



TransAqua

GREATER MONCTON
WASTEWATER
COMMISSION

COMMISSION
DES EAUX USÉES
DU GRAND MONCTON

WATCH TRANSAQUA GROW AND GROW WITH TRANSAQUA

Annual Report
2017



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1. INTRODUCTION

1.1 Mission and Vision

MISSION

To collect and treat wastewater in a reliable, cost-efficient and environmentally responsible manner.

VISION

To be an outstanding environmental steward supporting regional planning, economic development and quality of life for the communities of Dieppe, Moncton and Riverview.

1.2 History 1983-Present

The Greater Moncton Sewerage Commission (GMSC) was created by an order-in-council in 1983 based on a model outlined in a consultant's report by Boyd A. Touchie Engineering Ltd. and Anderson Associates Limited in consultation with the three municipalities and the Government of New Brunswick.

The GMSC was then mandated to implement the Master Plan as laid out in the study. From 1983 to 1995, the GMSC oversaw the construction of a 31-km network of collector sewers intercepting more than 80 untreated outfalls; the construction of a major pumping station along with eight smaller ones; implementation of an advanced primary treatment system; and implementation of a long-term sustainable Biosolids Management Program with a new innovative composting system.

In 2012, the federal government's new Wastewater Systems Effluent Regulations (WSER-2012) were enacted under the Fisheries Act. This legislation guides the effluent compliance requirements for wastewater treatment facilities and requires that the Commission meet these new requirements by 2020.

The Greater Moncton Sewerage Commission changed its legal corporate name to the Greater Moncton Wastewater Commission (GMWC) in 2014 and introduced a new trade name, TransAqua as the day-to-day business name. TransAqua is bilingual, easier to remember and better conveys what the Commission does: transforming ("trans") wastewater ("aqua") and returning it to nature, i.e. the Petitcodiac River. Changes to its Board and management structure in 2012 have improved transparency, accountability, public communication effort and operations.

After 34 years, the Commission continues to move away from concentrating on what goes into the pipe (i.e. sewage) and concentrate on what comes out of the other end – high quality treated wastewater which will be enhanced after secondary treatment is implemented by 2020. These mandated upgrades will be the main focus of TransAqua's activities between 2018 and 2020. We take our responsibility as an environmental steward very seriously and are committed to being part of the solution. Other initiatives which were planned for prior to – or in – 2017 include:

- Establishment of a TransAqua public display that includes information brochures, videos, microscopic bacteria, newsletters, Annual Report and a number of giveaways including the popular poo emoji stress ball;

- Development of the GMWC Biosolids Management Strategy;
- Development and formal Agreements including the Agreement for Cost Recovery of the Commission's Expenses, Service Agreement, Septage Disposal Service Agreement and CSO Reporting Agreement;
- Development and approval of the GMWC Social Media Strategy and GMWC Issues Management Plan;
- Development of public information items such as "Sewer Do's and Don'ts" and "Septic Tank Maintenance Brochures and a Quarterly Newsletter; and
- Policy development such as the "GMWC Climate Change and Variability", "Retirement Plan Governance", "Public Meeting Procedural", "GMWC Communications" Policies and the "GMWC Fire Safety Plan";
- Continued improvements to Composting Facility in order to track biosolids piles from cradle to grave;
- Computerized Maintenance Management Software development has continued. Assets that have been identified have been uploaded and categories defined. Work will continue to add more assets and additional asset information (owner's manuals, etc.);
- Through planned upgrades by 2020, we will achieve 95% of solids removed from effluent released into the Petitcodiac River. As well, through disinfection via ultraviolet light, the effluent released into Petitcodiac River will be of quality suitable for recreational use. In 2017, 66% of solids were removed, and
- The Residential Unit Rate remained at \$210 per unit in 2017 and 2018.

The Commission has been proven as an effective tri-community model and has demonstrated co-operation and the ability and efficiency to deliver. Its assets are well managed and maintained within a sustainable financial model that remains affordable to ratepayers. The administration, operations and maintenance teams continue to meet current expectations and aim to anticipate future needs to the benefit of all ratepayers, stakeholders and the environment. TransAqua was a finalist in the Environmental Excellence Category at the Greater Moncton Chamber of Commerce's 2017 Business Excellence Awards.

2. CHAIR'S REPORT

TransAqua's theme this year is *Watch TransAqua Grow* which refers directly to the major construction project and *Grow With TransAqua* refers directly to a desire for increased community engagement with TransAqua through our communications strategy and composting program.

With funding approval obtained for the TransAqua upgrade project in 2016, construction finally started in 2017. Funding Contribution Agreements were finalized and signed with the provincial and federal governments with construction contracts for Phase 1 and 2 signed in August. Work has been ongoing since that time and Commission staff is working hard to manage the construction contracts in an efficient and effective manner. Due to their efforts, cost savings are being found and construction timetables met. As the initial construction phases proceed staff is working with consultants on the design of future phases and sourcing required equipment. In addition to the upgrade project a major expansion is being done to the Administration Building to enlarge the laboratory and add much needed space to the general administration area. As expected, these and regular capital projects occupy a significant amount of management time.

The Commission Board amended the GMWC Purchasing Policy and Employee Guides while approving a number of new policies including GMWC Climate Change and Variability, Retirement Plan Governance, Public Meeting Procedural, GMWC Communications and the GMWC Fire Safety Plan. A Biosolids Management Policy was adopted and work is almost complete on a comprehensive strategy to implement this policy.

The Commission Board approved the Service Agreement and Agreement for Cost Recovery of the Commission's Expenses between GMWC and Moncton, Riverview and Dieppe. Each Municipal Council approved the Agreement for Cost Recovery of the Commission's Expenses in 2017 and is expected to approve the Service Agreement early in 2018. The Commission Board also approved the Septage Disposal Service Agreement and the CSO Reporting Agreement between GMWC and the City of Moncton.

TransAqua continued to raise its community profile in 2017 and increase public awareness of what we do. Initiatives under the Communications Strategy continued, facility tours were given and TransAqua remained a major partner in the Light Up Riverview Campaign during the Christmas season. An effort was made by the Board and staff to attend community events and TransAqua was a sponsor of the State of the Tri-Communities event hosted by the three municipal mayors.

While the capital projects consumed a large portion of staff and Board time, progress continued to be made in other areas of TransAqua operations. Staff is working on a new maintenance management system and a records management system including undertaking the required training to implement these major initiatives. Safety in the workplace is a high priority of the Board and staff and efforts are continuous in this area to ensure that TransAqua provides a safe work environment for everyone.

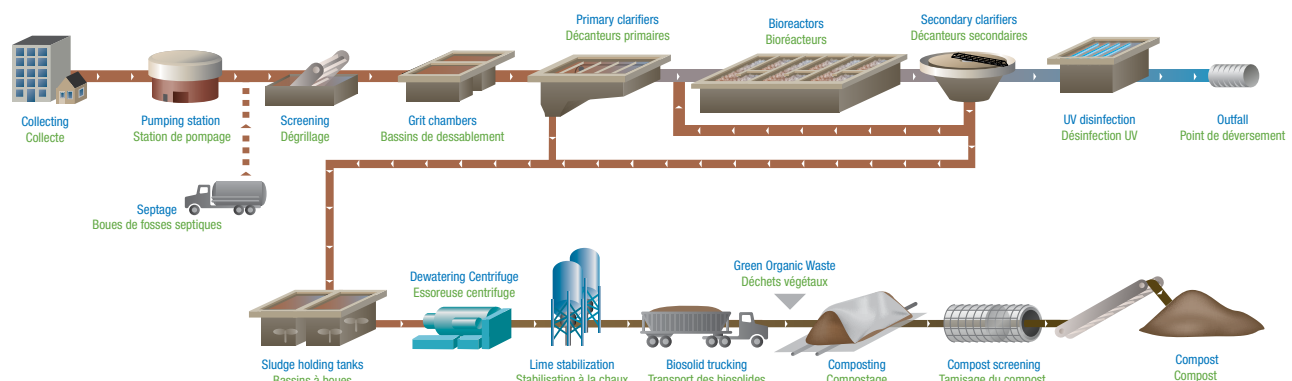
2017 saw one new board member added as Clarence Sweetland was replaced by Dr. Jennifer Dingman as a representative for the Town of Riverview. As the Board welcomes Jennifer and her expertise in environmental matters, it will miss the broad range of experience and insight that Clarence brought to Board meetings.

The next few years will be exciting for TransAqua as our upgrade project continues to move forward to its expected completion in 2020. As the Board and staff work together to bring this project to fruition there is no doubt that the Greater Moncton Area will end up with a state of the art facility that will serve its needs for many years into the future.

Respectfully submitted,

David Muir

David Muir, CPA, CA
Chair



Wastewater Treatment Process Using Biological Nutrient Removal (BNR) Process

3. GENERAL MANAGER'S REPORT

3.1 2017 Overview

The Commission entered into formal Funding Contribution Agreements with Infrastructure Canada and the New Brunswick Regional Development Corporation each providing 25% of funding towards the \$90 million WWTF Upgrade and Modernization Project. All equipment for Phase 1: Preliminary Treatment and Septage Works and phase 2: Primary Clarifiers was ordered and most of it received in 2017. Construction activities for Phase 1 and 2 include site excavation for the Primary Clarifiers, the new road configuration constructed, installation of 80% of the Primary Clarifier Overflow Pipe, the base slab for Clarifier 1 and 2 along with the center pipe gallery, excavation and backfill for the base of tank 4 and formwork installed, the walls and roof slab of the new Primary Gallery and associated masonry, the base of the grit tanks and the forms installed for the walls and the sub-structure, block walls and roofing membrane of the Septage Receiving Building. CBCL Limited was awarded the detail design and contract management for Phases 3, 4 and 5: Bioreactor, Clarifier retrofit, Sludge Thickening, and the Disinfection Facility.

