JOINT BOARD OF MANAGEMENT

Wednesday, October 21, 2020
9:00 AM
Virtually in Zoom

AGENDA

A. Call to Order:

B. Disclosures of Pecuniary Interest:

C. Approval of Minutes:

Minutes of the meeting of the Union Water Supply System Joint Board of Management Meeting held Wednesday, September 16, 2020
Pages 3 - 8

D. Business Arising Out of the Minutes

E. Items for Consideration:

1. UW/23/20 dated October 16, 2020 re: Status Update of UWSS Operations & Maintenance Activities and Capital Works to October 16, 2020
   Pages 9 – 11

2. UW/24/20 dated October 15, 2020 re: Update on UWSS Water Demand, Treatment Capacity, Restructuring and Common Assets
   Pages 12 – 31
   Appendix A – UWSS Common Assets Watermains and Map
   Pages 32 - 35
   Appendix B – C3 Beneficial Use Analysis
   Pages 36 - 38

3. UW/25/20 dated October 9, 2020 re: UWSS Infrastructure Needs Study and Master Servicing Plan
   Pages 39 - 42

4. UW/26/20 dated October 6, 2020 re: UWSS-WUC Water Supply Emergency Servicing Study
   Pages 43 - 46

5. UW/27/20 dated October 16, 2020 re: Payments from September 16th to October 14th, 2020
   Pages 47 - 55

F. New Business:

G. Adjournment:

H. Date of Next Meeting: November 18, 2020, Virtually in Zoom

/kmj

JOINT BOARD OF MANAGEMENT

Wednesday, September 16, 2020
9:00 AM
Virtually in Zoom

MINUTES

Members Present:	Deputy Mayor Verbeke, Councillors Dunn, Hammond, Jacobs, Tiessen – Leamington Mayor Nelson Santos (Vice-Chair); Deputy Mayor Queen, Councillors DeYong, Neufeld, Patterson – Kingsville Councillor VanderDoelen – Essex Councillor Walstedt - Lakeshore
Members Absent:	Mayor MacDonald - Leamington
Staff Present:	Kevin Girard – Essex Shaun Martinho - Kingsville Albert Dionne - Lakeshore Shannon Belleau, Nelson Carvalho – Leamington
OCWA Staff Present:	Dave Jubenville Dale Dillen, Ken Penney

Call to Order: 9:00 am

Disclosures of Pecuniary Interest: none

Adoption of Board Minutes:

No. UW-38-20

Moved by: Councillor Jacobs

Seconded by: Deputy Mayor Queen

That Minutes of the UWSS Joint Board of Management meeting of July 15th, 2020 be received.

Carried

Business Arising Out of the Minutes:

There was none.

Report UW/20/20 dated September 10, 2020 re: Changes to Leamington UWSS Board Member Appointment

The Manager explains that this report is just for information. He received word from Leamington's Clerk that at Council meeting of September 8th, 2020 authorized removing Councillor Wilkinson from UWSS Joint Board of Management. Councillor Wilkinson will still be an alternate member of the UWSS Board. Effective September 13th, 2020 Councillor Paul Tiessen will now be a regular member of the UWSS Joint Board of Management.

The Manager thanked Councillor Wilkinson for his service to the UWSS Board and welcomed Councillor Tiessen.

Mayor Santos, acting as Chair, welcomes Councillor Tiessen as well.

No. UW-39-20

Moved by: Councillor Neufeld

Seconded by: Councillor Hammond

That report UW/20/20 dated September 10, 2020 re: Changes to Leamington UWSS Board Member Appointments is received; and

That Councillor Wilkinson is moved to an alternate position and Councillor Tiessen is moved to the position of a regular UWSS Joint Board of Management member.

Carried (UW/20/20)

Report UW/21/20 dated September 11, 2020 re: Status Update of the UWSS Operations & Maintenance Activities and Capital Works to September 11, 2020

The Manager reviews his report with board members. He notes that business at the plant is slowly and carefully attempting to get back to the new normal.

During the bi-monthly meter reads it was noted that billing Meter #13 failed. A new meter was purchased and installed.

At the July 15th Board meeting it was noted that Low Lift pump #5 had been received from Nevtro. That pump has since been installed and is working well. Also at July meeting it was reported that Filter #5 "A" side main wash valve actuator had failed. This has since been replaced and an extra one has been purchased as a back-up. The roof leak that was also reported in the operator's section of the water treatment plant has been repaired. This was very necessary as the leak was over the SCADA server area of the plant, with multiple electronic components that could potentially be damaged by any leaks. The Manager does note that he has asked for quotes for major repairs and is still looking into warranty options.

The Manager informs members of the board that the residual solid pile has been completely removed by DiMenna Excavating. This company will also be cleaning out the solids from the south lagoon and staging it to dry out.

The Manager provides updates on the SCADA project. He notes that the WTP is getting ready for the SCADA contractors to return to the plant to complete the integration of the SCADA system. This work has been on hold since March 2020 due to COVID restrictions. He explains that all COVID-19 safety protocols will be in place during this time to protect essential staff members. He further explains that there will be some added expenses that will be seen as line items in the financials.

The Manager reminds members that the Kingsville Water Tower (KWT) project has been postponed until 2021. However the Manager notes that a preliminary lease agreement with the Town of Kingsville for the water tower land lease has been developed and UWSS is working with its solicitor to have a final version ready for review by Town of Kingsville.

The hydrant retrofit project that was discussed at the July 15th meeting has been started and data is now being collected. The Manager then provided the members with a demonstration of the type of data that is being collected from the 12 hydrants out in the system. He notes that the project will eventually include a screen in front of the operators so that they can see the water pressure information at all times and this will show if ever there is a pressure drop in the vicinity of these sensors, alerting the operator of potential watermain breaks. He further explains that the same company is being consulted to assist with the same type of monitoring for the 16 billing meters that the system uses.

The Manager reminds members of the upgraded security system project that had been approved in the 2020 budget. He explains that Empire Communications is working to install all of the necessary security features at the UWSS facilities. He anticipates that the work at the main building should be completed by the end of September and then he feels that all the finer details of the new system should be in place by the end of October.

The parking lot project has been delayed slightly. The County of Essex has asked the UWSS to enter into an Easement and Road Use Agreement. The Manager is still hoping to have this project completed by the end of the year, but it is getting difficult as the reality is that many contractors are super busy trying to catch up on projects that were postponed due to COVID-19 and many are bigger than this small type of project.

The Manager provides an update of the Dissolved Air Flotation (DAF) project, noting that Associated Engineers are working on the design portion of the project at the moment. He is hoping to get the tender out next year. The installation of DAF is designed to address the bottle neck that the UWSS has regarding the clarification project. This will take place on Clarifier #2. The second DAF will be installed at a later date.

The UWSS raw water line #2 will be having a new flow meter installed in late October or early November, which will allow staff to have better information on this line. New inlet valves for filters #2 and #4 have been purchased and will be installed once the low flow season arrives and these filters can be shut down.

Work on the Leamington Water Tower (LWT) isolation valve automation will take place in tandem with the SCADA project. The automation will allow control from the operator's desk, rather than sending someone out into the field to complete the task. This will help manage both the LWT and the AWT.

The Manager explains that OCWA Engineering Services (ES) has been retained to provide management services for the Filter #2 and #4 filter box upgrade. He notes that these two (2) filters are original to the WTP and date back to 1959. OCWA ES is in the process of working on a tender package. The Manager anticipates that the #4 Filter will be initiated in November 2020, and the #2 Filter in early 2021.

The new CO2 pH Adjustment System is working well, with operations staff making small adjustments in order to obtain the proper dosage. This has assisted in the reduction of the effluent aluminum residual and has prevented the effluent pH from dropping too low. The CO2 pH adjustment has significantly improved the coagulation process for water treatment.

The Manager provides an update on the University of Windsor/Glier project. He notes that the buoys are now out in Lake Erie and collecting real time data. He further notes that UWSS has not put any money into this project at this time, as a grant was used for funding. A third buoy has been purchased, but at the time of this meeting is not yet functional. The data collected will be will assist with monitoring water quality, weather and temperature. He sees the potential to help our neighbours as well, with the possibility of having a buoy out in the Harrow/Colchester waters as well. UWSS has the potential to create a network to gather pertinent data.

The Manager reminds members of the proposed joint study between UWSS and Windsor Utilities to investigate the possibility of servicing each system in an emergency situation. He confirms that Stantec Consulting and C3 Water are teaming up to assist with this investigation. They will be looking into what type of infrastructure will be required and what type of work would need to be completed. He is hoping to have further details available for the next UWSS Board meeting. The budget could be in the area of $120,000, which would be most likely shared between UWSS and WUC. This could have potential benefits to all municipalities in the area during emergency situations.

The Masterplan (MP) needs to be developed and the Manager is consulting with C3 Water and Associated Engineering (AE) to have them develop a new MP for the UWSS. UWSS is seeing increases in water demands and he is hoping to work with all the municipalities to obtain projections on greenhouse and residential development. He notes that this is necessary as there were a few days in June and early July that the peak daily demand exceeded the plant capacity for a few hours. That is a scenario that UWSS does not want happening for too long, because the reservoirs can be drained. This is why every year there is lawn watering by-laws in place. He is also potentially looking at tiered restrictions as well. A discussion needs to take place between all of our municipal partners regarding restrictions.

He also notes that there are things UWSS are doing at the WTP level to become more efficient, such as the DAF, CO2 System and potentially re-rate the WTP for higher limits. He will be further looking into another reservoir at the WTP. Unfortunately, this is a big ticket item with a budget of $15-$20 million.

There is then a discussion regarding greenhouses; how many have been built, how many new acres have been applied for and what is the potential for more to be built. This are will be part of the new Masterplan. He also notes that residential customers should not

be paying for the greenhouse growth. He is hoping to work with the municipalities to put a water rate in place to account for the greenhouse development.

There is then a discussion regarding the re-organization of the UWSS and where this project stands. The Manager explains that the municipalities have provided all of the reports and the meetings have taken place with all of the administrations of each municipality. One of the main issues to address is the Common Asset issue. The Manager had put together a short report that had been circulated for review, then unfortunately COVID-19 happened.

No. UW-40-20

Moved by: Councillor Jacobs

Seconded by: Councillor Hammond

That the Manager follow up with the partner municipalities regarding the incorporation of the UWSS; and

That any reports regarding the UWSS incorporation include the historical information regarding Common Assets for municipalities to review; and

That the UWSS Manager is directed to bring a report back to the next meeting regarding the incorporation and what parameters the UWSS requires to support the growth of the greenhouse industry, which could be in the form of a Masterplan update.

Carried (UW/21/20)

There is some discussion on the above motion. Possible infrastructure developments are briefly discussed and Shannon Belleau noted that a report would be going to Leamington council shortly on possible upgrades to infrastructure necessary to ensure future development. Councillor VanderDoelen notes that sometimes with success comes new problems, but is hopeful that Essex could support growth for the region. Councillor DeYong reminded members of the Board of last year's trip to the Netherlands by local municipal mayors and administration to tour many environmentally efficient greenhouses and asks if this technology has been utilized within the greenhouses in the UWSS service area. Mayor Santos noted that many of the newer greenhouses are already very efficient. There is then a brief discussion on the LADIA waterline and if this can be utilized in a better way to bring water to some of the newer developments. Nelson Carvalho notes that the greenhouse growers require better water than what is flowing through the LADIA line.

No. UW-41-20

Moved by: Councillor Dunn

Seconded by: Councillor Neufeld

That report UW/21/20 dated September 11, 2020 re: Status Update of the UWSS Operations & Maintenance Activities and Capital Works to September 11, 2020 is received.

Carried (UW/21/20)

Report UW/22/20 dated September 11, 2020 re: Payments from July 11th, to September 11th, 2020

No. UW-42-20

Moved by: Councillor Patterson

Seconded by: Councillor DeYong

That report UW/22/20 dated September 11, 2020 re: Payments from July 11 to September 11, 2020 is received.

Carried (UW/22/20)

Adjournment:

No. UW-43-20

Moved by: Councillor Walstedt

Seconded by: Councillor VanderDoelen

That the meeting adjourn at 10:19

Carried

Date of Next Meeting: Wednesday, October 21, 2020, virtually in Zoom

/kmj

UW/23/20

To: Chair and Members of the Union Water Supply System Joint Board of Management

From: Rodney Bouchard, UWSS General Manager

Date: October 16, 2020

Re: Status Update of UWSS Operations & Maintenance Activities and Capital Works to October 16, 2020

Aim:

To inform the UWSS Board about operational and maintenance activities and capital works projects for the Union Water Supply System since the last Board meeting on July 15, 2020.

Discussion:

The UWSS Manager conducts regular meeting with OCWA Operations staff in regards to on-going operations and maintenance programs for the UWSS facilities. The following provides an update on UWSS operations, regular maintenance and major maintenance and Capital Works at UWSS facilities:

1. Regular Maintenance on all process equipment and analyzers continue to be completed through OCWA's Workplace Maintenance Management System.

2. DiMenna was retained to clean out the solids from the south lagoon and to stage it for drying. This work has been completed and the south lagoon has been put back into operation. The North Lagoon has been taken out of service since it is quite full. The water has been drained and solids will be allowed to dewater over the winter for Spring removal.

3. SCADA Upgrade Project Update: UWSS and OCWA staff are working with the project consultant (Associated Engineering) and the SCADA system integrator (SUMMA Engineering) – Summa returned to site September 28th, Filters 5&7 , Albuna tower, Essex Tower, VC9 and VC26 have successfully been integrated into the new SCADA. Low lift will be integrated the week of October 13th, 2020. The work is on schedule for late November completion.

4. Installation of the security and access control system is on-going. Empire Communications has basically completed the work within the admin/water treatment plant building and is now installing the components at the remote facilities. It's anticipate that this work will be fully complete and the system will be operational in mid-November.

5. The work for the Treatment Plant front parking area expansion and sewage force main installation is moving forward. The engineer, N.J Peralta is completing a draft for the Easement and Road Use Agreement required by

Essex County. As of the date of this report, the surveyor has been retained and the survey work is anticipated to be complete the week of October 19, 2020. The engineer has indicated that they should be able to tender the work and complete construction before the end of year, weather permitting.

6. Associated Engineering is currently working on the Dissolved Air Flotation design for retrofit into Clarifier #2. The pre-purchase agreement for supply of the DAF system components has been completed and proposal received from Napier Reed. Tendering of the construction work is anticipated to be done in November 2020.

