Ontario Clean Water Agency
Agence Ontarienne Des Eaux

2020 Client Monthly Operations Report

Lambton Area Water Supply System

June 30, 2020

Facility Description

Facility Name:	Lambton Area Water Supply System
Facility Type:	Municipal
Classification:	Class 4 Water Treatment Class 4 Water Distribution
Title Holder:	Municipality
Operation Status:	OCWA
Sr. Operations Manager:	Mark Harris (519) 344-7429 Ext. 251
Business Development Manager:	Susan Budden
Capacity (m3/d):	181844
Service Area:	City of Sarnia, Village of Point Edward, Township of St. Clair, Township of Warwick-Watford, Municipality of Lambton Shores, Town of Plympton-Wyoming
Service Population:	104,162
In service Date:	1975

Operational Description

The Lambton WTP is a direct filtration surface water facility consisting of chemically assisted filtration with disinfection. The facility consists of an intake system (and alternate intake), a low lift pump station, a treatment system and distribution pumping system situated in the City of Sarnia. Water is drawn into the plant (a zebra mussel system is available as needed) and screened at the surge wells (pre-disinfection is utilized). Water flows to the pump wells where a total of 4 vertical turbine pumps are located and used as needed which pump to a discharge header. Coagulant is added, flashed mixed (PAC is also applied at this location when needed) the raw water is than flocculated (Polymer is added at the flocculation trains as needed) and diverted to filtration (10 dual media filters). The gravity fed filter effluents combine into two clear wells where sodium hypochlorite is injected. To maximize the contact time the water is diverted to the two baffled reservoirs (in series). Six vertical turbine pumps are available for supplying the distribution demand as needed. The entire water treatment system is continuously monitored (via SCADA) with continuous on-line analyzers equipped throughout the processes. The utility serves a large part of Lambton County and has over 250 kilometers of pipeline of various sizes and materials. There is also the East Lambton Booster Station with 9,000 cubic meters of storage capacity which is remotely monitored and controlled from the Lambton WTP via SCADA. During the 1997 calendar year the West Lambton Pumping Station, with the largest above ground water storage in the province with a capacity of 90,000m^3, was brought on-line. This pumping station is also remotely monitored and controlled from Lambton WTP via SCADA. The LAWSS distribution system has 5 towers/elevated tanks that the utility monitors via SCADA. In 2007 the Residual Management System (RMS) which treats backwash effluent was brought on-line.

Treatment Process

Pre-treatment Chemicals:	Prechlorination (sodium hypochlorite); Zebra mussel control
Coagulation/Flocculation:	Aluminum Sulphate (Clar+Ion A7)
Filtration:	Dual Media; Filter Aid polymer
Disinfection Method:	Sodium hypochlorite
Post Treatment Chemical Addition:	Fluoride
Waste Residue Management:	Filter backwash effluent is treated by an Actiflo system.
Waste effluent/residue Disposal:	Sludge is hauled to Sarnia WPCP on a needed basis.

Inspections

June: None

Maintenance, Operations & Distribution Works Summary 2020

Maintenance

June:

Date	(P)reventative Capital Major Mtc (C)orrective	Description
June 1	**P**	Completed monthly inspection of all water treatment plant chlorine analyzers.
June 1	**P**	Completed six month inspection on spill kits at the water treatment plant and West Lambton Pumping Station.
June 1	**P**	Completed six month inspection on backwash pump.
June 2	**C**	Electek in to look at LL #3 contactor that fails to start up pump.
June 2	**P**	Monthly inspection of water treatment plant compressors.
June 2-5	**Capital**	Experteers on site to work on capital radio project.
June 3	**P**	Completed annual inspection and tests of foundation drain pumps at East Lambton Pumping Station.
June 3	**P**	Completed annual inspection of RMS holding tank mixer.
June 3	**P**	Inspected HFS site glass.
June 4	**Capital**	EXP in to check on generator system.
June 4	**P**	Completed monthly inspection of eyewash and safety showers at the water treatment plant.
June 5	**P**	Tested generators at East Lambton Pumping Station.
June 5	**P**	Sentry Fire in to do annual inspection on fire system.
June 5	**P**	Completed six month inspection of spill kit at East Lambton