In 2017, there were many activities taking place that saw many of TransAqua's Programs grow. In addition to physical growth due to construction, continued implementation of the Community Stakeholder Communications Strategy saw the development and implementation of the "Sewer Do's and Don'ts" and "Septic Tank Maintenance" Brochures, a Quarterly Newsletter, weekly social media postings, expansion of the Light Up Riverview tree lights and a public information booth that were extremely successful with many favourable comments from the public.

The Technical Committee consisting of representatives from TransAqua and the three municipalities continued working on the Service Agreement and Agreement for Cost Recovery of the Commission's Expenses. Committee members shared their approved 5 year Capital Construction Plans to mitigate Capital Project construction conflicts. For example, a high level of collaboration resulted in GMWC undertaking construction of 590 metres of forcemain in along Fox Creek Road in 2017 that was originally planned in 2019 to coincide with the City of Dieppe's Fox Creek Road reconstruction project. The Technical Committee resolved a number of the Gabbey Report recommendations including the Service Agreement, Agreement for Cost Recovery of the Commission's Expenses, CSO Reporting Agreement, climate change impacts on GMWC facilities and Collector Sewer, GMWC Jurisdiction Limits, Development Cost Surcharge and began discussion regarding Over-Strength Sewer Discharge Fees and RV Disposal Sites in the GMA.

With the Commission's Mission and Vision in mind, the management team continued to focus on the four strategic objectives of the 2014-2018 strategic priorities, primarily the upgrade of the facility to a point where effluent released into the local environment complies with the federal wastewater regulations by 2020. The management team and their respective support staff have continued the great work and high standards for which the Commission is known. The following projects were completed in 2017 in line with TransAqua's long-term strategic plan objectives:

- The General Manager gave a number of presentations in 2017 to various groups such as the Greater Moncton Chamber of Commerce, Rotary, Tri-Community Council, Times & Transcript Editorial Board, and municipal Parks and Recreation Departments;



- Updated the TransAqua website (www.transaqua.ca) on a regular basis and adding a webcam so the public can view the Upgrade Project site at any time;
- Public Safety Canada conducted a Cyber Security Resilience Review with results forthcoming in 2018;
- Capital Projects completed in 2017 include the relocation of the GMWC collector sewer at Jonathan Creek, Fox Creek Wastewater Pumping Station Upgrade Preliminary Design, construction of a 590 metre section of forcemain along Fox Creek Road in Dieppe and integration of the Compost Pads 1 and 2 process controls to the main system thus allowing for a continuous pile tracking and data management system;
- Construction for the upgrades to the Administration Building Upgrade began in 2017. Construction is expected to be completed in March 2018;
- The Computerized Maintenance Management System progressed with the identification of numerous assets, the development of asset categories and the uploading of some assets into the system for trial use;
- The large diameter sewer inspection boat inspected 1,600 metres of large diameter sewer for the City of Moncton mainly along Wheeler Boulevard and 1,200 metres of GMWC sewer mainly along Coverdale / Hillsborough Road;
- The Biosolids Certificate of Conformity has been received and this expires on January 31, 2019;
- The Landscaping Community Open House was held in April 2017 and the Community Compost Open House was held in May 2017;
- GMWC was a finalist at the Greater Moncton Chamber of Commerce's Business Excellence Awards in the Environmental Excellence category;
- All required legislated and operational requirements were met in 2017 with the submission of National Pollutant Release Inventory, Combined Sewer Overflow Reports, quarterly Quality Monitoring Report through ERRIS and to NBDELG, the GMWC Annual Report, compost site groundwater monitoring wells analysis, AMEC/ STANTEC river sampling program analysis, GHG Report to Environment and Climate Change Canada and the BNQ site visits to ensure compost conformity;
- The laboratory passed the October 2017 Proficiency Testing that is the first step towards achieving national accreditation status;
- TransAqua staff exceeded its Safety Goal in 2017 of resolving 70% of all safety issues brought forward to the JHSC. In 2017, as many issues that were brought forward were resolved along with a number of issues identified in 2016;



- Peter Brown, TransAqua's Lead Operator, received the Water Environment Federation Morgan Operational Solution Award and the Atlantic Canada Water and Wastewater's Silent Hero Award in 2017 for his innovation using a modified boat with a GoPro Camera, LED lights, stabilizers, etc. to inspect large diameter sewers; and
- TransAqua's new Wastewater Systems Engineer, Chris Petrie, P. Eng. joined TransAqua in January 2017. Chris brings extensive water and wastewater experience from the private and public sectors.

TransAqua would like to thank all community members who took an active interest in TransAqua and its activities in 2017 through participation with our nationally recognized compost program, through various visits and tours and providing ongoing support for TransAqua as it continues to work toward meeting the 2020 regulatory deadline for improved wastewater treatment standards.

Respectfully submitted,

R. Kevin Rice, B.Sc., CET
General Manager

3.2 2014-2018 Strategic Plan Update

There are four strategic priorities outlined in the 2014-2018 Strategic Plan; minimizing negative environmental impact of GMSC, common vision and plan with municipal and community partners, long term reliability and sustainability of GMSC infrastructure and long term financial viability and cost effectiveness. In 2017, a number of goals to support the strategic priorities have been completed:



1 Minimizing Negative Environmental Impact of GMSC - All strategic goals have been met with the Biosolids Management Policy being approved by the Commission and an analysis of potential sludge producers completed. At this time, it does not make financial or practical sense to receive other producer's biosolids due to higher cost due to transportation and the higher level of contaminants in other producer's sludge.

2 Common Vision and Plan with Municipal and Community Partners - The Commission Board approved the Service Agreement and Agreement for Cost Recovery of the Commission's Expenses between GMWC and Moncton, Riverview and Dieppe. Each Municipal Council approved the Agreement for Cost Recovery of the Commission's Expenses in 2017 and is expected to approve the Service Agreement early in 2018. The Commission Board also approved the CSO Reporting Agreement between GMWC and the City of Moncton. TransAqua continues to present its annual budget presentations to Moncton, Dieppe and Riverview Councils at their request. TransAqua's Annual General Meeting (AGM) is open to the public and is held in each municipality on a rotational basis (Riverview in 2017). TransAqua ensures timely and appropriate communications with all levels of government (municipal, provincial, federal), NGOs and ratepayers regarding its activities. The GMWC Social Media Strategy, Issues Management Plan, Quarterly Newsletter, public information items such as "Sewer Do's and Don'ts" and "Septic Tank Maintenance Brochures and a Quarterly Newsletter along with other initiatives were implemented. Only one of 69 Gabbey Report recommendations remains outstanding at the end of 2017 that is expected to be resolved early in 2018.

3 Long Term Reliability and Sustainability of GMSC Infrastructure - In 2017, the Computerized Maintenance Management System (CMMS) progressed with the identification of numerous assets, the development of asset categories and the uploading of some assets into the system for trial use. Staff were trained to use the systems and trials will continue into 2018 along with the identification of any remaining assets and adding more information related to assets (Owner's Manuals, etc.). Resources have been provided to attempt to establish the financial software link to the CMMS and to begin the development of a formal Asset Management Plan. Work is ongoing to develop a long term plan to ensure that funding is available in the GMWC General Capital Reserve Fund to replace major assets (sewer tunnel, clarifiers, buildings, etc.) at the end of their life cycle.

4 Long Term Financial Viability and Cost Effectiveness - The Commission Board approved the Agreement for Cost Recovery of the Commission's Expenses between GMWC and Moncton, Riverview and Dieppe. This Agreement includes a Meter Equivalent Unit for industrial, commercial and institutional customers based on actual 2016 water usage. In 2017, a Septage Disposal Service Agreement was implemented to ensure that the process is receiving the appropriate septic water and eliminating any potential contaminants that can negatively impact the operations and the final compost product. The amount of septic tank waste decreased but so did the use of costly chemicals and maintenance.



3.3 Existing Assets and Condition

Currently, TransAqua's infrastructure consists of eight Remote Pumping Stations, 31 km of trunk sewers and tunnels, a Main Pumping Station, a Wastewater Treatment Facility (WWTF) located at Outhouse Point in Riverview and a Composting Facility located

in Moncton on a 140-hectare property. In 2017, construction of the new access road, parking lot and associated sidewalk and curbs and installation of 90 metres of primary clarifier overflow pipe was completed. Work continues on the primary clarifiers, inlet works and septage receiving that have not been commissioned in 2017.

3.3.1 Collector Sewer System

Eight Remote Pumping Stations along the collector sewer system are operated to pump wastewater to the WWTF and to protect low-lying areas from flooding during wet weather events. The 31 km of trunk sewers and tunnels extend to the causeway around the traffic circle and all the way to Dover Road on the north side of the Petitcodiac River. On the Riverview side, it extends from the

causeway to Mill Creek. The culminating achievement of this collector network is the 1.1-km-long tunnel under the riverbed from Bore Park to the Main Pumping Station. It is a 1.6-m diameter tunnel and is 22 m below the ground surface. In 2017, just over 2.8 kms of sewer, the tunnel and the WWTF's effluent pipe were inspected along Wheeler Boulevard and Coverdale Road using the modified boat.

3.3.2 Main Pumping Station



The Main Pumping Station located on the plant site at Outhouse Point (property having been granted initially to a Mr. Robert Outhouse) is the heart of the collector sewer system, a point of collection for all lines and continuous pumping to the WWTF.

The station is equipped with four non-clog type vertical centrifugal pumps, rated at 1020 L/s at 28.7 m head. The cylindrical structure extends 30 m below grade and 9 m above ground, much like a 10-storey building underground.

3.3.3 Wastewater Treatment Facility (WWTF)

The preliminary treatment building houses screening equipment, grit tanks, grit handling equipment, chemical storage and feeding equipment. Three 39-m diameter settling tanks are used for the chemically enhanced primary treatment. The dewatering building houses dewatering centrifuges, screw conveyors, lime silos and polymer equipment all of which transform the wastewater by-products (sludge) extracted from wastewater into an important feedstock for the Composting Facility, namely biosolids.