7. Automation of the isolation valve automation at the Leamington water tower will was completed during the week of October 12-16. The automation of this valve enables control of the valve from the operator's desk thus allowing better management of water levels in both the Leamington Water tower and the nearby Albuna Water Tower.

8. A fence and gate has been installed at the access to the UWSS plant property north of the lagoons near Road 2. This was needed for liability protection due to continued unauthorized entry onto the property by off-road vehicles and also to prevent dumping of brush, leaves, etc.

The first chart shows comparative flows for 2016 through 2020 in Mega Litres (ML) and the second chart shows Millions of Imperial Gallons (MIG) for the period January 1st to October 15th, 2020.

	2016	2017	2018	2019	2020
Flow to Date (ML)	13,226.22	13,020.18	13,897.10	14,325.55	16,229.11
Max Day (ML)	76.16	75.57	82.48	85.40	97.33
Min Day (ML)	19.49	20.73	23.56	20.13	25.44
Average Day (ML)	45.77	45.21	48.25	49.74	56.16
No of Days	289	288	288	288	289

	2016	2017	2018	2019	2020
Flow to Date (MG)	2909.42	2864.1	3056.98	3151.24	3569.975
Max Day (MGD)	16.75	16.62	18.14	18.79	21.41
Min Day (MGD)	4.29	4.56	5.18	4.43	5.60
Average Day (MGD)	10.07	9.94	10.61	10.94	12.35
No of Days	289	288	288	288	289

Flows to date are up 1,903.56 ML (418.74 MIG) or 13.29% from last year. The 2020 flows to date are up 19.18% over the previous 4 year average.

Re: UW/23/20 - Status Update of UWSS Operations & Maintenance Activities and Capital Works to October 16, 2020

Recommendation:

That this report be received by the UWSS Board for information purposes.

Respectfully submitted,

Rodney Bouchard, Manager
Union Water Supply System Joint Board of Management
/kmj

UW/24/20

Report

To: Chair and Members of the Union Water Supply System Joint Board of Management

From: Rodney Bouchard, Union Water Manager

Date: October 15, 2020

Re: Update on UWSS Water Demand, Treatment Capacity, Restructuring and Common Assets

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Recommendation:

1. It is recommended that the Union Water Supply Joint Board of Management (UWSS Board) receives this report for information;

Background:

At the September 16, 2020 meeting of the UWSS Board, the UWSS General Manager provided a verbal report to the Board on the recent significant increase in potable water demand and its effect on water treatment capacity and water storage and transmission capacity. The UWSS General Manager also touched on the following related items at the meeting:

- Potable water demand from the UWSS has increased 19% since 2017. It should be noted that water demand for 2020 is on a trend to be 15% greater than 2019 water demand.
- Potable water demand increases over the last 4 years are associated with increased residential development in each of the 4 owner municipalities and significant growth in greenhouse development since 2017. The main driver is the potable water demand appears to be greenhouse development.
- Capital infrastructure upgrades will be required to mitigate potable water demand increases should the recent trend continue. These upgrades would consist of a new reservoir at the treatment plant, with an estimated cost of $20 million, and completing the proposed Dissolved Air Flotation (DAF) clarifier upgrade project sooner than planned.
- Funding for new infrastructure upgrades would require debt to be incurred. Since the UWSS is not a standalone entity that can incur debt, this funding would need to be secured by the 4 owner municipalities and the debt would be reflected on municipal balance sheets.

- Restructuring UWSS into a Municipal Service Corporation (MSC) would allow UWSS to secure its own funding, and the debt would likely not be reflected on municipal owners' balance sheets thus preserving the municipalities' debt capacity.
- The process to restructure the UWSS into an MSC has been ongoing for 4+ years. The incorporation documents and all associated documentation has been completed in draft by UWSS retained financial and legal consultants and provided to municipalities for review. The main issue with moving the restructuring forward appears to be the lack of resolution for Common System Watermains.
- UWSS retained a consultant to complete an analysis of the Beneficial Use for each Common System Watermain by each owner municipality. The draft report has been shared with municipalities for review and comment.

At the September 16, 2020 UWSS Board meeting, the UWSS Board directed the UWSS General Manager to provide a comprehensive report on the above listed issues. This report has been prepared to provide details on the water demand and treatment capacity related issues.

Discussion:

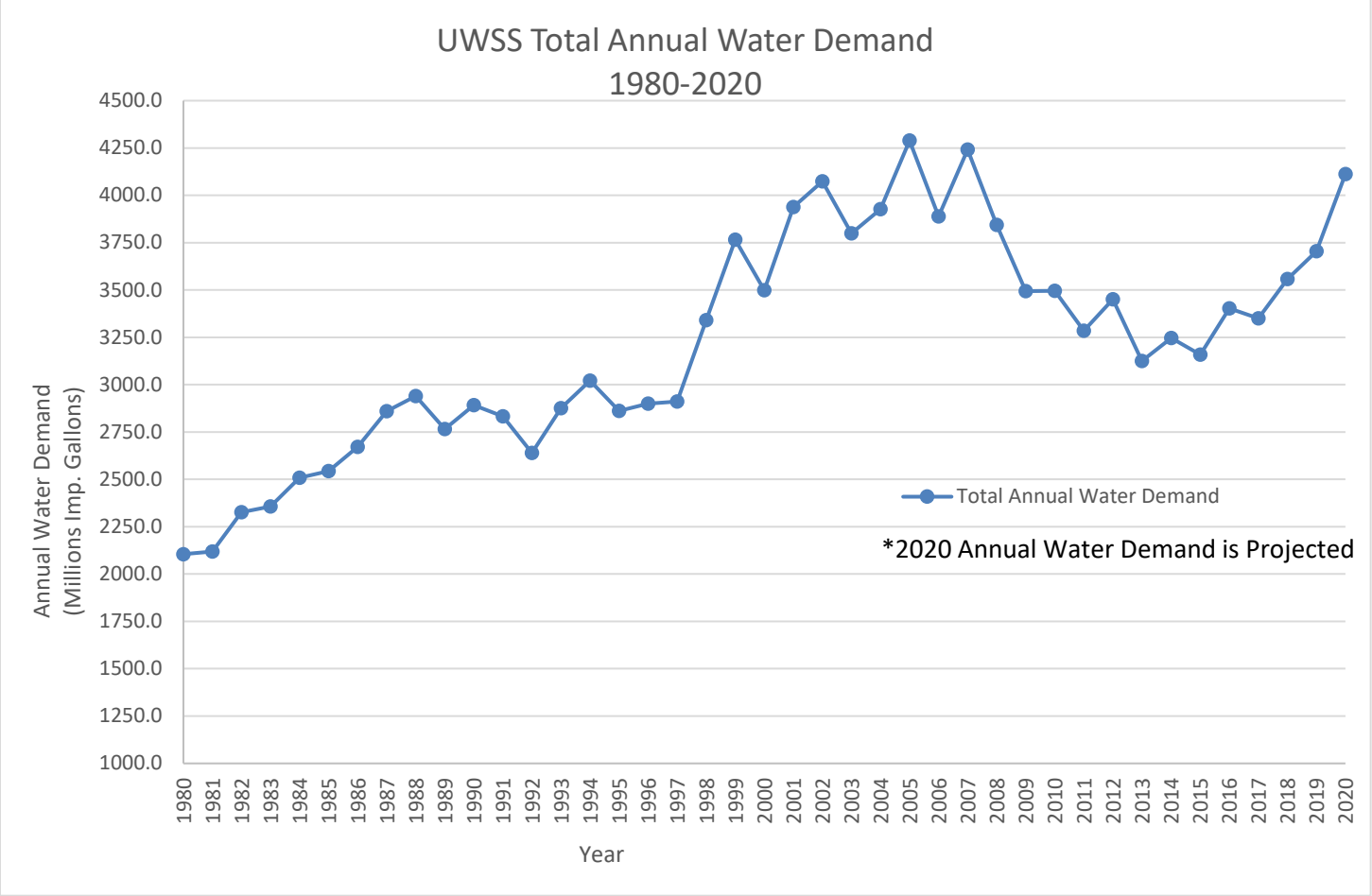
This report is structured to provide details for each of the following:

- UWSS Water Demand Trends and Growth Drivers
- UWSS Treatment and Storage Capacity
- Remaining UWSS Treatment Plant Capacity and Allocation
- UWSS Planned and New Proposed Capital Works
- UWSS Restructuring Update
- Update of Common System Watermains Resolution

UWSS Water Demand Trends and Growth Drivers

Water demand from the UWSS has changed significantly over the years. Figure 1 provides a graph of UWSS Water Demands from 1980 to 2020. As depicted in Figure 1, water demand from 1980 to 1997 depicted a general slow increasing trend from approximately 2,100 million imperial gallons (MIG) to approximately 3,000 MIG. Starting in 1998, water demands increased significantly reaching a historical peak of 4,290 MIG in 2005. The high annual water demand continued into 2007. This significant increase in annual water demand for that period is attributed to greenhouse growth development and some water servicing for drip irrigation farming.

Figure 1: UWSS Total Annual Water Demand



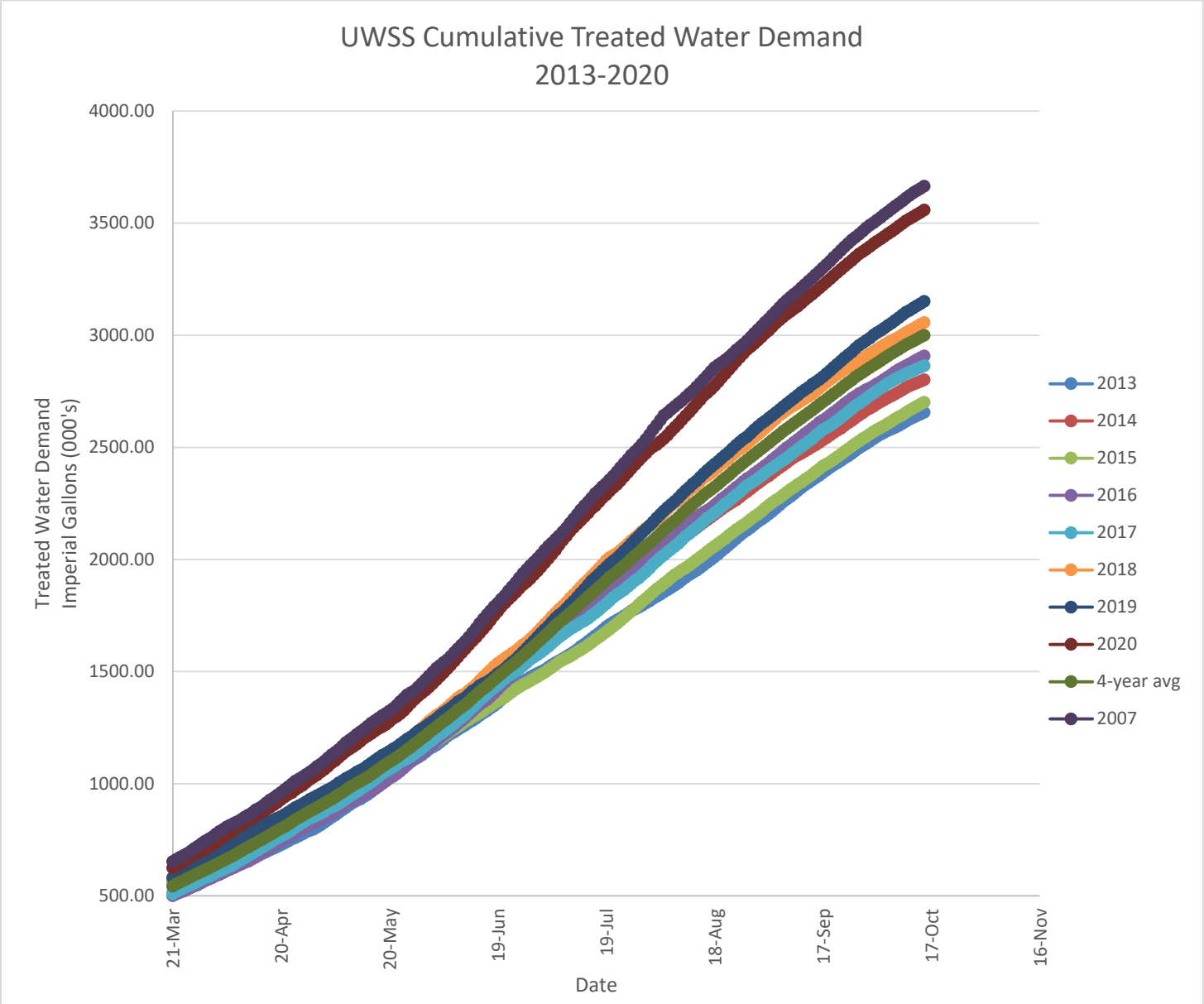
Starting in 2008, water demands decreased significantly year over year until 2013 where water demand was at 3,126 MIG for that year. The lower annual demand was also reflected in 2014 and 2015. This decrease in demand is likely a result of conservation efforts that were put into place following the significantly hot and dry summer of 2007 and technological improvements in the greenhouse industry that improved water recycling and reuse. New greenhouse developments and expansions also slowed during the 2008-2015 period thus also reducing water demand.

Since 2015, potable water demand from the UWSS has been on a steady increase. 2020 demand is projected to be 4,112 MIG, which is approximately 950 MIG or 30% higher than the annual demand in 2015. Of note is the significant increase in water demand between 2019 and 2020, which is projected at over 11%.

Figure 2 provides a comparison of annual cumulative water demand for the period of 2013-2020. It also provides the rolling 4-year average water demand and cumulative water demand for 2007 for further comparison. As can be noted in Figure 2, the

cumulative to date for 2020 is quite close to the 2007 cumulative water demand and well above the 4-year average and the water demand for years 2013-2019.

Figure 2: Comparison of Cumulative Annual Water Demand



The remarkable increase in water demand between 2015 and 2020 can be attributed to a relative increase in residential growth within the 4 municipalities served by UWSS and significant greenhouse growth. Over 1500 acres of new greenhouse development or expansions have been approved since 2017. It should also be noted that some of the water demand increase may be related to greenhouse crop switchover from food crop to marijuana. At this time, insufficient information is available to the UWSS to quantify the water demand for marijuana crops as compared to tomatoes, cucumbers or peppers.

