Associates. Over 90% of customers were satisfied or very satisfied with Halifax Water’s service each and every year that the survey was conducted.

Copies of the Twenty-first Annual Report will be distributed to Regional Council members as an Information Report in the near future.

BUDGET IMPLICATIONS

Annual Report costs are included in the 2016/2017 operations budget.

ATTACHMENT

2016/2017 Annual Report

Halifax Water

Twenty-first Annual Report

March 31, 2017

A Decade of One Water

Cover image: **The three services offered by Halifax Water, with the customer and environment in mind**

MIX
Paper from responsible sources
FSC® C021322
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Design: Sharon Ward Graphic Design; Printing: Advocate Printing

Letter from the Chair

September 19, 2017
Mayor Mike Savage and Members of Regional Council

Re: 2016/17 Annual Report

On behalf of the Halifax Water Board, we are pleased to submit the utility's annual report for the year ending March 31, 2017, marking a decade with a "one water" mandate. Significant progress has been made over the last 10 years, as outlined in the General Manager's Message contained in this report.

With respect to last year, I am pleased to report that a positive trend continues with improvements in governance, financial results and customer service. The Board approved revised Terms of Reference for its effective operation, including Terms of Reference for the three committees of the Board: the Board Executive; Audit and Finance; and Environment, Health and Safety.

The Utility submitted an application to the Nova Scotia Utility and Review Board (NSUARB) last fall, with proposed changes to the stormwater rate structure based on the approved Cost of Service Manual. This culminated from a review of best practice and three years of administration of the stormwater charge, initially implemented in July 2013. The application was well received, with refinements to incent non-residential customers to minimize peak run-off and a tiered rate structure for residential customers, consistent with user-pay principles. These changes put Halifax Water rate structures in line with industry best practice and, more importantly, in line with constructive feedback from customers and stakeholders. With the NSUARB Decision in April, the new rate structure came in to effect on July 1, 2017.

The Utility finished the year in an excellent financial position with a net profit of $8.86 million, compared to a budget profit of $0.16 million. Long term debt for the utility decreased by $12.6 million with total outstanding debt as of March 31, 2017, at $204.3 million. In accordance with the agreement between Halifax Water and the Halifax Regional Municipality, a dividend in the amount of $4.6 million was provided. With a strong financial trend continuing this year, Halifax Water will not need to increase rates this year or next.

The past year saw significant accomplishments to enhance customer service. Of particular note was the implementation of advanced metering infrastructure and a new operations management system through Cityworks to improve the customer experience. Last year also saw our Customer Care Centre step up to take all service calls from the customer, whether they are billing or operations related. On that note, a special thank you is extended to our customers and Regional Council who have entrusted us with the stewardship responsibility to deliver water, wastewater and stormwater service under a one water framework.

Respectfully Submitted,

Ray Ritcey
Chair of the Board

A Decade of One Water

It seems like only yesterday that Halifax Water was given responsibility for stewardship of all things water with the transfer of wastewater and stormwater assets from the municipality in 2007. This transfer was, in large part, based on the track record of the utility since its inception in 1945 and its regional mandate in 1996.

So what have we done? In terms of accomplishments over the past ten years, Halifax Water has made its mark on all three services (water, wastewater and stormwater) with:

• Over $500 million in infrastructure investments, including upgrades and expansions of the Eastern Passage and Aerotech Wastewater Treatment Facilities to meet federal wastewater system effluent regulations [WSER] and facilitate growth.

• Leadership on the recovery of the Halifax Wastewater Treatment Facility after the flood incident of January, 2009.

• Significantly improved compliance with WSER for all wastewater plants; in 2007, only two of fifteen plants were compliant with regulations. All plants are now compliant or on track for compliance by next year.

• Implementation of a wet weather management program to mitigate inflow and infiltration into the wastewater system, thereby reducing wastewater overflows into the environment.

• Continued focus on water loss control in the distribution system, garnering a world class reputation. Halifax Water has recaptured 40 million litres/day of leakage as a result of its efforts and was the first utility in North America to adopt the International Water Association (IWA) methodology.

• Implementation of a seasonal disinfection program for wastewater treatment facilities discharging to the harbour with triple bottom line results.

• Implementation of a robust emergency management program with a focus on response through the incident command system.

• Mitigation and adaptation programs in response to climate change for a more resilient utility.

• Leadership in water research with Dalhousie University through the Natural Science and Engineering Research Council (NSERC) Chair in Water Quality and Treatment (the NSERC Chair has been in place since 2007 and recently renewed for an additional five years).

• Implementation of an environmental management system for water and wastewater treatment facilities, certified to ISO 14001 standards. Halifax Water is the only utility in Atlantic Canada with this certification.

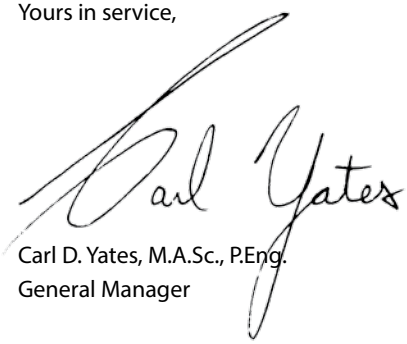
• Implementation of advanced metering infrastructure to enhance customer service.

• Responsible financial management with a focus on cost containment including a program on energy management across the utility to reduce our ecological footprint and costs.

• Continued high regard from customers as measured through the annual survey conducted by Corporate Research Associates. Over 90% of customers were satisfied or very satisfied with Halifax Water's service each and every year that the survey was conducted.

Although there are many more accomplishments to add to the list, it is the endorsement from customers that keeps us going. Customer Service is the lifeblood of Halifax Water and central to our mission.

Yours in service,



Carl D. Yates, M.A.Sc., P.Eng.
General Manager

Our Mission

To provide world-class services for our customers and our environment.

Our Vision

- *We will provide our customers with high quality water, wastewater, and stormwater services.*

- *Through the adoption of best practices, we will place the highest value on public health, customer service, fiscal responsibility, workplace safety and security, asset management, regulatory compliance, and stewardship of the environment.*

- *We will fully engage employees through teamwork, innovation, and professional development.*

Halifax Water

Board of Commissioners

March 31, 2017

Ray Ritcey, BComm, MBA CPA/CGA
Chair

Councillor Russell Walker
Vice Chair

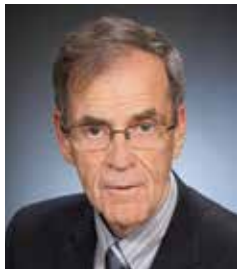
Councillor Lisa Blackburn
Commissioner

Councillor Steve Streatch
Commissioner

Mayor Mike Savage
Commissioner

Darlene Fenton
Commissioner

Jacques Dubé
Commissioner



Don Mason, P.Eng., MCIP
Commissioner

Executive Staff

Carl Yates, M.A.Sc., P.Eng.
General Manager

Cathie O'Toole, BA, MBA, CPA/CGA
Director, Corporate Services

Jamie Hannam, MBA, P.Eng.
Director, Engineering and Information Services

Kenda MacKenzie, P.Eng.
Director, Regulatory Services

Susheel Arora, M.A.Sc., P.Eng.
Director, Wastewater and Stormwater Services

Reid Campbell, M. Eng., P.Eng.
Director, Water Services

Contents

How to reach us:

For more information about Halifax Water and its services, visit our website at www.halifaxwater.ca, contact Customer Service at (902) 420-9287, e-mail us at customerservice@halifaxwater.ca, fax us at (902) 490-4749, or write us at P.O. Box 8388 RPO CSC, Halifax, N.S., B3K 5M1. You can also reach us via Facebook and Twitter at @HalifaxWater.

General Information of Utility

Year Ended March 31, 2017

WATER

Precipitation

Measured at Pockwock	
Rainfall	1 620.90 mm
Snowfall	349.25 cm
Measured at Lake Major	
Rainfall	1 230.8 mm
Snowfall	211.5 cm

Sources of Supply and Watershed Areas

Pockwock Lake	5 661 ha
Safe Yield	145 500 m^3/day
Chain Lake	206 ha
Safe Yield	4 500 m^3/day
Lake Major	6 944 ha
Safe Yield	65 900 m^3/day
Lake Lemont/Topsail	346 ha
Safe Yield	4 500 m^3/day
Bennery Lake	644 ha
Safe Yield	2 300 m^3/day

Water Supply Production (Cubic Metres)

Pockwock Lake	29 867 945
Lake Major	12 140 028
Bennery Lake	308 100
Small Systems	47 216
Total	**42 633 289**

Storage Reservoirs (Elevation Above Sea Level)

Lake Major	(60 m)	9 092 m^3
Pockwock	(170 m)	13 600 m^3
Geizer 158	(158 m)	36 400 m^3
Geizer 123	(123 m)	31 800 m^3
Cowie	(113 m)	11 400 m^3
Robie	(82 m)	15 900 m^3
Lakeside /Timberlea	(119 m)	5 455 m^3
Mount Edward 1	(119 m)	22 728 m^3
Mount Edward 2	(119 m)	22 728 m^3
Akerley Blvd.	(119 m)	37 727 m^3
North Preston	(125 m)	1 659 m^3
Meadowbrook	(95 m)	9 091 m^3
Sampson	(123 m)	12 273 m^3
Stokil	(123 m)	23 636 m^3
Waverley	(86 m)	1 364 m^3
Middle Musquodoboit	(81m)	275 m^3
Aerotech	(174 m)	4 085 m^3
Beaver Bank	(156 m)	6 937 m^3
Total Storage Capacity		**259 213 m^3**

Transmission and Distribution System

Size of mains	19 mm - 1 500 mm
Total water mains	1 582 km
Main valves	15 049
Fire hydrants	8 356
Distribution Pumping Stations	20
Pressure Control/Flow Meter Chambers	140

Services and Meters

Water	
Sprinkler services (25 mm - 300 mm)	2 117
Supply services (10 mm - 400 mm)	88 073
Meters (15 mm - 250 mm)	83 406
Wastewater services	80 143

Treatment Processes

J. Douglas Kline Water Supply Plant

Source	- Pockwock Lake
Process	- Dual media direct filtration - Iron and manganese removal
8 filters	143 m^2/each
Max. flow rate	0.137 m^3/m^2/min
Design capacity	227 000 m^3/day
Design average flows	81 606 m^3/day

Lake Major Water Supply Plant

Source	- Lake Major
Process	- Upflow clarification and trimedia filtration - Iron and manganese removal
4 filters	85 m^2/each
Max. flow rate	0.192 m^3/m^2/min
Design capacity	94 000 m^3/day
Design average flows	33 260 m^3/day

Bennery Lake

Source	- Bennery Lake
Process	- Manganese removal, sedimentation, dual media filtration
2 filters	26.65 m^2/each
Max. flow capacity	0.10/m^3/m^2/min
Design capacity	7 950 m^3/day
Design average flows	844 m^3/day

Bomont

Source - Shubenacadie River
Process - Nano Filtration / Ionic Exchange Resin
Design Average Flows 5 m^3/day

Collins Park

Source - Lake Fletcher
Process - Ultra Filtration / Nano Filtration
Design average flows 40 m^3/day

Middle Musquodoboit

Source- Musquodoboit River
Process- Raw water infiltration gallery
- Ultra Filtration / Nano Filtration
Design average flows 49 m^3/day

Five Island Lake

Source - 1 well
Process - Ultraviolet disinfection
Design average flows 9 m^3/day

Silver Sands

Source - 2 wells
Process - Green sand pressure filters
-Iron and manganese removal
Design average flows 25 m^3/day

Miller Lake

Source - 3 wells
Process - Arsenic removal with G2 Media
No Production - bulk water supply

Population Served

Halifax Municipality	
Estimated population served	365 000
Consumption per capita (all customers)	265 litres/day

Glossary of Terms

ha - hectare
m - metre
m^2 - square metre
m^3 - cubic metre
mm - millimetre
km - kilometre
cm - centimetre

General Information of Utility

Year Ended March 31, 2017

WASTEWATER/STORMWATER

Treatment Processes

Halifax

Process - Enhanced Primary - UV
Design average flows - 139 900 m^3/day
Area served - Halifax
Receiving water - Halifax Harbour
Volume treated - 52,272,321 m^3

Dartmouth

Process - Enhanced Primary - UV
Design average flows - 83 800 m^3/day
Area served - Dartmouth
Receiving water - Halifax Harbour
Volume treated - 18,818,967 m^3

Herring Cove

Process - Enhanced Primary - UV
Design average flows - 28 500 m^3/day
Area served - Halifax-Herring Cove
Receiving water - Halifax Harbour (Outer)
Volume treated - 3,633,821 m^3

Mill Cove

Process - Secondary - UV / Pure oxygen Activated sludge
Design average flows - 28 400 m^3/day
Area served - Bedford-Sackville
Receiving water - Bedford Basin
Volume treated - 8,652,553 m^3

Eastern Passage

Process - Secondary - UV / Conventional Activated sludge
Design average flows - 25 000 m^3/day
Area served - Cole Harbour-Eastern Passage
Receiving water - Halifax Harbour
Volume treated - 5,161,571 m^3

Timberlea

Process - Secondary - Sodium Hypochlorite / RBC
Design average flows - 4 540 m^3/day
Area served - Lakeside-Timberlea
Receiving water - Nine Mile River
Volume treated - 897,691 m^3

Aerotech

Process - Tertiary - UV /SBR
Design average flows - 1 360 m^3/day
Area served - Aerotech Park-Airport
Receiving water - Johnson River
Volume treated - 304,573 m^3

Springfield Lake

Prosess - Secondary - UV Activated sludge
Design average flows - 543 m^3/day
Area served - Springfield Lake
Receiving water - Lisle Lake
Volume treated - 209,398 m^3

Fall River

Process - Tertiary - UV / Activated sludge and post filtration
Design average flows - 454.5 m^3/day
Area served - Lockview-McPherson Road
Receiving water - Lake Fletcher
Volume treated - 53,819 m^3

North Preston

Process - Tertiary - UV / SBR and engineered wetland
Design average flows - 680 m^3/day
Area served - North Preston
Receiving water - Winder Lake
Volume treated - 244,407 m^3

Middle Musquodoboit

Process - Secondary - UV / RBC
Design average flows - 114 m^3/day
Area served - Middle Musquodoboit
Receiving water - Musquodoboit River
Volume treated - 71,195 m^3

Uplands Park

Process - Tertiary - UV / Trickling filter and wetland
Design average flows - 91 m^3/day
Area served - Uplands Park
Receiving water - Sandy Lake
Volume treated - 30,251 m^3

Wellington

Process - Tertiary - UV / Activated sludge /reed bed
Design average flows - 68 m^3/day
Area served - Wellington
Receiving water - Grand Lake
Volume treated - 6,752 m^3

Frame

Process - Secondary - Membrane Bioreactor / UV
Design average flows - 80 m^3/day
Area served - Frame Sub-Division
Receiving water - Lake William
Volume treated - 6,616 m^3

Belmont

Process - Secondary - Sodium Hypochlorate Extended Aeration
Design average flows - 114 m^3/day
Area served - Belmont Sub-Division
Receiving water - Halifax Harbour

RBC = Rotating Biological Contactor;
SBR = Sequencing Batch reactor;
UV = Ultra Violet
Volume treated - 40,880 m^3
(Decommissioned December 2016)

Wastewater & Stormwater Collection System

Size of pipes	38 mm - 3 600 mm
Total sewer length	2 555 km
Total manholes	39 977
Total Pumping Stations	166
Total ditch length	507 km
Driveway culverts	Approximately 18 000
Cross culverts	1748
Holding Tanks and Retention Ponds	54 (12-244,000 m^3)
Catch basins	23 810

High Quality Water

LEAD IN DRINKING WATER

Lead in drinking water remained a focus for Halifax Water in 2016/17. In September of 2017, the Halifax Water Board approved a business plan to facilitate removal of all lead service lines (LSLs) from the Halifax Water system, both those in the public right-of-way, which are owned by Halifax Water, and on private property which belongs to the property owner.

LSLs are found in areas which were connected to the public water system before 1960; these include peninsular Halifax and central Dartmouth. It is estimated that there are 2000-2500 public LSLs remaining and 10,000-15,000 on private property.

With most LSLs on private property, one focus of the program will be to assist property owners in the identification of LSLs. This will involve a thorough review of Halifax Water installation and maintenance records dating back over the last 100 years. It will also involve outreach to customers and development of tools to help them determine if they have a lead service line.
While Halifax Water has replaced the vast majority of its LSLs over the last 30+ years, many homeowners have not. There are a number of barriers to property owners replacing their LSLs. One barrier is certainly cost but other barriers include, lack of familiarity with the construction process, lack of understanding of the potential health risks, lack of awareness of the problem or not being sure if they have a lead service line. Over the coming months, Halifax Water will continue to develop programs to remove or lessen barriers to customers.

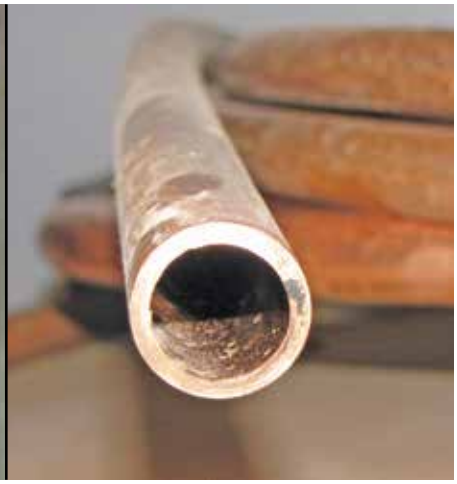
Halifax Water staff have been participating in a North America-wide effort to understand and address the LSL issue. Several Halifax Water staff have participated in the development of industry policy through the American Water Works Association. Halifax Water staff has also taken part in industry sponsored research to develop methods for locating and replacing LSLs.

Halifax Water replacing a lead service line with a new copper line

In the last year, Halifax Water has added two new features to its LSL replacement program. Since disturbance or replacement of an LSL can result in a short term increase in lead levels in a home, Halifax Water will now provide pitcher style filters to homes at risk of high lead levels. These include homes with lead services lines that have been disturbed and not yet replaced; and homes that have tested for high lead levels and a contractor is scheduled to begin replacement work.

The second change provides options for homeowners undergoing an LSL

Lead pipe



Copper pipe

replacement. Halifax Water schedules the public LSL replacement after the property owner replaces the private property portion. For reasons such as weather, scheduling, street permits and locates, this gap between the private and public replacement can be two weeks or more during which there may be elevated lead levels in the home. While exposure to lead can be managed in this situation, some customers have expressed concern about this gap. Halifax Water has identified three contractors who have been approved by Halifax Water to replace the public portion of the LSL. If the homeowner chooses to employ one of these contractors, they will coordinate replacement of the public and private into a single project. Homeowners are encouraged to get several prices for qualified contractors prior to making their selection. Information about this program and all things related to LSLs are found on the Halifax Water website.

SOURCE WATER QUALITY

Geosmin continues to occur in the Pockwock water supply. In 2016, geosmin occurred once again beginning in August and lasting until winter 2017. Geosmin is produced from both algae and soil based bacteria. It is not a health concern but does have an earthy, musty taste and odour that is apparent to some consumers.

Since its first occurence in 2012, Halifax Water has studied both the occurrence of geosmin and treatment options to remove geosmin. There are several treatment options but all are very costly from both an installation and long term operations perspective.

Halifax Water is now looking at geosmin from the broader perspective of other source water changes that have been observed. Halifax Water now has information to suggest that the lakes which supply water to our water systems are undergoing recovery from the effects of acid rain. Decades of emissions from industrialization and fossil fuel consumption have caused lakes in eastern Canada, and elsewhere, to acidify. Halifax area lakes typically have a pH of 5-6 or lower. Legislative efforts, improved technology and the reduction of coal fired power generation has reduced acid rain and permitted lakes to recover. Halifax Water has observed a trend of increasing pH in local lakes.

Pockwock Lake with wind turbines in background

This is a positive occurrence from an environmental perspective, and for our society at large. From a water treatment perspective it presents some challenges. Increasing pH results in increased levels of natural organic matter (NOM) in our lakes. NOM must be removed in the treatment process because it can lead to disinfection by-products, and also to make drinking water aesthetically acceptable. Increased NOM presents an increased treatment challenge for treatment plants and leads directly to increased operating costs. Increased pH also results in an improved aquatic habitat for fish and the species they rely on for food. This includes microbes and plankton that must be removed in the treatment process, but also species like algae which can be the cause of a variety of taste and odour causing compounds, such as geosmin.

Halifax Water will be doing increasing study and research over the coming years to fully understand the impacts of recovery on our lakes, the treatment challenges that come with lake recovery, and to plan improvements to treatment processes.

RESEARCH CHAIR

On April 1, 2017, Halifax Water and Dr. Graham Gagnon at Dalhousie University successfully renewed the NSERC/Halifax Water Industrial Research Chair in Water Quality and Treatment for another 5 year term. Under this program, the Natural Sciences and Engineering Research Council (NSERC) of Canada matches funds provided by Halifax Water and other partners to Dalhousie University, to fund research into drinking water quality issues. Many of our efforts to manage lead in drinking water and improve treatment processes have been developed based on research conducted at Dalhousie.

Research conducted over the next five years will be focused on the themes of Understanding Source Water Changes

(such as lake recovery), Adapting Treatment Processes to Meet Source Water Challenges, and Distribution System Water Quality.

Additionally, Halifax Water also joined an application to NSERC by Drs. Monica Emelko at the University of Waterloo and Uldis Silins at the University of Alberta to establish a national network to study how management of forested water sources can improve drinking water quality. This application was successful and the network will be established in 2017. This will result in two other Dalhousie University researchers, Dr. Rob Jamieson and Dr. Peter Duinker working in Halifax Water watersheds to develop tools and techniques for source water protection in collaboration with other network partners across Canada.

2016 DROUGHT

2016 will be remembered across Nova Scotia for the drought that impacted water supplies and many households on private wells.

While many Halifax Water sources experienced close to historically low lake levels, the impacts of the drought were experienced most directly at Lake Major.

In early September, low water levels in Lake Major resulted in interruption to downstream flows into the Little Salmon River. Later in September, Halifax Water called on its customers to undertake mandatory water use restrictions and began contingency planning in the event lake levels continued to drop.

Lake Major Dam September 14, 2016

Lake Major Dam October 21, 2016

Both Halifax Water staff and customers responded well to the call to action.

Water consumption in the Lake Major system decreased by 3 million litres/day as a result of the restrictions and increased leak detection and repair efforts.

As a result of this experience, Halifax Water will explore modifying the design of a planned new pumping station at Lake Major to access deeper areas of Lake Major.

Lake Major Pumping Station

WATER TREATMENT PLANT IMPROVEMENTS

Halifax Water periodically studies each of its treatment facilities to assess upgrades to improve treatment plant performance replacement. Each plant has a multi year capital plan based on these studies.

Last year Halifax Water began a project to replace the filter underdrains and filter media at the J. Douglas Kline Water Supply plant. New media and underdrains will

improve plant performance and position the plant for challenges that are likely to arise from changing source water quality. The project will also include the installation of air scour. Air scour is a technology to clean filters at the end of each run that has been developed since the plant was designed in the mid 1970's. Filters will be upgraded in a multi-phase project over the next two years to maintain plant operation through the project.

LAKE MAJOR DAM

Last year, Halifax Water completed the design of a new dam for Lake Major. The existing Lake Major dam is due for replacement due to its age and condition. The new dam will improve Halifax Water's ability to manage flows into the Little Salmon River and meet new fisheries maintenance requirements mandated by Fisheries and Oceans Canada.

The dam design will incorporate a labrynth spillway which will enable the dam to pass more water while protecting upstream properties from flooding.

The project was tendered in the Spring of 2017 and construction is planned to begin once permits are received from approval authorities.

LOCATES

Part of the business of a modern utility is to respond to calls from contractors and other utilities to locate buried infrastructure. Occupational health and safety regulations have resulted in a large increase in demand for locates by Halifax Water and other utilities.

Halifax Water is working to implement a new locates process through its computerized maintenance management system, City Works. Additional staff will be hired in 2017 to assist with the increasing volume of locates.

Later in 2017, Halifax Water is expected to join a computerized, internet based one call service provided for the Halifax area.

CUSTOMER CONNECT

In December 2016, Halifax Water launched Customer Connect, its advanced metering infrastructure (AMI) project.

The Customer Connect project includes the replacement or upgrade of all 83,000 water meters to current technology. Once upgraded, meters will no longer be read manually but will be read hourly by a radio transmitter on the outside of a customer's premise and communicated to a fixed network located throughout the service area.

Installation of enabling software and network design will take place, beginning in the Spring of 2017, and mass deployment of new water meters will begin in September of 2017, after the completion of test phases in Beaver Bank and north end Halifax in the summer of 2017.

In addition to ending manual meter reading, Customer Connect, will provide Halifax Water Customer Service staff with more detailed information which will allow them to work with customers to a greater degree on resolving billing issues. It will also vastly reduce billing errors and estimated bills. As the project evolves, further functionality will be added, including automatic alerts to customers about leaks or unusual consumption patterns and the ability for customers to view consumption via an online web portal.

The meter installation phase of Customer Connect is expected to be completed in 2020.

Customer Connect digital water meter and radio transmitter

Responsible Financial Management

ANNUAL FINANCIAL RESULTS

The Utility received a clean audit opinion for the fiscal year ended March 31, 2017. The financial statements are presented in accordance with International Financial Reporting Standards (IFRS). Halifax Water also produces financial information in the format required by the NSUARB - the NSUARB Accounting and Reporting Handbook (Handbook) for Water Utilities.

The financial summary information shown on page 45 of the annual report aligns with the NSUARB Handbook. The external financial statements reproduced on pages 46 to 72 of the annual report align with IFRS and were prepared in conjunction with the annual audit by Grant Thornton. Ongoing differences between NSUARB and IFRS requirements will steadily increase as debt increases. IFRS does introduce more volatility, particularly around post-employment benefits. The NSUARB handbook will continue to be used for rate making purposes.

