Gold Bar Wastewater Treatment Plant
10977 50 Street
Edmonton, Alberta T6A 2E9
Canada
epcor.com

February 25, 2021

Alberta Environment and Parks
#111 Twin Atria Building
4999-98 Avenue
Edmonton AB T6B 2X3

RE: 2020 Annual Wastewater Treatment and Wastewater Collection Report for Approval to Operate 639-03-06

Attention: Fengqin Wang, Municipal Approvals Engineer

Dear Ms. Wang,

Please find the 2020 Annual Wastewater System Report for Alberta Environment and Parks Approval to Operate 639-03-06 as required under section 6.3.4.

Respectfully,

Geoff Heise
Senior Manager, Environmental & Scientific Services, EPCOR

Attachment – 2020 Annual Wastewater System Report

cc: AEP.LAR-EPEAreports@gov.ab.ca
Mohammad Rahman, EPEA Team Lead, AEP
Mohammad Habib, Approvals Manager, AEP
Craig Bonneville, Director, Gold Bar WWTP, EPCOR
Steve Craik, Director, QA & Environment, EPCOR
Cindy Shepel, Director, Drainage Operations, EPCOR
Alfredo Suarez, Senior Manager, Gold Bar WWTP Operations, EPCOR
Angus Grant, Senior Manager, Monitoring & Compliance, EPCOR
Ross Bulat, Manager, Environmental Monitoring & Compliance, EPCOR

EPCOR PROVIDING MORE

EPCOR Water Services Inc.

Edmonton, Alberta

2020

Annual Wastewater System Report

Submitted to:

The Province of Alberta

Alberta Environment and Parks (AEP)

As per requirements of:

Approval to Operate No. 639-03-06

February 2021

Executive Summary

The following report contains two parts, Part I: Wastewater Treatment Plant and Part II: Wastewater Collection System, in order to meet the requirements of Approval to Operate No. 639-03-06.

The 2020 Annual Wastewater Treatment Plant Report is separated into an Annual Wastewater Treatment Report, an Annual Air Pollution Control System Report, an Annual Ambient Air Report, and a summary of contraventions reported, as outlined in the Approval to Operate. New requirements for the 2020 Wastewater Treatment Plant annual report include the following:

- reporting the daily average H_2S from the effluent air stream of the air pollution control systems;
- a summary of operational issues encountered by the air pollution control systems;
- additional information regarding odour complaints; and
- ambient air H_2S monitoring results.

The 2020 Annual Wastewater Collection System Report summarizes the completed and planned major rehabilitation projects, the interconnection control strategy, storm and CSO volumes and loadings, and other requirements as per Approval to Operate no. 639-03-06.

Part I: Wastewater Treatment Plant Report

EPCOR Water Services Inc.

Gold Bar Wastewater Treatment Plant

Edmonton, Alberta

2020

Annual Wastewater Treatment Plant Report

Submitted to:

The Province of Alberta

Alberta Environment and Parks (AEP)

As per requirements of:

Approval to Operate No. 639-03-06

February 2021

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Acronyms

ACRWC	Alberta Capital Region Wastewater Commission
AEP	Alberta Environment and Parks
CBBRF	Clover Bar Biosolids Recycling Facility
CBOD	Carbonaceous Biological Oxygen Demand
CSO	Combined Sewer Overflow
EPE	Enhanced Primary Effluent
EPEPS	Enhanced Primary Effluent Pumping Station
EPT	Enhanced Primary Treatment
FE	Final Effluent
FEC	Final Effluent Combined
GBWWTP	Gold Bar Wastewater Treatment Plant
H_2S	Hydrogen Sulfide
HSE	Health, Safety, and Environment
ISO	International Organization for Standardization
ML	Megalitres
MLD	Megalitres per Day
MLSS	Mixed Liquor Suspended Solids
NH_3-N	Ammonia-Nitrogen
NSR	North Saskatchewan River
ORP	Oxidation-Reduction Potential
PE	Primary Effluent
SOP	Standard Operating Procedure
TKN	Total Kjeldahl Nitrogen
TP	Total Phosphorus
TSS	Total Suspended Solids
UV	Ultraviolet
WELP	Wastewater Effluent Limit Performance
WWT	Wastewater Treatment
WWTP	Wastewater Treatment Plant

2020 Overview

The Gold Bar Wastewater Treatment Plant (WWTP) located on the banks of the North Saskatchewan River in Edmonton, Alberta successfully maintained the ISO 14001:2015 (Environmental Management System) and the ISO 45001:2018 (Occupational Health and Safety Management System) certificates for its Integrated Management System.

Notable events in 2020 include the addition of H_2S monitoring to the air pollution control system scrubbers, upgrades to Fermenter 1 and Fermenter 4, cleaning of Digester 2 and Digester 6 heat exchangers, upgrades to Clover Bar Lagoon Cell 3E, upgrades to Secondary Clarifier 7 and Secondary Clarifier 3, the removal of Digester 5 from service due to structural damage, seeding and placing Digester 3 into service, and ongoing upgrades to the Diversion Structure.

The true dry weather flow in 2020 did not change from 2019 and was 263 MLD. 2020 hosted a significant number of wet weather events (21) compared to previous years which resulted in an increased number of secondary bypasses (92). The plant performed very well with a WWTP Effluent Limit Performance (WELP) index of 19.0%.

2020 Annual Wastewater Treatment Report

Gold Bar WWTP Performance

The Gold Bar WWTP final effluent discharge limits of Approval to Operate 639-03-06 are listed in Table 1 and the monitoring requirements are outlined in Table 2.

Table 1: Limits for Treated Wastewater (Approval to Operate Table 5-1)

Parameter	Limit
$CBOD_5$	≤ 20 mg/L monthly arithmetic mean of daily composite samples
TSS	≤ 20 mg/L monthly arithmetic mean of daily composite samples
Total Phosphorus	≤ 1.0 mg/L monthly arithmetic mean of daily composite samples
Total Ammonia-nitrogen (December 1 to May 31)	≤ 10 mg/L monthly arithmetic mean of daily composite samples
Total Ammonia-nitrogen (June 1 to November 30)	≤ 5 mg/L monthly arithmetic mean of daily composite samples
E. Coli	≤ 126 per 100 mL/monthly geometric mean
pH	6.5-8.5

Table 2: Monitoring - Wastewater System (Approval to Operate Table 6-1)

Parameter	Frequency (Minimum)	Sample Type	Sampling Location
UNTREATED WASTEWATER			
pH BOD_5 TSS Total Phosphorus Total Ammonia-nitrogen	Once per day	Composite	Untreated wastewater entering the wastewater treatment plant
Volume of Flow	Continuous, recorded daily	Calculated	Untreated wastewater entering the wastewater treatment plant
TREATED WASTEWATER			
pH BOD_5 TSS Total Phosphorus Total Ammonia-nitrogen	Once per day	Composite	Wastewater treated plant effluent prior to release to the North Saskatchewan River
E. Coli	Once per day	Grab	After ultraviolet (UV) disinfection
Acute Toxicity	Monthly	Grab	Wastewater treatment plant effluent prior to release to the North Saskatchewan River
Chronic Toxicity	Quarterly	Grab	Wastewater treatment plant effluent prior to release to the North Saskatchewan River
Volume	Continuous, recorded daily	Calculated	Wastewater treatment plant effluent prior to release to the North Saskatchewan River
Volume	Continuous, recorded daily	Calculated	Reuse water transmission main

WASTEWATER TREATMENT PLANT BYPASS			
Release Volume	Continuous during bypass event, recorded daily	Calculated	Primary and secondary treatment bypass of wastewater at the wastewater treatment plant
pH BOD_5 TSS Total Phosphorus Total Ammonia-nitrogen	Any bypass event lasting > 2 hours	Composite	
E. Coli	Any bypass event lasting > 2 hours	Grab	
SLUDGE DISPOSAL			
Sludge Volume	Total volume	Estimated	Prior to leaving the wastewater treatment plant
Sludge Mass	Total mass	Estimated	Amount of sludge being disposed of as per the *Biosolids Management Plan*
CSO OUTFALLS AND UNAUTHORIZED RELEASE			
Release Volume	Total volume during each discharge event	Continuous during discharge event	Rat Creek CSO outfall; Hardisty-Capilano CSO outfall; Highlands CSO outfall; Cromdale CSO outfall; Strathearn CSO outfall; and unauthorized release point
pH BOD_5 TSS Total Phosphorus Total Ammonia-nitrogen *E. Coli*	Each discharge event	Composite	Rat Creek CSO outfall
		Grab	Unauthorized release point
The amount of any substance other than wastewater or storm water that is spilled or discharged accidentally or intentionally into the wastewater collection system	Each event	Estimated volume or mass	Unauthorized release point

Table 3 summarizes the monthly minimum, mean, and maximum values for parameters in Table 1 from January 1 to December 21, 2020. All analytical data in the table were developed on 24-hour composite samples collected using autosamplers at the sampling location specified in Table 2. The discrete samples for Escherichia coli (E. coli) determinations were collected at random times each day. No instances of non-conformance with regards to monitoring requirements were reported to AEP in 2020. Appendix A contains the monthly Plant Performance Reports.

2020 Annual Wastewater Treatment Report

Table 3: 2020 Gold Bar WWTP Performance

Month		Flows (ML)						pH				TSS (mg/L)						BOD_5 (mg/L)				$CBOD_5$ (mg/L)		TP (mg P/L)						NH_3 (mg N/L)						TKN (mg N/L)				NO_2+NO_3 (mg N/L)				Chloride (mg/L)				*E. coli* Counts/100 mL				Total Digested Sludge
		Raw	Outfall 30	MPW	Outfall 20	EPEPS	Outfall 10	Raw	Outfall 30	Outfall 20	Outfall 10	Raw	Outfall 30	Outfall 20	EPEPS	Outfall 10		Raw	Outfall 30	Outfall 20	EPEPS	Outfall 10		Raw	Outfall 30	Outfall 20	EPEPS	Outfall 10		Raw	Outfall 30	Outfall 20	EPEPS	Outfall 10		Raw	Outfall 30	Outfall 20	Outfall 10	Raw	Outfall 30	Outfall 20	Outfall 10	Raw	Outfall 30	Outfall 20	Outfall 10	Raw	Outfall 30	Outfall 20	Outfall 10	
							FEC	FE			FEC					FEC	FE					FEC	FE					FEC	FE					FEC	FE				FEC				FEC				FEC				
January	Avg	248.2	0.0	11.7	0.0	0.0	236.5	236.5	7.6	---	---	7.7	329	---	---	---	4.2	4.2	346	---	---	---	2.6	2.6	7.38	---	---	---	0.29	0.29	39.7	---	---	---	3.09	3.09	62.5	---	---	4.97	0.15	---	---	7.07	99	---	---	105	2.0	---	---	8	72.60
	Min	233.6	0.0	10.3	0.0	0.0	220.7	220.7	7.4	---	---	7.5	280	---	---	---	2.4	2.4	282	---	---	---	1.0	1.0	7.39	---	---	---	0.18	0.18	31.3	---	---	---	1.38	1.38	53.2	---	---	2.28	0.08	---	---	5.49	67	---	---	73	2.0	---	---	4	
	Max	268.4	0.0	12.9	0.0	0.0	257.3	257.3	7.7	---	---	7.8	420	---	---	---	10.0	10.0	410	---	---	---	4.0	4.0	7.58	---	---	---	0.52	0.52	44.5	---	---	---	5.70	5.70	68.7	---	---	7.37	0.15	---	---	9.19	152	---	---	151	2.0	---	---	15	
February	Avg	252.7	1.3	9.8	0.0	0.0	241.7	241.7	7.6	7.5	---	7.7	335	118	---	---	4.7	4.7	316	163	---	---	2.7	2.7	7.48	5.63	---	---	0.30	0.30	37.2	37.0	---	---	4.33	4.33	61.1	53.4	---	6.63	0.09	0.67	---	6.24	156	425	---	154	2.0	2.0	---	5	68.90
	Min	238.2	0.0	8.7	0.0	0.0	229.0	229.0	7.4	7.4	---	7.6	244	103	---	---	3.0	3.0	214	145	---	---	1.0	1.0	3.42	4.77	---	---	0.24	0.24	30.1	30.3	---	---	2.80	2.80	27.3	46.8	---	4.64	< 0.01	0.25	---	5.26	77.9	409	---	95.0	2.0	2.0	---	2	
	Max	286.8	21.7	10.8	0.0	0.0	256.0	256.0	7.8	7.6	---	7.9	540	144	---	---	15.4	15.4	385	194	---	---	5.0	5.0	8.8	7.12	---	---	0.62	0.62	45.8	42.5	---	---	6.16	6.16	73.3	62.7	---	8.77	0.09	0.94	---	7.11	470	455	---	337	2.0	3.0	---	23	
March	Avg	262.9	6.4	9.7	0.0	0.0	246.7	246.7	7.5	7.6	---	7.6	340	79	---	---	4.4	4.4	333	140	---	---	3.2	3.2	7.54	4.76	---	---	0.26	0.26	36.6	36.0	---	---	4.66	4.66	61.7	46.5	---	6.84	0.04	0.26	---	6.99	140	257	---	144	1.8	1.7	---	7	73.20
	Min	240.4	0.0	8.2	0.0	0.0	230.8	230.8	7.4	7.4	---	7.5	224	52	---	---	3.0	3.0	247	99	---	---	< 2.0	< 2.0	5.85	3.64	---	---	0.19	0.19	27.1	28.4	---	---	2.66	2.66	51.5	37.0	---	4.90	< 0.01	0.04	---	4.61	78	144	---	83	1.5	0.6	---	3	
	Max	352.2	88.2	11.3	0.0	0.0	262.9	262.9	7.7	7.8	---	7.8	460	101	---	---	6.1	6.1	447	179	---	---	6.0	6.0	8.43	6.36	---	---	0.34	0.34	45.6	41.4	---	---	6.15	6.15	71.5	53.7	---	8.05	0.08	0.85	---	9.34	288	498	---	244	2.2	3.4	---	17	
April	Avg	286.6	18.1	9.1	0.0	0.0	259.4	259.4	7.5	7.5	---	7.6	300	75	---	---	6.0	6.0	288	159	---	---	3.5	3.5	7.43	5.58	---	---	0.31	0.31	35.0	33.0	---	---	3.55	3.55	57.4	46.9	---	5.64	0.02	0.37	---	7.62	110	126	---	114	2.3	1.9	---	9	64.30
	Min	243.7	0.0	8.2	0.0	0.0	235.3	235.3	7.4	7.4	---	7.4	196	51	---	---	1.7	1.7	187	103	---	---	2.0	2.0	5.88	4.19	---	---	0.19	0.19	25.8	24.2	---	---	1.45	1.45	43.7	36.0	---	3.30	< 0.01	0.04	---	5.25	83	98	---	94	2.1	1.0	---	5	
	Max	393.7	105.2	11.2	0.0	0.0	291.3	291.3	7.7	7.8	---	8.0	400	130	---	---	24.6	24.6	361	345	---	---	6.0	6.0	9.58	10.50	---	---	0.91	0.91	43.9	49.0	---	---	5.50	5.50	72.9	65.8	---	7.8	0.08	0.62	---	10.6	174	204	---	171	2.6	6.5	---	22	
May	Avg	344.1	60.1	9.8	0.0	0.0	274.2	274.2	7.6	7.6	---	7.6	297	90	---	---	4.3	4.3	245	106	---	---	2.9	2.9	6.41	3.63	---	---	0.25	0.25	32.8	27.4	---	---	3.18	3.18	50.4	36.1	---	5.0	< 0.01	1.14	---	8.01	91	89	---	94	1.5	1.1	---	12	68.50
	Min	245.2	0.0	8.8	0.0	0.0	235.5	235.5	7.4	7.4	---	7.4	178	43	---	---	2.8	2.8	97	52	---	---	< 2.0	< 2.0	2.87	1.64	---	---	0.16	0.16	12.4	13.6	---	---	0.09	0.09	21.9	22.0	---	1.20	< 0.01	0.10	---	2.89	50	54	---	52	1.4	0.3	---	4	
	Max	841.4	519.8	10.9	0.0	0.0	324.7	324.7	7.7	7.7	---	7.8	878	172	---	---	9.8	9.8	354	224	---	---	4.0	4.0	8.13	7.69	---	---	0.43	0.43	44.6	41.9	---	---	8.6	8.6	62.5	61.1	---	8.6	< 0.01	3.85	---	11.5	115	146	---	105	1.7	2.4	---	130	
June	Avg	383.9	63.2	10.4	0.0	0.0	310.4	310.4	7.6	7.6	---	7.6	317	58	---	---	4.9	4.9	222	77	---	---	3.0	3.0	6.28	3.08	---	---	0.26	0.26	31.5	27.3	---	---	1.05	1.05	49.3	35.6	---	2.90	0.03	1.17	---	10.30	86	77	---	91	1.4	1.0	---	10	65.90
	Min	289.5	0.0	8.8	0.0	0.0	272.6	272.6	7.4	7.4	---	7.5	60	32	---	---	3.6	3.6	99	31	---	---	< 2.0	< 2.0	3.27	1.30	---	---	0.18	0.18	14.8	11.8	---	---	0.11	0.11	24.8	15.0	---	1.50	< 0.01	0.06	---	5.90	45	39	---	59	1.4	0.4	---	2	
	Max	932.4	573.2	11.5	0.0	0.0	350.1	350.1	7.7	7.9	---	7.8	632	101	---	---	8.2	8.2	368	143	---	---	5.0	5.0	10.80	5.71	---	---	0.45	0.45	41.3	42.3	---	---	2.63	2.63	75.3	50.1	---	5.20	0.07	3.89	---	13.6	100	105	---	104	1.5	2.0	---	21	
July	Avg	426.1	91.6	11.1	0.0	0.0	323.4	323.4	7.6	7.7	8.0	7.7	304	82	370	---	4.3	4.3	183	66	26	---	2.6	2.6	5.26	2.76	1.07	---	0.23	0.23	26.9	24.3	1.3	---	0.82	0.82	40.1	31.9	5.3	2.30	0.01	1.19	14.20	8.86	83	78	97	87	1.1	1.0	---	7	68.00
	Min	302.7	0.0	10.1	0.0	0.0	292.2	292.2	7.5	7.5	7.7	7.6	79	30	16	---	2.2	2.2	73	36	5	---	< 2.0	< 2.0	2.83	1.23	0.16	---	0.13	0.13	14.5	8.7	0.4	---	0.08	0.08	18.6	15.4	0.8	1.20	< 0.01	0.02	0.35	2.75	40	34	17	45	1.0	0.3	---	< 1	
	Max	968.9	627.6	12.4	0.4	0.0	346.6	346.6	7.8	8.0	8.3	7.8	552	286	963	---	7.1	7.1	275	118	54	---	4.0	4.0	6.52	4.51	2.62	---	0.54	0.54	39.1	32.8	2.6	---	3.66	3.66	49.7	41.8	11.2	5.40	0.02	3.77	23.00	11.4	98	96	152	99	1.3	3.2	---	3,800	
August	Avg	310.7	14.3	10.9	0.0	0.0	285.5	285.5	7.7	7.7	7.8	7.7	263	57	181	---	5.0	5.0	240	103	83	---	2.6	2.6	6.66	4.74	1.86	---	0.31	0.31	29.4	30.5	7.2	---	1.48	1.48	47.6	39.3	14.5	3.39	0.02	0.52	0.72	10.4	75	65	39	82	1.1	1.5	0.6	10	69.60
	Min	268.9	0.0	10.2	0.0	0.0	258.0	258.0	7.5	7.0	7.6	7.5	192	23	132	---	3.0	3.0	193	29	63	---	1.0	1.0	4.33	1.49	1.65	---	0.21	0.21	15.6	17.7	7.2	---	0.14	0.14	28.0	37.5	13.0	1.80	< 0.01	0.02	0.40	6.49	57	48	36	72	0.6	0.5	0.6	4	
	Max	454.5	110.3	11.5	0.3	0.0	335.3	335.3	7.8	8.3	7.9	7.8	368	99	230	---	6.9	6.9	322	234	103	---	4.0	4.0	9.30	7.48	2.07	---	0.49	0.49	40.7	44.8	7.3	---	3.08	3.08	67.4	53.4	16.0	5.18	0.03	1.25	1.04	13.0	89	94	41	90	2.0	3.1	0.6	57	
September	Avg	267.0	0.7	11.2	0.0	0.0	255.1	255.1	7.6	7.6	---	7.6	443	66	---	---	3.9	3.9	284	127	---	---	2.4	2.4	8.59	4.69	---	---	0.25	0.25	38.4	37.1	---	---	1.71	1.71	62.4	47.0	---	3.40	0.02	1.62	---	12.1	81	84	---	86	2.4	1.8	---	8	65.70
	Min	254.5	0.0	9.8	0.0	0.0	243.2	243.2	7.4	7.6	---	7.5	264	65	---	---	2.5	2.5	223	127	---	---	< 2.0	< 2.0	6.61	4.20	---	---	0.23	0.23	16.4	31.0	---	---	0.18	0.18	50.9	41.8	---	1.90	< 0.01	0.68	---	7.93	71	78	---	79	2.4	1.4	---	4	
	Max	325.4	92.4	12.6	0.0	0.0	302.4	302.4	7.7	7.7	---	7.8	856	66	---	---	5.2	5.2	397	127	---	---	4.0	4.0	14.6	5.18	---	---	0.28	0.28	51.8	43.1	---	---	2.84	2.84	88.0	52.2	---	5.10	0.05	2.56	---	15.8	94	90	---	92	2.5	2.2	---	16	
October	Avg	256.0	2.2	11.5	0.0	0.0	242.3	242.3	7.6	7.8	---	7.6	518	101	---	---	3.9	3.9	380	111	---	---	2.8	2.8	12.1	4.87	---	---	0.22	0.22	33.2	29.5	---	---	1.22	1.22	67.3	42.6	---	2.90	0.04	1.21	---	8.45	78	67	---	83	2.9	2.0	---	6	94.80
	Min	238.4	0.0	10.5	0.0	0.0	227.0	227.0	6.9	7.6	---	7.4	92	36	---	---	2.8	2.8	104	80	---	---	< 2.0	< 2.0	5.88	2.03	---	---	0.09	0.09	5.81	13.5	---	---	0.32	0.32	15.8	19.2	---	1.90	< 0.01	0.02	---	5.15	58	43	---	72	2.8	1.5	---	2	
	Max	349.2	59.0	12.5	0.0	0.0	278.5	278.5	7.8	8.0	---	7.7	5,900	160	---	---	5.5	5.5	2,750	134	---	---	4.0	4.0	137.0	6.30	---	---	0.29	0.29	42.4	42.8	---	---	2.81	2.81	390.0	58.3	---	4.70	0.08	3.27	---	12.1	100	104	---	95	3.1	2.3	---	27	
November	Avg	251.0	0.7	11.7	0.0	0.0	238.5	238.5	7.6	7.6	---	7.5	320	83	---	---	3.6	3.6	324	134	---	---	2.8	2.8	7.99	4.89	---	---	0.23	0.23	38.7	37.7	---	---	0.53	0.53	60.1	48.0	---	2.16	0.06	0.67	---	11.50	109	91	---	114	2.4	2.1	---	5	63.60
	Min	242.8	0.0	10.5	0.0	0.0	231.4	231.4	7.4	7.6	---	7.4	244	83	---	---	2.8	2.8	224	134	---	---	2.0	2.0	6.68	4.89	---	---	0.20	0.20	24.2	37.7	---	---	0.08	0.08	52.5	48.0	---	1.50	< 0.01	0.67	---	9.36	70	91	---	74	2.1	2.1	---	2	
	Max	284.9	21.7	12.7	0.0	0.0	251.1	251.1	7.8	7.6	---	7.7	452	83	---	---	6.4	6.4	375	134	---	---	5.0	5.0	8.86	4.89	---	---	0.27	0.27	44.0	37.7	---	---	1.50	1.50	70.8	48.0	---	3.20	0.15	0.67	---	13.80	275	91	---	234	2.8	2.1	---	10	
December	Avg	241.8	0.0	11.1	0.0	0.0	230.7	230.7	7.5	---	---	7.6	309	---	---	---	3.3	3.3	313	---	---	---	2.4	2.4	7.01	---	---	---	0.20	0.20	36.1	---	---	---	0.60	0.60	54.3	---	---	2.02	0.03	---	---	8.70	103	---	---	108	1.7	---	---	6	64.70
	Min	210.9	0.0	10.1	0.0	0.0	200.5	200.5	7.4	---	---	7.5	232	---	---	---	1.9	1.9	252	---	---	---	< 2.0	< 2.0	5.93	---	---	---	0.15	0.15	30.6	---	---	---	0.08	0.08	46.1	---	---	1.50	< 0.01	---	---	6.93	74.0	---	---	80.0	1.4	---	---	2	
	Max	290.8	0.0	12.2	0.0	0.0	280.1	280.1	7.7	---	---	7.7	396	---	---	---	6.8	6.8	383	---	---	---	4.0	4.0	8.90	---	---	---	0.35	0.35	42.6	---	---	---	2.00	2.00	64.2	---	---	3.40	0.06	---	---	11.2	197	---	---	166	2.1	---	---	250	
Annual Volume (ML)		108,289	8,358	3,903	1.00	0.00	96,029	96,029																																													839.8
2020	Avg	294	21.6	10.7	0.00	0.00	262	262	7.6	7.6	7.9	7.6	340	81	276	---	4.4	4.4	289	119	55	---	2.8	2.8	7.51	4.46	1.47	---	0.26	0.26	34.6	32.0	4.3	---	2.18	2.18	56.2	42.7	9.9	4.01	0.04	0.88	7.46	8.9	101	136	68	105					
2019	Avg	286	13.2	11.1	0.03	0.00	261	261	7.6	7.6	7.6	7.6	316	97	402	---	5.9	5.9	283	125	100	---	3.2	3.2	7.30	4.02	3.42	---	0.33	0.33	38.1	32.4	11.3	---	3.17	3.17	57.3	41.3	21.3	5.00	0.03	0.95	0.66	10.4	99	148	79	102					

PBP – Plant Bypass
TBP – Total Bypass Plant (including plant and secondary)
SEC – Secondary Bypass Plant
EPE - Enhanced Primary Effluent
EPT – Enhanced Primary Treatment

FEC – Final Effluent, Combined
RAW – Influent
BOD_5 – 5-day Biological Oxygen Demand
$CBOD_5$ – 5-day Inhibited BOD
EPEPS – Enhanced Primary Effluent Pump Station

TSS – Total Suspended Solids
TP – Total Phosphorus
NH_3-N – Ammonia as nitrogen
FE – Final Effluent from secondary treatment process

MPW – Membrane Product Water
ns – No sample

Outfall 10 - Combined, UV-disinfected (FEC + EPE)
Outfall 20 – Combined Bypass (RAW + PE + EPE)
Outfall 30 - Combined Bypass (RAW + Screened + PE + EPE)

(with biological nutrient removal).
Pre-Ultraviolet disinfection.

Table 4 summarizes the reclaimed water quality sample data from January 1 to December 31, 2020. All parameters except E. coli were developed on daily 24-hour composite samples of the recycled water. The E. coli testing was conducted on discrete samples collected on a daily basis.

Table 4: 2020 Reclaimed Water Quality

Month		FLOW ML	Total Alkalinity (mg CaCO3 /L)	Ammonia (mg N/L)	Biochemical Oxygen Demand (mg/L)	Chemical Oxygen Demand (mg/L)	Chloride (mg Cl/L)	Conductivity (mS/cm)	*E. coli* (Counts/100 mL)	pH	Total Suspended Solids (mg/L)	Total Organic Carbon (mg/L)	Total Phosphorus (mg P/L)	Total Dissolved Solids (mg/L)	Turbidity (NTU)
January	Avg	11.70	185	0.87	< 2	27	108	988	< 1	8.0	< 0.7	9.6	0.10	593	0.22
	Min	10.30	162	0.16	< 2	20	75.8	846	< 1	7.9	< 0.7	8.7	0.07	482	0.13
	Max	12.90	216	2.31	< 2	34	154	1,150	< 1	8.2	< 0.7	10.6	0.13	716	0.31
February	Avg	9.80	175	0.70	< 2	31	157	1,108	< 1	8.1	< 0.7	9.7	0.10	641	0.21
	Min	8.70	163	0.36	< 2	20	99.0	921	< 1	8.0	< 0.7	9.0	0.08	490	0.14
	Max	10.80	190	1.56	< 2	47	360	1,730	< 1	8.2	< 0.7	12.4	0.23	1,020	0.33
March	Avg	9.70	158	0.93	< 2	32	143	1,044	< 1	8.0	< 0.7	9.7	0.08	618	0.15
	Min	8.20	153	0.16	< 2	24	80.0	585	< 1	7.9	< 0.7	9.0	0.05	521	0.11
	Max	11.30	161	2.75	< 2	41	251	1,370	< 1	8.2	< 0.7	10.4	0.13	786	0.26
April	Avg	9.10	148	0.65	< 2	24	115.4	980	< 1	8.0	< 0.7	9.8	0.07	615	0.15
	Min	8.20	130	0.09	< 2	20	95.9	859	< 1	7.8	< 0.7	9.0	0.04	532	0.11
	Max	11.20	162	2.26	< 2	30	165	1,090	< 1	8.1	< 1.0	11.1	0.09	871	0.19
May	Avg	9.80	170	0.55	< 2	27	88.7	980	< 1	8.0	< 0.7	10.3	0.11	609	0.19
	Min	8.80	155	0.06	< 2	20	76.3	911	< 1	7.8	< 0.7	9.1	0.03	407	0.12
	Max	10.90	192	2.06	< 2	40	98.7	1,030	< 1	8.1	< 0.7	12.4	0.21	661	1.35
June	Avg	10.40	203	0.27	< 2	29	91.9	1,205	< 1	8.0	< 1.0	9.9	0.11	820	0.17
	Min	8.80	182	0.05	< 2	20	57.7	860	< 1	8.0	< 1.0	7.2	0.04	566	0.11
	Max	11.50	224	1.21	< 2	48	106.0	1,380	< 1	8.1	< 1.0	10.8	0.31	980	0.32
July	Avg	11.10	189	0.15	< 2	29	88.6	1,261	< 1	8.1	< 1.0	9.4	0.20	880	0.20
	Min	10.10	138	0.06	< 2	20	48.0	692	< 1	7.9	< 1.0	6.6	0.05	427	0.11
	Max	12.40	224	0.97	< 2	44	101.0	1,460	< 1	8.2	< 1.0	10.6	0.96	1,060	0.29
August	Avg	10.93	169	0.10	< 2	25	87.0	1,080	< 1	8.1	< 1.0	8.7	0.07	712	0.16
	Min	10.20	151	0.04	< 2	20	69.9	877	< 1	7.9	< 1.0	7.8	0.05	546	0.11
	Max	11.50	185	0.40	< 2	35	96.6	1,230	< 1	8.2	< 1.0	9.6	0.10	834	0.22
September	Avg	11.20	165	0.12	< 2	26	90.4	984	< 1	8.0	< 1.0	8.7	0.09	636	0.16
	Min	9.80	153	0.05	< 2	20	80.7	900	< 1	7.9	< 1.0	7.7	0.06	577	0.11
	Max	12.60	174	0.84	< 2	30	96.7	1,070	< 1	8.1	< 1.0	9.3	0.12	687	0.23
October	Avg	11.50	163	0.16	< 2	28	87.6	898	< 1	8.0	< 1.0	8.2	0.08	565	0.18
	Min	10.50	157	0.07	< 2	20	77.9	840	< 1	7.9	< 1.0	7.5	0.03	520	0.12
	Max	12.50	173	0.63	< 2	47	98	959	< 1	8.1	< 1.0	9.8	0.17	602	0.30
November	Avg	11.70	158	0.16	< 2	27	118	995	< 1	8.0	< 1.0	8.4	0.09	602	0.18
	Min	10.50	147	0.06	< 2	20	81.3	833	< 1	7.9	< 1.0	7.7	0.06	490	0.12
	Max	12.70	162	0.60	< 2	33	242	1,420	< 1	8.1	< 1.0	9.1	0.12	803	0.32
December	Avg	11.10	164	0.16	< 2	26	113	962	< 1	8.1	< 1.0	8.0	0.07	578	0.17
	Min	10.10	152	0.05	< 2	20	80.8	854	< 1	8.0	< 1.0	7.2	0.04	528	0.12
	Max	12.20	171	0.92	< 2	41	180	1,160	< 1	8.7	< 1.0	8.8	0.12	676	0.28
Annual Summary	Avg	10.67	171	0.40	< 2	28	107	1,040	< 1	8.0	< 0.9	9.2	0.10	656	0.18
	Min	8.20	130	0.04	< 2	< 20	48.0	585	< 1	7.8	< 0.9	6.6	0.03	407	0.11
	Max	12.90	224	2.75	< 2	48	360	1,730	< 1	8.7	1.0	12.4	0.96	1,060	1.35

Notes:

1) NTU – Nephelometric turbidity units.
2) Counts/100mL – Counts per 100 mL of sample.
3) ML – Megaliters (1,000,000 liters)

Table 5 summarizes the effluent chronic and acute toxicity testing. Both acute and chronic toxicity tests were carried out by contract laboratories in accordance with the Environment Canada Biological Test Methods (Environment Canada 1990 and 1992). The acute testing included 48-hour Rainbow Trout static toxicity, 48-hour static toxicity using Daphnia magna and 15-minute Microtox tests using luminescence bacteria. Seven-day Ceriodaphnia dubia, Fathead minnows and three-day P. subcapitata survival and reproductive impairment tests were used to determine chronic toxicity. No effluent toxic events were observed in 2020.

Table 5: 2020 Effluent Toxicity

Dates	Qrt	Microtox	*Daphnia Magna*	Rainbow Trout	*Ceriodaphnia dubia*				Fathead Minnows				*Pseudokirchneriella*				
					Survival		*Reproduction*		*Survival*		*Biomass*						
		% of Control	LC_{50} %[1]	LC_{50} %	LC_{25} %	LC_{50} %	IC_{25} %	IC_{50} %[2]	LC_{25} %	LC_{50} %	IC_{25} %	IC_{50} %	IC_{25} %[3]	NOEL (%)[4]	LOEL (%)[5]	TOEL (%)[6]	Toxic Units (TU)[7]
1/15/2020		>81.9	>100	>100													
2/12/2020	1	>81.9	>100	>100		>100				>100			>90.91	1.42	2.841	2.009	70.42
3/10/2020		>81.9	>100	>100													
4/22/2020		>81.9	>100	>100													
5/13/2020	2	81.9	>100	>100		>100				>100			>90.91	2.841	5.682	4.018	35.2
6/15/2020		>81.9	>100	>100													
7/8/2020		>81.9	>100	>100													
8/18/2020	3	>81.9	>100	>100		>100				>100			>90.91	<1.42	1.42	ND	>70.42
9/16/2020		>81.9	>100	>100													
10/14/2020		>81.9	>100	>100													
11/18/2020	4	>81.9	>100	>100		>100				>100			>90.91	2.841	5.682	4.018	35.2
12/21/2020		>81.9	>100	>100													

[1] LC50 - % effluent concentration at which there is a 50% mortality of test organisms; [2] IC50 - % effluent concentration at which there is a 50% reduction in growth or reproduction of test organisms; [3] IC25 - % effluent concentration at which there is a 25% reduction in growth or reproduction of test organisms; [4] NOEL - the concentration at which there was no observed effect level; [5] LOEL - the concentration at which you start seeing the lowest observable effect; [6] TOEL - NOEL/LOEL; [7] TU - the ratio of the concentration observed divided by the concentration for 50% inhibition.

Table 6 summarizes the proficiency testing of the Gold Bar WWTP Laboratory. It includes the Laboratory z-scores achieved from analyzing proficiency testing (PT) samples for constituents required by the Approval to Operate. The 2020 PT samples were provided by the Canadian Association for Laboratory Accreditation (CALA). A PT scores greater than or equal to 70 or z-scores less than or equal to 3.000 are considered acceptable for CALA PT.

Table 6: 2020 Summary of Gold Bar Wastewater Proficiency Testing

Study	Date	pH		BOD		C-BOD		TSS		NH3-N		TP		*E.coli*	
		PT Score	Avg. z-score	PT Score	Avg. z-score	PT Score	Avg. z-score	PT Score	Avg. z-score	PT Score	Avg. z-score	PT Score	Avg. z-score	PT Score	Avg. z-score
CALA	Mar-20	95	0.15	87	0.86	99	-0.03	95	-0.08	97	-0.15	90	0.66	94	0.43
CALA	Oct-20	93	-0.45	92	-0.63	84	-1.06	97	0.18	95	-0.30	96	0.29	90	-0.68

Notes:

PT Score > 70 acceptable.

VH - Very high bias, H - High bias, L - Low bias, A - Acceptable, Q - Questionable, U - Unsatisfactory

CALA - Canadian Association for Laboratory Accreditation.

pH - pH manual, BOD - 5-day Biochemical Oxygen Demand, C-BOD - 5-day Carbonaceous Biochemical Oxygen Demand, TSS - Total Suspended Solids, NH3-N - Ammonia as Nitrogen, TP - Total Phosphorus.

E.coli - Sample analyzed using membrane filtration (mENDO) method.

In 2020, a total of 108,289 million litres (ML) of wastewater was conveyed to the plant. Secondary treatment and UV disinfection was provided to 96,029 ML (88.7%) of the total raw influent flow with 3,903 ML (3.6%) of reclaimed water provided to industrial customers.

Assessment of Annual Monitoring Results

The Gold Bar WWTP Effluent Limit Performance (WELP) index for 2020 was 19.0% (Figure 1). The 2020 index was lower than the five-year average of 22.2% due to having more process tanks/equipment available than in previous years. Figure 2 shows the annual WELP from 2005 to 2020, including the five-year average.

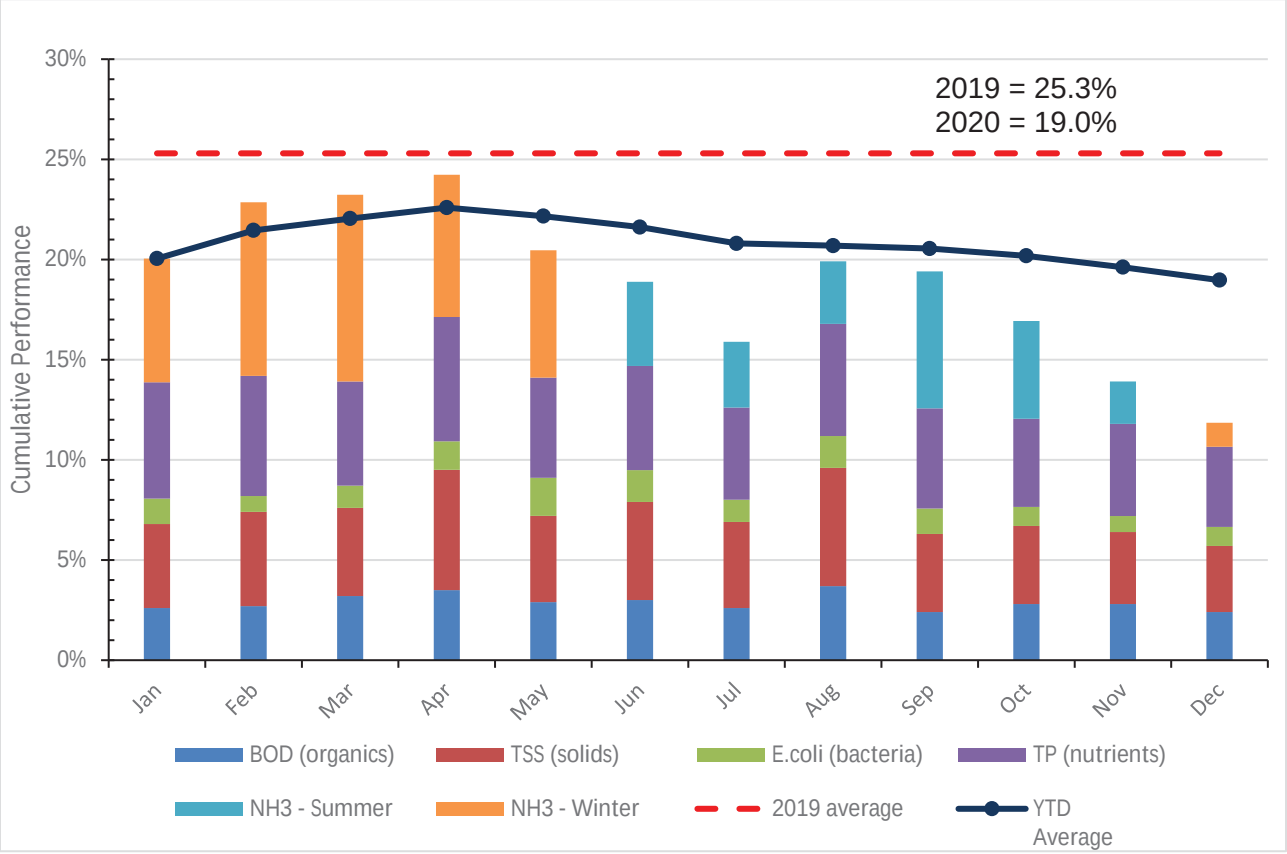

Figure 1: 2020 Monthly Gold Bar WWTP Wastewater Effluent Limit Performance (WELP) Index

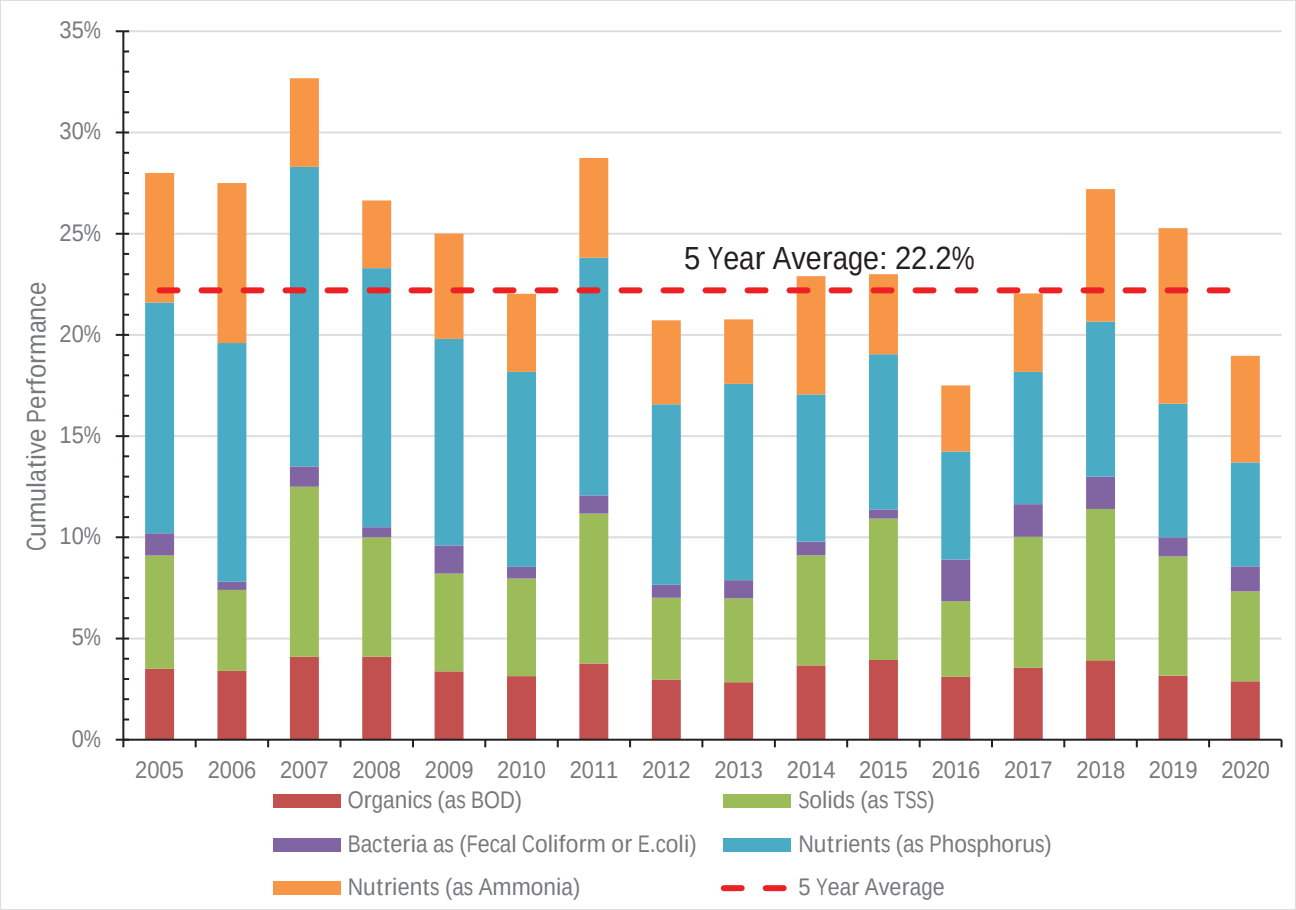

Figure 2: Gold Bar WWTP Wastewater Effluent Limit Performance (WELP Index) 2005-2020

For 2020, all of the monthly limits for Approval to Operate discharge parameters (Table 1) were met.

