

TOWN OF OKOTOKS

WASTEWATER SYSTEM

2020 ANNUAL REPORT



Approval # 1028-03-00

TABLE OF CONTENTS

1.	Wastewater System Introduction.....	3
2.	Town of Okotoks Quality Assurance Program.....	3
3.	Summary of WWTP Untreated Wastewater Influent: Monthly Summaries; BOD/TSS/Volume; Approval 1028-03-00; Table 6-1	4
4.	Summary of WWTP Untreated Wastewater Influent: Monthly Summaries; Ammonia/Total Phosphorus; Approval 1028-03-00; Table 6-1	6
5.	Summary of WWTP Parameters: Treated Wastewater Effluent: Monthly Summaries; BOD/CBOD/TSS/Volume; Approval 1028-03-00; Table 6-1.....	8
6.	Summary of WWTP Parameters: Treated Wastewater Effluent: Monthly Summaries; Ammonia/Total Phosphorus/Acute Lethality; Approval 1028-03-00; Table 6-1.....	11
7.	Summary of WWTP Parameters: Treated Wastewater Effluent: Monthly Summaries; Nitrogen Analysis; Approval 1028-03-00;	12
8.	Summary of WWTP Parameters: Total and Faecal Coliforms: Monthly Summaries; Approval 1028-03-00; Table 6-1	14
9.	Summary of WWTP Parameters: Sludge/Partially Composted Sludge: Monthly Summaries; Approval 1028-03-00; Table 6-1	16
10.	Chart – WWTP: Five Year Biosolids Production	17
11.	Summary of Incidents Reported to AEP – 2020	17
12.	Summary of Treated Wastewater used for Irrigation – 2020	17
13.	WWTP Uncommitted Hydraulic Reserve Capacity – 2020-2024	18
14.	Summary of Chemicals Used - 2020.....	19
15.	Summary of WSER Testing – 2020.....	20
16.	Summary of Operational Highlights & Problems	21
17.	Operator Certification.....	25
18.	Supervising Operator	26

1. Wastewater System Introduction

The Town of Okotoks operates and maintains the wastewater system in Okotoks the current wastewater treatment facility is a Level IV Tertiary BNR (biological nutrient removal) treatment process with continuous discharge to the Sheep River.

2. Town of Okotoks Quality Assurance Program

The Town of Okotoks Water Services Quality Assurance Program for the site is intended to be part of a larger overall Quality Management System which ensures that the utility:

- can demonstrate that it can consistently meet regulatory requirements
- can demonstrate that it can meet internal operational requirements
- can enhance customer protection through effective application of a quality system
- Continuously improves the overall quality system.

The Town of Okotoks QA program is in place to ensure that water and wastewater quality data is reliable and technically (and legally) defensible, data is reported correctly, violations are reported in a timely manner, approval requirements are met, and water or wastewater quality problems are responded to effectively. For external and internal audit purposes the Town of Okotoks must be also be able to demonstrate that:

- it is doing what it says it is doing in all of its operations and it is has the documentation to back this claim up,
- It is exercising due diligence by requiring that a reasonable level of quality assurance is in place.
- Has identified risks to the utility and has prepared remedial action plans for improvements.

Components of the QA Program

1. Monthly Reports
2. Analysis of daily QA/QC Proficiency Testing samples.
3. Review of monthly and annual utility performance reports.
4. Tracking and review of site incident reports.
5. The plan and procedures will be at least on an annual basis, and amended as necessary.

3. Summary of WWTP Untreated Wastewater Influent: Monthly Summaries; BOD/TSS/Volume; Approval 1028-03-00; Table 6-1

Approval # 1028-03-00; Table 6-1: Monitoring - Town of Okotoks Wastewater System												
Untreated Wastewater (Raw Influent) : BOD ₅ - TSS - VOLUME												
Parameter	Units of Measure	Frequency	Sample Type	Sampling Location		Jan	Feb	Mar	Apr	May	Jun	Jul
BOD ₅	mg/L	Once per day	Composite	Entering WWTP	MIN	323	355	363	331	293	252	209
					MAX	561	441	567	618	551	491	555
					AVG	406	398	425	413	375	359	359
TSS	mg/L	Once per day	Composite	Entering WWTP	MIN	284	288	284	244	224	216	184
					MAX	396	344	760	424	392	444	460
					AVG	318	315	347	316	293	307	261
VOLUME	m ³ /day	Once per day	Continuous	Entering WWTP	MIN	6116	6107	6237	6506	6760	7220	6662
					MAX	7303	7140	7292	7884	9053	9154	10067
					AVG	6524	6509	6707	7066	7426	7738	7508
					TOTAL	202233	188753	207905	211985	230209	232142	232736

BOD₅ - Biochemical Oxygen Demand
TSS - Total Suspended Solids

**Approval # 1028-03-00; Table 6-1: Monitoring - Town of Okotoks Wastewater System
Untreated Wastewater (Raw Influent) : BOD₅ - TSS - VOLUME**

Parameter	Units of Measure	Frequency	Sample Type	Sampling Location		Aug	Sep	Oct	Nov	Dec	Annual
BOD ₅	mg/L	Once per day	Composite	Entering WWTP	MIN	318	326	319	289	366	209
					MAX	454	677	602	438	660	677
					AVG	376	395	410	390	438	395
TSS	mg/L	Once per day	Composite	Entering WWTP	MIN	264	264	128	228	304	128
					MAX	332	488	580	420	484	760
					AVG	295	322	311	310	356	313
VOLUME	m ³ /day	Once per day	Continuous	Entering WWTP	MIN	6383	6248	6043	5817	6140	5817
					MAX	7230	7366	7328	8157	7159	10067
					AVG	6630	6612	6484	6637	6513	6863
					TOTAL	205529	198372	201003	199121	201916	2511904