Should the increase in water demand continue on the same trend as the last 4 years, UWSS will quickly require infrastructure improvements and possible expansion to accommodate this potable water demand. UWSS potable water treatment and storage capacity as compared to current and projected water demand is discussed in the next section of this report.

UWSS Treatment and Storage Capacity versus Water Demand

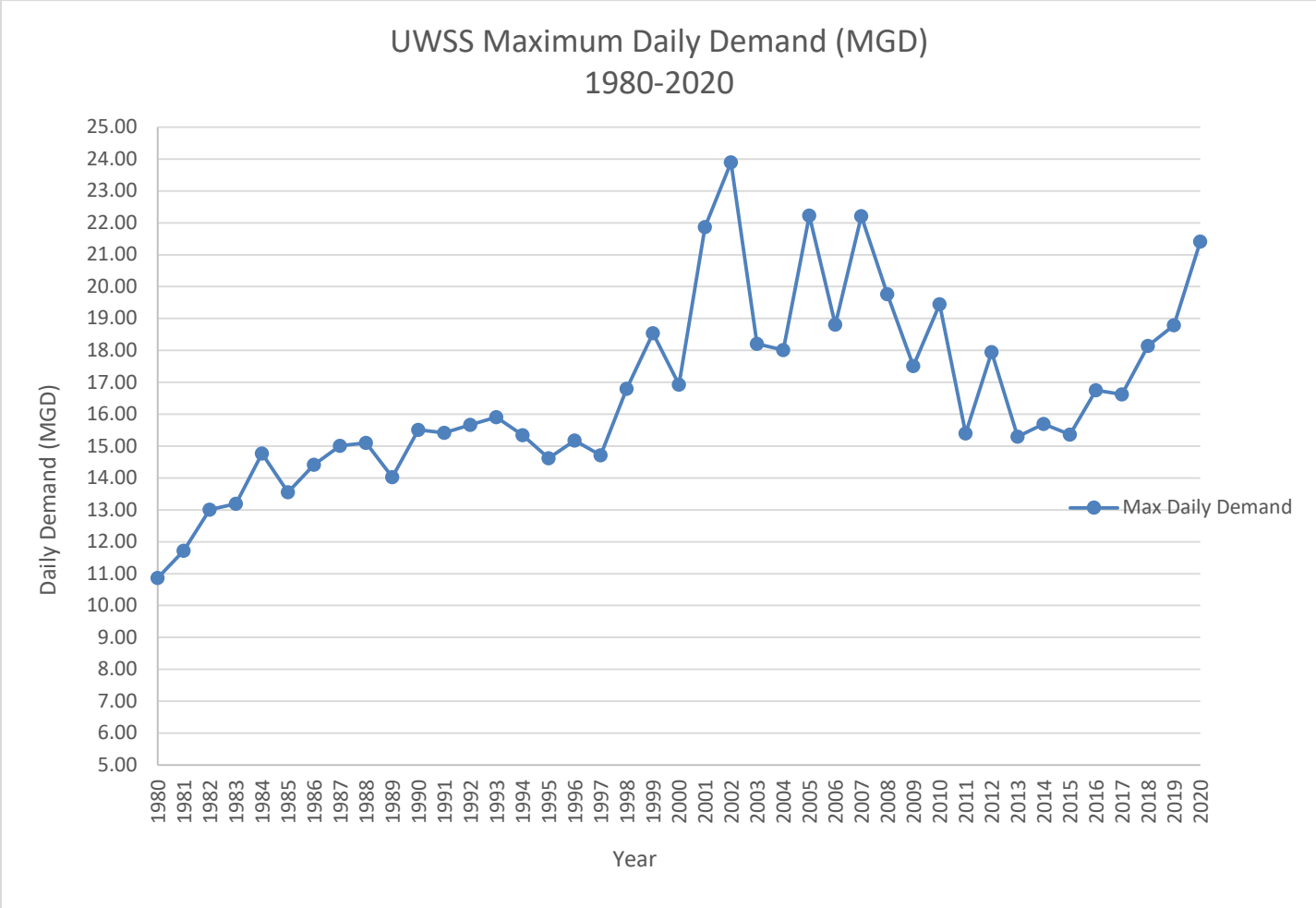
In 2002, Union Water Supply System (UWSS) treatment plant demand flows represented 99.6% of the rated treatment capacity of 24 MGD (million gallons per day). Existing demand coupled with the pressures of greenhouse development, resulted in the expansion of the treatment plant capacity to 27.4 MGD in 2005.

The current approved treated water output capacity for the UWSS' Ruthven Water Treatment plant remains at 27.4 MGD. Since 2007, the peak annual daily flow had remained below 20 MGD. Flows decreased steadily from 2007 until 2015. Figure 3 provides a graph with maximum daily flows from the UWSS between 1908 and 2020. As depicted in Figure 2, from 2011 to 2017, peak daily demand didn't surpass 18 MGD. Peak daily demand has increased since 2017 reaching 21.4 MGD in 2020.

Although total daily plant demand has increased significantly from 2017 to 2020 (when looking at peak day demand), the main concern is the ability to meet the daytime hourly demands during summertime high demand days.

As indicated previously, the current approved treatment plant capacity for the Ruthven Water Treatment Plant is 27.4 MGD. This is equivalent to roughly 19,028 imperial gallons per minute (IGPM). The approved treated output capacity is based on the UWSS' capability to meet "contact time" (aka CT) disinfection requirements under Ontario Regulations. As such, the maximum treatment capacity of UWSS' Ruthven treatment plant is 19,028 IGPM.

Figure 3: UWSS Maximum Daily Demand



During the late June and early July 2020 hot weather period, there were a few days where daytime (i.e. afternoon) water demand exceeded plant hourly production capacity of the treatment plant. When hourly demand is greater than production capacity, this results in decrease in the amount of water stored in the water towers and reservoirs. If this condition lasts for too many hours, then the ability to ensure enough water to meet system demand is at risk.

An example of such a day occurred on June 9, 2020, when hourly water demand exceeded plant production capacity and approached 21,000 IGPM for approximately 5 hours. Following this event, the UWSS posted a message on its website and on its Facebook page, informing the public of the lawn watering restrictions to reduce non-essential daytime water use such a filling of pools, vehicle washing, laundry, etc during off-peak hours for the summer period. This post was shared with partner municipalities (Leamington, Kingsville, Lakeshore, Essex).

It should be noted that early Summer 2020 was very hot and dry thus driving up demand. Also, COVID-19 restrictions resulted in most people being at home during June and July 2020 thus likely increasing residential water demand for domestic use including pools, lawn watering, etc. It is quite possible that the elevated water demand for this period of 2020 was an anomaly. However, to be prudent, the UWSS must plan accordingly.

Remaining UWSS Treatment Plant Capacity and Allocation

As indicated earlier in this report, the approved maximum treatment capacity of the UWSS' Ruthven Water Treatment Plant is 27.4 MIGD.

Based on available data from various sources including municipal partner data and greenhouse data, the majority of UWSS' treated water production (approximately 55%) is used by greenhouse operations. Other large users include canneries/food processing facilities such as Highbury Canco and Sunbrite (approximately 10%). The remaining water use is from residential and commercial/industrial sectors.

New large water users are required to seek approval for water allocations prior to construction. This includes new greenhouse developments or proposed expansions. There are two parts to the greenhouse water allocation review and approval process. The first step is determining whether UWSS has sufficient spare water treatment capacity to support the proposed greenhouse development. Once that is confirmed, the second step is to determine whether the water distribution system can deliver the required water to the location of the proposed greenhouse development. UWSS is only responsible for the water treatment capacity requirements while the water distribution portion is the responsibility of the respective municipality. Water treatment capacity allocation is completed by Stantec on behalf of the UWSS and the review is paid for by the applicant proposing the development.

As of October 15, 2020 there are 2,716 acres of existing greenhouse operations being serviced from the UWSS treatment plant, with an additional 1,067 acres approved but not yet constructed. Based on i) the approved maximum regulated flows to greenhouses development and it's proportional use of total UWSS water demand; ii) existing water demand from other large water users; iii) proportional peak water demand from residential and commercial/industrial sector, the UWSS can likely support an additional 2.0 MGD in additional water demand for growth under the current approved treatment capacity.

Due to limited remaining available treatment supply for allocation, UWSS Board will need to determine how to allocate the estimated 2.0 MGD of existing capacity. Should the remaining capacity be allocated on a first come/first served basis or should it be allocated to each municipality based on current ownership share of UWSS? Further, if all of the remaining capacity is allocated to greenhouse developments, this would directly affect any other form of growth within the UWSS service area.

UWSS Recent, Planned and New Proposed Capital Works

Should the owner municipalities and UWSS Board support the continued growth in the greenhouse sector, then the UWSS will need to commit to significant infrastructure upgrades, potential including a plant expansion.

A number of treatment plant upgrades are needed to increase a water treatment system's approved treatment capacity. These typically include upgrades to filters, coagulation process, clarification process, and disinfection process. Additional storage capacity would likely also be needed to further enhance the disinfection process (i.e. CT) while increasing transmission capacity.

The UWSS has recently completed significant treatment plant upgrades as part of an overall plan to improve efficiency, improve treated water quality and increase the treatment capacity for the Ruthven Water Treatment plant. The completed upgrades include the following:

- Upgrade all 8 existing treatment plant filters with air scour backwash systems and new media. The new filter media was installed to improve filtering capacity and water quality. Air scour systems were installed to improve filter backwash efficiency and reduce filter down time.

  Cost of improvements: $1.1 million

- Install raw water pH control system for enhanced coagulation purposes. The CO2 based pH control system was completed in summer 2020. The purpose of the system is to improve enhance the coagulation process through the clarifiers thus reducing the amount of materials being placed on the filters. This results in better filter performance and less downtime through backwashing. The pH control system was also designed to work with the future proposed Dissolved Air Flotation (DAF) clarification retrofits.

  Cost of improvements: $1.6 million

- Upgrade primary chlorine gas disinfection system. This work was completed in 2020. Improvements were made to the system that resulted in increased efficiency and capacity with the primary chlorine gas disinfection process.

  Cost of improvements: $1.5 million

The following water treatment plant upgrades are currently proposed to improve water quality and also increase water treatment process efficiency and output capacity:

- Retrofit of existing clarifiers with Dissolved Air Flotation (DAF) systems. UWSS proposes to retrofit two of the existing upflow clarifiers with DAF systems. The DAF system are designed to have 2-3 times more output that the existing

clarifiers and are one of the best technologies to remove algae, which is a significant concern for UWSS. The retrofit for the first clarifier is currently in detailed design with construction slated for 2021. The second clarifier is scheduled for retrofit in 2022.

Estimated Cost of Improvements: $4.5 million

- Installation of UV post-filtration disinfection system. The UV disinfection system is currently in preliminary planning stage with design scheduled for 2022 and construction in 2023-24. The purpose of the UV system is to improve the disinfection process for the Ruthven Water Treatment plant with a goal to increase treatment plant output.

  Estimated Cost of Improvements: $5-6 million

Upon completion of the proposed improvements, UWSS would complete an output capacity rating study to evaluate the new output capacity of the Ruthven Water Treatment process and obtain approval for the increased treatment plant capacity. The goal is to improved treatment capacity up to 32 MGD.

In addition to the water treatment plant upgrades, UWSS is proposing to construct a new 5 million gallon reservoir at the treatment plant location. Existing reservoir storage capacity at the treatment plant is 5 million gallons.

This proposed new reservoir was initially planned for beyond 2025. However, the increased water demand experienced in 2020 (which is approximately 11% higher than 2019 and increased 30% since 2015) has elevated the priority for a new reservoir. The existing storage capacity of 5 million gallons is very low considering the peak daily flows of 21 MGD that were observed in summer of 2020. An additional 5 MGD reservoir would provide additional capacity needed to meet peek daytime flows during.

UWSS is currently working with a consultant to evaluate sizing, placement and design of a new reservoir at the treatment plant. With UWSS Board approval, the design phase would be initiated in Winter/Spring 2021 and construction starting as early as Fall 2021. This is subject to establishment of a suitable funding/ financing plan. Estimated cost for a 5 million gallon reservoir is approximately $17-20 million.

Capital Works Funding Considerations

At the February 27, 2019 UWSS Board meeting, the UWSS Board received and endorsed the 2018/2019 Ontario Regulation 453/07 Financial Plan for UWSS and associated UWSS Water Rate Study that was prepared by Watson & Associates Economists Ltd. The 2019 Financial Plan included a Capital Program for 2019-2024 valued at $32.8 million.

This Capital Program included the following capital projects:

- CO2 Raw Water pH Adjustment System - *$1.6 million (completed)*
- Chlorine Gas Primary Disinfection System Upgrades -*$1.6 million (completed)*
- DAF Clarifier Retrofits (in detailed design/ pre-purchase stage) - *$4.6 million*
- UV Disinfection Project - *$5.8 million*
- Residual Management System Upgrades - *$1.6 million*
- Admin Building Expansion/ Upgrades - *$1.2 million*
- 12-inch Cottam Watermain Replacement - *$6.9 million*

Funding for this Capital Program is based on i) increase in water demand of 2% between 2019-2024; ii) Wholesale Water Rate increase from $0.6210/m3 to $0.7555/m3 (22%) from 2019-2024 and iii) UWSS Reserve/Cash Equivalents of $18.9 million at the beginning of 2019. The completion of the Capital Program results in Cash Equivalents/Reserves of $5.9 million at 2024 year end.

As can be noted, the construction of a new 5 million gallon reservoir #3 at the treatment plant, estimated at $17-20 million, is not included in the 2018/2019 Financial Plan and associated Water Rate Study. Certain projects such as the Admin Building Expansion/ Upgrades and 12-inch Cottam Watermain Replacement could be put on hold to and funds allocated to the new reservoir; however this postponement would only delay the inevitable, especially in regards to the 12-inch Cottam Watermain.

Although water demand has increased quite a lot more than predicted in the Financial Plan, funding for a new reservoir would still require debt financing since insufficient funds will be available through existing wholesale rate revenue and Reserves to finance the $20 million project. Since the UWSS is not a legal entity in its own right, it is unable to obtain credit/ debt financing on its own. As such, debt financing would need to be secured by the 4 owner municipalities on behalf of UWSS and debt liability would be reflected on the municipalities' financial ledger. This would result in reduced debt capacity for the municipalities, especially for the majority owners.