Chemicals Added to the Wastewater Treatment Process

As per Section 6 of the Operations Plan, the following chemicals are used in the wastewater treatment process:

- Secondary Alum
- EPT Alum
- EPT Polymer
- DAF Polymer
- Membrane Bleach
- Ostara Magnesium Chloride
- Ostara Caustic

Daily and monthly consumption of these chemicals is summarized in Appendix B.

Names of Supervising Operators

Table 7 lists all certified wastewater treatment operators, their level of certification, and their positions at Gold Bar WWTP as of December 2020. Supervising operators are also listed in the Operations Monthly Summaries in Appendix C.

Table 7: List of Certified Wastewater Treatment Operators (as of December 2020)

Name	Title	WWT Certification Level
Grossell, Ken M	Manager, Operations	IV
Schneider, Brian P	WWTP Operator Foreman	IV
Kerr, David A	WWTP HEI Coordinator	IV
Graham, Thomas A	WWTP Operator Foreman	IV
Jones, Kira I	WWTP Operator Foreman	IV
Kwan, Tom	WWTP Operator Foreman	IV
Espinosa, Diego F	WWTP Operator Foreman	IV
Lekamwasam, Janaka	WWTP Operator Foreman	IV
Nunes, Michael	WWTP Lead Operator	IV
Penner, Jody	WWTP Lead Operator	IV
Sanche, Dagny	WWTP Training Coordinator	IV
Barrett, Jeremy L	Manager, Process Risk & Integration	III
Li, Bing (Frank)	WWTP Operator	III
Jama, Yusuf	WWTP Operator	III
Budden, Curt	WWTP Operator Foreman	III
Rindero, Billy	WWTP Operator Foreman	III
Hetherington, Clarke	WWTP Operator	III
Hahn, Kevin	WWTP Operator	III
Sandouga, Sam	WWTP Lead Operator	III
Baker, Cole	WWTP Lead Operator	III
Holden, Derek	WWTP Operator	III
Jordan, Bradley	WWTP Lead Operator	III
Nieuwenhuis, Andrew	WWTP Operator	III
Vogelgesang, Ryan	WWTP Operator	III
Diletzoy, Kyle	WWTP Operator	III
Sontrop, Melanie	WWTP Operator	II
Rees, Emma	WWTP Operator	II
Downey, Anthony	WWTP Operator	II
Paglicauan, Jermine	WWTP Operator	II
Omeragic, Armen	WWTP Operator	II
Furber, Brandyn	WWTP Operator	I

Uncommitted Hydraulic Reserve Capacity

In 2020, Gold Bar WWTP received a total dry weather volume of 99,932 ML. This volume is the sum total of Outfall 10 effluent (96,029 ML) and membrane reclaimed water (3,903 ML). Outfall 10 effluent also includes wet weather flow that did not result in secondary bypass and any additional wet weather flow that had secondary treatment during secondary bypass events.

The average dry weather flow in 2020 was 273 million litres per day (MLD). However, the true dry weather flow was lower than 273 MLD and was approximately 263 MLD. The true dry weather average flow excludes additional flow to the plant during snow melt or rainfall, but includes inflow and infiltration (I&I). The total true dry weather volume was approximately 96,006 ML.

Based on 310 MLD of average secondary treatment capacity and a true dry weather average flow of 263 MLD, the uncommitted hydraulic reserve capacity for secondary treatment in 2020 was 47 MLD.

Wet Weather Summary

In 2020, Gold Bar WWTP had 92 days of secondary and primary plant bypasses. The total volume of secondary bypass was 8,172 ML. In addition, the total primary bypass volume was 187 ML.

There were 21 significant wet weather events with inflows to the plant greater than 1,200 MLD. The plant received a peak flow rate of approximately 1,929 MLD on August 3, 2020.

Summary of Operational Issues

Key operational activities, issues, and remedial actions are outlined in the Operations Monthly Summaries in Appendix C.

2020 Annual Air Pollution Control System Report

Table 8 and Table 9 describe the air pollution control system and ambient air monitoring limits and monitoring requirements. Note that the ambient air monitoring station is not yet installed, so ambient air monitoring was completed using a portable low range H_2S analyzer and no assessment of results was included as per Section 6.3.3 (a) (iii) (B) of the Approval to Operate. The ambient air monitoring station will be commissioned and in operation before December 31, 2021.

Table 8: Air Pollution Control System Operating Limits (Approval to Operate Table 5-2)

Air Pollution Control System	Monitoring Location	Parameter	Limit
East scrubber; West scrubber; EPT scrubber; and Fermenter scrubber	Blowdown recirculation line before chemical makeup of each wet scrubber	pH	≥ 8.0
		ORP	≥ 300 mV
N/A	Ambient air monitoring station	H_2S, NO_2, and SO_2	After ambient air monitoring station commissioned: Meet the latest *Alberta Ambient Air Quality Objectives*

Table 9: Monitoring and Reporting - Air Pollution Control Systems and Ambient Air (Approval to Operate Table 6-2)

Source	Parameter	Frequency	Method of Monitoring	Sample Location
Carbon scrubber for grit recovery facility, during operation seasons	Temperature	Continuous	Online temperature transmitter, record daily average	Influent air stream
	Differential air pressure	Continuous	Online differential air pressure gauge, record daily average	Influent and effluent air stream
Carbon scrubber for grit recovery facility, during operation seasons; Carbon scrubber for screening building 2/3; Carbon scrubber for grit building 2	H_2S	Continuous, effective July 1, 2020	Online H_2S sensor, record daily average	Effluent air stream of each carbon scrubber
	H_2S	Annually	Manual stack survey, as per the latest *Alberta Stack Sampling Code*	Effluent air stream of each carbon scrubber
Carbon scrubber for Clover Bar biosolids dewatering building	H_2S	Weekly	Portable low range H_2S analyzer, as per the manufacturer's specifications, grab sample	Effluent air stream of the carbon scrubber
	H_2S	Annually	Manual stack survey, as per the latest *Alberta*	Effluent air stream of the carbon scrubber

			Stack Sampling Code	
East scrubber; West scrubber; EPT scrubber; and Fermenter scrubber	pH	Continuous	Online pH sensor, record daily average	Recirculation blowdown line, before addition of chemical makeup of each wet scrubber
	ORP	Continuous	Online ORP sensor, record daily average	
East scrubber; West scrubber; EPT scrubber; and Fermenter scrubber	H_2S	Continuous, effective July 1, 2020	Online H_2S sensor, record daily average	Influent air stream of each wet scrubber
	H_2S	Continuous, effective July 1, 2020	Online H_2S sensor, record daily average	Effluent air stream of each wet scrubber
	H_2S	Annually	Manual stack survey, as per the latest *Alberta Stack Sampling Code*	Effluent air stream of each wet scrubber
Ambient air	H_2S	Before ambient air monitoring station commissioned: Daily, when ambient air temperature > 0 °C	Portable low range H_2S analyzer, as per the manufacturer's specifications, grab sample	Fence line of Gold Bar Wastewater Treatment Plant
	H_2S, NO_2, and SO_2	After ambient air monitoring station commissioned: Continuous	*Air Monitoring Directives*, as amended, record 1-hour average and 24-hour average	Ambient air monitoring station
	Temperature			
	Wind speed			
	Wind direction			
Public odour complaints	N/A	When occurring	Document when Gold Bar Wastewater Treatment Plant is alleged and confirmed to be odour source	N/A

Summary of Air Pollution Control System Monitoring

Table 10 and Table 11 contain a monthly summary of the air pollution control system monitoring data. The data is split into two tables for ease of viewing. Appendix D contains the daily air pollution control system data. As per Table 9 (Table 6-2 of the Approval to Operate), the requirement for daily average H_2S of the effluent air streams of the pollution control systems was effective July 1, 2020, therefore no data is shown prior to this date.

Table 10: Air Pollution Control System Report - Part I

Month		East Scrubber				Fermenter Scrubber				West Scrubber				EPT Scrubber			
		pH	ORP (mV)	H_2S In (ppm)	H_2S Out (ppb)	pH	ORP (mV)	H_2S In (ppm)	H_2S Out (ppb)	pH	ORP (mV)	H_2S In (ppm)	H_2S Out (ppb)	pH	ORP (mV)	H_2S In (ppm)	H_2S Out (ppb)
January	Avg	9.50	671.4	N/A	N/A	9.50	699.6	N/A	N/A	9.50	670.4	N/A	N/A	9.49	677.2	N/A	N/A
February	Avg	9.49	671.5	N/A	N/A	9.50	699.4	N/A	N/A	9.50	672.5	N/A	N/A	9.50	687.3	N/A	N/A
March	Avg	9.50	671.0	N/A	N/A	9.49	699.8	N/A	N/A	9.48	669.1	N/A	N/A	9.50	693.5	N/A	N/A
April	Avg	9.50	669.7	N/A	N/A	9.50	700.0	N/A	N/A	9.50	670.4	N/A	N/A	9.51	643.6	N/A	N/A
May	Avg	9.50	669.2	N/A	N/A	9.49	699.9	N/A	N/A	9.49	672.9	N/A	N/A	9.49	696.9	N/A	N/A
June	Avg	9.50	669.9	N/A	N/A	9.48	694.6	N/A	N/A	9.52	666.4	N/A	N/A	9.50	678.3	N/A	N/A
July	Avg	9.50	669.4	0.01	34.2	9.49	699.7	2.24	157.9	9.50	667.4	0.98	3.9	9.50	699.4	1.31	110.5
August	Avg	9.50	669.8	0.09	2.3	9.48	700.8	6.13	1123.7	9.53	623.0	2.37	73.3	9.50	676.7	2.49	540.5
September	Avg	9.50	671.0	0.34	8.5	9.46	699.8	6.05	745.0	9.56	650.4	4.22	157.4	9.49	682.5	3.60	1528.1
October	Avg	9.50	670.0	0.82	34.3	9.50	698.9	3.11	965.0	9.50	666.7	2.90	36.3	9.50	693.4	3.69	688.7
November	Avg	9.51	671.6	0.29	5.9	9.50	699.3	4.35	636.8	9.50	687.2	2.60	24.3	9.50	698.7	2.49	155.6
December	Avg	9.50	670.1	0.51	7.1	9.50	700.0	5.35	64.7	9.51	689.0	4.29	13.8	9.50	700.1	1.53	228.9

Table 11: Air Pollution Control System Report - Part II

Month		Grit 6/7 Building Scrubber	Screen 4-8 Building Scrubber	Dewatering Facility Scrubber
		H_2S Out (ppb)	H_2S Out (ppb)	H_2S Out (ppb)
January	Avg	N/A	N/A	N/A
February	Avg	N/A	N/A	N/A
March	Avg	N/A	N/A	N/A
April	Avg	N/A	N/A	N/A
May	Avg	N/A	N/A	0
June	Avg	N/A	N/A	0
July	Avg	1.0	22.3	0
August	Avg	1.7	203.7	0
September	Avg	2.8	948.6	0
October	Avg	0.2	329.5	0
November	Avg	0.1	178.4	0
December	Avg	0.0	301.2	0

The annual manual stack survey was submitted to AEP on September 29, 2020.

Assessment of Monitoring Results

On April 27, 2020, the daily average ORP for the EPT Scrubber was less than the required 300 mV. This was reported to AEP (Reference # 365988).

The daily average ORP for the EPT Scrubber on April 5, 2020 was below 300 mV, however operators were actively troubleshooting the issue and shut down the scrubber when it was determined that the ORP could not be recovered. Refer to Table 12, Summary of Scrubber Operational Issues for more information.

Chemicals Consumed by Scrubbers

As per Section 6 of the Operations Plan, sodium hypochlorite (bleach) and caustic soda are used in the scrubbers for oxidization of H_2S and pH control, respectively. Daily and monthly consumption of these chemicals is summarized in Appendix E.

Summary of Air Pollution Control System Operational Issues

Table 12 is a summary of operational issues encountered by each air pollution control system, and the remedial actions taken to resolve the issues.

Table 12: Summary of Scrubber Operational Issues

Scrubber Name	Date/Time of Shutdown	Date/Time Returned to Service	Total Time Shutdown (hr)	Fence Line H2S Readings Taken?	Operational Issue	Actions Taken
EPT	1/14/2020 9:31	1/15/2020 0:10	14.7	No - Temperature too low	Fan casing full of water due to foaming in tower.	Flushed scrubber tower to get rid of foam.
EPT	2/13/2020 7:30	2/13/2020 8:30	1.0	No - Short outage	Planned maintenance.	Maintenance on scrubber nozzles.
East	2/19/2020 4:15	2/19/2020 14:40	10.4	Yes	Planned maintenance.	Preventative maintenance work.
East	2/29/2020 15:40	2/29/2020 18:40	3.0	Yes	Tripped on low level, foaming.	Scrubber drained and restarted.
EPT	4/5/2020 19:45	4/6/2020 11:48	16.1	Yes	Bleach pump issues.	No redundant chemical feed pumps on the EPT scrubber. Troubleshooting throughout day including running bleach pump in manual mode. Called in Maintenance to assess issue. Bleach pump was replaced.
Fermenter	4/7/2020 7:15	4/7/2020 8:03	0.8	No - Short outage	Planned maintenance.	Bleach pump replacement.
EPT	4/26/2020 17:30	4/27/2020 19:00	0.0	No - Scrubber not shut down	Issue with bleach pump airlocking.	Scrubber not shut down. Intermittent issues. Bleach delivered to increase tank level. Reported to AEP (Reference # 365988).
EPT	5/27/2020 7:30	5/27/2020 11:00	3.5	Yes	Planned outage.	Install H2S sensors.
EPT	5/31/2020 20:14	5/31/2020 20:20	0.1	No - Short outage	Bleach pump issues.	Troubleshooting as per SOP.
EPT	6/5/2020 7:00	6/5/2020 14:28	7.5	Yes	Bleach pump issues.	Replaced bleach pump and repaired union on discharge piping.
EPT	6/5/2020 22:40	6/6/2020 1:54	3.2	Yes	Loss of ORP.	Troubleshooting as per SOP.
Fermenter	6/7/2020 3:30	6/7/2020 7:45	4.2	Yes	Tube burst on one bleach pump and overcurrent alarm on backup pump.	Emergency work request submitted to replace tube and E/I reset alarm.

EPT	6/8/2020 9:30	6/8/2020 13:00	0.0	No - Scrubber not shut down	Air locking in bleach pump.	Scrubber not shut down. Troubleshooting as per SOP.
West	6/20/2020 12:41	6/20/2020 13:29	0.8	No - Short outage	Scrubber pumps/blower tripped off.	Water softener tripped causing low level in scrubbers. Water softener bypassed and scrubber restarted.
West/EPT	8/11/2020 19:30	8/11/2020 22:30	0.0	Yes	Air locking in bleach pumps.	Scrubbers not shut down. Troubleshooting as per SOP.
Fermenter	8/19/2020 10:45	8/19/2020 14:15	3.5	Yes	Issue with both caustic pumps.	Immediately replaced hose on caustic pump and issue was resolved. Hose replacement on backup caustic pump also scheduled.
West	8/19/2020 22:40	8/20/2020 8:00	9.3	Yes	Air locking in bleach pumps, ORP dropping.	Tried both bleach pumps and tried backflushing multiple times. Shut off scrubber until we could get bleach pumps running again. Working on getting temporary totes until piping can be rerouted to resolve air locking issue.
West	8/21/2020 21:46	8/21/2020 22:27	0.7	No - Short outage	Air locking in bleach pumps.	Switched bleach supply to temporary tote. Still having issues, so switched back to tank and ORP recovered.
West	8/24/2020 19:45	8/25/2020 0:30	4.8	Yes	Air locking in bleach pumps, low ORP.	Shut off scrubber until we could get bleach pumps running again. Waiting for design for piping to be rerouted to resolve air locking issue.
West/EPT	8/26/2020 6:21	8/26/2020 7:57	1.6	No - Short outage	Air locking in bleach pumps.	Shut off scrubber until we could get bleach pumps running again. Waiting for design for piping to be rerouted to resolve air locking issue.
EPT	9/14/2020 5:08	9/15/2020 13:13	32.1	Yes	Planned outage.	Redoing piping to eliminate airlocking in bleach pumps. Temporary bleach totes utilized to minimize outage.
West	9/15/2020 4:55	9/16/2020 13:30	32.6	Yes	Planned outage.	Redoing piping to eliminate airlocking in bleach pumps. Temporary bleach totes utilized to minimize outage.
West	9/21/2020 9:24	9/21/2020 16:30	7.1	Yes	Low bleach tank level.	Switched bleach supply to temporary tote.
EPT	9/30/2020 18:06	9/30/2020 19:26	1.3	No - Short outage	Bleach pumping issues.	Switched bleach supply.
EPT	10/1/2020 8:00	10/1/2020 11:28	3.5	Yes	Bleach pumping issues.	Cleaned strainers. Cleared blockage from bleach supply line.
West	10/1/2020 9:56	10/1/2020 11:27	1.5	No - Short outage	Bleach pumping issues.	Cleaned strainers. Cleared blockage from bleach supply line.

West	10/15/2020 9:33	10/15/2020 10:09	0.6	No - Short outage	Planned outage.	Redoing piping to eliminate airlocking in bleach pumps. Temporary bleach totes utilized to minimize outage.
Screen Building, Grit Building, and GRF Carbon Scrubbers	12/4/2020	Ongoing	0.0	No - Scrubbers not shut down	Upon inspection of the carbon scrubbers, it was noticed that there is some air short circuiting the media. Recommended to top up scrubbers with additional media.	Planned to coordinate top up of scrubber media with contractor representative and maintenance in 2021. Scrubbers continue to be operational.
All	15-Dec-20	18-Dec-20	0.0	No - Scrubbers not shut down	Issues with calibrating scrubber outlet H2S sensors due to over-exposure of H2S. No shelf spares.	Notified AEP (Reference #374529). Ordered and installed replacement H2S sensors and shelf spares. Trialing a 0-20 ppm unit on the Fermenter Scrubber outlet to replace the 0-2000 ppb sensor for increased reliability.
West	12/22/2020 7:34	12/22/2020 12:12	4.6	Yes	Mechanical issue with recirculation pump.	Used lime to loosen scale on pump impeller.

2020 Annual Ambient Air Report

Summary of Ambient Air Monitoring

Table 13 shows a summary of the ambient air monitoring results. The grab samples were taken daily when the ambient air temperature was > 0°C using a portable, low-range H_2S analyzer along the fence line of the Gold Bar Wastewater Treatment Plant. Figure 3 depicts the monitoring locations. Appendix F contains the daily ambient air monitoring data.

Table 13: Summary of Ambient Air Monitoring Results

Month		H_2S (ppb)							
		1	2	3	4	5	6	7	8
January	Avg	3.10	1.29	2.30	0.56	0.16	0	0.18	0.35
	Min	0	0	0	0	0	0	0	0
	Max	19.25	9.08	9.69	7.16	3.08	0	3.47	3.46
February	Avg	2.25	0.84	0.50	0.15	0	0.61	0.64	0
	Min	0	0	0	0	0	0	0	0
	Max	13.06	4.73	3.35	3.79	0	5.01	7.28	0
March	Avg	3.17	0.76	0.73	0.37	0.55	0.59	0.99	1.55
	Min	0	0	0	0	0	0	0	0
	Max	20.77	3.89	5.66	3.52	4.53	5.01	4.76	24.79
April	Avg	1.26	0.51	0.22	0.76	0	0.54	0.34	0.12
	Min	0	0	0	0	0	0	0	0
	Max	12.55	8.48	3.29	9.76	0	4.69	3.4	3.42
May	Avg	0.36	0.12	0.11	1.39	0.03	0.16	0.22	0.27
	Min	0	0	0	0	0	0	0	0
	Max	4.63	3.57	3.54	7.46	1.04	5.05	3.44	8.36
June	Avg	0	0	0.11	0.44	0	0	0	0.18
	Min	0	0	0	0	0	0	0	0
	Max	0	0	3.40	5.12	0	0	0	5.27
July	Avg	0	0	0.21	1.01	0.21	0	0.23	0
	Min	0	0	0	0	0	0	0	0
	Max	0	0	3.29	14.2	3.46	0	3.97	0
August	Avg	2.99	0.76	0.90	1.27	0.51	0.12	0.37	0.10
	Min	0	0	0	0	0	0	0	0
	Max	20.54	4.51	11.82	7.59	9.21	3.84	7.45	3.17

September	Avg	0.55	0.16	0	0.11	0	0.10	0	0
	Min	0	0	0	0	0	0	0	0
	Max	7.38	4.68	0	3.33	0	3.09	0	0
October	Avg	0.93	0.31	0.28	0.15	0.20	0.24	0.07	0.14
	Min	0	0	0	0	0	0	0	0
	Max	5.89	4.26	4.09	3.48	3.33	4.85	2.07	3.07
November	Avg	1.45	0.11	0.07	0.04	0.09	0.21	0.07	0.04
	Min	0	0	0	0	0	0	0	0
	Max	16.02	3.14	2.12	1.1	2.51	3.36	1.89	1.15
December	Avg	3.79	0.22	0.11	0.63	0.18	0.11	0.11	0.11
	Min	0	0	0	0	0	0	0	0
	Max	38.12	3.25	3.05	4.26	5.18	3.11	3.06	3.22

Figure 3: Location of H_2S Monitoring

Summary of Public Odour Complaints

Table 14 shows the number of odour complaints received within the Gold Bar WWTP Odour Response Boundaries and number of complaints where Gold Bar WWTP is the confirmed source of odour based on wind direction, scrubber operation, corroboration with odour model software, ambient H_2S monitoring results, and plant operations/maintenance.

Table 14: Summary of Gold Bar WWTP Odour Complaints

Month	Number of Odour Complaints	Number of Complaints where Gold Bar WWTP is the Confirmed Source of Odour
January	3	2
February	0	0
March	0	0
April	1	0
May	1	1
June	0	0
July	2	1
August	1	1
September	6	2
October	0	0
November	1	1
December	0	0
Total	**15**	**8**

Appendix G contains a detailed list of odour complaints including the steps taken to identify the odour sources and remedial actions taken to resolve the odour issues.

2020 Summary of Contraventions and Notifications to AEP

Table 15 summarized the contraventions to Approval to Operate 639-03-06. There was one contravention in 2020.

Table 15: Summary of Contraventions

Date	Summary of Contravention	AEP Reference Number
5/1/2020	AEP 24 hour hotline was called to report a contravention to the approval section 5.2. EPT Scrubber daily average ORP dropped below 300 mV on April 27, 2020. 7 day letter required, due May 4, 2020.	365988

Table 16 summarizes the notifications to AEP under Approval to Operate 639-03-06 as per the 2020 Operations Plan. There were thirteen notifications in 2020, including two reported by the contractor operating the dewatering facility and lagoon dredge.

Table 16: Summary of Notifications to AEP

Date	Summary of Notifications	AEP Reference Number
1/10/2020 11:33 AM	AEP 24 hour hotline was notified of a planned UV outage from 7:30 - 8:30 AM January 14, 2020 for planned maintenance on an electrical transformer.	362620
1/30/2020 9:43 AM	Notified of extension to planned temporary reduction in target treatment capacity from 1200 MLD to 570 MLD for conventional and enhanced primary treated wastewater flows for planned capital work. Outage started September 9, 2019 and is planned to proceed until February 29, 2020.	358652
4/30/2020	AEP 24 hour hotline was notified of a planned UV outage from 7:00 - 8:00 AM May 1, 2020 for planned maintenance on an electrical transformer storage .	365957
6/30/2020	AEP 24 hour hotline was notified of a planned UV outage from 7:00 - 11:00 AM July 3, 2020 for planned maintenance on an electrical transformer.	368354
7/10/2020	AEP 24 hour hotline was notified of a variance from the target operating capacity listed in the Operations Plan. The summer target operating capacity for Pre-treatment is 1,200 MLD. On July 9, 2020 at approximately 11:30 PM, we reached 1,079 MLD before we had a screened bypass due to an unusually high surge of flow from the collection system.	368869
9/10/2020 11:30 AM	AEP 24 hour hotline was notified of a planned UV outage from 0:30 to 12:30 on September 17, 2020 for planned maintenance on the electrical distribution system (breaker change out).	371414
9/17/2020 10:00 AM AEP Operator: Taryn	AEP was called and an update was provided to this existing notification and reference number. A second phase of our planned UV shutdown to take place from 11:00 PM September 17 - 11:00 AM September 18. The scope of the work is the same as the original notification. It was noted that EPCOR purposely plans the shutdowns to take place over night because this is when wastewater flows are low, and impact to the river is minimized.	371414
9/24/2020 12:08 PM AEP Operator: Jason	Notified of planned temporary reduction in target treatment capacity from 1200 MLD to 750 MLD for conventional and enhanced primary treated wastewater flows for planned capital work. Outage to start October 1, 2020 and proceed until March 1, 2021.	372020

10/3/2020	100 L chlorinated water release at Clover Bar Dewatering Facility. Reported by to AEP by Dewatering Facility operator (Suez). 7 day letter submitted by EPCOR.	372433
10/5/2020 AEP Operator: Erin	AEP was notified by phone on October 5 at 3:00 PM that EPCOR is taking Digester 5 out of service for an unplanned structural assessment and repair after a bulge and crack was observed in the masonry veneer exterior wall. The condition of the digester vessel structure is unknown and will be assessed once the damaged masonry is removed. There have been no environmental releases from Digester 5 to date, and EPCOR will still have sufficient digester capacity if Digester 5 is out of service for an extended period of time. To safely remove Digester 5 from service, as noted in EPCOR's approved operations plan, on October 10, 2020 the headspace of Digester 5 will be continuously purged with nitrogen gas and flared until what remains in the headspace is a non-combustible mixture of nitrogen, carbon dioxide, methane, with trace amounts of hydrogen sulfide. The digester hatches will then be opened and fans will be activated to ventilate the purged digester headspace to atmosphere.	372467
10/8/2020 AEP Operator: Natasha	AEP was notified by phone on October 8 at 1:00 PM that the date of the Digester 5 purge has changed to October 13th, 2020.	372467
11/7/2020	50 L biosolids overflow from tank at Clover Bar Lagoons dredge operation. Reported to AEP by dredge operator (Suez). 7 day letter submitted by EPCOR.	374529
12/16/2020 AEP Operator: Darren	AEP was notified by phone on December 16 at 12:55 PM that the Gold Bar WWTP is having reliability issues with some of our new scrubber H2S exhaust monitoring instruments that were added by amendment to our approval to operate for July 1, 2020. All the odour scrubbers continue to operate and treat foul air as required by the approval, as these new H2S instruments are for supplementary monitoring purposes only. EPCOR is currently waiting on the repair of the H2S instruments and all our shelf spares by the US vendor. It is EPCOR's opinion that is a notification only, that no contravention to the approval has occurred, and that no 7 day letter is required.	374529

2020 Biosolids Program Summary

In 2020, the biosolids management program was able to remove 27,144 dry tonnes (DT) of biosolids from the Clover Bar Lagoons for beneficial reuse. We removed another estimated 2,250 DT to landfill during the Cell 3E cleaning and rehabilitation project. Biosolids production from Gold Bar and ACRWC was 30,420 DT, which increased the storage inventory by 1,026 DT. Table 17 shows a summary of the biosolids program.

Table 17: Summary of Biosolids Program

Beneficial Application Use Method	Application Weight (dry tonnes)	Application Volume (m^3)
Nutri-Gold (dewatered material)	3,921 (1,428 in stockpile)	16,685
Nutri-Gold (thickened material)	6,812	90,826
Agricultural Land Application (3rd party)	10,414	138,853
Non-Agricultural Land Application	5,997	25,519
Landfill (3E Project)	2,250	4,500
Total	29,394	276,383

Appendices H, I, and J contain summaries of the Nutri-Gold, third party agricultural, and non-agricultural land application programs, respectively.

Appendices

Appendix A – Monthly Plant Performance Reports

Appendix A - Plant Performance Reports

PROVIDING MORE EPCOR

Gold Bar Wastewater Treatment Plant
Plant Performance Report
January 2020

Digested Sludge: Total Monthly Volume (ML)	72.6

Table, part 1 of 3. Volume of Flow (ML), with Influent and Effluent (Non UV Disinfected / UV Disinfected) columns; Liquid Stream Quality: pH@25°C and TSS (mg/L).

DATE	Peak Flow (ML/D)	Influent INFs	Influent RAW	Non UV Disinfected OUTFALL 30	Non UV Disinfected OUTFALL 20	Non UV Disinfected MPW	UV Disinfected EPEPS	UV Disinfected OUTFALL 10 FEC	UV Disinfected OUTFALL 10 PE	pH RAW	pH OUTFALL 30	pH OUTFALL 20	pH OUTFALL 10 FEC	TSS RAW	TSS OUTFALL 30	TSS OUTFALL 20	TSS EPEPS	TSS OUTFALL 10 FEC	TSS OUTFALL 10 PE
Wed-01	337.9	0.0	233.6	0.0	0.0	12.9	0.0	220.7	220.7	7.6			7.7	328				3.2	3.2
Thu-02	340.2	0.0	242.6	0.0	0.0	12.4	0.0	230.2	230.2	7.6			7.7	328				3.2	3.2
Fri-03	341.9	0.0	246.8	0.0	0.0	11.9	0.0	234.9	234.9	7.6			7.7	336				3.2	3.2
Sat-04	353.3	0.0	242.9	0.0	0.0	12.3	0.0	230.6	230.6	7.6			7.7	352				3.7	3.7
Sun-05	359.1	0.0	246.0	0.0	0.0	12.1	0.0	233.9	233.9	7.6			7.8	300				2.9	2.9
Mon-06	343.3	0.0	251.4	0.0	0.0	12.0	0.0	239.4	239.4	7.5			7.6	340				2.7	2.7
Tue-07	331.9	0.0	246.8	0.0	0.0	12.3	0.0	234.5	234.5	7.5			7.6	288				3.1	3.1
Wed-08	340.2	0.0	242.7	0.0	0.0	12.3	0.0	230.4	230.4	7.5			7.6	304				2.6	2.6
Thu-09	331.6	0.0	244.6	0.0	0.0	12.4	0.0	232.2	232.2	7.6			7.6	332				2.8	2.8
Fri-10	330.4	0.0	248.6	0.0	0.0	12.5	0.0	236.1	236.1	7.6			7.7	300				3.5	3.5
Sat-11	352.9	0.0	244.4	0.0	0.0	12.4	0.0	232.0	232.0	7.6			7.7	348				4.0	4.0
Sun-12	363.5	0.0	247.7	0.0	0.0	12.6	0.0	235.1	235.1	7.5			7.7	280				4.1	4.1
Mon-13	353.7	0.0	248.7	0.0	0.0	12.2	0.0	236.5	236.5	7.5			7.6	380				6.7	6.7
Tue-14	329.6	0.0	248.8	0.0	0.0	11.9	0.0	236.9	236.9	7.5			7.7	317				5.3	5.3
Wed-15	344.7	0.0	247.1	0.0	0.0	11.2	0.0	235.9	235.9	7.6			7.7	296				5.1	5.1
Thu-16	332.5	0.0	247.7	0.0	0.0	11.0	0.0	236.7	236.7	7.5			7.6	312				7.4	7.4
Fri-17	326.6	0.0	248.6	0.0	0.0	11.2	0.0	237.4	237.4	7.5			7.6	296				5.0	5.0
Sat-18	377.7	0.0	247.9	0.0	0.0	11.4	0.0	236.5	236.5	7.5			7.7	300				10.0	10.0
Sun-19	378.1	0.0	251.3	0.0	0.0	11.5	0.0	239.8	239.8	7.6			7.7	392				8.3	8.3
Mon-20	360.7	0.0	252.0	0.0	0.0	11.8	0.0	240.2	240.2	7.5			7.5	420				4.8	4.8
Tue-21	341.6	0.0	246.5	0.0	0.0	11.5	0.0	235.0	235.0	7.6			7.6	344				3.7	3.7
Wed-22	361.3	0.0	249.1	0.0	0.0	11.2	0.0	237.9	237.9	7.5			7.7	324				2.9	2.9
Thu-23	357.4	0.0	245.1	0.0	0.0	11.7	0.0	233.4	233.4	7.5			7.8	340				2.4	2.4
Fri-24	386.1	0.0	268.4	0.0	0.0	11.1	0.0	257.3	257.3	7.7			7.7	347				3.0	3.0
Sat-25	364.6	0.0	251.8	0.0	0.0	11.5	0.0	240.3	240.3	7.6			7.8	332 *				3.5	3.5
Sun-26	370.5	0.0	251.3	0.0	0.0	11.5	0.0	239.8	239.8	7.6			7.7	300				4.0	4.0
Mon-27	352.2	0.0	252.8	0.0	0.0	10.9	0.0	241.9	241.9	7.5			7.7	328				3.7	3.7
Tue-28	344.9	0.0	244.6	0.0	0.0	10.8	0.0	233.8	233.8	7.4			7.6	308				5.4	5.4
Wed-29	361.2	0.0	254.6	0.0	0.0	10.6	0.0	244.0	244.0	7.6			7.7	340				3.8	3.8
Thu-30	333.7	0.0	246.7	0.0	0.0	10.7	0.0	236.0	236.0	7.6			7.8	360				3.7	3.7
Fri 31	330.9	0.0	252.3	0.0	0.0	[illegible]	0.0	242.0	242.0	7.5			7.7	320				3.5	3.5
Average	[illegible]	[illegible]	248.2	[illegible]	0.0	11.7	0.0	236.5	236.5	7.6	—	—	[illegible]	329	—	—	—	4.2	4.2
Minimum	326.8	0.0	233.6	0.0	0.0	10.3	0.0	220.7	220.7	7.4	—	—	7.5	280	—	—	—	2.4	2.4
Maximum	386.1	0.0	268.4	0.0	0.0	12.9	0.0	257.3	[illegible]	7.7	—	—	7.8	420	—	—	—	10.0	10.0
GeoMean	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
TOTAL	—	0	7,693	0	0	362	[illegible]	[illegible]	[illegible]	—	—	—	—	—	—	—	—	—	—

Table, part 2 of 3. Liquid Stream Quality: BOD_5/$cBOD_5$ (mg/L), TP (mg/L) and NH_3-N (mg/L).

DATE	BOD RAW BOD_5	BOD OUTFALL 30 BOD_5	BOD OUTFALL 20 BOD_5	BOD EPEPS BOD_5	OUTFALL 10 FEC $cBOD_5$	OUTFALL 10 PE $cBOD_5$	TP RAW	TP OUTFALL 30	TP OUTFALL 20	TP EPEPS	TP OUTFALL 10 FEC	TP OUTFALL 10 PE	NH_3-N RAW	NH_3-N OUTFALL 30	NH_3-N OUTFALL 20	NH_3-N EPEPS	NH_3-N OUTFALL 10 FEC	NH_3-N OUTFALL 10 PE
Wed-01	328				1.0	1.0	7.28				0.25	0.25	42.7				1.45	1.46
Thu-02	372				3.0	3.0	8.31				0.22	0.22	42.3				1.74	1.74
Fri-03	367				2.0	2.0	8.49				0.24	0.24	41.1				1.53	1.53
Sat-04	302				3.0	3.0	7.93				0.26	0.26	40.6				1.51	1.51
Sun-05	342				2.0	2.0	8.55				0.23	0.23	40.6				1.85	1.85
Mon-06	354				3.0	3.0	8.16				0.18	0.18	40.7				1.69	1.69
Tue-07	370				2.0	2.0	7.20				0.22	0.22	38.7				1.66	1.66
Wed-08	310				2.0	2.0	7.29				0.24	0.24	39.0				1.38	1.38
Thu-09	328				2.0	2.0	8.41				0.23	0.23	42.7				2.28	2.28
Fri-10	360				2.0	2.0	7.79				0.26	0.26	43.1				2.84	2.84
Sat-11	375				3.0	3.0	8.75				0.28	0.28	43.6				3.02	3.02
Sun-12	311				3.0	3.0	8.21				0.28	0.28	42.2				3.49	3.49
Mon-13	410				4.0	4.0	9.25				0.52	0.52	44.0				4.56	4.56
Tue-14	338				3.0	3.0	8.48				0.39	0.39	44.5				6.7	6.70
Wed-15	364				3.0	3.0	8.25				0.29	0.29	42.7				3.15	3.15
Thu-16	350				4.0	4.0	8.40				0.41	0.41	42.8				3.43	3.43
Fri-17	351				3.0	3.0	8.54				0.34	0.34	43.6				4.08	4.08
Sat-18	398				4.0	4.0	8.30				0.50	0.50	43.3				4.50	4.50
Sun-19	365				4.0	4.0	7.48				0.45	0.45	39.2				4.30	4.30
Mon-20	345				3.0	3.0	9.81				0.30	0.30	40.2				2.66	2.66
Tue-21	346				3.0	3.0	7.92				0.24	0.24	38.2				2.24	2.24
Wed-22	370				3.0	3.0	8.32				0.22	0.22	42.6				3.16	3.16
Thu-23	362				2.0	2.0	8.19				0.26	0.26	36.8				3.74	3.74
Fri-24	302				2.0	2.0	8.06				0.24	0.24	34.7				3.52	3.52
Sat-25	331				1.0	1.0	7.73				0.23	0.23	34.8				5.17	5.17
Sun-26	307				2.0	2.0	7.98				0.24	0.24	34.9				3.6	3.60
Mon-27	282				2.0	2.0	7.81				0.25	0.25	35.1				3.83	3.83
Tue-28	371				2.0	2.0	7.12				0.28	0.28	35.4				2.55	2.55
Wed-29	358				3.0	3.0	7.38				0.27	0.27	31.3				2.74	2.74
Thu-30	331				3.0	3.0	7.39				0.30	0.30	33.9				4.19	4.19
Fri 31	320				2.0	2.0	7.58				0.29	[illegible]	[illegible]				4.34	4.34
Average	346	—	—	—	2.8	2.8	7.36	—	—	—	[illegible]	[illegible]	[illegible]	—	—	—	[illegible]	3.09
Minimum	282	—	—	—	1.0	1.0	7.39	—	—	—	[illegible]	0.18	[illegible]	—	—	—	1.38	1.38
Maximum	410	—	—	—	4.0	4.0	7.58	—	—	—	[illegible]	[illegible]	[illegible]	—	—	—	5.70	5.70
GeoMean	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
TOTAL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Table, part 3 of 3. Liquid Stream Quality: un-ionized NH_3-N (mg/L), TKN (mg/L), NO_3+NO_2 (mg/L), Chloride (mg/L) and E. coli (Counts/100 mL).