The underlying activities and operating results are similar under the two standards. The key differences are:

1) IFRS includes depreciation on contributed assets in the income statement, resulting in higher depreciation expense,

2) IFRS includes the amortization of contributed capital in the income statement, resulting in higher non-operating revenue,

3) IFRS requires componentization of assets records and shorter useful lives, resulting in higher depreciation expense,

4) IFRS does not permit the appropriation of long term debt principle payments in the income statement, resulting in lower non-operating expenses,

Painting the interior walls and columns at the Geizer 158 Reservoir

5) IFRS requires the reporting of the full actuarial liability of employee future benefits as Other Comprehensive Income. This may result in either positive or negative impacts on income, and

6) IFRS requires contributed capital be treated as a long-term liability, resulting in much higher long-term liabilities and much lower equity.

The Net Income for the year under the NSUARB Handbook is $8.9 M. Under IFRS, earnings for the year are $23.2 million, and Total Comprehensive Earnings are $23.9 million. The main differences are debt principle appropriations of $21.3 million that are not included as an expense under IFRS, and some differences in how assets are componentized and depreciated resulting in $7 million dollars of additional depreciation expense. ($8.9 M + $21.3 M - $7 M = $23.2 M IFRS Earnings for the Year.) IFRS requires the reporting of changes in the full actuarial liability of employee future benefits as Other Comprehensive Income. This may result in either positive or negative impacts on income in any given year. In 2016/17, this resulted in a small improvement which is reflected as Other Comprehensive Income of $700 thousand, bringing IFRS Total Comprehensive Earnings to $23.9 million. ($23.2 IFRS Earnings for the Year, plus $700 thousand Other Comprehensive Income).

Halifax Water's cash balances and liquidity have increased since 2016. Plant in Service assets, net of Accumulated Depreciation, is $1.17 billion, $9.7 million higher than this time last year. A total of 318 Capital Work Orders were closed during the year, primarily in the final two months, representing $49.7 million in Plant In Service Additions. This was offset by Retirements of Plant In Service of $2.2 million and Depreciation of $37.8 million. The Geizer 158 Reservoir Rehabilitation was the largest capital project completed in the fiscal year, with a value of $5.1

million. The Governor's Brook subdivision represented the largest contributed asset addition at $3.7 million. Capital Assets Under Construction increased by $9.9 million to $28.4 million. The following tables highlight the major projects completed and still in progress:

Capital Asset Additions	Cumulative '000
Geizer 158 Reservoir Rehab	**$5,135**
Governor's Brook Subdivision	**$3,743**
Belmont Pump Station & Forcemain	**$2,735**
Rockingham South	**$2,435**
All other projects	**$35,616**
Total	**$49,664**

Capital Assets Under Construction	Cumulative '000
Macdonald Bridge Transmission Main	**$6,282**
Aerotech Wastewater Treatment Facility	**$5,359**
Computerized Maintenance Management System	**$3,135**
Corporate Flow Monitoring Program	**$1,167**
All other projects	**$12,462**
Total	**$28,406**

The major projects underway at the end of 2016/17 include the Macdonald Bridge Transmission Main, the Aerotech Wastewater Treatment Facility Upgrade, the Computerized Maintenance Management System (CMMS), and Corporate Flow Monitoring Program.

Current liabilities decreased by $5.4 million to $41.8 million, compared to the prior year. Amounts payable to the municipality are down $4.3 million as most capital and operating items were settled prior to year-end. The current portion of Long Term Debt balance of $21.7 million is $1.5 million less than prior year despite obtaining new debt in the fall debenture because there are no amounts to be refinanced in the next year.

The Accrued Post Retirement Benefits, Accrued Long Service Award, Deferred Pension Liability and Supplementary Employee Retirement Plan (SERP) have been updated based on the year end actuarial reports. The Deferred Pension Liability is $58.5 million, an increase of $4.2 million. For rate setting purposes, the NSUARB considers Pension costs on a cash basis, not on the basis of the full Pension liability and expense accrual.

Long Term Debt is down $12.6 million from last year, which is a net of new debt of $7.1 million, repayments of $21.2 million, and a decrease in the Current Portion of Long Term Debt of $1.5 million. The debt service ratio of 21.7% is well below the maximum 35% ratio allowed under the blanket guarantee agreement with Halifax Regional Municipality.
The following discussion of Operating Results is based on the NSUARB Accounting and Reporting Handbook, as this is what budgets and rates are based on.

Long Term Debt by Service	2016/17 '000	2015/16 '000
Water	**$59,599**	$62,042
Wastewater	**$133,409**	$62,042
Stormwater	**$11,324**	$11,083
Combined	**$204,333**	$216,949

Debt Service Ratio by Service	YTD Debt Servicing Cost Ratio	
	2016/17	2015/16
Water	**19.5%**	19.8%
Wastewater	**24.2%**	23.3%
Stormwater	**17.0%**	15.6%
Combined	**21.7%**	22.3%

The following table compares the results with the budget approved at the January 28, 2016 Board meeting. The final results are $8.7 million better than budget with Revenue finishing higher than budget and Expenses finishing lower than budget.

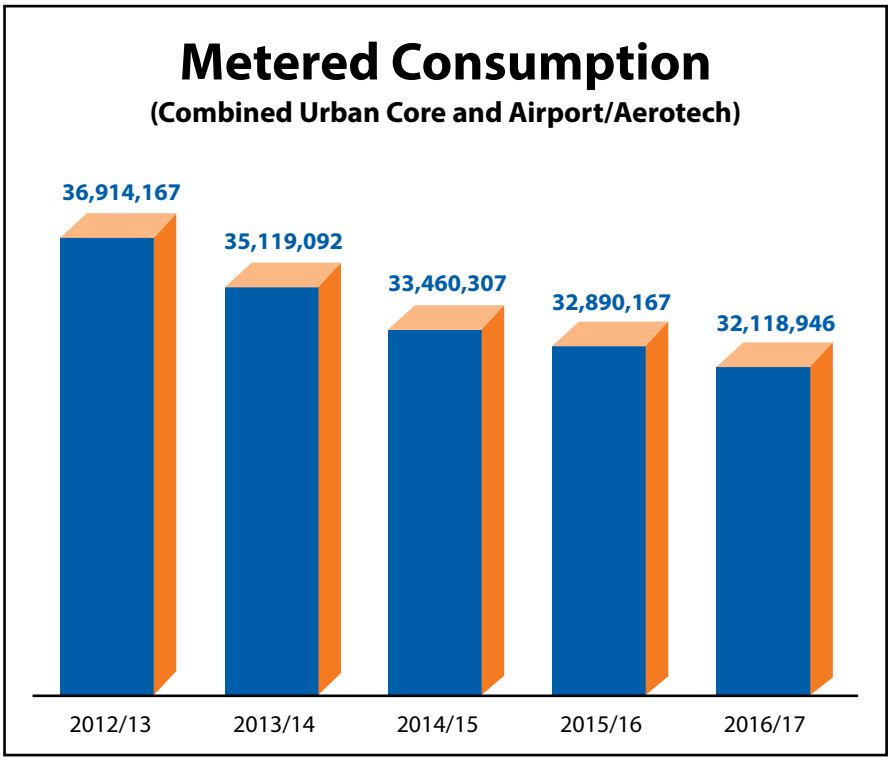
Summarized Consolidated Operating Results	Actual 2016/17 '000	Budget 2016/17 '000	$ Variance	% Variance
Operating Revenue	**$137,997**	$135,675	$2,322	1.7%
Operating Expenses	**$97,839**	$102,424	($4,585)	-4.5%
Operating Profit (Loss)	**$40,158**	$33,251	$6,907	20.8%
Non Operating Revenue	**$3,322**	$3,314	$8	0.2%
Non Operating Expenditures	**$34,622**	$36,410	($1,788)	-4.9%
Net Surplus (Deficit)	**$8,858**	$156	$8,702	5578%

The Net Surplus for the year is $8.9 million, an increase from the surplus of $4.9 million in the prior year.

The cumulative Operating Surplus of $7.8 million at the beginning of the fiscal year has grown to $16.7 million with the year end profit of $8.9 million. The accumulated Operating Surplus is expected to be drawn down in 2017/18 with a budget loss of $6.9 million in 2017/18.

Billed consumption was down 2.4% compared to the prior year. The utility had budgeted for a 3% decrease in billed consumption for 2016/17, so this is a better result than expected. The 3% projection was based on the 4 Year Historic Average Consumption Decrease of 2.68% as at March 31, 2014. The updated 4 Year Historic Average Consumption Decrease is 3.4% based on the most recently completed and audited fiscal year.

The following table shows operating results for each service.



Year to Date Operating Results by Service		
	2016/17	2015/16
	'000	'000
Water	**$3,731**	$1,136
Wastewater	**$3,369**	$1,621
Stormwater	**$1,759**	$2,120
Net Surplus (Deficit)	**$8,858**	$4,877

Water Operations

Water Operations show a profit of $3.7 million, compared to a profit of $1.1 million for the previous year. Water revenue is up $3.3 million. A reduction in Public Fire Protection revenue is offset by higher Metered Sales and Private Fire Protection revenue. Operating Expenses are up less than $0.1 million, with higher Administration & Pension offset by lower Water Supply & Treatment and Transmission & Distribution.

Wastewater Operations

Wastewater Operations show a profit of $3.4 million, up from a profit of $1.6 million in the prior year. Wastewater revenue has increased $3.0 million from the prior year, with Metered Sales and Septage Tipping Fees accounting for the increase. Operating expenses have increased by $1.3 million from the previous year in relation to Wastewater Collection and Wastewater Treatment Plants. Higher costs in Administration and Pension are for the recording of the final Pension expense.

Stormwater Operations

Stormwater Operations show a profit of $1.8 million, a decline from the profit of $2.1 million for the same period last year.

Revenue is down less than $0.1 million and Expenses are up $0.2 million as compared to the prior year figures. A portion of Investment Income was allocated to Stormwater for the first time in 2016/17, a total of $0.1 million. Financial Expenses are up $0.2 million, reflecting the growing capital expenditures and associated debt servicing costs for Stormwater.

Activities regulated by the NSUARB show a profit of $7.9 million, ahead of the $4 million profit last year. Unregulated activities show a profit of $971 thousand compared to a profit of $855 thousand in the prior year. The improvement is mainly due to increased revenue from Septage Tipping Fees; and there is also increased income from energy generation activities.

Results by Activity		
	2016/17	2015/16
	'000	'000
Regulated Activities	**$7,887**	$4,022
Unregulated Activities	**$971**	$855
Net Surplus (Deficit)	**$8,858**	$4,877

COST CONTAINMENT

Cost Containment is an on-going focus for the Utility to help maintain and stabilize rates. A formal cost containment program has been in place for four years. For 2016/17, cost containment initiatives totaled $5.1 million, and were reported to the NSUARB on June 30, 2017.

REGULATORY ACTIVITY

On April 1, 2016 rates for water and wastewater service increased. This was the the final year of rate increases from Halifax Water's November 24, 2014 Rate Application. No applications for water, wastewater, or stormwater rate increases were made in 2016/17, or planned for 2017/18.

From a competitiveness perspective, Halifax Water's rates compare very favorably and continue to be among the lowest in Canada. The average residential bill for water, wastewater and stormwater service is $805 per year, compared to the average of $889 from benchmarked Canadian cities.

Halifax Water engaged a consultant to conduct a Rate Affordability Study in 2016/17. The research addresses the following questions:

1. Are residential rates for water / wastewater / stormwater in the service area covered by Halifax Water affordable

at the community level?

2. Are there residential sub groups in the population for which current rates place undue hardship on the user?

3. If there are such subgroups, what can be done to alleviate or reduce undue hardship?

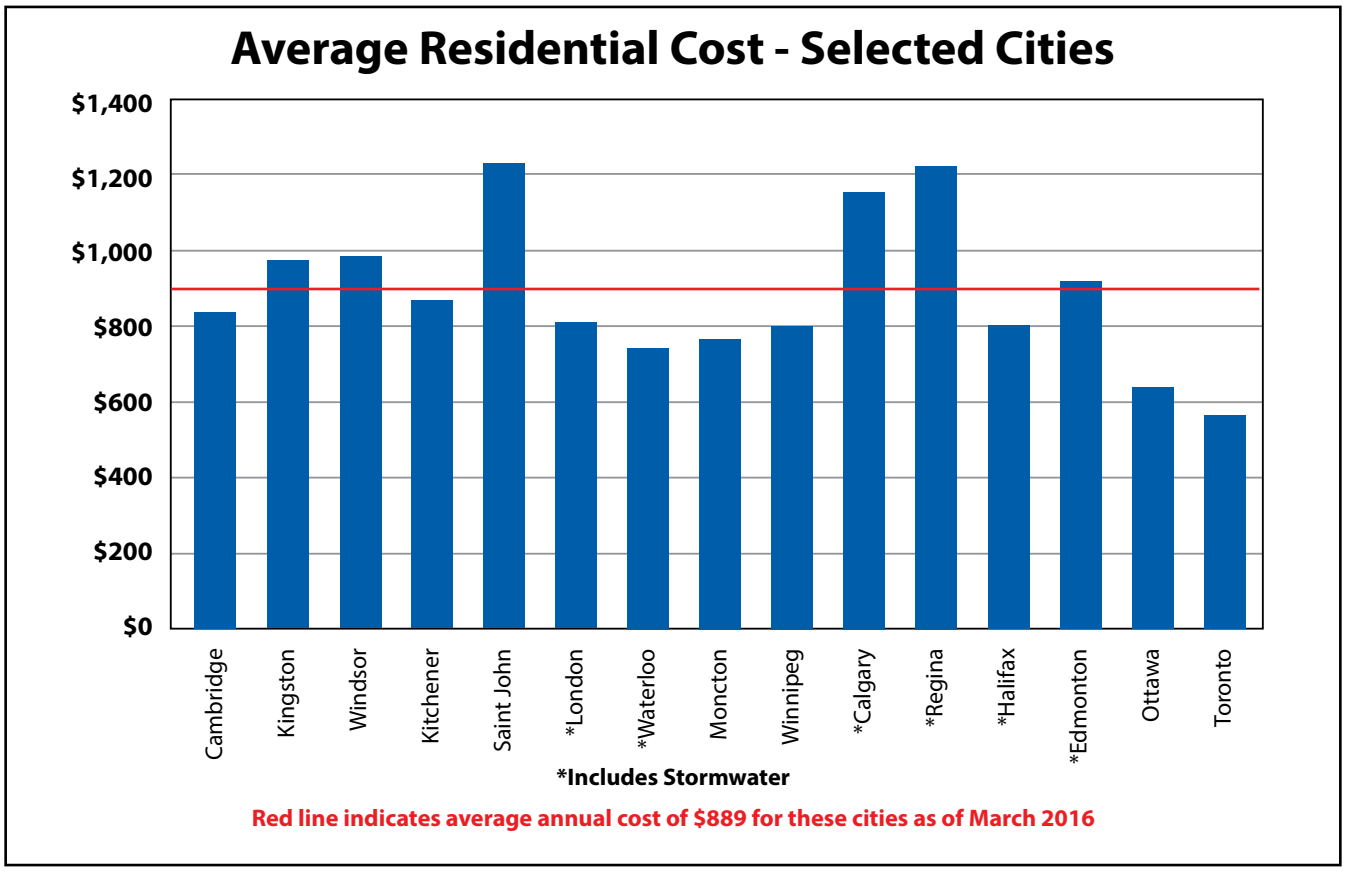
4. Are Halifax Water service rates for commercial users in line with those in other Canadian cities?

The results from this research will be presented to the Halifax Water Board in 2017/18.

STORMWATER COST OF SERVICE AND RATES

In May 2016 the NSUARB released a Decision on Halifax Water's Application to amend the Cost of Service Manual for Stormwater. Halifax Water put forward proposals in 2015/16 after conducting a review of how the initial stormwater cost of service and rates compared to best practice, and whether equity and administration could be improved. The outcome from the Decision was very positive and has provided the utility with good direction to shape an application to adjust rates for stormwater service, which was filed on October 31, 2016.

A public hearing took place February 15, 2017. On April 12, 2017 the NSUARB released a Decision on revised Stormwater rates for residential and Industrial, Commercial, Institutional (ICI), effective July 1, 2017. As a result of the Decision, 88% of customers will see their stormwater bills decreased.



Service Excellence

CUSTOMER CARE CENTRE

2016/17 was an exciting year for customer care service at Halifax Water. The Commission ended the year with 83,722 water customer connections, 80,143 wastewater customer connections, and 96,308 stormwater customers.

Call volumes increased by 3.5% in 2016/17 compared to 2015/16.

Customer Service answered 68,921 calls, and the average speed of answer was 51 seconds. On average, customer service answered 300 calls per day with an average call duration of 4.12 minutes and an abandon rate of 7%. These results are viewed positively and represent improved performance.

Customers also contact Halifax Water using on-line service requests and through a generic email customerservice@halifaxwater.ca. The email volume in 2016/17 was 9,609, down 3.5% from 2015/16.

Halifax Water is taking several steps to improve delivery of customer service and communication with its customers, partially as a result of observations made since implementation of the first stormwater charges, feedback from the exemption review process, and community engagement.

The first major initiative involved centralizing all calls for water, wastewater and stormwater service at the utility. Until March 2016, calls for Wastewater and Stormwater service were going through the municipality's 311 Centre. In February 2016 Halifax Water implemented a Customer Relationship Management (CRM) system that will help promote accountability in tracking and closing service requests, and providing information to customers. The second major improvement in 2016 was implementation of a Computerized Maintenance Management System (CMMS) that enables better management and operational tracking of repair and maintenance activities.

In February 2017 Water Operations calls were centralized. There will be continued enhancement of Customer Care with improvements to the website, development of a Customer Portal in conjunction with the Customer Connect project, and investigation of new telephony systems.

With all water, wastewater, and stormwater calls directed to the Customer Care Centre in 2016/17, and the continued evolution of the maintenance management system, the utility is well positioned to be responsive to customer needs.

Initiatives underway for 2017/18 include the implementation of a new phone number (902-420-9287), campaigns to encourage customers to subscribe to e-billing, a revised and updated website and a formal customer complaint process.

Effective Asset Management

CLEAN WATER AND WASTEWATER FUND

On August 16, 2016, Prime Minister Justin Trudeau, and the Honourable Stephen McNeil, Premier of Nova Scotia, announced $238 million for investment in wastewater and public transit projects across the province. These expenditures are part of the first phase of *Investing in Canada*, the Government of Canada's $120-billion plan to support public infrastructure across the country over the next 10 years.

Five projects under the Clean Water & Wastewater Fund (CWWF) portion of the program were formally approved for Halifax Water. The five projects are highlighted as follows:

1. Northwest Arm Sewer Rehabilitation
Federal/Provincial funding: $12,257,781

The 4.5km Northwest Arm trunk sewer is over a century old. It is 1200 mm in diameter and a large part of the line is constructed of clay blocks mortared together. This line needs to be structurally renewed to extend its service life, prevent leakage and overflows into Northwest Arm.

2. Peninsula Transmission Main Rehabilitation
Federal/Provincial funding: $5,631,446

This project involves the rehabilitation of critical water transmission mains in Halifax for improved service. There has been significant development activity in peninsular Halifax in recent years, with more planned. Increased water supply is required for future development and increased densities. This project will replace the original pipes that have served the city for over 150 years.

3. Lake Major Dam
Federal/Provincial funding: $3,388,287

A dam is required to impound water within Lake Major to provide water supply to the greater Dartmouth area. A new dam is required to replace the existing gravity timber and earthen structure which has reached the end of its service life.

4. Sullivan's Pond Storm Sewer Renewal – Phase 1
Federal/Provincial funding: $6,321,925

The existing storm sewer between Sullivan's Pond and Halifax Harbour has reached the end of its service life. A new 580 metre line was designed, with the construction completed in two phases of approximately 290m each. Phase one from Sullivan's Pond to Irishtown Road is approved for funding and will be completed in 2017.

5. JD Kline Filter Media and Underdrain Replacement
Federal/Provincial funding: $3,150,120

The J.D. Kline Water Supply Plant supplies treated water to the communities of Halifax, Bedford, Sackville, Fall River, Waverley and Timberlea. This project involves the replacement of the existing filter media and underdrains in all eight filters, the majority of which are beyond their expected life span.

As of March 31, 2017, all projects were at or near final design completion with construction proposed for 2017/18.

The net impact of the CWWF funding assistance will have a positive impact on the overall capital funding plan for Halifax Water in future years and may reduce debt requirements and rate impacts or create capacity to fund other capital projects.

CAPITAL INFRASTRUCTURE PROJECTS

The rehabilitation of the ***Geizer 158 Reservoir*** was successfully completed in 2016/17. The Geizer 158 Reservoir is a 69m diameter steel tank, originally constructed in 1986. This structure is

New pumping station replaces former Belmont WWTF

Stormwater system enhancements between Sackville Drive and the Little Sackville River

the highest and largest storage tank in the water distribution system in the West Region. The work involved full sandblasting, preparation and recoating of the tank interior, as well as a cleaning and recoating of the tank exterior. During the course of sandblasting the floor, corrosion holes were found in the floor plate and there were indications of widespread, severe corrosion on the underside of the steel floor plate. Based on industry best practice and the recommendations of Halifax Water's consultant, the solution was the replacement of the existing floor plate. The rehabilitation began in May 2016. The floor replacement was carried out during the fall of 2016 and the reservoir was recommissioned and put back into service in January 2017.

The ***Chain Control Transmission Main Realignment*** project provided critical upgrades to components of the original water supply system for Halifax dating back to the 1800s. The Chain Control facility feeds three transmission mains: the 375mm diameter Peninsula Intermediate (1856), the 600mm diameter Peninsula Low (1862), and the 675mm diameter Peninsula Low (1892). These pipelines passed through the basement of the former Chain Chlorinator building, which was no longer in use, and in a deteriorated condition. The project involved the demolition and removal of the old Chain Chlorinator building and associated pipework, with the site regraded to facilitate improved municipal parkland/trail access. Three new sections of transmission mains were installed through this area, connecting to the existing transmission mains downstream on Coronet Avenue. The work also included the abandonment of former raw water pipe connections at the Chain Lake Back-Up Water Supply Station and the demolition of abandoned valve chambers on the site.

Phase 2 of the ***Belmont WWTF Decommissioning*** project was completed in 2016. The work consisted of the installation of a duplex pump station complete with backup power. The pump station was installed at the location of the Belmont Wastewater Treatment Facility (WWTF) which was removed as part of the project. The pump station was connected to the pipe work which was installed the previous year on Main

Connecting new peninsula watermain to existing circa 1892 watermain

Rd. The work enabled Halifax Water to remove the Belmont WWTF to facilitate compliance with regulations.

The ***Sackville Cross Road Stormwater System Renewal*** project was completed in 2016. The work consisted of the replacement of 0.5km of storm sewer pipe, ranging in size from 300mm to 1200mm, as well as associated manhole and catchbasin structures. An off street drainage swale was also reconstructed to improve system functionality between Sackville Drive and the Little Sackville River.

The ***Aerotech Wastewater Treatment Facility*** (AWWTF) Expansion and Upgrade Project is an excellent example of investment where long term thinking and a commitment to balance financial, social and environmental concerns are integral to our service delivery.

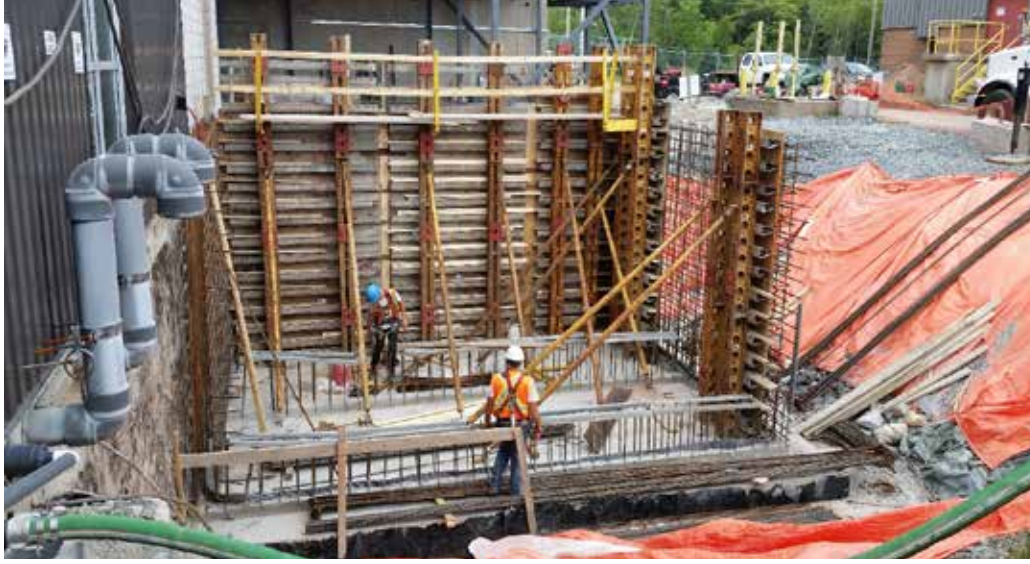
The AWWTF was originally constructed in 1985. The newly expanded and upgraded facility will provide tertiary level of treatment with a capacity of 2000 m^3/day.

The key drivers of the AWWTF Project are regulatory compliance and growth. At a total project cost of $22 million dollars, the project is benefiting from $14 million in cost shared funding from the *Federal/ Provincial New Building Canada* fund.

Construction of the facility got under way in September 2016 and is scheduled to be complete by December 2017.

ASSET MANAGEMENT PLANS

In 2016, Halifax Water completed its first formal Asset Management Plan (AMP). Asset management plans aim to answer guiding questions about an organization's assets (refer to Figure 1). The 2016 AMP creates an opportunity to refine the management of assets. It sets the stage for including more complex and challenging issues such as risk, performance, levels of service, and capital and operational expenditure optimization.