Assuming a $20 million loan was secured for this project at 2.2% interest amortized over 10 years, this would result in an additional debt burden of approximately $2.3 million per year for UWSS. A wholesale rate increase of up to 20% would be required to cover this debt burden.

The UWSS could reach out to senior levels of government to access any grant funding available for water system infrastructure improvements. A case could be made for the UV project if advanced oxidation process (AOP) is included in the design since AOP would enable the treatment of emerging contaminants of concern (e.g. pharmaceuticals) and thus present a more innovative approach to water treatment. However, it is doubtful that grant funding would be provided at this time for growth related items such as a new reservoir. In any case, any grant funding application would need to be submitted through

the municipal owners since UWSS as currently structured is not directly eligible for grant funding.

It should be noted that the main driver for a new reservoir is the significant increase in water demand between 2015 and 2020, which is mainly attributable to greenhouse sector growth. Since the principle of "growth pays for growth" is typically a fair approach, it may be best for the greenhouse sector to shoulder the main impact of wholesale rate increases. This can be achieved through special capital water rates that would be applied to greenhouse operations. It is to be noted that the UWSS does not have the authority to apply rates directly to any entity other than the 4 municipal owners of the system. Therefore, such rates, if used, would need to be applied to the greenhouse operations by the municipalities and collected funds directed to UWSS.

Should this project be approved, a decision would need to be made by the Board on how rate increases would be applied to cover the increased UWSS debt burden as a result of this project.

In regards to debt financing (and associated debt capacity reduction) and application of special capital water rates via UWSS' municipal owners, an alternative approach could be achieved were UWSS be restructured into a Municipal Service Corporation. In such a case, debt financing would be secured directly by UWSS and this debt would likely not be reflected on municipal ledgers. Additionally, a corporate UWSS, if structured appropriately would likely have the authority to apply special capital rates and use development charges. Further discussion on UWSS Restructuring is provided in the next section of the report.

UWSS Restructuring Update

At the June 21st, 2017 UWSS Board meeting, the UWSS Board approved a budget of $150,000 to complete a financial analysis and development of a Business Case for the restructuring of Union Water Supply System (UWSS) and associated assets into a Municipal Services Corporation under Section 203 and Ontario Regulation 599/06 of the Municipal Act 2001. UWSS retained Price Waterhouse Coopers (PwC) to complete this work. UWSS also retained Willis Business Law of Windsor, ON to complete the Legal business case.

Restructuring the UWSS into a Municipal Services Corporation with a proper legal would allow for the UWSS to achieve the following:

- Have the ability to independently obtain grants from senior governments;
- Become a credit worthy entity with the ability to secure its own debt;
- Become financially independent from the owner municipalities
- Develop a financial planning structure that would address future capital requirements without creating "rate shock" to the end users customers

The following has been completed in regards to UWSS restructuring since the June 21, 2017 UWSS Board meeting.

1. PwC initiated the development of the UWSS Restructuring Financial Business case in July 2017.

2. On October 19th, 2017, UWSS and PwC held a workshop with senior administrative staff from the municipalities of Essex, Kingsville, Lakeshore and Leamington. The purpose of the workshop was to obtain information from the municipalities on financial administration/ cooperation with UWSS, proposed options for restructuring UWSS in regards to financial systems, etc.

3. A workshop was held on October 20th, 2017 with the UWSS Board members. The focus of this workshop was to obtain Board members opinions, thoughts, concerns, etc. in regards to financial restructuring of UWSS.

4. Willis Business Law provided their Legal Advice on UWSS Restructuring in a letter report dated October 26, 2017. This legal advice report revised the original opinion provided by William Willis in May 2015. The Legal advice recommended the restructuring of UWSS into a Municipal Services Corporation under Section 203 and Ontario Regulation 599/06 of the Municipal Act 2001.

5. The UWSS General Manager provided a copy of the PwC Financial Restructuring Business Case and Willis Business Law Legal Advice on UWSS Restructuring report to the CAOs of the four owner municipalities in an email dated November 20th, 2017. Comments were received from 3 of 4 municipalities

6. In April 2018 the UWSS, PwC and Willis Business Law presented its report on the draft Business Case for Proposed Restructuring of UWSS into an MSC to the municipal councils of each of the 4 owner municipalities.

7. Following these presentations to municipal councils, the UWSS received Certified Resolutions from each of your municipalities in regards to the UWSS presentation and report on proposed UWSS Restructuring.

8. In June 2018, the UWSS Chair and Vice-Chair were consulted to determine the next steps in regards to the UWSS restructuring. It was determined that based on the feedback received from municipal councils during the presentations and the receipt of the certified resolutions, that there was enough momentum to keep the UWSS Restructuring process going.

9. In October 2018 PwC completed a Financial Market Sounding of potential financiers for the UWSS capital program. As part of the market sounding, six (6) financial institutions (including national banks, life insurance companies and credit unions) were approached and three (3) provided responses indicating that they

would provide debt financing to UWSS Inc. based on the proposed Business Case financial and commercial structure.

10. In April 2019, the UWSS General Manager sent an email to the CAOs of the 4 owner municipalities to renew discussions on UWSS Restructuring. These discussions had been paused as a result of the Fall 2018 municipal election and incoming new councils. As part of this email, the following documents were sent for review and comment:

    - *Draft* Articles of Incorporation for Union Water Supply System, Inc.
    - *Draft* By-Laws for Union Water Supply System, Inc.
    - *Draft* Organizing Resolutions for creation of Union Water Supply System, Inc. (i.e. Shareholder consent/agreement)
    - *Draft* UWSS-Municipal Water Service Agreement Template and associated Revenue and Rates Schedule
    - *Draft* Checklist for Incorporation of Union Water Supply System, Inc.
    - *Draft* Common Terms and Intercreditor Agreement – Summary Structure
    - *Draft* Municipal Undertaking Agreement - Summary Structure
    - Union Water Supply System Financial Market Sounding – Summary of Responses, December 2018

11. On June 13, 2019, the UWSS held a meeting with representatives from the owner municipalities to discuss Common System Watermains since this issue appeared to be the main barrier for moving ahead with the restructuring of UWSS. At the end of the meeting it was agreed that UWSS would retain a consultant to complete a Beneficial Use Analysis for Common System Watermains. The purpose of the analysis was to determine the benefit derived from each Common System Watermain by each municipality. Further discussion on Common System Watermains is included in a later section of this report.

12. In October and November 2019, UWSS General Manager, with support from PwC and Willis Law held consultation meetings with senior administration of UWSS' owner municipalities to review the UWSS restructuring documents (i.e. incorporation documents, financial plan, etc) for the proposed UWSS restructuring into a Municipal Service Corporation. The purpose of the meeting was to solicit support from the municipal administrations for the restructuring. General support has been received however certain outstanding issues, such as Common System Watermains, still need to be addressed.

In February 2020, the UWSS General Manager received a draft report on Beneficial Use Analysis for UWSS Common Asset Watermains prepared by C3 Water, Inc. The report was reviewed and it was intended that the final would be shared with Municipal Staff for review. However, in March 2020 the initial wave of the COVID 19 pandemic arrived and further work associated with UWSS Restructuring was put on hold.

The draft UWSS Beneficial Use Analysis report by C3 Water was shared via email to pertinent municipal directors and managers in early Summer 2020 for review and comment. Additional discussion on this report is provided in the next section of this report.

The next proposed step for the UWSS Restructuring process is for UWSS and PwC to meet with municipal financial directors/treasurers and the financial auditors for each municipality. The purpose of these meetings is to allow PwC to present the proposed financial business case on UWSS restructuring to financial auditors to obtain their opinion on whether the business case would allow for UWSS, Inc. to meet the Government Business Entity (GBE) requirements that would allow separation of UWSS, Inc. financials and from municipal financials and debt.

Update on Common System Watermains Resolution

The Union Water Supply System Joint Board of Management (UWSS JBM) was created in 2001 through the UWSS Transfer Order under the *Municipal Water and Sewage Transfer Act, 1997.* This Transfer Order transferred the assets of the Union Water System from the Province Ontario (Ontario Clean Water Agency) to the municipalities of Leamington, Kingsville, Essex and Lakeshore. Management of the system on behalf of the 4 municipalities was given to the newly created UWSS JBM. Within the Transfer Order 2001, a list of "transferred" watermains were identified as common system watermains.

The water distribution system in the Union Water Supply System service area is made up of 5 distinct parts. These are:

- The Union Water Supply System water distribution system
- Municipality of Leamington water distribution system
- Town of Kingsville water distribution system
- Town of Essex water distribution system
- Town of Lakeshore water distribution system

The Union Water Supply System water distribution system was generally called the Common Area System throughout the history of the UWSS and it is what comprises the water distribution part of the common assets.

The Common Area System has evolved since its initial construction as the Union Water System (UWS) in 1958 by the Ontario Water Resources Commission. The UWS was generally owned and operated by the Province through the agencies of the Ontario Water Resources Commission, the Ministry of the Environment and the Ontario Clean Water Agency until it transferred that system to the municipalities in 2001. While the UWS was under provincial ownership, a number of watermains were built as part of the Common Area System. The methodology on why particular watermains were constructed as part of the Common Area System while others were not doesn't appear to have been consistent. It is likely that many of the watermains that were not common system

watermains were constructed as part of the Common Area System since it was easier to administer the work through the Common System. Whatever the case, available documentation indicates that each municipality that benefited from a particular watermain construction paid for said watermain in proportion to the ultimate flow if was supplied through it.

The decision to construct watermains through the Common Area administration has resulted in a complication for the four municipal owners. The key issue with the Common Area System is determining what part of the distribution system should be the responsibility of the Joint Board of Management and thus paid for by all four owners. There have been many attempts to define what the common assets are in the last 20+ years. None have been very successful. However, there has been general agreement in the past that the list of Common System Watermains as identified in the Transfer Order 2001 was not deemed fair or appropriate.

The following items must be considered in relation to UWSS Common Assets:

1. Past practice before the Transfer Order was that all watermains were paid for on the basis of an agreement of which participants were the beneficiaries of a given project.

2. Past practice before the Transfer Order was that all works at the Ruthven treatment plant (including reservoirs) were paid for by all participants in proportion to water consumption.

3. The Transfer Order provides for the cost of area-specific projects (projects that are of benefit to a specific area within the UWSS service area) to be shared on the basis of agreed benefit.

4. The Transfer Order places the responsibility for agreeing the cost sharing for area-specific projects on the municipalities.

5. The Board has authorized payment for a number of capital projects that do not conform to the practice before the Transfer Order:

    - Payment to Kingsville for oversizing of the Kingsville Northwest Watermain - $320,000.
    - Construction of the 2nd Concession Trunk Watermain - $5,900,000.
    - Construction of the Road 2 East Trunk Watermain - $500,000.

In 2005, the previous Manager of the UWSS put forth report *UW51-(R1)05 System Assets* that presented a number of options for establishing a list of current UWSS Common Assets and for deciding in future when a proposed watermain, pump station or reservoir will be a Common Asset. The Report was discussed by the Board and forwarded to the municipalities for comment. Received comments indicated that was no consensus on adopting any of the policy options outlined.

In March 2006 the Board delegated the issue to a committee of the CAOs with the following mandate:

- To discuss alternatives for common assets for the Union Water Supply System
- To review governance issues for the Union Water Supply System
- To develop a policy on governance for the Union Water Supply System including common assets, and provide a recommendation to the Board

The committee of CAOs used the services of Stantec Consulting and Watson and Associates Economists Ltd. On the engineering and financial aspects of common assets. Despite these actions, the committee was not able to agree on a common position on deciding what the present common assets should be and how to decide what future commons assets will be.

Based on review of available documentation, it appears that the main issues that arose through the CAO committee meetings and reason for disagreements were:

i) the higher rate (Rate 4) paid by Essex and Lakeshore as part of the Northwest System

ii) The disagreement by Leamington of the approval and payment for the three Kingsville watermain projects (i.e. overize of northwest watermain; 2nd Concession Trunk watermain; Road 2 East Trunk watermain) valued at $6.7 million through the UWSS as common assets.

In June 2017, the UWSS Manager put forth report *UW53-07 Common Asset Proposal - Rate Impacts*. The report provided a recommendation for addressing the above identified issues. The recommendation proposed the following:

- That the three Kingsville watermain projects would continue to be funded out of Rate 2 as common system watermains.
- That Rate 4 would be merged with Rate 2 going forward thus all 4 municipal owners would pay the same wholesale rate for capital works
- That the Leamington Trunk Watermain be accepted as a common cost to be funded out of Rate 2 going forward.

The proposed recommendation was endorsed by the Board. Resolutions were issued in Fall 2007 by the Councils of the 4 owner municipalities resolving to adopt the recommendation.

As part of the recommendation, the UWSS took over payment of the Leamington loan that was secured for the construction of the Leamington Trunk Watermain. The value of this agreement was $2,791,000 to be paid by UWSS over a 10 year period ending 2015.

In October 2007, the UWSS Manager presented report *UW97-07 Engaging a Consultant to Undertake a New Capacity Master Plan for the Union Water Supply System.*

The report indicated that as part of the deliberations on common assets, the advisory group of municipal staff recommended that a Master Plan be undertaken for the UWSS service area which would establish treatment and distribution requirements for all of the system. It was expected that such a study would provide a basis for some of the expected future discussions on common assets. Also, the report stated that the Board was required under the Transfer Order to update the New Capacity Master Plan every five years. The first New Capacity Master Plan was initially completed in October 2001 and an Expansion Class EA in September 2003. It is to be noted that the Master Plan Update initiated in 2007 was not completed until November 2012.

In September 2008, the UWSS Manager put forth report *UW62-08 Proposed Interim Agreement on Common System Watermains* to propose a list of watermains derived from the Transfer Order 2001 that would best fit the actual definition of common system watermains. The list of watermains had been developed in consultation (but not necessarily agreed up) with municipal staff from owner municipalities. The Board resolved to adopt the Interim Agreement on Common Assets at its October 2008 meeting. This agreement allowed for the designation of ownership of watermains for the purposes of

- Meeting the requirements for PSAB 3150 Tangible Capital Assets as required under Ontario Regulation;
- Completion of Drinking Water Licencing for UWSS that was due March 9, 2008

It should be noted that the Board adopted the agreement subject to it being reviewed by owner municipalities before December 31, 2009. The expectation was that a decision on a future governance structure would have been decided by that date. The municipalities did not “sign off” on the interim agreement. A copy of the Interim Agreement on Common System Watermains and associated map is attached as Appendix A to this report.