		Pumping Station.
June 5	**P**	Completed monthly inspection of vacuum priming system at East Lambton Pumping Station.
June 5	**P**	Conducted two year inspection on maturation mixers in the RMS.
June 8	**P**	Completed monthly inspection of elevator.
June 8-12	**Capital**	WSP in for radio project work.
June 8	**P**	PW Makar at East Lambton Pumping Station and Forest Standpipe to conduct annual site security audit.
June 9	**P**	Completed monthly inspection of travelling screens at the water treatment plant.
June 10	**P**	Conducted monthly calibration checks on East Lambton Pumping Station chlorine analyzers.
June 10	**Capital**	Meeting Nick Wilson and contractor at West Lambton Pumping Station to discuss valve replacement.
June 11	**P**	Tested polymer system as per SOP.
June 11	**P**	Tested Residual Management System's effluent chlorine residuals. No chlorine detected.
June 11	**Capital**	Experteers at East Lambton Pumping Station to work on radio project.
June 15	**P**	Sentry Fire has completed annual fire system inspection. 17 heat sensors replaced.
June 15-16	**Capital**	Meetings in regards to the PLC/SCADA upgrades.
June 16	**Capital**	Meeting with LAWSS GM in regards to HVAC/dehumidification system.
June 6-7	**P**	Completed monthly inspection of floculator gear drives.
June 16-19	**Capital**	WSP in to work on SCADA/PLC project.
June 17	**P**	Flushed clearwell hypo lines.
June 17	**P**	Pumped out diesel and HFS containment areas.
June 18	**Capital**	Ainsworth conducting TSSA inspection on water treatment plant generators.
June 19	**Capital**	Meeting contractor at West Lambton Pumping Station to discuss valve replacement.
June 19	**P**	Tested intruder alarm at West Lambton Pumping Station.
June 19	**P**	Tested generators at both East and West Lambton Pumping Station.
June 22	**Capital**	Meeting with LAWSS GM in regards to SCADA Master Plan.
June 22	**P**	Completed monthly maintenance on Stations 1 and 7 turbidity meters.
June 22	**P**	Completed monthly maintenance on lab turbidity meter.
June 23-24	**P**	Annual flow meter calibrations completed.
June 24	**Capital**	Meeting contractor at West Lambton Pumping Station to discuss valve replacement.
June 24	**P**	Tested generators at the water treatment plant.
June 25	**P**	Completed monthly maintenance on all pH probes at the water treatment plant.

June 29	**P**	Elektek in to do annual inspection on VFD for HL Pump #6.
June 29	**P**	Completed monthly maintenance on streaming current meters.
June 29	**P**	Completed monthly maintenance on all turbidity meters at the water treatment plant.
June 29	**P**	Completed monthly maintenance on fluoride analyzer.
June 30	**P**	Completed monthly maintenance on Residual Management System turbidity meters.
June 30	**P**	Completed monthly maintenance on pocket chlorine testers.
June 30	**P**	Completed monthly maintenance on chlorine analyzer at West Lambton Pumping Station.
June 30	**C**	Replaced ceiling tiles in the lab.

Operations and Compliance

June:

June 1	PAC water on for testing.
June 1	Power outage at the water treatment plant. Plant running under generator load for approximately 1.5 hours. Generator #2 failed to start.
June 1	South clearwell pump failed with P+. Pump and panel were reset.
June 2	Start PAC system with PAC.
June 2	TSS sample for the Residual Management System taken.
June 2	Energy reporting information sent to Clinton.
June 3	Annual sample to check for diesel contamination taken from diesel containment at the water treatment plant. Results of tests showed no contamination.
June 4	OCWA's new Occupational Health and Safety Policy posted.
June 4	South clearwell pump #2 failed with airlock alarm. Pump and panel were reset.
June 10	Switched Forest lead to FP3 from FP1.
June 12	Staff meeting. Reviewed three year risk assessment and annual contingency test.
June 16	Large watermain break on City of Sarnia's 12" line at 292 Confederation. Demand increased.
June 17	PW Makar at West Lambton Pumping Station to conduct annual site security audit.
June 19	Power failure at the water treatment plant. Reset pumps with no issues.
June 24	PW Makar at Watford to conduct annual site security audit.
June 27	Power failure at East Lambton Pumping Station. No issues noted.

Distribution

June:

June 1	Onsite for third party at Hill St for crossing of LAWSS watermain.
June 2	Valve operations in St Clair Township.
June 2-3	Valve operations on Nauvoo Rd in Warwick Watford.