New Aerotech WWTF treatment process tankage under construction

The 2016 AMP included sections for each of the identified asset classes to capture key inventory, condition, and asset valuation. Asset classes were identified for Water (Supply Plants, Supply Dams, Chambers & Booster Stations, Distribution & Transmission Mains, and Service Reservoirs); for Wastewater (Treatment Facilities, Pumping Stations, Gravity Sewers, and Forcemains); and for Stormwater (Management Structures, Gravity Sewers, Cross Culverts, and Driveway Culverts & Ditches). Fact sheets for each of the infrastructure services were prepared to aggregate the information of the asset classes within the service type (Figure 2).

ENERGY MANAGEMENT

Energy use in municipal water and wastewater/stormwater systems remains

Figure 1 - Asset Management Guiding Questions

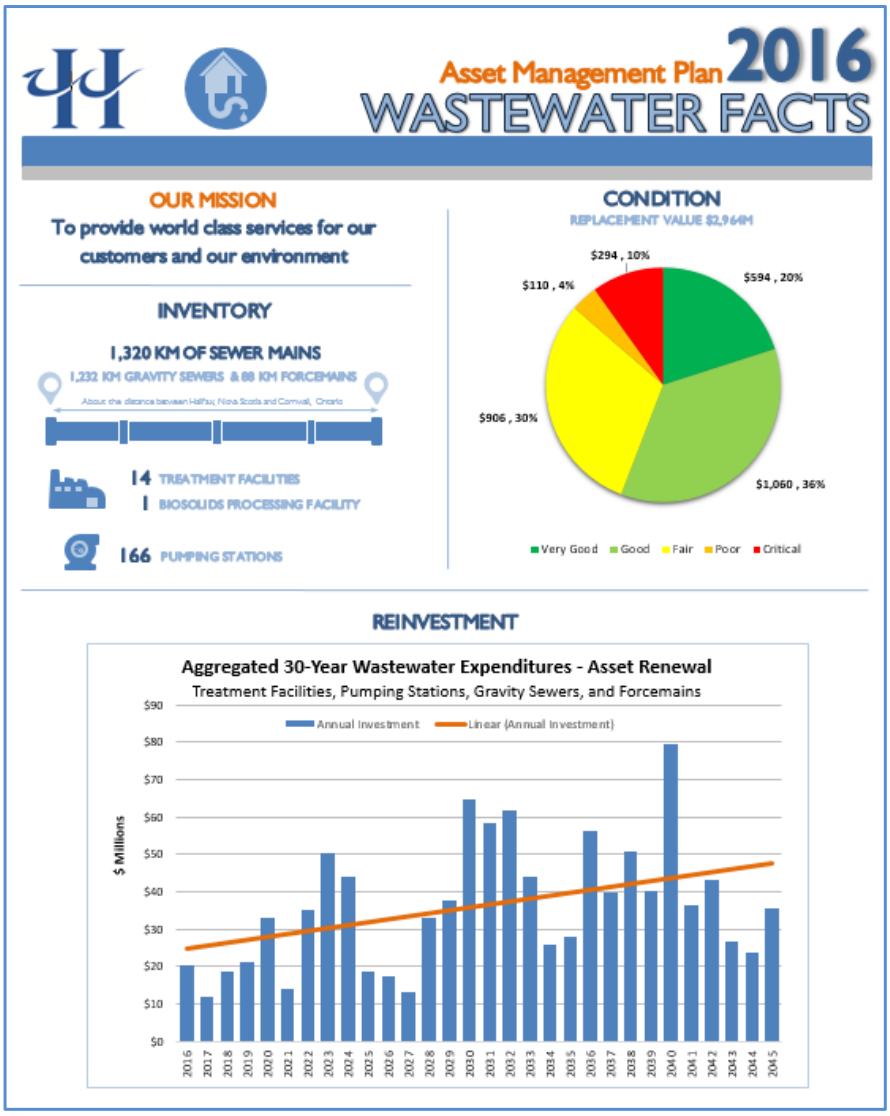


Figure 2 - Typical Fact Sheets

among the highest in North America, typically consuming over 30% of Municipal energy usage and over 4% of the total National energy usage. With this in mind, Halifax Water has continued its efforts to improve its energy foot print. Initiatives in 2016/17 include:

- The Energy Management Plan was updated to identify specific annual energy reduction targets and activities to be completed in 2016/17.

- Ongoing support of Halifax Water's Energy Management Information System (EMIS). The EMIS provides energy use data and other important facility related information for over 370 Halifax Water facilities. This allows staff to evaluate individual or multiple facility energy performance data, thereby increasing awareness and empowering staff to initiate energy improvement projects.

- Various equipment and infrastructure upgrades were completed, resulting in over 2,724,800 kWh_e in annual energy savings. These projects include ventilation air heat recovery in the Halifax WWTF, operation of the Odour Control Bypass systems in the Herring Cove and Halifax facilities, and a seasonal disinfection program at a number of our wastewater treatment facilities.

ENERGY GENERATION

- Development of renewable energy generation projects has continued.

- The 10 MW wind farm installed at the J.D. Kline WSP continues to operate as expected.

- The 40 kW in-line energy recovery turbine installed in the Orchard Control Chamber in Bedford continues to operate very well providing the energy equivalent to roughly 25 to 30 Nova Scotia households in the Bedford area.

- A Feasibility Study was completed for the proposed Cogswell District Energy System (DES). Results show very positive business and environmental cases for the system. Next steps involve developing by-laws around the implementation of DESs with the Halifax Regional Municipality, and completing the preliminary and detailed design for the DES in parallel with the municipality's Cogswell area redevelopment efforts.

ENERGY EFFICIENCY

A continued focus on early stage involvement in various infrastructure projects has also brought a focus on energy efficiency and sustainability to these projects at the design stage, resulting in efficiency improvements being implemented during construction. 2016/17 projects included the Mill Cove UV System Upgrades, and the Herring Cove Sewer Shed and Pump Station Upgrades.

When appropriate, Halifax Water has also taken advantage of Provincial energy efficiency rebate programs being offered by Efficiency One (Efficiency Nova Scotia), which help to reduce capital costs and improve project payback.

Overall results for 2016/17 were very good, with annual energy intensities

Geizer 158 Water Reservoir restored and back in operation

for the organization being reduced by approximately 5.8% in 2016/17 compared to 2015/16. A focus on further energy efficiency and operational improvements to existing infrastructure in the coming years will allow Halifax Water to continue to build on these results.

INFORMATION SERVICES

Information Services (IS) delivered on several business transformation initiatives at Halifax Water. The first major deliverable was to support work order tracking for linear systems (pipes) through a Computerized Maintenance Management System (CMMS). Known as City Works, the plan is to expand its use to our "Locates" process as well as treatment plants.

With the consolidation of all calls through our Customer Care Centre, customers can now contact us at one number (420-WATR). This required implementation of an interim Customer Relationship Management (CRM) system in a very short period of time. The Cayenta system was implemented for CRM with integration into the CityWorks system. This integration allows the Customer Care Centre to look at the status of a work order in real time and inform the customer.

The fiscal year began with the migration of the Wastewater and Stormwater (WWSW) calls from the City's 311 call centre to the Customer Care Centre using the Cayenta system, going live on March 7, 2016.

The next phase of CRM was to introduce integration with the new CityWorks system. This integration allows the Customer Care Centre to send work requests directly into the CityWorks system for specific customer service requests created in Cayenta. The Cayenta service request would remain open until the Work Request in CityWorks was closed. This went live in October 2016.

Halifax Water staff taking part in school career day event

In November we began the next phase of the CRM project to migrate the Water Service calls from the depots to the Customer Care Centre. Following a similar plan used for the WWSW, Cayenta was set up to process the customer calls and configured with CityWorks to receive any generated work requests for operations. The Customer Care Centre went live taking the water calls at the end of February, 2017.

Heat recovery ventilation system at the Halifax WWTF

Regulatory Compliance

The Engineering Approvals group is focused on adherence to the Halifax Water Design Specifications, the Supplementary Standard Specification and the Schedule of Rates, Rules and Regulations with respect to connections to, and expansions of Halifax Water systems. The administration of new service connections includes the administration of the Regional Development Charge.

In 2016/17, the Engineering Approvals group processed a significant volume of applications, as follows:

Application Type	Amount Processed
Building Permit Applications approved	650
New Service & Renewal Applications approved	379
Subdivision Applications	292
Demolition Permits	115
Clearance Letters	32
Tender Reviews	95
New Backflow Prevention Applications	93
Backflow Prevention Devices in Halifax Water's distribution system	6604

ENVIRONMENTAL MANAGEMENT SYSTEM

The International Standards Organization (ISO) establishes standards for a variety of processes and products. The standard pertaining to Environmental Management Systems (EMS) is 14001-2004 and requires an organization to:

1. Establish an environmental policy.

2. Identify environmental aspects that can impact the environment.

3. Identify our applicable legal requirements.

Herring Cove WWTF, ISO 14001 Certified

4. Set appropriate environmental objectives and targets.

5. Establish programs to implement our policy, achieve objectives and meet targets.

6. Periodically audit and review activities to ensure that the policy is complied with and the environmental management system remains appropriate.

7. Be capable of adapting to changing circumstances.

In 2016, Halifax Water obtained the ISO 14001-2004 Designation for the Herring Cove Wastewater Treatment facility expanding the previous scope of the Bennery, Pockwock and Lake Major water treatment facilities. The certification of the Herring Cove WWTF marked the first wastewater facility to obtain certification in Atlantic Canada.

In September 2015, ISO issued a new ISO 14001-2015 Standard and the EMS must be upgraded to be compliant with the new Standard by September 2018. Staff will ensure the current designated facilities meet the new standards and plan for expanding the program to other wastewater facilities.

DRINKING WATER QUALITY

Providing customers with safe, reliable, high-quality drinking water requires investment in infrastructure, research, and robust quality assurance/quality control programs. Halifax Water has made considerable investments in these areas. Two new modern membrane treatment plants were commissioned in Collins Park and Middle Musquodoboit. These new plants were built in response to Nova Scotia Environment's drinking water strategy.

Halifax Water undertakes a comprehensive water testing program. Bacteriological testing is done weekly at

Collins Park Water Treatment Facility, upgraded with membrane technology to ensure high quality water

51 locations within the urban core, and at each of the small systems.

Approximately 3,600 tests for total coliform bacteria are conducted each year. Results of 99.9% of samples with bacteria absent are consistently achieved, as shown below in the table.

Drinking Water Compliance Summary: Total Coliform Sample Result			
April 2016 - March 2017			
System	**No. of Samples**	**No. of Exceedances**	**% Absent**
Pockwock	962	0	100%
Pockwock Central	584	0	100%
Lake Major	1183	3	99.7%
Bennery	158	0	100%
Five Islands	104	0	100%
Silver Sands	103	0	100%
Middle Musquodoboit	102	0	100%
Collins Park	102	0	100%
Miller Lake	104	1	99.0%
Bomont	103	0	100%
TOTAL	**3505**	**4**	
Absent (A)	**3501**		**99.89%**
Present (P)		**4**	**0.11%**

Additional testing of drinking water includes:

• Chlorine residual, pH, and turbidity of treated water leaving each plant, as well as multiple locations within the plant to monitor and optimize the treatment process.

• Sampling twice per year for the *Guidelines for Canadian Drinking Water Quality* which includes approximately 90 parameters.

• Quarterly sampling of raw lake water and water from contributing streams for approximately 40 chemical parameters.

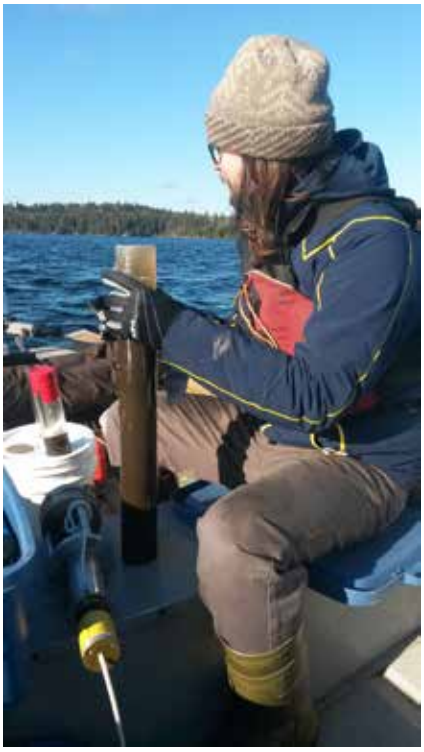
• Bi-annual sampling of Lake Major and Pockwock Lake raw and treated water for all parameters in the Guidelines for Canadian Drinking Water Quality (Health Canada).

• Bi-annual testing and sampling for giardia and cryptosporidium for treated and raw water for all surface water systems.

Water test results are reported to Nova Scotia Environment and the Nova Scotia Medical Officer of Health on a regular basis. Protocols have been established between Halifax Water, and the provincial Health and Environment departments to clearly delineate roles and responsibilities in the unlikely event of a disruption in water quality.

WASTEWATER TREATMENT FACILITY (WWTF) COMPLIANCE

Wastewater treatment facilities in Nova Scotia are regulated by Nova Scotia (NS) Environment. They set effluent discharge limits for all wastewater facilities. The limits define maximum concentrations of parameters such as Carbonaceous Biochemical Oxygen Demand (CBOD – a measure of the amount of material in water which will consume oxygen as it decomposes), Total Suspended Solids (TSS – a measure of the amount of particulate matter in the water), and Fecal Coliform (bacteria associated with wastewater). For some facilities, parameters such as nutrients (nitrogen and phosphorus which cause excess



Water sampling at Pockwock Lake-part of multiple barrier approach to high quality water

Lake Major Water Treatment Plant – continuing to meet or exceed the highest standard in the land

growth of algae and plants) or pH (a measure of acidity) are also regulated.

In 2007, Halifax Regional Council transferred responsibility for the municipality's stormwater and wastewater assets to Halifax Water. The older wastewater facilities – 12 in total – were in need of upgrading and often non-compliant with Nova Scotia Environment effluent limits.

Since becoming responsible for these facilities, Halifax Water has completely reconstructed the Wellington Wastewater Treatment Facility (WWTF), and completed a $61 million expansion and upgrade to the Eastern Passage Facility. The wastewater collection systems for two treatment facilities – Wellington and Frame – were both completely replaced, resulting in significant improvements to the performance of both treatment facilities. This year the small Belmont facility was decommissioned and related sewage directed to the Eastern Passage facility. A major upgrade to the Aerotech WWTF is underway. This will improve capacity and performance. As well, upgrades to the Ultra Violet Disinfection system at Mill Cove started in February.

The treatment processes at several other facilities have been significantly improved through optimization efforts on the part of Halifax Water staff. Other treatment facilities still require capital improvements, and Halifax Water has developed plans to upgrade and/or expand these facilities to improve their performance and become fully compliant.

In 2013, the federal government published the Wastewater System Effluent Regulations (WSER). These regulations set national minimum standards for CBOD and TSS in treated wastewater effluent effective January 1, 2015. All of Halifax Water's wastewater treatment facilities will meet these standards, although the Halifax and Dartmouth advanced-primary treatment facilities will require upgrading to secondary treatment in the future. The WSER provides for defined periods to allow required upgrades to take place,

Eastern Passage WWTF, a $61 million investment for growth of the community and protection of the environment

Wastewater Treatment Facility Compliance Summary

Cumulative Performance - April 2016 to March 2017

WWTF	CBOD5	TSS	E. coli	Phosphorus S	Phosphorus W	Ammonia S	Ammonia W	pH	Dissolved Oxygen	Total Chlorine	Toxicity
Halifax	30	19	2220	N/A		N/A		7	N/A	N/A	Non-Toxic
Herring Cove	20	16	167	N/A		N/A		7	N/A	N/A	Non-Toxic
Dartmouth	29	22	591	N/A		N/A		7	N/A	N/A	Toxic
Eastern Passage	8	9	48	N/A		N/A		7	N/A	N/A	Toxic
Mill Cove	12	13	390	N/A		N/A		6.6	N/A	N/A	Non-Toxic
AeroTech	5	7	14	0.4		0.1	2.9	7	8.6	N/A	Non-Toxic
Belmont	23	42	2649	N/A		N/A		7	N/A	0.38	N/A
Frame	8	15	101	N/A		N/A		7	N/A	0.10	N/A
Lakeside-Timberlea	8	19	18	2	2	2	7	7	8	0.12	Non-Toxic
Lockview-MacPherson	5	6	18	0.4		3		7.1	N/A	N/A	N/A
Middle Musquodoboit	13	13	102	N/A		N/A		8	N/A	N/A	N/A
North Preston	5	9	10	0.6		0.2		7	N/A	N/A	N/A
Springfield	4	6	129	N/A		N/A		7	N/A	0.80	Toxic
Steeves (Wellington)	5	4	10	0.15		0.07		7.5	N/A	N/A	N/A
Uplands Park	11	9	278	N/A		N/A		7	N/A	N/A	N/A
Weighted Average	12	14	450	N/A		N/A		7.1	8	0.35	

NOTES & ACRONYMS:

$CBOD_5$ - Carbonaceous 5-Day Biochemical Oxygen Demand

TSS - Total Suspended Solids

TRC - Total Residual Chlorine

S / W - Summer / Winter compliance limits

Toxic may indicate only a single sample

NSE requires monthly averages be less than the NSE Compliance Limit for each parameter (Dartmouth, Eastern Passage, Halifax, Herring Cove, Mill Cove)

NSE requires quarterly averages be less than the NSE Compliance Limit for each parameter (Aerotech, Lockview, Mid. Musq., Belmont, Frame, BLT, Uplands, North Preston, Springfield)

NSE requires an annual average be less than the NSE Compliance Limit for each parameter at Steeves

LEGEND:

Specific parameter limit achieved

Specific parameter limit not achieved

based upon a system for ranking the environmental risk of each facility. Under this risk ranking, the Halifax and Dartmouth facilities must be upgraded by 2040.

Performance assessments for the wastewater facilities are based upon monthly averages. Results for April 2016 to March 2017 are presented in the table above:

POLLUTION PREVENTION AND INFILTRATION/INFLOW REDUCTION PROGRAMS

The Environmental Engineering group oversees the Pollution Prevention Program and Inflow/Infiltration Reduction Program. The purpose of these two programs is to regulate the discharges from customer connections to the wastewater and stormwater system that can impact the health of the public, the environment, and Halifax Water workers, as well as create operational issues with Halifax Water infrastructure and treatment plants.

The use of "flushable wipes" and disposal of fat, oil and grease (FOG) into the wastewater system have been clogging wastewater systems, pipes and pumps, and impacting treatment plants. The result is unnecessary back-ups and pump failures with possible resulting overflows. The Pollution Prevention program developed two educational videos for customers to better understand the issues surrounding "flushable wipes". The videos were produced locally and include "*Toilet Paper: The One and Only Flushable Wipe*" and FOG "*How to Bacon Responsibly*". These entertaining, educational videos can be found at Halifax Water's YouTube channel at www.halifaxwater.ca.

The Inflow/Infiltration Reduction program identifies areas where private sources of stormwater are entering the wastewater system. In recent years

Wipes, FOG and other debris clogging the Susie Lake pumping station

staff have completed private side assessments across the Halifax Regional Municipality including work for the Wet Weather Management Program. This work includes pilot projects in Stuart Harris, Crescent Avenue, Leiblin Park, Munroe Subdivision and Cow Bay Road sewersheds. Enhanced communication strategies with property owners, such as those used in the Cow Bay Road project, have been able to achieve a record response of 76% compliance with the requirement to connect private stormwater sources to Halifax Water's stormwater system. Of the remaining 24%, private property inspections have been completed for 23% and are pending action to make their connection.

STORMWATER ENGINEER

In May of 2016, a dedicated Stormwater Engineer was hired within Regulatory Services to manage stormwater billing appeals, drainage investigations, and liaise with Halifax Regional Municipality on common drainage issues. With the recent decision on stormwater billing enabling credits for non-residential customers, the Stormwater Engineer will also administer any credit applications.

As well, with the creation of the Dispute Resolution Officer (DRO) position in January 2017, the Stormwater Engineer provides the DRO with the technical information relating to stormwater based complaints as required to evaluate whether the property receives stormwater service.

Performing ditch maintenance to effectively manage stormwater drainage

Cow Bay Road deep storm sewer project—getting stormwater out of the wastewater system

Stewardship of the Environment

BEECHVILLE/LAKESIDE/TIMBERLEA WASTEWATER TREATMENT FACILITY DE-CHLORINATION

The Beechville/Lakeside/Timberlea Wastewater Treatment Facility (BLT) utilizes sodium hypochlorite for effluent disinfection prior to returning treated flows to the environment. Recent regulatory changes required that Total Residual Chlorine levels in the effluent be below 0.02 mg/L. To meet this requirement would require either a change in the type of disinfection at the facility, or the addition of a de-chlorination process. Engineering and Operations staff considered a few options, including:

- Use of Ultraviolet disinfection, negating the need for chlorine
- Delivery of liquid sodium thiosulfate
- Ozonation
- Addition of a de-chlorination process to existing hypochlorite disinfection

Staff quickly realized that any of the new disinfection options would have high capital costs and add significant complexity to the operation of the disinfection process. Halifax Water staff took it upon themselves to find a more cost effective solution that would minimize operator intervention. After some investigation, it was determined that water soluble sodium sulfite pucks/tablets might be an effective method of de-chlorination.

For trial purposes, operations staff designed and constructed a practical delivery system. There are two chlorination lines at the facility. The trial system was installed on one of the lines to allow for comparative testing and optimization over an 8 week period. Various analyses were conducted and documented over the trial period to determine the effectiveness, and also to ensure there were no negative impacts on other compliance parameters. One of the primary concerns was that the pucks/tablets may exert additional oxygen demand on the effluent, thus impacting the ability to meet dissolved oxygen effluent requirements. Through optimization and analyses it became evident that this was not the case. Early trial period results showed that the system was very effective in removing Total Residual Chlorine. Staff then began optimizing puck placement, depth and quantity to ensure the minimum amount of sodium sulfite was used to achieve the NSE requirements.

With the trial a success, staff engaged a contractor to fabricate two permanent assemblies.They have been in operation since spring 2017 and the Beechville/Lakeside/Timberlea Wastewater Treatment Facility has been compliant for Total Residual Chlorine, ever since.

New de-chlorination system at the Beechville-Lakeside-Timberlea Wastewater Treatment Facility, a staff innovation

MILL COVE DIGESTER CLEANING

Staff from the Mill Cove WWTF undertook a major maintenance project this past year in cleaning and inspecting the Primary Anaerobic Digester. The digester was commissioned in 1996 and is the largest of its kind in Atlantic Canada with a volume of 3,785m^3. It had been operating without issue since being put in service, but was in need of cleaning and inspection to ensure its efficient operation well into the future. The Digester plays a pivotal role in the wastewater treatment process, as well as providing methane gas that is utilized within the facility for heating onsite buildings. The cleaning project began in early November and was completed by late December 2016. The entire project was planned and executed by Halifax Water staff with the assistance of external contractors who provided the equipment to complete the job. Once the digester was empty, Mill Cove staff completed several maintenance items including

Cleaning out the digesters at the Mill Cove WWTF

lining of the supernatant overflow box, rebuilding of the centre impeller mixer and replacement of several piping connections located at the bottom of the digester. The piping connection repairs were of particular significance due to the potential leakage of the digester's contents if one of the connections failed. Upon completing the maintenance, staff followed a strict refilling, reheating and reseeding sequence developed by the staff to ensure the process remained stable and to minimize the amount of time needed to reestablish methane gas production. Staff maintained strict adherence to the reseeding plan and gas production resumed in 24 days. This was an impressive feat given that most literature suggests that gas production would not resume in less than 45 days. Considering the time of year, this represents a significant savings in heating costs for a facility of its size.

Full operations were maintained at Mill Cove during this project and the facility remained compliant with its Nova Scotia Environment permit. The Mill Cove WWTF is located in close proximity to condominiums and office buildings. Halifax Water took significant steps to ensure neighbours were informed throughout the project.

MILL COVE ODOUR CONTROL SYSTEM

Air quality and odour issues are taken seriously by Halifax Water in its effort to be a good neighbour in the communities it serves. In the early spring of 2017 a project to install two new Odour Control Systems (OCS) at the Mill Cove WWTF was initiated as a result of odour complaints

The Mill Cove WWTF—part of the community since 1969

Mill Cove South Side Odour Control System

Mill Cove North Side Odour Control System

resulting from the extreme dry Summer of 2016 and related low flows in the wastewater collection system. These low flows increase the length of time wastewater remains in the pipes which can lead to septic conditions and odours. The project consisted of installing two new Odour Control Systems (OCS) utilizing activated carbon media as the odour absorbent on each of the existing North and South Primary Clarifiers. The project will be completed in early 2017/18. The upgrades will result in consistent removal of nuisance odours that are associated with the treatment of municipal wastewater, as well as enhanced monitoring of air quality events that will enable greater ability to respond to future odour concerns.

WET WEATHER MANAGEMENT PROGRAM

Like many municipalities and utilities across North America, Halifax Water's sanitary sewer system is subject to dramatic flow increases from heavy rain events. Wet weather flows can lead to sanitary sewer releases, capacity reduction, sewer backups/basement flooding, wastewater treatment plant process upsets and increased operation and maintenance costs. Recognizing the impacts of wet weather generated flows on the system, Halifax Water developed a proactive program to systematically address the negative impacts of wet weather on the collection system, wastewater treatment processes, and ultimately the environment. The Halifax Water Wet Weather Management Program (WWMP) developed a strategy to efficiently manage the impacts of wet weather generated flows within the sanitary sewer system. Figure 1 demonstrates the reduction in flow as a result of efforts to rehabilitate a sanitary sewer system within Halifax. Note the reduction in peak flow and the duration of the increased flow.