The actual WWTF was commissioned in 1994 with a capacity of 115,000 m³ per day, or 25 million gallons per day. The plant was designed to facilitate expansion to biological treatment in the future which will be completed by the end of 2021.



3.3.4 Composting Facility

The composting process used by the Commission combines bottom positive aeration and a cover system on three large concrete thermophilic composting pads. The key to the composting process is the mix ratio of biosolids and wood waste consisting primarily of bark and ground forestry waste. The bulking material provides a source of carbon but is essential in obtaining a porosity that facilitates the migration of air for a thorough and complete aerobic process.

The upgraded system has a capacity to process 15,000 tonnes of biosolids mixed with 15,000 tonnes of wood waste for a total of 30,000 tonnes of input materials per year that will accommodate additional biosolids due to the commissioning of secondary treatment in 2020.

Compost curing and finishing take place on adjacent asphalt pads. The design concept is based on total containment of surface runoff from rainfall and snowmelt from the composting site flowing into an on-site retention pond together with leachate generated from the composting process and then flowing back to the wastewater treatment plant through sanitary sewers for treatment.



3.4 Wastewater Operations

In 2017, the WWTF treated more than 22.8 million m³ of wastewater or an average of 62,531 m³ per day. At this flow rate, 25 Olympic-size swimming pools would be filled in a day. The wastewater treatment plant power consumption for 2017 was 5,139 MW hours or an average of 14,080 KW hours per day with an average monthly power bill of \$45,594.

Screening of large objects and removal of inorganics such as sand and gravel particles are accomplished through the screening and grit-removal processes. The materials removed are then transported to the Southeast Regional Service Commission waste management facility for disposal.

The existing enhanced primary treatment is designed to remove suspended solids and reduce biochemical oxygen demand to some

extent. In 2017, the removal rate of Total Suspended Solids (TSS) was measured at 66%. Biological Oxygen Demand (BOD) is a measure of organic biodegradable matter which is partially removed (approximately 44%) with the current process. The planned plant upgrades to biological treatment would bring these removal rates to more than 95%.

Approximately 9,215 m³ of septage collected from rural communities surrounding Greater Moncton (50-km radius) were also treated at the WWTF. With the implementation of the Septage Disposal Service Agreement in 2017, septage disposal volumes are lower than previous years as a result of septage quality guidelines. Also as a result of the septage quality guidelines, the amount of grit in septage has diminished, resulting in less frequency of septic tank cleaning and septic mixer malfunction.

Chemically assisted primary treatment uses chemical coagulants to increase the removal of settleable solids. Sludge is dewatered by centrifuge to increase dryness. Lime is then added to produce lime-stabilized biosolids. In 2017, 11,128 tonnes of biosolids with an average solids content of 27.7% were shipped from the WWTF to the Composting Facility.

The five-year historical operational data can be seen below in Table 1:

Table 1: 2013 – 2017 Historical WWTF Operational Data

		2013	2014	2015	2016	2017
Annual volume	m ³	23,871,805	27,328,601	25,341,627	22,869,117	22,814,067
Daily average	m ³ /day	65,257	74,865	69,384	62,554	62,531
Anionic polymer	tonnes	0.6	0.4	0.7	0.7	0.7
Cationic polymer	tonnes	12.9	10.4	10.9	13.4	13.5
Ferric sulfate	tonnes	410.7	390.3	398.5	452.7	427.5
Lime	tonnes	133.6	127.3	118.9	113.3	108.67
Power consumption	MW	5,279	5,557	5,137	5,063	5,139
Diesel Generators	hours	125	190	187	177	225
Biosolids (Wet)	tonnes	10,358	10,855	11,449	11,311	11,128
Biosolids (Dry)	tonnes	3,072	3,089	3,229	3,169	3,082
Solids	%	29.7	28.4	28.2	28.0	27.7
Precipitation	mm		1501	1352	995	1052
Cost / m ³	\$		\$0.17	\$0.20	\$0.21	\$0.19

The total cost to treat 1 m³ of wastewater in 2017 was \$0.19, \$0.21 in 2016 and \$0.20 in 2015. In recent years, citizens are using less water and there has been less precipitation (rain and snowmelt). This has resulted in less wastewater from citizens and combined

sewers requiring treatment. Because of this lack of dilution, more chemicals are required to remove solids however no significant variation is seen in biosolids production and effluent quality.

3.4.1 Regulatory Compliance

In 2017 TransAqua effluent discharged to the Petitcodiac River met requirements set in the Transitional Authorization issued by the New Brunswick DELG in November 2014. This authorization sets conditions for effluent quality that are appropriate for the current Advanced Primary Treatment Process in place:

- The average carbonaceous biochemical oxygen demand (CBOD₅) must not exceed 130 mg/L.
- The average concentration of total suspended solids (TSS) in the effluent must not exceed 96 mg/L.
- The maximum concentration of un-ionized ammonia in the effluent should be less than 1.25 mg/L, expressed as nitrogen (N), at 15°C ±1°C.

2017 average effluent concentrations for the pollutants above described are as follows:

- The average carbonaceous biochemical oxygen demand (CBOD₅) must not exceed 130 mg/L.
- The average concentration of total suspended solids (TSS) in the effluent must not exceed 96 mg/L.
- The maximum concentration of un-ionized ammonia in the effluent should be less than 1.25 mg/L, expressed as nitrogen (N), at 15°C ±1°C.

The following table contains monthly averages for TSS and CBOD₅ and maximum concentrations of un-ionized ammonia for 2017:

Table 2: 2017 Monthly Effluent Average

2017	CBOD ₅ mg/L	TSS mg/L	Un-NH ₃ max mg/L
January	69	57	0.098
February	78	55	0.109
March	79	67	0.102
April	58	52	0.066
May	61	53	0.059
June	77	51	0.086
July	121	50	0.091
August	123	50	0.104
September	114	53	0.095
October	101	58	0.112
November	102	55	0.157
December	105	56	0.103
Average	91	55	0.099

By 2020, TransAqua discharge to the Petitcodiac River will meet the Wastewater System Effluent Regulations (WSER). These federal regulations require that WWTF effluent must not be acutely lethal and must also meet the following conditions at the final discharge point to be authorized to be discharged:

- The average carbonaceous biochemical oxygen demand (CBOD₅) must not exceed 25 mg/L.
- The average concentration of total suspended solids in the effluent must not exceed 25 mg/L.
- The average concentration of total residual chlorine in the effluent must not exceed 0.02 mg/L.
- The maximum concentration of un-ionized ammonia in the effluent should be less than 1.25 mg/L, expressed as nitrogen (N), at 15°C ±1°C.

3.4.2 Laboratory Operations

The TransAqua wastewater laboratory is located at the WWTF Operations Center. This laboratory produces essential data that enables personnel to determine wastewater characteristics, process efficiency and effluent quality. Adjustments and improvements to treatment processes can be done based on laboratory results. The Canadian Association for Laboratory Accreditation Inc. (CALA) provides laboratories with national accreditation that meet rigorous testing quality standards. As part of the accreditation process, laboratories are required to participate in biannual (March, October) Proficiency Testing for some of the following parameters that are currently being tested at the TransAqua laboratory:

- pH and temperature
- Total suspended solids (TSS) and volatile suspended solids (VSS)
- Five-day carbonaceous biochemical oxygen demand (CBOD₅)
- Chemical oxygen demand (COD)
- Ammonia
- Total Kjeldahl nitrogen (TKN)
- Total phosphorus (TP)
- Alkalinity

Table 3 outlines the Proficiency Testing Parameters and the scores received since this program began in 2016. Results must be higher than 70% to achieve proficiency. The lower score for pH testing resulted from a faulty pH probe that was discovered as a result of the proficiency testing and was subsequently replaced.

Table 3: Proficiency Testing results

PARAMETER	OCTOBER 2016	MARCH 2017	OCTOBER 2018
Ammonia	85	99	88
CBOD	94	95	91
Total Suspended Solids	95	97	96
pH	91	96	81

TransAqua's laboratory participated in the October 2017 CALA Proficiency Testing Program and passed all parameters that were required to be submitted. In 2018, upgrades to the Administration Building, including the laboratory, will allow the laboratory to apply for CALA accreditation. TransAqua's Certificate of Approval issued by the Province of New Brunswick requires certain parameters to be analyzed by a nationally accredited laboratory. By achieving the accreditation status, TransAqua's laboratory will meet the federal and provincial testing requirements.

3.5 Composting Operations

Wastewater treatment by-products, or biosolids, are used as a key ingredient in the TransAqua composting process. Up until recently, biosolids were considered to be 'waste' that required expensive disposal. Personal attitudes are quickly changing to realize that compost containing biosolids are nutrient rich and are being seen as a value added product that can be reintroduced to the earth for many uses.

Treatment of biosolids at the WWTF involves conditioning with liquid lime, dewatering by high-speed centrifuges followed by the addition of dry lime. These centrifuges will be upgraded in 2018 not only to extend their life cycle by another 20 years but also increase their processing capacity to deal with additional solids that will be generated by the secondary treatment process that will be commissioned by 2020.

Biosolids are transferred to the Composting Facility where they are mixed with green waste consisting of bark (from sawmills), ground forestry waste, wood chips and other green waste. The initial mixture is two parts of green waste to one part of biosolids by volume. Biosolids are much denser (heavier) than green waste.

In 2017, 11,128 tonnes of treated biosolids were processed along with approximately 11,128 tonnes of green waste. The initial mix produced 45 windrows which are 50 m long on the composting pad. Windrows spend a minimum of eight weeks on the active aerated pad and are turned over three times. The windrows are covered with a breathable cover during the initial phases and can reach temperatures of more than 70°C. The windrows are then moved and grouped into lots on the curing pad where they are conditioned and left to compost at a slower rate while cooling down. The complete process takes one year. Consequently, 2017's production will be available for use in 2018.