June 3	Installed dehumidifier in Wyoming Pit.
June 4	Site meet with Bluewater Power for future work near LAWSS watermain at Exmouth and Front.
June 5	Onsite for third party work on Cathcart and Colburne near LAWSS watermain for sewer line repair.
June 9	Hydrant flushing in the City of Sarnia on Front, Brock and Campbell Streets.
June 16	Onsite for third party work at Brock and Confederation for directional drilling near LAWSS watermain by Vink.
June 16	Hydrant flushing in the City of Sarnia on Murphy Rd.
June 17-18	Onsite for third party at Front and Exmouth for directional drill near LAWSS watermain by Bluewater Power.
June 19	Onsite for third party work at 7681 Confederation Line for work being done by Brooks Telecom near LAWSS watermain.
June 22	Onsite for third party work near Blue Point for gas line work near LAWSS watermain by TW Johnstone.
June 23	Site meet on Fleming Rd in regards to bell fiber locations.
June 24	Conducting chamber checks on London Line in Warwick Watford.
June 25	Chamber checks on London Line in Plympton-Wyoming.

Call Outs 2020

June: Call out June 12th for emergency locate. Call out on June 20th due to the PAC system not starting up after power failure. Pumps had to be reset.

One Call Utility Locates

These numbers represent the number of locate notifications that were cleared from LAWSS assets

Number of Locates/Month

YEAR	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
2019	69	62	104	164	189	149	182	153	121	148	81	50
2020	57	54	107	131	165	162						

RMS Sludge Haulage

These numbers represent total monthly amounts of sludge produced by the Residual Management System and hauled to Sarnia WPCP

Amount of sludge produced per month in m^3

YEAR	Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec
2019	236	158	237	236	216	158	313	237	160	160	159	163
2020	241	228	231	240	230	237						

Required Monthly Reports

Monthly System Flows- see separate attached summary report

Workplace Management System Reports – see separate attached reports

Performance Data and Compliance – See separate attached report

Required Financial Reports

Quarterly Financial Summary – Q2 due July 30, 2020.

Semi-Annual "Schedule G" Reconcilable Commodities Report – Due July 30, 2020.

Health & Safety Work Order Summary by Facility

Start Date: 2020-06-01
End Date: 2020-06-30
Hub: Lambton

Cluster	ORG ID	Facility ID	Health and Safety					Closure Rate		
			Initiated	Approved	Completed	Total Labor Hrs	Total Cost $	Target	Actual	Variance
LAWSS (133000)	Lambton Area Water Treatment	5544, East Lambton Distribution (5544-WDEL)	0	0	0	0.00	0.00	85.00%	100.00%	-15.00%
		5544, East Lambton PS (5544-WPEL)	0	0	0	0.00	0.00	85.00%	100.00%	-15.00%
		5544, Forrest Standpipe (5544-WDFS)	0	0	0	0.00	0.00	85.00%	100.00%	-15.00%
		5544, Indian Road Tower (5544-WDIR)	0	0	0	0.00	0.00	85.00%	100.00%	-15.00%
		5544, Lambton Area RMS (5544-WWLA)	0	0	0	0.00	0.00	85.00%	100.00%	-15.00%
		5544, Lambton Area WTP (5544-WTLA)	2	2	2	5.50	254.71	85.00%	100.00%	-15.00%
		5544, Port Lambton Standpipe (5544-WDPL)	0	0	0	0.00	0.00	85.00%	100.00%	-15.00%
		5544, Watford Standpipe (5544-WDWF)	0	0	0	0.00	0.00	85.00%	100.00%	-15.00%
		5544, West Lambton Booster Stn (5544-WPWL)	0	0	0	0.00	0.00	85.00%	100.00%	-15.00%
		5544, West ST.Clair Distribution (5544-WDWS)	1	1	1	1.25	52.30	85.00%	100.00%	-15.00%
		Lambton Area Water Treatment Plant (5544)	0	0	0	0.00	0.00	85.00%	100.00%	-15.00%
		Total	3	3	3	6.75	307.01	85.00%	100.00%	-15.00%

Key Column	Colour	Meaning
Init		No Work Orders initialized
Closed		Closure Rate between 20-50%
Closed		Closure Rate less than 20%