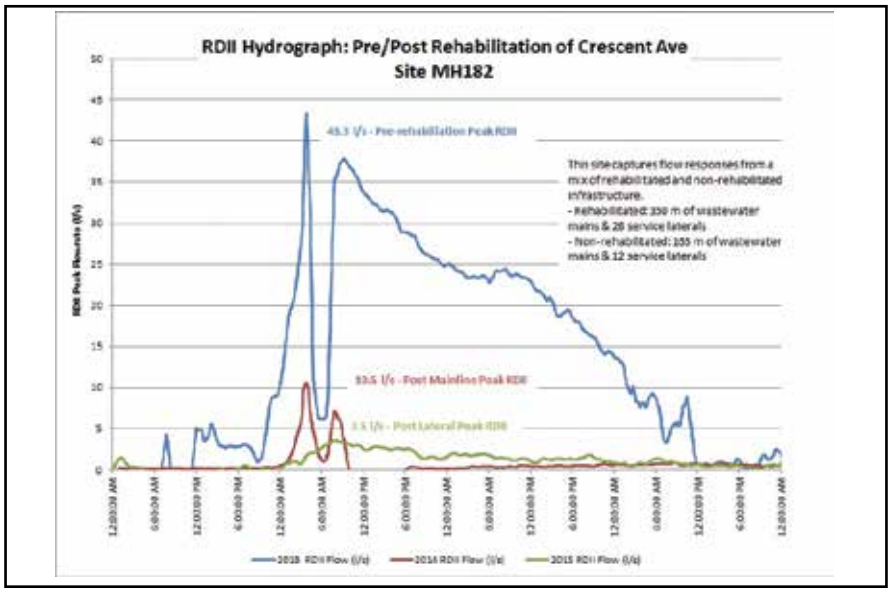


Figure 1: Pre and Post Flow for Crescent Ave rehabilitation.

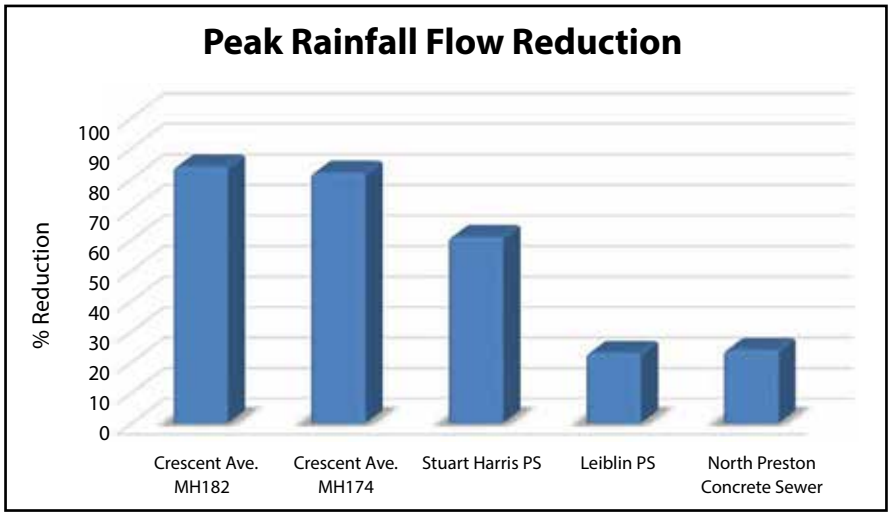


Figure 2: Pilot program average daily flow reduction

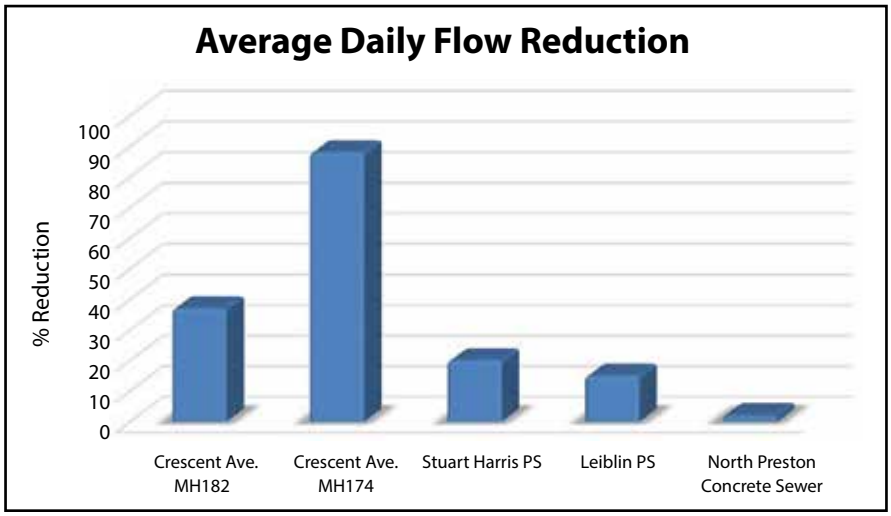


Figure 3: Pilot program rainfall derived flow reduction

Sewer overflowing onto a residential street

Presently the WWMP has five main active pilots that are monitored. The pilots have each undergone some level of public side rehabilitation and private side compliance. The results demonstrate a dramatic reduction in total sewer generation and peak flow response. Figure 2 indicates the percent reduction in average flow generated in each of the pilot sewersheds. Figure 3 indicates the total reduction in peak response to precipitation events.

The five pilot areas saw a flow reduction of over 150 million litres of sewage that otherwise would have been collected and treated at a wastewater treatment facility. This results in reduced operating costs and increased system capacity. In addition to average flow reduction, the pilots experienced a dramatic reduction in peak response to precipitation events. Collectively the pilots observed a peak flow reduction of almost 15 million litres per day during a 10 year return storm. While all these numbers are impressive, the key result is the reduction in sanitary sewer overflows as a result of Halifax Water's effort. Three of the pilot areas had pump stations that were frequently overwhelmed during wet weather events. These stations have experienced less than half the frequency of overflow events following rehabilitation. This is a significant environmental benefit. A summary of the annual volume reduction and peak flow reduction for each of the pilot's is summarized in the table below:

Site	Total Annual Volume Reduced (m^3)	Peak Flow Reduction (m^3/day)
Crescent Ave: MH182	57,670	4,231
Crescent Ave: MH174	60,270	3,147
Stuart Harris PS	6,935	1,798
Leiblin PS	23,561	3,460
North Preston Concrete Sewer	4,696	2,350
Total Reduction	**153,132**	**14,986**

*Normalized to a 24-hour 10-year storm return

Summary of flow reductions

The program continues to expand and a new project is planned to see the reduction of over 200 litres per second in wet weather generated flow.

HALIFAX WWTF AUTOMATIC BAR SCREEN UPGRADES

The Halifax Wastewater Treatment Facility was originally equipped with three mechanically cleaned bar screens (2 duty + 1 standby) to remove debris from the screened wastewater entering the facility as part of the Harbour Solutions Upgrade project. These vertically mounted units have individual channels containing multiple rakes to clean the 10 millimetre (mm) spacing between the bars that capture the debris entering the facility. To improve the capture rates and minimize impacts of sewage related debris in the wastewater treatment process, Halifax Water investigated replacement of the screen with 6mm perforated plate technology at a cost of $1.5 million. The challenge of getting three new fine

The Halifax mother ship, the largest of 14 wastewater treatment facilities

screens installed in the upper levels of the facility while keeping the site running would be significant. Alternatively, Halifax Water Engineering staff investigated the possibility of modifying the existing screens one at a time by reducing the bar spacing to 6mm from 10mm and using specially shaped bars (tear drop design) to reduce pressure loss and prevent jamming of solids in the bar spacing while maintaining the high flow capacity. With the help of regional suppliers and contactors, two of the three screens were modified to provide 6mm bar spacing. This resulted in significant improvements in the reduction of debris entering the wastewater treatment process downstream of the screen. This reduced equipment maintenance, while maintaining optimal treatment at a tenth of the cost of replacement with new technology.

Safety and Security

Halifax Water and its employees are committed to providing a healthy and safe work environment to prevent occupational illness and injury. This commitment is based upon our understanding that health and safety is a core business function for our organization and is treated as a priority. To this end, Halifax Water's Occupational Health and Safety Program Manual is continuously reviewed and updated. The intent of this manual is to embody the Occupational Health and Safety Act of Nova Scotia in all our workplaces.

In February, a Joint Occupational Health and Safety (JOHS) responsibilities session was held for all JOHS Committee members and their alternates. The session was led by safety representatives from Halifax Water and the Canadian Union of Public Employees.

In March, the Technical Services Division created an Electrical Safety Program Steering Committee to develop a corporate Electrical Safety Program. The committee is utilizing a product from Electrical Safety Program Solutions called "Product in a Box".

The "Product in a Box" is a licensed collection of template documents and resources which provide a comprehensive Electrical Safety Program. Using the step-by-step implementation guide allows staff to review and customize the documents to create a program that effectively manages the electrical hazards in our workplace.

To ensure safe and efficient response to water and wastewater/stormwater emergencies throughout the service area, Halifax Water recognizes that training is crucial. Staff continue to exercise emergency response plans and training by participating in monthly tabletop exercises with external agencies using the Incident Command System (ICS). Operational staff also use ICS when responding to a variety of system related incidents.

ICS table top exercise—ensuring staff are trained and ready

In 2008, Canada and the State of Israel signed a Declaration of Intent (DOI) to prioritize and manage cooperation in the areas of border management, correctional services, crime prevention, critical infrastructure protection, emergency management, law enforcement, and organized crime. The Canada-Israel Declaration of Intent has been a Ministerial priority since it came into force, and allows for significant, in-depth information sharing with an important international ally identified in the Public Safety International Strategic Framework. Some of the key objectives of the Declaration of Intent are to share information and best practices, identify and share public safety concerns, facilitate technical exchanges, and build on the shared commitment to enhance cooperation.

The DOI established several working groups, including the Critical Infrastructure Protection Working Group (CIPWG). Other working groups cover corrections issues, emergency management, law enforcement, border management and security and crime prevention. All working groups created under the Declaration of Intent meet annually. This past September, Halifax Water hosted a delegation at the Lake Major Water Treatment Facility.

In October, facility assessments were completed for the Pockwock

General Manager Carl Yates taking the safety message to the job site

Transmission Main and the Herring Cove Wastewater Facility in partnership with Public Safety Canada, utilizing the Critical Infrastructure Resilience Tool (CIRT). The CIRT is a voluntary and non-regulatory vulnerability assessment tool that estimates the resilience and protective posture of critical infrastructure facilities in support of the National Strategy and Action Plan for Critical Infrastructure.

Motivated And Satisfied Employees

Halifax Water has approximately 450 employees, operating under collective agreements with CUPE Locals 227 and 1431. Turnover is low relative to other public sector organizations, and employee satisfaction as measured by annual employee surveys is generally high.

Employee satisfaction is key to employee engagement and productivity. According to Halifax Water's 2016 Employee Satisfaction Survey 69% of employees are completely or mostly satisfied with their job overall which is a slight increase from the previous year. Also, 60% of employees believe that Halifax Water is one of the best Employers to work for in the Halifax area.

In 2016 Halifax Water participated in a Workforce Management Planning Survey led by the Municipal Auditor General's Office. The survey results found that 87% surveyed believe the organization is a good place to work, and 94% feel engaged. The survey also identified some challenges from the perspective of employees.

Halifax Water continues to develop ways to increase employee satisfaction. A review of current policies, practices and programs was completed and updates were made to reflect industry best standards. Employees' physical and psychological health and wellness will continue to be a focus in the future to assist employees to live happier, healthier lives for them and their families.

Halifax Water is committed to improve employee relations and to instill a shared accountability for success across the organization. Throughout the year several meetings were held between Human Resources and Union leaders to discuss ways to improve labour relations. The meetings were very beneficial and will continue in the future.

A respectful workplace for all employees is paramount at Halifax Water. Mandatory civility and respectful workplace training sessions were held for all employees and a final report of findings was received which will be a focus next year.

Statement	Percent Agree or Strongly Agree
The organization is a good place to work	87%
I am fully engaged in the success of the organization	94%
The work I do helps in achieving the organization's goals and priorities	100%
I feel the work I do has an impact on the organization	94%
I feel the work I do has an impact on the residents of the municipality	94%

There were 127 incidences where Employees received a formal recognition for going above and beyond their normal course of duty through Halifax Water's employee recognition program.

SERVICE AWARD BANQUET

At the 2016 Service Award Banquet the following awards were presented:

30 Year Award

Administration
Sandy Hood
Wastewater & Stormwater Services
Richard Brown
Lloyd Ferguson
Brian Gazeley
Rory MacNeil
Rick Reid
Water Services
Dave Hiscock
Rob Hood

25 Year Award

Water Services
Raymond Doucette
Karen Gardiner
Wastewater & Stormwater Services
Tim Dewolfe
Dave Dort
Laurie Sperry

20 Year Award

Corporate Services
Karen Kearney
Gail Reid
Tanya Shatford
Dawn Slaunwhite

Engineering & Information Services
Ian Guppy
Mike Slayter

Mike Slayter
Rudy Thomas

Regulatory Services
Charles Lloyd

Wastewater & Stormwater Services
Evan Beaton
Robert Cohoon
Eric Dorey
Rick Gage
William Hannam
Richard Masters
Gary McPherson
Jeff Oldham
Doug Rafuse
Heather Shea
Blair Titus
Chris Weeks
Rob Wyman

Water Services
Mike Campbell
Andrea LeGassie
Perry Pinkham
Mark Stevens

10 Year Award

Engineering & Information Services
Nola Button
Valerie Williams

Regulatory Services
Andrew Driscoll
Kimberley Gillis
Paul Taylor

Wastewater & Stormwater Services
Tracy Hatch
Ross Turner

Water Services
James Bruce
Daniel Englehutt
Barry Geddes
Andrew MacCallum
Jerry MacDonald
Hannah MacKay
Barry McMullin
Amanda Richards

Rory MacNeil receiving his 30 Year Service Award from Carl Yates, General Manager

CAROLYN BRUCE CUSTOMER SERVICE EXCELLENCE AWARD

The Carolyn Bruce Customer Service Excellence Award was established in 2012 in memory of and to honour Carolyn's unforgotten legacy. Each year Halifax Water recognizes an employee who has shown exemplary customer service. In 2016 this award was presented to Kelly Pereira for her continued commitment and high level of service provided to Halifax Water's customers.

FUNDRAISING INITIATIVES

Halifax Water supports the communities we work in as reflected in the many fundraising initiatives such as the United Way Halifax. Halifax Water employees raised $6,074.10 for the United Way through direct donations and

Kelly Pereira receives Carolyn Bruce Customer Service Excellence Award from General Manager Carl Yates

fundraising events.

The Halifax Water/Salvation Army H2O (Help to Others) program raised a total of $2,509 to assist customers who truly need help with their water/wastewater/stormwater bill. This internal staff fundraising is in addition to the $25,000 base funding that Halifax Water provides. Funds donated by Halifax Water employees were matched by Halifax Water.

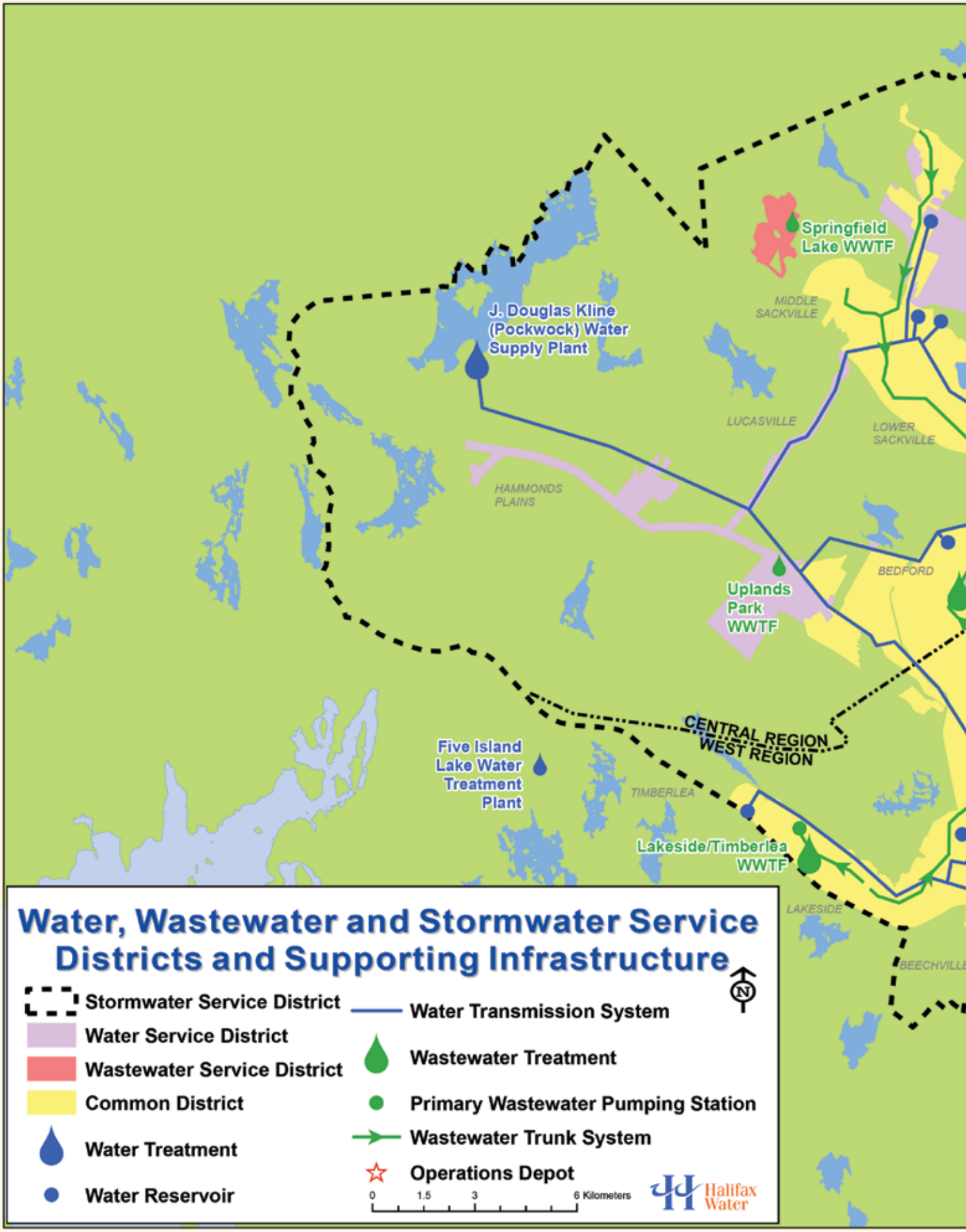
Halifax Water Employees also donated $8,092 toward Water For People to support the digging of wells to provide clean drinking water in 9 different countries for 4 million people.

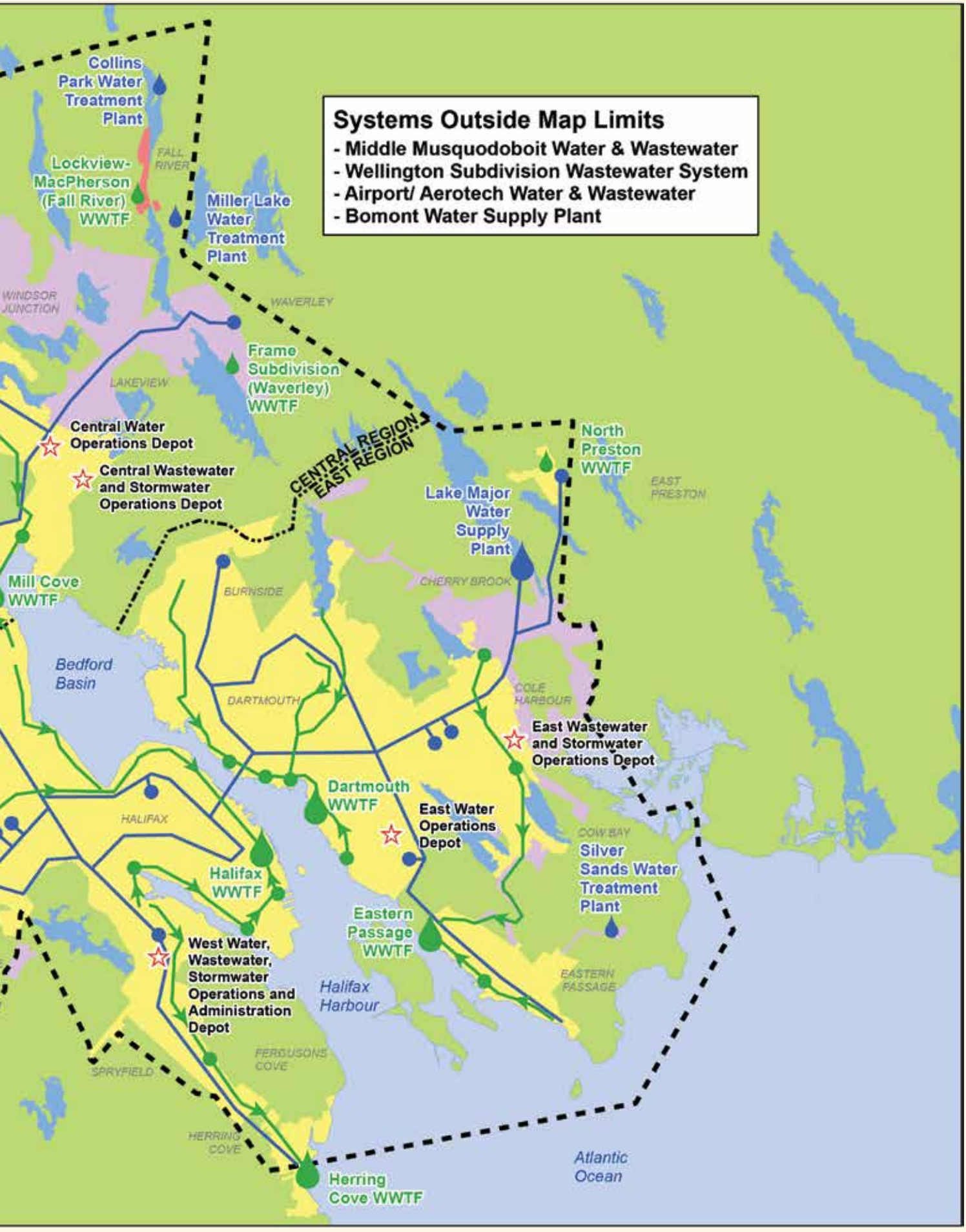
The Christmas Families Fundraising initiatives raised $4035 for Carolyn's Angel Tree program through the Salvation Army and was used to buy gifts for 75 kids in Halifax Regional Municipality who need it the most.

Halifax Water employees help spread Christmas joy to kids in need

Halifax Water Employees were also very generous in donations to support Bryony House, Feed NS, Hope Cottage, Special Olympics Nova Scotia and The Credit Union Lung Run.

Employees and family members run to raise funds for Credit Union Lung Run 2016


Springfield Lake WWTF
J. Douglas Kline (Pockwock) Water Supply Plant
MIDDLE SACKVILLE
LUCASVILLE
LOWER SACKVILLE
HAMMONDS PLAINS
BEDFORD
Uplands Park WWTF
CENTRAL REGION
WEST REGION
Five Island Lake Water Treatment Plant
TIMBERLEA
Lakeside/Timberlea WWTF
LAKESIDE
BEECHVILLE
Water, Wastewater and Stormwater Service Districts and Supporting Infrastructure
N
Stormwater Service District
Water Service District
Wastewater Service District
Common District
Water Treatment
Water Reservoir
Water Transmission System
Wastewater Treatment
Primary Wastewater Pumping Station
Wastewater Trunk System
Operations Depot
0 1.5 3 6 Kilometers
Halifax Water


Systems Outside Map Limits
- Middle Musquodoboit Water & Wastewater
- Wellington Subdivision Wastewater System
- Airport/ Aerotech Water & Wastewater
- Bomont Water Supply Plant
Collins Park Water Treatment Plant
Lockview-MacPherson (Fall River) WWTF
FALL RIVER
Miller Lake Water Treatment Plant
WINDSOR JUNCTION
WAVERLEY
Frame Subdivision (Waverley) WWTF
LAKEVIEW
Central Water Operations Depot
Central Wastewater and Stormwater Operations Depot
CENTRAL REGION
EAST REGION
North Preston WWTF
EAST PRESTON
Lake Major Water Supply Plant
CHERRY BROOK
Mill Cove WWTF
BURNSIDE
Bedford Basin
DARTMOUTH
COLE HARBOUR
East Wastewater and Stormwater Operations Depot
Dartmouth WWTF
East Water Operations Depot
HALIFAX
COW BAY
Silver Sands Water Treatment Plant
Halifax WWTF
Eastern Passage WWTF
West Water, Wastewater, Stormwater Operations and Administration Depot
Halifax Harbour
EASTERN PASSAGE
FERGUSONS COVE
SPRYFIELD
HERRING COVE
Atlantic Ocean
Herring Cove WWTF

TYPICAL ANALYSIS OF POCKWOCK/LAKE MAJOR WATER
2016 - 2017

(in milligrams per litre unless shown otherwise)
Note: All Regulatory Compliance Analysis are Processed by Third Party Laboratories

PARAMETERS	(Halifax) POCKWOCK		(Dartmouth) LAKE MAJOR		GUIDELINES FOR CANADIAN DRINKING WATER QUALITY	
	Raw Water	Treated Water	Raw Water	Treated Water	Maximum Acceptable Concentration	Objective Concentration
Alkalinity (as $CaCO_3$)	<1.0	19.5	<1.0	25.0	-	-
Aluminum	0.104	0.101	0.200	0.018	-	*0.20 / 0.10
Ammonia (N)	<0.050	0.088	<0.050	<0.050	-	-
Arsenic	<0.001	<0.001	<0.001	<0.001	0.010	-
Calcium	1.10	3.9	0.87	15.0	-	-
Chloride	7.2	8.6	5.5	7.1	-	≤250
Chlorate	<0.1	<0.1	<0.1	<0.1	1.0	-
Chlorite	<0.1	<0.1	<0.1	<0.1	1.0	-
Colour (True Colour Units)	14.5	<3.0	36.0	<3.0	-	≤15.0
Conductivity (µS/cm)	32.0	94.0	28.0	140.0	-	-
Copper (Total)	0.033	<0.002	0.069	<0.003	-	≤1.0
Fluoride	<0.10	0.62	<0.10	0.64	1.5	0.7
Hardness (as $CaCO_3$)	4.4	11.9	3.7	39.0	-	-
Hardness (as $CaCO_3$) (Grains/IG)	0.31	0.84	0.26	2.75	-	-
HAA5 (avg.)	-	0.038	-	0.044	0.080	-
Iron (Total)	<0.051	<0.050	0.103	<0.050	-	<0.3
Langelier Index @ 4°C	-4.6	-2.4	-5.4	-1.8	-	-
Langelier Index @ 20°C	-4.2	-2.1	-4.4	-1.6	-	-
Lead (Total) (µg/l)	0.50	<0.50	<0.50	<0.50	10.0	-
Magnesium	0.38	0.40	0.36	0.38	-	-
Manganese (Total)	0.028	0.011	0.044	0.003	-	≤0.05
Mercury (µg/l)	<0.013	<0.013	<0.013	<0.013	1.0	-
Nitrate and Nitrite (as N)	<0.057	0.057	<0.058	<0.056	10.0	-
pH (pH Units)	6.1	7.3	6.1	7.3	-	7.0 - 10.5
Potassium	0.33	0.29	0.28	0.26	-	-
Sodium	4.1	12.0	3.5	12.2	-	≤200
Solids (Total Dissolved)	29.5	49.3	16.0	76.0	-	≤500
Sulfate	3.3	8.5	2.6	30.8	--	≤500
Turbidity (NTU)	0.32	<0.098	0.30	<0.038	**0.2 / 1.0	≤5
Total Organic Carbon (TOC)	2.9	1.5	4.7	1.5	-	-
THM's (avg.)	-	0.049	-	0.052	0.100	-
Uranium (µg/l)	<0.10	<0.10	<0.10	<0.10	20.0	-
Zinc (Total)	<0.005	0.094	0.007	0.079	-	≤5.0
PCB (µg/l)	<0.05	<0.05	<0.05	<0.05	-	-
Gross Alpha / Gross Beta (Bq/L)	<0.10/<0.10	<0.10/<0.10	<0.10/<0.10	<0.10/<0.10	0.5/1.0	-

* Aluminum objective is related to type of plant filtration; the aluminum objective for direct filtration (i.e. Pockwock) is <0.20 mg/l and conventional filtration (i.e. Lake Major) is <0.10 mg/l. **0.2/1.0 means the plant must produce water with turbidity of <0.2 NTU 95% of the time and <1.0 NTU 100% of the time, as required by Provincial Permit.