Processing and product usage in 2017 involved screening of the 2016 stockpiles (lots) for use by the general public, landscapers and local municipalities.

The public was allowed to pick up compost free of charge from the self-loading bins. If customers required a small tractor to load their truck or trailer, a \$15 / cubic yard fee was paid. Product was sold to landscapers and is also provided to the Greater Moncton area municipalities for their horticultural activities.

The five-year usage summary (tonnes) is shown in Table 4. There were approximately 10,400 tonnes of compost available to the public in 2017

Table 4: 2013 – 2017 Historical Compost Operational Data (tonnes)

Compost Clientele	2013	2014	2015	2016	2017
Public pick-up bins	4,000	3,696	4,000	5,750	5,000
Commercial users	515	160	960	1,000	1,000
City of Moncton	42	535	800	40	130
City of Dieppe	1,009	26	200	60	60
Town of Riverview	16	34	96	150	60
Community projects	128	24	400	200	200
Trials/tests/promotional	680	600	400	200	150
Miscellaneous/TransAqua	400	400	400	200	200
Annual compost output totals	6,790	5,476	7,256	7,600	7,400
End of Season Inventory			1,750	100	3,000

TransAqua was pleased that public, commercial and municipal participation in 2017 rivalled levels in 2015 and 2016. There was a similar volume removed from the compost facility compared to 2016 and is one of the highest volumes to date. To put this in a visual perspective, TransAqua could load approximately 600 to 700 dump trucks with compost every year. Once secondary treatment is commissioned, up to 50% more biosolids will be created that will be converted into compost and made available to the public as a value added product.

The product available for use in 2017 were Lots 2016-1 to 2016-17, each tested in order to confirm product quality. Lot 2016-15 was

blended into manufactured topsoil due to very high moisture levels. Approximately 3000 tonnes of screened and approved compost from Lots 2016-13, 2016-14, 2016-15 (manufactured topsoil), 2016-16 and 2016-17 remained on site at the end of the season and will be available for use in early 2018. Lot 2016-16 will be blended in 2018 to make manufactured topsoil. There were 17 lots created in 2016 compared to the normal 12 to 14 lots each year in previous years which is why there are 3,000 tonnes of compost that were not removed from the compost facility in 2017. The Septage Disposal Service Agreement implemented in June 2017 has resulted in a reduction of solids entering the WWTF resulting in less biosolids being created.

3.5.1 BNQ Compost Certification

TransAqua's Composting Facility operation was developed on the basis of meeting BNQ standards (Bureau de Normalisation du Québec).

The BNQ is a standard development organization which is part of the Centre de Recherche Industrielle du Québec (CRIQ).

The BNQ was created in 1961 and is one of the four standards-development organizations accredited by the Standards Council of Canada and is therefore a member of the National Standards System.

The Commission went through the process of obtaining BNQ certification in 2009 for its Category "A" quality compost. This certification is under the Standard CAN/BNQ 0413-200/2016. Product certification level was upgraded to Category "AA" in 2011 – which is the highest certification level achievable in Canada for compost.

The BNQ certification standards underwent changes in 2017. TransAqua made the required adjustments and received the renewed Biosolids Certificate of Conformity that expires on January 31, 2019.



3.5.2 CQA Certification

TransAqua is a member of the Canadian Composting Council (CCC) and is also a member of its Compost Quality Alliance (CQA) Program. The CCC is active at continuing education through regional workshops and an annual conference. Although there is no regulatory requirement, TransAqua operators have received the Level 1 Compost Facility Operator certification through this organization.



3.6 Human Resources



Front Row: Gordon Buck; Lawton Hicks; Conrad Allain; Candace Jonah; Patricia Casas; Stella Richard; Jennifer Langille; Christopher Petrie - Second Row: Marc Hebert, Burtis Hayes, Peter Brown, Jordan Welsh, Shawn Hackett and Kevin Rice

In 2017, TransAqua employed a staff of 16, augmented in the summer months with university and college students from the local community.

The overall system of collector sewers and pumping stations, the WWTF and Composting Facility was overseen by General Manager who is supported by a management and administration team, WWTF operators, maintenance personnel for mechanical and electrical systems, a laboratory technician and heavy equipment operators for the Composting Facility.

In addition to the General Manager position, the management team also consists of the Director of Finance and Administration (responsible for all in-house financial activities), the Director of Technical Services (responsible for delivery of capital programs and engineering activities), the Manager of Solid Systems (responsible for composting activities and overall operational maintenance requirements) the Manager of Liquid Systems (responsible for WWTF and WWPS performance) and a Wastewater Systems Engineer to provide assistance with the WWTF Upgrade and

Modernization Project and as a key component of succession planning. TransAqua welcomed Chris Petrie, P. Eng. in January 2017 as the new Wastewater Systems Engineer.

Peter Brown, TransAqua's Lead Operator was awarded the Water Environment Federation's (WEF) 2017 Morgan Operational Solutions Award and the 2017 ACWWA Silent Hero Award for his innovative approach to visually inspecting large diameter sewer pipes.

Many TransAqua personnel completed training initiatives took place in 2017 that includes Social Media, Front End Loader, Government Relations, Arc Flash, Rigging and Hand Signalling, Worksafe NB JHSC, Scissor Lift, Articulated Boom Lift, Coaching Out of the Box, CMMS Lucity Software, Municipal Records Authority and industry conferences such as the Atlantic Infrastructure Management Network, Canadian Composting Council, WEFTEC and ACWWA.

3.7 Public Outreach

TransAqua plays a significant role in raising awareness of the importance of wastewater treatment on public health and the environment. TransAqua provides meaningful sponsorship including in-kind services in 2017 for the following industry and public organizations; MPWWA, ACWWA, GMCC, Light Up Riverview, NB Environmental Network and the APEGNB Soapbox Derby.

TransAqua maintains a bilingual website, www.transaqua.ca, to promote its current communication strategy, to keep the local community informed of its operations and goals for the future, to allow for the public to register to receive information and update progress of the treatment plant upgrade. In 2017, TransAqua added a webcam so the public can view the WWTF Upgrade and Modernization Project construction site at any time.

TransAqua continued to host numerous technical tours on a regular basis to school classes, technical colleges, universities and local community groups. Elected government representatives toured the WWTF throughout 2017. At the Compost Facility, the Landscaping Community Open House was held in April 2017 and the Community Compost Open House was held in May 2017.

During 2017, the public was invited to pick up Type “A” and “AA” compost; the highest provincial and nationally accredited quality compost at the Compost Facility off Delong Drive. For small

quantities (self-loaded), the product was provided free of charge. Those citizens that required assistance loading a trailer or pickup truck were charged \$15 / cubic yard.

TransAqua participated as a member of the Light Up Riverview Committee and expanded the blue, green and white lights (TransAqua colours) on large trees at the western entrance to add to the trees already decorated at the eastern entrance along the front of the TransAqua property. Students at Riverview Middle School assisted TransAqua by installing the lights into the sockets and took great pride in this community effort!

TransAqua hosted a Greater Moncton Chamber of Commerce Breakfast and Learn session in 2017 with a presentation and tour.

TransAqua adopted the GMWC Social Media Strategy and GMWC Communications Policy in 2017. Development of public information items such as “Sewer Do’s and Don’ts” and “Septic Tank Maintenance Brochures and a Quarterly Newsletter are meaningful methods for connecting with the public.

TransAqua staff participated in the Town of Riverview’s business friendly Pumpkin Personalities Contest and the Riverview Fire and Rescue Open House. TransAqua’s booth giveaways included poo emoji stress balls and markers along with dancing flowers that were a big hit with children and adults alike!



3.8 TransAqua WWTF Upgrade and Modernization Project Funding

TransAqua worked very closely with Infrastructure Canada and the New Brunswick Regional Development Corporation to develop and implement formal Funding Contribution Agreements. INFC and RDC each committed to providing 25% of the funding with TransAqua

providing the remaining 50% of funding towards this \$90.4M infrastructure project. An INFC – TransAqua Contract Oversight Committee Meeting was held in August 2017 with RDC attending as an Observer.

3.9 Capital Works Program

3.9.1 Advanced Biological Treatment

The federal government enacted new Wastewater Systems Effluent Regulations (WSER-2012) under the Fisheries Act in July 2012 to harmonize regulatory and reporting requirements across Canada. This regulation came as a result of the Canadian Council of Ministers of the Environment's (CCME) Canada-wide strategy for management of municipal wastewater effluent.

The current treatment works provide for an Advanced Primary Treatment Process. The new regulations will require that the WWTF be upgraded to an Advanced Biological Treatment Process in order for it to achieve new effluent requirements. The new requirements are in place now, however the Commission has been given until 2020 to complete the upgrades required to support the biological process.

The Commission started planning for the upgrade well ahead of the deadline and has had time to carefully evaluate the best available technology and most sustainable approach in meeting the new regulatory limits. Extensive studies and evaluations completed will greatly reduce risks and ensure successful outcome.