Health & Safety Work Order Summary by Facility

Start Date: 2020-01-01
End Date: 2020-06-30
Hub: Lambton

Cluster	ORG ID	Facility ID	Health and Safety					Closure Rate		
			Initiated	Approved	Completed	Total Labor Hrs	Total Cost $	Target	Actual	Variance
LAWSS (133000)	Lambton Area Water Treatment	5544, East Lambton Distribution (5544-WDEL)	0	0	0	0.00	0.00	85.00%	100.00%	-15.00%
		5544, East Lambton PS (5544-WPEL)	0	0	0	0.00	0.00	85.00%	100.00%	-15.00%
		5544, Forrest Standpipe (5544-WDFS)	0	0	0	0.00	0.00	85.00%	100.00%	-15.00%
		5544, Indian Road Tower (5544-WDIR)	0	0	0	0.00	0.00	85.00%	100.00%	-15.00%
		5544, Lambton Area RMS (5544-WWLA)	0	0	0	0.00	0.00	85.00%	100.00%	-15.00%
		5544, Lambton Area WTP (5544-WTLA)	21	21	20	37.50	1562.24	85.00%	95.24%	-10.24%
		5544, Port Lambton Standpipe (5544-WDPL)	0	0	0	0.00	0.00	85.00%	100.00%	-15.00%
		5544, Watford Standpipe (5544-WDWF)	0	0	0	0.00	0.00	85.00%	100.00%	-15.00%
		5544, West Lambton Booster Stn (5544-WPWL)	0	0	0	0.00	0.00	85.00%	100.00%	-15.00%
		5544, West ST.Clair Distribution (5544-WDWS)	5	5	5	5.25	203.46	85.00%	100.00%	-15.00%
		Lambton Area Water Treatment Plant (5544)	3	3	3	4.50	218.76	85.00%	100.00%	-15.00%
		Total	29	29	28	47.25	1984.46	85.00%	96.55%	-11.55%

Key Column	Colour	Meaning
Init		No Work Orders initialized
Closed		Closure Rate between 20-50%
Closed		Closure Rate less than 20%

Work Order Summary by Facility

Start Date: 2020-06-01
End Date: 2020-06-30
Hub: Lambton

Key Col	Colour	Meaning
Init		No Work Orders initialized
Closed		Closure Rate between 20-50%
Closed		Closure Rate less than 20%

			Corrective Maintenance					Emergency Maintenance					Call Back				
			Init	Approved	Completed	Total Labor Hrs	Total Cost $	Init	Approved	Completed	Total Labor Hrs	Total Cost $	Init	Approved	Completed	Total Labor Hrs	Total Cost $
LAWSS (133000)	Lambton Area Water Treatment Plant (5544)	5544, East Lambton Distribution (5544-WDEL)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		5544, East Lambton PS (5544-WPEL)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		5544, Forrest Standpipe (5544-WDFS)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		5544, Indian Road Tower (5544-WDIR)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		5544, Lambton Area RMS (5544-WWLA)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		5544, Lambton Area WTP (5544-WTLA)	2	2	1	2	92.62	0	0	0	0	0	1	1	1	4	197.7
		5544, Port Lambton Standpipe (5544-WDPL)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		5544, Watford Standpipe (5544-WDWF)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		5544, West Lambton Booster Stn (5544-WPWL)	2	2	2	3	159.32	0	0	0	0	0	0	0	0	0	0
		5544, West ST.Clair Distribution (5544-WDWS)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Lambton Area Water Treatment Plant (5544)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total			4	4	3	5	251.94	0	0	0	0	0	1	1	1	4	197.7

0
0

Work Order Summary by Facility

Start Date: 2020-06-01
End Date: 2020-06-30
Hub: Lambton

Key Col	Colour	Meaning
Init		No Work Orders initialized
Closed		Closure Rate between 20-50%
Closed		Closure Rate less than 20%

			Preventive Maintenance					Operational					Capital/Project Work					Closure Rate		
			Init	Approved	Completed	Total Labor Hrs	Total Cost $	Init	Approved	Completed	Total Labor Hrs	Total Cost $	Init	Approved	Completed	Total Labor Hrs	Total Cost $	Target	Actual	Variance
LAWSS (133000)	Lambton Area Water Treatment Plant (5544)	5544, East Lambton Distribution (5544-WDEL)	0	0	0	0	0	4	4	4	13.25	543.94	0	0	0	0	0	85%	100%	-15.0%
		5544, East Lambton PS (5544-WPEL)	4	4	4	4.5	234.81	3	3	3	7.25	292.21	0	0	0	0	0	85%	100%	-15.0%
		5544, Forrest Standpipe (5544-WDFS)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	85%	100%	-15.0%
		5544, Indian Road Tower (5544-WDIR)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	85%	100%	-15.0%
		5544, Lambton Area RMS (5544-WWLA)	5	5	5	5.5	280.6	2	2	2	68.5	3710.26	0	0	0	0	0	85%	100%	-15.0%
		5544, Lambton Area WTP (5544-WTLA)	33	33	30	92.25	4135.12	12	12	11	1487	43182.29	0	0	0	0	0	85%	89.58%	-4.58%
		5544, Port Lambton Standpipe (5544-WDPL)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	85%	100%	-15.0%
		5544, Watford Standpipe (5544-WDWF)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	85%	100%	-15.0%
		5544, West Lambton Booster Stn (5544-WPWL)	3	3	3	2.5	114.04	2	2	2	4.5	205.99	0	0	0	0	0	85%	100%	-15.0%
		5544, West ST.Clair Distribution (5544-WDWS)	0	0	0	0	0	3	3	3	5.25	237.22	0	0	0	0	0	85%	100%	-15.0%
		Lambton Area Water Treatment Plant (5544)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	85%	100%	-15.0%
Grand Total			45	45	42	104.75	4764.57	26	26	25	1585.75	48171.91	0	0	0	0	0	85%	93.42%	6.578%