DATE	un-ionized NH_3-N OUT-FAL 30	un-ionized NH_3-N OUT-FAL 20	un-ionized NH_3-N OUT-FAL 10	TKN RAW	TKN OUTFALL 30	TKN OUTFALL 20	TKN OUTFALL 10 FEC	NO_3+NO_2 RAW	NO_3+NO_2 OUTFALL 30	NO_3+NO_2 OUTFALL 20	NO_3+NO_2 OUTFALL 10 FEC	Chloride RAW	Chloride OUTFALL 30	Chloride OUTFALL 20	Chloride OUTFALL 10 FEC	E. coli RAW X10^6	E. coli OUTFALL 30 X10^6	E. coli OUTFALL 20 X10^6	E. coli OUTFALL 10 FEC
Wed-01				62.8			3.52	0.08			8.99	95.5			107				9
Thu-02				67.8			3.34				9.19	130			107				5
Fri-03				56.0			3.44				8.02	104			122				14
Sat-04				62.4			3.23				8.12	94			113				8
Sun-05				65.2			3.77				8.39	84			100				10
Mon-06				68.0			2.28				8.73	99			94				6
Tue-07				60.6			3.64				8.76	90			104				9
Wed-08				62.4			3.08	0.08			8.03	101			103	2			9
Thu-09				65.4			3.95				8.95	95			107				7
Fri-10				65.8			4.82				8.45	90			100				5
Sat-11				65.0			4.90				7.92	78			97				6
Sun-12				63.8			5.50				7.28	68			83				7
Mon-13				65.4			7.25				5.49	81			78				13
Tue-14				65.5			7.37				5.99	83			86				15
Wed-15				64.5			4.57	0.15			5.81	76			85				14
Thu-16				68.7			5.73				5.72	77			79				10
Fri-17				66.4			6.44				6.14	78			81				14
Sat-18				65.1			6.89				6.07	71			85				13
Sun-19				61.6			6.74				6.64	67			76				10
Mon-20				62.5			4.87				6.04	80			73				5
Tue-21				57.0			3.95				6.77	107			89	2			14
Wed-22				62.3			5.20	0.06			6.89	149			119				13
Thu-23				61.0			5.67				6.24	152			150				13
Fri-24				60.2			5.83				7.18	140			151				6
Sat-25				58.9			6.27				6.82	123.0			146				5
Sun-26				56.4			6.46				7.12	97.8			123				4
Mon-27				54.7			4.67				5.92	95			106				8
Tue-28				53.2			4.34				6.09	103.0			118				6
Wed-29				57.1			4.97	0.08			5.68	100.0			112				4
Thu-30				62.7			5.97				5.65	128			123				5
Fri 31				59.4			6.35				6.23	134			135				6
Average	—	—	—	[illegible]	—	—	4.87	0.15	—	—	[illegible]	99	—	—	[illegible]	—	—	—	—
Minimum	—	—	—	53.2	—	—	2.28	0.06	—	—	5.49	67.4	—	—	73.0	2	—	—	4
Maximum	—	—	—	68.7	—	—	7.37	0.15	—	—	9.2	152	—	—	151	2	—	—	15
GeoMean	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—	—	8
TOTAL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

* Contact Laboratory for information about the quality assurance associated with the results

Enhanced Primary Treatment (EPT) Usage					
Total Bypass (hr)	EPT Usage (hr)	% Usage	Total Bypass YTD (hr)	EPT Usage YTD (hr)	% Usage YTD
0	0	100%	0%	0	100%

Report Comments

AEP Ref #

RAW	Untreated Influent into the plant	FEC	Combined post-UV disinfection (FE+EPEPS)
INF	Untreated wastewater from collection system	OUTFALL 10	UV-disinfected, discharged via OUTFALL 10
INFs	Influent, screened at the Headworks Diversion Structure	OUTFALL 20	Combined Bypass (RAW + PE + EPE)
PE	Primary Effluent from conventional primaries	OUTFALL 30	Combined Bypass (INF + INFS + PE30 + EPE)
PE 30	Primary Effluent from conventional primaries discharged via Outfall 30	MPW	Membrane Product Water (Effluent re-use water)
EPT	Enhanced Primary Treatment	ML	Megalitre (1,000,000 Litre)
EPE	Enhanced Primary Effluent	MPN	Most Probable Number
EPEPS	Enhanced Primary Effluent Pump Station	NR	No Result
FE	Final Effluent from secondary treatment process (with biological nutrient removal). Pre-Ultraviolet disinfection.	NS	No Sample
		INS	Insufficient Sample
		AEP	Alberta Environment & Parks

for/ Alfredo Suarez
Senior Manager, Operations

Shane Harnish
Senior Manager, Analytical Operations

Appendix A - Plant Performance Reports

PROVIDING MORE EPCOR

Gold Bar Wastewater Treatment Plant
Plant Performance Report
February 2020

Digested Sludge: Total Monthly Volume (ML)	68.9

Volume of Flow (ML)

DATE	Peak Flow (MLD)	Influent	Effluent					
			Non UV Disinfected			UV Disinfected		
							OUTFALL 10	
		INFs	OUTFALL 30	OUTFALL 20	MPW	EPEPS	FEC	FE
Sat-01	447.8	0.0	5.6	0.0	10.3	0.0	247.1	247.1
Sun-02	371.7	0.0	0.0	0.0	10.1	0.0	240.8	240.8
Mon-03	338.5	0.0	0.0	0.0	9.8	0.0	240.3	240.3
Tue-04	334.0	0.0	0.0	0.0	9.3	0.0	236.7	236.7
Wed-05	353.0	0.0	0.0	0.0	10.2	0.0	235.7	235.7
Thu-06	360.3	0.0	0.0	0.0	9.3	0.0	253.9	253.9
Fri-07	343.3	0.0	0.0	0.0	8.7	0.0	245.5	245.5
Sat-08	354.8	0.0	0.0	0.0	9.7	0.0	236.4	236.4
Sun-09	359.5	0.0	0.0	0.0	10.8	0.0	236.4	236.4
Mon-10	340.2	0.0	0.0	0.0	9.9	0.0	243.4	243.4
Tue-11	334.4	0.0	0.0	0.0	10.2	0.0	240.9	240.9
Wed-12	340.1	0.0	0.0	0.0	9.7	0.0	239.3	239.3
Thu-13	342.4	0.0	0.0	0.0	9.0	0.0	245.2	245.2
Fri-14	351.0	0.0	0.0	0.0	9.8	0.0	242.4	242.4
Sat-15	347.0	0.0	0.0	0.0	10.4	0.0	232.8	232.8
Sun-16	341.2	0.0	0.0	0.0	9.2	0.0	229.0	229.0
Mon-17	349.9	0.0	0.0	0.0	9.9	0.0	232.1	232.1
Tue-18	335.3	0.0	0.0	0.0	10.6	0.0	238.5	238.5
Wed-19	335.1	0.0	0.0	0.0	9.7	0.0	239.9	239.9
Thu-20	332.4	0.0	0.0	0.0	10.4	0.0	239.7	239.7
Fri-21	350.9	0.0	0.0	0.0	9.1	0.0	247.8	247.8
Sat-22	361.7	0.0	0.0	0.0	9.6	0.0	241.5	241.5
Sun-23	360.6	0.0	0.0	0.0	9.5	0.0	240.1	240.1
Mon-24	346.3	0.0	0.0	0.0	9.2	0.0	244.9	244.9
Tue-25	345.1	0.0	0.0	0.0	10.2	0.0	236.9	236.9
Wed-26	339.4	0.0	0.0	0.0	10.1	0.0	239.4	239.4
Thu-27	431.6	0.0	9.5	0.0	9.2	0.0	252.7	252.7
Fri-28	475.3	0.0	21.7	0.0	9.1	0.0	256.0	256.0
Sat-29	655.4	0.0	0.0	0.0	10.6	0.0	253.0	253.0
Average	368.2	0.0	1.3	0.0	9.8	0.0	241.7	241.7
Minimum	332.4	0.0	0.0	0.0	8.7	0.0	229.0	229.0
Maximum	655.4	0.0	21.7	0.0	10.8	0.0	256.0	256.0
GeoMean	---	---	---	---	---	---	---	---
TOTAL	---	0	7,329	37	0	284	0	7,008	7,008

Liquid Stream Quality

DATE	pH@25°C				TSS (mg/L)						BOD$_5$/cBOD$_5$ (mg/L)						TP (mg/L)						NH3-N (mg/L)					
				OUTFALL 10					OUTFALL 10		RAW				OUTFALL 10						OUTFALL 10						OUTFALL 10	
															FEC	FE												
	RAW	OUTFALL 30	OUTFALL 20	FEC	RAW	OUTFALL 30	OUTFALL 20	EPEPS	FEC	FE	BOD$_5$	BOD$_5$	BOD$_5$	BOD$_5$	cBOD$_5$	cBOD$_5$	RAW	OUTFALL 30	OUTFALL 20	EPEPS	FEC	FE	RAW	OUTFALL 30	OUTFALL 20	EPEPS	FEC	FE
Sat-01	7.6	7.6		7.7	244	108			3.2	3.2	214	145			2.0	2.0	6.50	7.12			0.29	0.29	33.4	42.5			3.22	3.22
Sun-02	7.5			7.7	540				3.3	3.3	385				2.0	2.0	8.84				0.24	0.24	37.6				4.42	4.42
Mon-03	7.5			7.8	376				4.0	4.0	324				2.0	2.0	7.60				0.25	0.25	40.2				4.85	4.85
Tue-04	7.5			7.7	316				3.0	3.0	337				3.0	3.0	7.33				0.24	0.24	41.2				3.73	3.73
Wed-05	7.4			7.7	312				3.1	3.1	336				1.0	1.0	7.53				0.25	0.25	38.6				3.72	3.72
Thu-06	7.6			7.8	356				9.6	9.6	293				3.0	3.0	7.50				0.33	0.33	38.9				4.87	4.87
Fri-07	7.6			7.7	340				3.8	3.8	336				3.0	3.0	7.64				0.28	0.28	36.8				4.84	4.84
Sat-08	7.6			7.7	472				3.4	3.4	334				2.0	2.0	8.59				0.26	0.26	37.6				3.80	3.80
Sun-09	7.6			7.9	312				4.1	4.1	318				3.0	3.0	7.53				0.26	0.26	38.8				4.44	4.44
Mon-10	7.6			7.7	363				4.7	4.7	321				3.0	3.0	7.35				0.27	0.27	41.2				5.14	5.14
Tue-11	7.4			7.7	376				5.7	5.7	318				3.0	3.0	8.74				0.39	0.39	45.8				5.96	5.96
Wed-12	7.6			7.7	244				5.4	5.4	307				3.0	3.0	7.50				0.39	0.39	40.8				5.94	5.94
Thu-13	7.8			7.7	328				4.9	4.9	259				2.0	2.0	8.05				0.34	0.34	39.8				6.16	6.16
Fri-14	7.6			7.7	332				3.4	3.4	337				3.0	3.0	7.72				0.27	0.27	39.6				5.58	5.58
Sat-15	7.6			7.7	344				3.6	3.6	322				2.0	2.0	8.31				0.27	0.27	33.0				5.25	5.25
Sun-16	7.7			7.8	272				3.6	3.6	322				2.0	2.0	8.29				0.24	0.24	31.4				5.28	5.28
Mon-17	7.5			7.6	280				5.2	5.2	312				3.0	3.0	7.41				0.30	0.30	36.0				4.68	4.68
Tue-18	7.6			7.8	348				5.0	5.0	301				2.0	2.0	3.42				0.27	0.27	36.0				5.33	5.33
Wed-19	7.6			7.8	312				3.7	3.7	316				5.0	5.0	7.17				0.26	0.26	34.8				3.16	3.16
Thu-20	7.6			7.7	316				3.5	3.5	330				3.0	3.0	7.48				0.27	0.27	38.7				3.61	3.61
Fri-21	7.6			7.6	340				4.6	4.6	303				2.0	2.0	7.54				0.29	0.29	39.6				4.52	4.52
Sat-22	7.6			7.7	324				3.9	3.9	332				3.0	3.0	7.40				0.28	0.28	37.1				3.96	3.96
Sun-23	7.5			7.7	310				4.9	4.9	318				3.0	3.0	7.32				0.29	0.29	37.2				4.05	4.05
Mon-24	7.5			7.7	332				5.2	5.2	342				3.0	3.0	7.30				0.29	0.29	32.1				3.24	3.24
Tue-25	7.7			7.7	288				4.0	4.0	312				3.0	3.0	7.43				0.28	0.28	37.6				3.42	3.42
Wed-26	7.6			7.8	286				3.5	3.5	295				2.0	2.0	7.40				0.28	0.28	36.0				2.88	2.88
Thu-27	7.5	7.4		7.7	396	144			4.3	4.3	306	194			3.0	3.0	7.63	5.00			0.29	0.29	38.4	38.1			3.38	3.38
Fri-28	7.5	7.5		7.7	344	103			4.2	4.2	333	151			3.0	3.0	7.12	4.77			0.30	0.30	30.1	30.3			2.80	2.80
Sat-29	7.6			7.6	316				15.4	15.4	307				4.0	4.0	7.26				0.62	0.62	31.4				3.25	3.25
Average	7.6	7.5	---	7.7	335	118	---	---	4.7	4.7	316	163	---	---	2.7	2.7	7.48	5.63	---	---	0.30	0.30	37.2	37.0	---	---	4.33	4.33
Minimum	7.4	7.4	---	7.6	244	103	---	---	3.0	3.0	214	145	---	---	1.0	1.0	3.42	4.77	---	---	0.24	0.24	30.1	30.3	---	---	2.80	2.80
Maximum	7.8	7.6	---	7.9	540	144	---	---	15.4	15.4	385	194	---	---	5.0	5.0	8.84	7.12	---	---	0.62	0.62	45.8	42.5	---	---	6.16	6.16
GeoMean	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
TOTAL	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

DATE	TKN (mg/L)				NO_2+NO_3 (mg/L)				Chloride (mg/L)				*E. coli* (Counts/100 mL)			
				OUTFALL 10				OUTFALL 10				OUTFALL 10				OUTFALL 10
	RAW	OUTFALL 30	OUTFALL 20	FEC	RAW	OUTFALL 30	OUTFALL 20	FEC	RAW	OUTFALL 30	OUTFALL 20	FEC	RAW	OUTFALL 30	OUTFALL 20	FEC
Sat-01	54.8	62.7		6.80		0.25		7.11	245	412		167		3		8
Sun-02	69.1			6.62				6.66	103			210				6
Mon-03	63.8			6.38				5.93	97			127				6
Tue-04	63.1			6.19				6.53	103			107				23
Wed-05	57.9			5.41	0.09			6.73	183			119				2
Thu-06	61.2			7.09				6.31	470			265				7
Fri-07	62.3			7.15				5.77	153			337				5
Sat-08	71.3			6.63				6.90	101			187				5
Sun-09	66.5			6.93				6.76	78			118				4
Mon-10	58.0			7.25				6.41	97			95				4
Tue-11	73.3			8.77				5.56	272			116				5
Wed-12	61.0			8.19	< 0.01			5.74	118			167				13
Thu-13	66.1			8.62				5.72	117			128	2			13
Fri-14	64.5			7.54				6.08	143			130				10
Sat-15	63.9			6.91				6.00	109			145				4
Sun-16	70.6			7.31				6.40	95			111				5
Mon-17	62.3			7.46				6.51	98			102				6
Tue-18	27.3			7.17				6.12	102			102				2
Wed-19	57.0			5.56	< 0.01			5.46	110			103	2			4
Thu-20	60.0			6.03				5.26	142			124				4
Fri-21	59.9			6.64				6.54	215			150				4
Sat-22	63.5			6.02				6.81	170			205				3
Sun-23	61.7			6.25				6.88	107			174				4
Mon-24	59.9			6.33				6.37	123			122				6
Tue-25	59.4			5.67				6.61	113			123				6
Wed-26	60.9			4.64	< 0.01			5.87	133			114				4
Thu-27	57.5	50.8		5.18		0.94		5.96	256	455		156		3		3
Fri-28	55.9	46.8		5.36		0.83		6.62	250	409		233		2		7
Sat-29	59.4			6.28				5.39	219			239				11
Average	61.1	53.4	---	6.63	0.09	0.67	---	6.24	156	425	---	154	---	---	---	---
Minimum	27.3	46.8	---	4.64	< 0.01	0.25	---	5.26	77.9	409	---	95	2	2	---	2
Maximum	73.3	62.7	---	8.77	0.09	0.94	---	7.11	470	455	---	337	2	3	---	23
GeoMean	---	---	---	---	---	---	---	---	---	---	---	---	2	2	---	5
TOTAL	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

* Contact Laboratory for information about the quality assurance associated with the results

Enhanced Primary Treatment (EPT) Usage

Total Bypass (hr)	EPT Usage (hr)	% Usage	Total Bypass YTD (hr)	EPT Usage YTD (hr)	% Usage YTD
16	16	100%	0%	0	100%

Report Comments

AEP Ref #

RAW	Untreated Influent into the plant
INF	Untreated wastewater from collection system
INFs	Influent, screened at the Headworks Diversion Structure
PE	Primary Effluent from conventional primaries
PE 30	Primary Effluent from conventional primaries discharged via Outfall 30
EPT	Enhanced Primary Treatment
EPE	Enhanced Primary Effluent
EPEPS	Enhanced Primary Effluent Pump Station
FE	Final Effluent from secondary treatment process (with biological nutrient removal). Pre-Ultraviolet disinfection.

FEC	Combined post-UV disinfection (FE+EPEPS)
OUTFALL 10	UV-disinfected, discharged via OUTFALL 10
OUTFALL 20	Combined Bypass (RAW + PE + EPE)
OUTFALL 30	Combined Bypass (INF + INFS + PE30 + EPE)
MPW	Membrane Product Water (Effluent re-use water)
ML	Megalitre (1,000,000 Litre)
MPN	Most Probable Number
NR	No Result
NS	No Sample
INS	Insufficient Sample
AEP	Alberta Environment & Parks

for **Alfredo Suarez**
Senior Manager, Operations

Shane Harnish
Senior Manager, Analytical Operations

PROVIDING MORE EPCOR

Gold Bar Wastewater Treatment Plant
Plant Performance Report

Digested Sludge Total Monthly Volume (ML)	73.2

Volume of Flow (ML) and pH@25°C

DATE	Peak Flow (MLD)	Influent INFs	Influent RAW	Effluent Non UV Disinfected OUTFALL 30	Effluent Non UV Disinfected OUTFALL 20	Effluent Non UV Disinfected MPW	Effluent UV Disinfected EPEPS	Effluent UV Disinfected OUTFALL 10 FEC	Effluent UV Disinfected OUTFALL 10 FE	pH@25°C RAW	pH@25°C OUTFALL 30	pH@25°C OUTFALL 20	pH@25°C OUTFALL 10 FEC
Sun-01	364.5	0.0	250.6	0.0	0.0	10.1	0.0	240.5	240.5	7.5			7.7
Mon-02	507.3	0.0	283.0	14.8	0.0	9.5	0.0	258.7	258.7	7.5	7.6		7.7
Tue-03	557.7	0.0	295.5	24.7	0.0	9.5	0.0	261.3	261.3	7.5	7.5		7.5
Wed-04	362.7	0.0	272.2	0.0	0.0	9.3	0.0	262.9	262.9	7.5			7.6
Thu-05	360.9	0.0	250.3	0.0	0.0	9.8	0.0	240.5	240.5	7.6			7.7
Fri-06	351.4	0.0	256.9	0.0	0.0	11.3	0.0	245.6	245.6	7.7			7.7
Sat-07	336.9	0.0	246.3	0.0	0.0	10.7	0.0	235.6	235.6	7.5			7.7
Sun-08	355.6	0.0	240.4	0.0	0.0	9.6	0.0	230.8	230.8	7.5			7.6
Mon-09	352.8	0.0	258.9	0.0	0.0	9.6	0.0	249.3	249.3	7.5			7.7
Tue-10	334.6	0.0	255.1	0.0	0.0	9.8	0.0	245.3	245.3	7.4			7.7
Wed-11	343.0	0.0	253.6	0.0	0.0	9.3	0.0	244.3	244.3	7.5			7.7
Thu-12	339.5	0.0	249.5	0.0	0.0	9.3	0.0	240.2	240.2	7.6			7.6
Fri-13	328.0	0.0	252.2	0.0	0.0	9.2	0.0	243.0	243.0	7.5			7.7
Sat-14	355.1	0.0	250.8	0.0	0.0	10.5	0.0	240.3	240.3	7.5			7.6
Sun-15	359.9	0.0	252.8	0.0	0.0	9.3	0.0	243.5	243.5	7.5			7.7
Mon-16	339.1	0.0	257.2	0.0	0.0	10.3	0.0	246.9	246.9	7.5			7.7
Tue-17	339.0	0.0	254.2	0.0	0.0	9.8	0.0	244.4	244.4	7.6			7.7
Wed-18	337.2	0.0	252.8	0.0	0.0	9.7	0.0	243.1	243.1	7.5			7.6
Thu-19	335.7	0.0	252.0	0.0	0.0	11.1	0.0	240.9	240.9	7.5			7.7
Fri-20	365.3	0.0	256.8	0.0	0.0	10.4	0.0	246.4	246.4	7.5			7.6
Sat-21	509.2	0.0	272.7	18.9	0.0	9.5	0.0	244.3	244.3	7.6	7.6		7.5
Sun-22	534.5	0.0	285.3	32.3	0.0	10.2	0.0	242.8	242.8	7.6	7.8		7.7
Mon-23	437.7	0.0	273.2	3.5	0.0	10.0	0.0	259.7	259.7	7.5	7.8		7.6
Tue-24	424.1	0.0	270.6	4.7	0.0	9.6	0.0	256.3	256.3	7.4	7.8		7.7
Wed-25	379.7	0.0	263.2	0.0	0.0	8.2	0.0	255.0	255.0	7.5			7.6
Thu-26	458.8	0.0	273.2	9.0	0.0	10.6	0.0	253.6	253.6	7.7	7.6		7.8
Fri-27	700.7	0.0	352.2	88.2	0.0	9.2	0.0	254.8	254.8	7.5	7.4		7.6
Sat-28	428.3	0.0	271.7	3.8	0.0	9.3	0.0	258.6	258.6	7.6	7.7		7.7
Sun-29	356.3	0.0	249.4	0.0	0.0	9.1	0.0	240.3	240.3	7.5			7.8
Mon-30	338.1	0.0	250.4	0.0	0.0	9.5	0.0	240.9	240.9	7.5			7.5
Tue 31	343.4	0.0	247.4	0.0	0.0	8.3	0.0	239.1	239.1	7.5			7.7
Average	364.7	0.0	262.9	6.4	0.0	9.7	0.0	246.7	246.7	7.5	7.6	—	7.6
Minimum	326.0	0.0	240.4	0.0	0.0	8.2	0.0	230.8	230.8	7.4	7.4	—	7.5
Maximum	700.7	0.0	352.2	88.2	0.0	11.3	0.0	262.9	262.9	7.7	7.8	—	7.8
GeoMean	—	—	—	—	—	—	—	—	—	—	—	—	—
TOTAL	—	0	8,150	200	0	302	0	7,649	7,649	—	—	—	—

Liquid Stream Quality: TSS, BOD_5/cBOD_5, TP

DATE	TSS (mg/L) RAW	TSS OUTFALL 30	TSS OUTFALL 20	TSS EPEPS	TSS OUTFALL 10 FEC	TSS OUTFALL 10 FE	BOD_5/cBOD_5 (mg/L) RAW BOD_5	OUTFALL 30 BOD_5	OUTFALL 20 BOD_5	EPEPS BOD_5	OUTFALL 10 FEC cBOD_5	OUTFALL 10 FE cBOD_5	TP (mg/L) RAW	TP OUTFALL 30	TP OUTFALL 20	TP EPEPS	TP OUTFALL 10 FEC	TP OUTFALL 10 FE
Sun-01	373				5.3	5.3	326				3.0	3.0	7.53				0.29	0.29
Mon-02	344	101			6.1	6.1	301	176			6.0	6.0	6.78	4.80			0.34	0.34
Tue-03	396	99			4.6	4.6	342	130			2.0	2.0	6.88	4.64			0.29	0.29
Wed-04	331				4.9	4.9	294				4.0	4.0	6.74				0.27	0.27
Thu-05	276				3.2	3.2	324				3.0	3.0	6.64				0.24	0.24
Fri-06	377				3.7	3.7	336				3.0	3.0	7.64				0.23	0.23
Sat-07	312				4.3	4.3	303				3.0	3.0	7.65				0.23	0.23
Sun-08	340				3.8	3.8	327				2.0	2.0	7.61				0.23	0.23
Mon-09	460				4.2	4.2	362				4.0	4.0	8.33				0.28	0.28
Tue-10	328				4.2	4.2	314				3.0	3.0	7.77				0.27	0.27
Wed-11	332				4.4	4.4	332				4.0	4.0	7.28				0.26	0.26
Thu-12	317				5.4	5.4	367				4.0	4.0	7.96				0.24	0.24
Fri-13	324				5.7	5.7	328				4.0	4.0	8.28				0.30	0.30
Sat-14	308				4.8	4.8	360				4.0	4.0	8.18				0.32	0.32
Sun-15	348				5.8	5.8	361				4.0	4.0	8.00				0.32	0.32
Mon-16	336				5.4	5.4	356				3.0	3.0	8.43				0.31	0.31
Tue-17	304				4.3	4.3	377				4.0	4.0	8.19				0.30	0.30
Wed-18	392				5.1	5.1	344				4.0	4.0	8.39				0.32	0.32
Thu-19	288				4.3	4.3	370				3.0	3.0	8.28				0.31	0.31
Fri-20	320				4.5	4.5	363				4.0	4.0	8.29				0.26	0.26
Sat-21	356	74			3.0	3.0	447	146			3.0	3.0	7.61	4.24			0.22	0.22
Sun-22	224	52			3.6	3.6	288	111			3.0	3.0	6.85	2.64			0.20	0.20
Mon-23	388	73			3.8	3.8	360	151			3.0	3.0	7.45	5.98			0.19	0.19
Tue-24	300	101			3.1	3.1	286	166			2.0	2.0	7.22	6.36			0.20	0.20
Wed-25	352				5.1	5.1	293				< 2.0	< 2.0	7.50				0.24	0.24
Thu-26	352	67			5.0	5.0	343	179			3.0	3.0	7.08	5.75			0.27	0.27
Fri-27	448	88			3.3	3.3	247	99			2.0	2.0	6.68	5.28			0.21	0.21
Sat-28	333	52			4.6	4.6	271	102			2.0	2.0	8.12	3.19			0.21	0.21
Sun-29	328				4.4	4.4	336				3.0	3.0	6.99				0.22	0.22
Mon-30	360				3.4	3.4	329				3.0	3.0	7.56				0.23	0.23
Tue 31	306				3.6	3.6	324				3.0	3.0	6.93				0.20	0.20
Average	340	79	—	—	4.4	4.4	333	140	—	—	3.2	3.2	7.54	4.76	—	—	0.26	0.26
Minimum	224	52	—	—	3.0	3.0	247	99	—	—	< 2.0	< 2.0	5.85	2.64	—	—	0.19	0.19
Maximum	460	101	—	—	6.1	6.1	447	179	—	—	6.0	6.0	8.43	6.36	—	—	0.34	0.34
GeoMean	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
TOTAL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Liquid Stream Quality: NH3-N, TKN, NO_2+NO_3, Chloride, *E. coli*

DATE	NH3-N (mg/L) RAW	NH3-N OUTFALL 30	NH3-N OUTFALL 20	NH3-N EPEPS	NH3-N OUTFALL 10 FEC	NH3-N OUTFALL 10 FE	TKN (mg/L) RAW	TKN OUTFALL 30	TKN OUTFALL 20	TKN OUTFALL 10 FEC	NO_2+NO_3 (mg/L) RAW	NO_2+NO_3 OUTFALL 30	NO_2+NO_3 OUTFALL 20	NO_2+NO_3 OUTFALL 10 FEC	Chloride (mg/L) RAW	Chloride OUTFALL 30	Chloride OUTFALL 20	Chloride OUTFALL 10 FEC	*E. coli* (Counts/100 mL) RAW X10^6	*E. coli* OUTFALL 30 X10^6	*E. coli* OUTFALL 20 X10^6	*E. coli* OUTFALL 10 FEC
Sun-01	41.1				4.94	4.94	64.8			7.30				6.14	124			221				13
Mon-02	36.7	36.3			4.52	4.52	53.5	45.4		6.18		0.85		5.28	227	400		155		1.5		10
Tue-03	33.6	37.8			3.32	3.32	51.5	47.6		5.18		0.36		4.61	256	373		222		2.1		11
Wed-04	38.0				5.29	5.29	52.5			6.18	0.01			4.76	176			188				13
Thu-05	38.9				5.24	5.24	56.4			6.38				5.34	196			172				17
Fri-06	40.4				6.15	6.15	64.2			7.74				5.68	116			124				11
Sat-07	38.0				5.68	5.68	64.0			7.86				6.12	91			110				4
Sun-08	38.3				5.58	5.58	67.6			7.87				6.57	136			100				6
Mon-09	32.0				5.83	5.83	64.5			7.86				5.44	204			232				14
Tue-10	42.5				4.97	4.97	61.3			6.33				5.94	156			168				6
Wed-11	38.6				5.41	5.41	62.6			7.13	0.08			6.66	200			159				12
Thu-12	45.6				4.27	4.27	71.5			8.05				6.96	130			186				17
Fri-13	40.2				5.46	5.46	67.5			7.77				6.34	106			137				10
Sat-14	37.2				4.89	4.89	62.2			7.74				7.68	87			107				6
Sun-15	37.5				5.47	5.47	63.4			7.37				7.38	78			84				9
Mon-16	35.8				4.56	4.56	60.1			7.18				7.20	96			83				7
Tue-17	37.6				4.48	4.48	62.8			6.77				7.14	92			102	2.2			9
Wed-18	28.7				5.19	5.19	63.2			6.68	< 0.01			7.15	89			104				6
Thu-19	37.1				4.24	4.24	61.3			6.52				7.28	97			105				4
Fri-20	34.6				3.60	3.60	62.9			7.38				7.46	100			101	1.5			9
Sat-21	36.3	41.3			4.43	4.43	65.1	49.2		7.21		0.06		7.28	122	148		108		2.1		7
Sun-22	35.1	28.4			4.36	4.36	60.2	44.2		7.27		0.21		8.23	116	148		120		1.5		3
Mon-23	34.4	41.4			4.21	4.21	61.6	51.2		6.14		0.04		8.38	121	144		122		3.4		4
Tue-24	30.6	41.0			3.79	3.79	57.8	53.7		6.88		0.08		8.35	288	498		168		1.7		4
Wed-25	32.8				4.29	4.29	60.7			7.04	< 0.07			7.20	177			244				12
Thu-26	27.1	38.9			4.00	4.00	58.8	51.2		6.90		0.05		7.51	164	205		194		2.2		6
Fri-27	30.0	29.6			4.52	4.52	57.6	38.8		5.90		0.35		8.23	160	209		162		1.6		4
Sat-28	35.8	29.0			2.66	2.68	60.9	37.0		4.90		0.36		7.57	118	185		166		0.6		3
Sun-29	40.8				5.72	5.72	60.6			6.80				8.74	88			116				3
Mon-30	39.6				4.63	4.53	67.6			6.20				9.34	89			95				4
Tue 31	38.7				2.86	2.86	62.7			5.40				8.84	133			99				3
Average	36.6	36.0	—	—	4.66	4.68	61.7	46.5	—	6.84	0.04	0.26	—	6.99	140	257	—	144	—	—	—	—
Minimum	27.1	28.4	—	—	2.66	2.66	51.5	37.0	—	4.90	< 0.01	0.04	—	4.61	78	144	—	83	1.5	0.6	—	3
Maximum	45.6	41.4	—	—	6.15	6.15	71.5	53.7	—	8.05	0.08	0.85	—	9.34	288	498	—	244	2.2	3.4	—	17
GeoMean	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.8	1.7	—	7
TOTAL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

* Contact Laboratory for information about the quality assurance associated with the results

Enhanced Primary Treatment (EPT) Usage					
Total Bypass (hr)	EPT Usage (hr)	% Usage	Total Bypass YTD (hr)	EPT Usage YTD (hr)	% Usage YTD
41	41	100%	57	57	100%

Report Comments

1	OUTFALL 10 - March 8: Analysis of the sample exceeded the recommended hold time for E. coli
2	OUTFALL 10 - March 9. Analysis of the sample exceeded the recommended hold time for E. coli
3	RAW - March 25: Analysis of the sample exceeded the recommended hold time for BOD

AEP Ref #

RAW	Untreated influent into the plant
INF	Untreated wastewater from collection system
INFs	Influent, screened at the Headworks Diversion Structure
PE	Primary Effluent from conventional primaries
PE 30	Primary Effluent from conventional primaries discharged via Outfall 30
EPT	Enhanced Primary Treatment
EPE	Enhanced Primary Effluent
EPEPS	Enhanced Primary Effluent Pump Station
FE	Final Effluent from secondary treatment process (with biological nutrient removal). Pre-Ultraviolet disinfection.
FEC	Combined post-UV disinfection (FE+EPEPS)
OUTFALL 10	UV-disinfected, discharged via OUTFALL 10
OUTFALL 20	Combined Bypass (RAW + PE + EPE)
OUTFALL 30	Combined Bypass (INF + INFS + PE30 + EPE)
MPW	Membrane Product Water (Effluent re-use water)
ML	Megalitre (1,000,000 Litre)
MPN	Most Probable Number
NR	No Result
NS	No Sample
INS	Insufficient Sample
AEP	ronment & Parks

Alfredo Suarez
Senior Manager, Operations

May 05/2020

Shane Harnish
Senior Manager, Analytical Operations

Gold Bar Wastewater Treatment Plant
Plant Performance Report

Digested Sludge: Total Monthly Volume (ML)	64.3

Volume of Flow (ML) and pH

DATE	Peak Flow (MLD)	Influent INFs	Influent RAW	Effluent Non UV Disinfected OUTFALL 30	Effluent Non UV Disinfected OUTFALL 20	Effluent Non UV Disinfected MPW	Effluent UV Disinfected EPEPS	Effluent UV Disinfected OUTFALL 10 FEC	Effluent UV Disinfected OUTFALL 10 FE	pH@25°C RAW	pH@25°C OUTFALL 30	pH@25°C OUTFALL 20	pH@25°C OUTFALL 10 FEC
Wed-01	342.0	0.0	248.1	0.0	0.0	8.9	0.0	239.2	239.2	7.5			7.5
Thu-02	333.5	0.0	250.8	0.0	0.0	9.1	0.0	241.7	241.7	7.5			7.5
Fri-03	325.5	0.0	249.8	0.0	0.0	8.7	0.0	241.1	241.1	7.5			7.7
Sat-04	352.9	0.0	246.7	0.0	0.0	9.2	0.0	237.5	237.5	7.6			7.6
Sun-05	342.5	0.0	243.7	0.0	0.0	8.4	0.0	235.3	235.3	7.6			7.6
Mon-06	387.2	0.0	261.1	0.0	0.0	9.1	0.0	252.0	252.0	7.5			7.6
Tue-07	556.8	0.0	294.2	30.9	0.0	8.9	0.0	254.4	254.4	7.5	7.6		7.7
Wed-08	540.6	0.0	295.4	26.6	0.0	8.7	0.0	260.1	260.1	7.5	7.5		7.6
Thu-09	646.8	0.0	327.6	64.4	0.0	9.6	0.0	253.6	253.6	7.5	7.4		7.6
Fri-10	740.1	0.0	393.7	105.2	0.0	8.5	0.0	280.0	280.0	7.5	7.5		7.6
Sat-11	445.7	0.0	301.8	4.7	0.0	9.4	0.0	287.7	287.7	7.5	7.5		7.4
Sun-12	365.2	0.0	261.0	0.0	0.0	9.4	0.0	251.6	251.6	7.5			7.6
Mon-13	472.2	0.0	279.5	20.3	0.0	8.2	0.0	251.0	251.0	7.4	7.4		7.6
Tue-14	601.7	0.0	338.8	69.6	0.0	9.2	0.0	260.0	260.0	7.6	7.6		7.7
Wed-15	534.0	0.0	343.7	46.5	0.0	8.7	0.0	288.5	288.5	7.6	7.5		7.5
Thu-16	544.6	0.0	342.5	55.9	0.0	8.4	0.0	278.2	278.2	7.5	7.5		7.6
Fri-17	565.9	0.0	378.4	80.9	0.0	8.4	0.0	289.1	289.1	7.6	7.4		7.6
Sat-18	491.2	0.0	326.9	26.5	0.0	9.1	0.0	291.3	291.3	7.5	7.5		7.5
Sun-19	408.8	0.0	291.2	11.0	0.0	8.5	0.0	271.7	271.7	7.5	7.5		7.7
Mon-20	384.4	0.0	287.6	0.9	0.0	8.5	0.0	278.2	278.2	7.7	7.8		7.8
Tue-21	369.2	0.0	282.9	0.0	0.0	9.0	0.0	273.9	273.9	7.6	7.7		7.7
Wed-22	366.5	0.0	280.3	0.0	0.0	9.2	0.0	271.1	271.1	7.5			7.8
Thu-23	340.1	0.0	262.9	0.0	0.0	9.0	0.0	253.9	253.9	7.5			7.7
Fri-24	332.0	0.0	258.8	0.0	0.0	9.4	0.0	249.4	249.4	7.4			7.7
Sat-25	342.1	0.0	257.4	0.0	0.0	9.7	0.0	247.7	247.7	7.5			7.7
Sun-26	357.3	0.0	261.6	0.0	0.0	9.3	0.0	252.3	252.3	7.5			7.8
Mon-27	347.9	0.0	266.2	0.0	0.0	9.4	0.0	256.8	256.8	7.4			7.7
Tue-28	328.5	0.0	257.6	0.0	0.0	11.2	0.0	246.4	246.4	7.5			7.7
Wed-29	321.1	0.0	255.4	0.0	0.0	10.5	0.0	244.9	244.9	7.5			7.7
Thu-30	312.2	0.0	253.6	0.0	0.0	10.3	0.0	243.3	243.3	7.5			8.0
Average	426.6	0.0	286.6	18.1	0.0	9.1	0.0	259.4	259.4	7.5	7.5	---	7.6
Minimum	312.2	0.0	243.7	0.0	0.0	8.2	0.0	235.3	235.3	7.4	7.4	---	7.4
Maximum	740.1	0.0	393.7	105.2	0.0	11.2	0.0	291.3	291.3	7.7	7.8	---	8.0
GeoMean	---	---	---	---	---	---	---	---	---	---	---	---	---
TOTAL	---	0	8,599	543	0	274	0	7,782	7,782	---	---	---	---

Liquid Stream Quality

DATE	TSS (mg/L) RAW	TSS OUTFALL 30	TSS OUTFALL 20	TSS EPEPS	TSS OUTFALL 10 FEC	TSS OUTFALL 10 FE	BOD₅/cBOD₅ (mg/L) RAW BOD₅	OUTFALL 30 BOD₅	OUTFALL 20 BOD₅	EPEPS BOD₅	OUTFALL 10 FEC cBOD₅	OUTFALL 10 FE cBOD₅	TP (mg/L) RAW	TP OUTFALL 30	TP OUTFALL 20	TP EPEPS	TP OUTFALL 10 FEC	TP OUTFALL 10 FE
Wed-01	320				2.8	2.8	335				2.0	2.0	7.90				0.22	0.22
Thu-02	332				3.7	3.7	305				3.0	3.0	7.90				0.22	0.22
Fri-03	304				2.6	2.6	314				3.0	3.0	7.94				0.21	0.21
Sat-04	216				1.7	1.7	212				3.0	3.0	7.20				0.19	0.19
Sun-05	368				4.1	4.1	302				2.0	2.0	8.37				0.24	0.24
Mon-06	332				4.6	4.6	284				3.0	3.0	8.35				0.26	0.26
Tue-07	400	68			4.6	4.6	349	117			3.0	3.0	8.91	5.23			0.27	0.27
Wed-08	356	56			5.5	5.5	321	135			3.0	3.0	8.82	5.87			0.28	0.28
Thu-09	320	65			3.9	3.9	218	116			2.0	2.0	7.33	5.11			0.24	0.24
Fri-10	328	57			5.6	5.6	220	119			3.0	3.0	6.18	4.56			0.22	0.22
Sat-11	260	66			24.6	24.6	263	125			6.0	6.0	6.75	4.19			0.91	0.91
Sun-12	300				4.1	4.1	303				4.0	4.0	8.27				0.24	0.24
Mon-13	320	82			3.9	3.9	319	193			3.0	3.0	8.17	6.54			0.23	0.23
Tue-14	316	78			3.5	3.5	296	134			3.0	3.0	6.88	5.15			0.21	0.21
Wed-15	288	51			6.5	6.5	254	130			4.0	4.0	6.41	5.00			0.36	0.36
Thu-16	244	60			7.8	7.8	288	345			4.0	4.0	6.38	5.22			0.44	0.44
Fri-17	196	78			3.6	3.6	187	103			2.0	2.0	5.88	4.84			0.19	0.19
Sat-18	260	58			5.0	5.0	246	132			3.0	3.0	6.49	5.01			0.28	0.28
Sun-19	276	90			4.0	4.0	228	133			2.0	2.0	7.12	5.70			0.20	0.20
Mon-20	266	105			4.3	4.3	302	150			3.0	3.0	6.29	5.24			0.20	0.20
Tue-21	256	130			7.1	7.1	290	292			4.0	4.0	6.79	10.5			0.53	0.53
Wed-22	255				7.6	7.6	257				4.0	4.0	7.41				0.33	0.33
Thu-23	328				4.4	4.4	280				3.0	3.0	9.58				0.29	0.29
Fri-24	337				4.0	4.0	310				3.0	3.0	7.83				0.25	0.25
Sat-25	196				5.8	5.8	289				4.0	4.0	6.02				0.28	0.28
Sun-26	304				10.2	10.2	361				6.0	6.0	7.12				0.50	0.50
Mon-27	288				8.0	8.0	293				5.0	5.0	7.45				0.41	0.41
Tue-28	311				9.8	9.8	357				6.0	6.0	7.73				0.36	0.36
Wed-29	364				7.0	7.0	307				5.0	5.0	7.85				0.33	0.33
Thu-30	352				8.4	8.4	339				5.0	5.0	7.62				0.32	0.32
Average	300	75	---	---	6.0	6.0	288	159	---	---	3.5	3.5	7.43	5.58	---	---	0.31	0.31
Minimum	196	51	---	---	1.7	1.7	187	103	---	---	2.0	2.0	5.88	4.19	---	---	0.19	0.19
Maximum	400	130	---	---	24.6	24.6	361	345	---	---	6.0	6.0	9.58	10.5	---	---	0.91	0.91
GeoMean	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
TOTAL	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

DATE	NH3-N (mg/L) RAW	NH3-N OUTFALL 30	NH3-N OUTFALL 20	NH3-N EPEPS	NH3-N OUTFALL 10 FEC	NH3-N OUTFALL 10 FE	TKN (mg/L) RAW	TKN OUTFALL 30	TKN OUTFALL 20	TKN OUTFALL 10 FEC	NO_2+NO_3 (mg/L) RAW	NO_2+NO_3 OUTFALL 30	NO_2+NO_3 OUTFALL 20	NO_2+NO_3 OUTFALL 10 FEC	Chloride (mg/L) RAW	Chloride OUTFALL 30	Chloride OUTFALL 20	Chloride OUTFALL 10 FEC	*E. coli* (Counts/100 mL) RAW X10^6	*E. coli* OUTFALL 30 X10^6	*E. coli* OUTFALL 20 X10^6	*E. coli* OUTFALL 10 FEC
Wed-01	38.5				2.92	2.92	61.4			5.40	< 0.01			8.27	110			129				7
Thu-02	42.0				3.97	3.97	63.0			5.80				8.72	111			113	2.6			7
Fri-03	42.2				4.32	4.32	62.2			6.70				9.38	108			114				5
Sat-04	40.8				4.42	4.42	59.2			6.10				8.72	126			112				5
Sun-05	43.9				4.64	4.64	65.1			6.40				10.6	100			126				10
Mon-06	30.8				5.17	5.17	64.4			6.90				9.64	174			113				22
Tue-07	36.1	38.7			5.03	5.03	63.8	50.4		7.10		0.20		7.75	168	204		171		1.6		14
Wed-08	31.7	35.0			3.99	3.99	57.5	47.1		5.70	0.01	0.26		6.44	119	138		157		2.2		6
Thu-09	30.4	31.4			3.22	3.22	50.6	42.5		5.00		0.37		6.70	126	148		126	2.1	1.4		6
Fri-10	25.8	27.2			1.45	1.45	43.7	36.6		3.30		0.42		6.66	140	148		135		1.3		11
Sat-11	32.8	26.3			2.75	2.75	52.1	36.0		5.80		0.20		6.07	102	131		132		1.0		21
Sun-12	39.9				5.40	5.40	63.3			6.90				6.89	83			104				17
Mon-13	36.9	38.8			4.91	4.91	59.6	53.6		7.10		0.04		7.15	100	126		94		4.6		6
Tue-14	30.1	32.0			2.70	2.70	51.0	42.6		4.80		0.60		6.29	104	112		104		6.5		12
Wed-15	28.3	32.2			2.10	2.10	47.0	43.1		4.50	< 0.01	0.28		6.17	106	118		102		3.3		14
Thu-16	27.7	27.4			3.05	3.05	48.3	44.8		5.30		0.39		5.25	100	111		104		1.6		12
Fri-17	29.0	24.2			2.80	2.80	49.0	46.9		5.10		0.56		6.14	106	110		102		1.5		13
Sat-18	31.6	35.0			3.66	3.66	51.9	47.2		5.60		0.62		7.02	95	100		103		1.5		14
Sun-19	34.4	31.0			5.50	5.50	57.3	53.6		7.80		0.45		8.71	103	99		102		1.8		10
Mon-20	35.7	33.1			4.97	4.97	52.7	46.8		6.70		0.48		8.98	108	98		103		1.0		5
Tue-21	32.0	49.0			3.66	3.66	55.2	65.8		6.10				8.04	113			112				8
Wed-22	37.5				2.65	2.65	56.1			4.80	0.08			7.51	108			116				12
Thu-23	39.0				4.48	4.48	72.9			6.80				6.21	105			115				9
Fri-24	36.9				4.46	4.46	61.9			6.20				7.14	106			121				11
Sat-25	35.7				2.70	2.70	49.4			4.60				7.85	91			107				5
Sun-26	35.7				2.16	2.16	59.4			4.40				7.83	104			103				5
Mon-27	36.6				2.29	2.29	58.9			4.70				7.56	103			99				5
Tue-28	38.0				2.52	2.52	61.5			4.90				8.03	99			106				12
Wed-29	38.8				2.31	2.31	60.2			4.40	< 0.01			7.99	99			102				9
Thu-30	31.5				2.25	2.25	62.1			4.30				8.86	91			97				17
Average	35.0	33.0	---	---	3.55	3.55	57.4	46.9	---	5.64	0.02	0.37	---	7.62	110	126	---	114	---	---	---	---
Minimum	25.8	24.2	---	---	1.45	1.45	43.7	36.0	---	3.30	< 0.01	0.04	---	5.25	83	98	---	94	2.1	1.0	---	5
Maximum	43.9	49.0	---	---	5.50	5.50	72.9	65.8	---	7.80	0.08	0.62	---	10.6	174	204	---	171	2.6	6.5	---	22
GeoMean	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	2.3	1.9	---	9
TOTAL	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

* Contact Laboratory for information about the quality assurance associated with the results

Enhanced Primary Treatment (EPT) Usage

Total Bypass (hr)	EPT Usage (hr)	% Usage	Total Bypass YTD (hr)	EPT Usage YTD (hr)	% Usage YTD
108	108	100%	165	165	100%

Report Comments

1	RAW - April 6: Analysis of the sample exceeded the recommended hold time for BOD.
2	OUTFALL 30 - Not enough sample to run Chloride or N-TOX analyses.