The Long Term Sustainable Wastewater Treatment Strategy – Advanced Biological Treatment Process Selection Report, (CRA April 2010), recommended the implementation of Biological Nutrient Removal (BNR) technologies, more specifically the Modified Ludzack-Ettinger (MLE) process and/or the Anaerobic/Anoxic/Oxic (A2O) process. Subsequent to this study, a Pilot Plant was constructed and operated to determine the feasibility of a Biological Process. The BNR Pilot Plant Study, operated in the MLE mode was proven to be

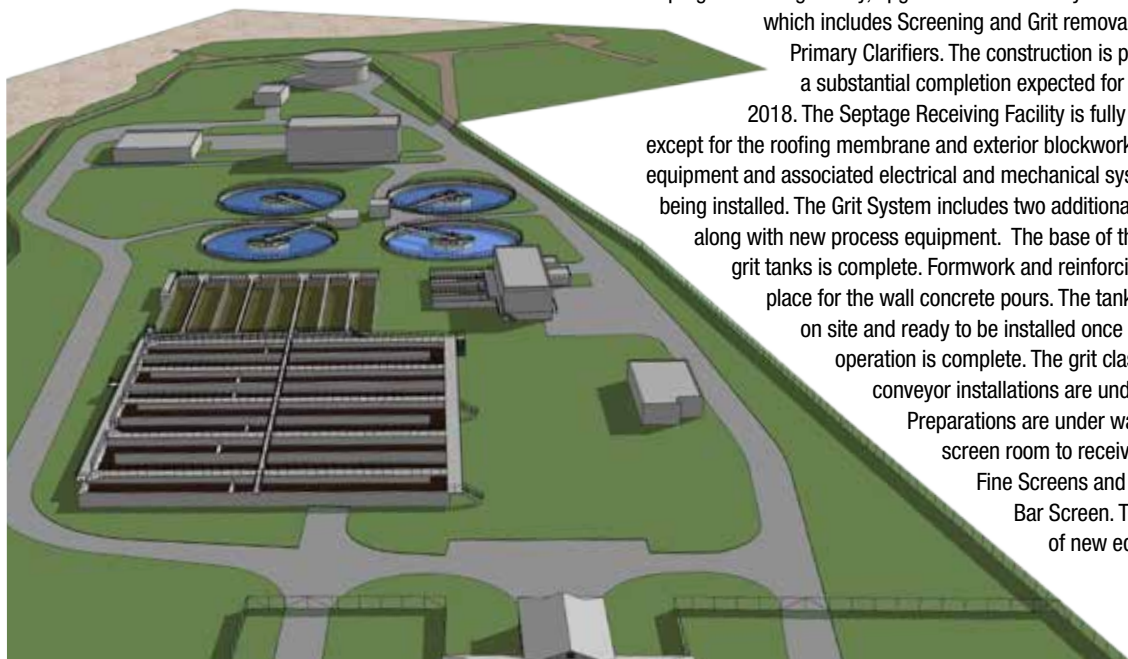
very successful in achieving high effluent quality through the removal of organics and nitrification – denitrification. Results from the Pilot Work was used in the preparation of The Preliminary Conceptual Design as documented in “Design Basis and Preliminary Conceptual Design Report – BNR Secondary Wastewater Treatment Facility” dated Oct. 1, 2013 by Conestoga-Rovers & Associates.

The Pre-Design work was then completed by CBCL (GMWC Wastewater Treatment Facility Upgrade to Biological Treatment by CBCL Limited dated January 2015) (CBCL-Jan 2015). The Pre-Design work and further process modelling determined that a four stage Step-Feed Biological Nutrient removal(BNR) process configuration sized for a maximum month wastewater flow rate of 142 ML/d would achieve the discharge effluent objectives and operate reliably considering hydraulic loadings, temperature requirement and solids loading to clarifiers.

With the funding announcement in December of 2016, the commission proceeded with the procurement of all specialized process equipment and completed detail design work for the first two phases. Phase 1 (Preliminary Treatment and Septage Receiving) and Phase 2 (Primary Clarifiers) were combined into one contract and tendered in the early summer. An excavation contract and a new roadway contract were tendered ahead of the major contract in order to advance site work in preparation of the general contract for phase 1 and 2. This contract was awarded to Pomerleau for \$12,250,000 following a public tender call. Process equipment that will be installed in this project is being procured directly by the commission following a pre-selection process. These two first phases includes a new Septage Receiving facility, upgrades to Preliminary Treatment Works which includes Screening and Grit removal and new

Primary Clarifiers. The construction is progressing for a substantial completion expected for mid-August 2018. The Septage Receiving Facility is fully constructed except for the roofing membrane and exterior blockwork. The process equipment and associated electrical and mechanical systems are being installed. The Grit System includes two additional grit tanks, along with new process equipment. The base of the two new grit tanks is complete. Formwork and reinforcing steel is in place for the wall concrete pours. The tank screws are on site and ready to be installed once concrete operation is complete. The grit classifier and conveyor installations are under way.

Preparations are under way in the screen room to receive the new Fine Screens and back-up Bar Screen. The delivery of new equipment



is expected in February 2018. Work is also progressing well on the new Primary Clarifiers and Pump Room. The slab for clarifiers No.1, 2 and 3 have been poured while rebar is almost complete for No.4. The pump room walls and roof slab are complete. The contractor will be focusing on completing the pipe gallery and clarifier main gallery to enable the mechanical and electrical contractors to continue with their installations over the winter months. The clarifier equipment has been pre-purchased and is scheduled to arrive on site by the end of February. Process piping and valves are expected to arrive by the end of January.

3.9.2 Collector System

In addition to regulatory driven projects, the Long-term Sustainable Wastewater Collection and Treatment Strategy (June 2010) has identified wastewater conveyance improvements to ensure that a robust collector system is maintained. Major projects identified include a second river crossing, upgrades to the existing Fox Creek pumping station and a new pumping station at Virginia Avenue in Dieppe.

A preliminary engineering study was awarded to Stantec in early 2015 to determine the best long-term configuration of the Commission's collector sewer in Dieppe considering the new Babineau Creek trunk sewer and the need to increase capacity from the Fox Creek drainage basin.

In view of the rapid growth in the City of Dieppe, the Commission will need to increase capacity of the conveyance by constructing a 3,800 metre forcemain along Bourque Road and Pumping Station for redirecting flows at Fox Creek to a new trunk sewer constructed along Babineau Creek. The City of Dieppe was resurfacing a 200 metre section of Bourque Road in 2016, so TransAqua completed this length of forcemain to prevent re-excavation of a new road.

3.9.3 Combined Sewer Overflows (CSO)

The new federal regulations required the Commission to develop a Combined Sewer Overflow Long-term Strategy to address overflows resulting during wet weather events from older areas which still have combined sewers. The Commission is also required to monitor CSO discharges and report volumes discharged per CSO structure per month to federal and provincial authorities annually. The goal is to focus on increasing CSO capture rates to provide an adequate level of treatment. CSO facilities have been identified at strategic locations of the system.

The Commission uses a hydraulic modeling software to estimate the volume of CSO discharge from its different structures along its collector system. Data such as hourly precipitation, pumping station levels, and dry weather flows are placed into the model to recreate

For secondary treatment, planning started with the completion of a report titled "Advance Biological Treatment Process Selection" by Conestoga-Rovers & Associates dated April 2010. The Commission then constructed a Pilot Plant and carried out extensive pilot testing. The compiled Pilot Plant data was used to carry out computer process simulations and to produce a report entitled Design Basis and Preliminary Conceptual Design Report – BNR Secondary Wastewater Treatment Facility by Conestoga-Rovers & Associates in October 2013.

In November 2017, the Commission awarded the detail design of the Bioreactor (Phase 4), Sludge Thickening (Phase 4) and UV Disinfection (Phase 5) to CBCL after a detailed public tender process.



collector system hydraulic conditions. The model is used to estimate discharge, frequency and duration of CSO events and to also estimate treated effluent discharges to the Petibodioc River. The actual wastewater flow coming to the wastewater treatment facility in Riverview is measured and then compared with model results. This information helps the Commission to know what portion of wet weather flows are conveyed to its wastewater treatment facility.

Since the City of Moncton does not have access to the federal CSO reporting system, a CSO Reporting Agreement was developed to allow the Commission to report CSO discharge on behalf of the City of Moncton. Three CSO discharge points of the Wheeler Boulevard trunk in Moncton are included in the Commission's hydraulic model. The City of Moncton provides information to the Commission for its Report.

