



SOUTHAMPTON SEWAGE TREATMENT PLANT

PERFORMANCE REPORT

**For the period of
JANUARY 1, 2021 TO DECEMBER 31, 2021**

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**Ontario Clean Water Agency
Agence Ontarienne Des Eaux**

1. Process Performance & Regulatory Compliance

1.1 Summary of Non-Compliances/ Exceedances

December 2021:

- Number of Regulatory Limit Exceedances = **0**
- Number of Regulatory Objective Exceedances = **1**
- Number of Non-Compliances = **0**

The Southampton STP performed within the regulatory limits set out in:

- Certificate of Approval (C of A) 3-1216-88-947 and;
- The Wastewater Systems Effluent Regulation (WSER)

2021	Regulatory Limit Exceedances	Regulatory Objective Exceedances	Non-Compliances
January	0	0	0
February	0	0	0
March	0	0	0
April	0	0	0
May	0	0	0
June	0	1	0
July	0	0	0
August	0	0	0
September	0	0	0
October	0	0	0
November	0	0	0
December	0	0	0

Description of Non-Compliances

The following is a summary of the requirements of the wastewater systems effluent regulation, the environmental compliance approvals, and any orders applicable to the system that were not met at any time during the time period covered by this report; as well as the duration of the failure and the measures that were taken to correct the failure:

Non-Compliance(s)	Duration	Required Actions & Corrective Actions
n/a	n/a	n/a

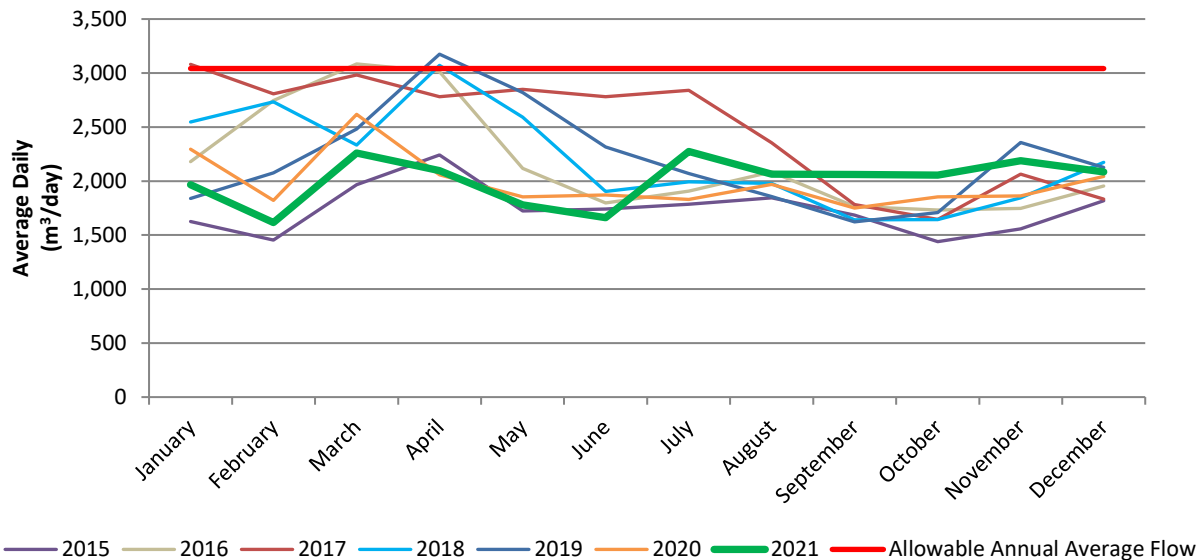
3.2.3 Flow

The Southampton STP rated capacity is based on the annual average daily influent flow of the system. The Annual Average Daily Influent Flow and whether the facility was within the limits of the rated capacity will be determined at the end of the calendar year.

2021	Maximum Daily Influent Flow (m ³ /d)	% of Peak Flow	Within Limits of Peak Flow (6,084 m ³ /d)	Average Flow	% of Allowable Annual Average Flow (3,042 m ³ /d)
January	2,218	36.5%	Yes	1,965	2,036 m ³ 66.9%
February	1,882	30.9%	Yes	1,616	
March	3,025	49.7%	Yes	2,260	
April	2,541	41.8%	Yes	2,097	
May	2,070	34.0%	Yes	1,779	
June	2,397	39.4%	Yes	1,662	
July	3,124	51.4%	Yes	2,274	
August	2,476	40.7%	Yes	2,065	
September	2,757	45.3%	Yes	2,061	
October	2,255	37.1%	Yes	2,056	
November	3,015	49.6%	Yes	2,189	
December	2,089	34.3%	Yes	2,085	