TYPICAL ANALYSIS - SMALL SYSTEMS
2016 - 2017

(in milligrams per litre unless shown otherwise)
Note: All Regulatory Compliance Analysis are Processed by Third Party Laboratories

PARAMETERS	BENNERY LAKE		FIVE ISLAND LAKE		GUIDELINES FOR CANADIAN DRINKING WATER QUALITY	
	Raw Water	Treated Water	Raw Water	Treated Water	Maximum Acceptable Concentration	Objective Concentration
Alkalinity (as $CaCO_3$)	<5.0	32.8	31.0	31.0	-	-
Aluminum	0.112	0.012	0.007	<0.005	-	0.2
Ammonia (N)	<0.50	<0.050	0.19	<0.050	-	-
Arsenic	<0.001	<0.001	0.004	0.004	0.010	-
Calcium	2.53	16.0	8.1	8.1	-	-
Chloride	6.6	9.0	4.4	5.3	-	≤250
Chlorate	<0.1	0.3	<0.1	<0.1	1.0	-
Chlorite	<0.1	<0.1	<0.1	<0.1	1.0	-
Colour (True Colour Units)	32.7	<3.0	<5.0	<3.0	-	≤15.0
Conductivity (µS/cm)	35.0	120.0	77.0	81.0	-	-
Copper (Total)	0.360	0.037	0.004	0.012	-	≤1.0
Fluoride	<0.10	<0.10	0.45	0.41	1.5	-
Hardness (as $CaCO_3$)	8.2	45.3	24.0	24.0	-	-
Hardness (as $CaCO_3$) (Grains/IG)	0.58	3.2	1.7	1.7	-	-
HAA5 (avg.)	-	0.045	-	<0.005	0.080	-
Iron (Total)	0.520	<0.050	<0.050	<0.050	-	≤0.3
Langelier Index @ 4°C	-2.6	-2.3	-2.06	-1.4	-	-
Langelier Index @ 20°C	-2.2	-2.1	-1.81	-1.1	-	-
Lead (Total) (µg/l)	0.77	<0.50	<0.50	<0.50	10.0	-
Magnesium	0.57	0.64	1.0	1.0	-	-
Manganese (Total)	0.305	0.022	<0.002	<0.002	-	≤0.05
Mercury (µg/l)	0.028	<0.013	<0.013	<0.013	1.0	-
Nitrate and Nitrite (as N)	0.065	<0.065	0.055	<0.052	10.0	-
pH (pH Units)	6.50	7.4	7.0	7.7	-	7.0 - 10.5
Potassium	0.20	0.27	0.45	0.45	-	-
Sodium	4.1	12.3	5.5	6.3	-	≤200
Solids (Total Dissolved)	27.3	110.0	57.0	61.0	-	≤500
Sulfate	3.9	30.0	2.9	2.8	-	≤500
Turbidity (NTU)	1.27	<0.10	<0.17	<0.11	*0.2 / 1.0 **1.0	≤5
Total Organic Carbon (TOC)	4.4	1.5	<0.50	<0.50	-	-
THM's (avg.)	-	0.057	-	<0.001	0.100	-
Uranium (µg/l)	<0.10	<0.10	9.9	10.0	20.0	-
Zinc (Total)	0.006	0.044	<0.005	<0.005	-	≤5.0
PCB (µg/l)	<0.05	<0.05	<0.050	<0.050	-	-
Gross Alpha / Gross Beta (Bq/L)	<0.10 / <0.10	<0.10 / <0.17	<0.10 / <0.10	0.24 / 0.11	0.5 / 1.0	-
Lead-210 (Bq/L)	-	-	-	<0.10	0.2	-

*The Bennery Lake plant must produce water with turbidity of <0.2 NTU 95% of the time and <1.0 NTU 100% of the time. **The Five Island Lake plant must produce water with turbidity of <1.0 NTU 95% of the time , as required by Provincial Permit.

TYPICAL ANALYSIS - SMALL SYSTEMS
2016 - 2017

(in milligrams per litre unless shown otherwise)
Note: All Regulatory Compliance Analysis are Processed by Third Party Laboratories

PARAMETERS	MIDDLE MUSQUODOBOIT		COLLINS PARK		GUIDELINES FOR CANADIAN DRINKING WATER QUALITY	
	Raw Water	Treated Water	Raw Water	Treated Water	Maximum Acceptable Concentration	Objective Concentration
Alkalinity (as $CaCO_3$)	48.0	83.5	12.0	7.2	-	-
Aluminum	0.007	<0.005	0.045	0.006	-	0.2
Ammonia (N)	<0.050	<0.050	0.07	<0.050	-	-
Arsenic	<0.001	<0.001	0.002	<0.001	0.010	-
Calcium	15.0	4.8	6.6	0.18	-	-
Chloride	14.5	8.9	42.5	6.3	-	≤250
Chlorate	<0.1	0.3	<0.1	0.3	1.0	-
Chlorite	<0.1	<0.1	<0.1	<0.1	1.0	-
Colour (True Colour Units)	<5.0	<5.0	16.0	<5.0	-	≤15.0
Conductivity (µS/cm)	150.0	230.0	160.0	22.0	-	-
Copper (Total)	0.002	0.010	<0.002	<0.019	-	≤1.0
Fluoride	<0.10	<0.10	<0.10	<0.10	1.5	-
Hardness (as $CaCO_3$)	61.0	19.0	20.0	<1.0	-	-
Hardness (as $CaCO_3$) (Grains/IG)	4.3	1.3	1.4	0.1	-	-
HAA5 (avg.)	-	<0.005	-	<0.005	0.080	-
Iron (Total)	<0.050	<0.050	0.075	<0.050	-	≤0.3
Langelier Index @ 4°C	-1.8	-1.5	-2.55	-3.83	-	-
Langelier Index @ 20°C	-1.5	-1.2	-2.30	-3.58	-	-
Lead (Total) (µg/l)	<0.50	<0.50	<0.50	<0.64	10.0	-
Magnesium	5.4	1.80	0.91	<0.10	-	-
Manganese (Total)	0.003	<0.002	0.042	<0.002	-	≤0.05
Mercury (µg/l)	<0.013	<0.013	<0.013	<0.013	1.0	-
Nitrate and Nitrite (as N)	0.65	0.64	0.14	<0.052	10.0	-
pH (pH Units)	6.9	7.2	7.3	7.0	-	7.0 - 10.5
Potassium	1.10	0.60	0.93	0.11	-	-
Sodium	7.2	39.0	24.5	5.5	-	≤200
Solids (Total Dissolved)	115.0	120.0	0.99	23.0	-	≤500
Sulfate	24.0	2.7	8.4	<2.0	-	≤500
Turbidity (NTU)	0.49	<0.10	1.02	<0.12	*0.1 / 0.3	≤5
Total Organic Carbon (TOC)	0.54	<0.50	3.5	<0.50	-	-
THM's (avg.)	-	<0.002	-	<0.003	0.100	-
Uranium (µg/l)	<0.10	<0.10	<0.10	<0.10	20.0	-
Zinc (Total)	0.013	0.096	<0.005	0.029	-	≤5.0
PCB (µg/l)	<0.05	<0.05	<0.05	<0.05	-	-
Gross Alpha / Gross Beta (Bq/L)	<0.014/<0.10	<0.010/<0.46	<0.010/<0.10	<0.010/<0.10	0.5/1.0	-

*Ultra-filtration membrane plants must produce water with turbidity of <0.1 NTU 99% of the time and <0.3 NTU 100% of the time, as required by Provincial Permit.

TYPICAL ANALYSIS - SMALL SYSTEMS
2016 - 2017

(in milligrams per litre unless shown otherwise)
Note: All Regulatory Compliance Analysis are Processed by Third Party Laboratories

PARAMETERS	SILVER SANDS		MILLER LAKE		GUIDELINES FOR CANADIAN DRINKING WATER QUALITY	
	Raw Water	Treated Water	*Raw Water	Treated Water	Maximum Acceptable Concentration	Objective Concentration
Alkalinity (as $CaCO_3$)	69.0	64.0	-	23.0	-	-
Aluminum	<0.009	0.013	-	0.088	-	0.2
Ammonia (N)	0.063	<0.050	-	<0.050	-	-
Arsenic	<0.002	<0.001	-	<0.001	0.010	-
Calcium	35.0	35.0	-	4.6	-	-
Chloride	63.0	66.5	-	9.2	-	≤250
Chlorate	<0.1	0.3	-	<0.1	1.0	-
Chlorite	<0.1	<0.1	-	<0.1	1.0	-
Colour (True Colour Units)	<5.0	<5.0	-	<5.0	-	≤15.0
Conductivity (µS/cm)	390.0	390.0	-	89.0	-	-
Copper (Total)	<0.002	<0.003	-	<0.002	-	≤1.0
Fluoride	0.23	0.22	-	0.59	1.5	-
Hardness (as $CaCO_3$)	110.0	110.0	-	13.0	-	-
Hardness (as $CaCO_3$) (Grains/IG)	7.7	7.7	-	0.9	-	-
HAA5 (avg.)	-	<0.005	-	0.051	0.080	-
Iron (Total)	0.856	<0.050	-	<0.050	-	≤0.3
Langelier Index @ 4°C	-0.32	-0.51	-	-2.07	-	-
Langelier Index @ 20°C	+0.28	-0.26	-	-1.82	-	-
Lead (Total) (µg/l)	<0.50	<0.50	-	<0.50	10.0	-
Magnesium	4.9	4.85	-	0.36	-	-
Manganese (Total)	1.030	<0.002	-	0.008	-	≤0.05
Mercury (µg/l)	<0.013	<0.013	-	<0.013	1.0	-
Nitrate and Nitrite (as N)	<0.050	<0.050	-	<0.050	10.0	-
pH (pH Units)	7.9	7.6	-	7.4	-	7.0 - 10.5
Potassium	0.86	0.79	-	0.32	-	-
Sodium	22.5	26.5	-	14.0	-	≤200
Solids (Total Dissolved)	210.0	210.0	-	56.0	-	≤500
Sulfate	19.5	19.0	-	9.0	-	≤500
Turbidity (NTU)	7.4	<0.18	-	<0.14	**1.0 ***0.2 / 1.0	≤5
Total Organic Carbon (TOC)	<0.50	<0.50	-	1.6	-	-
THM's (avg.)	-	<0.004	-	0.074	0.100	-
Uranium (µg/l)	<0.10	<0.10	-	<0.10	20.0	-
Zinc (Total)	<0.005	0.023	-	0.069	-	≤5.0
PCB (µg/l)	<0.05	<0.05	-	<0.05	-	-
Gross Alpha / Gross Beta (Bq/L)	<0.10/<0.10	<0.10/<0.11	-	<0.11/<0.11	0.5/1.0	-
Lead - 210 (Bq/L)	-	-	-	-	0.2	-

*Raw water samples were not collected from the Miller Lake wells this past year, since the wells were not in operation. Treated water was supplied from either the Lake Major or Pockwock water systems as facility upgrades are being implemented at the Miller Lake Water Supply System, including the connection of new wells. **The Silver Sands plant must produce water with turbidity of <1.0 NTU 95% of the time.

TYPICAL ANALYSIS - SMALL SYSTEMS
2016 - 2017

(in milligrams per litre unless shown otherwise)
Note: All Regulatory Compliance Analysis are Processed by Third Party Laboratories

PARAMETERS	BOMONT				GUIDELINES FOR CANADIAN DRINKING WATER QUALITY	
	Raw Water	Treated Water			Maximum Acceptable Concentration	Objective Concentration
Alkalinity (as $CaCO_3$)	12.0	15.0			-	-
Aluminum	0.059	0.010			-	0.2
Ammonia (N)	<0.050	0.082			-	-
Arsenic	0.002	<0.001			0.010	-
Calcium	11.0	10.0			-	-
Chloride	30.0	150.0			-	≤250
Chlorate	<0.1	0.5			1.0	-
Chlorite	<0.1	<0.10			1.0	-
Colour (True Colour Units)	18.5	<5.0			-	≤15.0
Conductivity (µS/cm)	130.0	120.0			-	-
Copper (Total)	<0.002	0.012			-	≤1.0
Fluoride	<0.10	<0.10			1.5	-
Hardness (as $CaCO_3$)	31.0	28.0			-	-
Hardness (as $CaCO_3$) (Grains/IG)	2.2	2.0			-	-
HAA5 (avg.)	-	0.070			0.080	-
Iron (Total)	0.100	0.086			-	≤0.3
Langelier Index @ 4°C	-2.8	-2.26			-	-
Langelier Index @ 20°C	-2.6	-2.01			-	-
Lead (Total) (µg/l)	<0.050	0.71			10.0	-
Magnesium	1.000	0.76			-	-
Manganese (Total)	0.048	0.007			-	≤0.05
Mercury (µg/l)	<0.013	<0.013			1.0	-
Nitrate and Nitrite (as N)	0.08	<0.050			10.0	-
pH (pH Units)	7.3	7.3			-	7.0 - 10.5
Potassium	0.67	0.75			-	-
Sodium	18.5	26.0			-	≤200
Solids (Total Dissolved)	74.0	220.0			-	≤500
Sulfate	18.0	<2.0			-	≤500
Turbidity (NTU)	1.5	<0.10			*1.0/0.3	≤5
Total Organic Carbon (TOC)	4.2	0.97			-	-
THM's (avg.)	-	0.053			0.100	-
Uranium (µg/l)	0.25	<0.10			20.0	-
Zinc (Total)	<0.005	0.030			-	≤5.0
PCB (µg/l)	<0.05	<0.05			-	-
Gross Alpha / Gross Beta (Bq/L)	<0.16/<0.10	<0.12/<0.10			0.5/1.0	-

Ultra-filtration membrane plants must produce water with turbidity of <1.0 NTU 99% of the time and <0.3 NTU 100% of the time, as required by Provincial Permit.

FINANCIAL OVERVIEW

Abbreviated Financial Information
March 31, 2017
(in thousands)

ASSETS			
Fixed			
Utility Plant in Service at Cost			$ 1,562,125
Provision for Depreciation			(393,727)
Net Book Value			1,168,398
Capital Work in Progress			28,406
Regulatory Asset			3,388
Current			90,706
TOTAL ASSETS			**$ 1,290,898**
LIABILITIES			
Long Term Debt			$ 224,968
Other Than Long Term Debt			82,808
TOTAL LIABILITIES			**$ 307,776**
EQUITY			
Special Purpose Reserves			$ 16,912
Contributed Capital Surplus			980,344
Accumulated Other Comprehensive Income			(43,193)
Operating Surplus used to Fund Capital, Cumulative			12,380
Capital Surplus			966,443
Operating Surplus (Deficit) April 1, 2016			7,819
2016/17 OPERATIONS			
Operating Revenue	$ 137,998		
Financial Revenue	3,323		
Revenue From all Sources	$ 141,321		
Expenditures			
Operating Expenses	$ 78,738		
Depreciation	19,102		
Grant in lieu of taxes HRM	4,578		
Financial Expenses	30,043		
Total Expenditures	$ 132,461		
Excess of Expenditures over Revenue			8,860
Accumulated Operating Surplus March 31, 2017			16,679
TOTAL EQUITY			**$ 983,122**
TOTAL LIABILITIES & EQUITY			**$ 1,290,898**

Figures in the Financial Overview are presented in accordance with the NSUARB Accounting and Reporting Handbook for Water Utilities.

Financial Statements

Halifax Regional Water Commission

March 31, 2017

Contents

Grant Thornton LLP
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Independent auditor's report

To the Members of the Board of the
Halifax Regional Water Commission

We have audited the accompanying financial statements of the Halifax Regional Water Commission, which comprise the statement of financial position as at March 31, 2017, and the statement of comprehensive earnings, statement of changes in equity and statement of cash flows for the year then ended, and a summary of significant accounting policies and other explanatory information.

Management's responsibility for the financial statements
Management is responsible for the preparation and fair presentation of these financial statements in accordance with International Financial Reporting Standards, and for such internal control as management determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditor's responsibility
Our responsibility is to express an opinion on these financial statements based on our audits. We conducted our audits in accordance with Canadian generally accepted auditing standards. Those standards require that we comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained in our audit is sufficient and appropriate to provide a basis for our audit opinion.

Other matter
Our audit was conducted for the purposes of forming an opinion on the financial statements taken as a whole. Schedules A to G are presented for purposes of additional information and are not a required part of the financial statements. Such information has been subjected to the auditing procedures applied, only to the extent necessary to express an opinion, on the audit of the financial statements taken as a whole.

Opinion
In our opinion, the financial statements present fairly, in all material respects, the financial position of the Halifax Regional Water Commission as at March 31, 2017 and its financial performance and its cash flows for the years then ended in accordance with International Financial Reporting Standards.

Emphasis of Matter
Without modifying our opinion, we draw attention to note 15 to the financial statements, which explains that certain comparative information for the year ended March 31, 2016 has been restated.

Grant Thornton LLP

Halifax, Canada
June 28, 2017

Chartered Professional Accountants
Licensed Public Accountants

Halifax Regional Water Commission
Statements of earnings

Year ended March 31, 2017 *(in thousands)*

	2017	2016 Restated (Note 15)
Operating revenues		
Water	**$ 47,183**	$ 43,193
Wastewater	**69,475**	66,601
Stormwater	**10,542**	10,595
Fire protection	**7,074**	8,032
Private fire protection	**831**	679
Other operating revenue	**2,892**	2,617
	137,997	131,717
Operating expenditures (note 14)		
Water supply and treatment	**8,050**	8,623
Water transmission and distribution	**8,997**	9,094
Wastewater collection	**11,639**	10,577
Stormwater collection	**4,097**	4,237
Wastewater treatment	**19,794**	19,285
Engineering and information services	**7,576**	7,018
Regulatory services	**2,356**	2,370
Customer service	**4,432**	4,450
Administration and pension	**11,799**	9,681
Depreciation and amortization	**43,433**	40,254
	122,173	115,589
Earnings from operations before financial and other revenues and expenditures	**15,824**	16,128
Financial and other revenues		
Interest	**780**	883
Contributed capital	**17,980**	17,446
Other	**2,543**	2,487
	21,303	20,816
Financial and other expenditures		
Interest on long term debt	**8,475**	8,889
Amortization of debt discount	**199**	186
Grant in lieu of taxes	**4,578**	4,528
Other	**467**	198
	13,719	13,801
Earnings for the year before regulatory deferral account balance amortization	**23,408**	23,143
Regulatory deferral account balance amortization (note 5)	**(192)**	(192)
Earnings for the year	**$ 23,216**	$ 22,951

See accompanying notes to the financial statements.

Halifax Regional Water Commission
Statements of comprehensive earnings

Year ended March 31, 2017 *(in thousands)*

		2017		2016
Earnings for the year	**$**	**23,216**	$	22,951
Other comprehensive income (loss)				
Items that will not be reclassified subsequently to earnings:				
Re-measurement on defined benefit plans		**743**		10,389
Total comprehensive earnings for the year	**$**	**23,959**	$	33,340

See accompanying notes to the financial statements.

Halifax Regional Water Commission
Statements of financial position

Year ended March 31, 2017 *(in thousands)*

	March 31 2017	March 31 2016 Restated (Note 15)	March 31 2015 Restated (Note 15)
Assets			
Current			
Cash and cash equivalents	**$ 55,879**	$ 46,478	$ 39,271
Receivables			
Customer charges and contractual	**13,321**	15,641	14,181
Unbilled service revenues	**17,158**	16,171	15,479
Halifax Regional Municipality	**1,880**	9,558	3,743
Inventory	**1,601**	1,684	1,528
Prepaids	**867**	862	915
	90,706	90,394	75,117
Intangible assets (note 11)	**10,275**	10,201	10,672
Capital work in progress	**28,406**	18,529	41,423
Utility plant in service (note 12)	**1,144,152**	1,139,658	1,096,257
Total assets	**1,273,539**	1,258,782	1,223,469
Regulatory deferral account balance (note 5)	**3,388**	3,580	3,772
Total assets and regulatory deferral account debit balances	**$ 1,276,927**	$ 1,262,362	$ 1,227,241
Liabilities			
Current			
Payables and accruals			
Trade	**$ 16,790**	$ 16,686	$ 15,612
Interest on long term debt	**2,101**	2,229	2,137
Halifax Regional Municipality	**295**	4,584	6,973
Contractor and customer deposits	**191**	193	198
Current portion of deferred contributed capital	**12,889**	12,526	21,603
Current portion of long term debt (note 13)	**21,669**	23,195	22,374
Unearned revenue	**787**	389	511
	54,722	59,802	69,408
Deferred contributed capital	**808,632**	804,641	790,315
Long term debt (note 13)	**203,299**	215,794	208,231
Employee benefit obligation – pension plan (note 4)	**58,480**	54,265	65,005
Employee benefit obligation – post-retirement benefits (note 4)	**341**	466	458
Employee benefit obligation – pre-retirement benefits (note 4)	**3,824**	3,724	3,494
	1,129,298	1,138,692	1,136,911
Equity			
Accumulated other comprehensive (loss) (page 5)	**(43,193)**	(43,936)	(54,325)
Accumulated surplus (page 5)	**190,822**	167,606	144,655
	147,629	123,670	90,330
	$ 1,276,927	$ 1,262,362	$ 1,227,241

Contingent liabilities (note 3)
Commitments (note 6)

Approved by the Board

Commissioner

Commissioner

See accompanying notes to the financial statements.

Halifax Regional Water Commission
Statements of changes in equity

Year ended March 31, 2017 *(in thousands)*

	Accumulated other comprehensive (loss)	Accumulated surplus	Total
Balance at April 1, 2015	$ (54,325)	$ 144,655	$ 90,330
Earnings for the year	-	22,951	22,951
Other comprehensive income	10,389	-	10,389
Comprehensive earnings for the year	10,389	22,951	33,340
Balance at March 31, 2016	$ (43,936)	$ 167,606	$ 123,670
Balance at March 31, 2016	**$ (43,936)**	**$ 167,606**	**$ 123,670**
Earnings for the year	**-**	**23,216**	**23,216**
Other comprehensive income	**743**		**743**
Comprehensive earnings for the year	**743**	**23,216**	**23,959**
Balance at March 31, 2017	**$ (43,193)**	**$ 190,822**	**$ 147,629**

See accompanying notes to the financial statements.

Halifax Regional Water Commission
Statements of cash flows

Year ended March 31, 2017 *(in thousands)*

	2017	2016 Restated (Note 15)
Increase (decrease) in cash and cash equivalents		
Operating		
Comprehensive earnings for the year	**$ 23,959**	$ 33,340
Depreciation and amortization	**26,692**	23,934
Employee benefit obligations	**4,191**	(10,504)
Gains on disposal of plant in service	**59**	158
	54,901	46,928
Change in non-cash operating working capital items (note 7)	**5,172**	(9,420)
	60,073	37,508
Financing		
Proceeds from issuance of long term debt	**9,053**	28,307
Contributed capital	**9,231**	5,013
Debt issue costs, net	**122**	(49)
Principal repayment on Harbour Solutions long term debt	**(6,500)**	(6,500)
Principal repayments of long term debt	**(16,695)**	(13,373)
	(4,789)	13,398
Investing		
Deferred capital contributions	**629**	4,148
Proceeds from sale of plant in service	**197**	90
Purchase of capital work in progress	**(19,393)**	(10,321)
Purchase of utility plant in service	**(27,316)**	(37,616)
	(45,883)	(43,699)
Net change in cash and cash equivalents	**9,401**	7,207
Cash and cash equivalents, beginning of year	**46,478**	39,271
Cash and cash equivalents, end of year	**$ 55,879**	$ 46,478

See accompanying notes to the financial statements.