**BOD₅ - Biochemical Oxygen Demand
TSS - Total Suspended Solids**

4. Summary of WWTP Untreated Wastewater Influent: Monthly Summaries; Ammonia/Total Phosphorus; Approval 1028-03-00; Table 6-1

Approval # 1028-03-00; Table 6-1: Monitoring - Town of Okotoks Wastewater System Untreated Wastewater (Raw Influent) : AMMONIA - TOTAL PHOSPHORUS												
Parameter	Units of Measure	Frequency	Sample Type	Sampling Location		Jan	Feb	Mar	Apr	May	Jun	Jul
Ammonia - Nitrogen	mg/L	Once per week	Composite	Entering WWTP	MIN	31.1	34.0	32.0	27.7	24.2	25.7	20.7
					MAX	40.6	41.2	38.5	38.9	34.1	32.0	35.8
					AVG	37.3	37.1	35.7	32.7	29.9	29.0	30.4
Total Phosphorus	mg/L	Once per week	Composite	Entering WWTP	MIN	6.60	6.50	6.10	6.10	5.30	5.20	3.90
					MAX	7.80	7.60	7.60	8.00	7.00	10.20	6.60
					AVG	6.90	6.95	6.97	6.93	6.35	6.93	5.75

**Approval # 1028-03-00; Table 6-1: Monitoring - Town of Okotoks Wastewater System
 Untreated Wastewater (Raw Influent) : AMMONIA - TOTAL PHOSPHORUS**

Parameter	Units of Measure	Frequency	Sample Type	Sampling Location		Aug	Sep	Oct	Nov	Dec	Annual
Ammonia - Nitrogen	mg/L	Once per week	Composite	Entering WWTP	MIN	30.6	32.2	39.4	32.3	33.8	20.7
					MAX	36.5	37.3	45.2	43.5	45.7	45.7
					AVG	32.9	34.8	41.3	38.6	37.3	34.8
Total Phosphorus	mg/L	Once per week	Composite	Entering WWTP	MIN	6.00	5.50	5.20	6.30	6.80	3.90
					MAX	7.60	8.00	9.60	8.80	8.20	10.20
					AVG	6.64	7.00	7.56	7.39	7.31	6.89

5. Summary of WWTP Parameters: Treated Wastewater Effluent: Monthly Summaries; BOD/CBOD/TSS/Volume; Approval 1028-03-00; Table 6-1

Approval # 1028-03-00; Table 6-1: Monitoring - Town of Okotoks Wastewater System													
Treated Wastewater: BOD ₅ - CBOD ₅ - TSS - VOLUME													
Parameter	Units of Measure	Frequency	Sample Type	Sampling Location	Approval Limit		Jan	Feb	Mar	Apr	May	Jun	Jul
BOD ₅ MDL : 2 mg/L	mg/L	Once per day	Composite	Prior to Release	N/A	MIN	< 2.0	2.0	2.0	4.6	2.7	< 2.0	< 2.0
						MAX	12.7	8.7	9.9	13.4	14.6	6.3	4.1
						AVG	4.8	4.5	6.1	9.3	7.9	3.8	2.6
CBOD ₅ MDL : 2 mg/L	mg/L	Once per day	Composite	Prior to Release	≤ 20 mg/L	MIN	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
						MAX	3.2	3.1	3.9	4.5	6.7	3.5	2.0
						AVG	2.2	2.2	2.3	3.1	2.7	2.1	2.0
TSS MDL : 2.5 mg/L	mg/L	Once per day	Composite	Prior to Release	≤ 15 mg/L	MIN	< 2.5	< 2.5	< 2.5	3.4	< 2.5	< 2.5	< 2.5
						MAX	6.4	3.4	4.2	7.2	5.9	2.8	< 2.5
						AVG	3.1	2.5	2.7	4.6	3.4	2.5	< 2.5
VOLUME	m ³ /day	Once per day	Continuous	Prior to Release	N/A	MIN	5903	5894	6022	6191	6549	7067	6485
						MAX	6948	6834	7093	7720	8868	8884	9829
						AVG	6294	6226	6481	6889	7219	7510	7280
						TOTAL	195117	180541	200907	206656	223775	225302	225680

BOD₅ - Biochemical Oxygen Demand
 CBOD₅ - Carbonaceous Biochemical Oxygen Demand
 TSS - Total Suspended Solids

**Approval # 1028-03-00; Table 6-1: Monitoring - Town of Okotoks Wastewater System
Treated Wastewater: BOD₅ - CBOD₅ - TSS - VOLUME**

Parameter	Units of Measure	Frequency	Sample Type	Sampling Location	Approval Limit		Aug	Sep	Oct	Nov	Dec	Annual
BOD ₅ MDL : 2 mg/L	mg/L	Once per day	Composite	Prior to Release	N/A	MIN	< 2.0	< 2.0	2.0	< 2.0	< 2.0	2.0
						MAX	5.9	8.9	11.5	2.9	5.1	14.6
						AVG	3.1	3.7	4.7	2.2	3.3	4.7
CBOD ₅ MDL : 2 mg/L	mg/L	Once per day	Composite	Prior to Release	≤ 20 mg/L	MIN	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	2.0
						MAX	3.5	4.4	7.9	2.0	2.3	7.9
						AVG	2.1	2.2	3.0	2.0	2.0	2.3
TSS MDL : 2.5 mg/L	mg/L	Once per day	Composite	Prior to Release	≤ 15 mg/L	MIN	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	3.4
						MAX	3.4	3.8	6.0	< 2.5	2.7	7.2
						AVG	2.5	2.6	3.1	< 2.5	2.5	2.9
VOLUME	m ³ /day	Once per day	Continuous	Prior to Release	N/A	MIN	6190	6127	6121	5759	5300	5300
						MAX	7013	7284	7437	8071	7114	9829
						AVG	6444	6525	6545	6720	6390	6710
						TOTAL	199758	195759	202898	201586	198090	2456069