AEP Ref #

RAW	Untreated Influent into the plant
INF	Untreated wastewater from collection system
INFs	Influent, screened at the Headworks Diversion Structure
PE	Primary Effluent from conventional primaries
PE 30	Primary Effluent from conventional primaries discharged via Outfall 30
EPT	Enhanced Primary Treatment
EPE	Enhanced Primary Effluent
EPEPS	Enhanced Primary Effluent Pump Station
FE	Final Effluent from secondary treatment process (with biological nutrient removal). Pre-Ultraviolet disinfection.
FEC	Combined post-UV disinfection (FE+EPEPS)
OUTFALL 10	UV-disinfected, discharged via OUTFALL 10
OUTFALL 20	Combined Bypass (RAW + PE + EPE)
OUTFALL 30	Combined Bypass (INF + INFS + PE30 + EPE)
MPW	Membrane Product Water (Effluent re-use water)
ML	Megalitre (1,000,000 Litre)
MPN	Most Probable Number
NR	No Result
NS	No Sample
INS	Insufficient Sample
AEP	Alberta Environment & Parks

Alfredo Suarez
Senior Manager, Operations

Shane Harnish
Senior Manager, Analytical Operations

PROVIDING MORE EPCOR

Gold Bar Wastewater Treatment Plant
Plant Performance Report
May 2020

Digested Sludge: Total Monthly Volume (ML)	68.5

Volume of Flow (ML)

DATE	Peak Flow (MLD)	Influent	Effluent						
			Non UV Disinfected			UV Disinfected			
							OUTFALL 10		
		INFs	RAW	OUTFALL 30	OUTFALL 20	MPW	EPEPS	FEC	FE
Fri-01	315.9	0.0	252.9	0.0	0.0	9.5	0.0	243.4	243.4
Sat-02	321.5	0.0	245.2	0.0	0.0	9.7	0.0	235.5	235.5
Sun-03	666.3	0.0	283.0	30.1	0.0	9.4	0.0	243.5	243.5
Mon-04	1,497.1	16.7	732.9	413.7	0.0	10.6	0.0	308.6	308.6
Tue-05	430.1	0.0	316.3	5.4	0.0	9.4	0.0	301.5	301.5
Wed-06	370.0	0.0	285.6	0.0	0.0	10.0	0.0	275.6	275.6
Thu-07	384.5	0.0	275.7	0.0	0.0	9.2	0.0	266.5	266.5
Fri-08	606.6	0.0	333.5	36.0	0.0	9.2	0.0	288.3	288.3
Sat-09	353.6	0.0	274.5	0.0	0.0	10.7	0.0	263.8	263.8
Sun-10	356.4	0.0	268.0	0.0	0.0	10.3	0.0	257.7	257.7
Mon-11	344.4	0.0	274.7	0.0	0.0	8.8	0.0	265.9	265.9
Tue-12	339.6	0.0	274.3	0.0	0.0	10.1	0.0	264.2	264.2
Wed-13	337.0	0.0	270.9	0.0	0.0	10.3	0.0	260.6	260.6
Thu-14	334.9	0.0	269.3	0.0	0.0	9.2	0.0	260.1	260.1
Fri-15	325.3	0.0	264.8	0.0	0.0	10.3	0.0	254.5	254.5
Sat-16	324.1	0.0	254.4	0.0	0.0	9.8	0.0	244.6	244.6
Sun-17	322.7	0.0	252.7	0.0	0.0	10.0	0.0	242.7	242.7
Mon-18	346.0	0.0	269.4	0.0	0.0	9.6	0.0	259.8	259.8
Tue-19	320.3	0.0	263.3	0.0	0.0	9.5	0.0	253.8	253.8
Wed-20	316.5	0.0	260.6	0.0	0.0	10.1	0.0	250.5	250.5
Thu-21	1,506.8	34.6	841.4	519.8	0.0	9.9	0.0	311.7	311.7
Fri-22	1,503.5	23.0	825.6	517.6	0.0	9.7	0.0	298.3	298.3
Sat-23	576.1	0.0	393.1	74.2	0.0	10.0	0.0	308.9	308.9
Sun-24	447.4	0.0	338.5	4.1	0.0	9.7	0.0	324.7	324.7
Mon-25	409.8	0.0	328.2	0.0	0.0	9.7	0.0	318.5	318.5
Tue-26	500.9	0.0	327.3	33.5	0.0	10.3	0.0	283.5	283.5
Wed-27	445.8	0.0	306.2	6.2	0.0	9.7	0.0	290.3	290.3
Thu-28	379.4	0.0	296.9	0.0	0.0	10.9	0.0	286.0	286.0
Fri-29	363.0	0.0	293.5	0.0	0.0	10.0	0.0	283.5	283.5
Sat-30	372.7	0.0	286.7	0.0	0.0	9.6	0.0	277.1	277.1
Sun 31	1,635.5	30.4	507.2	221.7	0.0	9.7	0.0	275.8	275.8
Average	540.4	3.4	344.1	60.1	0.0	9.8	0.0	274.2	274.2
Minimum	315.9	0.0	245.2	0.0	0.0	8.8	0.0	235.5	235.5
Maximum	1,635.5	34.6	841.4	519.8	0.0	10.9	0.0	324.7	324.7
GeoMean	---	---	---	---	---	---	---	---	---
TOTAL	---	105	10,667	1,862	0	305	0	8,499	8,499

Liquid Stream Quality

DATE	pH@25°C				TSS (mg/L)						BOD$_5$/cBOD$_5$ (mg/L)						TP (mg/L)					
				OUTFALL 10					OUTFALL 10						OUTFALL 10						OUTFALL 10	
	RAW	OUTFALL 30	OUTFALL 20	FEC	RAW	OUTFALL 30	OUTFALL 20	EPEPS	FEC	FE	RAW BOD$_5$	OUTFALL 30 BOD$_5$	OUTFALL 20 BOD$_5$	EPEPS BOD$_5$	FEC cBOD$_5$	FE cBOD$_5$	RAW	OUTFALL 30	OUTFALL 20	EPEPS	FEC	FE
Fri-01	7.4			7.7	304				3.3	3.3	354				3.0	3.0	7.24				0.21	0.21
Sat-02	7.6			7.6	312				2.9	2.9	350				3.0	3.0	7.79				0.20	0.20
Sun-03	7.4	7.5		7.6	432	172			3.5	3.5	315	224			3.0	3.0	7.56	7.69			0.21	0.21
Mon-04	7.4	7.4		7.5	356	146			4.9	4.9	205	85			4.0	4.0	4.32	2.34			0.29	0.29
Tue-05	7.6	7.6		7.5	304	59			2.8	2.8	223	120			3.0	3.0	5.33	3.19			0.16	0.16
Wed-06	7.7			7.6	236				2.9	2.9	328				3.0	3.0	6.98				0.17	0.17
Thu-07	7.6			7.6	243				3.0	3.0	257				2.0	2.0	6.76				0.19	0.19
Fri-08	7.5	7.5		7.6	324	66			3.3	3.3	248	152			3.0	3.0	5.84	4.32			0.21	0.21
Sat-09	7.7			7.6	236				3.2	3.2	183				3.0	3.0	6.15				0.19	0.19
Sun-10	7.6			7.6	256				3.4	3.4	289				3.0	3.0	6.34				0.26	0.26
Mon-11	7.6			7.6	306				3.8	3.8	265				3.0	3.0	6.62				0.22	0.22
Tue-12	7.6			7.6	266				4.6	4.6	251				3.0	3.0	6.46				0.25	0.25
Wed-13	7.5			7.5	316				4.9	4.9	259				3.0	3.0	6.17				0.26	0.26
Thu-14	7.5			7.6	300				3.2	3.2	260				3.0	3.0	6.96				0.41	0.41
Fri-15	7.5			7.7	288				5.1	5.1	305				3.0	3.0	6.87				0.33	0.33
Sat-16	7.6			7.7	254				4.4	4.4	268				2.0	2.0	7.26				0.29	0.29
Sun-17	7.7			7.7	296				6.4	6.4	278				3.0	3.0	7.91				0.34	0.34
Mon-18	7.6			7.6	300				9.8	9.8	305				3.0	3.0	7.52				0.37	0.37
Tue-19	7.5			7.6	288				5.7	5.7	313				3.0	3.0	7.46				0.29	0.29
Wed-20	7.6			7.7	328				4.1	4.1	180				3.0	3.0	7.42				0.25	0.25
Thu-21	7.4	7.4		7.4	222	111			4.2	4.2	182	87			3.0	3.0	3.46	2.45			0.26	0.26
Fri-22	7.5	7.6		7.5	184	43			3.4	3.4	97	52			< 2.0	< 2.0	2.87	1.64			0.18	0.18
Sat-23	7.6	7.6		7.5	178	50			3.2	3.2	150	52			< 2.0	< 2.0	4.81	2.84			0.16	0.16
Sun-24	7.7	7.7		7.7	192	44			3.7	3.7	194	76			< 2.0	< 2.0	4.98	2.70			0.19	0.19
Mon-25	7.7			7.6	252				3.9	3.9	234				3.0	3.0	6.44				0.22	0.22
Tue-26	7.6	7.7		7.7	280	69			4.8	4.8	247	128			3.0	3.0	5.86	3.88			0.26	0.26
Wed-27	7.5	7.7		7.6	292	82			3.5	3.5	224	113			3.0	3.0	6.77	5.81			0.20	0.20
Thu-28	7.6			7.6	250				5.2	5.2	193				3.0	3.0	7.04				0.26	0.26
Fri-29	7.6			7.7	336				4.9	4.9	258				3.0	3.0	6.92				0.27	0.27
Sat-30	7.6			7.8	204				5.6	5.6	244				3.0	3.0	6.49				0.43	0.43
Sun 31	7.6	7.5		7.6	878	147			5.6	5.6	148	78			3.0	3.0	8.13	3.06			0.28	0.28
Average	7.6	7.6	---	7.6	297	90	---	---	4.3	4.3	245	106	---	---	2.9	2.9	6.41	3.63	---	---	0.25	0.25
Minimum	7.4	7.4	---	7.4	178	43	---	---	2.8	2.8	97	52	---	---	< 2.0	< 2.0	2.87	1.64	---	---	0.16	0.16
Maximum	7.7	7.7	---	7.8	878	172	---	---	9.8	9.8	354	224	---	---	4.0	4.0	8.13	7.69	---	---	0.43	0.43
GeoMean	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
TOTAL	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

DATE	NH3-N (mg/L)						TKN (mg/L)				NO_2+NO_3 (mg/L)				Chloride (mg/L)				*E. coli* (Counts/100 mL)			
					OUTFALL 10																	
	RAW	OUTFALL 30	OUTFALL 20	EPEPS	FEC	FE	RAW	OUTFALL 30	OUTFALL 20	OUTFALL 10 FEC	RAW	OUTFALL 30	OUTFALL 20	OUTFALL 10 FEC	RAW	OUTFALL 30	OUTFALL 20	OUTFALL 10 FEC	RAW X10^6	OUTFALL 30 X10^6	OUTFALL 20 X10^6	OUTFALL 10 FEC
Fri-01	39.0				2.37	2.37	58.0			4.60				9.49	88			95				13
Sat-02	34.7				2.75	2.75	62.5			4.80				11.5	87			96				10
Sun-03	33.2	39.8			2.99	2.99	58.7	61.1		4.80		0.63		10.7	115	146		92		2.4		10
Mon-04	18.2	17.8			1.34	1.34	34.8	24.1		3.10		1.60		6.48	83	80		89		0.9		14
Tue-05	26.7	26.9			1.85	1.85	46.1	37.9		3.10		1.04		6.34	94	83		85		1.1		130
Wed-06	43.0				3.58	3.58	59.3			5.00	< 0.01			7.20	106			97				14
Thu-07	44.0				3.56	3.56	57.3			5.40				8.12	101			104				15
Fri-08	28.4	34.3			3.46	3.46	43.4	41.1		4.80		0.89		7.15	95	102		100		1.5		10
Sat-09	37.0				2.31	2.31	48.2			4.20				7.53	88			98				8
Sun-10	35.4				1.92	1.92	49.2			4.90				8.29	89			94				11
Mon-11	36.3				3.43	3.43	50.6			5.10				8.17	91			91				16
Tue-12	35.5				3.15	3.15	54.5			4.90				8.16	95			98				6
Wed-13	35.4				2.69	2.69	53.4			4.20	< 0.01			8.04	90			98				14
Thu-14	39.3				1.10	1.10	55.3			4.00				8.02	96			98				13
Fri-15	39.7				3.99	3.99	53.3			6.30				8.99	90			98				9
Sat-16	35.4				2.78	2.78	59.8			5.00				9.5	90			94				14
Sun-17	39.4				2.32	2.32	60.3			4.20				10.2	89			93				9
Mon-18	39.3				1.38	1.38	59.4			4.30				11.4	89			93				10
Tue-19	44.6				3.52	3.52	62.0			5.80				9.75	88			91				9
Wed-20	37.9				4.83	4.83	62.0			7.30	< 0.01			7.64	94			92	1.7			13
Thu-21	14.1	13.6			2.97	2.97	25.2	23.8		4.90		0.84		5.28	50	54		84		0.9		18
Fri-22	12.4	16.1			0.09	0.09	21.9	22.0		1.20		3.85		2.89	59	64		52		0.3		4
Sat-23	23.6	26.6			1.29	1.29	39.4	37.0		3.40		1.97		6.47	92	92		76		0.7		4
Sun-24	26.0	30.7			6.72	6.72	42.2	38.3		7.70		0.79		7.22	98	93		95		1.0		7
Mon-25	28.0				8.58	8.58	49.0			8.60				6.45	100			102				25
Tue-26	31.6	35.9			6.37	6.37	40.4	42.4		6.70		0.10		6.53	102	112		105		0.9		18
Wed-27	33.7	41.9			3.13	3.13	46.2	45.7		3.90	< 0.01	0.11		7.49	99	102		103		1.8		10
Thu-28	35.2				3.62	3.62	57.1			6.00				7.53	94			102	1.4			21
Fri-29	33.3				3.60	3.60	53.5			5.40				8.35	96			100				6
Sat-30	33.4				4.63	4.63	53.3			6.90				7.92	97			101				24
Sun 31	21.9	17.3			2.37	2.37	46.4	23.7		4.50		0.67		9.48	69	55		97		1.9		13
Average	32.8	27.4	---	---	3.18	3.18	50.4	36.1	---	5.00	< 0.01	1.14	---	8.01	91	89	---	94	---	---	---	---
Minimum	12.4	13.6	---	---	0.09	0.09	21.9	22.0	---	1.20	< 0.01	0.10	---	2.89	50	54	---	52	1.4	0.3	---	4
Maximum	44.6	41.9	---	---	8.58	8.58	62.5	61.1	---	8.60	< 0.01	3.85	---	11.5	115	146	---	105	1.7	2.4	---	130
GeoMean	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1.5	1.1	---	12
TOTAL	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

* Contact Laboratory for information about the quality assurance associated with the results

Enhanced Primary Treatment (EPT) Usage

Total Bypass (hr)	EPT Usage (hr)	% Usage	Total Bypass YTD (hr)	EPT Usage YTD (hr)	% Usage YTD
121	121	100%	286	286	100%

Report Comments

1	RAW - May 9: Analysis of the sample exceeded the recommended hold time for BOD.

AEP Ref #

RAW	Untreated Influent into the plant
INF	Untreated wastewater from collection system
INFs	Influent, screened at the Headworks Diversion Structure
PE	Primary Effluent from conventional primaries
PE 30	Primary Effluent from conventional primaries discharged via Outfall 30
EPT	Enhanced Primary Treatment
EPE	Enhanced Primary Effluent
EPEPS	Enhanced Primary Effluent Pump Station
FE	Final Effluent from secondary treatment process (with biological nutrient removal). Pre-Ultraviolet disinfection.

FEC	Combined post-UV disinfection (FE+EPEPS)
OUTFALL 10	UV-disinfected, discharged via OUTFALL 10
OUTFALL 20	Combined Bypass (RAW + PE + EPE)
OUTFALL 30	Combined Bypass (INF + INFS + PE30 + EPE)
MPW	Membrane Product Water (Effluent re-use water)
ML	Megalitre (1,000,000 Litre)
MPN	Most Probable Number
NR	No Result
NS	No Sample
INS	Insufficient Sample
AEP	Alberta Environment & Parks

Alfredo Suarez
Senior Manager, Operations

Shane Harnish
Senior Manager, Analytical Operations

PROVIDING MORE EPCOR

Gold Bar Wastewater Treatment Plant
Plant Performance Report
June 2020

Digested Sludge: Total Monthly Volume (ML)	65.9

Volume of Flow (ML)

DATE	Peak Flow (MLD)	Influent INFs	Influent RAW	Effluent – Non UV Disinfected OUTFALL 30	Effluent – Non UV Disinfected OUTFALL 20	Effluent – Non UV Disinfected MPW	Effluent – UV Disinfected EPEPS	Effluent – UV Disinfected OUTFALL 10 FEC	Effluent – UV Disinfected OUTFALL 10 FE
Mon-01	1,580.0	4.0	455.5	104.2	0.0	9.7	0.0	341.6	341.6
Tue-02	399.9	0.0	307.4	0.0	0.0	9.6	0.0	297.8	297.8
Wed-03	399.1	0.0	309.5	0.0	0.0	9.6	0.0	299.9	299.9
Thu-04	361.9	0.0	294.8	0.0	0.0	9.5	0.0	285.3	285.3
Fri-05	355.9	0.0	289.5	0.0	0.0	9.6	0.0	279.9	279.9
Sat-06	1,440.4	0.1	460.0	142.9	0.0	8.8	0.0	308.3	308.3
Sun-07	1,606.6	14.9	932.4	573.2	0.0	9.3	0.0	349.9	349.9
Mon-08	770.4	0.0	468.5	108.5	0.0	9.9	0.0	350.1	350.1
Tue-09	485.8	0.0	365.4	7.5	0.0	10.1	0.0	347.8	347.8
Wed-10	433.5	0.0	349.0	0.0	0.0	10.1	0.0	338.9	338.9
Thu-11	392.7	0.0	322.6	0.0	0.0	10.3	0.0	312.3	312.3
Fri-12	390.0	0.0	313.3	0.0	0.0	11.5	0.0	301.8	301.8
Sat-13	428.8	0.0	321.0	0.0	0.0	11.5	0.0	309.5	309.5
Sun-14	1,593.5	3.1	556.3	223.7	0.0	11.3	0.0	321.3	321.3
Mon-15	1,302.8	0.0	554.4	216.1	0.0	11.0	0.0	327.3	327.3
Tue-16	487.0	0.0	367.5	35.1	0.0	10.9	0.0	321.5	321.5
Wed-17	464.1	0.0	350.5	29.9	0.0	10.9	0.0	309.7	309.7
Thu-18	403.4	0.0	333.1	2.1	0.0	10.6	0.0	320.4	320.4
Fri-19	399.9	0.0	327.9	0.0	0.0	10.2	0.0	317.7	317.7
Sat-20	383.9	0.0	309.0	0.0	0.0	10.8	0.0	298.2	298.2
Sun-21	382.6	0.0	298.4	0.0	0.0	10.8	0.0	287.6	287.6
Mon-22	366.7	0.0	303.0	0.0	0.0	10.9	0.0	292.1	292.1
Tue-23	605.1	0.0	322.7	20.4	0.0	10.6	0.0	291.7	291.7
Wed-24	763.2	0.0	385.3	54.1	0.0	10.4	0.0	320.8	320.8
Thu-25	362.6	0.0	298.4	0.0	0.0	10.4	0.0	288.0	288.0
Fri-26	356.3	0.0	292.1	0.0	0.0	10.4	0.0	281.7	281.7
Sat-27	546.0	0.0	339.0	14.6	0.0	10.4	0.0	314.0	314.0
Sun-28	497.5	0.0	294.7	11.7	0.0	10.4	0.0	272.6	272.6
Mon-29	409.2	0.0	325.0	0.0	0.0	10.5	0.0	314.5	314.5
Tue-30	1,454.6	0.0	669.6	350.6	0.0	10.5	0.0	308.5	308.5
Average	660.8	0.7	383.9	63.2	0.0	10.4	0.0	310.4	310.4
Minimum	355.9	0.0	289.5	0.0	0.0	8.8	0.0	272.6	272.6
Maximum	1,606.6	14.9	932.4	573.2	0.0	11.5	0.0	350.1	350.1
GeoMean	---	---	---	---	---	---	---	---	---
TOTAL	---	22	11,516	1,895	0	311	0	9,311	9,311

Liquid Stream Quality

DATE	pH@25°C RAW	pH OUTFALL 30	pH OUTFALL 20	pH OUTFALL 10 FEC	TSS (mg/L) RAW	TSS OUTFALL 30	TSS OUTFALL 20	TSS EPEPS	TSS OUTFALL 10 FEC	TSS OUTFALL 10 FE
Mon-01	7.5	7.4		7.5	224	32			4.1	4.1
Tue-02	7.7			7.6	248				4.6	4.6
Wed-03	7.7			7.6	396				4.6	4.6
Thu-04	7.5			7.7	118				4.4	4.4
Fri-05	7.6			7.7	292				5.3	5.3
Sat-06	7.5	7.6		7.7	60	51			5.1	5.1
Sun-07	7.5	7.6		7.6	95	65			3.6	3.6
Mon-08	7.6	7.6		7.6	151	36			4.4	4.4
Tue-09	7.6	7.5		7.7	229	40			5.0	5.0
Wed-10	7.6			7.7	244				6.7	6.7
Thu-11	7.5			7.7	346				7.0	7.0
Fri-12	7.6			7.8	323				5.9	5.9
Sat-13	7.7			7.8	420				8.2	8.2
Sun-14	7.6	7.6		7.5	540	84			5.0	5.0
Mon-15	7.6	7.7		7.6	274	36			3.9	3.9
Tue-16	7.7	7.7		7.6	234	55			3.6	3.6
Wed-17	7.5	7.5		7.6	300	48			5.3	5.3
Thu-18	7.6	7.9		7.6	268	45			4.7	4.7
Fri-19	7.6			7.6	528				4.4	4.4
Sat-20	7.7			7.6	138				4.1	4.1
Sun-21	7.6			7.6	360				3.8	3.8
Mon-22	7.6			7.6	356				5.0	5.0
Tue-23	7.5	7.6		7.6	632	59			4.3	4.3
Wed-24	7.5	7.6		7.6	476	67			4.0	4.0
Thu-25	7.6			7.6	376				5.4	5.4
Fri-26	7.7			7.6	408				4.8	4.8
Sat-27	7.5	7.7		7.6	412	80			4.8	4.8
Sun-28	7.6	7.9		7.6	368	101			5.0	5.0
Mon-29	7.5			7.6	356				5.3	5.3
Tue-30	7.4	7.4		7.6	332	74			5.4	5.4
Average	7.6	7.6	---	7.6	317	58	---	---	4.9	4.9
Minimum	7.4	7.4	---	7.5	60	32	---	---	3.6	3.6
Maximum	7.7	7.9	---	7.8	632	101	---	---	8.2	8.2
GeoMean	---	---	---	---	---	---	---	---	---	---
TOTAL	---	---	---	---	---	---	---	---	---	---

DATE	$BOD_5/cBOD_5$ (mg/L) RAW BOD_5	OUTFALL 30 BOD_5	OUTFALL 20 BOD_5	EPEPS BOD_5	OUTFALL 10 FEC $cBOD_5$	OUTFALL 10 FE $cBOD_5$	TP (mg/L) RAW	TP OUTFALL 30	TP OUTFALL 20	TP EPEPS	TP OUTFALL 10 FEC	TP OUTFALL 10 FE
Mon-01	152	31			3.0	3.0	4.61	1.30			0.22	0.22
Tue-02	201				3.0	3.0	5.95				0.21	0.21
Wed-03	258				3.0	3.0	8.07				0.21	0.21
Thu-04	241				< 2.0	< 2.0	6.98				0.25	0.25
Fri-05	217				2.0	2.0	7.23				0.26	0.26
Sat-06	99	56			3.0	3.0	3.77	2.53			0.25	0.25
Sun-07	102	49			3.0	3.0	3.27	1.88			0.25	0.25
Mon-08	143	45			3.0	3.0	4.52	1.92			0.19	0.19
Tue-09	196	66			3.0	3.0	5.88	2.68			0.18	0.18
Wed-10	197				4.0	4.0	5.63				0.39	0.39
Thu-11	222				4.0	4.0	6.98				0.40	0.40
Fri-12	215				4.0	4.0	6.27				0.36	0.36
Sat-13	256				5.0	5.0	6.89				0.45	0.45
Sun-14	163	69			2.0	2.0	5.21	2.75			0.26	0.26
Mon-15	181	44			3.0	3.0	4.65	1.82			0.20	0.20
Tue-16	197	71			3.0	3.0	5.24	3.01			0.18	0.18
Wed-17	192	93			3.0	3.0	6.24	3.60			0.36	0.36
Thu-18	330	85			3.0	3.0	6.18	3.07			0.31	0.31
Fri-19	227				3.0	3.0	7.69				0.29	0.29
Sat-20	266				2.0	2.0	5.02				0.24	0.24
Sun-21	219				3.0	3.0	7.37				0.20	0.20
Mon-22	243				3.0	3.0	7.14				0.24	0.24
Tue-23	368	143			3.0	3.0	10.8	4.49			0.24	0.24
Wed-24	224	92			2.0	2.0	6.91	4.01			0.22	0.22
Thu-25	219				3.0	3.0	7.17				0.23	0.23
Fri-26	311				3.0	3.0	7.61				0.38	0.38
Sat-27	240	128			2.0	2.0	6.34	5.71			0.24	0.24
Sun-28	346	118			4.0	4.0	7.23	5.24			0.20	0.20
Mon-29	259				3.0	3.0	7.44				0.24	0.24
Tue-30	165	60			3.0	3.0	4.25	2.25			0.24	0.24
Average	222	77	---	---	3.0	3.0	6.28	3.08	---	---	0.26	0.26
Minimum	99	31	---	---	< 2.0	< 2.0	3.27	1.30	---	---	0.18	0.18
Maximum	368	143	---	---	5.0	5.0	10.8	5.71	---	---	0.45	0.45
GeoMean	---	---	---	---	---	---	---	---	---	---	---	---
TOTAL	---	---	---	---	---	---	---	---	---	---	---	---

DATE	NH3-N (mg/L) RAW	NH3-N OUTFALL 30	NH3-N OUTFALL 20	NH3-N EPEPS	NH3-N OUTFALL 10 FEC	NH3-N OUTFALL 10 FE	TKN (mg/L) RAW	TKN OUTFALL 30	TKN OUTFALL 20	TKN OUTFALL 10 FEC
Mon-01	22.7	11.8			1.16	1.16	36.0	15.0		2.8
Tue-02	32.5				1.73	1.73	49.7			3.7
Wed-03	37.4				1.02	1.02	58.1			3.0
Thu-04	40.7				1.00	1.00	54.5			2.8
Fri-05	40.4				1.25	1.25	56.0			3.1
Sat-06	27.3	27.8			0.58	0.58	33.4	30.4		2.4
Sun-07	14.8	12.5			0.11	0.11	24.8	18.7		1.5
Mon-08	25.0	27.8			0.13	0.13	40.9	31.3		1.6
Tue-09	30.5	29.8			0.91	0.91	49.4	40.7		1.6
Wed-10	32.6				2.10	2.10	48.8			4.4
Thu-11	31.4				2.63	2.63	56.6			5.2
Fri-12	35.0				1.68	1.68	51.3			4.1
Sat-13	34.0				1.56	1.56	52.6			3.8
Sun-14	21.4	25.6			1.21	1.21	37.3	32.1		3.0
Mon-15	22.7	14.6			0.18	0.18	36.9	25.2		1.6
Tue-16	27.6	33.7			0.31	0.31	44.9	39.0		2.0
Wed-17	30.2	36.3			0.48	0.48	48.5	45.8		2.3
Thu-18	28.7	34.7			1.46	1.46	51.0	44.9		3.5
Fri-19	32.4				2.10	2.10	55.6			4.1
Sat-20	32.3				1.48	1.48	48.1			3.6
Sun-21	39.4				1.27	1.27	57.1			3.3
Mon-22	38.4				1.33	1.33	57.8			3.1
Tue-23	41.3	35.4			1.12	1.12	75.3	48.8		3.3
Wed-24	30.4	28.4			0.39	0.39	49.8	38.8		1.8
Thu-25	38.8				0.50	0.50	55.9			2.2
Fri-26	39.3				0.79	0.79	60.0			2.9
Sat-27	30.5	31.9			0.67	0.67	44.4	50.1		2.6
Sun-28	37.4	42.3			0.93	0.93	63.3	50.0		2.6
Mon-29	32.2				0.73	0.73	49.7			2.6
Tue-30	18.8	17.3			0.57	0.57	31.5	22.7		2.4
Average	31.5	27.3	---	---	1.05	1.05	49.3	35.6	---	2.9
Minimum	14.8	11.8	---	---	0.11	0.11	24.8	15.0	---	1.5
Maximum	41.3	42.3	---	---	2.63	2.63	75.3	50.1	---	5.2
GeoMean	---	---	---	---	---	---	---	---	---	---
TOTAL	---	---	---	---	---	---	---	---	---	---

DATE	NO_2+NO_3 (mg/L) RAW	NO_2+NO_3 OUTFALL 30	NO_2+NO_3 OUTFALL 20	NO_2+NO_3 OUTFALL 10 FEC	Chloride (mg/L) RAW	Chloride OUTFALL 30	Chloride OUTFALL 20	Chloride OUTFALL 10 FEC	*E. coli* (Counts/100 mL) RAW X10^6	*E. coli* OUTFALL 30 X10^6	*E. coli* OUTFALL 20 X10^6	*E. coli* OUTFALL 10 FEC
Mon-01		1.34		5.90	69	39		71		0.4		13
Tue-02				9.64	94			91				14
Wed-03	< 0.01			10.9	92			98				11
Thu-04				11.5	100			98				13
Fri-05				11.3	96			102				8
Sat-06		0.67		11.5	66	69		96		1.1		3
Sun-07		1.69		6.38	45	44		59		0.7		5
Mon-08		3.11		7.63	85	85		60		0.4		2
Tue-09		1.31		11.2	96	93		91		1.0		8
Wed-10	< 0.01			9.49	95			101				20
Thu-11				10.9	90			104				18
Fri-12				10.1	87			101				12
Sat-13				10.4	91			104				21
Sun-14		1.11		8.70	64	65		85		1.1		6
Mon-15		3.89		7.05	81	68		63		1.0		8
Tue-16		1.93		9.91	84	89		82		1.0		9
Wed-17	0.07	0.39		12.2	92	105		96		1.1		6
Thu-18		0.53		11.8	99	94		100		0.8		9
Fri-19				11.2	99			99				15
Sat-20				11.6	92			100				17
Sun-21				12.8	92			97				9
Mon-22				13.6	97			96				9
Tue-23		0.14		12.8	98	102		104	1.5	2.0		7
Wed-24	< 0.01	0.30		10.5	81	82		90		1.7		17
Thu-25				11.1	93			90				9
Fri-26				10.8	92			94				9
Sat-27		0.15		10.4	76	78		89		1.0		10
Sun-28		0.06		11.5	90	95		91		1.7		6
Mon-29				10.5	80			86	1.4			12
Tue-30		0.97		6.64	51	52		86		0.8		16
Average	0.03	1.17	---	10.3	86	77	---	91	---	---	---	---
Minimum	< 0.01	0.06	---	5.90	45	39	---	59	1.4	0.4	---	2
Maximum	0.07	3.89	---	13.6	100	105	---	104	1.5	2.0	---	21
GeoMean	---	---	---	---	---	---	---	---	1.4	1.0	---	10
TOTAL	---	---	---	---	---	---	---	---	---	---	---	---

* Contact Laboratory for information about the quality assurance associated with the results

Enhanced Primary Treatment (EPT) Usage					
Total Bypass (hr)	EPT Usage (hr)	% Usage	Total Bypass YTD (hr)	EPT Usage YTD (hr)	% Usage YTD
163	163	100%	449	449	100%

Report Comments

1	OUTFALL10 - June 23: Analysis of the sample exceeded the recommended hold time for BOD.

AEP Ref #

RAW	Untreated Influent into the plant
INF	Untreated wastewater from collection system
INFs	Influent, screened at the Headworks Diversion Structure
PE	Primary Effluent from conventional primaries
PE 30	Primary Effluent from conventional primaries discharged via Outfall 30
EPT	Enhanced Primary Treatment
EPE	Enhanced Primary Effluent
EPEPS	Enhanced Primary Effluent Pump Station
FE	Final Effluent from secondary treatment process (with biological nutrient removal). Pre-Ultraviolet disinfection.
FEC	Combined post-UV disinfection (FE+EPEPS)
OUTFALL 10	UV-disinfected, discharged via OUTFALL 10
OUTFALL 20	Combined Bypass (RAW + PE + EPE)
OUTFALL 30	Combined Bypass (INF + INFS + PE30 + EPE)
MPW	Membrane Product Water (Effluent re-use water)
ML	Megalitre (1,000,000 Litre)
MPN	Most Probable Number
NR	No Result
NS	No Sample
INS	Insufficient Sample
AEP	Alberta Environment & Parks

Alfredo Suarez
Senior Manager, Operations

Shane Harnish
Senior Manager, Analytical Operations

Gold Bar Wastewater Treatment Plant
Plant Performance Report
July 2020

Digested Sludge: Total Monthly Volume (ML)	68.0

Volume of Flow (ML) and pH@25°C

DATE	Peak Flow (MLD)	Influent INFs	Influent RAW	Effluent Non UV Disinfected OUTFALL 30	Effluent Non UV Disinfected OUTFALL 20	Effluent Non UV Disinfected MPW	Effluent UV Disinfected EPEPS	Effluent UV Disinfected OUTFALL 10 FEC	Effluent UV Disinfected OUTFALL 10 FE	pH RAW	pH OUTFALL 30	pH OUTFALL 20	pH OUTFALL 10 FEC
Wed-01	1,528.1	2.1	968.9	627.6	0.0	10.4	0.0	330.9	330.9	7.5	7.6		7.6
Thu-02	665.2	0.0	485.1	143.4	0.0	10.5	0.0	331.2	331.2	7.7	7.8		7.7
Fri-03	497.7	0.0	370.3	26.3	0.0	10.5	0.0	333.5	333.5	7.6	7.8		7.8
Sat-04	1,014.8	0.0	401.7	68.8	0.0	10.4	0.0	322.5	322.5	7.6	7.6		7.6
Sun-05	1,270.3	0.0	460.7	116.7	0.0	11.0	0.0	333.0	333.0	7.6	7.6		7.6
Mon-06	455.4	0.0	355.2	5.4	0.0	11.0	0.0	338.8	338.8	7.6	7.8		7.6
Tue-07	1,458.4	0.0	471.7	135.8	0.0	10.9	0.0	325.0	325.0	7.6	7.6		7.6
Wed-08	1,604.7	8.2	744.2	399.4	0.0	11.1	0.0	333.7	333.7	7.5	7.7		7.7
Thu-09	1,855.7	5.5	445.4	94.0	0.1	10.1	0.0	341.2	341.2	7.6	7.7		7.7
Fri-10	1,716.8	12.0	640.6	288.4	0.0	10.3	0.0	341.9	341.9	7.7	7.8		7.6
Sat-11	485.2	0.0	388.3	39.0	0.0	10.7	0.0	338.6	338.6	7.6	7.8		7.6
Sun-12	491.1	0.0	383.9	35.3	0.0	10.6	0.0	338.0	338.0	7.8	7.8		7.6
Mon-13	962.6	0.0	403.8	62.8	0.0	10.8	0.0	330.2	330.2	7.6	7.6		7.7
Tue-14	413.4	0.0	348.7	1.6	0.0	10.7	0.0	336.4	336.4	7.7	7.9		7.6
Wed-15	409.1	0.0	326.8	0.0	0.0	11.0	0.0	315.8	315.8	7.6			7.7
Thu-16	1,912.4	16.0	611.4	287.4	0.4	11.2	0.0	312.4	312.4	7.6	7.5	7.7	7.6
Fri-17	1,060.9	0.0	529.1	171.1	0.0	11.4	0.0	346.6	346.6	7.7	7.8	8.3	7.7
Sat-18	457.6	0.0	374.3	31.5	0.0	12.1	0.0	330.7	330.7	7.7	7.8	8.0	7.7
Sun-19	1,161.6	0.0	398.2	70.0	0.0	12.4	0.0	315.8	315.8	7.6	7.7		7.8
Mon-20	525.8	0.0	358.3	23.4	0.0	12.3	0.0	322.6	322.6	7.6	7.6		7.7
Tue-21	443.6	0.0	333.9	5.8	0.0	12.3	0.0	315.8	315.8	7.6	7.8		7.7
Wed-22	1,287.6	0.0	444.6	113.6	0.0	12.3	0.0	318.7	318.7	7.5	7.6		7.7
Thu-23	821.2	0.0	398.0	55.9	0.0	12.2	0.0	329.9	329.9	7.6	7.6		7.6
Fri-24	494.4	0.0	355.3	7.4	0.0	12.0	0.0	335.9	335.9	7.8	8.0		7.6
Sat-25	600.4	0.0	350.6	28.1	0.0	12.2	0.0	310.3	310.3	7.7	7.8		7.7
Sun-26	396.2	0.0	313.5	0.0	0.0	11.4	0.0	302.1	302.1	7.6			7.6
Mon-27	395.8	0.0	313.0	0.0	0.0	10.8	0.0	302.2	302.2	7.6			7.7
Tue-28	389.8	0.0	312.0	0.0	0.0	10.9	0.0	301.1	301.1	7.6			7.7
Wed-29	385.0	0.0	311.2	0.0	0.0	11.0	0.0	300.2	300.2	7.6			7.8
Thu-30	373.8	0.0	308.4	0.0	0.0	10.6	0.0	297.8	297.8	7.6			7.7
Fri 31	370.6	0.0	302.7	0.0	0.0	10.5	0.0	292.2	292.2	7.5			7.7
Average	835.7	1.4	426.1	91.6	0.0	11.1	0.0	323.4	323.4	7.6	7.7	8.0	7.7
Minimum	370.6	0.0	302.7	0.0	0.0	10.1	0.0	292.2	292.2	7.5	7.5	7.7	7.6
Maximum	1,912.4	16.0	968.9	627.6	0.4	12.4	0.0	346.6	346.6	7.8	8.0	8.3	7.8
GeoMean	---	---	---	---	---	---	---	---	---	---	---	---	---
TOTAL	---	44	13,210	2,839	1	346	0	10,025	10,025	---	---	---	---

Liquid Stream Quality: TSS (mg/L) and BOD_5/$cBOD_5$ (mg/L)

DATE	TSS RAW	TSS OUTFALL 30	TSS OUTFALL 20	TSS EPEPS	TSS OUTFALL 10 FEC	TSS OUTFALL 10 FE	RAW BOD_5	OUTFALL 30 BOD_5	OUTFALL 20 BOD_5	EPEPS BOD_5	OUTFALL 10 FEC $cBOD_5$	OUTFALL 10 FE $cBOD_5$
Wed-01	184	53			3.4	3.4	77	36			< 2.0	< 2.0
Thu-02	242	30			5.3	5.3	155	44			2.0	2.0
Fri-03	268	111			4.8	4.8	196	68			3.0	3.0
Sat-04	300	111			4.8	4.8	163	74			2.0	2.0
Sun-05	206	47			7.1	7.1	148	66			3.0	3.0
Mon-06	79	86			3.1	3.1	271	81			< 2.0	< 2.0
Tue-07	396	153			3.7	3.7	186	90			< 2.0	< 2.0
Wed-08	296	48			2.2	2.2	73	42			2.0	2.0
Thu-09	300	69			2.3	2.3	154	53			< 2.0	< 2.0
Fri-10	324	78			2.7	2.7	108	40			< 2.0	< 2.0
Sat-11	192	77			3.6	3.6	82	43			< 2.0	< 2.0
Sun-12	208	129			4.4	4.4	179	104			3.0	3.0
Mon-13	346	113			4.3	4.3	221	118			2.0	2.0
Tue-14	280	86			4.5	4.5	164	95			3.0	3.0
Wed-15	440				4.6	4.6	240				2.0	2.0
Thu-16	552	286	963		5.7	5.7	182	64	54		3.0	3.0
Fri-17	496	52	131		4.3	4.3	110	38	19		< 2.0	< 2.0
Sat-18	220	55	16		4.0	4.0	169	62	5		2.0	2.0
Sun-19	384	72			3.1	3.1	238	68			2.0	2.0
Mon-20	328	37			3.2	3.2	275	79			2.0	2.0
Tue-21	264	74			3.7	3.7	212	89			2.0	2.0
Wed-22	278	55			4.2	4.2	168	60			3.0	3.0
Thu-23	336	57			3.8	3.8	186	52			3.0	3.0
Fri-24	308	30			5.0	5.0	171	46			3.0	3.0
Sat-25	296	62			3.7	3.7	215	71			3.0	3.0
Sun-26	324				4.7	4.7	198				4.0	4.0
Mon-27	270				6.5	6.5	199				3.0	3.0
Tue-28	260				5.0	5.0	227				4.0	4.0
Wed-29	348				4.6	4.6	232				4.0	4.0
Thu-30	308				4.8	4.8	236				4.0	4.0
Fri 31	394				5.1	5.1	244				4.0	4.0
Average	304	82	370	---	4.3	4.3	183	66	26	---	2.6	2.6
Minimum	79	30	16	---	2.2	2.2	73	36	5	---	< 2.0	< 2.0
Maximum	552	286	963	---	7.1	7.1	275	118	54	---	4.0	4.0
GeoMean	---	---	---	---	---	---	---	---	---	---	---	---
TOTAL	---	---	---	---	---	---	---	---	---	---	---	---

Liquid Stream Quality: TP (mg/L) and NH3-N (mg/L)