0
0

Work Order Summary by Facility

Start Date: 2020-01-01
End Date: 2020-06-30
Hub: Lambton

Key Col	Colour	Meaning
Init		No Work Orders initialized
Closed		Closure Rate between 20-50%
Closed		Closure Rate less than 20%

			Corrective Maintenance					Emergency Maintenance					Call Back				
			Init	Approved	Completed	Total Labor Hrs	Total Cost $	Init	Approved	Completed	Total Labor Hrs	Total Cost $	Init	Approved	Completed	Total Labor Hrs	Total Cost $
LAWSS (133000)	Lambton Area Water Treatment Plant (5544)	133000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		5544, East Lambton Distribution (5544-WDEL)	3	3	3	30.75	1321.87	1	1	1	13.25	545.45	2	2	2	16	3764.87
		5544, East Lambton PS (5544-WPEL)	4	4	4	26.5	1122.68	0	0	0	0	0	1	1	1	8	527.2
		5544, Forrest Standpipe (5544-WDFS)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		5544, Indian Road Tower (5544-WDIR)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		5544, Lambton Area RMS (5544-WWLA)	2	2	2	13.5	580.55	0	0	0	0	0	0	0	0	0	0
		5544, Lambton Area WTP (5544-WTLA)	20	20	14	180.75	12241.56	0	0	0	0	0	2	2	2	8	395.4
		5544, Port Lambton Standpipe (5544-WDPL)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		5544, Watford Standpipe (5544-WDWF)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		5544, West Lambton Booster Stn (5544-WPWL)	5	5	5	17	737.45	0	0	0	0	0	0	0	0	0	0
		5544, West ST.Clair Distribution (5544-WDWS)	2	2	1	22.5	1073.26	0	0	0	0	0	1	1	1	6	211.62
		Lambton Area Water Treatment Plant (5544)	4	4	4	8.75	1879.55	0	0	0	0	0	0	0	0	0	0
Grand Total			40	40	33	299.75	18956.92	1	1	1	13.25	545.45	6	6	6	38	4899.09

0
0

Work Order Summary by Facility

Start Date: 2020-01-01
End Date: 2020-06-30
Hub: Lambton

Key Col	Colour	Meaning
Init		No Work Orders initialized
Closed		Closure Rate between 20-50%
Closed		Closure Rate less than 20%

			Preventive Maintenance					Operational					Capital/Project Work					Closure Rate		
			Init	Approved	Completed	Total Labor Hrs	Total Cost $	Init	Approved	Completed	Total Labor Hrs	Total Cost $	Init	Approved	Completed	Total Labor Hrs	Total Cost $	Target	Actual	Variance
LAWSS (133000)	Lambton Area Water Treatment Plant (5544)	133000	0	0	0	0	0	0	0	0	0	0	1	1	0	132.5	7740.74	85%	100%	-15.0%
		5544, East Lambton Distribution (5544-WDEL)	6	6	0	0	0	24	24	24	69.25	2658.77	1	1	1	17.25	14528.39	85%	83.33%	1.666%
		5544, East Lambton PS (5544-WPEL)	35	35	33	46.75	2270.15	14	14	14	66	2728.85	0	0	0	0	0	85%	96.29%	-11.2%
		5544, Forrest Standpipe (5544-WDFS)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	85%	100%	-15.0%
		5544, Indian Road Tower (5544-WDIR)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	85%	100%	-15.0%
		5544, Lambton Area RMS (5544-WWLA)	18	18	17	47.5	2268.1	12	12	12	95	4772.21	0	0	0	0	0	85%	96.87%	-11.8%
		5544, Lambton Area WTP (5544-WTLA)	216	216	195	645.5	27679.42	78	78	74	9372.5	270048.3	4	4	2	23	17209.88	85%	90.18%	-5.18%
		5544, Port Lambton Standpipe (5544-WDPL)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	85%	100%	-15.0%
		5544, Watford Standpipe (5544-WDWF)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	85%	100%	-15.0%
		5544, West Lambton Booster Stn (5544-WPWL)	48	48	37	51.5	2310.81	12	12	12	83.25	4017.54	0	0	0	0	0	85%	83.07%	1.923%
		5544, West ST.Clair Distribution (5544-WDWS)	3	3	0	0.5	18.21	18	18	17	43	1816.8	1	1	0	10.5	651.94	85%	79.16%	5.833%
		Lambton Area Water Treatment Plant (5544)	8	8	5	41.25	2047.99	1	1	1	30.75	1513.28	1	1	0	0	0	85%	76.92%	8.076%
Grand Total			334	334	287	833	36594.68	159	159	154	9759.75	287555.8	8	8	3	183.25	40130.95	85%	89.07%	10.92%