BOD₅ - Biochemical Oxygen Demand
 CBOD₅ - Carbonaceous Biochemical Oxygen Demand
 TSS - Total Suspended Solids

6. Summary of WWTP Parameters: Treated Wastewater Effluent: Monthly Summaries; Ammonia/Total Phosphorus/Acute Lethality; Approval 1028-03-00; Table 6-1

Approval # 1028-03-00; Table 6-1: Monitoring - Town of Okotoks Wastewater System Treated Wastewater: AMMONIA - TOTAL PHOSPHORUS - ACUTE LETHALITY													
Parameter	Units of Measure	Frequency	Sample Type	Sampling Location	Approval Limit		Jan	Feb	Mar	Apr	May	Jun	Jul
Ammonia - Nitrogen MDL : 0.50 mg/L	mg/L	Once per day	Composite	Prior to Release	Oct 1 - Jun 30 ≤ 10 mg/L Jul 1 - Sep 30 ≤ 5mg/L	MIN	< 0.50	< 0.50	2.60	< 0.50	< 0.50	0.50	< 0.50
						MAX	2.60	5.10	13.80	13.08	2.40	1.91	0.54
						AVG	0.73	1.93	8.8	8.1	0.8	0.6	0.50
Total Phosphorus MDL : 0.02 mg/L	mg/L	Once per day	Composite	Prior to Release	≤ 0.5 mg/L	MIN	0.04	0.04	0.08	0.03	0.11	0.09	0.07
						MAX	0.46	0.27	0.21	0.31	0.31	0.23	0.19
						AVG	0.16	0.14	0.14	0.21	0.21	0.17	0.14
Acute Lethality Using Rainbow Trout	LC50 %	Once every 3 months	Grab	Prior to Release	N/A		> 100			> 100			
NOTE: All samples tested for Acute Lethality in 2020 are reported as > 100 (Not Acutely Lethal).													

7. Summary of WWTP Parameters: Treated Wastewater Effluent: Monthly Summaries; Nitrogen Analysis; Approval 1028-03-00;

Approval # 1028-03-00; Table 6-1: Monitoring - Town of Okotoks Wastewater System													
Treated Wastewater: NITROGEN : TKN - NO ₂ NO ₃ - TN													
Parameter	Units of Measure	Frequency	Sample Type	Sampling Location	Approval Limit		Jan	Feb	Mar	Apr	May	Jun	Jul
TKN MDL : 0.05 mg/L	mg/L	Once per week	Composite	Prior to Release	N/A	MIN	1.93	2.41	5.27	5.44	2.48	1.44	1.43
						MAX	2.29	4.64	15.40	15.30	3.53	2.51	1.61
						AVG	2.10	3.35	10.73	11.87	3.03	2.07	1.53
NO ₂ - NO ₃ MDL : 0.05 mg/L	mg/L	Once per week	Composite	Prior to Release	N/A	MIN	4.38	3.49	3.88	3.80	5.92	5.41	5.66
						MAX	4.82	4.86	4.60	5.69	7.44	5.91	5.97
						AVG	4.59	4.24	4.18	4.58	6.34	5.62	5.79
TN MDL : 0.015mg/L	mg/L	Once per week	Composite	Prior to Release	≤ 15mg/L	MIN	6.55	6.07	9.87	11.13	8.52	6.89	7.27
						MAX	6.82	9.50	19.40	19.97	10.71	8.42	7.40
						AVG	6.68	7.59	14.91	16.45	9.37	7.70	7.32

TKN - Total Kjeldahl Nitrogen
 NO₂ - NO₃ - Nitrite and Nitrate Nitrogen
 TN - Total Nitrogen

Approval # 1028-03-00; Table 6-1: Monitoring - Town of Okotoks Wastewater System

Treated Wastewater: NITROGEN : TKN - NO₂ NO₃ - TN

Parameter	Units of Measure	Frequency	Sample Type	Sampling Location	Approval Limit		Aug	Sep	Oct	Nov	Dec	Annual
TKN MDL : 0.05 mg/L	mg/L	Once per week	Composite	Prior to Release	N/A	MIN	1.50	1.45	1.42	1.44	1.47	1.42
						MAX	1.85	1.99	2.56	1.91	3.19	15.40
						AVG	1.65	1.72	2.00	1.61	2.03	3.64
NO ₂ - NO ₃ MDL : 0.05 mg/L	mg/L	Once per week	Composite	Prior to Release	N/A	MIN	5.39	4.65	4.93	4.79	3.65	3.49
						MAX	6.51	6.43	7.67	7.84	6.16	7.84
						AVG	5.86	5.68	6.24	5.86	5.20	5.35
TN MDL : 0.05 mg/L	mg/L	Once per week	Composite	Prior to Release	≤ 15mg/L	MIN	6.94	6.64	7.40	6.55	6.84	6.07
						MAX	8.36	8.22	9.90	9.44	7.63	19.97
						AVG	7.50	7.41	8.23	7.47	7.23	8.99