Halifax Regional Water Commission
Notes to the financial statements

Year ended March 31, 2017 *(in thousands)*

1. Nature of operations

The Halifax Regional Water Commission (the Commission) is a public utility owned and controlled by the Halifax Regional Municipality (HRM). The Commission is responsible for the supply of municipal water, wastewater and stormwater services to the residents of the HRM. The Commission's principal place of business is P.O. Box 8388 Station A, 450 Cowie Hill Road, Halifax, Nova Scotia. The Commission is exempt from income tax.

2. Summary of significant accounting policies

(a) Statement of compliance

The financial statements have been prepared in accordance with International Financial Reporting Standards (IFRS) issued by the International Accounting Standards Board (IASB). The principal accounting policies applied in the preparation of these financial statements are set out below. These policies have been consistently applied to all years presented, unless otherwise stated.

The financial statements were authorized for issue by the Board on June 28, 2017.

(b) Basis of measurement

The Commission's financial statements are prepared on the historical cost basis, except for certain financial instruments measured at fair value. The financial statements are presented in Canadian dollars and all values are rounded to the nearest thousand. The financial statements are presented in accordance with International Accounting Standards (IAS) 1 "Presentation of Financial Statements".

(c) Regulation

In matters of administrative policy relating to customers, rates, capital expenditures, depreciation rates and accounting matters, the Commission is subject to the jurisdiction of the Nova Scotia Utility and Review Board (NSUARB). Rates charged to and collected from customers are designed to recover costs of providing the regulated services. Halifax Water is required to prepare submissions in accordance with the Handbook issued by the NSUARB. There are differences in the accounting treatment of certain transactions from IFRS including the accounting of principal debt payments, employee future benefits, depreciation and amortization, and gains and losses on the disposal of plant in service and accumulated surplus.

Regulatory assets represent costs incurred that have been deferred as approved by the NSUARB and will be recovered through future rates collected from customers. Halifax Water's regulatory asset is disclosed in note 5.

(d) Utility plant in service

Utility plant in service (note 12) is recorded at cost, being the purchase price and directly attributable cost of acquisition or construction, including interest capitalized during construction. Contributions for capital expenditures are treated as deferred contributed capital on the statement of financial position and amortized over the estimated useful lives of the assets. Structures and land taken out of service are removed from utility plant in service and placed in plant not in service at cost less accumulated depreciation. Losses or gains related to assets retired, demolished or sold are charged or credited to the statement of earnings.

(e) Cash and cash equivalents

Cash and cash equivalents consists of cash on hand and balances with banks.

(f) Depreciation

Depreciation is provided using the straight-line method over the estimated useful lives of the assets.

The estimated useful lives for the major classifications of utility plant in service are as follows:

Culverts	25 to 50 years
Hydrants	50 to 80 years
Meters	20 to 25 years
Office equipment and furniture and transportation equipment	3 to 10 years
Pumping equipment	5 to 30 years
Purification and treatment equipment	20 to 50 years
SCADA equipment	5 to 25 years
Services and laterals	50 to 60 years
Structures and improvements	50 to 100 years
Tools and work equipment	5 to 30 years
Water, wastewater and stormwater mains	60 to 100 years

Depreciation commences in the year an asset is put in service and ready for its intended use. In the year of acquisition, depreciation is calculated at 50% of the above rates unless a project is significant, in which case depreciation is prorated for the number of months the asset was in use. The Commission does not maintain a depreciation fund. The Commission has received NSUARB approval for exemption from setting up a depreciation fund as long as net depreciable additions to plant exceed the depreciation charged.

(g) Inventory

Cost of inventory is comprised of direct materials and supplies. Inventories are valued at the lower of cost and net realizable value with cost being determined on a weighted average moving cost method.

(h) Revenues and expenditures

All revenues and expenditures are recorded on an accrual basis. Revenues relating to supplying water, wastewater and stormwater services are recorded based on cyclical billings and include an accrual for estimated amounts not yet billed. Fire protection revenue is recorded based on approved rates. Other revenues are recorded at the time services are performed, the amount can be measured reliably and collection is reasonably assured.

(i) Long term debt

Debt issue costs are deferred and amortized over the term of the debt to which it relates.

(j) Use of estimates and critical accounting judgments

In preparing the Commission's financial statements, management is required to make estimates and assumptions that affect the reported amounts of assets and liabilities, the disclosure of contingent assets and liabilities at the date of the financial statements and reported amounts of revenue and expenditures during the period. Significant estimates and assumptions are not limited to, but include the following:

- At year end, revenue from water, stormwater and wastewater services has been earned, but not yet billed due to the timing of the billing cycles. Management estimates the unbilled revenue accrual based on historic billing trends.
- Management assumptions are used in the actuarial determination of employee benefit obligations, such as standard rates of inflation, mortality, discount rates, and anticipation of future salary increases.
- Useful lives of utility plant in service are reviewed at each reporting date based on expected patterns of usage and historical information.
- Recognition and measurement of provisions and contingencies.

Actual results could differ from these estimates.

(k) Financial instruments

The Commission initially recognizes and measures its financial assets and liabilities at fair value.

All financial instruments are classified into one of five categories: fair value through profit and loss, held to maturity, loans and receivables, available for sale financial assets, or other financial liabilities. All financial instruments are initially measured in the statement of financial position at fair value. Financial instruments subsequently measured at amortized cost include transaction costs.

Subsequent measurement and changes in fair value will depend on their initial classification, as follows:

- Fair value through profit and loss financial instruments are measured at fair value and changes in fair value are recognized in net earnings;
- Available for sale financial assets are measured at fair value with changes in fair value recorded in other comprehensive income until the financial asset is derecognized or impaired at which time the amounts would be recorded in profit or loss; and
- Loans and receivables, held to maturity investments, and other financial liabilities are measured at amortized cost using the effective interest method.

The Commission's financial assets and liabilities are classified and measured as follows:

Asset/Liability	Classification	Measurement
Cash and cash equivalents	Loans and receivables	Amortized cost
Receivables	Loans and receivables	Amortized cost
Receivable from HRM	Loans and receivables	Amortized cost
Payables and accruals	Other financial liabilities	Amortized cost
Long term debt	Other financial liabilities	Amortized cost
Deposits	Other financial liabilities	Amortized cost

(l) Provisions

A provision is recognized in the statement of financial position when the Commission has a legal or constructive obligation as a result of a past event, and it is probable that an outflow of economic benefits will be required to settle the obligation. If the effect is material, provisions are determined by discounting the expected future cash flows at a rate that reflects current market assessment of the time value of money and, where appropriate, the risks specific to the obligation.

(m) Impairments

At the end of each reporting period, the Commission reviews the carrying amounts of its tangible and intangible assets to determine whether there is an indication of an impairment loss. If any such indication exists, the recoverable amount of the assets is estimated in order to determine the extent of impairment loss (if any). The recoverable amount of any asset is the higher of its fair value less costs to sell and its value in use. Where it is not possible to estimate the recoverable amount of an individual asset, the impairment test is carried out on the asset's cash-generating unit (CGU), which is the lowest group of assets to which the asset belongs for which there are separately identifiable cash inflows that are largely independent of the cash inflows from other assets. The Commission has three CGU's (water, wastewater and stormwater) for which impairment testing is performed.

If the recoverable amount of the asset is estimated to be less than its carrying amount, the carrying amount of the asset is reduced to its recoverable amount. An impairment loss is recognized immediately in earnings. When an impairment loss is subsequently reversed, the carrying amount of the assets is increased to the revised estimate of its recoverable amount, but so that the increased carrying amount does not exceed the carrying amount that would have been determined had no impairment loss been recognized for the asset in prior years.

(n) Intangibles

Intangible assets include land access easements, water removal rights, studies, and capital master plans and are recorded at cost less accumulated amortization. Land rights include payment for easements and right of use over land and have an indefinite useful life. Intangibles with finite useful lives are amortized annually over the estimated useful lives. The expected useful lives are as follows:

Intangible assets	10 to 30 years

(o) Employee benefits obligations

The Commission accrues in its accounts, annually, the estimated liabilities for pensions and other employee benefits.

Pension benefits
The Commission provides employment, post-retirement and pre-retirement benefits through defined benefit plans and defined contribution plans.

The cost of pension benefits for defined contribution pension plans are expensed at the time active employees are compensated.

The defined benefit plans sponsored by the Commission determine the amount of pension benefits employees will receive on retirement by reference to length of service and salary levels. Obligations associated with defined benefit plans reside with the Commission, even if plan assets for funding the plan are set aside.

The liability recognized in the statement of financial position for defined benefit plans is the present value of the defined benefit obligation at the end of the reporting date less the fair value of plan assets.

Management estimates the defined benefit obligation annually with assistance from an independent actuary using the projected unit credit method. The defined benefit obligation uses estimates for inflation, medical cost trends, mortality, and anticipated salary levels. The discount factor used to present value estimated future cash flows is determined with reference to high quality corporate bonds that have terms to maturity approximating the terms of the related pension liability.

Gains and losses resulting from re-measurements of the net defined benefit liability are charged to other comprehensive income in the period in which they arise. Service costs are recognized immediately into earnings.

Net interest cost related to pension obligations and returns on plan assets are included in salary and benefits on the statement of earnings.

Short-term employee benefits
Short-term employee benefit obligations that are due to be settled wholly within twelve months after the end of the annual reporting period in which the employees render the related service are measured on an undiscounted basis and are expensed as the related service is provided.

(p) Regulatory deferral account balance

The Commission early adopted IFRS 14 Regulatory Deferral Accounts and has continued to apply the accounting policies it applied in accordance with the Handbook for the recognition, measurement and impairment of assets and liabilities arising from rate regulation. These are referred to as regulatory deferral account balances.

Explanation of recognized amounts
Regulatory deferral account balances are recognized and measured at cost less amortization. They are assessed for impairment on the same basis as other non-financial assets as described below.

Management continually assesses the likelihood of recovery of regulatory assets. If recovery through future rates is no longer considered probable, the amounts would be charged to the results of operations in the period that the assessment is made.

(q) Future accounting standards

At the date of authorization of these financial statements, certain new IFRS standards, amendments and interpretations to existing standards have been published by the IASB, but are not yet effective and have not been adopted early by the Commission.

Management anticipates that all of the relevant pronouncements will be adopted in the Commission's accounting policies for the first period beginning after the effective date of the pronouncement. Informtion on new standards, amendments

and interpretations that are expected to be relevant to the Commission's financial statements is provided below.

IFRS 15 Revenue from Contracts with Customers
The IASB released a new standard IFRS 15 Revenue from Contracts with Customers which replaces IAS 18 Revenue, IAS 11 Construction Contracts and certain revenue-related interpretations. The new standard provides a single, principle based five-step model to be applied to all contracts with customers requiring an entity to recognize revenue 1) in a manner that depicts the transfer of goods or services to customers and 2) at an amount that reflects the consideration the entity expects to be entitled to in exchange for those goods or services.

IFRS 15 is effective for annual periods beginning on or after January 1, 2018.

IFRS 9 Financial Instruments
The IASB has replaced IAS 39 Financial Instruments: Recognition and Measurement in its entirety with a new standard IFRS 9 Financial Instruments. The final version of the standard introduces a new approach to financial asset classification, replaces the "incurred loss" impairment model with a more forward-looking expected loss model and substantially revises hedge accounting.

The new standard IFRS 9 is effective for annual periods beginning on or after January 1, 2018.

IFRS 16 Leases
The IASB issued IFRS 16, Leases, which replaces IAS 17, Leases. IFRS 16 provides a single lessee accounting model, requiring the recognition of assets and liabilities for all leases, unless the lease term is twelve months or less or the underlying asset has a low value. Lessor accounting remains largely unchanged from IAS 17.

The new standard IFRS 16 is effective for annual periods beginning on or after January 1, 2019.

Management believes these new and revised standards will have minimal impact on the financial statements.

3. Contingent liabilities

As a condition of a prior year sale of a property, the Commission indemnified the purchaser from claims or actions resulting from migration of halocarbons. The environmental risk is assessed to be low and the likelihood of any related liability is not determinable.

The Commission has been named along with the contractor for a flooding incident that occurred as a result of an overflow of wastewater at a pumping station associated with the Halifax Harbour Solutions Project (HHSP). The claim is being defended by the Commission's insurer and management believes exposure in this regard is minimal.

There are active claims against the Commission; however, the likelihood of actual liability is not determinable at this time. If the Commission's defense of active claims is unsuccessful, the potential exposure would be $2,000 - $3,000.

4. Employee benefit obligations

Retirement benefit plan – employees transferred from HRM
The Commission is responsible for funding the employer share of the contributions to the HRM pension plan for certain employees that transferred from HRM as of August 1, 2007. HRM administers this defined benefit pension plan and the Commission reimburses HRM for the pension costs related to the Commission's proportionate share of the employees covered under the plan. Due to the nature of the plan, the Commission does not have sufficient information to account for the plan as a defined benefit; therefore, the multiemployer defined benefit plan is accounted for in the same manner as a defined contribution plan. An expense is recorded in the period when the Commission is obligated to make contributions for services rendered by the employee. During 2017, the Commission funded $674 (2016 - $627) in contributions to the plan.

Defined benefit plans and other long term employment benefits
For all other employees, the Commission maintains a defined benefit pension plan and offers post-retirement health and insurance benefits to all of its employees. The pension plan provides pensions based upon length of service and best seven years' earnings. This defined benefit pension plan is funded by employer and employee contributions, each contributing 12.95% of regular employee earnings effective January 1, 2014. As of January 1, 2016, the pension plan was amended with employees currently contributing 10.65%.The employer contributes 13.29% of payroll which includes 9.85% toward current service cost and 3.44% toward going concern special payments.

Employees who retired prior to July 1, 1998 have extended health benefits coverage for life and drug coverage until age 65. Employees who retired after July 1, 1998 and before December 31, 2008 have coverage for drug, extended health, dental and life insurance until age 65 on a 50/50 cost shared basis (100% basis for employees who retired after December 31, 2008). Extended health coverage for these retirees and their spouses after the age of 65 is available on an optional basis at 100% retiree cost and drug coverage is available through the provincially managed drug program.

The Commission also has a non-funded pre-retirement benefit that is accrued annually, but is payable on retirement, termination or death if the employee has at least 10 years of continuous service. The benefit is equal to three days' pay for each completed year of service, up to a maximum of six month's salary and can be taken as a lump sum payment at the date of retirement in lieu of pre-retirement leave.

Information about the Commission's plans, based on an actuarial extrapolation as at March 31, 2017, is as follows on the next page:

	Pension Plan		Post-retirement benefits		Pre-retirement benefits	
	2017	2016	**2017**	2016	**2017**	2016
Change in accrued benefit obligation						
Balance, beginning of year	**$ 52,633**	$ 157,296	**$ 466**	$ 458	**$ 3,724**	$ 3,494
Current service cost	**5,020**	5,777	**-**	-	**308 2**	74
Interest cost	**6,160**	5,938	**11**	11	**129**	130
Past service cost	**-**	(2,787)	**-**	-	**-**	-
Contributions by plan participants	**2,417**	3,274	**-**	-	**-**	-
Benefit payments	**(4,715)**	(4,496)	**(61)**	(65)	**(377)**	(254)
Remeasurements – actuarial (gains)/ losses from changes in demographic assumptions	**-**	(1,101)	**31**	(21)	**-**	-
Remeasurements – actuarial (gains)/ losses from changes in financial/experience assumptions	**6,848**	(11,268)	**(106)**	83	**40**	80
Balance, end of year	**168,363**	152,633	**341**	466	**3,824**	3,724
Change in fair value of plan assets						
Balance, beginning of year	**98,368**	92,291	**-**	-	**-**	-
Interest income	**3,934**	3,644	**-**	-	**-**	-
Administrative expenses	**(144)**	(163)	**-**	-	**-**	-
Actual return on plan assets	**7,639**	(1,896)	**-**	-	**-**	-
Benefit payments	**(4,715)**	(4,496)	**(61)**	(65)	**(377)**	(254)
Contributions: Employee	**2,417**	3,273	-	-	**-**	-
Employer	**2,384**	5,715	**-**	65	**377**	254
Balance, end of year	**109,883**	98,368	**-**	-	**-**	-
Accrued benefit liability at March 31	**$ 58,480**	$ 54,265	**$ 341**	$ 466	**$ 3,824**	$ 3,724

Administration and pension expense includes pension expense of $7,390 (2016 - $5,448).

The significant actuarial assumptions adopted in measuring the Commission's accrued benefit obligations are as follows:

	2017 **Pension Plan**	2016 Pension Plan	**2017** **Post-Retirement Benefits**	2016 Post-Retirement Benefits	**2017** **Pre-Retirement Benefit**	2016 Pre-Retirement Benefit
Discount rate	**3.80%**	4.00%	**2.70%**	2.90%	**3.40%**	3.50%
Expected return on plan assets	**3.80%**	4.00%	**N/A**	N/A	**N/A**	N/A
Rate of compensation increase	**3.75%**	3.75%	**N/A**	N/A	**3.75%**	3.75%
Expenses for life benefits as a % of claims	**N/A**	N/A	**10.00%**	10.00%	**N/A**	N/A
Health benefit inflation per year	**N/A**	N/A	**7.16%**	7.43%	**N/A**	N/A
Dental benefit inflation per year	**N/A**	N/A	**4.50%**	4.50%	**N/A**	N/A

The measurement date used to determine the Plan assets and the accrued benefit obligation was March 31, 2017. The most recent valuation was completed January 1, 2016. The next review is scheduled for January 1, 2019.

The estimated employer contributions expected to be paid into the defined benefit plan and supplemental plan for the next fiscal year are $2,368.

5. Regulatory deferral account balance

In June 2011, the NSUARB granted the Commission approval to defer depreciation charges on certain assets transferred in 2010 from HRM relating to the Halifax Harbour Solutions Project (HHSP). Depreciation of $2,078 was deferred in each of fiscal 2011 and 2012. As a result, the Commission recognized a $4,156 regulatory deferral account. In absence of rate regulation, this regulatory deferral account balance would have been expensed as depreciation in fiscal 2011 and 2012. In May 2012, the NSUARB granted approval of the amortization of this deferral account over the remaining useful lives of the underlying assets, beginning in 2014. The expense recognized in 2017 is $192 (2016 - $192). IFRS 14 permits a first-time adopter of IFRS to continue to account, with some limited changes, for 'regulatory deferral account balances' in accordance with its previous GAAP, both on initial adoption of IFRS and in subsequent financial statements.

	2017	2016
Beginning balance	**$ 3,580**	$ 3,772
Amortization	**(192)**	(192)
Ending balance	**$ 3,388**	$ 3,580

6. Commitments

There is an agreement with HRM for renewal of the dividend/grant in lieu of taxes for fiscal years 2015/16 to 2019/20 for water services. Dividend payments are approved as part of revenue requirements by the NSUARB. There is no dividend/grant in lieu of taxes approved for wastewater/stormwater. The Commission is committed to a payment of $4,774 for the 2018 fiscal year.

At March 31, 2017, the Commission had $124,395 in expenditures from current and past approved capital budgets not yet expended.

7. Supplemental cash flow information

	2017	2016
Changes in non-cash operating working capital items		
Receivables, customer charges and contractual	**$ 1,333**	$ (2,152)
Payable to/receivable from HRM, net	**3,389**	(8,204)
Inventory	**83**	(156)
Prepaids	**(5)**	53
Payables and accruals, trade	**104**	1,074
Accrued interest on long term debt	**(128)**	92
Contractor and customer deposits	**(2)**	(5)
Unearned revenue	**398**	(122)
	$ 5,172	$ (9,420)

Interest paid during the year was $8,475 (2016 - $8,889).

8. Capital management

The Commission's objective when managing capital is to ensure sufficient liquidity to support its financial obligations and execute its operating and capital plans. The Commission monitors and makes adjustments to its capital structure through additional borrowings of long term debt which are used to finance capital projects.

The Commission considers its total capitalization to include all long term debt and total equity. The calculation is set out as follows:

	2017	2016
Long term debt (current portion)	**$ 21,669**	$ 23,195
Long term debt	**203,299**	215,794
Funded debt	**224,968**	238,989
Equity	**147,630**	123,670
Capital under management	**$ 372,598**	$ 362,659

The Commission is a regulated utility and is subject to the regulations of the NSUARB. As part of this regulation, the Commission must obtain approval by the NSUARB for all borrowings. The Commission has obtained regulatory approval for all borrowings during the fiscal year. The Commission is not subject to financial borrowing covenants other than as outlined in Note 10.

9. Financial instruments and risk management

The Commission applies a three-tier hierarchy framework for disclosing fair value of financial instruments, based on whether the inputs into the various valuation techniques are observable or unobservable. Observable techniques reflect market data obtained from independent sources, while unobservable inputs reflect management assumptions. Changes in valuation techniques of financial instruments may result in transfers of assigned levels. The hierarchy of input is as follows:

Level I	Quoted prices in active markets for identical assets or liabilities;
Level II	Inputs other than quoted prices included in Level I that are observable, either directly or indirectly; and
Level III	Inputs that are not based on observable market data.

The carrying values of current assets and current liabilities approximate their fair value due to the relatively short period to maturity of these financial instruments. Loans and receivables are carried at amortized cost. The fair value of variable rate long term debt is assumed to approximate its carrying value. Fair value has been estimated by discounting future cash flows at a rate offered for borrowings of similar maturities and credit quality at year end.

There were no transfers between classes of the fair value hierarchy during the year.

The Commission is exposed to risks as a result of holding financial instruments. Management considers and evaluates those risks on an on-going basis to ensure that the risks are appropriately managed. These potential risks include credit risk, interest risk, market risk and liquidity risk.

Credit risk

Credit risk arises from the possibility that the Commission's customers may experience financial difficulty and be unable to fulfill their obligations. The Commission's maximum exposure to credit risk corresponds to the cash and customer charges and contractual accounts receivable. However, the Commission's customers are numerous and diverse, which reduces the concentration of credit risk.

An analysis of the Commission's receivables and continuity of the Commission's provision for impairment losses on receivables is as follows:

	2017	2016
Receivables		
Customer charges, contractual and unbilled	**$ 32,702**	$ 33,754
Less: allowance for doubtful accounts	**(2,223)**	(1,941)
	$ 30,479	$ 31,813

The credit quality of financial assets that are neither past due nor impaired are assessed with reference to historical information and includes the following considerations; new customers, existing customers and payment patterns / history.

Interest risk
Interest risk arises from the possibility that changes in interest rates will cause the Commission a potential loss. All of the Commission's long term debt is at varying fixed rates and has staggered maturity dates which reduce the interest rate risk.

Market risk
Market risk arises from the possibility that the value of an investment will fluctuate as a result of changes in market prices. These changes could affect the market value of the investments in the Commission's employees' pension plan and consequently the plan's deficit. The risk is mitigated by the pension plan diversifying the types of investments in its portfolio.

Liquidity risk
Liquidity risk arises from the possibility of the Commission not being able to meet its cash requirements in a timely and cost effective manner. The Commission manages this risk by closely monitoring the cash on hand in comparison to upcoming cash commitments.

10. Related party transactions

The immediate parent and ultimate controlling party of the Commission is the HRM.

The Commission is obligated to make payments on debt, held in the name of HRM, associated with wastewater and stormwater assets which were transferred to the Commission in 2007 and subsequent years.

Amounts receivable from and payable to HRM have normal credit terms.

The Commission had the following related party transactions with HRM:

- The Commission recorded revenue for provision of water, wastewater and stormwater services to HRM in the amount of $5,025(2016 - $4,705).
- The Commission recorded fire protection revenue from HRM of $7,074(2016 - $8,032).
- The Commission paid a grant in lieu of tax of $4,578 (2016 - $4,528).
- The debt issued by the Commission was covered by a blanket guarantee from HRM subject to the Commission maintaining a debt service ratio of less than 35%.

Compensation of key management personnel

Members of the Board of Commissioners and Executive Management team are deemed to be key management personnel. It is the Board of Commissioners and Executive Management team who have the responsibility for planning, directing and controlling the activities of the Commission.