Comparison of Influent Flow to Previous Years

Southampton STP: Influent Flow



*Weather Conditions**

- January 2021 had 42.8 mm of precipitation (compared to 123.1 mm in January 2020), and an average temperature of -3.8°C (compared to -2.7°C in January 2020). January 2021 had much less precipitation and a similar temperature to the previous year.
- February 2021 had 79.8 mm of precipitation (compared to 75.3 mm in February 2020), and an average temperature of -7.2°C (compared to -4.6°C in February 2020). February 2021 had a similar amount of precipitation and was warmer to the previous year.
- March 2021 had 52.0 mm of precipitation (compared to 67.2 mm in March 2020), and an average temperature of 2.1°C (compared to 0.7°C in March 2020). March 2021 had less precipitation and was warmer to the previous year.
- April 2021 had 53.6 mm of precipitation (compared to 56.2 mm in April 2020), and an average temperature of 6.3°C (compared to 3.5°C in April 2020). April 2021 had the same amount of precipitation and was warmer compared to the previous year.
- May 2021 had 35.8 mm of precipitation (compared to 51.2 mm in May 2020), and an average temperature of 10.8°C (compared to 10.0°C in May 2020). May 2021 had less precipitation and the same average temperature compared to the previous year.
- June 2021 had 51.4 mm of precipitation (compared to 91.4 mm in June 2020) and an average temperature of 18.3°C (compared to 16.6°C in June 2020). June 2021 had less precipitation and was warmer compared to the previous year.
- July 2021 had 157.6 mm of precipitation (compared to 61.4 mm in July 2020) and an average temperature of 18.0°C (compared to 20.6°C in July 2020). July 2021 had a lot more precipitation and was slightly cooler compared to the previous year.
- August 2021 had 52.4 mm of precipitation (compared to 236.4 mm in August 2020) and an average temperature of 20.4°C (compared to 18.6°C in August 2020). August 2021 had a lot less precipitation and was slightly warmer compared to the previous year.
- September 2021 had 125.2 mm of precipitation (compared to 108.0 mm in September 2020) and an average temperature of 14.8°C (compared to 13.6°C in September 2020). September 2021 had slightly more precipitation and had a similar average temperature to the previous year.
- October 2021 had 107.0 mm of precipitation (compared to 107.5 mm in October 2020) and an average temperature of 12.2°C (compared to 7.7°C in October 2020). October 2021 had the same amount of precipitation and was warmer than the previous year.
- November 2021 had 160.4 mm of precipitation (compared to 85.9 mm in November 2020) and an average temperature of 2.7°C (compared to 6.2°C in November 2020). November 2021 had significantly more rain and was cooler than the previous year.
- December 2021 had 88.8 mm of precipitation (compared to 142.6 mm in December 2020) and an average temperature of -0.1°C (compared to -1.2°C in December 2020). December 2021 had a lot less precipitation and was slightly warmer than the previous year.

*Data from Environment Canada Warton Weather Station

1.1.2 Effluent Quality

Effluent Objectives – C of A

The Southampton STP effluent objectives for BOD₅ and Suspended Solids are based on the annual average. The Annual Averages for BOD₅ and Suspended Solids and whether the facility was within the objectives will be determined at the end of the calendar year.

2021	BOD ₅			Suspended Solids		
	Monthly Average (mg/L)	Annual Average (mg/L)	Within Objective (20 mg/L)	Monthly Average (mg/L)	Annual Average (mg/L)	Within Objective (20 mg/L)
January	2.0	3.44	Yes	11	9.6	Yes
February	4.5			11		
March	5.0			8.5		
April	2.5			8.5		
May	3.5			11		
June	8.0			11		
July	2.5			7.5		
August	2.0			10		
September	3.0			9.7		
October	2.0			5.0		
November	2.5			7.5		
December	4.0			14.5		

2021	Total Phosphorous		E. Coli	
	Monthly Average (mg/L)	Within Objective (0.5 mg/L)	Mean Geometric Density (cfu/100 mL)	Within Objective (150 cfu/100 mL)
January	0.32	Yes	13.27	Yes
February	0.30	Yes	12.96	Yes
March	0.24	Yes	2.83	Yes
April	0.26	Yes	6.00	Yes
May	0.44	Yes	5.29	Yes
June	0.60	No	<2.00	Yes
July	0.40	Yes	<2.00	Yes
August	0.37	Yes	2.83	Yes
September	0.27	Yes	9.03	Yes
October	0.18	Yes	<2.00	Yes
November	0.15	Yes	14.97	Yes
December	0.28	Yes	7.75	Yes

Effluent Limits – C of A

The Southampton STP effluent limits for BOD₅ and Suspended Solids are based on the annual average. The Annual Averages for BOD₅ and Suspended Solids and whether the facility was within the limits will be determined at the end of the calendar year.

2021	BOD ₅			Suspended Solids		
	Monthly Average (mg/L)	Annual Average (mg/L)	Within Limits* (25 mg/L)	Monthly Average (mg/L)	Annual Average (mg/L)	Within Limits* (25 mg/L)
January	2.0	3.44	Yes	11	9.6	Yes
February	4.5			11		
March	5.0			8.5		
April	2.5			8.5		
May	3.5			11		
June	8.0			11		
July	2.5			7.5		
August	2.0			10		
September	3.0			9.7		
October	2.0			5.0		
November	2.5			7.5		
December	4.0			14.5		

2021	Total Phosphorous		E. Coli	
	Monthly Average (mg/L)	Within Limits (1 mg/L)	Mean Geometric Density (cfu /100 mL)	Within Limits (200 cfu/100 mL)
January	0.32	Yes	13.27	Yes
February	0.30	Yes	12.96	Yes
March	0.24	Yes	2.83	Yes
April	0.26	Yes	6.00	Yes
May	0.44	Yes	5.29	Yes
June	0.60	Yes	<2.00	Yes
July	0.40	Yes	<2.00	Yes
August	0.37	Yes	2.83	Yes
September	0.27	Yes	9.03	Yes
October	0.18	Yes	<2.00	Yes
November	0.15	Yes	14.97	Yes
December	0.28	Yes	7.75	Yes

Effluent Limits – WSER

During the period of time covered by this report, the Southampton STP operated within the effluent limits set in the Wastewater Systems Effluent Regulations (listed below).

- the average carbonaceous biochemical oxygen demand due to the quantity of CBOD matter in the effluent did not exceed 25 mg/L;
- the average concentration of suspended solids in the effluent did not exceed 25 mg/L;
- the average concentration of total residual chlorine in the effluent did not exceed 0.02 mg/L, if chlorine, or one of its compounds, was used in the treatment of wastewater; and (*only relevant in systems that use chlorine as a disinfectant – Southampton uses UV treatment*)
- the maximum concentration of un-ionized ammonia in the effluent was less than 1.25 mg/L, expressed as nitrogen (N), at 15°C ± 1°C. (***only required if the period ends on or before June 30, 2014*).