DATE	TP RAW	TP OUTFALL 30	TP OUTFALL 20	TP EPEPS	TP OUTFALL 10 FEC	TP OUTFALL 10 FE	NH3-N RAW	NH3-N OUTFALL 30	NH3-N OUTFALL 20	NH3-N EPEPS	NH3-N OUTFALL 10 FEC	NH3-N OUTFALL 10 FE
Wed-01	2.83	1.23			0.14	0.14	14.5	13.5			0.08	0.08
Thu-02	4.12	2.01			0.18	0.18	24.4	17.5			0.16	0.16
Fri-03	5.21	3.12			0.23	0.23	28.2	32.8			1.07	1.07
Sat-04	6.35	3.37			0.24	0.24	25.3	24.4			1.94	1.94
Sun-05	4.56	2.96			0.23	0.23	24.5	28.2			0.54	0.54
Mon-06	4.58	3.75			0.24	0.24	30.3	30.5			2.41	2.41
Tue-07	6.14	3.30			0.34	0.34	25.8	19.5			3.66	3.66
Wed-08	3.08	1.73			0.14	0.14	17.8	17.3			0.46	0.46
Thu-09	4.45	2.72			0.13	0.13	25.9	31.5			0.44	0.44
Fri-10	4.47	1.86			0.14	0.14	20.8	19.8			0.27	0.27
Sat-11	3.53	3.00			0.21	0.21	27.4	27.9			0.22	0.22
Sun-12	5.24	4.14			0.28	0.28	28.3	31.9			0.25	0.25
Mon-13	5.86	3.96			0.45	0.45	27.2	26.2			0.44	0.44
Tue-14	2.88	4.51			0.54	0.54	31.9	26.7			0.76	0.76
Wed-15	6.52				0.40	0.40	30.6				1.54	1.54
Thu-16	5.40	2.68	2.62		0.27	0.27	17.5	8.74	2.62		1.16	1.16
Fri-17	5.09	1.52	0.16		0.16	0.16	20.4	20.0	0.89		0.10	0.10
Sat-18	4.62	2.48	0.44		0.15	0.15	26.3	28.6	0.43		0.17	0.17
Sun-19	5.90	2.60			0.18	0.18	25.7	22.4			0.44	0.44
Mon-20	5.88	3.03			0.22	0.22	27.9	26.0			0.43	0.43
Tue-21	6.09	3.13			0.21	0.21	30.6	25.1			0.79	0.79
Wed-22	5.18	2.34			0.21	0.21	23.4	27.4			0.50	0.50
Thu-23	5.54	2.46			0.17	0.17	26.7	25.7			0.39	0.39
Fri-24	5.57	1.74			0.19	0.19	24.2	24.0			0.69	0.69
Sat-25	5.96	2.64			0.20	0.20	28.8	26.8			1.06	1.06
Sun-26	6.25				0.19	0.19	32.3				0.71	0.71
Mon-27	6.25				0.21	0.21	31.4				0.96	0.96
Tue-28	6.14				0.22	0.22	30.1				0.74	0.74
Wed-29	6.32				0.22	0.22	31.8				0.69	0.69
Thu-30	6.48				0.21	0.21	39.1				1.04	1.04
Fri 31	6.47				0.23	0.23	36.1				1.17	1.17
Average	5.26	2.76	1.07	---	0.23	0.23	26.9	24.3	1.31	---	0.82	0.82
Minimum	2.83	1.23	0.16	---	0.13	0.13	14.5	8.74	0.43	---	0.08	0.08
Maximum	6.52	4.51	2.62	---	0.54	0.54	39.1	32.8	2.62	---	3.66	3.66
GeoMean	---	---	---	---	---	---	---	---	---	---	---	---
TOTAL	---	---	---	---	---	---	---	---	---	---	---	---

Liquid Stream Quality: TKN (mg/L), NO_2+NO_3 (mg/L), Chloride (mg/L) and *E. coli* (Counts/100 mL)

DATE	TKN RAW	TKN OUTFALL 30	TKN OUTFALL 20	TKN OUTFALL 10 FEC	NO_2+NO_3 RAW	NO_2+NO_3 OUTFALL 30	NO_2+NO_3 OUTFALL 20	NO_2+NO_3 OUTFALL 10 FEC	Chloride RAW	Chloride OUTFALL 30	Chloride OUTFALL 20	Chloride OUTFALL 10 FEC	*E. coli* RAW X10^6	*E. coli* OUTFALL 30 X10^6	*E. coli* OUTFALL 20 X10^6	*E. coli* OUTFALL 10 FEC
Wed-01	18.6	15.4		1.2	< 0.01	1.92		2.75	40	43		45		0.4		5
Thu-02	34.2	31.0		1.4		2.94		6.62	82	86		59		0.3		8
Fri-03	42.8	36.9		2.8		0.48		9.69	95	96		88		1.2		3800
Sat-04	46.6	32.0		3.9		0.42		9.28	67	62		93		1.2		11
Sun-05	35.9	32.9		2.3		0.07		9.66	70	73		77		1.3		9
Mon-06	40.4	39.3		4.0		0.41		10.9	91	86		85		2.4		7
Tue-07	44.5	28.5		5.4		0.71		9.23	75	64		98		1.6		4
Wed-08	23.2	22.3		1.7	< 0.01	1.93		5.39	55	60		63		0.9		5
Thu-09	35.3	35.5		1.7		0.70		9.10	88	92		79		0.5		10
Fri-10	40.4	24.8		1.5		3.17		8.30	68	73		74	1.0	0.3		5
Sat-11	33.7	36.6		1.8		0.47		10.6	93	95		88		1.4		6
Sun-12	40.4	41.8		2.0		0.09		11.4	97	96		97		1.7		6
Mon-13	40.8	35.1		2.2		0.02		11.2	85	86		96		1.2		4
Tue-14	20.7	39.1		2.6		0.20		8.20	92	87		91		1.3		6
Wed-15	49.4			3.2	0.01			8.30	95			98				5
Thu-16	32.5	16.8	11.2	3.1		1.51	0.35	8.97	56	34	17	98		0.6	0.0	6
Fri-17	34.5	25.9	0.8	1.4		3.77	19.2	6.38	82	81	152	71		0.4		9
Sat-18	38.2	36.2	3.8	1.5		0.31	23.0	10.1	95	92	122	91		1.5		< 1
Sun-19	45.2	33.0		2.1		1.29		11.4	87	83		99		1.2		7
Mon-20	44.0	36.4		1.8		0.14		10.2	92	92		89		0.9		13
Tue-21	47.9	37.9		2.5		0.92		8.54	98	96		98	1.3	2.0		8
Wed-22	37.3	32.8		1.8	0.01	0.50		7.72	75	79		90		0.8		8
Thu-23	43.1	32.0		1.9		0.91		8.37	80	77		86		0.9		5
Fri-24	45.3	30.5		2.2		2.70		8.61	82	67		83		1.2		6
Sat-25	43.9	31.9		2.4		2.99		9.34	87	81		90		3.2		16
Sun-26	49.7			2.0				9.09	84			88				4
Mon-27	46.2			2.4				9.70	90			89				13
Tue-28	45.7			2.3				8.49	90			95				6
Wed-29	48.0			2.2	0.02			8.23	91			94				13
Thu-30	46.7			2.7				9.24	92			99				9
Fri 31	49.3			2.5				9.77	89			99				6
Average	40.1	31.9	5.3	2.3	0.01	1.19	14.2	8.86	83	78	97	87	---	---	---	---
Minimum	18.6	15.4	0.8	1.2	< 0.01	0.02	0.35	2.75	40	34	17	45	1.0	0.3	0.0	< 1
Maximum	49.7	41.8	11.2	5.4	0.02	3.77	23.0	11.4	98	96	152	99	1.3	3.2	0.0	3800
GeoMean	---	---	---	---	---	---	---	---	---	---	---	---	1.1	1.0	0.0	7
TOTAL	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

* Contact Laboratory for information about the quality assurance associated with the results

Enhanced Primary Treatment (EPT) Usage					
Total Bypass (hr)	EPT Usage (hr)	% Usage	Total Bypass YTD (hr)	EPT Usage YTD (hr)	% Usage YTD
280	280	100%	729	729	100%

Report Comments

1	OUTFALL10 - July 3: UV was shutdown at the time of E. Coli sample collection.

AEP Ref #

368354	July 3 - UV maintenance shutdown

RAW - Untreated Influent into the plant
INF - Untreated wastewater from collection system
INFs - Influent, screened at the Headworks Diversion Structure
PE - Primary Effluent from conventional primaries
PE 30 - Primary Effluent from conventional primaries discharged via Outfall 30
EPT - Enhanced Primary Treatment
EPE - Enhanced Primary Effluent
EPEPS - Enhanced Primary Effluent Pump Station
FE - Final Effluent from secondary treatment process (with biological nutrient removal). Pre-Ultraviolet disinfection.
FEC - Combined post-UV disinfection (FE+EPEPS)
OUTFALL 10 - UV-disinfected, discharged via OUTFALL 10
OUTFALL 20 - Combined Bypass (RAW + PE + EPE)
OUTFALL 30 - Combined Bypass (INF + INFS + PE30 + EPE)
MPW - Membrane Product Water (Effluent re-use water)
ML - Megalitre (1,000,000 Litre)
MPN - Most Probable Number
NR - No Result
NS - No Sample
INS - Insufficient Sample
AEP - Alberta Environment & Parks

Alfredo Suarez
Senior Manager, Operations

Shane Harnish
Senior Manager, Analytical Operations

Appendix A - Plant Performance Reports

Gold Bar Wastewater Treatment Plant
Plant Performance Report
August 2020

Digested Sludge: Total Monthly Volume (ML)	69.6

Volume of Flow (ML)

DATE	Peak Flow (MLD)	Influent: INFs	Influent: RAW	Effluent: Non UV Disinfected: OUTFALL 30	Effluent: Non UV Disinfected: OUTFALL 20	Effluent: Non UV Disinfected: MPW	Effluent: UV Disinfected: EPEPS	Effluent: UV Disinfected: OUTFALL 10: FEC	Effluent: UV Disinfected: OUTFALL 10: FE
Sat-01	356.0	0.0	284.2	0.0	0.0	11.0	0.0	273.2	273.2
Sun-02	349.8	0.0	276.9	0.0	0.0	10.2	0.0	266.7	266.7
Mon-03	1,928.8	14.5	487.0	195.2	0.2	10.2	0.0	281.4	281.4
Tue-04	948.8	0.0	419.5	59.5	0.0	10.7	0.0	349.3	349.3
Wed-05	410.9	0.0	331.0	0.0	0.0	10.9	0.0	320.1	320.1
Thu-06	388.5	0.0	315.2	0.0	0.0	10.9	0.0	304.3	304.3
Fri-07	913.7	0.0	414.8	102.7	0.0	10.7	0.0	301.4	301.4
Sat-08	402.1	0.0	303.7	0.0	0.0	10.6	0.0	293.1	293.1
Sun-09	363.0	0.0	286.8	0.0	0.0	11.1	0.0	275.7	275.7
Mon-10	355.5	0.0	293.6	0.0	0.0	10.6	0.0	283.0	283.0
Tue-11	1,152.1	0.0	378.0	83.4	0.0	10.7	0.0	283.9	283.9
Wed-12	1,266.4	0.0	503.0	144.4	0.0	11.0	0.0	347.6	347.6
Thu-13	397.0	0.0	302.9	0.0	0.0	10.8	0.0	292.1	292.1
Fri-14	350.8	0.0	291.4	0.0	0.0	10.0	0.0	281.4	281.4
Sat-15	358.0	0.0	283.8	0.0	0.0	10.3	0.0	273.5	273.5
Sun-16	357.0	0.0	280.3	0.0	0.0	10.7	0.0	269.6	269.6
Mon-17	354.9	0.0	282.4	0.0	0.0	10.9	0.0	271.5	271.5
Tue-18	367.3	0.0	285.3	0.0	0.0	10.7	0.0	274.6	274.6
Wed-19	348.9	0.0	286.6	0.0	0.0	10.7	0.0	275.9	275.9
Thu-20	1,479.3	0.0	372.3	85.7	0.0	10.8	0.0	275.8	275.8
Fri-21	752.8	0.0	344.3	25.6	0.0	10.7	0.0	308.0	308.0
Sat-22	643.7	0.0	353.5	43.0	0.0	10.5	0.0	300.0	300.0
Sun-23	321.1	0.0	284.0	0.0	0.0	10.4	0.0	273.6	273.6
Mon-24	1,158.7	0.0	351.1	61.6	0.0	10.5	0.0	279.0	279.0
Tue-25	612.7	0.0	318.1	10.9	0.0	10.9	0.0	296.3	296.3
Wed-26	969.1	0.0	397.1	59.0	0.0	10.5	0.0	327.6	327.6
Thu-27	339.6	0.0	302.9	0.0	0.0	10.3	0.0	292.6	292.6
Fri-28	340.8	0.0	291.7	0.0	0.0	10.3	0.0	281.4	281.4
Sat-29	339.6	0.0	279.4	0.0	0.0	10.3	0.0	269.1	269.1
Sun-30	322.0	0.0	274.7	0.0	0.0	10.7	0.0	264.0	264.0
Mon-31	332.5	0.0	278.7	0.0	0.0	10.6	0.0	268.1	268.1
Average	612.3	0.5	327.6	28.1	0.0	10.6	0.0	288.8	288.8
Minimum	321.1	0.0	274.7	0.0	0.0	10.0	0.0	264.0	264.0
Maximum	1,928.8	14.5	503.0	195.2	0.2	11.1	0.0	349.3	349.3
GeoMean	---	---	---	---	---	---	---	---	---
TOTAL	---	15	10,154	871	0	329	0	8,954	8,954

Liquid Stream Quality

DATE	pH@25°C: RAW	pH@25°C: OUTFALL 30	pH@25°C: OUTFALL 20	pH@25°C: OUTFALL 10: FEC
Sat-01	7.6			7.7
Sun-02	7.6			7.7
Mon-03	7.4	7.3	7.2	7.6
Tue-04	7.6	7.6		7.6
Wed-05				7.7
Thu-06	7.6			7.7
Fri-07	7.5	7.6		7.9
Sat-08	7.6			7.8
Sun-09	7.7			7.7
Mon-10	7.5			7.7
Tue-11	7.6	7.6		7.7
Wed-12	7.5	7.4		7.5
Thu-13	7.7			7.6
Fri-14	7.7			7.7
Sat-15	7.6			7.7
Sun-16	7.6			7.7
Mon-17	7.6			7.6
Tue-18	7.6			7.7
Wed-19	7.6			7.7
Thu-20	7.4	7.5		7.7
Fri-21	7.6	7.6		7.7
Sat-22	7.5	7.7		7.7
Sun-23	7.6			7.6
Mon-24	7.5	7.6		7.7
Tue-25	7.5	7.9		7.6
Wed-26	7.5	7.6		7.7
Thu-27	7.5			7.4
Fri-28	7.7			7.6
Sat-29	7.7			7.6
Sun-30	7.6			7.7
Mon-31	7.5			7.6
Average	7.6	7.6	7.2	7.7
Minimum	7.4	7.3	7.2	7.4
Maximum	7.7	7.9	7.2	7.9
GeoMean	---	---	---	---
TOTAL	---	---	---	---

DATE	TSS (mg/L): RAW	TSS (mg/L): OUTFALL 30	TSS (mg/L): OUTFALL 20	TSS (mg/L): EPEEPS	TSS (mg/L): OUTFALL 10: FEC	TSS (mg/L): OUTFALL 10: FE
Sat-01	260				5.1	5.1
Sun-02	231				6.9	6.9
Mon-03	384	125	220		6.2	6.2
Tue-04	360	40			6.2	6.2
Wed-05	268				4.9	4.9
Thu-06	238				4.6	4.6
Fri-07	276	55			5.3	5.3
Sat-08	220				4.0	4.0
Sun-09	256				4.6	4.6
Mon-10	237				4.8	4.8
Tue-11	150	83			4.9	4.9
Wed-12	236	30			5.0	5.0
Thu-13	316				4.2	4.2
Fri-14	320				5.2	5.2
Sat-15	236				5.8	5.8
Sun-16	293				6.0	6.0
Mon-17	303				10.0	10.0
Tue-18	316				7.8	7.8
Wed-19	316				8.8	8.8
Thu-20	472	138			9.1	9.1
Fri-21	432	41			8.2	8.2
Sat-22	260	32			5.1	5.1
Sun-23	264				5.5	5.5
Mon-24	348	81			6.8	6.8
Tue-25	360	44			6.3	6.3
Wed-26	452	52			4.6	4.6
Thu-27	404				3.5	3.5
Fri-28	392				5.5	5.5
Sat-29	587				7.7	7.7
Sun-30	350				5.0	5.0
Mon-31	404				4.1	4.1
Average	321	66	220	---	5.9	5.9
Minimum	150	30	220	---	3.5	3.5
Maximum	587	138	220	---	10.0	10.0
GeoMean	---	---	---	---	---	---
TOTAL	---	---	---	---	---	---

DATE	BOD_5/$cBOD_5$ (mg/L): RAW	BOD_5/$cBOD_5$ (mg/L): OUTFALL 30	BOD_5/$cBOD_5$ (mg/L): OUTFALL 20	BOD_5/$cBOD_5$ (mg/L): EPEEPS	BOD_5/$cBOD_5$ (mg/L): OUTFALL 10: FEC	BOD_5/$cBOD_5$ (mg/L): OUTFALL 10: FE
Sat-01	260				5.0	5.0
Sun-02	308				5.0	5.0
Mon-03	190	72	97		5.0	5.0
Tue-04	173	47			4.0	4.0
Wed-05	222				4.0	4.0
Thu-06	201				3.0	3.0
Fri-07	209	81			4.0	4.0
Sat-08	227				3.0	3.0
Sun-09	213				3.0	3.0
Mon-10	203				3.0	3.0
Tue-11	171	101			4.0	4.0
Wed-12	166	46			3.0	3.0
Thu-13	263				3.0	3.0
Fri-14	304				6.0	6.0
Sat-15	219				6.0	6.0
Sun-16	217				4.0	4.0
Mon-17	239				4.0	4.0
Tue-18	254				4.0	4.0
Wed-19	196				4.0	4.0
Thu-20	223	130			4.0	4.0
Fri-21	212	46			3.0	3.0
Sat-22	198	57			4.0	4.0
Sun-23	233				3.0	3.0
Mon-24	187	88			3.0	3.0
Tue-25	230	61			3.0	3.0
Wed-26	150	74			3.0	3.0
Thu-27	239				< 2.0	< 2.0
Fri-28	265				3.0	3.0
Sat-29	470				4.0	4.0
Sun-30	247				3.0	3.0
Mon-31	239				3.0	3.0
Average	230	73	97	---	3.7	3.7
Minimum	150	46	97	---	< 2.0	< 2.0
Maximum	470	130	97	---	6.0	6.0
GeoMean	---	---	---	---	---	---
TOTAL	---	---	---	---	---	---

DATE	TP (mg/L): RAW	TP (mg/L): OUTFALL 30	TP (mg/L): OUTFALL 20	TP (mg/L): EPEEPS	TP (mg/L): OUTFALL 10: FEC	TP (mg/L): OUTFALL 10: FE
Sat-01	7.04				0.22	0.22
Sun-02	6.62				0.25	0.25
Mon-03	5.54	2.16	2.52		0.28	0.28
Tue-04	4.94	2.12			0.24	0.24
Wed-05	5.67				0.21	0.21
Thu-06	5.92				0.24	0.24
Fri-07	5.27	2.86			0.24	0.24
Sat-08	5.60				0.21	0.21
Sun-09	5.99				0.23	0.23
Mon-10	6.45				0.24	0.24
Tue-11	5.14	3.94			0.24	0.24
Wed-12	4.45	1.52			0.21	0.21
Thu-13	6.84				0.21	0.21
Fri-14	6.84				0.26	0.26
Sat-15	6.86				0.29	0.29
Sun-16	6.45				0.29	0.29
Mon-17	6.26				0.41	0.41
Tue-18	6.46				0.49	0.49
Wed-19	6.38				0.40	0.40
Thu-20	6.25	3.81			0.35	0.35
Fri-21	5.87	1.81			0.32	0.32
Sat-22	5.68	2.75			0.28	0.28
Sun-23	6.3				0.30	0.30
Mon-24	6.21	3.41			0.31	0.31
Tue-25	6.43	2.64			0.26	0.26
Wed-26	6.38	3.72			0.29	0.29
Thu-27	7.59				0.20	0.20
Fri-28	7.02				0.32	0.32
Sat-29	8.81				0.30	0.30
Sun-30	6.74				0.28	0.28
Mon-31	7.00				0.26	0.26
Average	6.29	2.79	2.52	---	0.28	0.28
Minimum	4.45	1.52	2.52	---	0.20	0.20
Maximum	8.81	3.94	2.52	---	0.49	0.49
GeoMean	---	---	---	---	---	---
TOTAL	---	---	---	---	---	---

DATE	NH_3-N (mg/L): RAW	NH_3-N (mg/L): OUTFALL 30	NH_3-N (mg/L): OUTFALL 20	NH_3-N (mg/L): EPEEPS	NH_3-N (mg/L): OUTFALL 10: FEC	NH_3-N (mg/L): OUTFALL 10: FE
Sat-01	35.9				0.98	0.98
Sun-02	36.7				1.08	1.08
Mon-03	23.2	11.6	5.1		0.73	0.73
Tue-04	23.9	23.1			0.28	0.28
Wed-05	30.5				0.63	0.63
Thu-06	31.0				0.52	0.52
Fri-07	20.1	25.1			0.24	0.24
Sat-08	31.0				0.21	0.21
Sun-09	34.5				0.92	0.92
Mon-10	34.5				0.86	0.86
Tue-11	27.1	25.6			0.74	0.74
Wed-12	21.2	17.7			0.44	0.44
Thu-13	32.0				0.77	0.77
Fri-14	33.4				2.40	2.40
Sat-15	40.8				1.50	1.50
Sun-16	34.5				1.29	1.29
Mon-17	33.1				1.06	1.06
Tue-18	34.2				0.89	0.89
Wed-19	32.9				0.58	0.58
Thu-20	26.6	22.6			0.47	0.47
Fri-21	27.9	20.2			0.41	0.41
Sat-22	28.6	30.0			0.18	0.18
Sun-23	35.3				0.38	0.38
Mon-24	30.5	25.4			0.48	0.48
Tue-25	32.6	23.7			1.01	1.01
Wed-26	23.8	26.4			0.90	0.90
Thu-27	33.4				0.48	0.48
Fri-28	33.8				0.69	0.69
Sat-29	36.8				0.79	0.79
Sun-30	37.0				1.09	1.09
Mon-31	35.6				0.90	0.90
Average	31.4	22.9	5.1	---	0.78	0.78
Minimum	20.1	11.6	5.1	---	0.18	0.18
Maximum	40.8	30.0	5.1	---	2.40	2.40
GeoMean	---	---	---	---	---	---
TOTAL	---	---	---	---	---	---

DATE	TKN (mg/L): RAW	TKN (mg/L): OUTFALL 30	TKN (mg/L): OUTFALL 20	TKN (mg/L): OUTFALL 10: FEC
Sat-01	55.4			2.7
Sun-02	49.8			2.9
Mon-03	33.5	17.2	16.6	2.5
Tue-04	36.8	27.9		1.9
Wed-05	43.5			2.3
Thu-06	46.7			2.1
Fri-07	37.2	30.7		1.8
Sat-08	45.0			1.7
Sun-09	45.8			2.4
Mon-10	50.4			2.4
Tue-11	39.6	36.9		2.4
Wed-12	35.3	25.0		2.0
Thu-13	56.0			2.3
Fri-14	53.6			4.2
Sat-15	55.6			3.2
Sun-16	55.1			3.1
Mon-17	57.5			3.0
Tue-18	53.5			3.0
Wed-19	52.6			2.6
Thu-20	45.2	33.7		2.1
Fri-21	46.7	23.2		2.0
Sat-22	41.9	32.5		1.7
Sun-23	52.3			2.7
Mon-24	44.8	33.1		2.0
Tue-25	49.3	30.8		2.7
Wed-26	38.7	34.8		2.8
Thu-27	53.9			2.2
Fri-28	54.9			2.4
Sat-29	65.3			2.8
Sun-30	56.2			2.7
Mon-31	57.5			2.7
Average	48.7	29.6	16.6	2.5
Minimum	33.5	17.2	16.6	1.7
Maximum	65.3	36.9	16.6	4.2
GeoMean	---	---	---	---
TOTAL	---	---	---	---

DATE	NO_3+NO_2 (mg/L): RAW	NO_3+NO_2 (mg/L): OUTFALL 30	NO_3+NO_2 (mg/L): OUTFALL 20	NO_3+NO_2 (mg/L): OUTFALL 10: FEC
Sat-01				10.1
Sun-02				10.6
Mon-03		0.98	0.49	11.9
Tue-04		1.43		8.40
Wed-05	< 0.01			10.5
Thu-06				10.1
Fri-07		0.31		8.87
Sat-08				8.59
Sun-09				11.3
Mon-10				11.6
Tue-11		0.45		10.5
Wed-12	< 0.01	0.64		4.92
Thu-13				8.28
Fri-14				10.9
Sat-15				11.1
Sun-16				10.8
Mon-17				11.3
Tue-18				11.5
Wed-19	0.02			11.3
Thu-20		0.30		11.6
Fri-21		0.33		8.62
Sat-22		0.27		10.1
Sun-23				10.6
Mon-24		0.69		11.4
Tue-25		0.62		8.80
Wed-26	0.03	0.17		7.97
Thu-27				8.91
Fri-28				11.2
Sat-29				9.77
Sun-30				11.5
Mon-31				11.7
Average	0.02	0.56	0.49	10.2
Minimum	< 0.01	0.17	0.49	4.92
Maximum	0.03	1.43	0.49	11.9
GeoMean	---	---	---	---
TOTAL	---	---	---	---

DATE	Chloride (mg/L): RAW	Chloride (mg/L): OUTFALL 30	Chloride (mg/L): OUTFALL 20	Chloride (mg/L): OUTFALL 10: FEC
Sat-01	90			95
Sun-02	90			93
Mon-03	59	35	32	94
Tue-04	72	66		68
Wed-05	88			87
Thu-06	89			93
Fri-07	61	74		87
Sat-08	85			78
Sun-09	89			91
Mon-10	89			90
Tue-11	73	70		95
Wed-12	52	50		65
Thu-13	77			76
Fri-14	80			90
Sat-15	77			92
Sun-16	75			88
Mon-17	78			85
Tue-18	87			92
Wed-19	87			92
Thu-20	73	63		93
Fri-21	69	52		77
Sat-22	69	68		76
Sun-23	80			74
Mon-24	73	68		81
Tue-25	76	62		75
Wed-26	64	70		73
Thu-27	72			72
Fri-28	85			81
Sat-29	82			87
Sun-30	77			86
Mon-31	83			82
Average	78	62	32	84
Minimum	52	35	32	65
Maximum	90	74	32	95
GeoMean	---	---	---	---
TOTAL	---	---	---	---

DATE	*E. coli* (Counts/100 mL): RAW	*E. coli* (Counts/100 mL): OUTFALL 30	*E. coli* (Counts/100 mL): OUTFALL 20	*E. coli* (Counts/100 mL): OUTFALL 10: FEC
Sat-01				4
Sun-02				4
Mon-03		1.7	0.6	6
Tue-04		0.9		13
Wed-05				9
Thu-06				20
Fri-07		1.0		10
Sat-08				12
Sun-09				6
Mon-10				6
Tue-11		2.4		12
Wed-12	0.6	0.5		14
Thu-13				9
Fri-14				16
Sat-15				12
Sun-16				9
Mon-17				14
Tue-18				7
Wed-19				20
Thu-20	2.0	1.9		7
Fri-21		2.1		8
Sat-22		2.0		14
Sun-23				6
Mon-24		3.1		57
Tue-25		1.4		6
Wed-26		1.4		7
Thu-27				16
Fri-28				6
Sat-29				10
Sun-30				12
Mon-31				8
Average	---	---	---	---
Minimum	0.6	0.5	0.6	4
Maximum	2.0	3.1	0.6	57
GeoMean	1.1	1.5	0.6	10
TOTAL	---	---	---	---

* Contact Laboratory for information about the quality assurance associated with the results

Enhanced Primary Treatment (EPT) Usage

Total Bypass (hr)	EPT Usage (hr)	% Usage	Total Bypass YTD (hr)	EPT Usage YTD (hr)	% Usage YTD
77	77	100%	806	806	100%

Report Comments

AEP Ref #

RAW	Untreated Influent into the plant
INF	Untreated wastewater from collection system
INFs	Influent, screened at the Headworks Diversion Structure
PE	Primary Effluent from conventional primaries
PE 30	Primary Effluent from conventional primaries discharged via Outfall 30
EPT	Enhanced Primary Treatment
EPE	Enhanced Primary Effluent
EPEPS	Enhanced Primary Effluent Pump Station
FE	Final Effluent from secondary treatment process (with biological nutrient removal). Pre-Ultraviolet disinfection.

FEC	Combined post-UV disinfection (FE+EPEPS)
OUTFALL 10	UV-disinfected, discharged via OUTFALL 10
OUTFALL 20	Combined Bypass (RAW + PE + EPE)
OUTFALL 30	Combined Bypass (INF + INFS + PE30 + EPE)
MPW	Membrane Product Water (Effluent re-use water)
ML	Megalitre (1,000,000 Litre)
MPN	Most Probable Number
NR	No Result
NS	No Sample
INS	Insufficient Sample
AEP	Alberta Environment & Parks

Alfredo Suarez
Senior Manager, Operations

Shane Harnish
Senior Manager, Analytical Operations

Appendix A - Plant Performance Reports

Gold Bar Wastewater Treatment Plant
Plant Performance Report
September 2020

Digested Sludge: Total Monthly Volume (ML)	65.7

Volume of Flow (ML)

DATE	Peak Flow (ML/D)	Influent: INFs	Influent: RAW	Effluent: Non UV Disinfected: OUTFALL 30	Effluent: Non UV Disinfected: OUTFALL 20	Effluent: Non UV Disinfected: MPW	Effluent: UV Disinfected: EPEPS	Effluent: UV Disinfected: OUTFALL 10 FEC	Effluent: UV Disinfected: OUTFALL 10 FE
Tue-01	320.7	0.0	274.0	0.0	0.0	11.4	0.0	262.6	262.6
Wed-02	535.3	0.0	325.4	12.4	0.0	10.6	0.0	302.4	302.4
Thu-03	341.7	0.0	275.5	0.0	0.0	10.5	0.0	265.0	265.0
Fri-04	335.5	0.0	274.3	0.0	0.0	11.1	0.0	263.2	263.2
Sat-05	325.2	0.0	258.8	0.0	0.0	9.8	0.0	249.0	249.0
Sun-06	329.0	0.0	254.5	0.0	0.0	10.5	0.0	244.0	244.0
Mon-07	494.5	0.0	280.5	9.8	0.0	10.8	0.0	259.9	259.9
Tue-08	350.9	0.0	272.7	0.0	0.0	10.6	0.0	262.1	262.1
Wed-09	339.9	0.0	270.6	0.0	0.0	10.7	0.0	259.9	259.9
Thu-10	331.9	0.0	270.2	0.0	0.0	10.9	0.0	259.3	259.3
Fri-11	322.5	0.0	269.1	0.0	0.0	11.0	0.0	258.1	258.1
Sat-12	330.5	0.0	258.6	0.0	0.0	10.8	0.0	247.8	247.8
Sun-13	350.8	0.0	260.3	0.0	0.0	11.7	0.0	248.6	248.6
Mon-14	331.6	0.0	267.4	0.0	0.0	11.5	0.0	255.9	255.9
Tue-15	337.4	0.0	266.3	0.0	0.0	11.6	0.0	254.7	254.7
Wed-16	337.9	0.0	266.9	0.0	0.0	10.7	0.0	256.2	256.2
Thu-17	326.4	0.0	267.4	0.0	0.0	10.9	0.0	256.5	256.5
Fri-18	324.8	0.0	266.4	0.0	0.0	10.8	0.0	255.6	255.6
Sat-19	332.8	0.0	259.5	0.0	0.0	11.1	0.0	248.4	248.4
Sun-20	340.9	0.0	261.1	0.0	0.0	11.1	0.0	250.0	250.0
Mon-21	327.4	0.0	269.5	0.0	0.0	11.3	0.0	258.2	258.2
Tue-22	326.1	0.0	261.3	0.0	0.0	11.5	0.0	249.8	249.8
Wed-23	324.1	0.0	264.0	0.0	0.0	12.1	0.0	251.9	251.9
Thu-24	319.4	0.0	263.0	0.0	0.0	11.8	0.0	251.2	251.2
Fri-25	316.9	0.0	265.0	0.0	0.0	11.6	0.0	253.4	253.4
Sat-26	338.1	0.0	256.3	0.0	0.0	11.7	0.0	244.6	244.6
Sun-27	336.5	0.0	256.8	0.0	0.0	11.6	0.0	245.2	245.2
Mon-28	326.3	0.0	256.9	0.0	0.0	12.0	0.0	244.9	244.9
Tue-29	315.1	0.0	255.0	0.0	0.0	11.8	0.0	243.2	243.2
Wed-30	318.6	0.0	264.0	0.0	0.0	12.6	0.0	251.4	251.4
Average	343.0	0.0	267.0	0.7	0.0	11.2	0.0	255.1	255.1
Minimum	315.1	0.0	254.5	0.0	0.0	9.8	0.0	243.2	243.2
Maximum	535.3	0.0	325.4	12.4	0.0	12.6	0.0	302.4	302.4
GeoMean	---	---	---	---	---	---	---	---	---
TOTAL	---	0	8,011	22	0	336	0	7,653	7,653

Liquid Stream Quality

DATE	pH@25°C: RAW	pH@25°C: OUTFALL 30	pH@25°C: OUTFALL 20	pH@25°C: OUTFALL 10 FEC
Tue-01	7.7			7.6
Wed-02	7.4	7.6		7.5
Thu-03	7.5			7.5
Fri-04	7.6			7.5
Sat-05	7.6			7.5
Sun-06	7.7			7.6
Mon-07	7.6	7.6		7.5
Tue-08	7.6			7.6
Wed-09	7.6			7.5
Thu-10	7.5			7.8
Fri-11	7.6			7.5
Sat-12	7.6			7.6
Sun-13	7.6			7.6
Mon-14	7.6			7.7
Tue-15	7.6			7.6
Wed-16	7.6			7.6
Thu-17	7.6			7.6
Fri-18	7.6			7.6
Sat-19	7.6			7.7
Sun-20	7.6			7.7
Mon-21	7.7			7.6
Tue-22	7.6			7.6
Wed-23	7.7			7.5
Thu-24	7.6			7.5
Fri-25	7.6			7.5
Sat-26	7.6			7.5
Sun-27	7.6			7.5
Mon-28	7.7			7.6
Tue-29	7.6			7.6
Wed-30	7.6			7.7
Average	7.6	7.6	---	7.6
Minimum	7.4	7.6	---	7.5
Maximum	7.7	7.6	---	7.8
GeoMean	---	---	---	---
TOTAL	---	---	---	---

DATE	TSS (mg/L): RAW	TSS (mg/L): OUTFALL 30	TSS (mg/L): OUTFALL 20	TSS (mg/L): EPEEPS	TSS (mg/L): OUTFALL 10 FEC	TSS (mg/L): OUTFALL 10 FE
Tue-01	322				4.5	4.5
Wed-02	380	66			4.2	4.2
Thu-03	500				3.8	3.8
Fri-04	592				4.6	4.6
Sat-05	572				3.5	3.5
Sun-06	396				3.8	3.8
Mon-07	420	65			4.7	4.7
Tue-08	416				4.2	4.2
Wed-09	476				4.2	4.2
Thu-10	468				4.0	4.0
Fri-11	452				5.2	5.2
Sat-12	320				3.8	3.8
Sun-13	376				4.2	4.2
Mon-14	432				3.4	3.4
Tue-15	452				4.4	4.4
Wed-16	436				4.2	4.2
Thu-17	508				3.9	3.9
Fri-18	432				3.7	3.7
Sat-19	288				3.5	3.5
Sun-20	356				3.2	3.2
Mon-21	512				3.6	3.6
Tue-22	856				3.5	3.5
Wed-23	440				3.6	3.6
Thu-24	468				4.5	4.5
Fri-25	488				3.8	3.8
Sat-26	264				3.4	3.4
Sun-27	376				2.5	2.5
Mon-28	432				3.6	3.6
Tue-29	360				3.5	3.5
Wed-30	488				3.2	3.2
Average	443	66	---	---	3.9	3.9
Minimum	264	65	---	---	2.5	2.5
Maximum	856	66	---	---	5.2	5.2
GeoMean	---	---	---	---	---	---
TOTAL	---	---	---	---	---	---

DATE	BOD_5/$cBOD_5$ (mg/L): RAW	BOD_5: OUTFALL 30	BOD_5: OUTFALL 20	BOD_5: EPEPS	OUTFALL 10 FEC: $cBOD_5$	OUTFALL 10 FE: $cBOD_5$
Tue-01	245				< 2.0	< 2.0
Wed-02	250	127			2.0	2.0
Thu-03	262				2.0	2.0
Fri-04	319				< 2.0	< 2.0
Sat-05	276				2.0	2.0
Sun-06	266				2.0	2.0
Mon-07	297	127			2.0	2.0
Tue-08	317				2.0	2.0
Wed-09	239				2.0	2.0
Thu-10	354				3.0	3.0
Fri-11	304				< 2.0	< 2.0
Sat-12	301				3.0	3.0
Sun-13	262				2.0	2.0
Mon-14	280				2.0	2.0
Tue-15	248				3.0	3.0
Wed-16	252				3.0	3.0
Thu-17	275				3.0	3.0
Fri-18	280				2.0	2.0
Sat-19	292				2.0	2.0
Sun-20	257				2.0	2.0
Mon-21	273				2.0	2.0
Tue-22	397				< 2.0	< 2.0
Wed-23	293				< 2.0	< 2.0
Thu-24	256				< 2.0	< 2.0
Fri-25	287				2.0	2.0
Sat-26	276				3.0	3.0
Sun-27	331				3.0	3.0
Mon-28	223				3.0	3.0
Tue-29	257				3.0	3.0
Wed-30	346				4.0	4.0
Average	284	127	---	---	2.4	2.4
Minimum	223	127	---	---	< 2.0	< 2.0
Maximum	397	127	---	---	4.0	4.0
GeoMean	---	---	---	---	---	---
TOTAL	---	---	---	---	---	---

DATE	TP (mg/L): RAW	TP (mg/L): OUTFALL 30	TP (mg/L): OUTFALL 20	TP (mg/L): EPEEPS	TP (mg/L): OUTFALL 10 FEC	TP (mg/L): OUTFALL 10 FE
Tue-01	7.18				0.24	0.24
Wed-02	6.61	4.20			0.25	0.25
Thu-03	7.08				0.25	0.25
Fri-04	8.02				0.24	0.24
Sat-05	7.70				0.26	0.26
Sun-06	7.15				0.25	0.25
Mon-07	7.98	5.18			0.24	0.24
Tue-08	10.1				0.24	0.24
Wed-09	7.86				0.23	0.23
Thu-10	8.34				0.25	0.25
Fri-11	7.25				0.24	0.24
Sat-12	7.17				0.25	0.25
Sun-13	7.43				0.25	0.25
Mon-14	7.33				0.23	0.23
Tue-15	8.60				0.28	0.28
Wed-16	8.07				0.27	0.27
Thu-17	8.15				0.27	0.27
Fri-18	8.32				0.25	0.25
Sat-19	8.02				0.25	0.25
Sun-20	7.83				0.24	0.24
Mon-21	9.10				0.26	0.26
Tue-22	14.6				0.26	0.26
Wed-23	10.4				0.26	0.26
Thu-24	10.3				0.28	0.28
Fri-25	10.8				0.28	0.28
Sat-26	10.1				0.27	0.27
Sun-27	11.1				0.26	0.26
Mon-28	9.14				0.27	0.27
Tue-29	7.27				0.23	0.23
Wed-30	8.63				0.25	0.25
Average	8.59	4.69	---	---	0.25	0.25
Minimum	6.61	4.20	---	---	0.23	0.23
Maximum	14.6	5.18	---	---	0.28	0.28
GeoMean	---	---	---	---	---	---
TOTAL	---	---	---	---	---	---

DATE	NH3-N (mg/L): RAW	NH3-N (mg/L): OUTFALL 30	NH3-N (mg/L): OUTFALL 20	NH3-N (mg/L): EPEEPS	NH3-N (mg/L): OUTFALL 10 FEC	NH3-N (mg/L): OUTFALL 10 FE
Tue-01	37.9				1.15	1.15
Wed-02	31.1	31.0			0.72	0.72
Thu-03	16.4				1.30	1.30
Fri-04	35.7				1.64	1.64
Sat-05	37.3				1.47	1.47
Sun-06	33.7				1.53	1.53
Mon-07	35.6	43.1			2.06	2.06
Tue-08	38.2				1.25	1.25
Wed-09	38.0				1.65	1.65
Thu-10	39.8				2.02	2.02
Fri-11	39.1				1.92	1.92
Sat-12	35.6				1.97	1.97
Sun-13	42.8				2.80	2.80
Mon-14	36.0				2.36	2.36
Tue-15	41.6				2.84	2.84
Wed-16	44.0				2.82	2.82
Thu-17	43.4				2.42	2.42
Fri-18	40.8				2.45	2.45
Sat-19	41.8				2.09	2.09
Sun-20	42.2				1.96	1.96
Mon-21	42.4				1.61	1.61
Tue-22	25.6				1.66	1.66
Wed-23	44.2				1.61	1.61
Thu-24	45.3				1.03	1.03
Fri-25	43.9				0.72	0.72
Sat-26	44.5				1.31	1.31
Sun-27	51.8				2.39	2.39
Mon-28	41.6				1.98	1.98
Tue-29	31.5				0.18	0.18
Wed-30	31.4				0.26	0.26
Average	38.4	37.1	---	---	1.71	1.71
Minimum	16.4	31.0	---	---	0.18	0.18
Maximum	51.8	43.1	---	---	2.84	2.84
GeoMean	---	---	---	---	---	---
TOTAL	---	---	---	---	---	---

DATE	TKN (mg/L): RAW	TKN (mg/L): OUTFALL 30	TKN (mg/L): OUTFALL 20	TKN (mg/L): OUTFALL 10 FEC
Tue-01	60.6			2.9
Wed-02	51.5	41.8		2.3
Thu-03	54.8			2.8
Fri-04	55.7			3.2
Sat-05	63.7			2.8
Sun-06	53.9			3.5
Mon-07	64.2	52.2		2.6
Tue-08	64.2			3.4
Wed-09	54.0			3.3
Thu-10	69.2			3.6
Fri-11	57.9			3.2
Sat-12	54.1			3.4
Sun-13	60.2			4.1
Mon-14	58.6			3.8
Tue-15	65.7			4.9
Wed-16	65.4			5.1
Thu-17	63.1			4.1
Fri-18	64.2			4.2
Sat-19	60.8			3.7
Sun-20	63.8			3.8
Mon-21	66.4			3.2
Tue-22	88.0			3.5
Wed-23	69.6			3.7
Thu-24	64.1			3.0
Fri-25	65.9			2.4
Sat-26	63.3			3.2
Sun-27	71.2			4.0
Mon-28	60.4			3.9
Tue-29	50.9			1.9
Wed-30	60.4			2.0
Average	62.4	47.0	---	3.4
Minimum	50.9	41.8	---	1.9
Maximum	88.0	52.2	---	5.1
GeoMean	---	---	---	---
TOTAL	---	---	---	---

DATE	NO_3+NO_2 (mg/L): RAW	NO_3+NO_2: OUTFALL 30	NO_3+NO_2: OUTFALL 20	NO_3+NO_2: OUTFALL 10 FEC
Tue-01				11.4
Wed-02	0.02	0.68		10.3
Thu-03				10.3
Fri-04				10.8
Sat-05				11.4
Sun-06				12.2
Mon-07		2.56		12.4
Tue-08				11.1
Wed-09	< 0.01			11.1
Thu-10				10.8
Fri-11				10.3
Sat-12				11.8
Sun-13				13.1
Mon-14				11.4
Tue-15				12.4
Wed-16	< 0.01			12.5
Thu-17				13.1
Fri-18				12.9
Sat-19				12.5
Sun-20				13.2
Mon-21				13.0
Tue-22				14.1
Wed-23	0.05			14.9
Thu-24				15.8
Fri-25				13.8
Sat-26				13.9
Sun-27				13.1
Mon-28				12.9
Tue-29				9.6
Wed-30	< 0.01			7.93
Average	0.02	1.62	---	12.1
Minimum	< 0.01	0.68	---	7.93
Maximum	0.05	2.56	---	15.8
GeoMean	---	---	---	---
TOTAL	---	---	---	---

DATE	Chloride (mg/L): RAW	Chloride (mg/L): OUTFALL 30	Chloride (mg/L): OUTFALL 20	Chloride (mg/L): OUTFALL 10 FEC
Tue-01	88			89
Wed-02	76	78		85
Thu-03	84			83
Fri-04	87			90
Sat-05	92			92
Sun-06	81			88
Mon-07	80	90		84
Tue-08	92			84
Wed-09	85			90
Thu-10	94			90
Fri-11	93			91
Sat-12	80			88
Sun-13	80			85
Mon-14	77			83
Tue-15	75			80
Wed-16	83			89
Thu-17	83			91
Fri-18	71			91
Sat-19	80			80
Sun-20	74			89
Mon-21	85			85
Tue-22	73			88
Wed-23	80			86
Thu-24	79			86
Fri-25	76			84
Sat-26	76			85
Sun-27	78			83
Mon-28	77			79
Tue-29	78			85
Wed-30	80			82
Average	81	84	---	86
Minimum	71	78	---	79
Maximum	94	90	---	92
GeoMean	---	---	---	---
TOTAL	---	---	---	---

DATE	*E. coli* (Counts/100 mL): RAW X10^6	*E. coli*: OUTFALL 30 X10^6	*E. coli*: OUTFALL 20 X10^6	*E. coli*: OUTFALL 10 FEC
Tue-01				7
Wed-02		1.4		12
Thu-03				10
Fri-04				6
Sat-05				6
Sun-06				11
Mon-07		2.2		5
Tue-08				4
Wed-09				7
Thu-10				11
Fri-11				4
Sat-12				6
Sun-13				7
Mon-14				7
Tue-15				9
Wed-16				16
Thu-17				8
Fri-18	2.4			4
Sat-19				9
Sun-20				8
Mon-21				10
Tue-22				4
Wed-23				10
Thu-24	2.5			9
Fri-25				9
Sat-26				4
Sun-27				8
Mon-28				14
Tue-29				11
Wed-30				6
Average	---	---	---	---
Minimum	2.4	1.4	---	4
Maximum	2.5	2.2	---	16
GeoMean	2.4	1.8	---	8
TOTAL	---	---	---	---

* Contact Laboratory for information about the quality assurance associated with the results

Enhanced Primary Treatment (EPT) Usage

Total Bypass (hr)	EPT Usage (hr)	% Usage	Total Bypass YTD (hr)	EPT Usage YTD (hr)	% Usage YTD
6	6	100%	812	812	100%

Report Comments

1	OUTFALL 10 - September 11: Analysis of the sample exceeded the recommended hold time for BOD.

AEP Ref #

RAW	Untreated Influent into the plant
INF	Untreated wastewater from collection system
INFs	Influent, screened at the Headworks Diversion Structure
PE	Primary Effluent from conventional primaries
PE 30	Primary Effluent from conventional primaries discharged via Outfall 30
EPT	Enhanced Primary Treatment
EPE	Enhanced Primary Effluent
EPEPS	Enhanced Primary Effluent Pump Station
FE	Final Effluent from secondary treatment process (with biological nutrient removal). Pre-Ultraviolet disinfection.