TKN - Total Kjeldahl Nitrogen

NO₂ - NO₃ - Nitrite and Nitrate Nitrogen

TN - Total Nitrogen

8. Summary of WWTP Parameters: Total and Faecal Coliforms: Monthly Summaries; Approval 1028-03-00; Table 6-1

Approval # 1028-03-00; Table 6-1: Monitoring - Town of Okotoks Wastewater System Treated Wastewater: TOTAL & FAECAL COLIFORMS													
Parameter	Units of Measure	Frequency	Sample Type	Sampling Location	Approval Limit		Jan	Feb	Mar	Apr	May	Jun	Jul
Total Coliform	Count per 100 mL	Once per week	Grab	Prior to Release	≤ 1000 per 100 mL	MIN	< 10	< 10	< 10	< 10	< 10	< 10	< 10
						MAX	10	110	127	45	< 10	< 10	< 10
						Geometric Mean	10	26	17	15	< 10	< 10	< 10
Faecal Coliform	Count per 100 mL	Once per week	Grab	Prior to Release	≤ 200 per 100 mL	MIN	< 10	< 10	< 10	< 10	< 10	< 10	< 10
						MAX	10	18	30	36	< 10	< 10	< 10
						Geometric Mean	10	12	12	14	< 10	< 10	< 10
NOTE: Samples for coliform analysis are sent to the Provincial Health Lab on a weekly basis. Approval limit is based on the monthly geometric mean of weekly samples.													

**Approval # 1028-03-00; Table 6-1: Monitoring - Town of Okotoks Wastewater System
Treated Wastewater: TOTAL & FAECAL COLIFORMS**

Parameter	Units of Measure	Frequency	Sample Type	Sampling Location	Approval Limit		Aug	Sep	Oct	Nov	Dec	Annual
Total Coliform	Count per 100 mL	Once per week	Grab	Prior to Release	≤ 1000 per 100 mL	MIN	< 10	< 10	< 10	< 10	< 10	< 10
						MAX	10	10	100	70	< 10	127
						Geometric Mean	10	10	18	15	< 10	13
Faecal Coliform	Count per 100 mL	Once per week	Grab	Prior to Release	≤ 200 per 100 mL	MIN	< 10	< 10	< 10	< 10	< 10	< 10
						MAX	< 10	< 10	20	< 10	< 10	36
						Geometric Mean	< 10	< 10	12	< 10	< 10	11

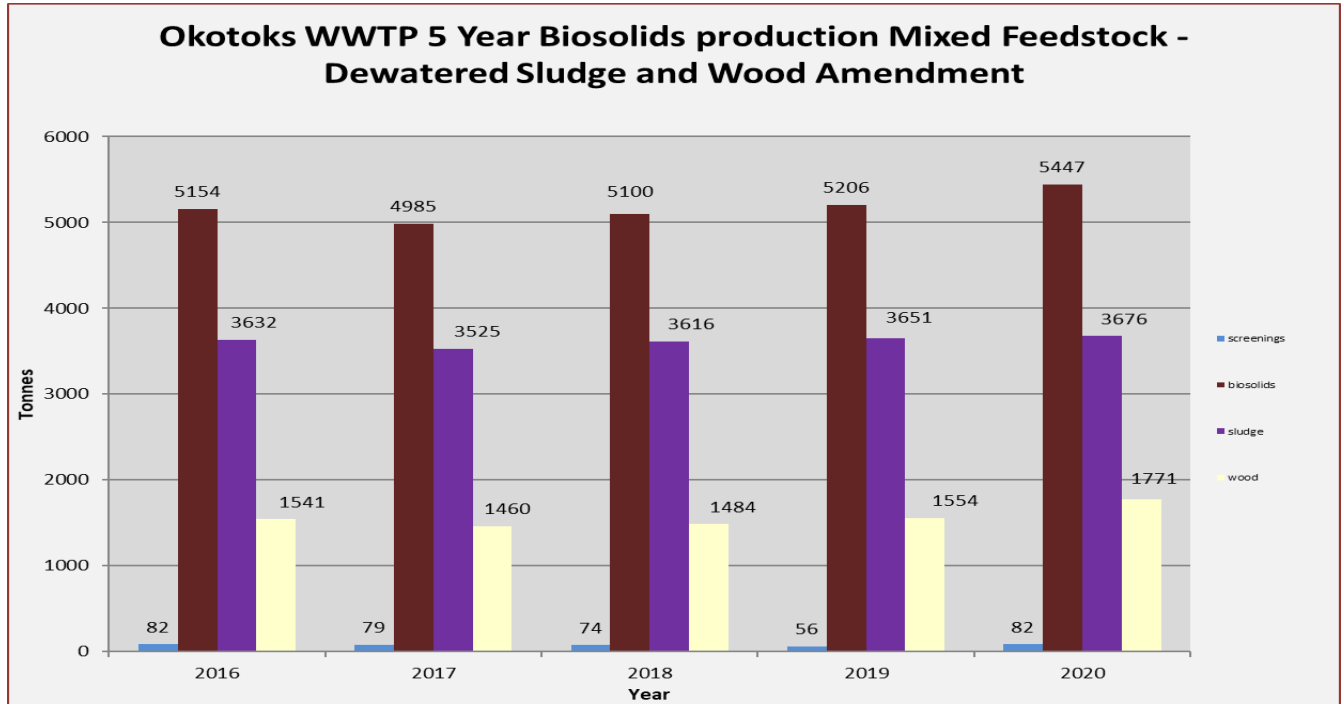
NOTE: Samples for coliform analysis are sent to the Provincial Health Lab on a weekly basis. Approval limit is based on the monthly geometric mean of weekly samples.