2021	CBOD ₅		TSS		Unionized Ammonia	
	Monthly Average (mg/L)	Within Limits (<25 mg/L)	Monthly Average (mg/L)	Within Limits (<25 mg/L)	Monthly Average (mg/L)	Within Limits** (<1.25 mg/L)
January	2.5	Yes	11	Yes	0.001	Yes
February	3.5	Yes	11	Yes	<0.001	Yes
March	3.5	Yes	8.5	Yes	0.001	Yes
April	3.0	Yes	8.5	Yes	<0.001	Yes
May	4.0	Yes	11	Yes	0.001	Yes
June	2.5	Yes	11	Yes	<0.001	Yes
July	2.0	Yes	7.5	Yes	0.002	Yes
August	2.0	Yes	10	Yes	<0.001	Yes
September	2.0	Yes	9.7	Yes	0.001	Yes
October	2.0	Yes	5.0	Yes	<0.001	Yes
November	3.0	Yes	7.5	Yes	<0.002	Yes
December	3.0	Yes	14.5	Yes	0.012	Yes

Acute Lethality/Toxicity Testing – WSER

Currently the Southampton STP is eligible for reduced sampling (annual sampling). Acute Lethality samples were taken on August 4, 2021 and sent to Aquatox to analyze. The results showed that the Southampton STP **effluent was not acutely lethal** with a mortality rate of 0%. The next samples are scheduled for **August 2022**.

The test method used is the Reference Method for Determining Acute Lethality of Liquid Effluents to Rainbow Trout, Environment Canada, EPS 1/RM/13.

The test conditions for Acute Lethality testing are as follows:

- 1 vessel of 100% effluent with 10 fish in the vessel
- 1 vessel of Control Solution with 10 fish in the vessel
- Over 96 hours (or 4 days) – only aeration of vessels with no feeding of the fish 16 hours prior to the test or during the test
- Observation of the fish every 24 hours with the removal of any deceased fish from the vessels

The analysis method used is:

- Endpoint of test is the percentage of mortality at 96 hours
- Mortality of 50% of fish is commonly used
- The effluent fails the test if the effluent at 100% concentration kills more than 50% of the fish
- If >10% of the trout do not survive in the control solution, than the test is not valid.

1.2 Biosolids Haulage

Land application of biosolids from the Southampton STP is contracted to Bartel’s Environmental Inc. and typically occurs twice a year, once in the spring and once in the fall. Haulage occurred in November 2021. There is no more expected haulage scheduled until the spring of 2022.

As required by the Nutrient Management Act, chemical analyses of the digester contents will be completed and the results will be sent to the contractor prior to haulage and spreading. Samples will be taken during biosolids haulage and sent for chemical analyses.

Agriculture, Food and Rural Affairs (OMAFRA) approved Non-Agricultural Source Material Plans (NASM Plans) and C of As based on Ontario Regulation 338/09 made under the Nutrient Management Act, 2002. NASM Plans under the Nutrient Management Act are issued to the owner (farmer) who is responsible for managing the plan with assistance from the NASM Plan Developer.

Volume of Biosolids

Site	Volume of Biosolids (m ³)	Hauler	Haulage Dates
23698	836	Bartel’s Environmental	May 10 & 11, 2021
23232	484	Bartel’s Environmental	May 12, 2021
23260	1,584	Bartel’s Environmental	November 8, 9 & 11, 2021

1.3 Reportable Events

There were no reportable events during the period of time covered by this report. Refer to the table below for more details.

2021	Date (yyyy/mm/dd)	Event	Details
January	n/a	n/a	n/a
February	n/a	n/a	n/a
March	n/a	n/a	n/a
April	n/a	n/a	n/a
May	n/a	n/a	n/a
June	n/a	n/a	n/a
July	n/a	n/a	n/a
August	n/a	n/a	n/a
September	n/a	n/a	n/a
October	n/a	n/a	n/a
November	n/a	n/a	n/a
December	n/a	n/a	n/a

1.4 Report Submissions

A summary of the reports submitted by OCWA on behalf of the Municipality are summarized in the table below:

Report	Submission Frequency	Submit To	Submission Date	Next Report Due
Annual Performance Report	Annual (March 31 st)	MECP – Water Supervisor	March 31, 2021 (2020 Report)	March 31, 2022 (2021 Report)
Discharge Data Reports	45 days after the Quarter	MECP	February 15, 2021 (2020 Q4) May 15, 2021 (2021 Q1) August 15, 2021 (2021 Q2) November 15, 2021 (2021 Q3)	February 15, 2022 (2021 Q4)
Monitoring Reports – Wastewater Systems Effluent Regulation (WSER)	45 days after the Quarter	Environment Canada – Effluent Regulatory Reporting Information System (ERRIS)	February 11, 2021 (2020 Q4) May 12, 2021 (2021 Q1) August 12, 2021 (2021 Q2) November 5, 2021 (2021 Q3)	February 15, 2022 (2021 Q4)

1.4.1 Annual Performance Report

An Annual Performance Report is submitted as required by the Certificate of Approval for the Southampton STP within 90 days following the end of the period being reported upon. The most recent Annual Performance Report was submitted as per C of A 3-1216-88-947. The following items are required to be included in the report:

- (a) a summary and interpretation of all monitoring data and a comparison to the effluent limits including an overview of the success and adequacy of the Works;
- (b) a comprehensive interpretation of all monitoring data and analytical data collected relative to the works during the reporting period and a comparison to the effluent quality and quantity criteria described
- (c) a summary of effluent quality assurance or control measures taken during the reporting period
- (d) summary of all maintenance carried out on any major structure, equipment, apparatus, or mechanisms that form part of the facility during the reporting period
- (e) the operating problems encountered and corrective actions taken during the reporting period
- (f) a summary of any proposed alteration, extension or replacement in the process of operations of the sewage treatment plant to be completed over the next reporting period which may require approval under the Ontario Water Resources Act
- (g) tabulation of the volume of sludge generated in the reporting period and an outline of anticipated volumes to be generated over the next reporting period
- (h) outline of the sludge handling methods and disposal areas to be utilized over the next reporting period;
- (i) an evaluation of the calibration and maintenance procedures conducted on all monitoring equipment
- (j) evaluation for the need for modifications to the Southampton Sewage Treatment Plant to improve performance and reliability and to minimize upsets and bypasses

1.4.2 Discharge Data Report (MECP)

The Ontario Clean Water Agency (OCWA) has an agreement with the MECP to submit quarterly discharge data for all OCWA operated municipal sewage treatment facilities 45 days at the end of each quarter. Monitoring data is submitted via the Ministry of Environment Wastewater System (MEWS). The MECP stores these reports in a shared location where MECP Inspectors can obtain and review them. There are no limits/objectives for the quarterly Discharge Data Report.

1.4.3 Monitoring Report (WSER)

A monitoring report required under the Wastewater Systems Effluent Regulation (WSER) is submitted on a quarterly basis to the Government of Canada via the Effluent Regulatory Reporting Information System (ERRIS). The quarterly monitoring report requires that the following information be reported for the Southampton STP:

- Number of days effluent was deposited
- Total volume of effluent deposited
- Average CBOD (limit of 25 mg/L)
- Average concentration of suspended solids (limit of 25 mg/L)

1.5 Third Party Inspections & Results

An MECP Inspection was performed on March 21, 2019. On April 12, 2019 the inspection report was issued and no orders, no non-compliance issues and no recommendations were identified.

2. Operations & Maintenance

2.1 Major & Unscheduled Maintenance Summary

2021	Maintenance Summary
January	Lifted supernatant pump #2 after multiple faults for inspection. Determined pump no longer functional and ordered two new pumps. Vac truck taken to Works for annual inspection Inspected drive components on aeration ditch #2 after persistent belt squealing noise. Ordered new belts and returned to service. Persistent failure of RAS #3. RAS #3 bypass was opened and removed from service for inspection. Replaced old light fixture above grit channel with new LED fixture provided by ToSS electrician. Removed grid coupling from RAS #3 pump and drive motor to determine cause of faults and motor condition. Replaced drive and drive sheave on aeration ditch #2 aeration brush rotor after squealing noise persisted. Replaced broken retaining rod on aeration ditch #1 drive assembly safety cage. Facility perimeter fence front gate damaged. Replaced RAS #3 pump with refurbished pump (previously RAS#1) and packaged up RAS #3 pump to be sent away for refurbishment.
February	Took old RAS pump #3 to Advanced Pump Repair for refurbishment Coupling on new RAS pump #3 loose. Cleaned, inspected, greased and returned to service. Autodialer issues causing a facility alarm (clarifier #1 drive fault) to go acknowledged. Identified issue as bad phone line issues resulting in the operators being unable to interact with the autodialer program. Replaced 6" intake valve ahead of RAS pump #1. Replaced 6" eccentric plug valve between RAS #1 and #2. Facility drinking water heater replaced due to defective valve and age of unit.
March	Replaced pump "on" float switch in the scum pit with the assistance of ToSS electrician. Replaced pump #1 rotating assembly with spare unit at pump station #1. Attached drive shaft to new rotating assembly. Installed new seal flush line on pump #1 at pump station #1. Drained, scrubbed, and power washed entire effluent and U.V. channel. Set impeller and head wear ring clearances to specification on pump #1 at pump station #1. Replaced sample chamber seals on influent and effluent auto sampler at the Southampton WPCP lab. Set cartridge seal on pump #1 at pump station #1.
April	New supernatant pump installed Pump Station #4 flow meter wires tightened in local controller Cleaned out and inspected all RAS/WAS pump discharge check valves Replaced sludge loading pump #2 discharge 4" plug valve Tightened electrical wiring into junction feeding the grit channel lighting system Vac'd out air relief valve chambers on the sewage collection system Completed brush rotor gear reducer oil changes and component inspections
May	Assisted Bartel's with hauling stored sludge Replaced two lighting fixtures on exterior of control building Vac'd water out of ARV chambers on Hwy 21 and South Rankin Street, and Grey Street Troubleshoot flow meter at pump station #4 Removed 4" sludge loading plug valve Ventilation fan at pump station #5 replaced New 4" sludge loading valve installed Replaced outer most packing ring on RAS #1 seal
June	Replaced cross collector motor on clarifier #1 Replaced grid coupling connecting cross collector motor on clarifier #1 Replaced broken air diffuser arm in holding tank #4 Replaced cross collector grid coupling on clarifier #2 Replaced cross collector motor on clarifier #2 with motor removed from service on cross collector #1 Inspected clarifier #2 auger and mechanical components for obstructions and condition Low coolant alarm noted on genset at pump station #2. Coolant topped up. Cleaned grit from floor and FOG accumulation from walls of wet well #4 Checked ARV chamber in collection system for damage. Removed two packing rings from seal on RAS/WAS pump #1 for inspection Vacuumed out both #1 and #2 drive pit drains. Replaced aeration rotor #1 drive belts
July	Replaced sump pump Replaced ditch #1 aerator VFD cooling fan