It should be noted that the UWSS has used this list of common asset watermains to this day. It should also be noted that no common system watermain work has been undertake by UWSS since the development of the interim list except for a small watermain relocation project on Division Road at Highway 3 that was required under the Drainage Act.

As indicated previously in this report, the UWSS held a meeting on June 13, 2019 with representatives from the owner municipalities to discuss Common System Watermains since this issue appeared to be the main barrier for moving ahead with the restructuring of UWSS. At the end of the meeting it was agreed that a Beneficial Use Analysis for Common System Watermains needed to be completed to address concerns by municipal staff. The purpose of the analysis was to determine the benefit derived from each Common System Watermain by each municipality.

UWSS retained C3 Water, Inc. to complete a Beneficial Use Analysis for the common system watermains that are included in the Interim Agreement on Common System Watermain. C3 Water provided their draft report to UWSS in February 2020. The report was reviewed by the UWSS General Manager and it was intended that the final would be shared with Municipal Staff for review. However, in March 2020 the initial wave of the COVID 19 pandemic arrived and further work associated with UWSS Restructuring was put on hold.

The draft UWSS Beneficial Use Analysis report by C3 Water was shared via email to pertinent municipal directors and managers in early Summer 2020 for review and comment.

The results presented in the draft C3 report include percentage use of each watermain by each municipality as based on 2018 and 2019 system demand and usage. Appendix B includes an excerpt of the C3 Water Inc. draft report that presents i) a copy of the map showing the locations of the common system watermains and; ii) a table listing of common system watermains and resulting beneficial use in percent.

As can be noted in the table with results on beneficial use, a number of common system watermains are identified to be used 100% by one municipality only. All owner municipalities, with the exception of Lakeshore are identified as have at least one common system watermain that that they derive 100% beneficial use. In practice, a watermain would need to be beneficial to at least 2 or more municipalities in order to be deemed a common system watermain. An exception could be made for watermains that feed other common assets such as a water tower. For example, the Kingsville water tower is identified as a common asset however the watermain feeding the Kingsville Water Tower is for the sole beneficial use of Kingsville. It may be impractical to remove this watermain from the common system watermain listing.

Although comments have yet to be received from the owner municipalities on the Beneficial Use Analysis for common system watermains as presented in the draft C3 Water report, the UWSS General Manager proposes the following for common system watermain resolution:

<u>Option A</u>

i) That the results of the Beneficial Use Analysis be adopted for determination of common system watermains.
ii) That the common system watermains identified as providing a beneficial use solely to one municipality be removed from the common system watermains listing and “given back” to the benefitting municipality.
iii) That the UWSS and municipalities develop water transmission agreements for those watermains that are critical to other common assets, such as watermains that feed water towers.
iv) That UWSS Board and municipalities agree to start “fresh” in regards to common system watermains. Whatever occurred in the past should remain in

the past. The focus for the watermains should be on asset renewal and replacement and how this will be addressed when the time comes. Many of the common system watermains are over 50 years old and showing signs of weakness.

v) Renewal and replacement of existing common system watermains would be completed on a case by case basis with funding arrangements made between UWSS and benefitting municipalities.

vi) New watermain expansions deemed to be common system watermains would be funded on a project by project basis through funding arrangements made between UWSS and benefitting municipalities.

Option B:

i) That items i)-iv) above would apply;

ii) That renewal and replacement of common system watermains would be the sole responsibility of UWSS and funded through common system rates. This is similar to other utility models such as electricity or cable utilities where all customers pay the same rate (generally) no matter where the utility undertakes improvements.

iii) New watermain expansions deemed to be common system watermains would be the sole responsibility of UWSS as per the points made it item ii) above.

The UWSS General Manager believes that a resolution to the common system watermains is at hand but can only be achieved if all involved agree to begin anew without focusing on how things were done in the past.

Closing Comments:

It's the UWSS General Manager's opinion that this report presents a comprehensive picture of current and upcoming challenges being faced by the UWSS. A number of decisions need to be made by the Board and owner municipalities if these challenges are to be adequately addressed. These include the following:

1. A decision needs to be made (upon receipt of consultant report on options) by the UWSS Board on construction of a new reservoir at the treatment plant. This reservoir would help buffer daytime peak summer water demand issues and provide additional water security should part of the treatment plant suffer a break.

2. A decision needs to be made by the UWSS Board on how to apply rate increases that would be needed to fund a water reservoir construction project. Should these rates apply to all or to the sectors that are driving the need for this reservoir?

3. A decision needs to be made by the UWSS Board in regards to soliciting debt financing through UWSS municipal owners to fund the new reservoir project.

4. A decision needs to be made by the UWSS Board on the allocation of remaining UWSS treatment capacity. How much goes to greenhouse developments? How

much to other sectors? Should the remaining treatment capacity be allocated to owner municipalities based on current ownership share?

5. A decision needs to be made by the UWSS Board and Councils of owner municipalities on greenhouse sector growth. It is rumored that the sector is projected to grow significantly over the next 5-10 years. From a water treatment capacity, the UWSS cannot support such growth at this moment. Should owner municipalities wish to support such greenhouse sector growth, then UWSS will need to consider treatment capacity expansions and how to fund such expansions.

6. A decision needs to be made by UWSS and Councils of owner municipalities on how to proceed with common system watermain resolution. It may be best to address this issue by starting fresh and putting the past behind us. The results of the Beneficial Use Analysis (currently in draft) could be used to move forward.

7. A decision needs to be made by the UWSS and Councils of owner municipalities on UWSS Restructuring into a Municipal Service Corporation. An incorporated UWSS that can self finance, obtain credit, apply for grant funding (and hire needed staff) could address most of the financial/funding and management related issues identified in items 1 through 6 above.

Respectfully submitted,

Rodney Bouchard, General Manager
Union Water Supply System Joint Board of Management
rb/kmj

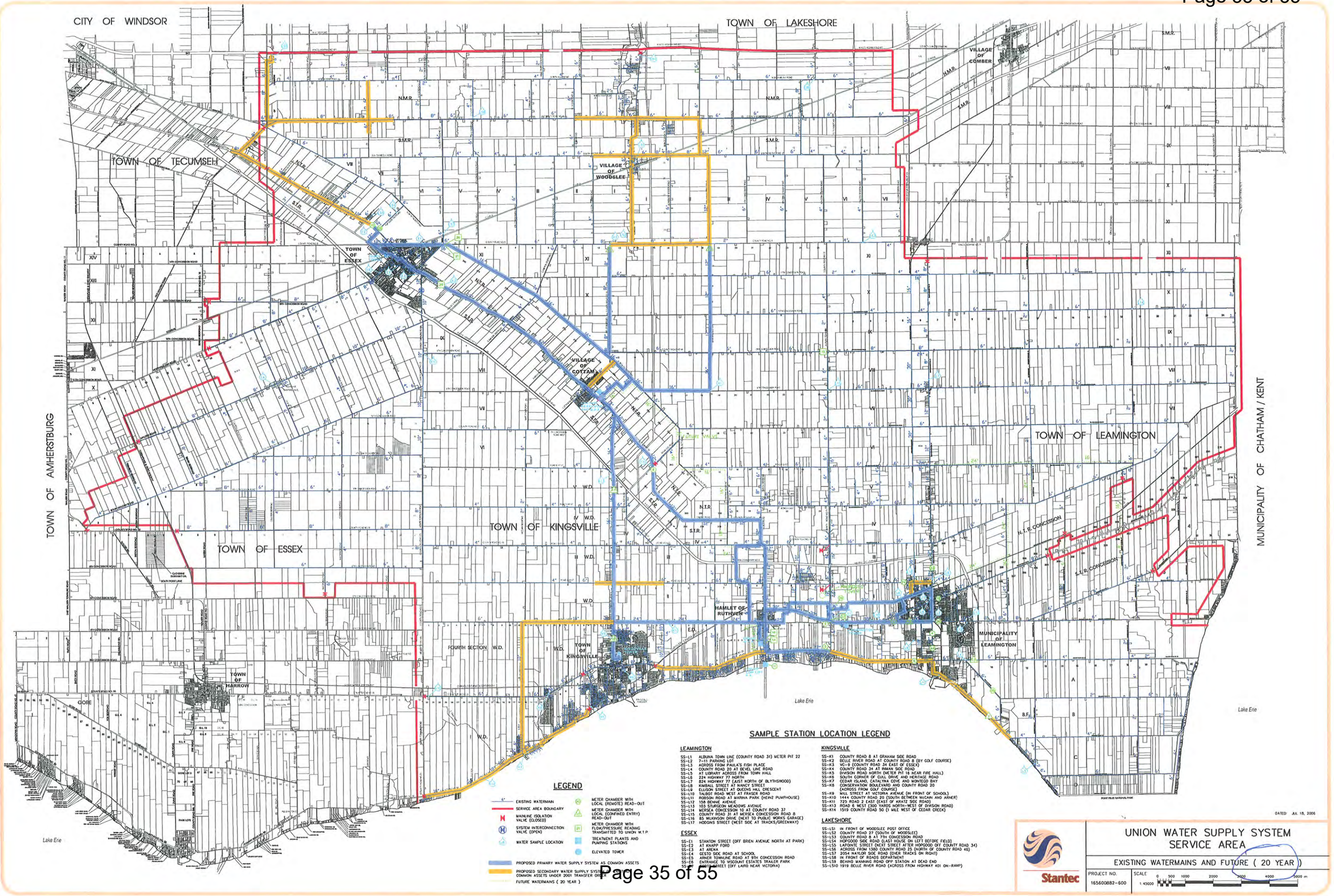
Attachments

APPENDIX A

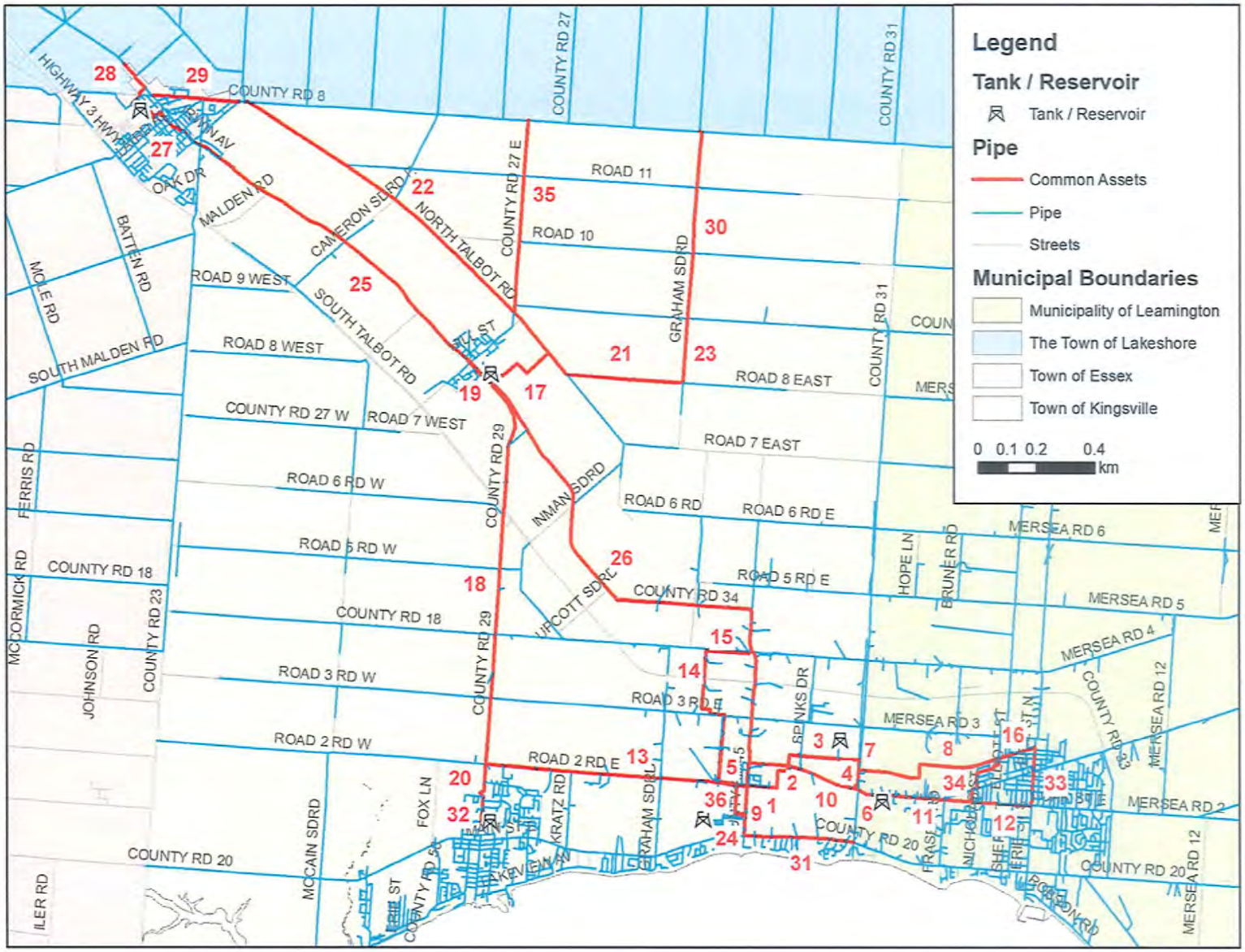
UWSS Common System Watermains

- 42-inch diameter: on Gosfield South 2nd Concession Road from WTP to dead end at east
- 42-inch diameter: Across from private property, and crossing COUNTY ROAD 34 from Gosfield South 2nd Concession Road to former C&O railway
- 42-inch diameter: on former C&O railway from NS easement to COUNTY ROAD 31
- 42-inch diameter: on County Road 31 from former C&O railway to 36-inch diameter watermain to east
- 42-inch diameter: on Gosfield South 2nd Concession Road from WTP to Peterson Sideroad
- 36-inch diameter: on County Road 31 from 42-inch to County Road 34 (Connection between 42-inch and 30-inch trunk watermains)
- 36-inch diameter: on County Road 31 from 42-inch to 30-inch watermain in former C&O railway
- 30-inch diameter: on former C&O railway from County Road 31 to former Penn Central railway
- 30-inch diameter: On Union Avenue from WTP to COUNTY ROAD34
- 30-inch diameter: on County Road 34, Union Avenue to Leamington Tower
- 30-inch diameter: on County Road 34 from Leamington Tower to Oak Street
- 30-inch diameter: on Oak Street from County Road 34 to Erie Street
- 24-inch diameter: on Gosfield South 2nd Concession Road from WTP to County Road 27 (Division Road)
- 24-inch diameter: on Peterson Sideroads and in easement from Gosfield South 2nd Concession to Gosfield South 4th Concession
- 24-inch diameter: On Gosfield South 4th Concession from easement to County rd 34
- 24-inch diameter: on former C&O railway from former Penn Central railway to Erie Street
- 20-inch diameter: on easement from Cottam PS to Nth Talbot Road
- 16-inch diameter: on County Road 27 (Division Road) from Gosfield South 2nd Concession to County Road 34
- 16-inch diameter: on County Road 34 from County Road 27 (Division Road) to Cottam Village
- 16-inch diameter: on County Road 27 (Division Road) from Gosfield South 2nd Concession Road to old Kingsville bdy
- 16-inch diameter: on Nth Talbot and Gosfield North 8th Concession Road, from Cottam PS to Graham Sideroad .
- 16-inch diameter: on Nth Talbot Road from Cottam PS to County Road 8