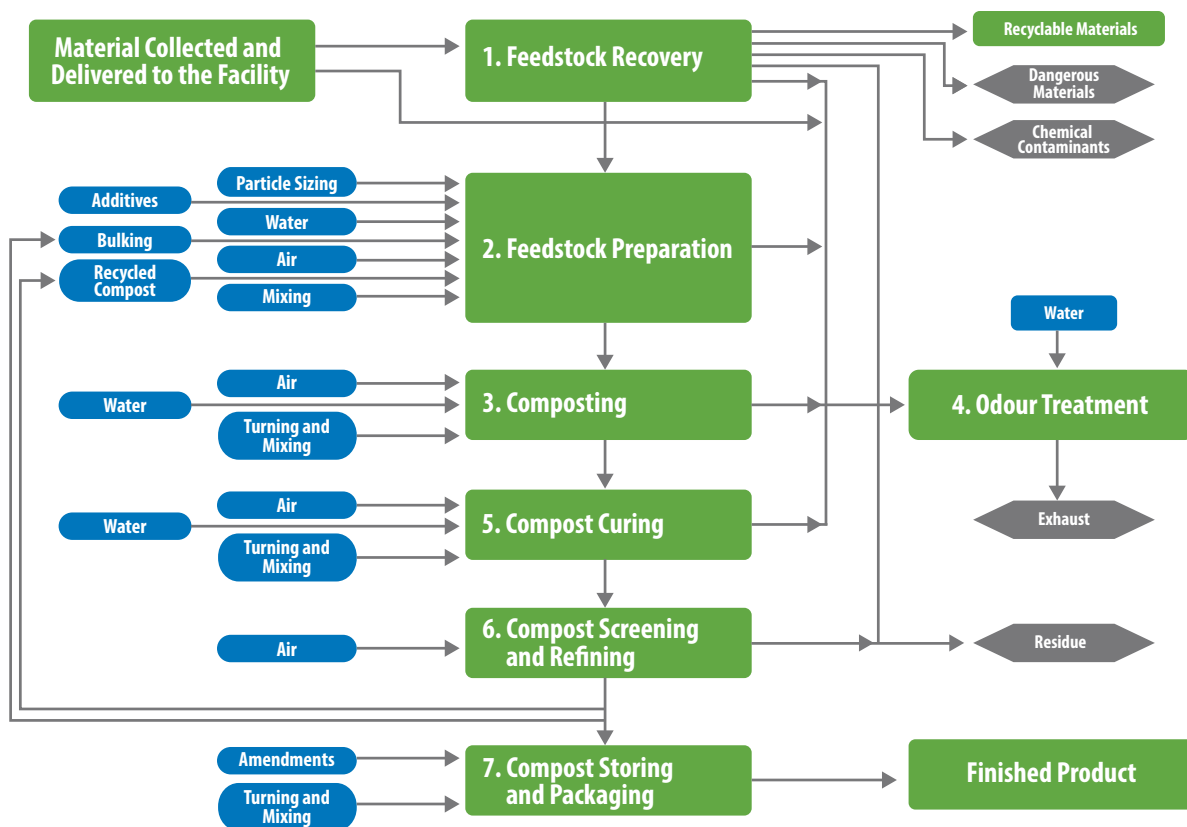
3.9.4 Composting Facility

The composting system with the recent addition of Compost Pad No.3 is capable of processing 30,000 tonnes per year (15,000 tonnes of biosolids with 15,000 tonnes of amendments). The process incorporates recycled green wastes and purchased bark from sawmills in the process. The system which produces "AA" compost quality is fully aerobic using a bottom aeration system and a cover system.

In 2017, upgrades were designed to integrate all three pads to the commission's central SCADA system with a built-in pile tracking system for product traceability. Control panels and additional programming will be completed in early 2018.



Biosolids Composting Process



3.9.5. Plant Automation

The Commission embarked on a modernization program of its Supervisory Control and Data Acquisition System (SCADA) in 2014. Initially, the focus was on updating workstations and software to allow for a smooth transition to the new-generation control hardware (Programmable Logic Controllers, or PLCs).

These new PLCs will replace the aging older hardware and make use the fibre-optic network for communication. Fibre-optic trunk lines were installed throughout the plant several years ago.

The control hardware upgrade was completed in 2015 at the Dewatering Facility. This provides the new control platform to support a major retrofit of the three large dewatering centrifuges. The centrifuge upgrade, scheduled for 2017-2018, will include

compatible PLCs that will be integrated to the plant system. Various sub-systems such as the heating and ventilation have also been upgraded to compatible hardware. The 2016 control hardware upgrade was completed at the Main Pumping Station. Significant improvements and upgrades were also included as part of the project.

The first contract of the WWTF Upgrade and Modernization Project will now combine the upgrading and expansion of the Preliminary Treatment Facility as well as new Primary Tanks. An upgrade to the existing Preliminary Treatment Control System as well as a new Primary Treatment control system will be installed as part of this project.

3.9.6 Fox Creek WWPS Upgrade

The preliminary design for the Fox Creek WWPS Upgrade in Dieppe was completed in 2017 with the detailed design to be completed early in 2018. It is expected that construction of the wet well and underground services will be completed in 2018 with the construction of the backup power (generator) system and above ground systems in 2019. TransAqua used the opportunity to transfer excavation material from the WWTF Upgrade and

Modernization Project to the Fox Creek WWPS site in 2017 to build up the site in an effort to meet the requirements of the GMWC Climate Change and Variability Policy minimum height of a 10.5 metre flood level. This initiative will result in savings related to the transportation and dumping of new material.



3.9.7. Administration Building Upgrade

The detailed design for the upgrade of the Administration Building began in 2016. The laboratory requires significant upgrades to meet national accreditation standards. The upgrade design deals with some of the recommendations within the TransAqua Critical Infrastructure Resilience Tool Report conducted by Public Safety Canada; create more distance between the parking lot and front entrance, add a security camera to the front of the building and install doors leading from the reception area into the office areas through a swipe card system among others. The garage area is being expanded to be capable of providing more space for equipment maintenance and storage considering secondary treatment will realize the addition of many more assets.



3.10 Energy Sustainability

In 2014, TransAqua completed the installation of a pilot project to test commercial grade geothermal heat pumps and plate type heat exchangers in order to confirm design criteria and equipment necessary for a plant-wide heating system using heat extracted from wastewater. This project is being done to support the Commission's goal toward efficiency and sustainability. The Pilot Plant has been operating since 2014 and will provide valuable data and insight that will support full-scale system design and implementation.

The composting facility is designed with a very low energy input to sustain the fully aerobic process. The process itself generates high temperatures, an important aspect for pathogen inactivation. In view of this excess heat, the concrete pads were equipped with network of polyethylene pipes carrying a glycol solution and configured to extract heat from the hot slab. This heat is then circulated within the blower enclosure to pre-heat intake air, and can also be directed to other parts of the pad to melt snow and ice. The operations centre at the compost site was also designed to also take advantage of this green energy. The heating system is a deep-well geothermal system that will be integrated to the pad heat-recovery system using heat exchangers. Planning for the full integration of all facilities is underway.

4. TREASURER'S REPORT

As of December 31, 2017, actual revenue was \$15,850,139 compared to a budget of 23,443,988 resulting in a year to date variance of \$7,593,848. The year to date variance resulted from only receiving \$2,282,884 of the \$9,858,057 federal and provincial grants budgeted for the year.

Overall expenditures were \$6,428,193 which was \$692,041 under budget. Expenditures that significantly contributed to a positive Operational variance were electrical usage, quality control (lab cost), general maintenance, generator diesel fuel and snow removal. Expenditures that significantly contributed to the positive Administration variance were budgeted professional consulting fees relating to the WWTF Upgrade and Modernization Project that were not spent. It must also be noted that \$485,000 allocated for cost sharing expenses relating to the Babineau Creek project were not spent because the project was not completed before year end. This will be budgeted for 2018.

The WWTF Upgrade and Modernization Project is consuming a significant amount of time and energy. Management is very focused on managing the Project and have been keeping the Commission

well informed. The total project allowance is \$90,407,778. As of December 31, 2017, tenders have been issued in the total amount of \$24,158,304.43. Total capital spend year to date is 9,448,808.



Bryan Inglis
Treasurer



5. COMMISSION MEMBERS



MICHEL DESJARDINS

Representing Moncton

Current term to
September 2020

- Secretary of the
Commission Board
- Member of
Executive
Committee

JENNIFER DINGMAN

Representing Riverview

Current term to
August 2021

- Commission
Member

BRYAN INGLIS

Representing Moncton

Current term to
September 2020

- Treasurer of the
Commission Board
- Member of Execu-
tive Committee

MYLÈNE ROY

Representing Dieppe

Current term to
September 2018

- Commission
Member

DAVID MUIR

Representing Riverview

Current term to
Octobre 2020

- Chair of the
Commission Board
- Chair of Finance,
Audit and
Governance
Committee
- Member of
Executive
Committee

CHANEL MICHAUD

Representing Dieppe

Current term to
September 2019

- Commission
Member

6. 2017 AUDITED FINANCIAL STATEMENTS

GREATER MONCTON WASTEWATER COMMISSION

FINANCIAL STATEMENTS
DECEMBER 31, 2017

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INDEPENDENT AUDITOR'S REPORT

Tel: (506) 389-8073
Fax: (506) 632-1210
www.deloitte.ca

To the Chairman and Members of Greater Moncton Wastewater Commission

We have audited the accompanying financial statements of Greater Moncton Wastewater Commission which comprise the statement of financial position as at December 31, 2017, and the statements of operations and accumulated surplus, changes in net financial assets and cash flows for the year then ended, and the related notes, which comprise 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 Canadian generally accepted accounting principles, 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 audit. We conducted our audit 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.

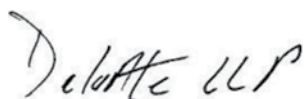
We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the financial statements present fairly, in all material respects, the financial position of Greater Moncton Wastewater Commission as at December 31, 2017 and the results of its operations, and its cash flows for the year then ended in accordance with Canadian public sector accounting standards.

The financial statements of Greater Moncton Wastewater Commission for the year ended December 31, 2016 were audited by another auditor who expressed an unmodified opinion on those statements dated February 23, 2017.

Our audit was conducted for the purpose of forming an opinion on the financial statements of Greater Moncton Wastewater Commission taken as a whole. The supplementary information included in the Schedules of the financial statements are presented for purposes of additional information and are not a required part of the financial statements. Such supplementary information has been subjected to the auditing procedures applied, only to the extent necessary to express an opinion on the financial statements taken as a whole.



Chartered Professional Accountants
Moncton, New Brunswick
February 16, 2018

GREATER MONCTON WASTEWATER COMMISSION

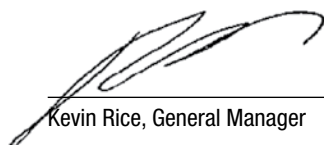
STATEMENT OF FINANCIAL POSITION As at December 31, 2017

	2017 \$	2016 \$
Financial assets		
Cash		
Operating	7,646,240	8,163,007
Reserve funds (Schedule 2)	1,461,579	577,919
Accounts receivable		
General	3,963,226	21,445
HST receivable	359,436	68,965
Accrued interest receivable (Schedule 2)	380,470	550,783
Investments (Note 3 and Schedule 2)	35,150,000	35,150,000
	48,960,951	44,532,119
Liabilities		
Accounts payable and accrued liabilities	3,269,331	1,491,205
Holdbacks payable	929,912	36,482
	4,199,243	1,527,687
Net assets	44,761,708	43,004,432
Non-financial assets		
Tangible capital assets (Note 7)	49,959,901	42,400,486
Prepaid expenses and deposits	183,560	78,303
	50,143,461	42,478,789
Accumulated surplus	94,905,169	85,483,221

Approved by the board and management



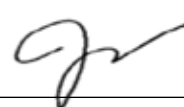
David Muir, Chair



Kevin Rice, General Manager



Bryan Inglis, Treasurer



Jennifer Langille, Director of Finance

The accompanying notes to the financial statement are an integral part of this financial statement.