	<p>New float switch installed in wet well #5 Installed repaired bar screen at pump station #1 Lab vacuum pump rebuilt Dialers reprogrammed to include an additional phone line on call out list VFD control pad on RAS #1 replaced Changed oil on clarifier #3 chain and flight gear reducers Replaced air filters in air handling unit</p>
August	<p>Replaced two packing rings in RAS pump #1 Holding tank #1 internal components inspected Replaced plug valve connecting holding tank #1 to 30 hp scum pump Changed dialer programming at Turner Street to reduce redundant dialing out for known issues Turner Street voltage turned up by power utility to assist in low utility voltage issues Began organizing for repair for analog outputs on pump station #4 flow meter altometer Cleaned and inspected rotor</p>
September	<p>Ditch #1 dissolved oxygen probe replaced Ditch #1 drive components greased and drive belts replaced Removed broken float switch from PS #5 and put temporary jumper wire to allow pumps to operate Exercised isolation valves at pump station #2 for tie in to new force main Worked with Cummins to service generator at Turner Street control station Shut down and re-activated PS #2 for ToSS and contractors to tie in new force main New Dialer installed at Turner St control station Pump station #3 re-activated and tested Replaced inboard bearing on brush rotor shaft and pillow block assembly in aeration ditch #1</p>
October	<p>Fixed drive component housing on ditch #2 from rattling. Indus Controls on site to troubleshoot altometer at pump station #4. Back up UPS unit replaced at Turner Street Control. Changed out faulty light fixture above man door of pump station #3 building. Thompson Machine Millwrighting on site to replace outboard bearing on ditch #1. Replaced 10" to 6" eccentric reducer, 10" Victaulic coupling and gasket, and 6" gasket on pump #1 at PS #1. Main gate at Southampton WPCP adjusted. Assisted OCWA UPIT team with installation of new panel and new cellular communication antenna. Installed rebuilt RAS/WAS pump. New battery installed on the Turner Street Control building back up genset. Float switches at pump station #3 cleaned. Replaced belts on ditch #1 drive.</p>
November	<p>Bartels on site hauling sludge Ditch #1 and #2 D.O. probes lifted and inspected Removed RAS/WAS pump #1 after several "TOL" (Timed Overload) fault messages Shut off flush system at pump station #4 Began removing old stair caps and risers at WPCP main facility going up to the main office/break room Installed new Lolo float switch in wet well of pump station #5 Lifted all float switches for cleaning and inspection</p>
December	<p>Removed volute from RAS pump #1 to inspect impeller and clear obstructions SPD on site for annual gas monitor calibrations Exposed diaphragms and cleaned check valves on both alum pumps Reassembled and installed RAS pump #1 Began transferring contents of ditch #2 for clean out Drive belt on ditch #1 rotor squealing, shut down and inspected belt</p>

Refer to Appendix A and Section 2.2 for details regarding the major and unscheduled maintenance performed during the reporting period.

2.2 Call-Ins

Number of call-ins:

2021	# of Call-Ins	Due to
January	0	n/a
February	3	Generator Running, Power Failure
March	0	n/a
April	4	Blower Fault, RAS VFD Failure, Pump Fault, High Temperature Alarm
May	1	Ran diesel generators
June	8	Turner St Generator Running – Low Voltage (7), Phone Line Fail Alarm
July	13	Turner St Generator Running – Low Voltage (13)
August	18	Turner St Generator Running – Low Voltage (16), Power Bump (2)
September	1	Power Outage
October	0	n/a
November	1	RAS Pump Fault
December	4	Power Outage, RAS Pump Fault, Aerator Failure, General Alarm

Refer to Appendix B for a detailed list of call-ins.

2.3 Community Complaints

January

No community complaints related to wastewater were received by OCWA staff.

February

No community complaints related to wastewater were received by OCWA staff.

March

No community complaints related to wastewater were received by OCWA staff.

April

No community complaints related to wastewater were received by OCWA staff.

May

21 Responded to odour complaint down by pump station #5. Poured deodorizer down wet well at station, and down the man hole at Oak Street and Blanchfield. Ventilation fan at pump station #5 wet well not working. Notified ToSS electrician. Deodorizer was poured down wet well daily by operators between the time the odour complaint was issued and the fan motor was fixed on the 25th.

June

No community complaints related to wastewater were received by OCWA staff.

July

No community complaints related to wastewater were received by OCWA staff.

August

No community complaints related to wastewater were received by OCWA staff.

September

No community complaints related to wastewater were received by OCWA staff.

October

No community complaints related to wastewater were received by OCWA staff.

November

No community complaints related to wastewater were received by OCWA staff.

December

No community complaints related to wastewater were received by OCWA staff.

3. Health & Safety

3.1 Incidents

- Number of Health & Safety Incidents Reported = 0

2021	Health & Safety Incidents	
	# Reported	Details
January	0	n/a
February	0	n/a
March	0	n/a
April	0	n/a
May	0	n/a
June	0	n/a
July	0	n/a
August	0	n/a
September	0	n/a
October	0	n/a
November	0	n/a
December	0	n/a

3.2 Training

The following safety topics/training were discussed with staff:

2021	Topics
January	Winter Driving
February	COVID Reminders
March	Mental Wellness Reminders
April	Distracted Driving
May	Occupational Health Testing
June	Mental Wellness Reminders
July	OCWA's OHSS Resource Portal
August	Back to School Reminders
September	Don't Walk By & Near Miss Programs
October	COVID Reminders
November	Housekeeping
December	Slips and Trips