- 16-inch diameter: on Graham Sideroad Gosfield North from 8th Concession Road to COUNTY ROAD14 (Gosfield North 9th Concession Road)
- 12-inch diameter: on Union Avenue from WTP to County Road 20 (Seacliff Drive)
- 12-inch diameter: County Road 34 from Cottam PS to County Road 23 (Albuna Townline)
- 12-inch diameter: on County Road 34 from Ruthven to Cottam PS
- 12-inch diameter: through Essex from County Road 23 to Essex Tower via Talbot, Wellington, Alice, Victoria and Forest.
- 12-inch diameter: through Essex from Essex Tower to Meter Chamber 10
- 12-inch diameter: on County Road 8 from County Road 29 (Naylor Sideroad to Bell Avenue)
- 12-inch diameter: on Graham Sideroad from County Road 14 (Gosfield N Conc 9) to County Road 8
- 12-inch diameter: on Seacliff Drive (County Road 20) from Ruthven to County Road 31
- 12-inch diameter: on Division Road from old Kingsville bdy to Pulford, on Pulford from Division Road to Kingsville Tower
- 12-inch diameter: Erie Street from former C&O railway to Oak Street
- 12-inch diameter: from Oak Street (at Armstrong) to former C&O railway (at Hodgins) via Armstrong, Talbot and Fuller.
- 8-inch diameter: on County Road 27 (Belle River Road) from Nth Talbot Road to County Road 8


CITY OF WINDSOR
TOWN OF LAKESHORE
TOWN OF TECUMSEH
VILLAGE OF WOODSLEE
VILLAGE OF COMBER
TOWN OF ESSEX
VILLAGE OF COTTAM
TOWN OF LEAMINGTON
TOWN OF AMHERSTBURG
TOWN OF KINGSVILLE
HAMLET OF RUTHVEN
MUNICIPALITY OF LEAMINGTON
MUNICIPALITY OF CHATHAM / KENT
TOWN OF HARROW
FOURTH SECTION W.D.
Lake Erie
N.M.R.
S.M.R.
N.T.R.
S.T.R.
W.D.
LEGEND
EXISTING WATERMAIN
SERVICE AREA BOUNDARY
MAINLINE ISOLATION VALVE (CLOSED)
SYSTEM INTERCONNECTION VALVE (OPEN)
WATER SAMPLE LOCATION
METER CHAMBER WITH LOCAL (REMOTE) READ-OUT
METER CHAMBER WITH LOCAL (CONFINED ENTRY) READ-OUT
METER CHAMBER WITH FLOW/PRESSURE READING TRANSMITTED TO UNION W.T.P.
TREATMENT PLANTS AND PUMPING STATIONS
ELEVATED TOWER
PROPOSED PRIMARY WATER SUPPLY SYSTEM AS COMMON ASSETS
PROPOSED SECONDARY WATER SUPPLY SYSTEM AS COMMON ASSETS UNDER 2001 TRANSFER ORDER
FUTURE WATERMAINS (20 YEAR)
SAMPLE STATION LOCATION LEGEND
LEAMINGTON
SS-L1 ALBUNA TOWN LINE (COUNTY ROAD 31) METER PIT 22
SS-L2 7-11 PARKING LOT
SS-L3 ACROSS FROM PAULA'S FISH PLACE
SS-L4 COUNTY ROAD 20 AT BEVEL LINE ROAD
SS-L5 AT LIBRARY ACROSS FROM TOWN HALL
SS-L6 224 HIGHWAY 77 NORTH
SS-L7 824 HIGHWAY 77 (JUST NORTH OF BLYTHSWOOD)
SS-L8 KIMBALL STREET AT NANCY STREET
SS-L9 ELLISON STREET AT QUEENS HILL CRESCENT
SS-L10 TALBOT ROAD WEST AT FRASER ROAD
SS-L11 ROBSON ROAD AT MARINA PARK (HEINZ PUMPHOUSE)
SS-L12 158 BENNIE AVENUE
SS-L13 103 STURGEON MEADOWS AVENUE
SS-L14 MERSEA CONCESSION 10 AT COUNTY ROAD 37
SS-L15 COUNTY ROAD 31 AT MERSEA CONCESSION ROAD B
SS-L16 85 WILKINSON DRIVE (NEXT TO PUBLIC WORKS GARAGE)
SS-L17 HODGINS STREET (WEST SIDE AT TRACKS/GREENWAY)
ESSEX
SS-E1 STANTON STREET (OFF BREN AVENUE NORTH AT PARK)
SS-E2 AT KNAPP FORD
SS-E3 AT ARENA
SS-E4 GESTO SIDE ROAD AT SCHOOL
SS-E5 ARNER TOWNLINE ROAD AT 9TH CONCESSION ROAD
SS-E6 ENTRANCE TO WISCOUNT ESTATES TRAILER PARK
SS-E7 STREET (OFF LAIRD NEAR VICTORIA)
KINGSVILLE
SS-K1 COUNTY ROAD 8 AT GRAHAM SIDE ROAD
SS-K2 BELLE RIVER ROAD AT COUNTY ROAD 8 (BY GOLF COURSE)
SS-K3 VC-9 (COUNTY ROAD 34 EAST OF ESSEX)
SS-K4 COUNTY ROAD 34 AT INMAN SIDE ROAD
SS-K5 DIVISION ROAD NORTH (METER PIT 16 NEAR FIRE HALL)
SS-K6 SOUTH CORNER OF CULL DRIVE AND HERITAGE ROAD
SS-K7 CEDAR ISLAND, CATALYNA COVE AND MONTECO BAY
SS-K8 CONSERVATION BOULEVARD AND COUNTY ROAD 20 (ACROSS FROM GOLF COURSE)
SS-K9 WILL STREET AT DORA AVENUE (IN FRONT OF SCHOOL)
SS-K10 1444 COUNTY ROAD 20 (SOUTH BETWEEN McCAIN AND ARNER)
SS-K11 725 ROAD 2 EAST (EAST OF KRATZ SIDE ROAD)
SS-K13 ROAD 6 WEST (300 YARDS NORTH-WEST OF DIVISION ROAD)
SS-K14 1519 COUNTY ROAD 50 (1 MILE WEST OF CEDAR CREEK)
LAKESHORE
SS-LS1 IN FRONT OF WOODSLEE POST OFFICE
SS-LS2 COUNTY ROAD 27 (SOUTH OF WOODSLEE)
SS-LS3 COUNTY ROAD 8 AT 7TH CONCESSION ROAD
SS-LS4 HOPGOOD SIDE ROAD (LAST HOUSE ON LEFT BEFORE FIELD)
SS-LS5 LAPOINTE STREET (NEXT STREET AFTER HOPGOOD OFF COUNTY ROAD 34)
SS-LS6 ACROSS FROM 1350 COUNTY ROAD 25 (NORTH OF COUNTY ROAD 46)
SS-LS7 2054 NAYLOR SIDE ROAD (OVER TRACKS ON RIGHT)
SS-LS8 IN FRONT OF ROADS DEPARTMENT
SS-LS9 BEHIND MANNING ROAD OPP STATION AT DEAD END
SS-LS10 1919 BELLE RIVER ROAD (ACROSS FROM HIGHWAY 401 ON-RAMP)
DATED: JUL 18, 2006
Stantec
UNION WATER SUPPLY SYSTEM
SERVICE AREA
EXISTING WATERMAINS AND FUTURE (20 YEAR)
PROJECT NO: 165600882-600
SCALE 1: 45000
0 500 1000 2000 3000 4000 5000 m

APPENDIX B


Legend
Tank / Reservoir
Tank / Reservoir
Pipe
Common Assets
Pipe
Streets
Municipal Boundaries
Municipality of Leamington
The Town of Lakeshore
Town of Essex
Town of Kingsville
0 0.1 0.2 0.4
km
COUNTY RD 8
COUNTY RD 27
COUNTY RD 31
COUNTY RD 27 E
ROAD 11
ROAD 10
ROAD 9 WEST
ROAD 8 WEST
ROAD 8 EAST
ROAD 7 WEST
ROAD 7 EAST
ROAD 6 RD W
ROAD 6 RD
ROAD 6 RD E
ROAD 5 RD W
ROAD 5 RD E
ROAD 3 RD W
ROAD 3 RD E
ROAD 2 RD W
ROAD 2 RD E
COUNTY RD 18
COUNTY RD 34
COUNTY RD 20
COUNTY RD 29
COUNTY RD 23
MERSEA RD 6
MERSEA RD 5
MERSEA RD 4
MERSEA RD 3
MERSEA RD 2
MERSEA RD 12
HIGHWAY 3 HWY
MALDEN RD
CAMERON SDRD
NORTH TALBOT RD
SOUTH TALBOT RD
SOUTH MALDEN RD
BATTEN RD
NOLE RD
FERRIS RD
MCCORMICK RD
JOHNSON RD
INMAN SDRD
GRAHAM SDRD
MCCAIN SDRD
FOX LN
KRATZ RD
SPANKS DR
HOPE LN
BRUNER RD
ILER RD
28
29
27
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31

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Table 3.1 Summary of Common Asset Beneficial Use by Municipality

CA#	Name	Leamington %	Lakeshore %	Essex %	Kingsville %
1	CA01_1050_WTP_to_Rd2	85%	0%	0%	15%
2	CA02_1050_Rd2_to_Rail	88%	0%	0%	12%
3	CA03_1050_Rail_to_Rd31	85%	0%	0%	15%
4	CA04_1050_Rd31_to_CA06	86%	0%	0%	14%
5	CA05_1050_WTP_to_Pete	0%	6%	12%	82%
6	CA06_900_CA04_to_Rd34	28%	0%	0%	72%
7	CA07_900_CA04_to_CA08	100%	0%	0%	0%
8	CA08_750_CA07_to_CA16	100%	0%	0%	0%
9	CA09_750_WTP_to_Rd34	42%	0%	0%	58%
10	CA10_750_Rd34_to_LeamET	93%	0%	0%	7%
11	CA11_750_LeamET_to_Oak	100%	0%	0%	0%
12	CA12_750_Oak_to_Erie	100%	0%	0%	0%
13	CA13_600_WTP_to_Rd27	0%	7%	14%	79%
14	CA14_600_Rd2_to_Rd4E	0%	9%	17%	74%
15	CA15_600_Rd4E_to_Rd34	0%	11%	20%	69%
16	CA16_600_CA08_to_Erie	100%	0%	0%	0%
17	CA17_500_COTT_to_Talb	0%	45%	45%	10%
18	CA18_400_Rd2_to_Rd34	0%	19%	35%	46%
19	CA19_400_Rd27_to_Belle	0%	1%	58%	41%
20	CA20_400_Rd2_to_Palmer	0%	0%	0%	100%
21	CA21_400_Talb_to_Graham	0%	84%	0%	16%
22	CA22_400_Talb_to_Rd8	0%	15%	84%	1%
23	CA23_400_Graham_to_Rd14	0%	84%	0%	16%
24	CA24_300_WTP_to_Rd20	29%	0%	0%	71%
25	CA25_300_COTT_to_Rd23	0%	0%	71%	29%
26	CA26_300_Lee_to_COTT	0%	6%	11%	83%
27	CA27_300_Rd23_to_EssET	0%	0%	100%	0%
28	CA28_300_EssET_to_FM10	0%	0%	100%	0%
29	CA29_250_Rd29_to_Bell	0%	0%	100%	0%
30	CA30_300_Rd14_to_Rd8	0%	91%	0%	9%
31	CA31_300_Union_to_Rd31	37%	0%	0%	63%
32	CA32_300_Palm_to_KingET	0%	0%	0%	100%
33	CA33_300_Rail_to_Oak	100%	0%	0%	0%
34	CA34_300_Oak_to_Hodg	100%	0%	0%	0%
35	CA35_200_Talb_to_Rd8	0%	73%	0%	27%
36	CA36_900_WTP_to_Rd2	34%	3%	7%	56%

UW/25/20

Report

To: Chair and Members of the Union Water Supply System Joint Board of Management

From: Rodney Bouchard, Union Water Manager

Date: October 9th, 2020

Re: UWSS Infrastructure Needs Study and Master Servicing Plan

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Recommendation:

That the Union Water Supply Joint Board of Management (UWSS Board) receives this report for information;

And further, that the Board approves a budget of $205,000 to be funded from the UWSS Reserves for the completion of the UWSS Infrastructure Needs Study and Master Servicing Plan;

And further, that the UWSS Board authorizes the UWSS General Manager to undertake a direct negotiation with Associated Engineering (as the lead consultant or the team of Associated Engineering and C3 Water Inc.) for the UWSS Infrastructure Needs Study and Master Servicing Plan

Background:

There is a requirement in the UWSS Transfer Order of 2001 for the UWSS Board to update its New Capacity Master Plan every 5 years. A New Capacity Master Plan was completed in 2001 and an Expansion Environmental Assessment in 2003.

The Board approved the undertaking of a New Capacity Master Plan Update in 2007 to help address issues associated with Common Asset Watermains between UWSS and the four owner municipalities. This Master Plan update was also undertaken to plan for UWSS expansion due to increased water demands and anticipated system growth associated with the projected residential and greenhouse sector growth.