GREATER MONCTON WASTEWATER COMMISSION

STATEMENT OF OPERATIONS AND ACCUMULATED SURPLUS For the year ended December 31, 2017

	Budget (Unaudited) \$	2017 Actual \$	2016 Actual \$
Revenue			
User fees			
City of Moncton	8,462,790	8,462,790	8,369,130
Town of Riverview	1,668,870	1,668,870	1,661,384
City of Dieppe	2,426,550	2,341,687	2,369,640
	12,558,210	12,473,347	12,400,154
Septic hauler and compost income	311,000	285,973	309,686
Grants	9,858,057	2,282,884	-
Interest income (Schedule 2)	716,721	807,935	721,709
	23,443,988	15,850,139	13,431,549
Expenses			
Plant and operating expenses			
Easement and property taxes	343,362	488,831	329,226
Salaries and benefits	1,711,507	1,727,948	1,557,848
Amortization of tangible capital assets	1,842,261	1,802,546	1,735,753
Electricity	599,779	572,593	546,515
Telephone	31,020	32,100	31,737
Insurance	158,730	158,877	159,716
Maintenance and operating	1,518,646	1,396,069	1,250,957
Consulting services	42,000	1,677	32,724
Vehicle expense	16,569	13,957	9,152
Cost sharing	485,000	-	2,470,581
	6,748,874	6,194,598	8,124,209
General expenses			
Marketing and communications	118,500	19,400	73,057
Office expenses	27,845	35,835	18,196
Travel, training and education	54,865	50,732	37,909
Governance	25,992	48,778	40,074
Interest and bank charges	3,610	-	3,330
Professional fees and consulting	141,150	78,848	173,354
	371,962	233,593	345,920
Total expenses	7,120,836	6,428,191	8,470,129
Annual surplus	16,323,152	9,421,948	4,961,420
Accumulated surplus, beginning of year	-	85,483,221	80,521,801
Accumulated surplus, end of year	16,323,152	94,905,169	85,483,221

The accompanying notes to the financial statement are an integral part of this financial statement.

GREATER MONCTON WASTEWATER COMMISSION

STATEMENT OF CHANGES IN NET FINANCIAL ASSETS

For the year ended December 31, 2017

	Budget \$	2017 \$	2016 \$
Annual surplus	16,323,152	9,421,948	4,961,420
Acquisition of tangible capital assets	(10,421,249)	(9,448,808)	(2,588,971)
Amortization of tangible capital assets	1,842,261	1,802,546	1,735,753
Gain (loss) on sale of tangible capital assets	-	75,272	(7,146)
Proceeds on sale of tangible capital assets	-	11,575	16,687
	(8,578,988)	(7,559,415)	(843,677)
Change in prepaid expenses	26,935	(105,257)	34,258
Change in net financial assets	7,771,099	1,757,276	4,152,001
Net financial assets, beginning of year	38,852,431	43,004,432	38,852,431
Net financial assets, end of year	46,623,530	44,761,708	43,004,432

The accompanying notes to the financial statement are an integral part of this financial statement.

GREATER MONCTON WASTEWATER COMMISSION

STATEMENT OF CASH FLOWS For the year ended December 31, 2017

	2017 \$	2016 \$
Operating activities		
Annual surplus	9,421,948	4,961,420
Charges (credits) to income not involving cash		
Amortization of tangible capital assets	1,802,546	1,735,753
Gain (loss) on sale of tangible capital assets	75,272	(7,146)
	11,299,766	6,690,027
Change in non-cash assets and liabilities		
Accounts receivable	(4,061,939)	(469,165)
Prepaid expenses and deposits	(105,257)	34,258
Accounts payable and accrued liabilities	1,778,126	734,936
Holdbacks payable	893,430	36,482
	9,804,126	7,026,538
Investing activities		
Purchase of investments, net of maturities	-	(5,075,000)
Proceeds on sale of tangible capital assets	11,575	16,687
Acquisitions of tangible capital assets	(9,448,808)	(2,588,971)
	(9,437,233)	(7,647,284)
Net change in cash during the year	366,893	(620,746)
Cash, beginning of year	8,740,926	9,361,672
Cash, end of year	9,107,819	8,740,926
Cash consist of:		
Cash in bank, operating	7,646,240	8,163,007
Cash in bank, reserve funds	1,461,579	577,919
	9,107,819	8,740,926

The accompanying notes to the financial statement are an integral part of this financial statement.

GREATER MONCTON WASTEWATER COMMISSION

NOTES TO FINANCIAL STATEMENTS For the year ended December 31, 2017

1. Purpose of organization

The Greater Moncton Wastewater Commission (the "Commission") is incorporated and operates under the provisions of the Province of New Brunswick Municipalities Act and the Clean Environment Act. As a municipality, the Commission is exempt from income tax under section 149(1)(c) of the Income Tax Act of Canada.

The Commission operates a wastewater treatment plant, wastewater collection system and composting facility in the greater Moncton region and provides wastewater treatment for the cities of Moncton and Dieppe and the town of Riverview.

2. Summary of significant accounting policies

The financial statements of the Commission are prepared in accordance with Canadian public sector accounting standards ("PSAS") and reflect the accounting policies enumerated below.

The focus of PSAS financial statements is on the financial position of the Commission and the changes thereto. The statement of financial position includes all of the assets and liabilities of the Commission.

Budget

The budget figures contained in these financial statements were approved by the Commission on November 17, 2016 and submitted to the Minister of Local Government. Certain budget figures have been reclassified to conform with PSAS financial statement presentation.

Fund accounting

Funds within the financial statements consist of general, capital and reserve funds. The Commission approves certain amounts to be set aside in reserve funds for future operating and capital purposes.

Transfers between funds are recorded as adjustments to the appropriate fund balance.

Revenue recognition

The Commission recognizes revenues from user fees, septic hauler and compost income as the services are rendered or the goods are sold, the price is fixed or determinable and collection is reasonably assured. Interest income is recognized on an accrual basis and recorded in the statement of reserve fund balances as a direct increase to the reserve fund.

Government transfers are recognized in the period in which the events giving rise to the transfer occur, providing transfers are authorized, any eligibility criteria have been met, and reasonable estimates of the amounts can be made.

Use of estimates

The preparation of the financial statements in conformity with PSAS requires management to make estimates that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amount of revenues and expenses during the reporting period. Actual results may differ from those estimates.

GREATER MONCTON WASTEWATER COMMISSION

NOTES TO FINANCIAL STATEMENTS For the year ended December 31, 2017

2. Summary of significant accounting policies (continued):

Financial instruments

The Commission's financial assets and liabilities are initially measured at fair value and subsequently carried at amortized cost with interest recorded in the statement of operations and accumulated surplus as earned.

Cash and cash equivalents

Cash and cash equivalents includes cash on hand and cash in banks not subject to other restrictions and with a term to maturity of three months or less at date of acquisition.

Tangible capital assets

Tangible capital assets are stated at cost less accumulated amortization. The Commission provides for amortization at rates designed to amortize the cost of the tangible capital assets over their estimated useful lives. Annually, amortization is calculated using the straight-line method over the estimated useful lives as follows:

Operations centre	10 - 60 years
Treatment facilities	5 - 60 years
Collection system	10 - 75 years
Fleet	5 - 20 years
Computer hardware and software	3 - 5 years

Assets under construction are not amortized until the asset is available for productive use.

Accrued sick leave

The Commission provides for sick leave that accumulates at 1.25 days per month worked for full-time employees. The employees can accumulate up to a maximum of 120 days. On retirement or resignation after being employed for at least 60 months, any employee having accrued sick leave will receive an allowance equal to fifty percent of the value at a rate of pay effective immediately prior to retirement or resignation.

The sick leave is an unfunded benefit. As such, there are no applicable assets. Benefits are paid out of general revenue as they come due. The unfunded liability at December 31, 2017 of \$175,361 (2016 - \$158,980) is recorded in accounts payable and accrued liabilities.

GREATER MONCTON WASTEWATER COMMISSION

NOTES TO FINANCIAL STATEMENTS For the year ended December 31, 2017

3. Investments

The details of the investments held by the Commission are as follows:

	2017 \$	2016 \$
Guaranteed investment certificate (1.85%, maturing July 2018)	5,000,000	5,000,000
Guaranteed investment certificate, matured	-	15,000,000
Guaranteed investment certificate (2.15% maturing November 2020)	15,000,000	-
Guaranteed investment certificate (1.75% maturing May 2022)	5,000,000	-
Guaranteed investment certificate, matured	-	5,000,000
Guaranteed investment certificate (2.00%, maturing Sep 2021)	5,075,000	5,075,000
Guaranteed investment certificate (2.00%, maturing Sep 2021)	5,075,000	5,075,000
	35,150,000	35,150,000

4. Post-employment benefits

The Commission sponsors an RRSP plan for substantially all its employees. The Plan allows for RRSP contributions of 7% of employee salaries. Prior to December 31, 2016, the employees were not required to pay into the RRSP plan in order to obtain this benefit.

Subsequently, in accordance with the collective agreement signed between the Commission and Canadian Union of Public Employees Local 5217 on May 20, 2016, each employee will contribute a minimum percentage of salary each year (2017 - 2%, 2018 - 4%, 2019 - 6%, thereafter 7%). There is no unfunded liability associated with this post-employment benefits payable.