Appendix A: Detailed Major & Unscheduled Maintenance

January

- 05** Lifted supernatant pump #2 after multiple faults for inspection. Determined pump no longer functional and would require replacement. Ordered two new pumps to replace supernatant pump #1 and #2.
- 06** Vac truck taken to Works for annual inspection
- 08** Inspected drive components on aeration ditch #2 after persistent belt squealing noise. Assessed components to be in fair condition. Rubber build up on sheaves and slight cracking on belts. Ordered new belts and prepped spare sheaves for use if squealing continues. Returned to service. Squealing subsided.
- 09** Persistent failure of RAS #3. After multiple attempts to clear pump, and subsequent faults. RAS #3 bypass was opened and removed from service for inspection during regular shift.
- 11** Replaced old light fixture above grit channel with new LED fixture provided by ToSS electrician.
- 13** Removed grid coupling from RAS #3 pump and drive motor. Determined faults caused from stiff operation of pump. Motor condition good.
- 18** Replaced drive and drive sheave on aeration ditch #2 aeration brush rotor after squealing noise persisted. Re-installed old belts since new belts had not arrived yet. Belt condition still good. Changed drive gear reducer oil with 220 gear oil, gave drive motor 2 shots of Polyrex electric motor grease on inboard and outboard bearings. Running checks good.
- 19** Replaced broken retaining rod on aeration ditch #1 drive assemble safety cage.
- 21** Facility perimeter fence front gate damaged. Repositioned as best we could for the time being. Will complete repairs in the spring.
- 25** Replaced RAS #3 pump with refurbished pump (previously RAS#1) by Advanced Pump Repair. Operation team installed refurbished pump and completed running checks. Checks good. Packaged up RAS #3 pump to be sent away for refurbishment.

February

- 02** Took old RAS pump #3 to Advanced Pump Repair for refurbishment
- Coupling on new RAS pump #3 loose. Cleaned, inspected, greased and returned to service.
- 09** Autodialer issues causing a facility alarm (clarifier #1 drive fault) to go acknowledged. ToSS electrician on site to assist.
- 10** ToSS electrician and SCADA integrator on site to continue working on alarm dialer issue. Identified issue as bad phone line issues resulting in the operators being unable to interact with the autodialer program.
- 11** Replaced 6" intake valve ahead of RAS pump #1 as part of a continuous improvement project. Valve identified for replacement due to age and difficult operational characteristics.
- 16** Replaced 6" eccentric plug valve between RAS #1 and #2 (RAS pump by-pass valve) as part of a continuous improvement project. Valve identified for replacement due to age and difficult operational characteristics.
- 22** Facility drinking water heater replaced after defective valve and age of unit identified during a routine facility health and safety inspection by operations staff.

March

- 03** Replaced pump "on" float switch in the scum pit with the assistance of ToSS electrician.
- 04** Replaced pump #1 rotating assembly with spare unit at pump station #1.
Attached drive shaft to new rotating assembly.
- 08** Installed new seal flush line on pump #1 at pump station #1.
- 10** Drained, scrubbed, and power washed entire effluent and U.V. channel.
- 12** Set impeller and head wear ring clearances to specification on pump #1 at pump station #1.
- 15** Replaced sample chamber seals on influent and effluent auto sampler at the Southampton WPCP lab.
Set cartridge seal on pump #1 at pump station #1. Pressurized and returned to service.

April

- 06** New supernatant pump installed to replace supernatant pump #2 with assistance from ToSS electrician
- 09** Pump Station #4 flow meter not communicating with Turner St. control station. Tightened wires in local controller. Communication restored and flow information now visible at Turner Street.
- 12** Cleaned out and inspected all RAS/WAS pump discharge check valves and created follow up work orders for issues noticed
Replaced sludge loading pump #2 discharge 4" plug valve with new valve. Old valve was inoperable.
- 19** Tightened electrical wiring into junction feeding the grit channel lighting system (Issue identified during ESA inspection and ToSS electrician)
- 20** Vac'd out air relief valve chambers on the sewage collection system at the corner of Edward and Augusta Street, and along Grey Street.
- 21** Completed brush rotor gear reducer oil changes and component inspections

May

- 10** Assisted Bartel's with hauling stored sludge from facility holding tanks
- 11** Replaced two lighting fixtures on exterior of control building by main entrance with new LED light provided by ToSS electrician
- 18** Vac'd water out of ARV chambers on Hwy 21 and South Rankin Street, and Grey Street
- 20** Troubleshoot flow meter at pump station #4 after it stopped sending measurements to Turner Street control
Removed 4" sludge loading plug valve after being identified for replacement due to difficult operation
- 25** Ventilation fan at pump station #5 replaced by ToSS electrician.
- 26** New 4" sludge loading valve installed
- 31** Replaced outer most packing ring on RAS #1 seal due to excessive leaking

June

- 01** Replaced cross collector motor on clarifier #1 after noting above normal operating temperature on the motor during annual inspection of drive motors.
Replaced grid coupling connecting cross collector motor on clarifier #1 with new grid coupling. Old grid coupling was damaged and obsolete.
- 03** Replaced broken air diffuser arm in holding tank #4.
- 04** Replaced cross collector grid coupling on clarifier #2 with new grid coupling. Old grid coupling was damaged and obsolete.
Replaced cross collector motor on clarifier #2 with motor removed from service on cross collector #1. Clarifier #2 motor was damaged beyond repair the day before by water. New motors ordered as spares.
Inspected clarifier #2 auger and mechanical components while empty for obstructions and condition. Checks good.
- 16** Low coolant alarm noted on genset at pump station #2. Coolant topped up.
- 21** Cleaned grit from floor and FOG accumulation from walls of wet well #4 after noticing build up.
Checked ARV chamber in collection system for damage.
- 25** Removed two packing rings from seal on RAS/WAS pump #1 for inspection. Packing in acceptable condition.
Repacked stuffing box and tightened seal. Checks good.
- 28** Aeration rotor #1 drive pit not draining. Vacuumed out both #1 and #2 pit drains.
- 29** Replaced aeration rotor #1 drive belts with new belts from stock after persistent belt squeal noted. Old belts were disposed of.