The following is compensation expense for key management personnel:

	2017	2016
Short term benefits	**$ 1,345**	$ 1,481
Post-employment benefits	**243**	233
Total compensation	**$ 1,588**	$ 1,714

11. Intangible assets

	2017	2016
Cost		
Beginning balance, April 1	**$ 12,232**	$ 11,669
Additions	**981**	563
Total cost, March 31	**13,213**	12,232
Accumulated depreciation		
Beginning balance, April 1	**2,031**	997
Depreciation	**907**	1,034
Total accumulated depreciation, March 31	**2,938**	2,031
Net book value	**$ 10,275**	$ 10,201

Halifax Regional Water Commission
Notes to the financial statements

Year ended March 31, 2017 *(in thousands)*

12. Utility plant in service

	Land	Structures and improvements	Treatment and network equipment	Distribution and collection network	Tools and work equipment	Total
Cost						
Beginning balance, April 1, 2016	**$ 20,518**	**$ 206,944**	**$ 214,182**	**$ 760,027**	**$ 12,291**	**$ 1,213,962**
Additions	**262**	**8,726**	**4,814**	**28,005**	**6,874**	**48,681**
Disposals	**-**	**(795)**	**(223)**	**(386)**	**(843)**	**(2,247)**
Total cost, March 31, 2017	**20,780**	**214,875**	**218,773**	**787,646**	**18,322**	**1,260,396**
Accumulated depreciation						
Beginning balance, April 1, 2016	**-**	**21,561**	**22,714**	**28,354**	**1,676**	**74,305**
Depreciation	**-**	**12,246**	**11,957**	**15,390**	**2,346**	**41,939**
Total accumulated depreciation March 31, 2017	**-**	**33,807**	**34,671**	**43,744**	**4,022**	**116,244**
Net book value, March 31, 2017	**$ 20,780**	**$ 181,068**	**$ 184,102**	**$ 743,902**	**$ 14,300**	**$ 1,144,152**

	Land	Structures and improvements	Treatment and network equipment	Distribution and collection network	Tools and work equipment	Total
						Restated (Note 15)
Cost						
Beginning balance, April 1, 2015	$ 18,983	$ 199,526	$ 204,676	$ 700,532	$ 7,838	$ 1,131,555
Additions	1,605	7,418	10,041	59,495	5,275	83,834
Disposals	(70)	-	(535)	-	(822)	(1,427)
Total cost, March 31, 2016	20,518	206,944	214,182	760,027	12,291	1,213,962
Accumulated depreciation						
Beginning balance, April 1, 2015	-	10,690	11,254	13,790	(436)	35,298
Depreciation	-	10,871	11,460	14,564	2,112	39,007
Total accumulated depreciation March 31, 2016	-	21,561	22,714	28,354	1,676	74,305
Net book value, March 31, 2016	$ 20,518	$ 185,383	$ 191,468	$ 731,673	$ 10,615	$ 1,139,657

13. Long-term debt	Interest rates	**2017**	2016
Payable to Municipal Finance Corporation (MFC)			
Water	1.040% to 6.750%	**$ 68,380**	$ 72,356
Halifax Harbour Solutions	0.900% to 4.329%	**8,450**	9,100
Wastewater/stormwater	1.040% to 4.500%	**85,120**	88,228
Stormwater	1.040% to 4.114%	**11,985**	11,699
		173,935	181,383
Payable to Halifax Regional Municipality			
MFC Wastewater/stormwater	1.200% to 4.940%	**52,066**	58,762
		226,001	240,145
Less: debt issue costs		**(1,033)**	(1,156)
		224,968	238,989
Less: amount payable within one year		**(21,669)**	(23,195)
		$ 203,299	$ 215,794

The debentures are repayable in fixed annual or semi-annual principal instalments plus interest payable semi-annually. Principal instalments for the next five years are as follows:

2018	$ 21,669
2019	$ 22,130
2020	$ 23,259
2021	$ 17,581
2022	$ 15,538

14. Operating expenditures by nature

	2017	Restated 2016
Salaries and benefits	**$ 39,839**	$ 33,538
Training	**656**	409
Contract services	**12,118**	16,326
Electricity	**6,295**	6,964
Operating supplies	**9,423**	8,349
Professional services	**4,768**	3,878
Chemicals	**4,404**	4,742
Depreciation and amortization	**44,670**	41,381
	$ 122,173	$ 115,587

15. Restatement

During the fiscal year ended March 31, 2017, the Commission completed Asset Management Plans for various assets. In the course of completing this initiative, management compiled an inventory of stormwater assets that were not previously recorded, specifically culverts for driveways and under roadways (cross culverts). Most of these assets are contributed assets installed prior to the transfer of wastewater and stormwater assets from HRM in 2007. At the time of the 2007 transfer no records were available on asset quantities, location, cost and condition. The Commission has added the assets to utility plant in service due to the relative significance of the assets to stormwater service. The assets were valued using an estimated depreciated replacement cost and prior year figures restated. The impact of restatement is as follows:

	Previously Reported April 1, 2015	Restated Adjustment	April 1, 2015
Distribution and collection network			
Cost	**$ 597,781**	$ 102,751	$ 700,532
Accumulated depreciation	**$ 9,877**	$ 3,913	$ 13,790
Deferred contributed capital	**$ 691,477**	$ 98,838	$ 790,315

	2016	Adjustment	2016
Depreciation expense	**$ 10,650**	$ 3,914	$ 14,564
Contributed capital revenue	**$ 13,533**	$ 3,914	$ 17,447

16. Comparative figures

Certain of the comparative figures have been reclassified to conform with the financial statement presentation adopted for the current year.

Halifax Regional Water Commission
Schedule of utility plant in service
Year ended March 31, 2017 *(in thousands)*

Schedule A

Water

	Land	Structures and improvements	Pumping equipment	Purification equipment	SCADA equipment	Transmission and distribution mains	Services	Meters	Hydrants	Aerotech and small systems	Tools and work equipment	Total
Cost												
Beginning balance, April 1, 2016												
Cost	**$ 15,297**	**$ 87,643**	**$ 9,711**	**$ 22,901**	**$ 4,792**	**$ 343,510**	**$ 34,082**	**$ 14,442**	**$ 18,887**	**$ 9,467**	**$ 23,876**	**$ 584,608**
Additions	120	5,486	9	870	254	6,977	1,551	701	445	97	3,336	19,846
Disposals	-	(795)	-	-	-	(386)	-	(223)	-	-	(341)	(1,745)
Total cost, March 31, 2017	15,417	92,334	9,720	23,771	5,046	350,101	35,633	14,920	19,332	9,564	26,871	602,709
Accumulated depreciation												
Beginning balance, April 1, 2016	**-**	**25,551**	**6,778**	**14,522**	**3,545**	**76,018**	**5,795**	**5,480**	**3,605**	**2,648**	**17,117**	**161,059**
Depreciation	-	2,483	250	956	144	4,226	582	470	297	274	1,192	10,874
Total accumulated depreciation, March 31, 2017	-	28,034	7,028	15,478	3,689	80,244	6,377	5,950	3,902	2,922	18,309	171,933
Net book value, March 31, 2017	$ 15,417	$ 64,300	$ 2,692	$ 8,293	$ 1,357	$ 269,857	$ 29,256	$ 8,970	$ 15,430	$ 6,642	$ 8,562	$ 430,776
Cost												
Beginning balance, April 1, 2015												
Cost	$ 15,440	$ 86,583	$ 9,711	$ 22,613	$ 4,326	$ 327,226	$ 32,931	$ 13,801	$ 18,400	$ 9,248	$ 22,913	$ 563,192
Additions	54	1,060	-	288	466	16,662	1,151	1,021	487	219	963	22,371
Disposals	(197)	-	-	-	-	(378)	-	(380)	-	-	-	(955)
Total cost, March 31, 2016	15,297	87,643	9,711	22,901	4,792	343,510	34,082	14,442	18,887	9,467	23,876	584,608
Accumulated depreciation												
Beginning balance, April 1, 2015	-	24,250	6,523	13,624	3,459	72,021	5,269	5,132	3,326	2,388	15,601	151,592
Depreciation	-	1,301	255	898	86	3,997	526	348	279	260	1,516	9,466
Total accumulated depreciation, March 31, 2016	-	25,551	6,778	14,522	3,545	76,018	5,795	5,480	3,605	2,648	17,117	161,059
Net book value, March 31, 2016	$ 15,297	$ 62,092	$ 2,933	$ 8,379	$ 1,247	$ 267,492	$ 28,287	$ 8,962	$ 15,282	$ 6,819	$ 6,759	$ 423,549

Schedules are presented in accordance with the NSUARB Accounting and Reporting Handbook for Water Utilities (Handbook).

Utility plant in service under IFRS differs from the Handbook due to exclusion of intangible assets, componentization of certain assets and useful lives for depreciation.

Schedule A

Halifax Regional Water Commission
Schedule of utility plant in service
Year ended March 31, 2017 *(in thousands)*

Wastewater

	Land	Structures and improvements	Pumping equipment	Treatment equipment	SCADA equipment	Collection system	Laterals	Tools and work equipment	Aerotech and small systems	Total
Cost										
Beginning balance, April 1, 2016										
Cost	**$ 5,187**	**$ 172,048**	**$ 16,870**	**$ 159,921**	**$ 7,777**	**$ 283,562**	**$ 16,170**	**$ 22,401**	**$ 11,994**	**$ 695,930**
Additions	142	3,160	709	1,201	433	6,607	2,938	3,508	95	18,793
Disposals	-	-	-	-	-	-	-	(502)	-	(502)
Total cost, March 31, 2017	5,329	175,208	17,579	161,122	8,210	290,169	19,108	25,407	12,089	714,221
Accumulated depreciation										
Beginning balance, April 1, 2016	-	48,798	5,962	39,289	910	53,469	1,149	9,877	3,021	162,475
Depreciation	-	4,899	615	7,966	456	3,949	353	1,696	429	20,363
Total accumulated depreciation, March 31, 2017	-	53,697	6,577	47,255	1,366	57,418	1,502	11,573	3,450	182,838
Net book value, March 31, 2017	**$ 5,329**	**$ 121,511**	**$ 11,002**	**$ 113,867**	**$ 6,844**	**$ 232,751**	**$ 17,606**	**$ 13,834**	**$ 8,639**	**$ 531,383**
Cost										
Beginning balance, April 1, 2015										
Cost	$ 5,187	$ 171,473	$ 9,568	$ 159,922	$ 7,061	$ 279,268	$ 13,465	$ 21,161	$ 11,730	$ 678,835
Additions	-	575	7,302	54	716	4,294	2,705	1,240	264	17,150
Disposals	-	-	-	(55)	-	-	-	-	-	(55)
Total cost, March 31, 2016	5,187	172,048	16,870	159,921	7,777	283,562	16,170	22,401	11,994	695,930
Accumulated depreciation										
Beginning balance, April 1, 2015	-	44,715	5,684	31,406	552	50,104	903	7,834	2,610	143,808
Depreciation	-	4,083	278	7,883	358	3,365	246	2,043	411	18,667
Total accumulated depreciation, March 31, 2016	-	48,798	5,962	39,289	910	53,469	1,149	9,877	3,021	162,475
Net book value, March 31, 2016	$ 5,187	$ 123,250	$ 10,908	$ 120,632	$ 6,867	$ 230,093	$ 15,021	$ 12,524	$ 8,973	$ 533,455

Schedules are presented in accordance with the NSUARB Accounting and Reporting Handbook for Water Utilities (Handbook).

Utility plant in service under IFRS differs from the Handbook due to exclusion of intangible assets, componentization of certain assets and useful lives for depreciation.

Halifax Regional Water Commission
Schedule of utility plant in service
Year ended March 31, 2017 *(in thousands)*

Schedule A

Stormwater	Structures and improvements	Collection system	Laterals	Tools and work equipment	Total
					Restated (Note 15)
Cost					
Beginning balance, April 1, 2016					
Cost	**$ 9,705**	**$ 218,501**	**$ 3,929**	**$ 2,034**	**$ 234,169**
Additions	80	9,250	682	1,011	11,023
Disposals	-	-	-	-	-
Total cost, March 31, 2017	9,785	227,751	4,611	3,045	245,192
Accumulated depreciation					
Beginning balance, April 1, 2016	**1,226**	**30,690**	**216**	**504**	**32,636**
Depreciation	176	5,690	85	366	6,317
Total accumulated depreciation, March 31, 2017	1,402	36,380	301	870	38,953
Net book value, March 31, 2017	**$ 8,383**	**$ 191,371**	**$ 4,310**	**$ 2,175**	**$ 206,239**
Cost					
Beginning balance, April 1, 2015					
Cost	$ 8,945	$ 211,223	$ 3,636	$ 1,624	$ 225,428
Additions	760	7,278	293	410	8,741
Disposals	-	-	-	-	-
Total cost, March 31, 2016	9,705	218,501	3,929	2,034	234,169
Accumulated depreciation					
Beginning balance, April 1, 2015	1,062	25,317	168	332	26,879
Depreciation	164	5,373	48	172	5,757
Total accumulated depreciation, March 31, 2016	1,226	30,690	216	504	32,636
Net book value, March 31, 2016	$ 8,479	$ 187,811	$ 3,713	$ 1,530	$ 201,533

During the year, $267 of interest was capitalized to Utility Plant in Service (2016 - $491).

Cumulative utility plant in service	**Water**	**Wastewater**	**Stormwater**	**Total**
Net book value, March 31, 2017	$ 430,776	$ 531,383	$ 206,239	$ 1,168,398
Net book value, March 31, 2016	$ 423,549	$ 533,455	$ 201,533	$ 1,158,537

Schedules are presented in accordance with the NSUARB Accounting and Reporting Handbook for Water Utilities (Handbook).

Utility plant in service under IFRS differs from the Handbook due to exclusion of intangible assets, componentization of certain assets and useful lives for depreciation.

Schedule B

Halifax Regional Water Commission
Schedule of long term debt

Year ended March 31, 2017 *(in thousands)*

	Interest rate	Final Maturity	Balance Remaining 2017	2016
Payable to Municipal Finance Corporation				
Water				
Debenture 23 A 1	4.250% to 6.125%	2018	$ **700**	$ 800
Debenture 26 A 1	5.500% to 8.000%	2016	**-**	2,200
Debenture 96 A 1	4.350% to 4.880%	2016	**-**	80
Debenture 27 A 1	4.650% to 5.010%	2017	**1,108**	2,165
Debenture 28 A 1	6.500% to 6.750%	2018	**1,200**	1,300
Debenture 98 A 1	3.750% to 5.088%	2019	**7,128**	10,383
Debenture 29 A 1	0.900% to 4.329%	2019	**675**	900
Debenture 30 A 1	1.550% to 3.870%	2020	**700**	875
Debenture 31 A 1	1.630% to 4.221%	2021	**750**	900
Debenture 32 A 1	1.636% to 3.480%	2022	**1,200**	1,400
Debenture 32 C 1	1.510% to 3.160%	2022	**8,587**	9,124
Debenture 33 A 1	1.330% to 3.489%	2023	**8,595**	9,101
Debenture 33 B 1	1.285% to 4.114%	2023	**6,300**	6,671
Debenture 34 B 1	1.200% to 3.190%	2024	**12,305**	12,989
Debenture 35 B 1	1.040% to 2.894%	2025	**12,794**	13,467
Debenture 36 A 1	1.150% to 2.925%	2026	**2,000**	-
Debenture 36 B 1	1.150% to 2.506%	2026	**4,338**	-
Halifax Harbour Solutions				
Debenture 29 A 1	0.900% to 4.329%	2019	**8,450**	9,100
Wastewater/stormwater				
Debenture 30 A 1	1.510% to 4.500%	2020	**2,380**	2,550
Debenture 32 A 1	1.636% to 3.480%	2022	**1,917**	2,037
Debenture 32 B 1	1.380% to 3.156%	2022	**25,600**	27,200
Debenture 32 C 1	1.510% to 3.160%	2022	**3,676**	3,906
Debenture 33 A 1	1.330% to 3.489%	2023	**14,331**	15,174
Debenture 33 B 1	1.285% to 4.114%	2023	**9,259**	9,804
Debenture 34 A 1	1.245% to 3.347%	2024	**5,012**	5,291
Debenture 34 B 1	1.200% to 3.190%	2024	**7,727**	8,157
Debenture 35 B 1	1.040% to 2.894%	2025	**13,405**	14,110
Debenture 36 B 1	1.150% to 2.506%	2026	**1,813**	-
Stormwater				
Debenture 33 A 1	1.330% to 3.489%	2023	**459**	486
Debenture 33 B 1	1.285% to 4.114%	2023	**2,243**	2,375
Debenture 34 B 1	1.200% to 3.190%	2024	**5,313**	5,608
Debenture 35 B 1	1.040% to 2.894%	2025	**3,069**	3,230
Debenture 36 B 1	1.150% to 2.506%	2026	**901**	-
			173,935	181,383

Continued on page 66

Halifax Regional Water Commission
Schedule of long term debt

Year ended March 31, 2017 *(in thousands)*

Schedule B cont'd

	Interest rate	Final Maturity	Balance Remaining 2017	2016
Payable to Halifax Regional Municipality				
Municipal Finance Corporation – Wastewater/stormwater				
Debenture 24 B 1	2.840% to 5.940%	2024	**44,000**	49,500
Debenture 26 A 1	4.350% to 4.880%	2016	**-**	126
Debenture 26 B 1	4.265% to 4.410%	2016	**-**	5
Debenture 27 A 1	4.650% to 5.010%	2017	**66**	131
Debenture 34 B 1	1.200% to 3.190%	2024	**8,000**	9,000
			52,066	58,762
			226,001	240,145
Less: debt issue costs			**(1,033)**	(1,156)
			224,968	238,989
Less: amount payable within one year			**(21,669)**	(23,195)
			$ 203,299	$ 215,794

The debentures are repayable in fixed annual or semi-annual principal instalments plus interest payable semi-annually. Principal instalments for the next five years are as follows:

2018	$ 21,669
2019	$ 22,130
2020	$ 23,259
2021	$ 17,585
2022	$ 15,538

Schedule C Halifax Regional Water CommissionSchedule of operations for water service

Year ended March 31, 2017 *(in thousands)*

	2017	2016 Restated (Note 15)
Operating revenues		
Water service	$ **47,183**	$ 43,193
Fire protection	**7,074**	8,032
Private fire protection services	**831**	679
Other operating revenue		
Bulk water stations	**330**	265
Customer late payment fees	**282**	198
Miscellaneous	**153**	181
	55,853	52,548
Operating expenditures		
Water supply and treatment	**8,050**	8,232
Water transmission and distribution	**8,997**	9,485
Engineering and information services	**3,828**	3,528
Regulatory services	**493**	505
Customer service	**2,290**	2,268
Administration and pension	**5,966**	4,919
Depreciation	**7,756**	8,411
	37,380	37,348
Earnings from operations before financial and other revenues and expenditures	**18,473**	15,200
Financial and other revenues		
Interest	**351**	442
Other	**375**	434
	726	876
Financial and other expenditures		
Interest on long term debt	**2,378**	2,531
Repayment of long term debt	**8,400**	7,766
Amortization of debt discount	**95**	90
Grant in lieu of taxes	**4,578**	4,528
Other	**17**	29
	15,468	14,944
Earnings for the year	$ **3,731**	$ 1,132

Schedules are presented in accordance with the NSUARB Accounting and Reporting Handbook for Water Utilities (Handbook).

Halifax Regional Water Commission
Schedule of operations for wastewater service

Schedule D

Year ended March 31, 2017 *(in thousands)*

	2017	2016 Restated (Note 15)
Operating revenues		
Wastewater service	**$ 69,475**	$ 66,601
Other operating revenue		
Leachate and other contract revenue	**440**	424
Septage tipping fees	**909**	648
Overstrength surcharge	**23**	135
Customer late payment fees	**189**	238
Miscellaneous	**428**	382
	71,464	68,428
Operating expenditures		
Wastewater collection	**11,639**	10,578
Wastewater treatment	**19,793**	19,286
Engineering and information services	**3,223**	3,010
Regulatory services	**1,095**	1,134
Customer service	**1,842**	1,877
Administration and pension	**5,017**	4,095
Depreciation	**10,669**	11,975
	53,278	51,955
Earnings from operations before financial and other revenues and expenditures	**18,186**	16,473
Financial and other revenues		
Interest	**351**	441
Other	**2,168**	2,054
	2,519	2,495
Financial and other expenditures		
Interest on long term debt	**5,509**	5,786
Repayment of long term debt	**11,699**	11,462
Amortization of debt discount	**95**	89
Other	**32**	11
	17,335	17,348
Earnings for the year	**$ 3,370**	$ 1,620

Schedules are presented in accordance with the NSUARB Accounting and Reporting Handbook for Water Utilities (Handbook).

Schedule E

Halifax Regional Water Commission
Schedule of operations for stormwater service

Year ended March 31, 2017 *(in thousands)*

	2017	2016 Restated (Note 15)
Operating revenues		
Stormwater site generated service	**$ 6,661**	$ 6,713
Stormwater right-of-way service	**3,881**	3,881
Other operating revenue		
Customer late payment fees	**51**	63
Miscellaneous	**88**	82
	10,681	10,739
Operating expenditures		
Stormwater collection	**4,096**	4,236
Engineering and information services	**525**	480
Regulatory services	**768**	729
Customer service	**300**	305
Administration and pension	**816**	666
Depreciation	**677**	523
	7,182	6,939
Earnings from operations before financial and other revenue and expenditures	**3,499**	3,800
Financial and other revenues		
Investment income	**78**	-
Financial and other expenditures		
Interest on long term debt	**588**	571
Repayment of long term debt	**1,221**	1,100
Amortization of debt discount	**9**	8
	1,818	1,679
Earnings for the year	**$ 1,759**	$ 2,121

Schedules are presented in accordance with the NSUARB Accounting and Reporting Handbook for Water Utilities (Handbook).

Halifax Regional Water Commission
Schedule of regulated activities

Schedule F

Year ended March 31, 2017 *(in thousands)*

	2017	2016 Restated (Note 15)
Operating revenues		
Water service	**$ 47,183**	$ 43,193
Wastewater service	**69,475**	66,601
Stormwater service	**10,542**	10,594
Public fire protection	**7,074**	8,032
Private fire protection services	**831**	679
Other operating revenue	**1,207**	1,262
	136,312	130,361
Operating expenditures		
Water supply and treatment	**9,137**	9,308
Water transmission and distribution	**10,411**	10,534
Wastewater collection	**10,347**	9,537
Stormwater collection	**4,039**	4,186
Wastewater treatment	**17,797**	17,421
Engineering and information services	**7,576**	7,018
Regulatory services	**2,356**	2,369
Customer service	**4,396**	4,415
Administration and pension	**11,768**	9,660
Depreciation	**19,095**	20,903
	96,922	95,351
Earnings from operations before financial and other revenues and expenditures	**39,390**	35,010
Financial and other revenues		
Interest	**780**	883
Other	**2,289**	2,055
	3,069	2,938
Financial and other expenditures		
Interest on long term debt	**8,475**	8,889
Repayment of long term debt	**21,320**	20,328
Amortization of debt discount	**199**	186
Grant in lieu of taxes	**4,578**	4,528
Other	**-**	158
	34,572	34,089
Earnings for the year	**$ 7,887**	$ 3,859

Schedules are presented in accordance with the NSUARB Accounting and Reporting Handbook for Water Utilities (Handbook).

Schedule F

Halifax Regional Water Commission
Schedule of unregulated activities

Year ended March 31, 2017 *(in thousands)*

		2017		2016 Restated (Note 15)
Operating revenues				
Dewatering	**$**	**210**	$	210
Septage tipping fees		**909**		648
Leachate treatment and contract revenue		**440**		424
Airplane effluent		**89**		51
Other operating revenue		**196**		219
		1,844		1,552
Operating expenditures				
Water supply and treatment		**16**		10
Wastewater treatment		**830**		822
Other		**111**		68
Depreciation		**6**		6
		963		906
Earnings from operations before financial and other revenues and expenditures		**881**		646
Financial and other revenues				
Other		**139**		376
Financial and other expenditures				
Other		**49**		-
Earnings for the year	**$**	**971**	$	1,022

Schedules are presented in accordance with the NSUARB Accounting and Reporting Handbook for Water Utilities (Handbook).

Halifax Regional Water Commission
Nova Scotia Utility and Review Board information

Schedule G

Year ended March 31, 2017 *(in thousands)*

Return on rate base	**2017**	2016
Rate of return on rate base for water service	**4.54%**	3.64%
Rate of return on rate base for wastewater service	**6.71%**	6.18%
Rate of return on rate base for stormwater service	**11.78%**	15.45%

Special purpose reserves

	Wastewater & Stormwater Reserves	RDC Water Reserve	RDC Wastewater Reserve	Other Capital Reserves	**2017 Total**	2016 Total
Reserve, beginning of year	$ 3,638	$ 774	$ 3,653	$ 5	**$ 8,070**	$ 24,875
Contributions and interest	-	471	8,759	-	**9,230**	5,012
Expenditures	182	-	(570)	-	**(388)**	(21,817)
Reserve, end of year	$ 3,820	$ 1,245	$ 11,842	$ 5	**$ 16,912**	$ 8,070

Summarized consolidated operating results

	Actual 2017	Actual 2016 Restated (Note 15)
Operating revenues	**$ 137,997**	$ 131,716
Operating expenditures	**97,839**	96,238
Earnings from operations before financial and other revenues and expenditures	**40,158**	35,478
Non-operating revenues	**3,322**	3,370
Non-operating expenditures	**34,622**	33,961
Earnings for the year	**$ 8,858**	$ 4,877

Schedules are presented in accordance with the NSUARB Accounting and Reporting Handbook for Water Utilities (Handbook).


Halifax
Water

Halifax Water
Halifax Regional Water Commission

ITEM #7-I
HRWC Board
September 28, 2017

TO: Ray Ritcey, Chair, and Members of the Halifax Regional Water Commission Board

SUBMITTED BY: *Original Signed By:*
Cathie O'Toole, MBA, CPA, CGA, Director, Corporate Services

APPROVED: *Original Signed By:*
Carl Yates M.A.Sc., P.Eng., General Manager

DATE: September 20, 2017

SUBJECT: **Merchant Discount Fees for RDC Credit Card Payments**

INFORMATION REPORT

ORIGIN

October 2014 Nova Scotia Utility And Review Board Decision – Permission to Accept Merchant Discount Fees for Credit Card Payments for Development Related Charges Paid Through HRM Customer Service Centres.

BACKGROUND

In July 2014, the Nova Scotia Utility and Review Board (NSUARB) approved the implementation of Regional Development Charges (RDCs) for Water and Wastewater. RDCs are paid by developers and property owners for new construction. RDCs are primarily collected by Halifax Regional Municipality (HRM) with other permit fees and are remitted to Halifax Water monthly.

In October 2014, HRM began implementation of a credit card payment system for permit payments and the NSUARB granted interim approval of the payment of RDCs via the same system. The objective of the implementation was to enhance convenience and service to permit payers. The NSUARB requested a report be filed annually on usage and costs associated with the system.

DISCUSSION

HRM implemented the credit card payment system in the 2014/15 fiscal year. HRM fully absorbed the implementation cost and began invoicing Halifax Water for the merchant discount fees associated with the payments in April 2015.

At the time the interim approval was granted, the merchant discount rate was not yet known, though a rate between 2% and 3.5% was anticipated. Total RDCs of up to $9 million per year were anticipated, with between 10% and 50% expected to be paid by credit card. Thus an annual cost between $18,000 and $157,500 in merchant discount fees was anticipated.

The actual RDCs collected, actual paid by credit card, and the merchant discount fees incurred in the subsequent fiscal years are as follows:

Year	RDC Total	RDCs paid by credit card	Percentage paid by credit card	Average Discount Rate	Merchant Discount Fees
2015-16	5,012,522.98	1,178,683.68	23.5%	2.00%	23,619.97
2016-17	9,144,724.75	2,205,725.21	24.1%	2.07%	45,665.97

By comparison, Halifax Water estimated it would cost $172,878 to implement its own process to administer collection of development permits and it would incur a $70,000 annual cost.