0

0

Ontario Clean Water Agency
Time Series Info Report

Report extracted 07/14/2020 12:00

From: **01/01/2020 to 30/06/2020**

Facility Org Number: **5544**

Facility Works Number: **210000906**

Facility Name: **LAMBTON AREA WATER SUPPLY SYSTEM (LAWSS)**

Facility Owner: **Local Services Board: LAMBTON AREA WATER SUPPLY SYSTEM**

Facility Classification: **Class 4 Water Treatment**

Receiver:

Service Population: **100000.0**

Total Design Capacity: **181844.0 m3/day**

	01/2020	02/2020	03/2020	04/2020	05/2020	06/2020	Total	Avg	Max	Min
Coagulation/Floculation / Coagulant Dosage-Calculated - mg/L										
Max IH	26.437	30.355	29.818	28.267	27.141	23.142			30.355	
Mean IH	20.802	24.673	25.189	23.287	21.491	19.913		22.546		
Min IH	15.602	20.415	20.129	16.333	16.002	17.122				15.602
Coagulation/Floculation / Coagulant Used - kg										
Max IH	1241.6	1459.2	1638.4	1190.4	1459.2	1779.2			1779.2	
Mean IH	964.129	1110.069	1104.103	979.2	1063.226	1296.64		1085.398		
Min IH	691.2	870.4	793.6	780.8	832	908.8				691.2
Total IH	29888	32192	34227.2	29376	32960	38899.2	197542.4			
Coagulation/Floculation / Coagulant Volume Used - m^3										
Max IH	0.97	1.14	1.28	0.93	1.14	1.39			1.39	
Mean IH	0.753	0.867	0.863	0.765	0.831	1.013		0.848		
Min IH	0.54	0.68	0.62	0.61	0.65	0.71				0.54
Total IH	23350	25150	26740	22950	25750	30390	154330			
DW / Trihalomethane: Total - µg/l										
Max Lab	31				39				39	
Mean Lab	29.667				34.667			32.167		
Min Lab	28				28					28
East Lambton Booster Station / Cl Residual: Inlet Free - mg/L										
Max OL	1.49	1.49	1.83	1.63	1.58	1.52			1.83	
Mean OL	1.359	1.372	1.434	1.424	1.419	1.382		1.398		
Min OL	0	0	0	0	0	0				0
Filter Backwash / Backwash Volume - m^3										
Max IH	2988	4208	3666	2702	2716	3016			4208	
Mean IH	2017.581	2051.793	2001.742	1775.2	1903.613	2066.133		1968.973		
Min IH	1208	1200	0	602	1204	1206				0
HFS / Fluoride Dosage - mg/L										