July

- 05** Replaced sump pump at pump station #5 flow meter chamber after noticing it not working on July 3rd
- 08** Ditch #1 aerator VFD cooling fan not functioning and causing overheating. Contacted ToSS electrician and replaced defective cooling fan.
- 12** Cleaned fats, oils and greases off of walls of wet well #5. Inspected internal components. Found broken low level float switch during inspection. New float switch supplied by ToSS electrician and installed.
- 13** Installed repaired bar screen at pump station #1
- 19** RAS pump #1 VFD fault "stuck key". Unable to adjust pump speed. Traced issue to the VFD control touch pad. ToSS electrician sourced replacement. VFD taken out of service until new replacement installed.

- 20 Lab vacuum pump rebuilt with new veins and gaskets.
On call phone line not working. Station #1, #3, and Turner Street Control dialers reprogrammed to include an additional phone line on call out list. Phone hubs picked up to provide additional phone lines. Checked dialers for functionality.
- 22 VFD control pad on RAS #1 replaced with new control pad. Returned the VFD to service.
Replaced lab auto sampler hosing
Changed oil on clarifier #3 chain and flight gear reducers.
- 23 Leak around the 6" side of the 10" to 6" reducer on pump station #1 pump #1 discharge. Pump isolated to prevent additional leakage. Began sourcing parts to repair and replacement.
- 26 Replaced air filters in air handling unit in blower room building of WPCP.

August

- 05 Replaced two packing rings in RAS pump #1 packing gland to slow leak from stuffing box
- 09 Holding tank #1 internal components inspected
Replaced 4" eccentric plug valve connecting holding tank #1 to 30 hp scum pump
- 11 Worked with ToSS electrician and Integrator to change dialer programming at Turner Street to reduce redundant dialing out for known issues.
Turner Street voltage turned up by power utility to assist in low utility voltage issues. OCWA monitored station after increase to ensure operation of equipment.
- 26 Confirmed analog outputs on pump station #4 flow meter altometer not sending signal with the assistance of ToSS electrician. Began organizing for repair.
- 31 Knocking noise noticed against housing for brush rotor in ditch #2. Rotor shut down and noise investigated. Rags wrapped rotor shaft. Cleaned and inspected rotor – returned to service

September

- 01 Ditch #1 dissolved oxygen probe not reading correct. Lifted probe from ditch. Probe cap broken. Replaced with spare and returned to service.
- 02 Ditch #1 drive components squealing. Greased inboard and outboard bearing. Replaced drive belts. Rebalanced motor platform. Checked all other components. Returned to service.
Inspected float switch due to persistent low level alarm from pump station #5. Removed to source a replacement and put a temporary jumper wire to clear the alarm and allow the pumps to operate.
Exercised isolation valves at pump station #2 in preparation for tie in to new force main this month.
- 07 Worked with Cummins to service generator at Turner Street control station
- 09 Shut down and re-activated pump station #2 for ToSS and contractors to tie in new force main from the station.
- 10 New Dialer installed at Turner St control station after MODBUS failure alarm noticed by operators during routine checks. ToSS electrician and Integrator from Selectra on site to install and program the new dialer.
- 13 Pump station #3 dialer not alarming out during routine checks. ToSS electrician and operations staff troubleshoot. Phone line was found to be deactivated. Re-activated and tested. Checks good.
- 28 Took aeration ditch #1 offline to have Thompson Machine Millwrighting service remove damaged old inboard bearing on brush rotor shaft, and replace with new bearing and pillow block assembly.

October

- 04 Fixed drive component housing on ditch #2 from rattling.
- 08 Indus Controls on site to troubleshoot altometer at pump station #4. Tightened wires on 4-20 signal output. Signal output returned to Turner Street Control.
- 12 Back up UPS unit replaced at Turner Street Control.
- 14 Changed out faulty light fixture above man door of pump station #3 building.
Thompson Machine Millwrighting on site to replace outboard bearing on ditch #1. Aeration ditch shut down in the a.m. and returned to service in the p.m. after work was completed.
- 18 Replaced 10" to 6" eccentric reducer on intake side of pump #1 at pump station #1, along with 10" Victaulic coupling and gasket, and 6" gasket to repair a leak on the 6" side discovered earlier. Pressure checks good and pump returned to service.

- 19 Main gate at Southampton WPCP adjusted to prevent one side from dragging on the ground when opening/closing.
- 20 Assisted OCWA UPIT team with the removal of old Outpost 5 panel, and the installation of new panel. New cellular communication antenna installed on the south side of main control building at Southampton WPCP.
- 21 Installed rebuilt RAS/WAS pump in the RAS/WAS pump #1 position. Removed old RAS/WAS pump #1 for repair. Completed axial and angular shaft alignments and running checks.
- 26 New battery installed on the Turner Street Control building back up genset after the Cummins Technician identified the old battery to be weak. Completed running checks.
- 27 Float switches at pump station #3 cleaned to address an imbalance in pump run times.
- 28 Replaced belts on ditch #1 drive to address persistence squealing noise. Checked gear reducer oil and topped up to overflow plug.