9. Summary of WWTP Parameters: Sludge/Partially Composted Sludge: Monthly Summaries; Approval 1028-03-00; Table 6-1

Town of Okotoks Wastewater Treatment Plant 2020 Annual Sludge Production MIN/MAX/AVG											
Month	COMPOST FEEDSTOCK						SOLIDS SHIPPED FROM WWTP				General Notes
	Dewatered Sludge TOTAL	Dewatered Sludge MIN	Dewatered Sludge MAX	Wood Shavings Total	Wood Shavings MIN	Wood Shavings MAX	Mixed Feedstock to Regional Facility TOTAL	Mixed Feedstock to Regional Facility - MIN	Mixed Feedstock to Regional Facility - MAX	Raw Screenings to Regional Landfill TOTAL	
	Metric Tonnes						Metric Tonnes				
JAN	330.6	3.9	15.3	152.1	1.6	7.2	482.7	5.5	22.4	6.1	1) Raw Screenings/Grit hauled to landfill: kept separate from Biosolids Compost. 2) All raw feedstock (dewatered sludge & sawdust) sent to approved regional compost facility - EcoAg. 3) Wood amendment supplied by Spray Lakes Sawmills.
FEB	302.0	0.0	14.1	137.0	0.0	6.5	438.9	0.0	20.6	5.6	
MAR	349.8	4.0	18.1	159.2	2.0	7.9	509.0	6.0	25.8	7.6	
APR	334.1	7.9	17.5	153.1	3.7	8.0	487.1	11.6	25.4	8.3	
MAY	312.1	0.0	17.0	144.6	0.0	7.8	456.7	0.0	24.8	8.0	
JUN	363.1	8.4	17.3	163.8	0.4	7.8	526.9	9.9	25.1	8.1	
JUL	340.7	7.2	16.0	158.7	3.6	7.4	499.4	10.9	23.4	6.8	
AUG	284.7	3.6	15.4	131.7	1.7	7.1	416.4	5.3	22.5	5.5	
SEP	244.4	2.1	12.3	129.1	1.2	6.8	373.5	3.3	17.8	6.3	
OCT	241.4	3.4	11.9	137.1	0.6	7.5	378.5	5.2	19.4	6.8	
NOV	292.6	5.4	12.8	155.2	2.4	7.0	447.8	7.8	18.9	7.1	
DEC	280.8	3.7	12.5	149.3	2.1	6.4	430.1	5.8	18.5	6.1	
TOTAL	3676.2			1770.9			5447.0			82.2	
AVG	306.3			147.6			453.9			6.9	
MIN	241.4			129.1			373.5			5.5	
MAX	363.1			163.8			526.9			8.3	

WAS: Waste Activated Sludge

10. Chart – WWTP: Five Year Biosolids Production



11. Summary of Incidents Reported to AEP – 2020

March 2020 - Ref # 364741

- The Town of Okotoks got a call from the emergency call center around 2:17 pm on March 22nd 2020. The operator reported on-site and confirmed that SE-20 manhole (behind 124 Woodbend way) surcharging into the nearby catch basin. In response the operator brought in the town's sewer flusher to try and clear the blockage. The contractor called for additional supports. The flusher unit and hydrovac were not success full to clear the blockages. Around 5 PM, the incident was reported to Alberta Environment and Parks. At this time, the reduction of surcharging flow was visibly observed. Another hydro Vac company called to try a bigger flusher to move the blockages. The blockage did not progressed further. Bypass system set up and up running around 11:30 PM to stop surcharging. The operator was monitoring the bypass system in the night at the site. On March 23rd the Town was successful in clearing and inspecting the line. The blockage was a result of 3" boulders, gravels, low spots in the pipe section, and foreign material such as pipe straps.

April 2020 – Ref # 366324

- After receiving the final testing report on May 11th from CARO labs (Edmonton) that was collected on April 29th it was established that the monthly average for the month was 16.44 mg/l and the approval limit is ≤ 15 mg/l the call was placed the morning of May 11th to AEP in regards to exceeding the TN levels for the month of April 2020. 7 day letter was submitted May 18th

12. Summary of Treated Wastewater used for Irrigation – 2020

- There was no treated wastewater used for irrigation purposes in 2020

13. WWTP Uncommitted Hydraulic Reserve Capacity – 2020-2024

WWTP Uncommitted Hydraulic Reserve Capacity

Municipality	Town of Okotoks	Facility	Okotoks Wastewater Treatment Plant			
Supervising Operator	James McElmon	Phone No.	(403) 899-9343			
Treatment Type	Mechanical – Tertiary BNR	Design Capacity (m3/d)	10,000			
	Year	2020	2021	2022	2023	2024
Average Daily Flow - 2020	m3/d	6,863	6,900	7,094	7,289	7,484
Average Daily Flow Per Capita (F)	m3/capita/d	0.230	0.225	0.225	0.225	0.225
Hydraulic Reserve Capacity (Cr)	m3/d	3,137	3,100	2,906	2,711	2,517
Number of Unconnected Approved Lots (L)	lots	468	370	370	370	370
Connected Population (P)	persons	29,800	30,665	31,530	32,395	33,260
Number of Residential Connections (H)	connections	10,910	11,357	11,678	11,998	12,319
Committed Reserve (Com)	m3/d	294	225	225	225	225
Uncommitted Reserve Capacity (Cu)	m3/d	2,843	2,876	2,681	2,486	2,292
Cr = Design Capacity – Average Daily Flow Cu = Cr – [L*F*P/H] 2020 connected Population is based on Federal census data		*Years 2021-2024 are estimates only Future Pop is based on 5 yr annual avg growth rate of 865 Future Unconnected Approved Lots based on 5 yr avg Future Res Connections is based on 2.7 people per connection				