5. Accumulated surplus

The accumulated surplus noted on the statement of financial position is the result of the excess of revenue over expenditures from the commencement of the Commission's operations to the date of financial position. The accumulated surplus is made up of the following:

	2017 \$	2016 \$
Net financial assets	44,761,708	43,004,432
Non-financial assets	50,143,461	42,478,789
	94,905,169	85,483,221

The net financial assets consist of cash flows necessary for day-to-day operations and reserve funds held for future capital expenditures. The non-financial assets consist of tangible capital assets and prepaid expenses that the Commission has purchased or had constructed as of the end of the year.

GREATER MONCTON WASTEWATER COMMISSION

NOTES TO FINANCIAL STATEMENTS For the year ended December 31, 2017

6. Financial instruments and risk management

Market risk

Market risk is the risk that the fair value or future cash flows of the Commission's financial instruments will fluctuate because of changes in market prices. Market risk is comprised of currency risk, interest rate risk and other price risk. The Commission does not consider itself exposed to these risks.

Credit risk

Credit risk arises from the potential that a debtor will be unable to meet its obligations. The Commission conducts a thorough assessment of its debtors prior to granting credit and actively monitors the financial health of its debtors on a continuous basis. Credit risk arises primarily from cash, accounts receivable, and investments. There are no significant concentrations of credit risk.

Liquidity risk

The Company's objective is to have sufficient liquidity to meet its liabilities when due. The Company monitors its cash balances and cash flows generated from operations to meet its requirements. As at December 31, 2017, the most significant financial liabilities are accounts payable and accrued liabilities, and holdbacks payable.

GREATER MONCTON WASTEWATER COMMISSION

NOTES TO FINANCIAL STATEMENTS
For the year ended December 31, 2017

7. Tangible capital assets

	Land \$	Operations centre \$	Treatment facilities \$	Collection system \$	Fleet \$	Computer hardware and software \$	Assets under construction \$	Total \$
COST								
Balance – Beginning of year	518,185	2,743,575	51,345,154	33,653,412	1,841,754	153,399	1,602,051	91,857,530
Net additions during the year	40,182	337,637	970,250	772,747	134,053	34,075	7,159,464	9,448,408
Disposals during the year	-	(565,067)	-	(134,027)	(64,325)	-	-	(763,419)
Balance, end of year	558,367	2,516,145	52,315,404	34,292,132	1,911,482	187,474	8,761,515	100,542,519
ACCUMULATED AMORTIZATION								
Balance – Beginning of year	-	2,369,093	32,795,130	13,561,106	672,599	59,116	-	49,457,044
Amortization during the year	-	49,708	1,078,814	482,133	148,247	43,644	-	1,802,546
Accumulated amortization disposals	-	(555,678)	-	(57,518)	(63,776)	-	-	(676,972)
Balance, end of year	-	1,863,123	33,873,944	13,985,721	757,070	102,760	-	50,582,618
Net book value of tangible capital assets 2016	518,185	374,482	18,550,024	20,092,306	1,169,155	94,283	1,602,051	42,400,486
Net book value of tangible capital assets 2017	558,367	653,022	18,441,460	20,306,411	1,154,412	84,714	8,761,515	49,959,901

8. Financial instruments and risk management

The Department of Local Government of New Brunswick has requested disclosures in addition to Canadian public sector accounting standards for monitoring purposes. The Commission has provided these disclosure requirements in the following pages.

GREATER MONCTON WASTEWATER COMMISSION

SCHEDULE OF RECONCILIATION OF ANNUAL SURPLUS - SCHEDULE 1 For the year ended December 31, 2017 (unaudited)

	General fund \$	Capital Fund \$	Reserve Fund \$	Total \$
2017 annual surplus	10,416,559	(1,802,546)	807,935	9,421,948
Adjustments to annual surplus for funding requirements				
Second previous year surplus	6,201,318	-	-	6,201,318
Transfer from operating to capital	(9,448,808)	9,448,808	-	-
Amortization expense	-	1,802,546	-	1,802,546
Total adjustments to 2017 annual surplus	(3,247,490)	11,251,354	-	8,003,864
2017 annual fund surplus	7,169,069	9,448,808	807,935	17,425,812

SCHEDULE OF STATEMENT OF RESERVES - SCHEDULE 2 For the year ended December 31, 2017 (unaudited)

	2017 \$	2016 \$
Capital reserve		
Assets		
Cash	1,461,579	577,919
Accrued interest receivable	380,470	550,783
Investments	35,150,000	35,150,000
Accumulated surplus	36,992,049	36,278,702
Revenue		
Interest	807,935	21,709
Annual surplus	807,935	721,709

GREATER MONCTON WASTEWATER COMMISSION

SCHEDULE OF OPERATING BUDGET TO PUBLIC SECTOR ACCOUNTING - SCHEDULE 3 For the year ended December 31, 2017 (unaudited)

	Operating \$	2017 \$	Transfers \$	Total \$
Revenue				
User fees	12,558,210	-	-	12,558,210
Interest and miscellaneous	10,885,778	-	-	10,885,778
	23,443,988	-	-	23,443,988
Expenses				
Plant and Operating Expense				
Easement and property taxes	343,362	-	-	343,362
Salaries and benefits	1,711,507	-	-	1,711,507
Amortization of tangible capital assets	-	1,842,261	-	1,842,261
Electricity	599,779	-	-	599,779
Telephone	31,020	-	-	31,020
Insurance	158,730	-	-	158,730
Maintenance and operating	1,518,646	-	-	1,518,646
Consulting services	42,000	-	-	42,000
Vehicle expense	16,568	-	-	16,568
Miscellaneous	485,000	-	-	485,000
	4,906,612	1,842,261	-	6,748,873
General				
Marketing and communications	118,500	-	-	118,500
Office expenses	27,845	-	-	27,845
Travel, training and education	54,865	-	-	54,865
Governance	25,992	-	-	25,992
Interest and bank charges	3,610	-	-	3,610
Professional fees and consulting	141,150	-	-	141,150
	371,962	-	-	371,962
Fiscal services				
Transfers from operating fund to capital fund	7,326,859	-	7,326,859	-
Transfers from operating fund to reserve fund	716,721	-	716,721	-
Second previous surplus	(6,201,318)	-	(6,201,318)	-
	1,842,262	-	1,842,262	-
	7,120,836	1,842,261	1,842,262	7,120,835
Annual surplus	16,323,152	(1,842,261)	1,842,262	16,323,153

7. 2017 Independent Audit Report

Schedule of federal and provincial capital expenditure claim submissions of

GREATER MONCTON WASTEWATER COMMISSION

DECEMBER 31, 2017

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INDEPENDENT AUDITOR'S REPORT

To the Management of Greater Moncton Wastewater Commission

We have audited the accompanying schedule of federal and provincial capital expenditure claim submissions for the year ended December 31, 2017 and a summary of significant accounting policies and other explanatory information (together "the Schedule"). The Schedule has been prepared by the management of Greater Moncton Wastewater Commission based on basis of accounting described in Note 1.

Management's responsibility for the financial statements

Management is responsible for the preparation of the Schedule in accordance with Note 1, this includes determining that the applicable financial reporting framework is acceptable for the preparation of the Schedule in the circumstances, and for such internal control as management determines is necessary to enable the preparation of the Schedule that is free from material misstatement.

Auditor's responsibility

Our responsibility is to express an opinion on the Schedule based on our audit. We conducted our audit 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 Schedule is free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the Schedule. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the Schedule, 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 Schedule 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, if any, made by management, as well as evaluating the overall presentation of the Schedule.

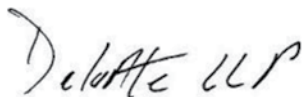
We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the Schedule of federal and provincial capital expenditures claim submissions for the year ended December 31, 2017 is prepared in all material respects in accordance with the basis of accounting described in Note 1.

Basis of Accounting and Restriction of Use

Without modifying our opinion, we draw attention to Note 1 to the Schedule, which describes the basis of accounting. The Schedule is prepared to provide information to the Regional Development Corporation ("RDC") and Infrastructure Canada ("IC"). As a result, the Schedule may not be suitable for another purpose. Our report is intended solely for Greater Moncton Wastewater Commission, RDC and IC and should not be used by parties other than Greater Moncton Wastewater Commission, RDC and IC.



Chartered Professional Accountants
Moncton, New Brunswick
February 24, 2018

GREATER MONCTON WASTEWATER COMMISSION

SCHEDULE OF FEDERAL AND PROVINCIAL CAPITAL EXPENDITURE CLAIM SUBMISSIONS

For the period ending December 31, 2017

Claim #	Date Claimed	Period Covered	Total Claimed Eligible Costs	Provincial Claim	Province Fiscal Year	Province Total Project	Federal Claim	Federal Fiscal Year	Federal Total Project	Total Claim
2017-01	July 17, 2017	Dec 12, 2016 - Jul 13, 2017	284,239	75,286	4,924,714	22,524,714	94,746	4,834,283	22,507,198	170,032
2017-02	September 22, 2017	Jul 13, 2017- Aug 31, 2017	444,649	111,162	4,813,552	22,413,552	148,216	4,686,067	22,358,982	259,378
2017-03	November 27, 2017	Sept 1, 2017- Nov 21, 2017	519,527	129,882	4,683,670	22,283,670	173,176	4,512,891	22,185,806	303,058
2017-04	November 30, 2017	Nov 21, 2017 - Nov 27, 2017	1,168,679	292,170	4,391,500	21,991,500	389,560	4,123,331	21,796,246	681,730
2017-05	December 31, 2017	Nov 28, 2017 - Dec 31, 2017	802,442	374,019	4,017,481	21,617,481	491,110	3,632,221	21,305,136	865,129
TOTAL			3,219,536							

NOTES TO THE SCHEDULE

December 31, 2017

1. Basis of accounting

The schedule of the Commission is prepared in accordance with the requirements as presented in article 9(b) of the contribution agreements of the Regional Development Corporation ("RDC") and Infrastructure Canada ("IC").

The accompanying notes to the schedule are an integral part of this schedule



TransAqua

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WASTEWATER
COMMISSION

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