November

- 08 Bartels on site hauling sludge
- 15 Ditch #1 and #2 D.O. probes lifted and inspected. Caps removed, cleaned, and inspected. Checks good and returned to service. Verified against hand held.
Removed RAS/WAS pump #1 after several "TOL" (Timed Overload) fault messages. Removed pump volute and inspected for obstructions. Operated pump driven components to assess operations. Greased radial and thrust bearings. Consulted with pump repair company to troubleshoot. Blind flanged off clarifier #1 at pump intake side and opened bypass to RAS/WAS pump #2
- 16 Shut off flush system at pump station #4
Began removing old stair caps and risers at WPCP main facility going up to the main office/break room. Being replaced with new vinyl tread caps and risers.
- 23 Installed new Lolo float switch in wet well of pump station #5
- 25 FOG binding up float switches at pump station #2, causing duty and back up pumps to come online at the same time. Lifted all float switches for cleaning and inspection. Returned to service and completed running checks. All checks good.

December

- 1 Removed volute from RAS pump #1 to inspect impeller and clear obstructions. Shaft still difficult to spin despite having volute off and impeller exposed. Contacted Advanced Pump Repair to assist with trouble shooting.
- 2 SPD on site for annual gas monitor calibrations
- 13 Exposed diaphragms and cleaned check valves on both alum pumps. Checked drive belts and motors. Changed oil with SAE 30 detergent less.
- 14 Reassembled and installed RAS pump #1 at the direction of Advanced Pump Repair to assess further.
- 17 Began transferring contents of ditch #2 to ditch #1 in preparation for ditch #2 clean out
- 19 Drive belt on ditch #1 rotor squealing persistently. Shut down and inspected belt. Condition was good with some slack in belts. Motor platform slightly out of balance. Rebalanced platform and tightened belts. Returned to service. Running checks good.
- 20 Bartels Environmental on site to begin cleaning out ditch #2
- 22 Brought ditch #2 back into service. Cleaned channels and equipment downstream at plant while flow was reduced/stopped as the ditch filled.

Appendix B: List of Call-Ins

DATE	TIME	DESCRIPTION
February 6, 2021	12:20	Generator running at Turner St Station
February 7, 2021	18:15	Power Failure at Turner St Station
February 8, 2021	18:20	Generator running at Turner St Station
April 7, 2021	22:21	Blower Fault
April 7, 2021	22:21	RAS VFD failure
April 7, 2021	23:02	Pump Station #5 Pump #3 soft start fault pump
April 8, 2021	16:30	Pump Station #5 High PLC Temperature Alarm
May 28, 2021	22:00	Ran diesel generators for planned Westario power outage
June 6, 2021	12:10	Turner St Generator Running – Low Voltage
June 7, 2021	16:00	Turner St Generator Running – Low Voltage
June 8, 2021	16:00	Turner St Generator Running – Low Voltage
June 9, 2021	17:00	Turner St Generator Running – Low Voltage
June 10, 2021	16:00	Turner St Generator Running – Low Voltage
June 23, 2021	20:45	Phone Line Fail Alarm
June 27, 2021	11:30	Turner St Generator Running – Low Voltage
June 29, 2021	17:00	Turner St Generator Running – Low Voltage
July 4, 2021	15:10	Turner St Generator Running – Low Voltage
July 5, 2021	16:15	Turner St Generator Running – Low Voltage
July 6, 2021	17:15	Turner St Generator Running – Low Voltage
July 15, 2021	11:30	Turner St Generator Running – Low Voltage
July 16, 2021	16:45	Turner St Generator Running – Low Voltage
July 17, 2021	18:00	Turner St Generator Running – Low Voltage
July 19, 2021	18:30	Turner St Generator Running – Low Voltage
July 24, 2021	18:00	Turner St Generator Running – Low Voltage
July 25, 2021	16:30	Turner St Generator Running – Low Voltage
July 26, 2021	16:15	Turner St Generator Running – Low Voltage
July 27, 2021	18:00	Turner St Generator Running – Low Voltage
July 28, 2021	16:30	Turner St Generator Running – Low Voltage
July 29, 2021	18:00	Turner St Generator Running – Low Voltage
August 3, 2021	18:00	Turner St Generator Running – Low Voltage
August 4, 2021	17:00	Turner St Generator Running – Low Voltage
August 5, 2021	17:30	Turner St Generator Running – Low Voltage
August 6, 2021	17:15	Turner St Generator Running – Low Voltage
August 7, 2021	11:30	Turner St Generator Running – Low Voltage
August 7, 2021	01:15	Power Bump
August 8, 2021	16:45	Turner St Generator Running – Low Voltage
August 9, 2021	16:00	Turner St Generator Running – Low Voltage
August 10, 2021	15:30	Turner St Generator Running – Low Voltage
August 12, 2021	17:30	Turner St Generator Running – Low Voltage
August 21, 2021	14:00	Turner St Generator Running – Low Voltage
August 22, 2021	12:30	Turner St Generator Running – Low Voltage
August 23, 2021	18:00	Turner St Generator Running – Low Voltage
August 24, 2021	16:45	Turner St Generator Running – Low Voltage
August 26, 2021	16:00	Turner St Generator Running – Low Voltage
August 27, 2021	13:00	Turner St Generator Running – Low Voltage
August 28, 2021	20:45	Power Bump
August 29, 2021	12:30	Turner St Generator Running – Low Voltage
September 7, 2021	16:30	Power Outage
November 14, 2021	02:45	RAS Pump Fault Alarm
December 11, 2021	14:00	Power Outage
December 17, 2021	06:00	Aerator Failure

Town of Saugeen Shores
Southampton Sewage Treatment Plant
Performance Report: January 1, 2021 to December 31, 2021

December 19, 2021	17:45	RAS Pump Fault
December 20, 2021	23:00	General Alarm at Turner St Station