FEC	Combined post-UV disinfection (FE+EPEEPS)
OUTFALL 10	UV-disinfected, discharged via OUTFALL 10
OUTFALL 20	Combined Bypass (RAW + PE + EPE)
OUTFALL 30	Combined Bypass (INF + INFS + PE30 + EPE)
MPW	Membrane Product Water (Effluent re-use water)
ML	Megalitre (1,000,000 Litre)
MPN	Most Probable Number
NR	No Result
NS	No Sample
INS	Insufficient Sample
AEP	Alberta Environment & Parks

Alfredo Suarez
Senior Manager, Operations

Steve Craik
Director, Quality Assurance and Environment

Appendix A - Plant Performance Reports

Gold Bar Wastewater Treatment Plant
Plant Performance Report
October 2020

Digested Sludge: Total Monthly Volume (ML)	94.8

Volume of Flow (ML)

DATE	Peak Flow (MLD)	Influent: INFs	Influent: RAW	Effluent: Non UV Disinfected: OUTFALL 30	Effluent: Non UV Disinfected: OUTFALL 20	Effluent: Non UV Disinfected: MPW	Effluent: UV Disinfected: EPEPS	Effluent: UV Disinfected: OUTFALL 10: FEC	Effluent: UV Disinfected: OUTFALL 10: FE
Thu-01	311.3	0.0	246.8	0.0	0.0	12.1	0.0	234.7	234.7
Fri-02	377.9	0.0	249.0	0.0	0.0	11.6	0.0	237.4	237.4
Sat-03	411.7	0.0	238.4	0.0	0.0	11.4	0.0	227.0	227.0
Sun-04	346.9	0.0	252.9	0.0	0.0	11.3	0.0	241.6	241.6
Mon-05	344.0	0.0	256.4	0.0	0.0	11.6	0.0	244.8	244.8
Tue-06	317.6	0.0	250.7	0.0	0.0	11.3	0.0	239.4	239.4
Wed-07	330.5	0.0	250.0	0.0	0.0	10.8	0.0	239.2	239.2
Thu-08	350.8	0.0	250.0	0.0	0.0	11.4	0.0	238.6	238.6
Fri-09	325.0	0.0	251.2	0.0	0.0	11.7	0.0	239.5	239.5
Sat-10	456.3	0.0	251.7	0.9	0.0	10.7	0.0	240.1	240.1
Sun-11	875.0	0.0	349.2	59.0	0.0	11.7	0.0	278.5	278.5
Mon-12	370.7	0.0	251.5	0.0	0.0	10.9	0.0	240.6	240.6
Tue-13	334.0	0.0	256.5	0.0	0.0	11.0	0.0	245.5	245.5
Wed-14	326.8	0.0	251.1	0.0	0.0	11.1	0.0	240.0	240.0
Thu-15	325.9	0.0	250.6	0.0	0.0	11.5	0.0	239.1	239.1
Fri-16	322.7	0.0	253.8	0.0	0.0	11.4	0.0	242.4	242.4
Sat-17	347.3	0.0	251.1	0.0	0.0	10.5	0.0	240.6	240.6
Sun-18	371.8	0.0	255.2	0.0	0.0	11.2	0.0	244.0	244.0
Mon-19	352.7	0.0	260.9	0.0	0.0	10.5	0.0	250.4	250.4
Tue-20	335.2	0.0	255.7	0.0	0.0	11.3	0.0	244.4	244.4
Wed-21	350.4	0.0	255.2	0.0	0.0	12.4	0.0	242.8	242.8
Thu-22	361.8	0.0	254.5	0.0	0.0	12.4	0.0	242.1	242.1
Fri-23	347.4	0.0	251.6	0.0	0.0	12.3	0.0	239.3	239.3
Sat-24	357.2	0.0	250.8	0.0	0.0	12.5	0.0	238.3	238.3
Sun-25	425.0	0.0	254.3	0.0	0.0	12.5	0.0	241.8	241.8
Mon-26	409.1	0.0	260.7	0.0	0.0	12.4	0.0	248.3	248.3
Tue-27	448.3	0.0	257.7	0.0	0.0	11.7	0.0	246.0	246.0
Wed-28	343.0	0.0	250.6	0.0	0.0	11.4	0.0	239.2	239.2
Thu-29	332.1	0.0	249.0	0.0	0.0	10.9	0.0	238.1	238.1
Fri-30	456.1	0.0	270.0	7.0	0.0	12.0	0.0	251.0	251.0
Sat 31	363.1	0.0	247.9	0.0	0.0	12.5	0.0	235.4	235.4
Average	378.3	0.0	256.0	2.2	0.0	11.5	0.0	242.3	242.3
Minimum	311.3	0.0	238.4	0.0	0.0	10.5	0.0	227.0	227.0
Maximum	875.0	0.0	349.2	59.0	0.0	12.5	0.0	278.5	278.5
GeoMean	---	---	---	---	---	---	---	---	---
TOTAL	---	0	7,935	67	0	358	0	7,510	7,510

Liquid Stream Quality

DATE	pH@25°C: RAW	TSS (mg/L): RAW	TSS (mg/L): OUTFALL 30	TSS (mg/L): OUTFALL 20	TSS (mg/L): EPEPS	TSS (mg/L): OUTFALL 10: FEC	TSS (mg/L): OUTFALL 10: FE	BOD_5/$cBOD_5$ (mg/L): RAW	BOD_5: OUTFALL 30	BOD_5: OUTFALL 20	BOD_5: EPEPS	BOD_5: OUTFALL 10: FEC	BOD_5: OUTFALL 10: FE	TP (mg/L): RAW	TP (mg/L): OUTFALL 30	TP (mg/L): OUTFALL 20	TP (mg/L): EPEPS	TP (mg/L): OUTFALL 10: FEC	TP (mg/L): OUTFALL 10: FE	NH3-N (mg/L): RAW	NH3-N (mg/L): OUTFALL 30	NH3-N (mg/L): OUTFALL 20	NH3-N (mg/L): EPEPS	NH3-N (mg/L): OUTFALL 10: FEC	NH3-N (mg/L): OUTFALL 10: FE	TKN (mg/L): RAW	TKN (mg/L): OUTFALL 30	TKN (mg/L): OUTFALL 20	TKN (mg/L): OUTFALL 10	NO_3+NO_2 (mg/L): RAW	NO_3+NO_2 (mg/L): OUTFALL 30	NO_3+NO_2 (mg/L): OUTFALL 20	NO_3+NO_2 (mg/L): OUTFALL 10	Chloride (mg/L): RAW	Chloride (mg/L): OUTFALL 30	Chloride (mg/L): OUTFALL 20	Chloride (mg/L): OUTFALL 10	*E. coli* (Counts/100 mL): RAW	*E. coli* (Counts/100 mL): OUTFALL 30	*E. coli* (Counts/100 mL): OUTFALL 20	*E. coli* (Counts/100 mL): OUTFALL 10
												FEC	FE																													
												cBOD$_5$	cBOD$_5$																													
Thu-01	7.7	143				4.4	4.4	184				3.0	3.0	6.36				0.25	0.25	32.5				0.44	0.44	47.1			1.90				82								4
Fri-02	7.8	180				4.6	4.6	231				4.0	4.0	9.85				0.24	0.24	17.5				0.48	0.48	41.2			2.20				82								4
Sat-03	7.7	92				4.3	4.3	104				3.0	3.0	6.24				0.29	0.29	5.81				0.43	0.43	15.8			2.00				79								7
Sun-04	6.9	5900				4.3	4.3	2750				3.0	3.0	137				0.24	0.24	20.7				0.68	0.68	390			2.00				78								8
Mon-05	7.7	355				4.4	4.4	373				3.0	3.0	8.82				0.24	0.24	34.3				0.62	0.62	58.6			1.90				76								4
Tue-06	7.6	336				4.0	4.0	292				3.0	3.0	6.89				0.22	0.22	33.4				0.40	0.40	51.4			2.00				82								5
Wed-07	7.5	324				4.2	4.2	266				3.0	3.0	6.70				0.22	0.22	27.9				0.51	0.51	50.7			2.20	0.08			83								3
Thu-08	7.6	540				3.9	3.9	283				3.0	3.0	7.00				0.23	0.23	33.8				0.51	0.51	55.1			2.20				84	3.1							5
Fri-09	7.4	532				5.5	5.5	275				2.0	2.0	6.94				0.23	0.23	33.1				0.99	0.99	52.9			2.60				84								5
Sat-10	7.5	376	36			2.9	2.9	265	80			4.0	4.0	6.50	2.03			0.24	0.24	32.5	13.5			0.87	0.87	52.1	19.2		2.70		0.34		88		2.3			75	43		88		27
Sun-11	7.5	460	160			2.8	2.8	218	119			4.0	4.0	5.88	6.28			0.18	0.18	21.8	32.3			1.17	1.17	39.8	50.3		2.60		3.27		73		1.5			58	53		73		15
Mon-12	7.6	436				4.4	4.4	324				3.0	3.0	6.83				0.20	0.20	35.9				1.70	1.70	55.4			3.10				72								21
Tue-13	7.5	396				4.3	4.3	263				3.0	3.0	6.83				0.19	0.19	33.9				1.56	1.56	53.3			3.10				75								7
Wed-14	7.7	300				3.5	3.5	308				3.0	3.0	7.31				0.09	0.09	35.2				2.01	2.01	56.7			1.90	< 0.01			85								4
Thu-15	7.6	296				3.8	3.8	302				3.0	3.0	7.18				0.19	0.19	29.7				2.00	2.00	53.6			3.60				83	2.8				76			2
Fri-16	7.6	384				3.7	3.7	291				3.0	3.0	8.49				0.20	0.20	36.8				2.30	2.30	61.9			3.80				83					75			4
Sat-17	7.8	608				3.6	3.6	507				2.0	2.0	10.7				0.21	0.21	34.0				2.49	2.49	68.6			4.40				80					67			5
Sun-18	7.6	448				4.4	4.4	329				2.0	2.0	9.28				0.20	0.20	42.4				2.81	2.81	75.5			4.70				75					69			8
Mon-19	7.6	328				3.6	3.6	274				2.0	2.0	8.11				0.20	0.20	37.9				2.50	2.50	59.7			4.20				73					73			6
Tue-20	7.5	300				3.3	3.3	271				2.0	2.0	8.37				0.21	0.21	37.7				1.84	1.84	65.6			3.80				83					84			6
Wed-21	7.6	284				4.0	4.0	331				3.0	3.0	8.08				0.22	0.22	37.4				1.42	1.42	61.0			3.20	< 0.01			87					83			6
Thu-22	7.6	292				3.6	3.6	310				3.0	3.0	8.46				0.23	0.23	38.1				2.00	2.00	63.3			4.00				86					77			4
Fri-23	7.7	276				3.7	3.7	326				3.0	3.0	8.58				0.23	0.23	37.0				1.10	1.10	63.5			3.10				86					76			4
Sat-24	7.5	336				3.6	3.6	300				3.0	3.0	8.49				0.25	0.25	39.5				1.22	1.22	67.9			3.40				85					73			7
Sun-25	7.6	260				4.2	4.2	334				3.0	3.0	8.58				0.23	0.23	38.9				1.52	1.52	61.6			4.00				77					69			7
Mon-26	7.7	292				4.2	4.2	353				3.0	3.0	8.02				0.22	0.22	29.3				1.40	1.40	60.3			3.40				75					84			6
Tue-27	7.4	340				3.9	3.9	331				3.0	3.0	8.27				0.23	0.23	38.4				0.70	0.70	59.8			2.60				95					97			5
Wed-28	7.4	316				3.5	3.5	344				< 2.0	< 2.0	8.78				0.22	0.22	37.1				0.41	0.41	63.2			2.40	0.04			93					85			4
Thu-29	7.6	300				3.4	3.4	380				2.0	2.0	7.61				0.23	0.23	37.2				0.32	0.32	57.8			2.00				93					78			3
Fri-30	7.5	380	107			2.9	2.9	368	134			2.0	2.0	8.82	6.30			0.23	0.23	38.8	42.8			0.50	0.50	60.6	58.3		2.20		0.02		88		2.2			82	104		88		3
Sat 31	7.6	256				4.2	4.2	285				2.0	2.0	8.74				0.22	0.22	40.1				1.00	1.00	62.1			2.70				92					73			9
Average	7.6	518	101	---	---	3.9	3.9	380	111	---	---	2.8	2.8	12.1	4.87	---	---	0.22	0.22	33.2	29.5	---	---	1.22	1.22	67.3	42.6	---	2.90	0.04	1.21	---	83	---	---	---	---	78	67	---	83	---	---	---	---
Minimum	6.9	92	36	---	---	2.8	2.8	104	80	---	---	< 2.0	< 2.0	5.88	2.03	---	---	0.09	0.09	5.81	13.5	---	---	0.32	0.32	15.8	19.2	---	1.90	< 0.01	0.02	---	5.15	58	43	---	72	2.8	1.5	---	2	---	---	---	---
Maximum	7.8	5900	160	---	---	5.5	5.5	2750	134	---	---	4.0	4.0	137	6.30	---	---	0.29	0.29	42.4	42.8	---	---	2.81	2.81	390	58.3	---	4.70	0.08	3.27	---	12.1	100	104	---	95	3.1	2.3	---	27	---	---	---	---
GeoMean	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	2.9	2.0	---	6
TOTAL	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

* Contact Laboratory for information about the quality assurance associated with the results

Enhanced Primary Treatment (EPT) Usage

Total Bypass (hr)	EPT Usage (hr)	% Usage	Total Bypass YTD (hr)	EPT Usage YTD (hr)	% Usage YTD
10	10	100%	822	822	100%

Report Comments

1	OUTFALL 10 - October 11: Analysis of the sample exceeded the recommended hold time for BOD.
2	RAW - October 11: Analysis of the sample exceeded the recommended hold time for BOD.

AEP Ref #

RAW	Untreated Influent into the plant
INF	Untreated wastewater from collection system
INFs	Influent, screened at the Headworks Diversion Structure
PE	Primary Effluent from conventional primaries
PE 30	Primary Effluent from conventional primaries discharged via Outfall 30
EPT	Enhanced Primary Treatment
EPE	Enhanced Primary Effluent
EPEPS	Enhanced Primary Effluent Pump Station
FE	Final Effluent from secondary treatment process (with biological nutrient removal). Pre-Ultraviolet disinfection.

FEC	Combined post-UV disinfection (FE+EPEPS)
OUTFALL 10	UV-disinfected, discharged via OUTFALL 10
OUTFALL 20	Combined Bypass (RAW + PE + EPE)
OUTFALL 30	Combined Bypass (INF + INFS + PE30 + EPE)
MPW	Membrane Product Water (Effluent re-use water)
ML	Megalitre (1,000,000 Litre)
MPN	Most Probable Number
NR	No Result
NS	No Sample
INS	Insufficient Sample
AEP	Alberta Environment & Parks

Alfredo Suarez
Senior Manager, Operations

Steve Craik
Director, Quality Assurance and Environment

Appendix A - Plant Performance Reports

Gold Bar Wastewater Treatment Plant
Plant Performance Report
November 2020

Digested Sludge: Total Monthly Volume (ML)	63.6

Volume of Flow (ML)

DATE	Peak Flow (MLD)	Influent: INFs	Influent: RAW	Effluent: Non UV Disinfected: OUTFALL 30	Effluent: Non UV Disinfected: OUTFALL 20	Effluent: Non UV Disinfected: MPW	Effluent: UV Disinfected: EPEEPS	Effluent: UV Disinfected: OUTFALL 10: FEC	Effluent: UV Disinfected: OUTFALL 10: FE
Sun-01	365.4	0.0	257.7	0.0	0.0	12.7	0.0	245.0	245.0
Mon-02	338.3	0.0	251.4	0.0	0.0	10.5	0.0	240.9	240.9
Tue-03	332.4	0.0	247.0	0.0	0.0	11.7	0.0	235.3	235.3
Wed-04	333.1	0.0	249.5	0.0	0.0	11.8	0.0	237.7	237.7
Thu-05	616.8	0.0	284.9	21.7	0.0	12.1	0.0	251.1	251.1
Fri-06	372.2	0.0	252.8	0.0	0.0	11.9	0.0	240.9	240.9
Sat-07	351.0	0.0	247.3	0.0	0.0	12.2	0.0	235.1	235.1
Sun-08	363.5	0.0	253.6	0.0	0.0	12.2	0.0	241.4	241.4
Mon-09	342.1	0.0	255.4	0.0	0.0	11.5	0.0	243.9	243.9
Tue-10	368.1	0.0	256.7	0.0	0.0	10.9	0.0	245.8	245.8
Wed-11	395.8	0.0	242.9	0.0	0.0	11.3	0.0	231.6	231.6
Thu-12	331.5	0.0	249.1	0.0	0.0	11.1	0.0	238.0	238.0
Fri-13	343.1	0.0	250.4	0.0	0.0	11.3	0.0	239.1	239.1
Sat-14	353.8	0.0	243.4	0.0	0.0	11.2	0.0	232.2	232.2
Sun-15	356.1	0.0	246.6	0.0	0.0	11.3	0.0	235.3	235.3
Mon-16	340.2	0.0	251.9	0.0	0.0	11.5	0.0	240.4	240.4
Tue-17	333.6	0.0	246.8	0.0	0.0	12.1	0.0	234.7	234.7
Wed-18	331.8	0.0	246.9	0.0	0.0	11.7	0.0	235.2	235.2
Thu-19	342.9	0.0	249.3	0.0	0.0	11.5	0.0	237.8	237.8
Fri-20	340.3	0.0	250.9	0.0	0.0	12.0	0.0	238.9	238.9
Sat-21	346.6	0.0	248.5	0.0	0.0	12.4	0.0	236.1	236.1
Sun-22	360.7	0.0	252.0	0.0	0.0	12.4	0.0	239.6	239.6
Mon-23	348.2	0.0	252.4	0.0	0.0	12.5	0.0	239.9	239.9
Tue-24	330.0	0.0	248.1	0.0	0.0	11.9	0.0	236.2	236.2
Wed-25	335.7	0.0	257.0	0.0	0.0	11.6	0.0	245.4	245.4
Thu-26	327.0	0.0	245.8	0.0	0.0	11.6	0.0	234.2	234.2
Fri-27	338.3	0.0	252.1	0.0	0.0	11.5	0.0	240.6	240.6
Sat-28	353.5	0.0	242.8	0.0	0.0	11.4	0.0	231.4	231.4
Sun-29	355.9	0.0	245.2	0.0	0.0	12.3	0.0	232.9	232.9
Mon-30	363.0	0.0	250.5	0.0	0.0	12.2	0.0	238.3	238.3
Average	357.0	0.0	251.0	0.7	0.0	11.7	0.0	238.5	238.5
Minimum	327.0	0.0	242.8	0.0	0.0	10.5	0.0	231.4	231.4
Maximum	616.8	0.0	284.9	21.7	0.0	12.7	0.0	251.1	251.1
GeoMean	---	---	---	---	---	---	---	---	---
TOTAL	---	0	7,529	22	0	352	0	7,155	7,155

Liquid Stream Quality

DATE	pH@25°C: RAW	pH@25°C: OUTFALL 30	pH@25°C: OUTFALL 20	pH@25°C: OUTFALL 10: FEC
Sun-01	7.6			7.5
Mon-02	7.6			7.5
Tue-03	7.5			7.6
Wed-04	7.6			7.5
Thu-05	7.5	7.6		7.6
Fri-06	7.7			7.6
Sat-07	7.6			7.4
Sun-08	7.7			7.4
Mon-09	7.5			7.5
Tue-10	7.6			7.5
Wed-11	7.5			7.7
Thu-12	7.6			7.5
Fri-13	7.6			7.5
Sat-14	7.7			7.5
Sun-15	7.6			7.6
Mon-16	7.6			7.6
Tue-17	7.5			7.6
Wed-18	7.5			7.4
Thu-19	7.8			7.6
Fri-20	7.6			7.5
Sat-21	7.5			7.5
Sun-22	7.6			7.6
Mon-23	7.5			7.6
Tue-24	7.6			7.5
Wed-25	7.5			7.5
Thu-26	7.5			7.6
Fri-27	7.5			7.6
Sat-28	7.4			7.7
Sun-29	7.6			7.6
Mon-30	7.5			7.6
Average	7.6	7.6	---	7.5
Minimum	7.4	7.6	---	7.4
Maximum	7.8	7.6	---	7.7
GeoMean	---	---	---	---
TOTAL	---	---	---	---

DATE	TSS (mg/L): RAW	TSS (mg/L): OUTFALL 30	TSS (mg/L): OUTFALL 20	TSS (mg/L): EPEEPS	TSS (mg/L): OUTFALL 10: FEC	TSS (mg/L): OUTFALL 10: FE
Sun-01	300				3.9	3.9
Mon-02	272				6.4	6.4
Tue-03	268				3.3	3.3
Wed-04	312				4.3	4.3
Thu-05	452	83			3.7	3.7
Fri-06	348				3.6	3.6
Sat-07	340				2.9	2.9
Sun-08	332				3.4	3.4
Mon-09	260				3.8	3.8
Tue-10	308				3.2	3.2
Wed-11	396				3.9	3.9
Thu-12	244				3.1	3.1
Fri-13	396				3.8	3.8
Sat-14	340				2.8	2.8
Sun-15	336				3.3	3.3
Mon-16	316				3.1	3.1
Tue-17	316				3.6	3.6
Wed-18	396				3.1	3.1
Thu-19	328				3.2	3.2
Fri-20	356				3.6	3.6
Sat-21	292				3.2	3.2
Sun-22	304				4.0	4.0
Mon-23	368				3.8	3.8
Tue-24	304				3.6	3.6
Wed-25	344				4.6	4.6
Thu-26	276				3.6	3.6
Fri-27	264				3.4	3.4
Sat-28	257				3.2	3.2
Sun-29	272				3.6	3.6
Mon-30	316				3.9	3.9
Average	320	83	---	---	3.6	3.6
Minimum	244	83	---	---	2.8	2.8
Maximum	452	83	---	---	6.4	6.4
GeoMean	---	---	---	---	---	---
TOTAL	---	---	---	---	---	---

DATE	BOD_5/$cBOD_5$ (mg/L): RAW	BOD_5/$cBOD_5$ (mg/L): OUTFALL 30	BOD_5/$cBOD_5$ (mg/L): OUTFALL 20	BOD_5/$cBOD_5$ (mg/L): EPEPS	BOD_5/$cBOD_5$ (mg/L): OUTFALL 10: FEC	BOD_5/$cBOD_5$ (mg/L): OUTFALL 10: FE
	BOD_5	BOD_5	BOD_5	BOD_5	$cBOD_5$	$cBOD_5$
Sun-01	305				3.0	3.0
Mon-02	363				3.0	3.0
Tue-03	224				3.0	3.0
Wed-04	329				3.0	3.0
Thu-05	305	134			3.0	3.0
Fri-06	356				4.0	4.0
Sat-07	307				3.0	3.0
Sun-08	342				3.0	3.0
Mon-09	328				3.0	3.0
Tue-10	326				3.0	3.0
Wed-11	331				2.0	2.0
Thu-12	370				3.0	3.0
Fri-13	315				2.0	2.0
Sat-14	345				2.0	2.0
Sun-15	354				3.0	3.0
Mon-16	309				3.0	3.0
Tue-17	326				3.0	3.0
Wed-18	363				3.0	3.0
Thu-19	352				3.0	3.0
Fri-20	342				3.0	3.0
Sat-21	375				2.0	2.0
Sun-22	330				3.0	3.0
Mon-23	321				2.0	2.0
Tue-24	330				3.0	3.0
Wed-25	329				2.0	2.0
Thu-26	306				2.0	2.0
Fri-27	267				2.0	2.0
Sat-28	323				2.0	2.0
Sun-29	281				5.0	5.0
Mon-30	275				2.0	2.0
Average	324	134	---	---	2.8	2.8
Minimum	224	134	---	---	2.0	2.0
Maximum	375	134	---	---	5.0	5.0
GeoMean	---	---	---	---	---	---
TOTAL	---	---	---	---	---	---

DATE	TP (mg/L): RAW	TP (mg/L): OUTFALL 30	TP (mg/L): OUTFALL 20	TP (mg/L): EPEEPS	TP (mg/L): OUTFALL 10: FEC	TP (mg/L): OUTFALL 10: FE
Sun-01	8.66				0.22	0.22
Mon-02	7.89				0.24	0.24
Tue-03	8.34				0.27	0.27
Wed-04	8.81				0.26	0.26
Thu-05	8.22	4.89			0.26	0.26
Fri-06	7.57				0.22	0.22
Sat-07	8.23				0.22	0.22
Sun-08	7.71				0.22	0.22
Mon-09	7.67				0.22	0.22
Tue-10	8.61				0.22	0.22
Wed-11	8.68				0.24	0.24
Thu-12	8.27				0.21	0.21
Fri-13	8.55				0.22	0.22
Sat-14	8.44				0.22	0.22
Sun-15	8.86				0.25	0.25
Mon-16	7.97				0.22	0.22
Tue-17	8.74				0.25	0.25
Wed-18	8.47				0.23	0.23
Thu-19	7.73				0.24	0.24
Fri-20	8.77				0.26	0.26
Sat-21	7.20				0.24	0.24
Sun-22	8.32				0.26	0.26
Mon-23	7.64				0.24	0.24
Tue-24	8.48				0.25	0.25
Wed-25	7.82				0.24	0.24
Thu-26	6.94				0.24	0.24
Fri-27	6.72				0.23	0.23
Sat-28	6.74				0.23	0.23
Sun-29	6.68				0.22	0.22
Mon-30	6.92				0.20	0.20
Average	7.99	4.89	---	---	0.23	0.23
Minimum	6.68	4.89	---	---	0.20	0.20
Maximum	8.86	4.89	---	---	0.27	0.27
GeoMean	---	---	---	---	---	---
TOTAL	---	---	---	---	---	---

DATE	NH3-N (mg/L): RAW	NH3-N (mg/L): OUTFALL 30	NH3-N (mg/L): OUTFALL 20	NH3-N (mg/L): EPEEPS	NH3-N (mg/L): OUTFALL 10: FEC	NH3-N (mg/L): OUTFALL 10: FE
Sun-01	40.8				1.12	1.12
Mon-02	41.6				0.77	0.77
Tue-03	42.0				0.25	0.25
Wed-04	41.2				0.26	0.26
Thu-05	33.8	37.7			0.44	0.44
Fri-06	36.1				0.37	0.37
Sat-07	33.3				0.83	0.83
Sun-08	38.6				1.50	1.50
Mon-09	36.7				0.87	0.87
Tue-10	38.0				0.26	0.26
Wed-11	38.7				0.59	0.59
Thu-12	40.6				1.00	1.00
Fri-13	41.3				0.47	0.47
Sat-14	42.1				0.60	0.60
Sun-15	38.6				0.93	0.93
Mon-16	42.5				0.65	0.65
Tue-17	42.8				0.45	0.45
Wed-18	42.8				0.40	0.40
Thu-19	38.4				0.45	0.45
Fri-20	24.2				0.46	0.46
Sat-21	44.0				0.50	0.50
Sun-22	43.5				1.10	1.10
Mon-23	39.4				0.56	0.56
Tue-24	41.8				0.20	0.20
Wed-25	36.0				0.10	0.10
Thu-26	36.1				0.08	0.08
Fri-27	36.6				0.10	0.10
Sat-28	36.4				0.10	0.10
Sun-29	36.6				0.24	0.24
Mon-30	35.1				0.13	0.13
Average	38.7	37.7	---	---	0.53	0.53
Minimum	24.2	37.7	---	---	0.08	0.08
Maximum	44.0	37.7	---	---	1.50	1.50
GeoMean	---	---	---	---	---	---
TOTAL	---	---	---	---	---	---

DATE	TKN (mg/L): RAW	TKN (mg/L): OUTFALL 30	TKN (mg/L): OUTFALL 20	TKN (mg/L): OUTFALL 10: FEC
Sun-01	62.4			3.10
Mon-02	58.2			2.50
Tue-03	59.7			1.90
Wed-04	60.2			1.60
Thu-05	57.1	48.0		2.20
Fri-06	55.7			2.10
Sat-07	62.3			2.30
Sun-08	54.7			2.90
Mon-09	59.4			3.00
Tue-10	69.1			2.00
Wed-11	70.8			2.50
Thu-12	61.3			3.20
Fri-13	68.8			2.40
Sat-14	64.2			2.10
Sun-15	62.8			2.50
Mon-16	64.2			2.10
Tue-17	62.7			2.00
Wed-18	62.7			2.00
Thu-19	56.9			1.90
Fri-20	60.1			2.00
Sat-21	56.1			2.20
Sun-22	58.2			2.50
Mon-23	59.3			2.40
Tue-24	65.0			1.90
Wed-25	58.5			1.60
Thu-26	55.7			1.70
Fri-27	53.8			1.50
Sat-28	57.0			1.60
Sun-29	54.8			1.60
Mon-30	52.5			1.50
Average	60.1	48.0	---	2.16
Minimum	52.5	48.0	---	1.50
Maximum	70.8	48.0	---	3.20
GeoMean	---	---	---	---
TOTAL	---	---	---	---

DATE	NO_3+NO_2 (mg/L): RAW	NO_3+NO_2 (mg/L): OUTFALL 30	NO_3+NO_2 (mg/L): OUTFALL 20	NO_3+NO_2 (mg/L): OUTFALL 10: FEC
Sun-01				13.2
Mon-02				12.6
Tue-03				12.8
Wed-04	0.15			13.8
Thu-05		0.67		11.5
Fri-06				10.5
Sat-07				11.1
Sun-08				11.7
Mon-09				12.1
Tue-10				10.7
Wed-11	0.02			9.36
Thu-12				10.6
Fri-13				9.64
Sat-14				10.7
Sun-15				11.7
Mon-16				11.4
Tue-17				11.7
Wed-18	0.05			12.3
Thu-19				11.8
Fri-20				12.5
Sat-21				12.0
Sun-22				12.1
Mon-23				13.2
Tue-24				11.9
Wed-25	< 0.01			12.0
Thu-26				10.6
Fri-27				10.1
Sat-28				9.69
Sun-29				9.41
Mon-30				10.8
Average	0.06	0.67	---	11.5
Minimum	< 0.01	0.67	---	9.36
Maximum	0.15	0.67	---	13.8
GeoMean	---	---	---	---
TOTAL	---	---	---	---

DATE	Chloride (mg/L): RAW	Chloride (mg/L): OUTFALL 30	Chloride (mg/L): OUTFALL 20	Chloride (mg/L): OUTFALL 10: FEC
Sun-01	70			81
Mon-02	73			74
Tue-03	81			80
Wed-04	80			83
Thu-05	78	91		85
Fri-06	71			83
Sat-07	87			83
Sun-08	95			99
Mon-09	104			99
Tue-10	275			136
Wed-11	124			234
Thu-12	106			144
Fri-13	106			116
Sat-14	103			111
Sun-15	82			104
Mon-16	90			92
Tue-17	98			94
Wed-18	110			102
Thu-19	120			117
Fri-20	124			125
Sat-21	112			133
Sun-22	97			126
Mon-23	121			103
Tue-24	112			108
Wed-25	160			123
Thu-26	138			169
Fri-27	152			147
Sat-28	106			152
Sun-29	87			111
Mon-30	96			95
Average	109	91	---	114
Minimum	70	91	---	74
Maximum	275	91	---	234
GeoMean	---	---	---	---
TOTAL	---	---	---	---

DATE	*E. coli* (Counts/100 mL): RAW	*E. coli* (Counts/100 mL): OUTFALL 30	*E. coli* (Counts/100 mL): OUTFALL 20	*E. coli* (Counts/100 mL): OUTFALL 10: FEC
	X10^6	X10^6	X10^6	
Sun-01				4
Mon-02				4
Tue-03				9
Wed-04				9
Thu-05		2.1		5
Fri-06				3
Sat-07				6
Sun-08				4
Mon-09				2
Tue-10				5
Wed-11				9
Thu-12				7
Fri-13				4
Sat-14				4
Sun-15				4
Mon-16				6
Tue-17				5
Wed-18				8
Thu-19				8
Fri-20				4
Sat-21				3
Sun-22				2
Mon-23				9
Tue-24				10
Wed-25				4
Thu-26	2.1			5
Fri-27				10
Sat-28				2
Sun-29				6
Mon-30	2.8			10
Average	---	---	---	---
Minimum	2.1	2.1	---	2
Maximum	2.8	2.1	---	10
GeoMean	2.4	2.1	---	5
TOTAL	---	---	---	---

* Contact Laboratory for information about the quality assurance associated with the results

Enhanced Primary Treatment (EPT) Usage					
Total Bypass (hr)	EPT Usage (hr)	% Usage	Total Bypass YTD (hr)	EPT Usage YTD (hr)	% Usage YTD
4	4	100%	826	826	100%

Report Comments

AEP Ref #

RAW	Untreated Influent into the plant
INF	Untreated wastewater from collection system
INFs	Influent, screened at the Headworks Diversion Structure
PE	Primary Effluent from conventional primaries
PE 30	Primary Effluent from conventional primaries discharged via Outfall 30
EPT	Enhanced Primary Treatment
EPE	Enhanced Primary Effluent
EPEPS	Enhanced Primary Effluent Pump Station
FE	Final Effluent from secondary treatment process (with biological nutrient removal). Pre-Ultraviolet disinfection.

FEC	Combined post-UV disinfection (FE+EPEEPS)
OUTFALL 10	UV-disinfected, discharged via OUTFALL 10
OUTFALL 20	Combined Bypass (RAW + PE + EPE)
OUTFALL 30	Combined Bypass (INF + INFS + PE30 + EPE)
MPW	Membrane Product Water (Effluent re-use water)
ML	Megalitre (1,000,000 Litre)
MPN	Most Probable Number
NR	No Result
NS	No Sample
INS	Insufficient Sample
AEP	Alberta Environment & Parks

Alfredo Suarez
Senior Manager, Operations

Steve Craik
Director, Quality Assurance and Environment

Gold Bar Wastewater Treatment Plant
Plant Performance Report
December 2020

Digested Sludge: Total Monthly Volume (ML)	64.7

Volume of Flow (ML)

DATE	Peak Flow (MLD)	Influent INFs	Influent RAW	Effluent – Non UV Disinfected OUTFALL 30	Non UV Disinfected OUTFALL 20	Non UV Disinfected MPW	UV Disinfected EPEPS	UV Disinfected OUTFALL 10 FEC	UV Disinfected OUTFALL 10 FE
Tue-01	372.5	0.0	245.8	0.0	0.0	11.8	0.0	234.0	234.0
Wed-02	367.3	0.0	241.7	0.0	0.0	12.1	0.0	229.6	229.6
Thu-03	342.7	0.0	247.2	0.0	0.0	11.4	0.0	235.8	235.8
Fri-04	361.2	0.0	243.9	0.0	0.0	11.2	0.0	232.7	232.7
Sat-05	324.3	0.0	239.8	0.0	0.0	11.0	0.0	228.8	228.8
Sun-06	359.2	0.0	243.2	0.0	0.0	10.6	0.0	232.6	232.6
Mon-07	378.7	0.0	259.0	0.0	0.0	10.1	0.0	248.9	248.9
Tue-08	400.8	0.0	290.8	0.0	0.0	10.7	0.0	280.1	280.1
Wed-09	345.4	0.0	250.2	0.0	0.0	10.5	0.0	239.7	239.7
Thu-10	338.2	0.0	246.2	0.0	0.0	10.4	0.0	235.8	235.8
Fri-11	336.6	0.0	244.9	0.0	0.0	10.3	0.0	234.6	234.6
Sat-12	305.9	0.0	241.6	0.0	0.0	10.5	0.0	231.1	231.1
Sun-13	343.4	0.0	244.2	0.0	0.0	11.7	0.0	232.5	232.5
Mon-14	318.4	0.0	246.5	0.0	0.0	12.0	0.0	234.5	234.5
Tue-15	280.3	0.0	239.3	0.0	0.0	12.0	0.0	227.3	227.3
Wed-16	323.4	0.0	239.0	0.0	0.0	12.0	0.0	227.0	227.0
Thu-17	327.9	0.0	237.7	0.0	0.0	11.9	0.0	225.8	225.8
Fri-18	316.8	0.0	239.5	0.0	0.0	12.0	0.0	227.5	227.5
Sat-19	336.8	0.0	242.9	0.0	0.0	12.2	0.0	230.7	230.7
Sun-20	344.4	0.0	240.1	0.0	0.0	10.9	0.0	229.2	229.2
Mon-21	327.9	0.0	239.1	0.0	0.0	11.4	0.0	227.7	227.7
Tue-22	322.7	0.0	234.1	0.0	0.0	11.3	0.0	222.8	222.8
Wed-23	334.3	0.0	237.9	0.0	0.0	11.3	0.0	226.6	226.6
Thu-24	342.3	0.0	241.8	0.0	0.0	10.3	0.0	231.5	231.5
Fri-25	312.9	0.0	210.9	0.0	0.0	10.4	0.0	200.5	200.5
Sat-26	320.1	0.0	224.8	0.0	0.0	10.2	0.0	214.6	214.6
Sun-27	352.3	0.0	229.1	0.0	0.0	10.5	0.0	218.6	218.6
Mon-28	332.6	0.0	236.7	0.0	0.0	10.8	0.0	225.9	225.9
Tue-29	325.0	0.0	247.4	0.0	0.0	10.8	0.0	236.6	236.6
Wed-30	425.8	0.0	235.1	0.0	0.0	11.0	0.0	224.1	224.1
Thu 31	439.4	0.0	235.9	0.0	0.0	10.9	0.0	225.0	225.0
Average	343.9	0.0	241.8	0.0	0.0	11.1	0.0	230.7	230.7
Minimum	280.3	0.0	210.9	0.0	0.0	10.1	0.0	200.5	200.5
Maximum	439.4	0.0	290.8	0.0	0.0	12.2	0.0	280.1	280.1
GeoMean	---	---	---	---	---	---	---	---	---
TOTAL	---	0	7,496	0	0	344	0	7,152	7,152

Liquid Stream Quality

DATE	pH@25°C RAW	pH OUTFALL 30	pH OUTFALL 20	pH OUTFALL 10 FEC	TSS (mg/L) RAW	TSS OUTFALL 30	TSS OUTFALL 20	TSS EPEPS	TSS OUTFALL 10 FEC	TSS OUTFALL 10 FE	BOD_5/$cBOD_5$ (mg/L) RAW BOD_5	OUTFALL 30 BOD_5	OUTFALL 20 BOD_5	EPEPS BOD_5	OUTFALL 10 FEC $cBOD_5$	OUTFALL 10 FE $cBOD_5$
Tue-01	7.5			7.6	288				4.4	4.4	335				3.0	3.0
Wed-02	7.6			7.6	308				3.5	3.5	328				3.0	3.0
Thu-03	7.7			7.6	340				3.0	3.0	383				2.0	2.0
Fri-04	7.5			7.6	300				3.1	3.1	326				2.0	2.0
Sat-05	7.6			7.6	296				3.1	3.1	309				3.0	3.0
Sun-06	7.5			7.6	340				3.4	3.4	296				2.0	2.0
Mon-07	7.4			7.6	276				3.5	3.5	260				2.0	2.0
Tue-08	7.5			7.6	277				3.5	3.5	308				3.0	3.0
Wed-09	7.4			7.5	336				4.0	4.0	290				< 2.0	2.0
Thu-10	7.5			7.5	272				3.3	3.3	307				2.0	2.0
Fri-11	7.6			7.5	324				2.9	2.9	292				2.0	2.0
Sat-12	7.6			7.5	304				3.1	3.1	336				2.0	2.0
Sun-13	7.6			7.7	284				3.3	3.3	287				2.0	2.0
Mon-14	7.5			7.6	232				3.5	3.5	264				3.0	3.0
Tue-15	7.5			7.6	300				3.9	3.9	341				< 2.0	2.0
Wed-16	7.5			7.6	392				2.7	2.7	318				2.0	2.0
Thu-17	7.6			7.6	252				2.6	2.6	326				2.0	2.0
Fri-18	7.6			7.6	344				3.0	3.0	357				2.0	2.0
Sat-19	7.5			7.6	288				4.8	4.8	348				4.0	4.0
Sun-20	7.5			7.5	312				2.7	2.7	336				3.0	3.0
Mon-21	7.5			7.5	332				2.7	2.7	316				2.0	2.0
Tue-22	7.4			7.5	288				2.4	2.4	252				2.0	2.0
Wed-23	7.5			7.5	284				2.5	2.5	304				2.0	2.0
Thu-24	7.6			7.6	352				2.9	2.9	262				3.0	3.0
Fri-25	7.5			7.5	294				1.9	1.9	290				< 2.0	2.0
Sat-26	7.7			7.5	296				2.9	2.9	321				< 2.0	2.0
Sun-27	7.6			7.6	372				2.7	2.7	306				< 2.0	2.0
Mon-28	7.6			7.5	396				3.2	3.2	345				3.0	3.0
Tue-29	7.5			7.5	252				6.8	6.8	301				4.0	4.0
Wed-30	7.5			7.5	324				4.3	4.3	333				3.0	3.0
Thu 31	7.6			7.5	316				3.9	3.9	338				2.0	2.0
Average	7.5	---	---	7.6	309	---	---	---	3.3	3.3	313	---	---	---	2.4	2.4
Minimum	7.4	---	---	7.5	232	---	---	---	1.9	1.9	252	---	---	---	< 2.0	2.0
Maximum	7.7	---	---	7.7	396	---	---	---	6.8	6.8	383	---	---	---	4.0	4.0
GeoMean	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
TOTAL	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