During the undertaking of the 2007 UWSS Master Plan update, UWSS water demand decreased significantly starting in 2008. This resulted in a shift in the Master Plan from projected expansion to more of a conservation plan. The Master Plan Update report and associated water model was completed in November 2012 and shared with the 4 owner municipalities.

Discussion:

In 2016, the UWSS retained Associated Engineering to complete a Water Quality Master Plan for the UWSS. The objectives of the Water Quality Master Plan were as follows:

- Document the current and future challenges of the entire system considering regulatory, social, economic and environmental (Climate Change) impacts with an eye to improve the overall system robustness for the years to come.

- Review and propose treatment alternatives to increase the plant's robustness and meet future treatment demands

- Prepare a defensible capital phasing plan to implement the preferred treatment alternatives.

This Water Quality Master Plan was presented to the UWSS Board at a special meeting of the Board in February 2017.

The completion of the Water Quality Master Plan enabled the UWSS to work towards the undertaking of an update to the UWSS Master Plan.

As a first step, the UWSS retained C3 Water to review the UWSS water model that had been constructed as part of the Master Plan Update that was completed in late 2012. C3 Water's review of the model indicated that significant updates were needed to improve the model and make it current and relevant. UWSS retained C3 to update the model with 2018 water demand data (and then 2019 data). C3 Water issued their report in April 2020.

With the completion of the UWSS Water model update, the UWSS is now in a good position to update the UWSS Master Plan. This update to the Master Plan is needed for the following reasons:

1. The Transfer Order of 2001 stipulates that the UWSS Master Plan be updated every 5-years;

2. Residential growth in the 4 municipalities serviced by UWSS has increased steadily since 2016 and is projected to continue into the foreseeable future;

3. Greenhouse developments have increased significantly since 2017 with no sign of abating;

4. Since 2015, UWSS water demand has been steadily increasing, thus reversing the trend of water demand decline experienced between 2008 and 2014. The water demand increase since 2015 is over 30%
5. The most recent UWSS Master Plan is out of date since it was more reflective of a low demand and conservation forecast for UWSS (including associated municipal growth).

The main goal for this study is to assess the capability of the UWSS drinking water system to meet the treated water demands of its municipal customers through to 2060 (20-year planning horizon), and to identify any necessary existing or future upgrades, as required. This study will focus on: identifying future system demand requirements considering historic consumption rates and climate change impacts; assessing current system operations and identifying opportunities for optimization; and providing solutions to address identified deficiencies, considering life cycle cost, and environmental and social impact.

The undertaking of the Infrastructure Needs Study and Master Servicing Plan for UWSS requires a consultant with water system design and engineering background, planning knowledge, and hydrodynamic modelling expertise. It's the UWSS General Manager opinion that a consultant team approach with team members that have significant knowledge of the UWSS water system would be the best option for this study. The proposed team includes the following consultants:

- Associated Engineering Inc.: Associated Engineering is a Canadian multi-disciplinary engineering firm with significant expertise in the municipal water sector. Associated Engineering has completed a number of projects for the UWSS including the UWSS Water Quality Master Plan, Raw Water pH control system for coagulation enhancement, primary chlorine gas disinfection system upgrades and Dissolved Air Floatation (DAF) clarifier retrofit preliminary design. Associated Engineering will serve as the lead consultant and project manager for this proposed work

- C3 Water Inc: C3 Water Inc. is a consulting firm that specializes in water system engineering services including expertise in hydrodynamic water modeling for municipal drinking water systems. C3 Water recently completed the update to the UWSS water model for the larger distribution system supplied by UWSS.

Financial Impact:

The UWSS General Manager requested a proposal from the consultant team of Associated Engineering and C3 Water, Inc. to complete this work. At this time, this proposal was solicited solely from this consultant team for the following reasons:

- Associated Engineering possesses extensive knowledge of the UWSS drinking water system garnered through the completion of water quality studies and drinking water system upgrades over the last few years. Further, Associated Engineering has significant expertise in municipal water system planning, design, and construction.

- C3 Water, Inc. possesses significant experience and expertise in constructing and calibrating hydrodynamic water models for municipal drinking water systems. C3

Water recently completed the review and updates for UWSS' water model for the entire UWSS serviced area.

- The use of a consultant team with extensive work experience and knowledge of the UWSS system components will significantly reduce the learning curve and cost that would be associated with retaining a consulting firm through a request for proposal.

Based on the proposal received from the consultant team led by Associated Engineering the costs for undertaking the UWSS Infrastructure Needs Study is $184,331. This includes $42,000 for completion of drinking water system field testing by a third party testing firm (Watermark Solutions).

The UWSS General Manager proposes a budget of $205,000 for this work, to allow for contingency funds if needed.

Sufficient funds are available in the UWSS Reserves to fund this work.

Respectfully submitted,

Rodney Bouchard, Manager
Union Water Supply System Joint Board of Management
rb/kmj

UW/26/20

Report

To: Chair and Members of the Union Water Supply System Joint Board of Management

From: Rodney Bouchard, Union Water Manager

Date: October 6, 2020

Re: UWSS-WUC Water Supply Emergency Servicing Study

Recommendation:

That the Union Water Supply Joint Board of Management (UWSS Board) receives this report for information;

And further, that the Board approves a budget of $140,000 to be funded from the 2020 UWSS Operations Budget for to undertake the UWSS-WUC Water Supply Emergency Servicing Study;

And further, that the UWSS Board authorizes the UWSS General Manager to enter into a funding agreement with the Windsor Utilities Commission/ ENWIN to reflect that the UWSS-WUC Water Supply Emergency Servicing Study will be equally funded between UWSS and WUC;

And further, that the UWSS Board authorizes the UWSS General Manager to undertake a direct negotiation with C3 Water, Inc. for the UWSS-WUC Water Supply Emergency Servicing Study;

Background:

In 1992 the Ministry of the Environment (MOE) contracted consultants LaFontaine, Cowie, Burratto and Associates Limited to conduct an Essex County Water Study. The study reviewed all drinking water treatment facilities and distribution systems within the County of Essex and provided recommendations on future planning and development of alternatives to provide and/or improve water service throughout various municipalities.

The two largest drinking water utilities in Essex County, Union Water Supply System (UWSS) and Windsor Utilities Commission (WUC), are investigating opportunities that will ensure that our customers are protected against any disruption in water supply. It was agreed that both utilities would partner to undertake a study to investigate the potential for water supply servicing between these two water systems during an emergency

situation that would require partial or full shutdown of a water treatment plant for one of the systems.

Discussion:

On September 10, 2019 the UWSS General Manager attended a meeting at the City of Windsor's City Hall to discuss potential interconnectivity between the Windsor Utilities Commission water system and the UWSS' water system to ensure water supply to both water systems' customers during emergency situations. The driver for this meeting was due to a recent "near miss" situation in the Detroit River that threatened the drinking water intake for the WUC's only water treatment plant. Had the incident occurred, the WUC's drinking water system would likely have been taken out of service for an extended period of time. Since the WUC water system does not have a redundant water supply, this would have resulted in a serious water shortage emergency for the system. It was noted during this meeting that the UWSS is in a similar position should an incident require the shutdown of the UWSS' drinking water intakes in Lake Erie. An example of such an incident could be a large toxic algal bloom in Lake Erie that would require an extended shutdown of the UWSS drinking water intakes.

As a result of this meeting and follow up discussions between WUC/ENWIN and UWSS administration, WUC/ENWIN and UWSS are committed to undertake a joint study to investigate the possibility for further interconnection of the UWSS and WUC water systems that would allow one water system to supply the minimum amount of water to support the other water system in an emergency situation.

During a meeting on July 22nd, 2020 between the UWSS General Manager and Enwin Vice President of Water Operations, it was agreed that it would be best to retain a consultant with in-depth knowledge of the area water systems and hydrodynamic water modelling expertise to complete this work. It was noted that water modelling would be the main component of this study. A consultant team approach was identified as the best option for this study. The proposed team would include the following consultants:

- C3 Water Inc: C3 Water Inc. is a consulting firm that specializes in water system engineering services including expertise in hydrodynamic water modeling for municipal drinking water systems. C3 Water recently completed the update to the UWSS water model for the larger distribution system supplied by UWSS. C3 Water Since water modeling was deemed to be the larger component of this proposed study, it was agreed that C3 Water would be the lead consultant on the consulting team.

- Stantec Consulting – Windsor Office: Stantec Consulting senior staff from their Windsor office have been involved in many Essex area water supply system projects over the last 30 years both as part of Stantec and as part of Lafontaine, Cowie, Burratto and Associates before this firm was amalgamated into Stantec Windsor. . Mr. Tony Berardi, the current Managing Director of Stantec Windsor has been involved in area water system projects (including UWSS) since the days

of LaFontaine, Cowie, Burratto and Associates Limited. Mr. Berardi possesses a vast knowledge of the interconnections between the Essex region water system. Mr. Berardi, through Stantec, will serve as technical advisor on the consultant team so that we can access his knowledge and engineering expertise.

As part of the meeting of July 22nd, 2020, it was also agreed that UWSS would take the lead on this study in regards to consultant procurement and financial management. UWSS would retain the consultant and pay consultant invoices. UWSS would then in turn invoice WUC/Enwin for half of the consultant costs for this study.

On August 31, 2020 a meeting was held between UWSS General Manager, WUC/Enwin Vice President of Water Operations, C3 Water Inc Vice-President (Mr. Samuel Ziemman) and Stantec (Mr. Tony Berardi) to set the consulting team arrangements and study goals.

It is anticipated that the completion of this Study will provide a blueprint and starting point for the UWSS and WUC boards to begin discussions and planning for a redundant system that at minimum benefits the two entities in regards to emergency water supply servicing. It is expected that the Study will provide recommendations on possible connections or future infrastructure that would provide the UWSS and WUC systems some redundancy in order to provide drinking water to their customers in the event of an unforeseen disruption. These recommendations will include considerations for different factors such as:

a. Raw Water back up supply and estimated costs associated with the implementation;
b. Drinking water connections to provide supply between the two systems that can provide emergency service and estimated costs associated with the implementation;
c. Any facilities/storage requirements to provide that supply to all municipalities serviced by Union and WUC and estimated costs associated with the implementation;
d. Any changes or additional treatment requirements in order to ensure compatibility of treated water supplied to either system

Financial Impact:

The UWSS General Manager requested a proposal from the C3 Water/Stantec team for this study. At this time, this proposal was solicited solely from this consultant team due to their in-depth knowledge of Essex Region water supply systems, expertise in hydrodynamic water modeling for municipal drinking water systems, previous work experience between UWSS and these consultants.

Based on C3 Water/Stantec's proposal, the costs for undertaking the UWSS-WUC Water Supply Emergency Servicing Study is $133,421. Although UWSS would manage the study from a financial perspective, half of the study cost will be recouped from WUC.

It should be noted that as part of the 2020 UWSS Budget, UWSS Board approved $30,000 to undertake this study. Since the proposal has identified a cost of $133,421 for this study, the UWSS General Manager recommends that the UWSS Board approves a new budget of $140,000 to fund this study. Again, it is noted that UWSS will recoup up to $70,000 of the study costs from WUC.

Closing Comments:

In light of the potential threats to the UWSS system, such as a large toxic algal bloom in Lake Erie that could result in the extended shut-down of the Ruthven Water Treatment Plant and consequences associated with not have an emergency backup water supply, the UWSS General Manager believes that the completion of this Study would provide a good starting point to develop a strategy to ensure that UWSS customers will continue to have a safe and secure source of drinking water.

Respectfully submitted,

Rodney Bouchard, General Manager
Union Water Supply System Joint Board of Management
rb/kmj

UW/27/20

To: Chair and Members of the Union Water Supply System Joint Board of Management

From: Rodney Bouchard, Union Water Manager

Date: October 16, 2020

Re: Payments for the September 16th to October 14th, 2020

Aim:

To provide the Board with a copy of payments made by the Union Water Supply System from September 16th to October 14th, 2020

Recommendation:

For information purposes.

Respectfully submitted,

Rodney Bouchard, Manager
Union Water Supply System Joint Board of Management
/kmj

Vendor : 0011450 To PT00000193
Batch : All
Department : All
Cheque Print Date : 16-Sep-2020 To 18-Sep-2020
Bank : 07 To 08
Class : All

Vendor / Invoice	Vendor Name / Description	CC1	CC2	CC3	GL Account Name	Batch	Invc Date	Invc Due Date	Amount
DEPARTMENT 0700	Union Water System								
180325	**RICOH CANADA INC**								
SCO92930902	COPIER CONTRACT - MAY19-JUN30					507	14-Aug-2020	16-Sep-2020	
70-5-0700-7010		002070			Office Supplies				93.44
SCO92930903	COPIER CONTRACT - JUN23-JUL30					507	14-Aug-2020	16-Sep-2020	
70-5-0700-7010		002070			Office Supplies				85.84
SCO92946045	COPIER CONTRACT - JUL21-AUG30					507	31-Aug-2020	16-Sep-2020	
70-5-0700-7010		002070			Office Supplies				92.56
							Department Totals :		**271.84**

Vendor : 0011450 To PT00000193 EFT Paid Date : 16-Sep-2020 To 18-Sep-2020
Batch : All Bank : 07 To 08
Department : All Class : All