14. Summary of Chemicals Used - 2020

Summary of Chemicals Used in 2020				
MONTH	Zetag 8190 Dry Polymer kg	ALUM kg	Sodium Hypochlorite 16% L	Sodium Sulfite - Dechlorination tablets Kg
Jan	661	0	0	0
Feb	465	0	20	1
Mar	583	0	40	2
Apr	575	0	0	0
May	544	0	0	0
Jun	791	0	0	0
Jul	556	0	0	0
Aug	523	0	0	0
Sep	559	0	20	1
Oct	1048	0	20	1
Nov	1070	0	20	1
Dec	1022	0	0	0
TOTAL	8397	0	120	6
1 Dry Polymer used in Sludge Dewatering process 2 Sodium Hypochlorite used for cleaning Disk Filtration process (<u>Not for Treatment</u>) 3 Sodium Sulfite used for dechlorination after disk filter cleaning 4 Alum used for Chemical Phosphorus removal				

15. Summary of WSER Testing – 2020

WSER Monitoring Requirements 2020 - Town of Okotoks WWTP							
Parameter							
Sample Type	24 Hour Composite					Grab	
Parameter	CBOD		TSS		Total Ammonia	Acute Lethality	
Environment Canada Limits	^ v	< 25 mg/L	^ v	< 25 mg/L	^ v		<50%
Date							
8-Jan-20		8.5	<	2.0		0.29	Feb 3/20
22-Jan-20		2.6	<	2.0		1.08	>100
5-Feb-20		3.1	<	2.0		0.50	
19-Feb-20		5.8		2.2		1.97	
4-Mar-20		7.3		2.0		3.34	
18-Feb-20		6.3	<	2.0		10.60	
Q1 AVG		5.6		2.0		2.96	
Q1 MIN		2.6	<	2.0		0.29	
Q1 MAX		8.5		2.2		10.60	
1-Apr-20		5.0		3.2		12.50	May 4/20
15-Apr-20		17.9		6.6		11.10	>100
29-Apr-20		10.8		3.0		2.67	
13-May-20		8.8		2.0		1.08	
27-May-20		8.4		3.0		1.02	
10-Jun-20		4.0	<	2.0		0.80	
24-Jun-20		3.5	<	2.0		0.19	
Q2 AVG		8.3		3.1		4.19	
Q2 MIN		3.5	<	2.0		0.19	
Q2 MAX		17.9		6.6		12.50	
8-Jul-20		2.5	<	2.0		0.10	Aug 10/20
22-Jul-20		2.8	<	2.0		0.09	>100
5-Aug-20		2.4	<	2.0		0.11	
19-Aug-20		4.8	<	2.0		0.09	
2-Sep-20		2.8	<	2.0		0.35	
16-Sep-20		3.2	<	2.0		0.31	
30-Sep-20		3.7	<	2.0		0.37	
Q3 AVG		3.2	<	2.0		0.20	
Q3 MIN		2.4	<	2.0		0.09	
Q3 MAX		4.8	<	2.0		0.37	
14-Oct-20		9.3		3.0		0.17	Nov 2/20
28-Oct-20		2.8	<	2.0		0.22	>100
9-Nov-20	<	2.4	<	2.0		0.27	
25-Nov-20		3.8	<	2.0		0.43	
9-Dec-20		3.4	<	2.0		0.16	
21-Dec-20		3.7	<	2.0		0.81	
Q4 AVG		4.2		2.2		0.34	
Q4 MIN	<	2.4	<	2.0		0.16	
Q4 MAX		9.3		3.0		0.81	
Annual AVG		5.3		2.3		1.92	>100
Annual MIN	<	2.4	<	2.0		0.09	>100
Annual MAX		17.9		6.6		12.50	>100

16. Summary of Operational Highlights & Problems

January 2020

- Jan 15 – BERC Mechanical on site to troubleshoot heating issues in the solids handling building, in their findings it was determined that there was not enough gas flow being provided to the units. While the technician was adjusting the gas regulator he accidentally broke it causing no gas to be distributed to all the other buildings at the WWTP forcing the town's maintenance department and operators to supply supplemental heat to the buildings until repairs could be made.
- Jan 16 – Repair was completed on the main gas line entering the plant at 6 pm and all heating units were relit and placed back into normal operations.
- Jan 22 – High Country Vac services offloaded in the Headwork's 10 m³ from the wet well cleaning of Drake Landing, Business Park and Stockton lift stations due to the annual cleaning schedule.
- Jan 23 – High Country Vac services back on site to offload another 10 m³ from wet well cleaning from Westmount, Big rock and Southbank lift stations.

February 2020

- Feb 25 – Operations replaced a ballast card on Bank A Mod 3 lights 5&6 in the UV system due to lights 5&6 not working.
- Feb 26 – Suntech Electrical onsite to install new contactor in the Centrifuge PLC cabinet but when the PLC was powered back up there was a major power failure that caused 3 DC fuses to fail making the Centrifuge inoperable until repairs can be made.
- Feb 27 – Operations was forced to run the WWTP on generator power from 8:30am till 12:00pm while Fortis tied in the power supply for the town's new solar panel project.
- Feb 29 – Suntech Electrical was able to temporarily rewire the Centrifuges PLC wiring to get the power back on so that operations could resume dewatering of TWAS sludge.

March 2020

- Mar 3 – High Country Vac services on-site to steam/cleanout Primary discharge line to TWAS tank due to grease accumulation.
- Mar 9 – Operations replaced Effluent composite sampler suction hose and strainer and reset samplers suction line counter.
- Mar 12 – Operations reduced WAS rate from 300 l/min to 280 l/min to promote biomass growth.
- Mar 30 – Operations placed Disc filter #1 offline for a 24 hour cleaning cycle, while Disc filter #1 was offline operations was having Disc filter #3 periodically alarm for high level throughout the day during high flows.
- Mar 31 – High Country Vac services off loaded 2 loads in lower head works from lift station cleanings taking place from the towns lift stations.