Max IH		0.63		0.633		0.647		0.645		0.685		0.594						0.685			
Mean IH		0.55		0.556		0.555		0.554		0.551		0.534				0.55					
Min IH		0.477		0.516		0.433		0.491		0.41		0.399								0.399	
HFS / Fluoride Used - l																					
Max IH		88.823		94.553		91.689		88.823		120.341		137.533						137.533			
Mean IH		83.185		82.796		81.437		77.934		90.587		114.818				88.435					
Min IH		68.766		77.361		63.295		68.762		71.631		85.957								63.295	
Total IH		2578.73		2401.087		2524.546		2338.016		2808.208		3444.541		16095.13							
HFS / HFS (kg) - kg																					
Max IH		108.364		115.355		111.86		108.364		146.816		167.79						167.79			
Mean IH		101.486		101.011		99.353		95.079		110.517		140.078				107.89					
Min IH		83.895		94.38		77.22		83.89		87.39		104.868								77.22	
Total IH		3146.051		2929.326		3079.946		2852.38		3426.014		4202.34		19636.06							
HFS / Treated Water Fluoride Residual - mg/L																					
Max OL		2		0.81		0.92		0.8		0.81		0.81						2			
Mean OL		0.544		0.63		0.692		0.666		0.673		0.661				0.644					
Min OL		0		0.23		0.51		0.55		0.56		0.21								0	
Post Disinfection / Chlorine Dosage - mg/L																					
Max IH		2.078		1.897		2.157		2.232		2.063		2.016						2.232			
Mean IH		1.449		1.561		1.676		1.599		1.618		1.796				1.616					
Min IH		0.822		1.03		1.288		0.933		1.134		1.582								0.822	
Post Disinfection / Hypochlorite Dosage - mg/L																					
Max IH		17.316		15.809		17.977		18.596		17.191		16.797						18.596			
Mean IH		12.072		13.011		13.971		13.325		13.483		14.971				13.47					
Min IH		6.854		8.586		10.733		7.779		9.447		13.18								6.854	
Post Disinfection / Hypochlorite Used - kg																					
Max IH		777.85		680.325		1083.35		707.35		1025.775		1294.85						1294.85			
Mean IH		559.262		585.231		615.927		560.867		672.782		972.927				660.839					
Min IH		254.975		358.375		440.625		420.65		425.35		701.475								254.975	
Total IH		17337.13		16971.7		19093.75		16826		20856.25		29187.82		120272.6							
Post Disinfection / Hypochlorite Volume-Total - m^3																					
Max IH		0.662		0.579		0.922		0.602		0.873		1.102						1.102			
Mean IH		0.476		0.498		0.524		0.477		0.573		0.828				0.562					
Min IH		0.217		0.305		0.375		0.358		0.362		0.597								0.217	
Total IH		14755		14444		16250		14320		17750		24840.7		102359.7							
Post Disinfection / Station 7 Cl Residual: Free - mg/L																					
Max OL		5		1.75		3.1		1.84		1.85		1.8						5			
Mean OL		1.608		1.636		1.816		1.664		1.662		1.613				1.667					
Min OL		0		1.45		1.45		0		1.4		0								0	
PrTr / P.A.C. Dosage - mg/L																					
Max IH												0.594						0.594			
Mean IH												0.386				0.386					
Min IH												0.187								0.187	

PrTr / P.A.C. Used - kg																				
Max IH											29.461					29.461				
Mean IH											24.607			24.607						
Min IH											12.27							12.27		
Total IH											713.612		713.612							
Raw Water / Background - cfu/100mL																				
Max Lab		10		5		0		0		11	270					270				
Mean Lab		2.5		1.25		0		0		2.75	58			12.154						
Min Lab		0		0		0		0		0	0							0		
Raw Water / Conductivity - µS/cm																				
Max IH		223.4		235.2		231.1		229.8		244.9	234.5					244.9				
Mean IH		220.597		226.503		222.677		222.918		227.515	229.864			224.981						
Min IH		217.1		217.6		217.8		218.65		176.9	227.8							176.9		
Raw Water / E. Coli: EC - cfu/100mL																				
Max Lab		0		0		0		0		0	2					2				
Mean Lab		0		0		0		0		0	0.4			0.077						
Min Lab		0		0		0		0		0	0							0		
Raw Water / Raw Flow Daily - m³/d																				
Max IH		51462		49347		68210		54076		68792	89737					89737				
Mean IH		46223.13		45011.1		43968.16		42331.93		49718.13	65201.9			48728.18						
Min IH		37203		38233		26615		30479		41407	44210							26615		
Raw Water / Raw Flow Rate - l/s																				
Max IH		595.62		571.15		789.47		600.16		796.2	1038.62					1038.62				
Mean IH		534.99		523.03		508.89		482.67		575.45	754.15			563.03						
Min IH		430.59		442.51		308.04		352.77		479.24	511.69							308.04		
Raw Water / Raw Water Turbidity - NTU																				
Max OL		14		11.4		23		6.6		3.4	3.79					23				
Mean OL		2.445		3.495		3.194		1.747		1.714	1.035			2.272						
Min OL		0.26		0.51		0.587		0.41		0.65	0.354							0.26		
Raw Water / Raw Water pH - ---																				
Max IH		8.27		8.16		8.13		8.16		8.29	8.46					8.46				
Mean IH		8.114		8.051		8.051		8.065		8.153	8.252			8.114						
Min IH		8.02		7.98		7.96		7.9		8.03	8.14							7.9		
Raw Water / Temperature - °C																				
Max IH		10		8		12		11.7		14	17.9					17.9				
Mean IH		7.466		6.083		9.203		9.432		11.392	15.318			9.829						
Min IH		5.5		3		5.9		6.87		8.025	12.8							3		
Raw Water / Total Coliform: TC - cfu/100mL																				
Max Lab		0		0		0		0		0	5					5				
Mean Lab		0		0		0		0		0	1			0.192						
Min Lab		0		0		0		0		0	0							0		
Treated Water / Background - cfu/100mL																				
Max Lab		0		0		0		0		0	0					0				