Vendor Code / Invoice No. / G.L. Account	Vendor Name / Description	CC1	CC2	CC3	GL Account Name	Batch	Invc Date	Invc Due Date	Amount
DEPARTMENT 0700	Union Water System								
010045	**AIR LIQUIDE CANADA INC.**								
71881372-3199	CARBON DIOXIDE, CO2, BULK LIQUID					522	02-Sep-2020	17-Sep-2020	
70-5-0700-7080			002080		Operational Supplies				3,169.88
050099	**ENBRIDGE GAS INC**								
1929770177678	31.97M3 GAS - COTTAM BOOSTER					522	08-Sep-2020	17-Sep-2020	
70-5-0700-7410			002073		Gas				34.95
1929770208308	28.24M3 RUTHVEN WTP					522	19-Aug-2020	17-Sep-2020	
70-5-0700-7410			002073		Gas				90.31
050195	**ESSEX POWERLINES CORPORATION**								
220651 - AUG2(	AUG/20 HYDRO - METER # 4					522	19-Aug-2020	17-Sep-2020	
70-5-0700-7420			002073		Electricity				44.51
253800 AUG20	AUG20 HYDRO METER # 23					522	19-Aug-2020	17-Sep-2020	
70-5-0700-7420			002073		Electricity				31.91
080250	**HYDRO ONE NETWORKS INC**								
200141677460-	AUG/20 HYDRO - RUTHVEN WTP					522	09-Sep-2020	17-Sep-2020	
70-5-0700-7420			002073		Electricity				95,112.23
200141680692 /	AUG20 - HYDRO LOW LIFT					522	09-Sep-2020	09-Sep-2020	
70-5-0700-7420			002073		Electricity				51,342.01
200152134969 /	AUG20 HYDRO - METER # 17					522	15-Aug-2020	15-Aug-2020	
70-5-0700-7420			002073		Electricity				29.14
130120	**MAPLE REINDERS CONSTRUCTORS LTD**								
PC# 14 25349	PMT # 14 CO2 INJ/CL2					522	31-Jul-2020	31-Jul-2020	
70-7-0700-8745			700200		Treatment Plant				19,139.21
70-7-0700-8745			700200		Treatment Plant				2,126.58
190185	**SGS CANADA INC. ENVIRONMENTAL SERVICES**								
11350209	WATER QUALITY STUDIES CORROSION - LAKESHORE					522	28-Jul-2020	17-Sep-2020	
70-5-0700-7989			002075		Operational Programs & Studies				116.96
11350211	WATER QUALITY STUDIES CORROSION - LEAMINGTON					522	28-Jul-2020	17-Sep-2020	
70-5-0700-7989			002075		Operational Programs & Studies				98.31
11350580	WATER QUALITY STUDIES CORROSION - ESSEX					522	28-Jul-2020	17-Sep-2020	
70-5-0700-7989			002075		Operational Programs & Studies				98.31
11350581	WATER QUALITY STUDIES CORROSION - KINGSVILLE					522	28-Jul-2020	17-Sep-2020	
70-5-0700-7989			002075		Operational Programs & Studies				196.62
11357139	WATER QUALTIY STUDIES CORROSION - UWSS					522	25-Aug-2020	17-Sep-2020	
70-5-0700-7989			002075		Operational Programs & Studies				796.65
11357140	WATER QUALITY STUDIES CORROSION - KINGSVILLE					522	25-Aug-2020	17-Sep-2020	
70-5-0700-7989			002073		Operational Programs & Studies				98.31
11357208	WATER QUALITY STUDIES CORROSION - LAKESHORE					522	25-Aug-2020	17-Sep-2020	
70-5-0700-7989			002075		Operational Programs & Studies				98.31
1357202	WATER QUALITY STUDIES CORROSION - ESSEX					522	25-Aug-2020	17-Sep-2020	
70-5-0700-7420			002075		Electricity				98.31
1357207	WATER QUALITY STUDIES CORROSION - LEAMINGTON					522	25-Aug-2020	17-Sep-2020	
70-5-0700-7989			002075		Operational Programs & Studies				98.31
190751	**SUMMA ENGINEERING LIMITED**								
PC # 4 115285	PMT #4 SCADA - INSTALLATION					522	24-Aug-2020	24-Aug-2020	
70-7-0700-8780					SCADA System				7,525.80
70-7-0700-8780					SCADA System				836.20
PC# 9 115302	PMT #9 SCADA UPGRADES					522	31-Aug-2020	31-Aug-2020	
70-7-0700-8780					SCADA System				41,420.58

Vendor : 0011450 To PT00000193
EFT Paid Date : 16-Sep-2020 To 18-Sep-2020
Batch : All
Bank : 07 To 08
Department : All
Class : All

Vendor Code / Invoice No. / G.L. Account	Vendor Name / Description / CC1 CC2 CC3 GL Account Name	Batch	Invc Date	Invc Due Date	Amount
DEPARTMENT 0700	Union Water System				
	Department Totals :				**222,603.40**

Vendor : 0011450 To PT00000194
Batch : All
Department : All
Cheque Print Date : 01-Oct-2020 To 05-Oct-2020
Bank : 07 To 08
Class : All

Vendor / Invoice	Vendor Name / Description	CC1	CC2	CC3	GL Account Name	Batch	Invc Date	Invc Due Date	Amount
DEPARTMENT 0700	Union Water System								
020120	**BELL MOBILITY CELLULAR**								
514877178-SEI	MONTHLY CELL PHONE CHARGES					533	01-Sep-2020	01-Oct-2020	
70-5-0700-7110		002070	002083		Telecommunications Usage				22.68
140135	**NEVTRO SALES (2004) LTD**								
7357	LOW LIFT PUMP #5					542	16-Jul-2020	01-Oct-2020	
70-7-0700-8735		700050			Low Lift Station				30,656.90
					Department Totals :				**30,679.58**

Vendor : 0011450 To PT00000194
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Vendor Code / Invoice No. / G.L. Account	Vendor Name / Description	CC1	CC2	CC3	GL Account Name	Batch	Invc Date	Invc Due Date	Amount
DEPARTMENT 0700	Union Water System								
010103	**ASSOCIATED ENGINEERING (ONT) LTD**								
528160	SCADA UPGRADES - SEP4					545	18-Sep-2020	01-Oct-2020	
70-7-0700-8780					SCADA System				2,876.58
528161	DAF RETROFIT PH 1 - SEP4					545	18-Sep-2020	01-Oct-2020	
70-7-0700-8745		700220			Treatment Plant				5,242.65
528163	CBS RESERVOIR - SEP4					545	18-Sep-2020	01-Oct-2020	
70-7-0700-8725		700040			Cottam Booster Station				350.30
030405	**COLLABRIA**								
CDN DOMAIN-5	DOMAIN NAME - YEARLY WEBSITE FEE					547	12-Aug-2020	02-Oct-2020	
70-5-0700-7950		002070			Professional Services				23.72
DOMINOS-0000	PIZZA - TEAM BUILDING LUNCH					547	18-Aug-2020	02-Oct-2020	
70-5-0700-7052		002070			Meeting Expenses				142.21
STAR-AUG20	STAR SUBSCRIPTION					547	13-Aug-2020	02-Oct-2020	
70-5-0700-7020		002070			Dues, Memberships and Subscriptions				16.94
ZOOM-INV3916	ZOOM SUBSCRIPTION					547	01-Sep-2020	02-Oct-2020	
70-5-0700-7270		002070	008002		Software Purchases				229.39
050099	**ENBRIDGE GAS INC**								
1929770208308	59.3M3 GAS - RUTHVEN WTP					545	22-Sep-2020	01-Oct-2020	
70-5-0700-7410		002073			Gas				100.68
1929770217397	0M3 GAS - LOW LIFT					545	24-Sep-2020	01-Oct-2020	
70-5-0700-7410		002073			Gas				25.43
050195	**ESSEX POWERLINES CORPORATION**								
220651-AUG20	16KWH - METER#4					545	22-Sep-2020	01-Oct-2020	
70-5-0700-7420		002073			Electricity				-13.57
70-5-0700-7420		002073			Electricity				48.21
253800-AUG20	0KWH - METER#23					545	22-Sep-2020	01-Oct-2020	
70-5-0700-7420		002073			Electricity				-12.50
70-5-0700-7420		002073			Electricity				44.41
080250	**HYDRO ONE NETWORKS INC**								
200141681706-5	SEP/20 HYDRO - METER#2					545	28-Sep-2020	01-Oct-2020	
70-5-0700-7420		002073			Electricity				-12.54
70-5-0700-7420		002073			Electricity				44.59
200141683524-5	SEP/20 HYDRO - METER#8					545	28-Sep-2020	01-Oct-2020	
70-5-0700-7420		002073			Electricity				-11.48
70-5-0700-7420		002073			Electricity				40.78
200141683726-5	SEP/20 HYDRO - METER#15					545	24-Sep-2020	01-Oct-2020	
70-5-0700-7420		002073			Electricity				-11.34
70-5-0700-7420		002073			Electricity				40.31
200141687362-5	SEP/20 HYDRO - METER#22					545	28-Sep-2020	01-Oct-2020	
70-5-0700-7420		002073			Electricity				-11.35
70-5-0700-7420		002073			Electricity				40.33
200141687766-5	SEP/20 HYDRO - METER#29					545	28-Sep-2020	01-Oct-2020	
70-5-0700-7420		002073			Electricity				-12.71
70-5-0700-7420		002073			Electricity				45.16
200141687867-5	SEP/20 HYDRO - METER#24					545	28-Sep-2020	01-Oct-2020	
70-5-0700-7420		002073			Electricity				-11.34
70-5-0700-7420		002073			Electricity				40.30
200141690190-5	SEP/20 HYDRO - METER#26					545	25-Sep-2020	01-Oct-2020	
70-5-0700-7420		002073			Electricity				-24.45
70-5-0700-7420		002073			Electricity				86.90
200208899066-5	SEP/20 HYDRO - METER#16					545	16-Sep-2020	01-Oct-2020	

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Vendor Code / Invoice No. / G.L. Account	Vendor Name / Description / CC1	CC2	CC3	GL Account Name	Batch	Invc Date	Invc Due Date	Amount
DEPARTMENT 0700	Union Water System							
70-5-0700-7420		002073		Electricity				-37.79
70-5-0700-7420		002073		Electricity				134.30
200220161473-(	SEP/20 HYDRO - METER#14				545	24-Sep-2020	01-Oct-2020	
70-5-0700-7420		002073		Electricity				-11.44
70-5-0700-7420		002073		Electricity				40.67
190185	**SGS CANADA INC. ENVIRONMENTAL SERVICES**							
11365259	WATER QUALITY STUDIES CORROSION-LEAMINGTON				545	25-Sep-2020	01-Oct-2020	
70-5-0700-7989		002075		Operational Programs & Studies				196.62
11365265	WATER QUALITY STUDIES CORROSION-UWSS				545	25-Sep-2020	01-Oct-2020	
70-5-0700-7989		002075		Operational Programs & Studies				1,209.10
11365268	WATER QUALITY STUDIES CORROSION-ESSEX				545	25-Sep-2020	01-Oct-2020	
70-5-0700-7989		002075		Operational Programs & Studies				98.31
11365271	WATER QUALITY STUDIES CORROSION-KINGSVILLE				545	25-Sep-2020	01-Oct-2020	
70-5-0700-7989		002075		Operational Programs & Studies				98.31
11365277	WATER QUALITY STUDIES CORROSION-LAKESHORE				545	25-Sep-2020	01-Oct-2020	
70-5-0700-7989		002075		Operational Programs & Studies				98.31
						Department Totals :		**11,144.00**

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Department : All
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Vendor / Invoice	Vendor Name / Description	CC1	CC2	CC3	GL Account Name	Batch	Invc Date	Invc Due Date	Amount
DEPARTMENT 0700	Union Water System								
050003	**E.L.K. ENERGY INC**								
40010915-01 A	3651KWH - ESSEX WATER TOWER					555	01-Oct-2020	07-Oct-2020	
70-5-0700-7420		002073			Electricity				-101.76
70-5-0700-7420		002073			Electricity				361.60
40047150-03 A	580KWH - METER#9					555	01-Oct-2020	07-Oct-2020	
70-5-0700-7420		002073			Electricity				-20.93
70-5-0700-7420		002073			Electricity				74.36
51976611-00 A	1411KWH - KINGSVILLE WATER TOWER					555	01-Oct-2020	07-Oct-2020	
70-5-0700-7420		002073			Electricity				-77.80
70-5-0700-7420		002073			Electricity				276.44
90006300-01 A	64320KWH - COTTAM BOOSTER STATION					555	01-Oct-2020	07-Oct-2020	
70-5-0700-7420		002073			Electricity				-1,916.63
70-5-0700-7420		002073			Electricity				6,810.65
							Department Totals :		**5,405.93**

Vendor : 0011450 To PT00000195
EFT Paid Date : 07-Oct-2020 To 09-Oct-2020
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Bank : 07 To 08
Department : All
Class : All

Vendor Code / Invoice No. / G.L. Account	Vendor Name / Description	CC1	CC2	CC3	GL Account Name	Batch	Invc Date	Invc Due Date	Amount
DEPARTMENT 0700	Union Water System								
080250	**HYDRO ONE NETWORKS INC**								
200141680894-:	SEP/20 HYDRO - LEAMINGTON WATER TOWER					558	30-Sep-2020	08-Oct-2020	
70-5-0700-7420		002073			Electricity				-137.37
70-5-0700-7420		002073			Electricity				488.12
200141682009-:	SEP/20 HYDRO - ALBUNA WATER TOWER					558	01-Oct-2020	08-Oct-2020	
70-5-0700-7420		002073			Electricity				-107.40
70-5-0700-7420		002073			Electricity				381.64
200141683019-:	SEP/20 HYDRO - METER#3					558	30-Sep-2020	08-Oct-2020	
70-5-0700-7420		002073			Electricity				-11.34
70-5-0700-7420		002073			Electricity				40.32
200141683120-/	AUG/20 HYDRO - METER #5					558	01-Sep-2020	08-Oct-2020	
70-5-0700-7420		002073			Electricity				-11.46
70-5-0700-7420		002073			Electricity				40.71
200141683120-:	SEP/20 HYDRO - METER #5					558	01-Oct-2020	08-Oct-2020	
70-5-0700-7420		002073			Electricity				-11.46
70-5-0700-7420		002073			Electricity				40.70
200141683423-:	SEP/20 HYDRO - METER #6					558	30-Sep-2020	08-Oct-2020	
70-5-0700-7420		002073			Electricity				-11.34
70-5-0700-7420		002073			Electricity				40.30
150365	**ONTARIO CLEAN WATER AGENCY**								
INV0000000503	SEP/20 OPER&MTCE					558	30-Sep-2020	08-Oct-2020	
70-5-0700-6720		002071			OCWA Operating Contract				276,874.61
190751	**SUMMA ENGINEERING LIMITED**								
PC#5 115354	PMT#5 SCADA INSTALLATION					558	30-Sep-2020	08-Oct-2020	
70-7-0700-8780					SCADA System				42,884.29
70-7-0700-8780					SCADA System				4,764.92
190755	**SUN LIFE ASSURANCE COMPANY OF CANADA**								
OCT-20	OCT/20 UNION WATER LOAN 3724:1					558	01-Oct-2020	08-Oct-2020	
70-5-0700-6000		002020	006901		Debenture Principal				92,624.95
70-5-0700-6100		002010	006901		Debenture Interest				95,477.36
							Department Totals :		**513,367.55**