April 2020

- Apr 1 – Operations increased RAS rate from 90% hand speed to 95% hand speed to reduce Secondary sludge blanket.
- Apr 1 – Operations decreased Was rate from 240 l/min to 220 l/min to promote biomass growth within the Bioreactor.
- Apr 13 – After operations noticed a significant decrease in ammonia and total nitrogen removal due to temperature and a low biomass indicated in the test results, lead hand operator started a VitaStim

treatment addition to promote/reactivate Nitrifiers within the Aerobic zones with the injection point at the start of Aerobic zone #1. (500 ml/day of Nitrifiers & 500 ml/day of Ammonia Assimilator)

- Apr 15 – Canadian Underwater divers on-site to preform quarterly dive inspection of the Secondary rake/skimmer and was determined there was little change in condition from previous dive.
- Apr 20 – Operations made a change to increase DO set points in all 3 aerobic zones due to no change in test results for ammonia or total nitrogen levels.
- Apr 22 – Increased VitaStim dosing rates on the 10th day of treatment to (750 ml/day of Nitrifiers & 750 ml/day of Ammonia Assimilators)
- Apr 25 – Final treatment of VitaStim was added.

May 2020

- May 1 – Operations decreased daily wasting from Primary Clarifier from 32 m³ to 30 m³ due to low VFA test results.
- May 4 – Quarterly Acute lethality testing was collected and shipped to CARO labs (Edmonton) see results below.
- May 6 – Operations lowered was rate to 230 L/min in preparation of solids handling down due to no sawdust.
- May 9 – Operations unable to process sludge via the Centrifuge due to no sawdust, transferred Twas to MSBR for storage.
- May 10 – Still unable to process sludge via the Centrifuge due to sawdust issues related t COVID-19, transferred Twas to MSBR for storage.
- May 13 – Operations increased WAS rate from 230 l/min to 275 l/min to lower MLSS in the Bioreactor.
- May 13 – BALZER'S on-site to re-enforce welds on the sawdust conveyor as it was showing signs of failure.
- May 14 – Operations replaced 2 disc filter panels in disc filter #3 due to torn panels found during inspection of the unit.
- May 21 – High Country Vac services on-site to cleanout Primary Clarifier grease pit and haul to Calgary for disposal.
- May 21 – WWTP plant experiencing higher then normal flows entering the plant due to heavy rainfall in the region.
- May 25 – Base river sampling collected and shipped to CARO labs (Edmonton) for testing.

June 2020

- June 2 – Operations started to discharge from MSBR into Headwork's in attempts to drain and clean out MSBR.
- June 3 – G&R picker services on site to remove UV sump pumps #1 & #2 so that they could be sent to JAMES Electric for inspection due to failure.
- June 4 – Operators removed blockage from Primary pump #2.
- June 4 – Operators lifted TWAS mixer #1 to remove rag accumulation that was built up around propeller causing it to go into fault.
- June 8 – Frontier (generator contractor) on-site to load test all 3 WWTP generators for there annual inspections.
- June 15 – Operations increased WAS rate from 250 l/min to 280 l/min.
- June 23 – WWT operators collected and sent monthly river sampling testing to CARO (Edmonton).
- June 25 - Operations was forced to shut down Primary sludge pump #2 to remove a large blockage that was in front of the pump.
- June 26 – Disc filters #1 & #2 went into bypass mode for a short period of time due to heavy rain event in the area.
- June 29 – WWT operators collected a wet weather event for the river sampling and sent it to CARO labs (Edmonton) for testing.

July 2020

- July 2 – Operations with the help from Stampede Crane services lifted out WAS pump #1 and replaced it with the shelf spare and placed it back into service mid afternoon.
- July 3 – Operations having issues with WAS pump #1 due to the VFD running hot in MCC-HE room, resolved the issue by replacing the cooling fan on the drive itself.
- July 9 – Suntech Mechanical on-site to install new centrifuge back drive unit as the old drive has failed.
- July 18- Operations were able to remove blockage that occurred the night before in the Grit Vortex discharge line by the use of a HOTSYS.
- July 20 – Custom Electric preformed the 1st of 4 power shutdowns/switchovers to tie power from MCC-A and reroute some feeds to the new MCC-K due to phase 2 of the construction.
- July 20 – The maintenance department replaced the air scour solenoid on the Grit Vortex as the old one had failed causing it not to close.
- July 21 – Custom Electric preformed the 2nd of 4 power shutdowns/switchovers for the project with no issues to report.
- July 23 - Custom Electric preformed the 3rd of 4 power shutdowns/switchovers for the project with no issues to report.

August 2020

- Aug 5 - Operational call outs regarding Aeration blowers tripping on Hi Temperature at 4:05pm, 5:47pm, 8:17pm, and 10:30pm.
- Aug 8 – Operational call outs regarding blowers tripping on Hi Temperature at 5:00pm.
- Aug 10 – SIFI on site to disassemble of Pug mill #2.
- Aug 11 – Custom electrical installed new switch gear into MCC-K.

September 2020

- Sept 7 – Screw pump #3 lower bearing had failed forcing operations to lock and tag it out of service until repairs can be made.
- Sept 5 – High Country Vac services on site to remove sludge/grease from the Primary scum chamber and dispose of it in Calgary.
- Sept 23 – Custom Electrical to preform the 4th and last power tie-in/switchover that's needed for the construction of phase 2 of the project.
- Sept 28 – Operations increased the WAS rate from 280L/min to 300 L/min to assist with high MLSS in CTU #1.