Report Prepared by: *Original Signed By:*

Warren Brake, B.Comm, CPA, CGA, Manager, Accounting, 490-4814

Halifax Water
Halifax Regional Water Commission

ITEM # 8-I
HRWC Board

September 28, 2017

TO: Ray Ritcey, Chair and Members of the Halifax Regional Water Commission Board

SUBMITTED BY: *Original Signed By:*
Cathie O'Toole, MBA, CPA, CGA, Director, Corporate Services
Allan Campbell, BComm, CPA, CMA, Manager, Finance

APPROVED: *Original Signed By:*
Carl Yates, M.A.Sc., P. Eng., General Manager

DATE: September 19, 2017

SUBJECT: **Halifax Regional Water Commission Employees' Pension Plan Financial Report – 2nd Quarter, 2017**

INFORMATION REPORT

ORIGIN

Financial reporting for the Halifax Regional Water Commission Employees' Pension Plan (hereinafter called the "Plan").

BACKGROUND

On September 29, 2016, Plan administration submitted an Information Report to the Board containing a budget for the period January 1, 2016 to December 31, 2016. This marked the first time a budget with respect to the Plan had been introduced to the Board. Although the 2016 budget was in the form of an information report, it was the intent at that time to submit annual budgets to the Board for review and approval on a go-forward basis. In addition, the Board would be provided with unaudited financial results for the Plan on a quarterly basis.

The 2017 operating budget was the first operating budget submitted to the HRWC Board for approval, with formal approval obtained March 30, 2017 (Board Item #9). The budget detailed the changes in assets available for benefits, outlined the various revenues, contributions and expenses for the Plan, and projected net assets available as at December 31, 2017.

Pursuant to the above, the Board is required to review the periodic financial results of the Plan throughout the year.

DISCUSSION

The attached statement of changes in net assets available for benefits outlines the annual budget for the Plan and actual financial performance for the 2nd quarter (January 1 to June 30, 2017). Favourable or unfavourable variances reported compare actual results to prorated budget amounts (50% = 6 months/ 12 months), which serves as a benchmark for the six (6) month period in 2017. Results for 2016 and 2015 are shown for comparative purposes.

As shown on the statement of changes in net assets available for benefits attached, net assets available for benefits have increased by $6.5 million over the six (6) month period ending June 30, 2017. The budget for 2017 forecasted an increase in net assets available of $6.5 million. Actual results for the period compared to the benchmark show a favourable variance in the amount of $3.3 million.

Revenue for the period totaled $5.6 million, which when compared to the benchmark, results in a favorable variance of $2.9 million. Revenue is most affected by the performance of the HRM Master Trust, and change tends to be more volatile compared to contributions and expenses of the Plan. The large variance is attributed directly to the increase in the fair value of the investment assets. Gains in the fair value for the period amounted to $4.5 million. Investment income for the period is performing as expected, showing an unfavorable variance of 3%.

Contributions are tracking as expected but are reported over budget due to the timing of budgeted pay increases.

Expenses of $2.0 million for the period are lower than the benchmark of $2.4 million resulting in a favorable variance of $0.4 million or 15%. The main contributor to this favorable variance is termination benefits of $83.6 thousand, which came in considerably lower than the benchmark of $400.0 thousand, resulting in a $0.3 million variance. Another factor in the favorable variance is actuarial and consulting fees which came in at $8.7 thousand which is lower than the benchmark of $65.0 thousand by $56.3 thousand.

ATTACHMENT

Statement of changes in net assets available for benefits, for the six (6) month period ended June 30, 2017.

Report Prepared by: *Original Signed By:*

Michelle Bennett, BComm, Accountant 902-490-5242

Halifax Regional Water Commission Employees' Pension Plan
Statement of changes in net assets available for benefits
For the six (6) month period ended
Benchmark *50%*

	June 30, 2017						
				Variance			
			Prorated	Actual versus Prorated Budget			
			Budget	Favourable (Unfavourable)		Actual	Actual
	Budget	Actual	50%	$	%	2016	2015
Revenue[1]							
Net investment income:							
Total investment income	$2,440,000	$1,178,477	*1,220,000*	*(41,523)*	*-3%*	$2,389,377	$2,350,179
Investment manager fees	($140,000)	($67,597)	*(70,000)*	*2,403*	*-3%*	($138,922)	($188,555)
Increase (decrease) in the fair value of investment assets	$2,960,000	$4,468,291	*1,480,000*	*2,988,291*	*202%*	$3,184,155	$7,313,583
	$5,260,000	**$5,579,171**	*2,630,000*	*2,949,171*	***112%***	**$5,434,610**	**$9,475,207**
Contributions[2]							
Participants:							
Current service (inc AVC's)	$2,594,000	$1,335,668	*1,297,000*	*38,668*	*3%*	$2,493,266	$2,655,143
Sponsors:							
Current service (inc LTD)	$2,487,000	$1,215,214	*1,243,500*	*(28,286)*	*-2%*	$2,275,977	$2,741,953
Unfunded liability	$825,000	$412,610	*412,500*	*110*	*0%*	$825,200 x	$2,952,200
	$5,906,000	**$2,963,492**	*2,953,000*	*10,492*	***0%***	**$5,594,443**	**$8,349,296**
Expenses[3]							
Benefit payments:							
Benefit payments	$3,699,000	$1,868,919	*1,849,500*	*(19,419)*	*-1%*	$3,536,894	$3,246,032
Termination payments	$800,000	$83,633	*400,000*	*316,367*	*79%*	$992,572	$1,021,997
Death benefit payments	$0		*0*	*0*	*n/a*	$509,236	$0
Administrative:							
Actuarial & consulting fees	$130,000	$8,709	*65,000*	*56,291*	*87%*	$128,677	$134,296
Audit & accounting fees	$8,000		*4,000*	*4,000*	*100%*	$9,244	$660
Bank custodian fees	$22,000	$14,381	*11,000*	*(3,381)*	*-31%*	$26,511	$21,567
Insurance	$8,000		*4,000*	*4,000*	*100%*	$7,950	$7,950
Miscellaneous	$13,000	$9,818	*6,500*	*(3,318)*	*-51%*	$14,433	$11,641
Professional fees	$20,000	$9,674	*10,000*	*326*	*3%*	$12,845	$18,313
Registration fees	$2,000		*1,000*	*1,000*	*100%*	$2,158	$2,074
Training (Trustees/ Administration/ Pension Committee)	$5,000		*2,500*	*2,500*	*100%*	$1,127	$0
	$4,707,000	**$1,995,134**	*2,353,500*	*358,366*	***15%***	**$5,241,647**	**$4,464,530**
Increase (decrease) in net assets available for benefits	**$6,459,000**	**$6,547,529**	*3,229,500*	*3,318,029*	***103%***	**$5,787,407**	**$13,359,973**
Net assets available for benefits, beginning of period	**$106,198,705**	**$105,623,468**				**$99,836,061**	**$86,476,088**
Increase (decrease) in net assets available for benefits	**$6,459,000**	**$6,547,529**				**$5,787,407**	**$13,359,973**
Net assets available for benefits, end of period	**$112,657,705**	**$112,170,997**				**$105,623,468**	**$99,836,061**

Note:

1 *Budgeted amounts for revenue are derived by calculating the average change in investment income and increase / decrease in the fair value of net assets and assuming this average change to continue.*

2 *Budgeted amounts for contributions are derived by using the actual amounts remitted for the two (2) month period ended Feb 28, 2017, then adding forecasted amounts for the remainder of the year, as reported in the annual contribution planner filed with the trustee.*

3 *Budgeted amounts for benefit payments are derived by using the actual amounts paid to pensioners for the three (3) months of the year, then adding an estimated amount for the remainder of the year based on actual benefit payments paid March 1, 2017. All other expenses are based on best estimates.*

For the purposes of this statement, expenses are reported on a cash basis. Comparative years are reported on an accrual basis as that is how they are reported on the financial statements.

Halifax Regional Water Commission

ITEM #9-I

HRWC Board

September 28, 2017

TO: Ray Ritcey, Chair, and Members of the Halifax Regional Water Commission Board

SUBMITTED BY: *Original Signed By:*

Cathie O'Toole, MBA, CPA, CGA, Director, Corporate Services
Allan Campbell, BComm, CPA, CMA, Manager, Finance

APPROVED: *Original Signed By:*

Carl Yates M.A.Sc., P.Eng., General Manager

DATE: September 20, 2017

SUBJECT: **HRM Pension Plan Investment Performance 2nd Quarter, 2017**

INFORMATION REPORT

ORIGIN

The Pension Plan investment performance is reported to the Commission periodically throughout the year.

BACKGROUND

None

DISCUSSION

The tables below and the attached Investment Report provide a performance update for the second quarter of 2017 (April to June) for the Halifax Regional Municipality (HRM) Pension Plan Master Trust, of which Halifax Regional Water Commission (HRWC) is a part. The fair value of the investment in the Master Trust is determined and updated at year-end, and HRWC's share of the total HRM Master Trust at December 31, 2016 was 6.01%, and totaled $106.2 million.

Table 1 - Returns

	Quarter (Apr to Jun)	1-Year	3 - Year Annualized	4 - Year Annualized	Inception (Oct 1999)
Fund Return	1.96%	11.28%	8.47%	9.75%	7.07%
Policy Benchmark	1.47%	9.08%	5.98%	7.24%	5.64%
Excess Return	0.49%	2.20%	2.49%	2.51%	1.43%

Table 2 – Asset Mix, as at December 31, 2016

Asset:	Actual	Policy
Cash & Equivalents	0.40%	0.00%
Canadian Equity	6.29%	6.00%
Global Equity	31.96%	29.90%
Bonds	22.83%	26.20%
Minimum Target Return	38.52%	37.30%

The total fund returned 2.0% in the 2nd Quarter, which outperformed the policy benchmark of 1.5% by 0.5%. The return for the one-year period ended June 30, 2017 is 11.3%, outperforming the policy benchmark of 9.1% by 2.2%. Other historical returns are provided in the Table 1 above.

The total fund return is subject to investment management fees and plan expenses. The HRM Pension Plan performs an analysis with respect to the Master Trust, to show the potential downside return risk under different scenarios. The four scenarios analyzed as at August 14, 2017 that show the greatest potential risk, are identified in Table 3 below:

Table 3 – Stress Testing

Scenario:	Projected Return of Master Trust
Equities down by 5%	-2.26%
CAD increasing by 10% compared to the USD	-1.04%
US interest rates decreasing by 0.25%	-0.99%
Oil prices dropping 10%	-0.34%

As at June 30, 2017 the Master Trust was in compliance with the Statement of Investment Policies and Procedures (SIP&P).

ATTACHMENT

Halifax Regional Municipality Pension Plan Investment Report 2nd Quarter, 2017

Report Prepared by: *Original Signed By:*
Michelle Bennett, BComm, Accountant 902-490-5242

HRM PENSION PLAN

Investment Report

Q2 2017

ITEM # 9-I
HRWC Board
September 28, 2017
ATTACHMENT

Consent Agenda Item No. 1

Executive Summary

Compliance

As at June 30, 2017, the Master Trust (MT) was in compliance with the SIP&P.

Funded Status*

As at December 31, 2016, the accounting funded position was *104%*. The going concern funded ratio and solvency funded ratio are estimated to be *92%** and 64% respectively.*

Master Trust Performance (net of fees)

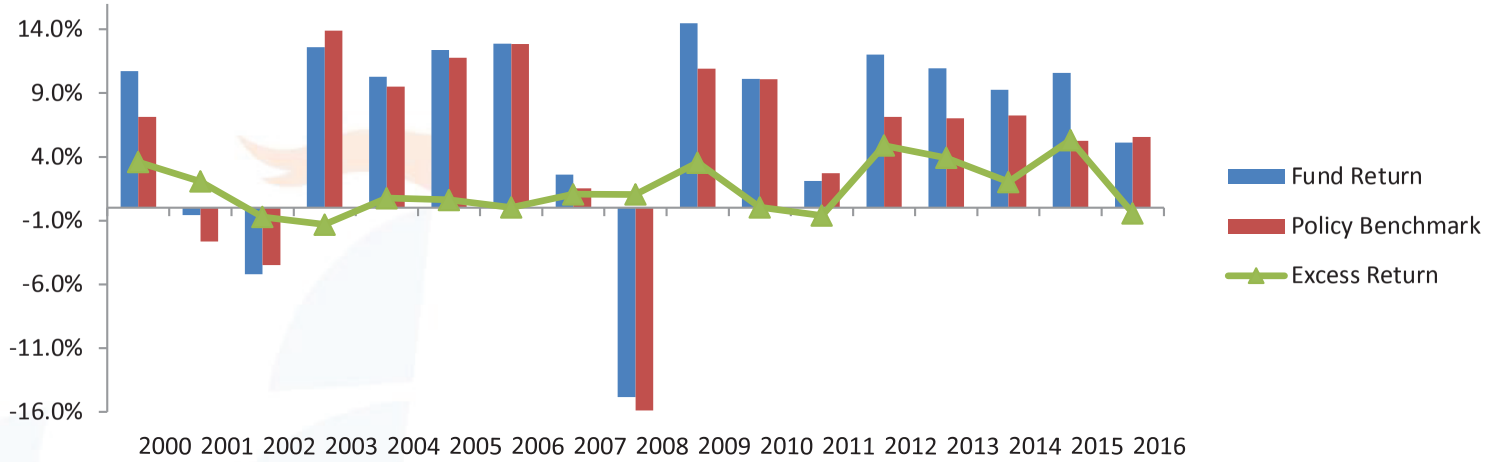
- In Q2, the MT earned 2.0%, outperforming the policy benchmark return by 0.5%.
- For the one-year period ending June 30, 2017, the MT earned 11.3%, outperforming the policy benchmark by 2.2%.
- The MT earned an annualized return of 9.8% over the 4-year period ending June 30, 2017 outperforming the policy benchmark by 2.5% annualized.
- Since inception (October 1999), the MT earned 7.1% annualized outperforming the Plan's long-term rate objective of 6.5%. The table on the next slide summarizes the calendar year returns for the MT.

**Per Eckler Valuation Report as at December 31, 2016. Assumes discount rates of 7.25% for Accounting and 6.50% for Going Concern.*

**** Uses a 6.50% going concern discount rate. If 6.40%, 6.20% or 6.00% going concern discount rate is used, the going concern funded status is estimated to be 91%, 89% and 87% respectively.***

Executive Summary – Cont.

Calendar Returns (net of fees)



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Fund Return	10.71%	-0.56%	-5.21%	12.60%	10.27%	12.38%	12.88%	2.60%	-14.83%	14.47%	10.12%	2.11%	12.01%	10.94%	9.27%	10.59%	5.13%
Policy Benchmark	7.12%	-2.64%	-4.50%	13.91%	9.50%	11.76%	12.85%	1.53%	-15.88%	10.92%	10.08%	2.71%	7.12%	7.01%	7.24%	5.27%	5.55%
Excess Return	3.59%	2.08%	-0.71%	-1.31%	0.77%	0.62%	0.03%	1.07%	1.05%	3.55%	0.04%	-0.60%	4.89%	3.93%	2.03%	5.32%	-0.42%

Executive Summary – Cont.

Added Value

In Q2 of 2017, the MT outperformed its policy benchmark by 0.49%. Attribution: Minimum Target Return +0.32%, Emerging Market Equity +0.12%, Global Credit +0.07%, EAFE Equity +0.03%, World Equity +0.03%, Universe Bonds -0.01%, US Equity -0.02%, and Canadian Equity -0.05%.

Q2 Updates

- Performing due diligence on a manager for a CAD $30 million investment in a global multi-asset diversified portfolio
- Invested CAD 5mn in a private equity fund alongside a manager with whom we have a strategic relationship.
- Invested in three co-investments alongside our private investment managers:
  - USD 3mn in a senior secured credit facility for a company operating in the US healthcare business.
  - USD 3mn in a private equity fund restructuring transaction. The five underlying assets were US and European businesses.
  - USD 5mn in a Brazilian infrastructure project.

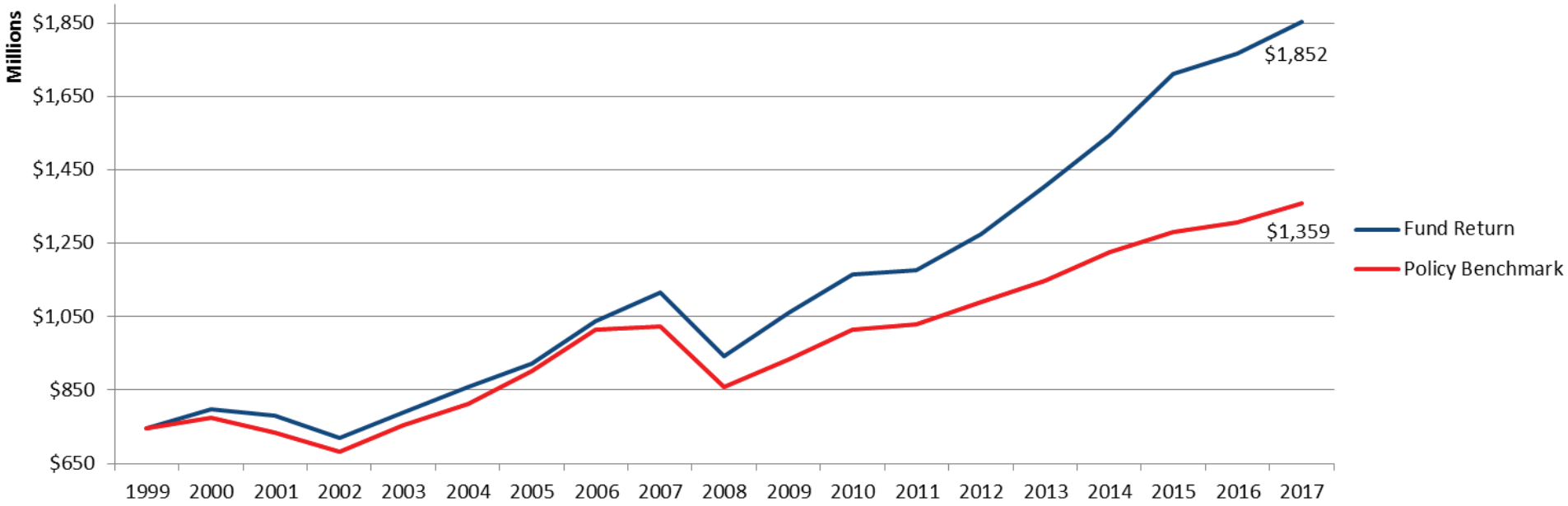
Total Fund Net Returns – June 30, 2017

	Q2 2017	1-Year	3-Year Annualized	4-Year Annualized	Inception (Oct 1999)
Fund Return	1.96%	11.28%	8.47%	9.75%	7.07%
Policy Benchmark*	1.47%	9.08%	5.98%	7.24%	5.64%
Excess Return	0.49%	2.20%	2.49%	2.51%	1.43%

*Effective June 30, 2017, the Policy Benchmark is 3.5% S&P/TSX Index + 2.5% S&P/TSX 60 + 4.8% S&P 500 Index ($USD) + 9.3% MSCI EAFE Index ($CAN) + 4.2% MSCI Emerging Markets ($CAN) + 11.6% MSCI World ($CAN) +14.9% FTSE TMX Canada Universe Bond + 11.9% 3 Month Bankers Acceptance + 37.3% Minimum Target Return.

Fund returns are shown net of fees and expenses

Since Inception Performance

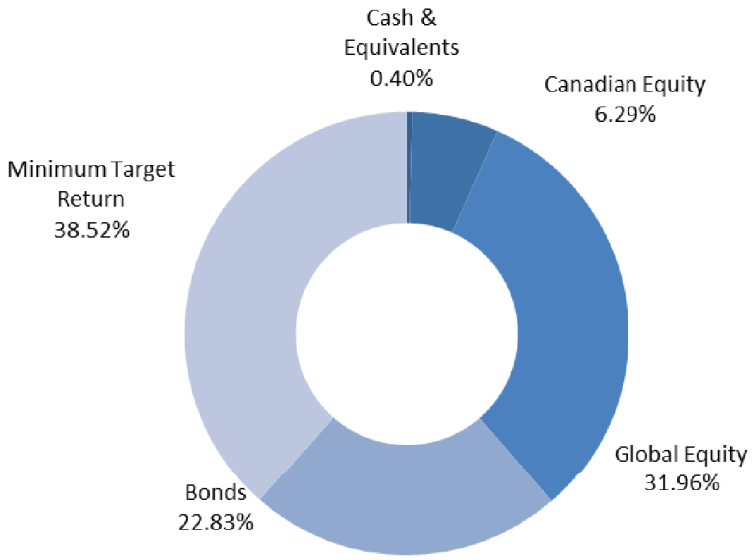


In dollar terms, the fund has grown $493 million in excess of the policy benchmark since inception.

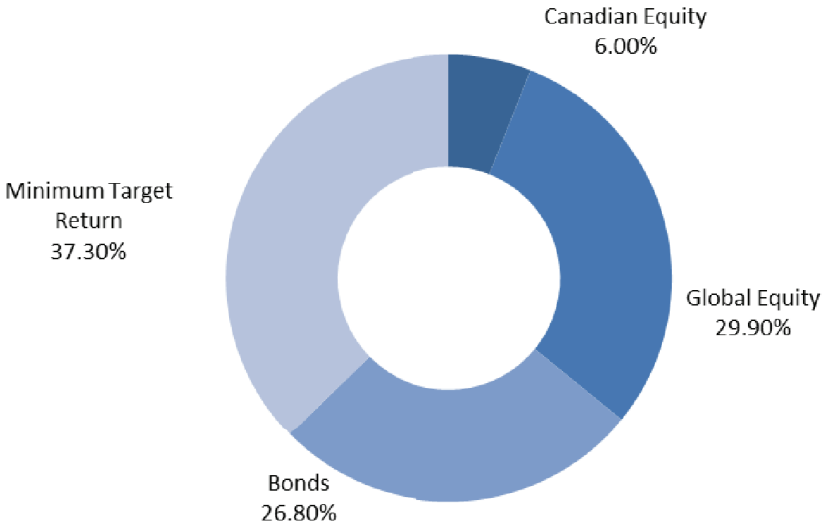
Fund returns are shown net of fees and expenses

Asset Mix – June 30, 2017

Actual Asset Mix
As of June 30, 2017



Asset Mix Policy
As of June 30, 2017



* Effective June 30, 2017, the Policy Benchmark is 3.5% S&P/TSX Index + 2.5% S&P/TSX 60 + 4.8% S&P 500 Index ($USD) + 9.3% MSCI EAFE Index ($CAN) + 4.2% MSCI Emerging Markets ($CAN) + 11.6% MSCI World ($CAN) +14.9% FTSE TMX Canada Universe Bond + 11.9% 3 Month Bankers Acceptance + 37.3% Minimum Target Return.

Equity Market Index Returns

Indexes	Q2 2017	1-Year Ending June 30, 2017	4-Year Ending June 30, 2017
Canadian Equity (S&P/TSX Composite Index)	-1.64%	11.05%	8.96%
US Equity (S&P 500 C$)	0.39%	17.90%	19.22%
US Equity (S&P 500 U$)	3.09%	17.90%	13.18%
EAFE Equity (MSCI EAFE C$)	3.34%	20.27%	12.01%
Emerging Markets (MSCI EM C$)	3.48%	23.75%	9.79%
World Equity (MSCI World C$)	1.30%	18.20%	15.50%

*Source: Mercer Insight and Northern Trust

In the second quarter:

- Canadian markets declined due to weak performance of resource stocks.
- US equities gained despite mixed economic data and political uncertainty.
- Emerging market equities continue to outperform.
- EAFE markets slightly outperformed the US equity market and had similar performance to emerging markets.
- Global equities advanced.

Bond Market Index Returns

Bond Indexes	Q2 2017	1-Year Ending June 30, 2017	4-Year Ending June 30, 2017
Canadian Government Bonds (FTSE TMX Canada Universe Government)	1.14%	-0.94%	4.05%
Canadian Universe Bonds (FTSE TMX Canada Universe)	1.10%	0.01%	4.18%
Canadian Corporate Bonds (FTSE TMX Canada Universe Corporate)	1.02%	2.59%	4.53%

*Source: Mercer Insight and Northern Trust

- Corporate bonds have outperformed Government Bonds and the broader Universe over the 1-year and 4-year periods.

Fixed Income – Q2 Summary

- The MT's diversified Fixed Income portfolio earned 1.09%, which outperformed its benchmark return of 0.72% by +0.37%.

MT Fixed Income	Q2 2017	Benchmark	Relative Performance
Universe Bond	0.99%	1.10%	-0.11%
Credit Bond	1.50%	1.02%	0.48%
Government Bond	0.72%	1.14%	-0.42%
Global Credit Absolute Return	1.20%	0.24%	0.96%
MT Fixed Income Total	1.09%	0.72%	0.37%

*Source: Mercer Insight and Northern Trust

- Corporate fixed income portfolios outperformed their benchmarks in the quarter.
- Strong performance by our global credit portfolios boosted returns relative to the overall fixed income benchmark.

MTR – Q2 Summary

- The Minimum Target Return portfolio (private investment portfolio) returned 2.76% in Q2, versus a benchmark of 1.59%, outperforming by +1.17%.

Equity – Q2 Summary

- The MT's Equity portfolio returned 2.20% during the quarter, outperforming the equity policy benchmark return of 1.82% by +0.38%, primarily due to the allocation to Emerging Markets.

MT Equity	Q2 2017	Benchmark	Relative Performance
Canadian Equity (S&P/TSX Composite Index)**	-2.39%	-1.70%	-0.69%
US Equity (S&P 500 U$)	2.77%	3.09%	-0.32%
EAFE Equity (MSCI EAFE C$)	3.52%	3.34%	0.18%
Emerging Markets (MSCI EM C$)	6.50%	3.48%	3.02%
World Equity (MSCI World C$)	1.56%	1.30%	0.26%
MT Equity Total	2.20%	1.82%	0.38%

*Source: Northern Trust
**Canadian Equity is a blended index of S&P TSX 60 and S&P/TSX Composite