DATE	TP (mg/L) RAW	TP OUTFALL 30	TP OUTFALL 20	TP EPEPS	TP OUTFALL 10 FEC	TP OUTFALL 10 FE	NH3-N (mg/L) RAW	NH3-N OUTFALL 30	NH3-N OUTFALL 20	NH3-N EPEPS	NH3-N OUTFALL 10 FEC	NH3-N OUTFALL 10 FE	TKN (mg/L) RAW	TKN OUTFALL 30	TKN OUTFALL 20	TKN OUTFALL 10 FEC
Tue-01	6.92				0.21	0.21	30.6				0.10	0.10	52.0			1.60
Wed-02	6.66				0.21	0.21	35.1				0.08	0.08	53.8			1.50
Thu-03	7.00				0.20	0.20	36.2				0.16	0.16	56.2			1.60
Fri-04	6.55				0.19	0.19	34.6				0.10	0.10	51.0			1.60
Sat-05	7.04				0.20	0.20	37.2				0.24	0.24	54.7			1.60
Sun-06	6.57				0.19	0.19	36.7				0.34	0.34	53.0			1.70
Mon-07	6.33				0.21	0.21	35.1				0.28	0.28	50.2			1.70
Tue-08	6.20				0.20	0.20	31.7				0.41	0.41	46.1			2.00
Wed-09	7.40				0.21	0.21	37.4				0.58	0.58	57.5			2.00
Thu-10	8.18				0.19	0.19	41.2				0.77	0.77	56.1			2.20
Fri-11	8.25				0.20	0.20	41.7				0.82	0.82	58.7			2.40
Sat-12	7.59				0.21	0.21	42.6				1.14	1.14	54.2			2.80
Sun-13	7.51				0.22	0.22	39.4				2.00	2.00	53.2			3.40
Mon-14	7.03				0.20	0.20	38.0				1.74	1.74	49.0			3.30
Tue-15	6.78				0.20	0.20	36.0				0.25	0.25	55.0			1.50
Wed-16	7.77				0.22	0.22	34.4				0.17	0.17	59.0			1.50
Thu-17	6.74				0.21	0.21	35.5				0.34	0.34	57.0			1.90
Fri-18	7.22				0.21	0.21	35.2				1.04	1.04	59.3			2.50
Sat-19	6.69				0.28	0.28	34.3				0.45	0.45	52.1			1.80
Sun-20	6.09				0.17	0.17	36.0				0.67	0.67	49.8			2.10
Mon-21	6.71				0.16	0.16	36.2				0.60	0.60	51.7			1.80
Tue-22	5.93				0.17	0.17	35.6				0.56	0.56	47.7			2.00
Wed-23	6.7				0.18	0.18	32.4				0.47	0.47	51.9			1.80
Thu-24	6.58				0.18	0.18	34.0				0.60	0.60	47.6			1.80
Fri-25	6.51				0.16	0.16	35.0				0.49	0.49	54.8			1.80
Sat-26	7.21				0.15	0.15	32.7				0.86	0.86	62.0			2.00
Sun-27	7.46				0.15	0.15	39.5				1.05	1.05	60.2			2.40
Mon-28	8.85				0.18	0.18	35.9				0.75	0.75	64.2			2.10
Tue-29	6.90				0.35	0.35	35.5				0.58	0.58	58.0			2.40
Wed-30	6.90				0.22	0.22	35.6				0.48	0.48	50.8			1.80
Thu 31	7.02				0.21	0.21	36.6				0.48	0.48	57.7			2.00
Average	7.01	---	---	---	0.20	0.20	36.1	---	---	---	0.60	0.60	54.3	---	---	2.02
Minimum	5.93	---	---	---	0.15	0.15	30.6	---	---	---	0.08	0.08	46.1	---	---	1.50
Maximum	8.9	---	---	---	0.35	0.35	42.6	---	---	---	2.00	2.00	64.2	---	---	3.40
GeoMean	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
TOTAL	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

DATE	NO_2+NO_3 (mg/L) RAW	NO_2+NO_3 OUTFALL 30	NO_2+NO_3 OUTFALL 20	NO_2+NO_3 OUTFALL 10 FEC	Chloride (mg/L) RAW	Chloride OUTFALL 30	Chloride OUTFALL 20	Chloride OUTFALL 10 FEC	*E. coli* (Counts/100 mL) RAW X10^6	*E. coli* OUTFALL 30 X10^6	*E. coli* OUTFALL 20 X10^6	*E. coli* OUTFALL 10 FEC
Tue-01				8.24	105			106				13
Wed-02	< 0.01			8.45	104			108				4
Thu-03				9.0	103			107				4
Fri-04				8.5	103			108				2
Sat-05				9.3	90			107				4
Sun-06				10.3	81			92				5
Mon-07				8.64	120			88				57
Tue-08				6.93	197			155				10
Wed-09	< 0.01			9.6	106			166				4
Thu-10				9.36	95			116				11
Fri-11				9.3	88			102				6
Sat-12				10.6	81			94				3
Sun-13				11.2	74			83				10
Mon-14				9.86	76			80	2.1			6
Tue-15				8.22	84			84				6
Wed-16	0.05			8.23	108			95				4
Thu-17				7.6	92			106				2
Fri-18				7.4	102			106				7
Sat-19				8.5	162			121				5
Sun-20				8.2	134			151				7
Mon-21				8.4	113			139				4
Tue-22				8.1	111			116				3
Wed-23	0.01			7.3	110			121				4
Thu-24				7.3	120			124	1.4			3
Fri-25				8.4	104			127				2
Sat-26				9.7	83			102				4
Sun-27				10.5	84			89				5
Mon-28				10.0	85			86				6
Tue-29				7.88	93			91				250
Wed-30	0.06			7.72	98			94				4
Thu 31				7.28	91			98				2
Average	0.03	---	---	8.7	103	---	---	108	---	---	---	---
Minimum	< 0.01	---	---	6.93	74	---	---	80	1.4	---	---	2
Maximum	0.06	---	---	11.2	197	---	---	166	2.1	---	---	250
GeoMean	---	---	---	---	---	---	---	---	1.7	---	---	6
TOTAL	---	---	---	---	---	---	---	---	---	---	---	---

* Contact Laboratory for information about the quality assurance associated with the results

Enhanced Primary Treatment (EPT) Usage					
Total Bypass (hr)	EPT Usage (hr)	% Usage	Total Bypass YTD (hr)	EPT Usage YTD (hr)	% Usage YTD
0	0	100%	826	826	100%

Report Comments

AEP Ref #

RAW Untreated Influent into the plant
INF Untreated wastewater from collection system
INFs Influent, screened at the Headworks Diversion Structure
PE Primary Effluent from conventional primaries
PE 30 Primary Effluent from conventional primaries discharged via Outfall 30
EPT Enhanced Primary Treatment
EPE Enhanced Primary Effluent
EPEPS Enhanced Primary Effluent Pump Station
FE Final Effluent from secondary treatment process (with biological nutrient removal). Pre-Ultraviolet disinfection.

FEC Combined post-UV disinfection (FE+EPEPS)
OUTFALL 10 UV-disinfected, discharged via OUTFALL 10
OUTFALL 20 Combined Bypass (RAW + PE + EPE)
OUTFALL 30 Combined Bypass (INF + INFS + PE30 + EPE)
MPW Membrane Product Water (Effluent re-use water)
ML Megalitre (1,000,000 Litre)
MPN Most Probable Number
NR No Result
NS No Sample
INS Insufficient Sample
AEP Alberta Environment & Parks

Alfredo Suarez

Senior Manager, Operations

Daniel Calcines

Manager, Laboratory Customer Relations

Appendix B – WWTP Chemicals

2020 Secondary Alum Usage (kg)

	January	February	March	April	May	June	July	August	September	October	November	December
1	0	0	0	0	0	0	0	0	472	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	884	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	199	598	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	788	0	0	0	0	0
14	0	0	0	0	0	0	2413	0	0	0	0	0
15	0	509	0	64	0	0	98	0	0	0	0	0
16	0	0	0	932	0	0	0	0	0	0	0	0
17	0	0	0	0	0	213	0	0	0	0	0	0
18	0	0	0	586	0	98	0	0	0	0	0	0
19	0	0	0	0	0	1046	0	0	0	0	0	0
20	97	0	0	0	0	0	105	0	0	0	0	0
21	0	0	0	0	0	0	0	0	0	0	0	0
22	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0	0	0	0	0
25	0	0	0	0	0	0	0	0	0	0	0	0
26	0	0	0	0	0	0	0	0	1	0	0	0
27	0	0	0	0	0	0	0	0	0	0	0	0
28	0	0	0	0	0	0	0	0	0	0	0	0
29	0	0	0	0	0	0	0	0	0	0	0	0
30	0		0	0	276	0	0	0	0	0	0	0
31	0		0		0		0	0		0		0
Total (kg)	**97**	**509**	**0**	**1,581**	**474**	**1,955**	**4,287**	**0**	**473**	**0**	**0**	**0**

2020 EPT Alum Usage (kg)

	January	February	March	April	May	June	July	August	September	October	November	December
1	0	2102	0	0	0	5431	23391	0	0	0	0	0
2	0	0	1853	0	0	0	13862	0	2063	0	0	0
3	0	18	2461	0	3020	0	7482	7487	0	0	0	0
4	0	0	0	0	18226	0	5559	6728	0	0	0	0
5	0	0	0	0	1527	0	9625	0	0	0	3573	0
6	0	0	0	0	0	9411	1444	0	0	0	0	0
7	0	0	0	5098	0	17414	4004	7335	3917	0	0	0
8	0	0	0	4402	4482	13739	17531	0	0	0	0	0
9	0	0	0	5153	0	1868	9610	0	0	0	0	0
10	0	0	0	8111	0	0	15146	0	0	109	0	0
11	0	0	0	1643	0	0	7849	3269	0	4278	0	0
12	0	0	0	0	0	0	6831	9556	0	0	0	0
13	0	0	0	3399	0	0	4007	0	0	0	0	0
14	0	0	0	6090	0	11373	334	0	0	0	0	0
15	0	0	0	6564	0	13642	0	0	0	0	0	0
16	0	0	0	5949	0	7345	6533	0	0	0	0	0
17	0	0	0	8097	0	6112	13633	0	0	0	0	0
18	0	0	0	5335	0	911	6632	0	0	0	0	0
19	0	0	0	3391	169	0	5713	0	0	0	0	0
20	0	0	0	363	0	0	5813	3750	0	0	0	0
21	0	0	6709	0	17097	0	1801	2569	0	0	0	0
22	0	0	10704	0	17346	0	10135	4963	0	0	0	0
23	0	0	1529	0	8974	3765	4574	0	0	0	0	0
24	0	0	1055	0	1790	4828	1035	2246	0	0	0	0
25	0	0	0	0	0	0	3584	1041	0	0	0	0
26	0	0	1858	0	6439	0	0	4068	0	0	0	0
27	0	2412	5881	0	1397	1830	0	0	0	0	0	0
28	0	2545	941	0	0	2119	0	0	0	0	0	0
29	0	0	0	0	0	0	0	0	0	0	0	0
30	0		0	0	0	14539	0	0	0	3410	0	0
31	0		0		5691		0	0		0		0
Total (kg)	**0**	**7,077**	**32,989**	**63,593**	**86,159**	**114,328**	**186,127**	**53,013**	**5,980**	**7,797**	**3,573**	**0**

2020 EPT Polymer Usage (kg)

	January	February	March	April	May	June	July	August	September	October	November	December
1	0	3	0	0	0	15	66	0	0	0	0	0
2	0	0	4	0	0	0	37	0	4	0	0	0
3	0	0	6	0	6	0	20	14	0	0	0	0
4	0	0	0	0	50	0	15	19	0	0	0	0
5	0	0	0	0	4	0	26	0	0	0	7	0
6	0	0	0	0	0	22	4	0	0	0	0	0
7	0	0	0	11	0	49	11	21	8	0	0	0
8	0	0	0	12	12	38	59	0	0	0	0	0
9	0	0	0	14	0	5	27	0	0	0	0	0
10	0	0	0	22	0	0	43	0	0	0	0	0
11	0	0	0	4	0	0	22	9	0	9	0	0
12	0	0	0	0	0	0	19	27	0	0	0	0
13	0	0	0	9	0	0	13	0	0	0	0	0
14	0	0	0	17	0	25	1	0	0	0	0	0
15	0	0	0	18	0	36	0	0	0	0	0	0
16	0	0	0	16	0	19	19	0	0	0	0	0
17	0	0	0	22	0	15	39	0	0	0	0	0
18	0	0	0	15	0	2	19	0	0	0	0	0
19	0	0	0	9	0	0	16	0	0	0	0	0
20	0	0	0	1	0	0	16	7	0	0	0	0
21	0	0	7	0	43	0	5	6	0	0	0	0
22	0	0	11	0	48	0	29	14	0	0	0	0
23	0	0	4	0	25	7	13	0	0	0	0	0
24	0	0	3	0	5	13	3	6	0	0	0	0
25	0	0	0	0	0	0	10	3	0	0	0	0
26	0	0	5	0	18	0	0	11	0	0	0	0
27	0	4	17	0	4	5	0	0	0	0	0	0
28	0	6	3	0	0	5	0	0	0	0	0	0
29	0	0	0	0	0	0	0	0	0	0	0	0
30	0		0	0	0	41	0	0	0	7	0	0
31	0		0		16		0	0		0		0
Total (kg)	**0**	**13**	**60**	**171**	**229**	**297**	**534**	**139**	**12**	**16**	**7**	**0**

2020 DAF Polymer Usage (kg)

	January	February	March	April	May	June	July	August	September	October	November	December
1	26	25	39	37	46	28	39	36	31	30	30	26
2	25	27	40	39	43	28	37	29	29	29	30	25
3	25	28	45	39	41	32	30	30	32	28	29	26
4	27	28	55	39	38	10	30	33	34	27	28	26
5	26	31	52	38	36	27	26	33	31	30	27	25
6	25	31	46	39	35	38	27	35	33	34	24	27
7	25	28	41	34	35	30	32	32	33	32	23	14
8	25	30	38	31	30	30	32	30	32	32	22	24
9	24	32	36	32	29	29	28	31	31	35	27	23
10	25	32	39	32	33	31	25	31	30	37	25	23
11	24	34	41	32	35	29	28	30	29	34	25	23
12	28	27	39	34	40	30	29	27	29	34	24	23
13	21	33	41	34	40	34	34	33	29	35	24	23
14	19	36	38	34	40	32	37	32	31	35	25	22
15	19	36	40	42	39	29	38	23	28	33	24	23
16	20	33	45	40	40	30	35	21	27	33	23	25
17	24	33	38	36	38	27	31	30	28	33	22	25
18	22	33	39	34	37	29	31	30	28	32	23	22
19	25	32	43	34	46	30	31	27	29	30	23	23
20	39	32	48	36	19	33	31	27	31	29	23	29
21	44	31	48	36	29	34	29	33	9	29	23	25
22	32	32	44	48	26	33	31	33	30	15	23	22
23	29	32	40	41	26	39	32	34	19	30	25	15
24	27	31	36	32	27	39	31	34	29	30	26	16
25	29	32	39	34	25	46	33	32	36	33	28	17
26	31	33	34	39	27	41	33	32	37	30	24	17
27	28	33	32	60	27	38	33	29	36	30	27	18
28	23	32	34	45	28	41	33	31	31	30	26	18
29	27	33	34	44	32	40	33	31	30	30	26	21
30	26		36	48	29	36	35	32	24	30	26	19
31	27		37		32		36	32		29		22
Total (kg)	**817**	**911**	**1,255**	**1,139**	**1,048**	**974**	**990**	**953**	**886**	**958**	**755**	**687**

2020 Membrane Bleach Usage (L as delivered 16% sodium hypochlorite solution)

	January	February	March	April	May	June	July	August	September	October	November	December
1	518	255	308	208	465	411	400	380	483	668	584	565
2	436	410	247	214	521	335	333	355	487	405	472	548
3	563	243	510	216	599	469	447	462	485	646	480	471
4	490	263	350	241	498	507	433	444	419	596	609	608
5	411	347	432	221	443	603	370	426	451	606	449	532
6	512	286	509	271	532	359	370	617	410	584	377	459
7	495	253	385	199	494	432	572	473	458	557	514	688
8	487	386	347	299	619	325	404	455	515	621	527	655
9	493	334	457	213	493	367	419	606	486	657	471	585
10	328	200	450	279	400	381	479	551	427	528	651	551
11	395	300	365	301	498	512	511	446	539	683	600	659
12	402	338	342	224	642	551	372	530	519	578	616	533
13	467	227	436	197	399	640	661	421	568	591	579	526
14	425	424	407	268	758	416	486	366	623	691	581	586
15	554	289	416	236	428	327	565	548	600	646	546	558
16	438	352	398	220	323	404	647	484	562	484	507	572
17	520	357	593	194	502	558	495	434	632	429	354	486
18	541	316	438	263	679	304	414	562	551	343	433	505
19	341	279	443	195	173	449	695	466	593	337	554	505
20	363	522	260	197	530	495	438	463	659	457	517	539
21	516	217	274	271	447	449	705	450	689	408	431	531
22	287	296	230	211	210	712	585	474	465	279	580	519
23	863	451	263	274	282	734	797	332	477	478	433	418
24	334	281	257	266	611	408	424	561	506	496	458	612
25	253	293	254	319	111	604	676	385	521	526	635	678
26	241	307	232	249	405	531	621	405	579	404	565	406
27	359	219	283	266	324	484	495	431	469	478	506	550
28	250	282	291	395	367	512	633	442	549	464	564	542
29	303	434	200	373	419	588	579	335	684	518	651	509
30	328		236	382	348	349	318	562	569	441	603	511
31	301		287		337		527	439		425		473
Total (L)	**13,214**	**9,160**	**10,899**	**7,662**	**13,856**	**14,218**	**15,870**	**14,305**	**15,975**	**16,020**	**15,845**	**16,879**

2020 Ostara Magnesium Chloride Usage (L as delivered 30% magnesium chloride solution)

	January	February	March	April	May	June	July	August	September	October	November	December
1	0	2366	2291	2557	4134	4855	6228	5683	4775	0	0	0
2	0	2436	2094	3805	4027	5754	6298	5727	5496	0	0	0
3	0	2243	2408	3217	4061	4833	6129	5556	4573	0	0	0
4	0	2657	2522	3874	4048	4184	5854	5876	5522	0	0	0
5	0	2692	2554	3817	3438	5336	5922	5264	5201	0	0	0
6	2030	2873	2651	1297	4059	5422	4122	5609	5311	0	0	0
7	2801	2819	2801	165	3992	5522	3856	5582	5353	0	0	0
8	742	2879	2685	549	4136	5752	6805	5675	5385	0	0	0
9	1535	2772	2610	0	3991	5599	5962	5592	5321	0	0	0
10	1160	2825	3054	0	3987	6034	6139	4675	4713	0	0	0
11	0	2650	2973	0	3649	6076	6337	5764	5341	0	0	0
12	0	2846	2758	0	4490	6059	6209	5474	5271	0	0	0
13	1653	2572	2648	0	2205	5983	4685	5576	5276	0	0	0
14	2595	1838	2751	0	4640	6140	6515	5538	5281	0	0	0
15	1584	1434	2775	1079	4813	5114	5692	5657	5251	0	0	0
16	0	1490	2615	2006	4766	6470	6355	5681	5221	0	0	0
17	0	1727	3275	3549	4843	5838	5291	5522	5155	0	0	0
18	0	0	3302	3762	4691	6261	5876	4982	5161	0	0	0
19	0	993	3290	3676	4770	5553	5853	4636	5070	0	0	0
20	0	4808	4774	3255	7219	6265	5199	5455	5282	0	0	0
21	0	1903	3584	3137	4649	6219	5806	5610	1686	0	0	0
22	0	2019	3650	3699	5130	6274	6009	5428	0	0	0	0
23	0	1828	3437	3273	5309	6477	5676	5564	0	0	0	0
24	0	1961	3848	3330	5222	5789	5836	5465	0	0	0	0
25	0	1371	5342	2850	4458	6740	6150	5108	0	0	0	0
26	0	1697	3587	3015	4455	6272	5726	0	0	0	0	0
27	0	1900	3820	2899	4845	6343	5914	2553	0	0	0	0
28	0	2274	3730	3823	5360	5414	4330	5523	0	0	0	0
29	1171	2225	3662	5056	4907	4711	5834	5393	0	0	0	0
30	1323		1376	4019	4685	6064	5680	5422	0	0	0	0
31	2616		0		4523		5694	5466		0		0
Total (L)	**19,210**	**64,098**	**92,867**	**71,709**	**139,502**	**173,353**	**177,984**	**161,058**	**105,647**	**0**	**0**	**0**

2020 Ostara Caustic Usage (kg)

	January	February	March	April	May	June	July	August	September	October	November	December
1	0	361	519	397	601	411	1022	645	539	0	0	0
2	0	401	432	533	580	324	970	660	397	0	0	0
3	0	397	538	443	477	421	817	590	508	0	0	0
4	0	522	464	522	462	452	808	662	390	0	0	0
5	0	528	510	548	301	726	869	659	442	0	0	0
6	228	513	482	213	397	631	785	627	453	0	0	0
7	240	478	586	21	383	712	688	595	166	0	0	0
8	255	500	520	21	366	789	1022	573	371	0	0	0
9	49	513	595	0	367	828	1007	592	423	0	0	0
10	275	496	661	0	386	749	1062	471	404	0	0	0
11	0	477	569	0	371	754	1112	645	600	0	0	0
12	0	364	519	0	411	850	1135	616	659	0	0	0
13	103	319	546	0	120	776	613	300	732	0	0	0
14	747	345	604	0	320	953	759	567	650	0	0	0
15	474	336	667	2	315	703	647	577	438	0	0	0
16	0	334	665	135	366	936	676	607	405	0	0	0
17	0	329	676	242	232	685	683	617	309	0	0	0
18	0	141	643	383	263	889	781	588	336	0	0	0
19	0	145	677	454	334	884	682	426	299	0	0	0
20	0	383	704	448	454	1086	673	565	149	0	0	0
21	0	348	655	498	343	1101	707	505	0	0	0	0
22	0	333	654	558	396	1146	729	512	0	0	0	0
23	0	356	325	556	420	1009	700	537	0	0	0	0
24	0	383	519	621	411	958	805	543	0	0	0	0
25	0	321	591	469	387	1074	705	483	0	0	0	0
26	0	323	701	441	196	1070	706	14	0	0	0	0
27	0	401	585	455	232	1020	703	296	0	0	0	0
28	0	467	563	681	273	1001	563	627	0	0	0	0
29	183	439	575	491	342	881	604	683	0	0	0	0
30	292		230	201	273	942	625	635		0	0	0
31	743		0		256		574	638		0		0
Total (kg)	**3,589**	**11,251**	**16,977**	**9,334**	**11,038**	**24,762**	**24,234**	**17,057**	**8,672**	**0**	**0**	**0**

Appendix C – Operations Monthly Reports

Gold Bar Wastewater Treatment Plant
10977 50 Street
Edmonton AB T6A 2E9
Canada
epcor.com

Approval 639-03-06
Gold Bar Waste Water Treatment Plant Operations Monthly Summary

2020

SENIOR MANAGER, OPERATIONS MANAGER, OPERATIONS	• ALFREDO SUAREZ • KEN GROSSELL (LEVEL IV)
LEVEL IV OPERATORS	• TOM GRAHAM • KIRA JONES • TOM KWAN • DIEGO ESPINOSA • JANAKA LEKAMWASAM • MIKE NUNES • JODY PENNER

January
- 0 secondary bypass events
- 47 dead ducks found and reported in ERS
- Blower 5 O/S for inspection – Jan 6th
- Fermenter 1 commissioning – Jan 7th
- Voltus blower shutdown – Jan 12th and 13th
- Boiler 8 O/S for inspection – Jan 16th
- Sec 3 O/S for chain alignment – Jan 27th
- BNR Test started Jan 29th

February
- 3 secondary bypass events – Feb 1st, 27th and 28th
- Fermenter 1 filled with FE Feb 6th – remains O/S needs beach plate adjustment
- EPT 11/12 O/S for shaft repair and inspection – Feb 11th
- Bio 5 influent valve opened Feb 11th
- Dig 2 heat exchanger acid cleaned – Feb 19th
- Dig 6 heat exchanger acid cleaned – Feb 27th
- Influent Channel 2 & Grit Tank 4/5 in service Feb 29th
- Influent Channel 1, Grit Tank 1/2/3, and Primary 3/4 filling with FE

March
- 8 secondary bypass events – March 2nd, 3rd, 21st, 22nd, 23rd, 24th, 26th and 27th

- Grit Tank 5 auger failed – March 4th
- Fermenter 1 in service – March 11th
- Channel 1, Grit Tanks 1/2/3, and Primary 3/4 ready for service March 13th
- EPT 11/12 back in service March 13th
- Voltus blower shutdown March 13th & 21st
- Grit Tank 5 pre-screen chain broke, drained grit tank March 20th
- Grit Tank 5 back in service March 24th

April

- 11 secondary bypass events – April 7th, 8th, 9th, 10th, 13th, 14th, 15th, 16th, 17th, 18th, 19th and 20th
- Primary 6 drive chain broke – April 2nd
- Primary 8 sludge pump failed – April 3rd
- EPT Scrubber off line due to pump failure – April 5th
- Ostara off line – April 6th – back on line April 16th
- Ferm 1 O/S for rake drive VFD replacement April 20th – back in service April 29th
- False reading Outfall 30 April 22nd due to level in NSR
- Possible toxic load April 23rd – 2 blowers running (Blower 4 and Blower 6)
- North flare set to lead for Plant Engineering – April 23rd
- Outfall 20 cleaned of ice due to false reading – April 23rd
- Blower 5 started and left running – April 27th
- Blend Tank 1 emptied to retrieve mixer – April 28th
- Dig 6 recirculation pump replaced, now improvement to flow – April 29th
- Ferm 4 O/S – started to waste blanket to have ready for Projects – April 30th

May

- 7 secondary bypass events – May 3rd - 5th, May 8th, May 21st - 23rd, May 23rd - 24th, May 26th, May 27th and May 31st
- Pre-screens 4/5 plugged May 4th
- GRF started – May 5th
- Grit Tank 7 dewatered for repair May 5th – back in service May 7th
- Grit Tank 6 incline auger MCC replaced May 6th
- GRF plugged May 7th – back in service May 12th
- Blend Tank 1 in service – May 7th
- Fermenter 4 O/S for Projects – May 11th
- Dig 6 heat exchanger flushed/acid cleaned May 24th – back in service May 27th
- RAS 1 pump replaced May 28th
- Voltus blower shutdown May 29th
- Bio 7/Clarifier 7 start to fill with FE May 30th
- 15 trucks GRF

June

- 12 secondary bypass events: June 1st, June 6th, June 7th - 9th, June 14th, June 14th - 16th, June 16th - 17th, June 17th - 18th, June 23rd, June 24th, June 27th, June 28th and June 30th - July 3rd
- Ferm 1 rake VFD repaired – June 2nd
- Grit Tank 7 dewatered June 2nd – broken shear pin – in service June 3rd

- EPT Scrubber bleach pump replaced – June 5th
- Sec 5 O/S for RAS pump replacement – June 5th
- Sec 7 in service – June 5th
- Influent Channel 2 level controller setpoint changed to 2.67 – June 6th
- Voltus call – June 7th
- Grit Tank 5 pre-screen failure – drained – June 8th – in service June 11th
- Draining Sec 1 for FE sample line repair – June 10th – in service June 12th
- Sec 3 O/S for inspection – June 13th – in service June 17th
- Sec 2 O/S for Projects – June 17th

July

- 17 secondary bypass events – July 1st - 3rd, July 3rd, July 4th - 5th, July 5th - 6th, July 7th - 9th, July 9th - 11th, July 11th - 12th, July 12th, July 13th, July 16th - 18th, July 18th - 19th, July 19th - 20th, July 20th - 21st, July 21st, July 22nd, July 23rd - 24th, and July 25th
- 4 screened bypass events – July 1st, July 8th, July 9th, and July 16th
- Screen 6 O/S for chain replacement – July 5th – in service July 13th
- UV shutdown July 3rd for breaker inspection
- Blend tank heat exchanger 45610 rupture disk replacement – July 7th
- Grit Tank 7 isolated/drained – broken shaft east end – back in service until fall due to wet weather season – Maintenance to make new shaft – July 14th
- RAS 3 motor replaced July 15th, O/S for only dayshift
- Primary 7 isolated/drained July 20th, back in service July 25th
- 9 GRF trucks for July

August

- 9 secondary bypass events – Aug 3rd - 4th, Aug 4th, Aug 7th, Aug 11th - Aug 12th, Aug 20th - Aug 21st, Aug 22nd, Aug 24th - Aug 25th, and Aug 26th (2 events)
- 1 static weir event Outfall 20 – Aug 3rd from Influent Channel 3
- Secondary 7 drained for chain tightening – Aug 15th
- Fermenter Scrubber off line due to caustic pumps tube failure – 2.5 hrs – Aug 19th
- West Scrubber off line due to bleach pump issues – 30 min – Aug 19th
- West Scrubber off line due to bleach pump issues – 3.5 hrs – Aug 22nd
- Motor failed for Influent Channel 1 gate – gate left open with chain block – Aug 22nd
- Voltus shutdown Aug 23rd, did not complete in time
- Drain Grit Tank 5 and Influent Chanel 2 to clean around Grit Tank 5 bypass gate to get fully closed – back in service same day – Aug 24th
- Grit Tank 6 influent auger broke Aug 30th – repaired and back in service Aug 31st
- GRF – 6 trucks confirmed

September

- 2 secondary bypass events – Sept 2nd & 7th
- EPT Scrubber off line for bleach line retrofit Sept 14th – back on Sept 16th
- West Scrubber off line for bleach line retrofit Sept 15th – back on Sept 16th
- UV shutdown midnight to 10:22 am – Sept 17th
- Plant wide solids shutdown – Sept 21st
- Grit Tank 5 O/S for dry weather for pre-screen chain pin replacement Sept 23rd – back Sept 28th

- Dig 5 O/S – started thinning for the day – structural damage noticed on west wall Sept 23rd
- Hardisty feed off line Sept 24th – back on line Oct 1st
- Potable water line repaired east of membrane facility – Sept 24th
- Supernatant off line for Ostara shutdown
- Dig 5 thinning started Sept 30th

October

- 1 secondary bypass event – Oct 11th
- Thinning Dig 5 started Oct 1st
- Sec 11 clarifier dewatered for WAS pump replacement – Oct 1st
- Potable water line isolated – east side of membrane facility – leaking Oct 1st
- North Diversion Structure, Channel 3, and Grit Tank 6/7 O/S for cleaning and projects – Oct 1st
- Sec 11 back in service – Oct 3rd
- Voltus call – blower off – Oct 9th and Oct 26th
- Purge Digester 5 – Oct 13th
- Dig 5 pumped down until loss of flow – Oct 14th
- Supernatant back on at 2 MLD – Oct 14th
- West Scrubber off line for pipe retrofit – Oct 15th
- Sec 3 clarifier drained for equalization valve replacement for Sec 2 – Oct 22nd
- GRF off line for winter – Oct 26th

November

- 1 secondary bypass event – Nov 5th
- Membrane shutdown for new DeltaV card – Nov 2nd
- GRF off line – winterized – Nov 6th
- Voltus shutdown – Nov 11th
- K101 pressure switch replaced – Nov 12th
- EPT 9/10 O/S and thinning – Nov 18th
- Blower 1 fuse changed – Nov 19th
- Blower 1 tripped again after first start after fuse change – under voltage – Nov 20th
- EPT 9/10 dewatered for inspection – Nov 21st
- Compressor K102 low oil flow switch replaced – Nov 25th
- Dig 3 headspace purged – Nov 25th
- Started seeding Digester 3 – Nov 26th
- Temp VFD for Fermenter 2 rake drive – Nov 29th
- Bleach pump tube failure for Fermenter Scrubber – Nov 30th
- 2 dead ducks found at UV screens

December

- 0 secondary bypass events
- 7 dead ducks found at UV screens
- Ferm 2 VFD replaced – Dec 1st
- Dig 3 in full service, total digester seed 22.3 ML – Dec 8th
- DAF 6 VFD replaced – Dec 8th
- Blower 1 fuse replaced – available for service – Dec 10th

- Pre-screen 5 O/S for chain replacement – Dec 11th – back in service Dec 18th
- Sec 9 one broken flight – remains in service – Dec 12th
- Sec 8 broken drive chain – Dec 13th – replaced Dec 14th
- Bio 4 broken air header – Dec 15th – repaired and back in service Dec 24th
- Voltus power shutdown – Dec 17th & Dec 26th
- Bleach fill line to membrane leaking – Dec 18th – repaired Dec 23rd
- Pre-screen 4 O/S for chain replacement – Dec 19th
- Odour scrubber tower H2S out sensors failing
- Sec 2 clarifier drained to repair wear strips – Dec 29th
- Prim 7 drive chain broke – Prim 7 O/S – Dec 31st – repaired Jan 3rd, 2021

Appendix D – Air Pollution Control System Data

Gold Bar Wastewater Treatment Plant
Daily Average Scrubber Report
January 2020

Date	East Scrubber		Fermenter Scrubber		West Scrubber		EPT Scrubber		GRF Scrubber			
	pH	ORP (mV)	pH	ORP (mV)	pH	ORP (mV)	pH	ORP (mV)	Temperature In (°C)	Pressure In (kPa)	Pressure Out (kPa)	H_2S Out (ppm)
January 1, 2020	9.50	669.9	9.50	700.0	9.51	666.1	9.50	699.0	21.45	-0.3	-0.2	0.1
January 2, 2020	9.50	670.1	9.50	700.0	9.50	672.1	9.50	708.1	21.66	-0.3	-0.2	0.1
January 3, 2020	9.50	670.0	9.50	700.1	9.52	662.2	9.50	700.9	20.97	-0.3	-0.2	0.1
January 4, 2020	9.50	670.1	9.50	699.7	9.50	668.4	9.50	701.3	21.70	-0.3	-0.2	0.1
January 5, 2020	9.50	670.0	9.50	700.2	9.50	669.1	9.50	702.2	20.81	-0.3	-0.2	0.1
January 6, 2020	9.50	670.1	9.50	681.9	9.51	677.3	9.50	697.1	20.59	-0.3	-0.2	0.1
January 7, 2020	9.50	669.9	9.50	700.3	9.50	671.4	9.50	701.1	19.43	-0.3	-0.2	0.1
January 8, 2020	9.50	670.1	9.50	700.7	9.50	667.9	9.50	700.6	19.23	-0.3	-0.2	0.1
January 9, 2020	9.50	670.2	9.50	699.8	9.49	669.5	9.49	697.9	19.18	-0.3	-0.2	0.1
January 10, 2020	9.50	670.1	9.50	699.5	9.51	672.4	9.50	700.3	19.04	-0.3	-0.2	0.1
January 11, 2020	9.50	669.8	9.50	700.5	9.49	663.3	9.51	701.6	19.19	-0.3	-0.2	0.1
January 12, 2020	9.50	669.9	9.49	699.6	9.50	672.4	9.50	701.4	19.00	-0.3	-0.2	0.1
January 13, 2020	9.51	674.9	9.50	702.4	9.56	686.4	9.49	705.7	19.12	-0.3	-0.2	0.1
January 14, 2020	9.50	673.9	9.50	699.6	9.50	674.2	9.32	644.8	19.23	-0.3	-0.2	0.1
January 15, 2020	9.50	670.4	9.50	699.9	9.50	668.2	9.27	569.4	20.47	-0.3	-0.2	0.1
January 16, 2020	9.47	655.3	9.50	700.3	9.50	671.1	9.50	700.2	20.06	-0.3	-0.2	0.1
January 17, 2020	9.52	707.6	9.50	700.3	9.50	669.1	9.50	700.1	19.32	-0.3	-0.2	0.1
January 18, 2020	9.50	673.5	9.50	699.8	9.49	665.2	9.50	699.7	19.23	-0.3	-0.2	0.1
January 19, 2020	9.50	670.0	9.50	699.8	9.49	685.2	9.50	700.8	19.10	-0.2	-0.2	0.1
January 20, 2020	9.50	669.8	9.50	700.1	9.50	694.1	9.49	699.8	19.36	-0.2	-0.2	0.0
January 21, 2020	9.50	671.7	9.51	700.5	9.51	673.0	9.50	700.1	19.55	-0.3	-0.2	0.1
January 22, 2020	9.50	670.1	9.50	699.7	9.50	669.6	9.50	687.6	19.12	-0.3	-0.2	0.1
January 23, 2020	9.50	670.0	9.50	694.4	9.50	671.6	9.50	586.8	19.21	-0.3	-0.2	0.1
January 24, 2020	9.50	670.1	9.50	706.9	9.50	668.4	9.50	595.5	18.95	-0.3	-0.2	0.1
January 25, 2020	9.50	669.9	9.50	700.5	9.49	665.9	9.50	661.3	19.39	-0.3	-0.2	0.1
January 26, 2020	9.50	670.0	9.50	699.5	9.50	670.3	9.50	701.3	19.31	-0.3	-0.2	0.1
January 27, 2020	9.49	675.5	9.50	700.8	9.48	644.7	9.50	648.3	19.64	-0.3	-0.2	0.1
January 28, 2020	9.50	670.0	9.50	699.7	9.49	683.4	9.49	700.7	19.59	-0.3	-0.2	0.1
January 29, 2020	9.50	669.9	9.50	699.4	9.50	670.0	9.50	667.0	19.25	-0.3	-0.2	0.1
January 30, 2020	9.50	670.0	9.50	700.1	9.51	672.5	9.50	700.3	19.65	-0.3	-0.2	0.1
January 31, 2020	9.50	670.0	9.50	700.4	9.50	648.5	9.50	512.0	20.00	-0.3	-0.2	0.1
Avg	9.50	671.4	9.50	699.6	9.50	670.4	9.49	677.2	19.74	-0.3	-0.2	0.1
Min	9.47	655.3	9.49	681.9	9.48	644.7	9.27	512.0	18.95	-0.3	-0.2	0.0
Max	9.52	707.6	9.51	706.9	9.56	694.1	9.51	708.1	21.70	-0.2	-0.2	0.1

Gold Bar Wastewater Treatment Plant
Daily Average Scrubber Report
February 2020

Date	East Scrubber		Fermenter Scrubber		West Scrubber		EPT Scrubber		GRF Scrubber			
	pH	ORP (mV)	pH	ORP (mV)	pH	ORP (mV)	pH	ORP (mV)	Temperature In (°C)	Pressure In (kPa)	Pressure Out (kPa)	H_2S Out (ppm)
February 1, 2020	9.50	670.5	9.50	699.8	9.52	706.5	9.53	702.9	19.71	-0.3	-0.2	0.1
February 2, 2020	9.50	669.8	9.50	699.4	9.50	669.2	9.50	690.7	19.26	-0.3	-0.2	0.1
February 3, 2020	9.50	670.0	9.50	700.7	9.50	672.4	9.50	650.6	19.42	-0.3	-0.2	0.1
February 4, 2020	9.50	670.0	9.50	699.9	9.50	661.3	9.50	699.7	19.18	-0.3	-0.2	0.1
February 5, 2020	9.49	670.0	9.50	700.3	9.49	667.6	9.49	535.3	19.44	-0.3	-0.2	0.1
February 6, 2020	9.50	670.1	9.51	700.5	9.50	702.9	9.51	674.7	19.38	-0.3	-0.2	0.1
February 7, 2020	9.50	670.0	9.50	699.7	9.50	667.1	9.50	699.6	19.19	-0.3	-0.2	0.1
February 8, 2020	9.50	670.0	9.50	699.7	9.50	667.0	9.50	644.2	19.07	-0.3	-0.2	0.1
February 9, 2020	9.50	670.0	9.50	700.0	9.49	690.6	9.50	635.5	19.32	-0.3	-0.2	0.1
February 10, 2020	9.50	669.9	9.50	684.1	9.49	670.9	9.50	701.5	19.18	-0.3	-0.2	0.1
February 11, 2020	9.51	671.1	9.51	700.5	9.51	650.7	9.50	698.2	19.17	-0.3	-0.2	0.1
February 12, 2020	9.50	669.9	9.50	700.1	9.51	682.6	9.51	701.6	18.91	-0.2	-0.2	0.1
February 13, 2020	9.50	669.9	9.50	700.1	9.49	668.3	9.60	688.8	19.39	-0.3	-0.2	0.1
February 14, 2020	9.50	670.2	9.50	700.3	9.50	663.9	9.50	698.7	19.00	-0.3	-0.2	0.1
February 15, 2020	9.50	670.0	9.50	700.2	9.50	671.2	9.51	701.0	19.44	-0.3	-0.2	0.1
February 16, 2020	9.50	669.9	9.50	700.1	9.50	662.2	9.50	699.5	19.55	-0.3	-0.2	0.1
February 17, 2020	9.50	670.0	9.50	700.2	9.50	675.2	9.50	701.4	19.09	-0.2	-0.2	0.1
February 18, 2020	9.50	670.1	9.50	697.2	9.51	678.6	9.50	701.4	19.04	-0.3	-0.2	0.1
February 19, 2020	9.20	709.0	9.50	700.2	9.49	669.9	9.49	700.6	19.19	-0.3	-0.2	0.0
February 20, 2020	9.50	670.0	9.50	698.1	9.50	668.2	9.50	700.1	19.13	-0.3	-0.2	0.1
February 21, 2020	9.50	670.1	9.50	700.0	9.49	663.0	9.50	699.6	19.03	-0.3	-0.2	0.1
February 22, 2020	9.50	669.9	9.50	700.0	9.50	665.8	9.50	699.7	18.93	-0.3	-0.2	0.1
February 23, 2020	9.50	669.9	9.50	700.1	9.50	672.5	9.50	701.0	18.62	-0.3	-0.2	0.1
February 24, 2020	9.50	671.2	9.50	700.1	9.50	676.3	9.50	702.8	19.37	-0.3	-0.2	0.1
February 25, 2020	9.50	670.0	9.50	700.2	9.50	672.6	9.50	700.3	19.50	-0.3	-0.2	0.1
February 26, 2020	9.50	670.0	9.50	699.9	9.50	671.4	9.50	700.7	19.59	-0.3	-0.2	0.1
February 27, 2020	9.50	670.1	9.50	700.3	9.50	675.0	9.49	699.8	19.25	-0.3	-0.2	0.1
February 28, 2020	9.50	669.9	9.50	700.3	9.51	674.1	9.50	701.5	19.11	-0.3	-0.2	0.1
February 29, 2020	9.56	670.9	9.50	699.5	9.50	665.9	9.51	701.5	19.16	-0.3	-0.2	0.1
Avg	9.49	671.5	9.50	699.4	9.50	672.5	9.50	687.3	19.23	-0.3	-0.2	0.1
Min	9.20	669.8	9.50	684.1	9.49	650.7	9.49	535.3	18.62	-0.3	-0.2	0.0
Max	9.56	709.0	9.51	700.7	9.52	706.5	9.60	702.9	19.71	-0.2	-0.2	0.1