October 2020

- Oct 3 – On-Call operator called to site due to a low DO alarm in Zone #3 of CTU #1, upon inspection it was found that the sensor was dirty and was cleaned and placed back into service.
- Oct 5 – High Country Vac services onsite to remove and haul Primary grease to Calgary for disposal.
- Oct 21 – Operations placed Disc Filter #1 offline for 48 hour cleaning cycle.
- Oct 22-25 – Operations were forced to collect daily Effluent samples for these days for TAN testing and ship them to CARO labs (Edmonton) due to equipment failure at our onsite lab. (MDL=0.050 mg/L)

- Oct 28 – AB WESTRAC and Maple Reinders started the bypass pumping from the Primary splitter chamber bypassing the Primary clarifier and pumping directly to CTU #1 so that work could start to take place on dewatering the 750mm feed line entering CTU #1 from the Primary clarifier and rerouting the 750mm into the newly constructed splitter chamber that will divert flows between CTU's 1 and 2 once construction is completed.
- Oct 28 – Operations increased WAS rate from 300 L/min to 320 L/min due to the forecasted solids entering the CTU #1 because of the bypass pumping from Primary.
- Oct 29 – Bypass pumping continues for the construction of CTU #2.
- Oct 30 – Bypass pumping continues for the construction of CTU #2.
- Oct 31 – Bypass pumping continues for the construction of CTU #2.

November 2020

- Nov 1 - Bypass pumping continues for the construction of CTU #2.
- Nov 2 – The bypass pumping of the Primary clarifier so the work could be completed tying in the primary discharge line to the newly constructed splitter chamber was completed and shut down at 2:00pm and flow was allowed to return flowing thru the Primary, the liquid level crested the V-notch weirs at 5:30pm.
- Nov 2 – Operations placed Disc Filter #2 offline for a 48 hour cleaning.
- Nov 3 – Humphrey's Mechanical onsite to remove Screw pump #2 top gearbox and repair it at their Calgary shop.
- Nov 16 – Operations found the Flow EQ system off caused by a seized cooling motor/fan bearing on the VFD cabinet which caused a spike in current when tried to be started and faulting the unit out on overcurrent, Suntech Electrical contracted to repair it.
- Nov 16 – Custom Electrical started to bring MCC-K online for the new CTU #2 construction.
- Nov 19 – Operations increased WAS rate from 275 L/min to 290 L/min due to high MLSS in CTU #1.
- Nov 19 – HI-TECH clarifier drive manufacturer on site to start-up and give training to the operational staff on the new drive on CTU #2.
- Nov 27 – High country vac services onsite to steam out old ALUM out of the storage tote in the ALUM building in preparation of adding the new stock of ALUM.

December 2020

- Dec 18 – Total controls onsite to add programming to SCADA for the CTU #2 construction.
- Dec 19 – Suntech electrical & controls onsite to troubleshoot alarms for hot standby on LCP-700 in MCC-HE.

17. Operator Certification

As required under section 4.2 of Approval No. 1028-03-00, the wastewater treatment facility is classified as **Class IV** and the wastewater collection system is classified as **Class III**. The facilities are classified in accordance with the *Water and Wastewater Operators' Certification Guidelines*.

As per approval section 4.2.2(b), the operation of the wastewater treatment facility shall be performed by, or under the direction of:

- a) One operator who holds a valid Level IV (or higher) WWT (Wastewater Treatment) Operators Certificate of qualification; and
- b) Two operators each with a valid Level III (or higher) WWT Operators Certificate, and
- c) One operator with a Level II WWT (or higher) certificate, in charge of each of each shift

As per approval section 4.2.2(a), the operation of the wastewater collection system shall be performed by, or under the direction of:

- a) An operator who holds a valid Level III (or higher) WWC (wastewater collection) Operators Certificate; and
- b) At least one other operator who holds a valid Level II (or higher) WWC Operators Certificate

- The Town of Okotoks operators are certified as shown within the table below:

Name	Office Number	Cell number	Fax Number
Rakesh Savani	(403) 995-6306	(587) 432-6448	(403) 938-7387
Pacer Wilson	(403) 995-2502	(403) 899-6349	
Patti Kjinserdahl	(403) 938-1230	(403) 899-1556	
Dain Perrior	(403) 938-1230	(403) 542-0263	
James McElmon	(403) 995-6343	(403) 899-9343	
Bryan Steed	(403) 938-1230	(403) 899-6347	
Marlon Anthony	(403) 938-1230	(403) 771-2995	
Jordan Ballard	(403) 938-1230	(403) 899-9340	
Terry Sapsford	(403) 938-1230	(403) 899-4456	
Johnathan Bartisch	(403) 938-1230	(403) 899-6345	


Site Manager Contact Information:

Rakesh Savani
 Water Services Manager
 Town of Okotoks
 100 – 1118 North Railway Street
 Okotoks, AB T1S 1K1
 Bus: (403) 995-6306
 Cell: (587) 432-6448
 Email: rsavani@okotoks.ca

Supervising Operator Contact Information:

James McElmon
 Lead Hand – WWT Operations
 Town of Okotoks
 200 – 1118 North Railway Street
 Okotoks, AB T1S 1K1
 Bus: (403) 995-6343
 Cell: (403) 899-9343
 Email: jmcElmon@okotoks.ca

18. Supervising Operator

	<p>James McElmon</p>	<p>4045</p>
<p>Signature</p>	<p>Printed</p>	<p>Certificate #</p>