Mean Lab		0		0		0		0		0		0				0				
Min Lab		0		0		0		0		0		0								0
Treated Water / E. Coli: EC - cfu/100mL																				
Max Lab		0		0		0		0		0		0						0		
Mean Lab		0		0		0		0		0		0				0				
Min Lab		0		0		0		0		0		0								0
Treated Water / Electrical Consumption - kWh																				
Total IH		1060323		1063396		1033647		1058808		936374.9		923041.1		6075590						
Treated Water / Flow: Total of All Sources - m^3/d																				
Max IH		48147		47888		47433		45327		65796		79186						79186		
Mean IH		44815.48		44078.86		43484.03		41675.97		48893.58		63849.17				47785.86				
Min IH		37737		38449		35292		38147		38491		47877								35292
Total IH		1389280		1278287		1348005		1250279		1515701		1915475		8697027						
Treated Water / HPC - cfu/mL																				
Max Lab	<	10	<	40	<	10	<	10	<	10	<	10					<	40		
Mean Lab	<	10	<	17.5	<	10	<	10	<	10	<	10			<	11.154				
Min Lab	<	10	<	10	<	10	<	10	<	10	<	10							<	10
Treated Water / Total Coliform: TC - cfu/100mL																				
Max Lab		0		0		0		0		0		0						0		
Mean Lab		0		0		0		0		0		0				0				
Min Lab		0		0		0		0		0		0								0
Treated Water / Turbidity - NTU																				
Max OL		0.094		0.11		0.741		0.1		0.089		0.6						0.741		
Mean OL		0.069		0.069		0.082		0.072		0.069		0.069				0.072				
Min OL		0.052		0.052		0.048		0.05		0.05		0.045								0.045
West Lambton Booster Station / Cl Residual: Outlet Free - mg/L																				
Max OL		4.98		1.88		2.22		2.26		1.84		3						4.98		
Mean OL		1.666		1.694		1.735		1.63		1.626		1.5				1.642				
Min OL		0		0		0		0		0		0								0
Zebra Mussel Control / Chlorine Dosage - mg/L																				
Max IH		1.251		1.294		1.283		1.49		1.292		1.177						1.49		
Mean IH		1.057		1.137		1.143		1.125		1.091		1.042				1.099				
Min IH		0.972		0.971		1.039		0.83		0.829		0.896								0.829
Zebra Mussel Control / Cl Residual: Free - mg/L																				
Max IH		0.66		0.67		0.71		0.71		0.68		0.7						0.71		
Mean IH		0.597		0.599		0.634		0.61		0.627		0.609				0.613				
Min IH		0.46		0.44		0.51		0.42		0.43		0.44								0.42
Zebra Mussel Control / Cl Residual: Total - mg/L																				
Max IH		0.84		0.82		0.86		0.83		0.84		0.803						0.86		
Mean IH		0.759		0.754		0.785		0.746		0.756		0.728				0.755				
Min IH		0.61		0.6		0.67		0.53		0.52		0.53								0.52
Zebra Mussel Control / Hypochlorite Dosage - mg/L																				
Max IH		10.423		10.787		10.696		12.413		10.77		9.805						12.413		

Mean IH		8.812		9.472		9.521		9.375		9.095		8.684				9.158				
Min IH		8.102		8.095		8.656		6.916		6.906		7.468								6.906
Zebra Mussel Control / Hypochlorite Used - kg																				
Max IH		470		492.325		667.4		504.075		635.675		791.95						791.95		
Mean IH		407.081		425.512		418.262		393.938		451.882		565.998				443.582				
Min IH		339.575		358.375		278.475		312.55		323.125		381.875								278.475
Total IH		12619.5		12339.85		12966.13		11818.15		14008.35		16979.93		80731.9						
Zebra Mussel Control / Hypochlorite Volume-Total-1 - m^3																				
Max IH		0.4		0.419		0.568		0.429		0.541		0.674						0.674		
Mean IH		0.346		0.362		0.356		0.335		0.385		0.482				0.378				
Min IH		0.289		0.305		0.237		0.266		0.275		0.325								0.237
Total IH		10740		10502		11035		10058		11922		14451		68708						
Filter Backwash / Backwash Volume - m^3																				
Total IH		62545		59502		62054		53256		59012		61984		358353						