Gold Bar Wastewater Treatment Plant
Daily Average Scrubber Report
March 2020

Date	East Scrubber		Fermenter Scrubber		West Scrubber		EPT Scrubber		GRF Scrubber			
	pH	ORP (mV)	pH	ORP (mV)	pH	ORP (mV)	pH	ORP (mV)	Temperature In (°C)	Pressure In (kPa)	Pressure Out (kPa)	H_2S Out (ppm)
March 1, 2020	9.50	670.7	9.50	699.7	9.49	666.9	9.50	700.7	19.19	-0.3	-0.2	0.1
March 2, 2020	9.50	670.1	9.51	700.9	9.50	680.2	9.50	701.4	18.50	-0.2	-0.2	0.1
March 3, 2020	9.50	670.0	9.50	699.8	9.50	671.6	9.50	701.1	18.54	-0.1	-0.2	0.1
March 4, 2020	9.50	669.9	9.50	700.2	9.49	665.9	9.50	701.0	18.78	-0.1	-0.2	0.1
March 5, 2020	9.50	669.9	9.50	699.7	9.50	667.1	9.50	700.5	19.22	-0.1	-0.2	0.1
March 6, 2020	9.52	673.8	9.50	699.9	9.50	668.3	9.50	700.6	18.96	-0.1	-0.2	0.1
March 7, 2020	9.50	670.1	9.50	700.1	9.50	668.3	9.50	700.9	18.63	-0.1	-0.2	0.1
March 8, 2020	9.50	670.0	9.50	699.6	9.49	658.5	9.49	699.3	19.02	-0.1	-0.2	0.1
March 9, 2020	9.50	671.3	9.50	701.2	9.50	677.4	9.50	700.6	19.17	-0.1	-0.2	0.2
March 10, 2020	9.50	670.0	9.50	700.1	9.50	677.0	9.49	702.5	18.91	1.5	0.2	0.1
March 11, 2020	9.50	670.0	9.50	690.0	9.51	649.1	9.51	700.7	19.20	-0.1	-0.2	0.1
March 12, 2020	9.50	670.0	9.50	700.1	9.50	665.6	9.50	700.0	18.50	-0.1	-0.2	0.1
March 13, 2020	9.50	670.0	9.34	699.8	9.50	671.5	9.50	700.2	18.52	-0.1	-0.2	0.1
March 14, 2020	9.50	669.9	9.49	699.7	9.50	669.3	9.50	701.1	18.55	-0.1	-0.2	0.1
March 15, 2020	9.50	670.0	9.51	700.2	9.49	667.7	9.50	699.9	18.43	-0.1	-0.2	0.1
March 16, 2020	9.50	670.1	9.48	699.7	9.44	676.7	9.50	700.4	19.00	-0.1	-0.2	0.1
March 17, 2020	9.50	670.0	9.51	700.1	9.04	659.1	9.50	699.3	19.01	-0.1	-0.2	0.1
March 18, 2020	9.50	670.0	9.50	699.9	9.56	667.5	9.50	700.3	19.28	-0.1	-0.2	0.1
March 19, 2020	9.50	670.2	9.50	700.1	9.46	680.2	9.50	700.6	18.87	-0.1	-0.2	0.1
March 20, 2020	9.50	670.3	9.49	699.8	9.49	664.3	9.49	699.5	18.70	-0.1	-0.2	0.0
March 21, 2020	9.50	670.2	9.50	700.3	9.50	677.9	9.50	701.3	18.50	-0.1	-0.2	0.1
March 22, 2020	9.50	670.1	9.51	700.3	9.50	670.5	9.49	642.1	18.74	-0.1	-0.2	0.1
March 23, 2020	9.50	670.0	9.50	699.8	9.50	668.2	9.51	670.5	19.37	-0.1	-0.2	0.1
March 24, 2020	9.48	672.6	9.25	701.8	9.51	672.2	9.50	700.4	18.79	-0.1	-0.2	0.1
March 25, 2020	9.52	688.2	9.52	700.1	9.47	658.4	9.50	699.9	18.65	-0.1	-0.2	0.1
March 26, 2020	9.50	670.0	9.50	700.3	9.49	666.8	9.50	684.7	18.68	-0.1	-0.2	0.1
March 27, 2020	9.51	670.1	9.50	699.7	9.51	689.5	9.50	700.8	18.59	-0.1	-0.2	0.1
March 28, 2020	9.50	671.0	9.53	700.4	9.50	665.0	9.52	663.6	18.51	-0.1	-0.2	0.1
March 29, 2020	9.50	670.2	9.49	699.8	9.49	664.3	9.50	699.9	18.98	-0.1	-0.2	0.1
March 30, 2020	9.50	670.7	9.50	699.8	9.50	669.7	9.50	644.1	18.81	-0.1	-0.2	0.1
March 31, 2020	9.50	670.6	9.49	699.9	9.49	667.2	9.50	680.1	18.66	-0.1	-0.2	0.1
Avg	9.50	671.0	9.49	699.8	9.48	669.1	9.50	693.5	18.81	-0.1	-0.2	0.1
Min	9.48	669.9	9.25	690.0	9.04	649.1	9.49	642.1	18.43	-0.3	-0.2	0.0
Max	9.52	688.2	9.53	701.8	9.56	689.5	9.52	702.5	19.37	1.5	0.2	0.2

Gold Bar Wastewater Treatment Plant
Daily Average Scrubber Report
April 2020

Date	East Scrubber		Fermenter Scrubber		West Scrubber		EPT Scrubber		GRF Scrubber				Dewatering Facility Scrubber
	pH	ORP (mV)	pH	ORP (mV)	pH	ORP (mV)	pH	ORP (mV)	Temperature In (°C)	Pressure In (kPa)	Pressure Out (kPa)	H_2S Out (ppm)	H_2S Out (ppb)
April 1, 2020	9.50	670.9	9.50	699.9	9.50	672.0	9.50	700.5	18.6	-0.09	-0.19	0.1	
April 2, 2020	9.50	671.0	9.49	699.9	9.50	671.0	9.50	603.0	18.8	-0.09	-0.19	0.1	
April 3, 2020	9.50	671.4	9.50	700.1	9.50	666.7	9.50	700.0	18.7	-0.09	-0.19	0.1	
April 4, 2020	9.50	670.6	9.50	699.7	9.50	672.5	9.50	700.2	18.5	-0.09	-0.19	0.1	
April 5, 2020	9.49	670.4	9.52	700.2	9.43	665.5	9.68	225.4*	19.1	-0.09	-0.20	0.1	
April 6, 2020	9.50	670.0	9.45	698.2	9.50	675.0	9.71	653.2	18.8	-0.10	-0.20	0.1	
April 7, 2020	9.48	669.6	9.50	702.8	9.50	678.6	9.50	700.1	18.4	-0.11	-0.20	0.1	
April 8, 2020	9.48	633.2	9.50	700.0	9.50	669.7	9.50	664.0	18.6	-0.11	-0.20	0.1	
April 9, 2020	9.52	690.4	9.50	700.2	9.50	674.8	9.50	700.5	18.8	-0.11	-0.20	0.1	
April 10, 2020	9.50	670.0	9.50	700.5	9.49	663.9	9.49	686.2	18.5	-0.12	-0.21	0.1	
April 11, 2020	9.50	671.2	9.50	700.1	9.51	685.8	9.52	701.7	18.6	-0.11	-0.20	0.1	
April 12, 2020	9.50	671.0	9.50	699.7	9.50	664.8	9.50	670.1	18.4	-0.10	-0.20	0.1	
April 13, 2020	9.50	670.9	9.50	700.0	9.49	668.3	9.49	698.9	18.6	-0.09	-0.20	0.1	
April 14, 2020	9.50	670.0	9.50	700.2	9.51	680.4	9.50	700.6	18.9	-0.11	-0.20	0.1	
April 15, 2020	9.50	670.7	9.50	700.0	9.50	671.5	9.51	653.0	19.1	-0.11	-0.20	0.1	
April 16, 2020	9.50	670.2	9.50	699.8	9.50	668.5	9.49	683.1	18.7	-0.12	-0.20	0.1	
April 17, 2020	9.50	670.0	9.50	700.1	9.50	671.4	9.51	700.7	18.6	-0.13	-0.21	0.1	
April 18, 2020	9.50	670.1	9.50	700.0	9.50	665.0	9.50	625.1	18.7	-0.12	-0.20	0.1	
April 19, 2020	9.50	669.9	9.50	699.9	9.50	669.0	9.50	669.4	19.2	-0.12	-0.20	0.1	
April 20, 2020	9.50	670.0	9.50	699.7	9.50	668.5	9.50	655.9	20.4	-0.12	-0.21	0.1	
April 21, 2020	9.50	670.0	9.50	699.6	9.49	662.8	9.50	699.6	20.7	-0.13	-0.21	0.1	
April 22, 2020	9.50	669.8	9.50	699.6	9.50	672.2	9.50	662.0	19.3	-0.13	-0.21	0.1	
April 23, 2020	9.50	670.0	9.50	700.0	9.50	670.4	9.50	667.3	19.2	-0.12	-0.21	0.1	
April 24, 2020	9.50	669.9	9.50	699.6	9.50	667.3	9.50	672.4	19.8	-0.13	-0.21	0.1	
April 25, 2020	9.50	670.0	9.50	699.5	9.50	665.6	9.50	642.0	20.3	-0.12	-0.21	0.0	
April 26, 2020	9.50	670.1	9.51	700.8	9.50	669.7	9.51	628.3	19.6	-0.12	-0.21	0.1	
April 27, 2020	9.50	670.0	9.50	698.8	9.49	668.8	9.48	146.6†	19.5	-0.12	-0.21	0.1	
April 28, 2020	9.50	669.9	9.51	700.4	9.50	675.5	9.51	700.3	20.5	-0.13	-0.21	0.1	
April 29, 2020	9.50	669.9	9.50	699.9	9.49	669.0	9.50	699.8	21.6	-0.12	-0.10	0.1	
April 30, 2020	9.50	670.1	9.50	699.9	9.50	666.7	9.50	699.4	21.0	0.01	0.86	0.1	
Avg	9.50	669.7	9.50	700.0	9.50	670.4	9.51	643.6	19.3	-0.11	-0.16	0.1	N/A
Min	9.48	633.2	9.45	698.2	9.43	662.8	9.48	603.0	18.4	-0.13	-0.21	0.0	N/A
Max	9.52	690.4	9.52	702.8	9.51	685.8	9.71	701.7	21.6	0.01	0.86	0.1	N/A

*Active scrubber troubleshooting resulting in shutdown of scrubber. See Summary of Scrubber Operational Issues in Table X.
†Reported to AEP (Reference # 365988).

Gold Bar Wastewater Treatment Plant
Daily Average Scrubber Report
May 2020

Date	East Scrubber		Fermenter Scrubber		West Scrubber		EPT Scrubber		GRF Scrubber				Dewatering Facility Scrubber
	pH	ORP (mV)	pH	ORP (mV)	pH	ORP (mV)	pH	ORP (mV)	Temperature In (°C)	Pressure In (kPa)	Pressure Out (kPa)	H_2S Out (ppm)	H_2S Out (ppb)
May 1, 2020	9.50	669.9	9.50	699.7	9.50	676.8	9.50	700.5	19.9	-0.11	0.09	0.1	
May 2, 2020	9.50	669.7	9.51	700.9	9.50	667.3	9.50	699.3	20.5	-0.10	0.10	0.1	
May 3, 2020	9.50	670.1	9.49	699.0	9.48	670.3	9.47	693.1	20.8	-0.09	0.09	0.1	
May 4, 2020	9.50	672.6	9.51	702.0	9.49	707.1	9.31	692.3	18.5	-0.10	0.11	0.1	
May 5, 2020	9.50	669.9	9.50	700.2	9.41	669.0	9.16	731.7	20.1	-0.11	0.12	0.1	
May 6, 2020	9.50	669.9	9.50	699.9	9.26	707.8	9.51	713.5	21.6	-0.12	0.11	0.1	
May 7, 2020	9.50	669.9	9.50	699.7	9.49	666.2	9.50	699.6	20.1	-0.12	0.12	0.1	
May 8, 2020	9.50	670.2	9.50	700.2	9.50	674.7	9.50	700.5	19.0	-0.13	0.13	0.1	
May 9, 2020	9.50	669.9	9.50	699.8	9.50	664.1	9.50	699.7	19.3	-0.12	0.13	0.1	
May 10, 2020	9.50	670.0	9.50	699.7	9.50	671.2	9.50	699.8	19.4	-0.11	0.13	0.1	
May 11, 2020	9.50	670.0	9.50	700.1	9.50	670.6	9.50	700.1	19.3	-0.11	0.13	0.1	
May 12, 2020	9.50	670.0	9.50	699.8	9.50	668.1	9.50	699.6	19.3	-0.11	0.13	0.1	
May 13, 2020	9.50	669.8	9.50	699.7	9.50	667.6	9.50	699.7	19.3	-0.11	0.12	0.1	
May 14, 2020	9.50	670.1	9.50	700.2	9.49	660.0	9.50	698.8	19.5	-0.12	0.12	0.1	
May 15, 2020	9.49	669.8	9.49	699.7	9.49	670.5	9.50	700.6	19.1	-0.12	0.13	0.1	
May 16, 2020	9.50	670.0	9.47	700.0	9.51	674.9	9.50	700.2	19.8	-0.14	0.22	0.1	
May 17, 2020	9.50	675.6	9.38	702.3	9.50	669.1	9.50	700.3	19.4	-0.20	0.30	0.1	
May 18, 2020	9.50	670.0	9.25	699.5	9.50	671.4	9.50	699.8	19.0	-0.21	0.30	0.1	
May 19, 2020	9.50	669.8	9.52	700.0	9.48	666.6	9.50	699.8	19.3	-0.20	0.31	0.1	
May 20, 2020	9.50	670.1	9.51	700.2	9.50	669.3	9.50	699.9	19.1	-0.20	0.30	0.1	
May 21, 2020	9.51	671.0	9.52	700.6	9.55	709.5	9.49	691.4	19.6	-0.19	0.30	0.0	
May 22, 2020	9.50	636.5	9.51	696.0	9.50	675.6	9.50	699.0	19.2	-0.18	0.30	0.1	
May 23, 2020	9.49	669.7	9.50	700.3	9.49	669.7	9.50	701.1	19.3	-0.19	0.31	0.1	
May 24, 2020	9.50	669.9	9.49	699.5	9.51	669.5	9.51	701.2	19.8	-0.20	0.30	0.1	
May 25, 2020	9.51	669.7	9.49	699.2	9.50	666.2	9.50	699.7	19.4	-0.20	0.30	0.1	
May 26, 2020	9.50	670.1	9.49	700.0	9.50	662.5	9.48	696.8	18.9	-0.20	0.31	0.1	
May 27, 2020	9.50	669.8	9.50	699.9	9.49	672.3	9.67	683.9	19.2	-0.19	0.31	0.1	0
May 28, 2020	9.50	670.0	9.48	700.0	9.50	668.5	9.50	699.6	19.2	-0.20	0.30	0.1	0
May 29, 2020	9.50	669.9	9.50	699.8	9.50	667.6	9.50	699.9	19.0	-0.21	0.30	0.1	
May 30, 2020	9.50	669.9	9.49	700.0	9.50	668.6	9.50	699.9	20.3	-0.21	0.29	0.1	
May 31, 2020	9.50	670.7	9.49	699.5	9.50	667.4	9.49	601.3	20.2	-0.21	0.29	0.1	
Avg	9.50	669.2	9.49	699.9	9.49	672.9	9.49	696.9	19.6	-0.16	0.21	0.1	0
Min	9.49	636.5	9.25	696.0	9.26	660.0	9.16	601.3	18.5	-0.21	0.09	0.0	0
Max	9.51	675.6	9.52	702.3	9.55	709.5	9.67	731.7	21.6	-0.09	0.31	0.1	0

Gold Bar Wastewater Treatment Plant
Daily Average Scrubber Report
June 2020

Date	East Scrubber		Fermenter Scrubber		West Scrubber		EPT Scrubber		GRF Scrubber				Dewatering Facility Scrubber
	pH	ORP (mV)	pH	ORP (mV)	pH	ORP (mV)	pH	ORP (mV)	Temperature In (°C)	Pressure In (kPa)	Pressure Out (kPa)	H_2S Out (ppm)	H_2S Out (ppb)
June 1, 2020	9.51	669.8	9.53	701.5	9.50	693.5	9.54	684.3	18.9	-0.21	0.29	0.1	0
June 2, 2020	9.50	669.5	9.49	700.4	9.50	660.7	9.50	678.2	19.7	-0.21	0.29	0.1	
June 3, 2020	9.50	669.9	9.48	699.4	9.50	667.0	9.50	629.5	18.9	-0.20	0.30	0.1	
June 4, 2020	9.50	670.6	9.49	697.5	9.50	660.1	9.49	675.4	19.2	-0.19	0.31	0.1	
June 5, 2020	9.50	670.0	9.49	700.1	9.50	666.1	9.60	587.6	19.3	-0.21	0.30	0.1	
June 6, 2020	9.49	671.9	9.50	701.5	9.50	687.8	9.49	632.9	19.0	-0.20	0.30	0.1	
June 7, 2020	9.51	670.2	9.45	519.2	9.50	680.9	9.49	628.8	19.3	0.01	1.40	0.1	
June 8, 2020	9.50	669.8	9.52	700.2	9.50	668.6	9.50	683.6	19.4	0.16	2.18	0.1	0
June 9, 2020	9.50	669.8	9.50	699.8	9.50	666.7	9.52	676.4	19.2	0.04	1.49	0.1	
June 10, 2020	9.49	669.8	9.49	701.2	9.50	668.2	9.49	535.2	19.8	-0.21	0.29	0.1	
June 11, 2020	9.51	669.7	9.49	698.0	9.50	668.3	9.50	700.0	20.3	-0.21	0.30	0.1	
June 12, 2020	9.49	669.7	9.51	703.3	9.49	656.5	9.49	699.0	20.9	-0.21	0.29	0.1	
June 13, 2020	9.50	670.2	9.49	697.7	9.50	678.5	9.50	700.6	20.0	-0.21	0.30	0.1	
June 14, 2020	9.50	670.6	9.51	705.5	9.50	675.2	9.46	700.2	19.0	-0.21	0.29	0.1	
June 15, 2020	9.50	670.1	9.28	709.2	9.50	680.4	9.53	705.3	18.7	-0.21	0.29	0.1	0
June 16, 2020	9.50	669.5	9.18	699.1	9.50	663.2	9.50	700.2	19.4	-0.20	0.28	0.1	
June 17, 2020	9.50	670.0	9.49	701.0	9.50	663.7	9.49	698.6	18.9	-0.20	0.30	0.1	
June 18, 2020	9.49	669.1	9.48	699.7	9.50	672.7	9.52	702.8	19.2	-0.21	0.30	0.1	
June 19, 2020	9.49	658.6	9.51	697.6	9.50	649.5	9.49	697.5	19.5	-0.21	0.28	0.1	
June 20, 2020	9.50	670.0	9.53	703.3	9.54	670.1	9.50	699.9	20.3	-0.22	0.28	0.1	
June 21, 2020	9.49	670.1	9.48	699.8	9.50	665.4	9.50	699.9	19.0	-0.21	0.29	0.1	
June 22, 2020	9.50	669.7	9.50	700.1	9.50	668.8	9.50	699.7	20.9	-0.22	0.28	0.1	
June 23, 2020	9.50	669.8	9.48	699.9	9.97	545.7	9.46	618.1	21.1	-0.22	0.29	0.1	
June 24, 2020	9.49	670.8	9.49	701.4	9.50	682.6	9.53	709.1	19.1	-0.19	0.30	0.1	
June 25, 2020	9.50	669.3	9.51	700.3	9.50	660.2	9.51	702.5	20.5	-0.20	0.28	0.1	
June 26, 2020	9.50	669.1	9.48	702.3	9.50	666.6	9.50	700.2	19.3	-0.20	0.29	0.1	0
June 27, 2020	9.51	671.0	9.52	697.5	9.50	671.1	9.51	700.7	19.0	-0.19	0.29	0.0	
June 28, 2020	9.49	670.2	9.51	702.0	9.50	658.5	9.53	713.3	19.0	-0.19	0.29	0.1	
June 29, 2020	9.46	671.4	9.56	698.7	9.50	668.6	9.50	701.0	19.0	-0.20	0.28	0.1	
June 30, 2020	9.50	676.8	9.50	700.6	9.51	705.4	9.46	689.4	18.9	-0.19	0.29	0.1	
Avg	9.50	669.9	9.48	694.6	9.52	666.4	9.50	678.3	19.5	-0.18	0.43	0.1	0
Min	9.46	658.6	9.18	519.2	9.49	545.7	9.46	535.2	18.7	-0.22	0.28	0.0	0
Max	9.51	676.8	9.56	709.2	9.97	705.4	9.60	713.3	21.1	0.16	2.18	0.1	0

Appendix D - Air Pollution Control System Data

Gold Bar Wastewater Treatment Plant
Daily Average Scrubber Report
July 2020

Date	East Scrubber				Fermenter Scrubber				West Scrubber				EPT Scrubber				GRF Scrubber				Grit 6/7 Building Scrubber	Screen 4-8 Building Scrubber	Dewatering Facility Scrubber
	pH	ORP (mV)	H_2S In (ppm)	H_2S Out (ppb)	pH	ORP (mV)	H_2S In (ppm)	H_2S Out (ppb)	pH	ORP (mV)	H_2S In (ppm)	H_2S Out (ppb)	pH	ORP (mV)	H2S In (ppm)	H2S Out (ppb)	Temperature In (°C)	Pressure In (kPa)	Pressure Out (kPa)	H_2S Out (ppm)	H_2S Out (ppb)	H_2S Out (ppb)	H_2S Out (ppb)
July 1, 2020	9.51	670.2	0.00	0.0	9.53	700.8	1.77	51.4	9.50	677.5	0.00	0.0	9.53	702.9	0.6	35.0	18.9	-0.19	0.29	0.1	0.0	0.1	
July 2, 2020	9.51	669.8	0.00	0.2	9.49	700.1	1.10	28.9	9.50	667.9	0.00	0.3	9.51	699.9	0.3	22.9	19.0	-0.19	0.29	0.1	0.0	0.0	0
July 3, 2020	9.50	669.6	0.00	4.5	9.49	699.8	1.25	28.6	9.50	662.2	0.44	0.3	9.50	699.4	0.8	55.2	19.9	-0.20	0.28	0.1	0.0	0.7	
July 4, 2020	9.50	670.1	0.00	9.4	9.49	699.8	1.54	23.2	9.50	675.1	0.72	0.4	9.48	697.4	1.4	164.7	17.1	-0.20	0.29	0.1	0.0	2.0	
July 5, 2020	9.50	670.2	0.00	5.1	9.50	700.1	1.38	16.9	9.50	665.1	0.36	0.5	9.52	703.4	1.3	102.8	16.3	-0.20	0.29	0.1	0.0	2.5	
July 6, 2020	9.45	669.4	0.00	11.8	9.40	700.1	1.78	95.9	9.50	668.7	1.00	0.9	9.52	703.5	0.6	36.3	17.5	-0.13	0.14	0.1	0.3	3.4	
July 7, 2020	9.49	670.7	0.03	29.7	9.50	700.2	1.97	23.9	9.50	669.8	1.30	1.0	9.45	692.2	1.6	184.0	17.0	0.14	-0.31	0.1	0.0	6.1	
July 8, 2020	9.52	670.8	0.00	1.4	9.51	701.2	0.79	14.3	9.50	687.1	0.02	0.2	9.54	704.4	1.0	52.9	16.1	-0.06	0.04	0.1	0.0	6.8	
July 9, 2020	9.50	669.7	0.00	3.3	9.33	700.5	1.12	49.6	9.50	666.2	0.31	1.8	9.50	699.7	0.7	46.1	17.4	-0.20	0.29	0.1	0.0	9.0	
July 10, 2020	9.49	670.3	0.00	1.1	9.51	700.6	0.68	7.1	9.50	674.4	0.03	1.1	9.50	701.7	0.8	57.1	17.4	-0.21	0.29	0.1	0.0	12.6	0
July 11, 2020	9.50	669.5	0.00	6.7	9.50	699.9	0.86	15.6	9.50	666.4	0.24	0.7	9.49	699.4	0.9	58.9	19.0	-0.22	0.30	0.1	0.0	12.9	
July 12, 2020	9.50	669.7	0.00	17.8	9.49	699.6	1.10	18.6	9.50	666.8	0.58	1.5	9.49	698.6	1.7	140.8	18.2	-0.22	0.33	0.1	0.0	14.4	
July 13, 2020	9.50	669.5	0.03	31.5	9.48	699.5	1.38	26.0	9.50	664.7	1.10	2.4	9.49	698.2	2.9	419.6	16.2	-0.22	0.34	0.1	0.0	13.5	
July 14, 2020	9.51	669.8	0.00	30.5	9.51	700.1	1.65	45.4	9.50	668.8	1.30	1.3	9.55	714.8	1.0	49.8	18.4	-0.22	0.33	0.1	0.0	19.1	
July 15, 2020	9.50	669.8	0.00	50.7	9.47	699.8	2.07	67.0	9.50	665.0	2.14	3.8	9.50	699.4	1.4	69.4	18.1	-0.22	0.33	0.1	0.0	35.2	
July 16, 2020	9.50	652.2	0.03	60.3	9.52	680.6	1.93	60.1	9.50	676.4	1.71	4.6	9.45	690.9	2.0	166.5	18.2	-0.22	0.34	0.1	0.0	22.2	
July 17, 2020	9.50	669.9	0.00	1.2	9.52	709.9	0.69	6.2	9.50	676.5	0.01	1.9	9.54	702.5	0.5	24.0	17.9	-0.22	0.34	0.1	0.0	9.9	0
July 18, 2020	9.50	669.6	0.00	4.3	9.48	699.7	0.81	5.1	9.50	668.1	0.13	1.6	9.50	700.9	0.6	28.9	18.1	-0.22	0.33	0.1	0.0	10.1	
July 19, 2020	9.48	669.5	0.02	18.4	9.48	699.7	1.34	6.0	9.50	666.1	0.60	1.3	9.47	695.3	1.4	121.9	18.1	-0.22	0.34	0.1	0.0	10.5	
July 20, 2020	9.50	670.2	0.00	10.5	9.50	700.2	1.66	9.2	9.50	662.3	0.95	3.3	9.52	718.1	1.6	116.8	18.8	-0.22	0.34	0.1	0.0	10.8	
July 21, 2020	9.49	669.5	0.00	24.6	9.48	699.1	2.41	11.5	9.50	670.5	1.27	4.1	9.51	701.6	1.1	53.9	19.3	-0.23	0.34	0.1	0.3	15.0	
July 22, 2020	9.50	670.6	0.03	30.4	9.49	700.7	3.01	15.3	9.50	669.4	1.27	3.7	9.58	699.6	2.4	170.7	19.4	-0.23	0.33	0.1	2.2	15.0	
July 23, 2020	9.51	669.6	0.06	44.3	9.48	698.7	3.28	26.0	9.50	670.8	1.77	1.3	9.47	694.2	2.4	247.4	18.9	-0.22	0.34	0.0	0.1	14.8	
July 24, 2020	9.52	670.3	0.17	35.3	9.51	700.4	2.21	93.5	9.50	672.2	0.65	11.7	9.55	721.7	0.9	49.8	17.0	-0.22	0.34	0.1	3.5	17.4	0
July 25, 2020	9.48	669.9	0.02	84.9	9.48	699.8	1.84	31.6	9.50	661.6	1.09	1.8	9.46	693.8	2.0	249.8	17.0	-0.22	0.33	0.1	0.0	19.7	
July 26, 2020	9.51	669.6	0.00	63.0	9.46	704.4	2.19	36.2	9.50	670.5	1.25	0.8	9.53	708.0	1.0	63.1	18.2	-0.23	0.34	0.1	2.7	32.1	
July 27, 2020	9.50	669.2	0.00	92.2	9.50	697.5	3.63	522.0	9.50	667.5	1.49	1.0	9.49	700.6	1.2	100.5	20.9	-0.23	0.33	0.1	4.4	46.0	
July 28, 2020	9.48	668.1	0.00	111.8	9.49	699.5	5.37	863.5	9.50	665.7	1.66	1.1	9.50	699.5	1.3	90.5	23.1	-0.24	0.32	0.1	5.6	44.4	
July 29, 2020	9.49	671.5	0.00	166.7	9.49	698.7	6.09	896.1	9.50	661.8	2.10	0.7	9.50	699.6	1.7	121.3	23.1	-0.23	0.32	0.1	4.9	70.6	
July 30, 2020	9.51	672.4	0.00	63.7	9.49	701.1	6.75	1002.2	9.50	663.3	2.26	0.4	9.49	699.9	1.5	94.0	22.6	-0.23	0.32	0.1	3.8	81.3	
July 31, 2020	9.52	669.8	0.00	43.5	9.52	699.8	5.90	797.2	9.50	622.2	2.61	65.2	9.49	640.7	1.9	231.3	22.2	-0.23	0.33	0.1	1.8	134.5	
Avg	9.50	669.4	0.01	34.2	9.49	699.7	2.24	157.9	9.50	667.4	0.98	3.9	9.50	699.4	1.3	110.5	18.7	-0.20	0.29	0.1	1.0	22.3	0
Min	9.45	652.2	0.00	0.0	9.33	680.6	0.68	5.1	9.50	622.2	0.00	0.0	9.45	640.7	0.3	22.9	16.1	-0.24	-0.31	0.0	0.0	0.0	0
Max	9.52	672.4	0.17	166.7	9.53	709.9	6.75	1002.2	9.50	687.1	2.61	65.2	9.58	721.7	2.9	419.6	23.1	0.14	0.34	0.1	5.6	134.5	0

Appendix D - Air Pollution Control System Data

Gold Bar Wastewater Treatment Plant
Daily Average Scrubber Report
August 2020

Date	East Scrubber				Fermenter Scrubber				West Scrubber				EPT Scrubber				GRF Scrubber				Grit 6/7 Building Scrubber	Screen 4-8 Building Scrubber	Dewatering Facility Scrubber
	pH	ORP (mV)	H_2S In (ppm)	H_2S Out (ppb)	pH	ORP (mV)	H_2S In (ppm)	H_2S Out (ppb)	pH	ORP (mV)	H_2S In (ppm)	H_2S Out (ppb)	pH	ORP (mV)	H2S In (ppm)	H2S Out (ppb)	Temperature In (°C)	Pressure In (kPa)	Pressure Out (kPa)	H_2S Out (ppm)	H_2S Out (ppb)	H_2S Out (ppb)	H_2S Out (ppb)
August 1, 2020	9.50	670.1	0.00	0.0	9.50	700.3	6.82	1066.7	9.50	647.5	2.45	0.5	9.51	700.4	2.1	145.5	23.1	-0.27	0.31	0.1	0.2	93.6	
August 2, 2020	9.50	670.1	0.00	0.0	9.50	700.7	7.44	1081.7	9.50	655.0	2.20	0.0	9.50	700.2	1.9	127.3	23.8	-0.23	0.32	0.1	0.9	63.8	
August 3, 2020	9.48	671.2	0.02	0.0	9.49	697.6	7.60	1295.8	9.50	645.9	2.15	5.3	9.43	623.1	4.2	431.7	21.1	-0.23	0.33	0.1	1.3	67.4	
August 4, 2020	9.52	669.2	0.00	0.0	9.51	704.9	4.06	463.0	9.50	667.3	0.36	0.0	9.57	722.0	0.8	40.3	19.3	-0.22	0.33	0.1	2.6	15.8	
August 5, 2020	9.50	668.7	0.00	0.1	9.50	701.1	4.57	842.5	9.50	645.7	2.28	0.0	9.49	698.9	1.2	63.2	21.0	-0.22	0.32	0.1	3.0	29.4	
August 6, 2020	9.49	670.6	0.00	0.0	9.48	696.5	5.97	902.9	9.50	644.8	2.47	0.0	9.50	700.3	1.7	74.2	22.3	-0.23	0.32	0.1	0.4	44.1	
August 7, 2020	9.51	670.5	0.00	0.0	9.50	707.1	5.27	549.7	9.49	660.5	2.06	2.8	9.48	695.4	4.1	580.5	17.5	-0.22	0.33	0.1	0.1	35.7	0
August 8, 2020	9.51	669.3	0.00	0.4	9.50	697.3	4.43	1559.1	9.50	640.5	2.32	0.0	9.53	704.9	1.6	103.2	15.6	-0.21	0.34	0.1	0.0	59.2	
August 9, 2020	9.49	667.6	0.00	0.0	9.50	700.1	5.52	1769.9	9.51	640.0	2.04	0.5	9.49	570.3	1.7	320.9	17.0	-0.22	0.33	0.1	0.0	62.3	
August 10, 2020	9.50	669.6	0.00	0.0	9.49	699.0	7.90	1999.6	9.51	623.0	2.28	2.1	9.50	667.3	1.7	103.4	18.1	-0.22	0.33	0.1	0.2	118.7	
August 11, 2020	9.46	668.7	0.03	0.6	9.50	699.4	8.82	2005.4	9.50	552.6	3.11	176.9	9.43	590.2	5.1	506.5	15.5	-0.21	0.34	0.1	0.1	211.7	
August 12, 2020	9.54	672.5	0.00	0.3	9.51	702.5	3.93	1136.4	9.51	571.1	0.66	11.4	9.56	705.4	2.5	327.8	15.3	-0.21	0.35	0.1	0.0	20.8	
August 13, 2020	9.50	669.6	0.00	0.4	9.49	699.5	4.00	974.9	9.50	666.8	2.57	1.1	9.49	698.8	1.8	155.6	16.3	-0.21	0.34	0.1	0.7	114.1	
August 14, 2020	9.50	669.8	0.00	0.4	9.50	699.8	4.70	1036.5	9.51	603.6	2.54	64.0	9.50	701.0	2.0	170.8	16.6	-0.22	0.34	0.1	1.5	178.7	0
August 15, 2020	9.49	669.7	0.00	0.4	9.49	699.5	6.43	1348.4	9.50	554.5	2.36	111.3	9.50	700.9	1.7	118.9	17.7	-0.22	0.34	0.1	2.5	173.9	
August 16, 2020	9.49	670.1	0.00	0.5	9.32	703.5	7.13	1304.2	9.50	654.6	2.49	1.3	9.50	699.7	1.9	137.4	19.7	-0.23	0.34	0.0	3.5	197.2	
August 17, 2020	9.50	669.6	0.00	0.6	9.33	699.3	7.79	1685.0	9.50	643.9	2.50	3.6	9.50	699.6	1.8	127.3	20.5	-0.23	0.33	0.1	4.1	195.0	
August 18, 2020	9.51	669.9	0.00	0.9	9.50	699.4	8.04	1306.0	9.50	638.0	3.24	4.4	9.50	699.5	2.2	165.1	21.4	-0.22	0.33	0.1	3.3	388.5	
August 19, 2020	9.49	669.7	0.00	0.9	9.17	706.6	9.41	1711.8	9.65	387.3	3.20	494.0	9.50	622.1	2.2	265.4	20.3	-0.23	0.33	0.1	0.0	314.3	
August 20, 2020	9.49	670.1	0.01	1.2	9.47	698.6	9.45	1813.7	9.94	475.8	3.37	607.4	9.42	582.3	4.1	556.5	19.3	-0.22	0.33	0.1	2.3	263.9	0
August 21, 2020	9.53	670.6	0.00	1.4	9.50	703.0	6.44	1069.1	9.55	580.5	2.15	262.1	9.50	729.6	2.6	140.5	18.7	-0.22	0.34	0.1	5.5	108.3	
August 22, 2020	9.46	665.5	0.06	1.4	9.50	699.3	6.11	1815.2	9.51	697.0	2.20	1.2	9.51	701.8	3.0	255.9	17.4	-0.22	0.34	0.1	5.5	237.3	
August 23, 2020	9.49	669.2	0.11	1.4	9.49	699.4	7.03	1736.7	9.50	703.5	2.23	0.9	9.50	700.1	2.7	286.9	16.4	-0.22	0.35	0.1	0.9	223.9	
August 24, 2020	9.49	669.1	0.22	1.5	9.50	699.2	7.47	1375.7	9.67	571.7	2.43	241.5	9.47	610.6	4.4	433.8	16.9	-0.22	0.34	0.1	2.2	140.7	
August 25, 2020	9.50	667.2	0.14	1.9	9.49	700.2	6.59	1124.3	9.52	619.6	1.97	106.5	9.53	668.3	2.5	273.9	15.8	-0.21	0.35	0.1	1.8	288.5	
August 26, 2020	9.53	675.7	0.09	0.5	9.49	698.8	7.24	1069.7	9.50	571.0	1.84	118.9	9.48	582.3	3.6	591.0	16.0	-0.21	0.34	0.1	1.6	168.0	
August 27, 2020	9.50	675.3	0.39	10.1	9.53	707.5	3.58	300.9	9.50	691.2	2.46	22.7	9.51	704.6	2.0	732.3	15.7	-0.21	0.35	0.1	1.1	304.9	0
August 28, 2020	9.48	664.9	0.38	11.7	9.48	699.7	5.11	241.7	9.50	673.3	2.89	6.8	9.50	699.4	2.3	2384.5	15.7	-0.22	0.35	0.1	2.5	395.4	
August 29, 2020	9.53	674.6	0.36	10.2	9.50	700.8	3.99	60.2	9.50	664.8	2.83	3.7	9.51	700.0	2.7	2384.3	15.2	-0.22	0.33	0.1	4.4	525.5	
August 30, 2020	9.49	666.5	0.32	10.4	9.50	699.9	3.26	63.8	9.50	674.9	2.57	7.6	9.50	699.4	2.5	2364.9	13.1	-0.22	0.33	0.1	0.3	369.1	
August 31, 2020	9.49	669.6	0.62	12.5	9.50	703.2	3.83	123.7	9.50	647.3	3.08	15.0	9.50	699.5	2.7	2384.7	12.7	-0.21	0.34	0.1	0.3	904.5	
Avg	9.50	669.8	0.09	2.3	9.48	700.8	6.13	1123.7	9.53	623.0	2.37	73.3	9.50	676.7	2.5	540.5	17.9	-0.22	0.34	0.1	1.7	203.7	0
Min	9.46	664.9	0.00	0.0	9.17	696.5	3.26	60.2	9.49	387.3	0.36	0.0	9.42	570.3	0.8	40.3	12.7	-0.27	0.31	0.0	0.0	15.8	0
Max	9.54	675.7	0.62	12.5	9.53	707.5	9.45	2005.4	9.94	703.5	3.37	607.4	9.57	729.6	5.1	2384.7	23.8	-0.21	0.35	0.1	5.5	904.5	0

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Date	East Scrubber				Fermenter Scrubber				West Scrubber				EPT Scrubber				GRF Scrubber				Grit 6/7 Building Scrubber	Screen 4-8 Building Scrubber	Dewatering Facility Scrubber
	pH	ORP (mV)	H_2S In (ppm)	H_2S Out (ppb)	pH	ORP (mV)	H_2S In (ppm)	H_2S Out (ppb)	pH	ORP (mV)	H_2S In (ppm)	H_2S Out (ppb)	pH	ORP (mV)	H2S In (ppm)	H2S Out (ppb)	Temperature In (°C)	Pressure In (kPa)	Pressure Out (kPa)	H_2S Out (ppm)	H_2S Out (ppb)	H_2S Out (ppb)	H_2S Out (ppb)
September 1, 2020	9.50	670.3	0.76	13.8	9.50	697.5	4.25	362.0	9.50	643.9	3.47	19.3	9.50	657.7	3.1	1969.4	16.7	-0.23	0.33	0.1	1.7	886.9	
September 2, 2020	9.50	671.1	0.64	11.9	9.51	698.5	3.94	167.1	9.50	693.7	3.46	26.5	9.51	618.5	3.1	985.5	14.8	-0.22	0.34	0.1	1.1	768.9	
September 3, 2020	9.53	677.4	0.52	11.2	9.49	699.3	3.99	95.4	9.50	625.1	3.93	14.4	9.50	697.8	2.8	1411.7	13.8	-0.22	0.35	0.1	0.7	1226.0	
September 4, 2020	9.50	670.0	0.37	13.0	9.49	703.2	4.38	147.1	9.50	667.6	4.32	25.5	9.50	700.1	2.7	1235.7	15.3	-0.23	0.35	0.1	1.3	1140.5	0
September 5, 2020	9.51	668.2	0.34	12.4	9.51	699.3	3.63	255.1	9.50	657.3	4.06	17.5	9.51	700.3	3.0	1316.4	15.6	-0.22	0.34	0.1	0.7	775.7	
September 6, 2020	9.51	672.2	0.40	10.5	9.49	699.3	2.97	133.0	9.50	663.4	3.58	27.1	9.50	699.8	2.8	1367.7	14.0	-0.22	0.35	0.1	0.3	780.9	
September 7, 2020	9.48	667.1	0.34	8.4	9.48	699.9	2.36	55.0	9.49	681.6	3.51	25.6	9.48	694.3	3.5	1628.7	10.8	-0.22	0.36	0.1	0.0	403.5	
September 8, 2020	9.52	672.4	0.21	11.3	9.47	695.2	3.73	457.1	9.50	648.5	3.94	41.1	9.51	701.7	2.5	1165.6	12.7	-0.22	0.36	0.1	0.6	989.7	
September 9, 2020	9.49	669.9	0.32	15.2	9.30	705.1	4.48	596.5	9.50	625.4	4.83	105.1	9.49	699.9	2.8	1716.5	14.2	-0.22	0.35	0.1	2.0	1246.4	
September 10, 2020	9.50	678.4	0.06	14.3	9.06	706.5	5.77	1474.6	9.53	649.0	4.33	61.9	9.51	704.9	2.9	1570.2	17.0	-0.22	0.34	0.1	3.4	1120.3	
September 11, 2020	9.50	670.3	0.00	8.6	8.92	696.0	8.53	1694.3	9.43	648.8	4.97	183.1	9.51	699.8	3.1	1630.2	15.9	-0.22	0.34	0.1	3.7	742.7	0
September 12, 2020	9.51	669.6	0.00	6.8	9.51	703.7	9.25	1918.7	9.50	654.3	4.13	137.2	9.50	698.8	3.5	1992.7	12.3	-0.21	0.35	0.1	2.0	750.5	
September 13, 2020	9.50	672.7	0.00	17.6	9.51	699.6	8.71	1831.9	9.50	645.5	4.06	160.8	9.50	698.6	3.1	2129.9	11.5	-0.22	0.35	0.1	1.6	588.3	
September 14, 2020	9.50	669.9	0.01	6.3	9.49	698.9	10.15	1047.7	9.51	645.7	5.29	359.1	9.52	715.3	12.6	820.4	10.7	-0.21	0.35	0.1	1.3	904.3	
September 15, 2020	9.51	671.0	0.00	3.0	9.51	700.3	9.46	0.0	10.29	638.5	5.06	1552.4	9.16	666.0	11.2	999.7	10.5	-0.22	0.36	0.1	2.9	1031.0	
September 16, 2020	9.49	670.1	0.00	7.4	9.50	699.7	9.17	0.0	10.00	639.7	4.85	1236.9	9.50	699.9	2.4	1908.2	15.0	-0.21	0.34	0.1	1.7	1187.6	
September 17, 2020	9.44	658.4	0.54	17.2	9.50	699.8	10.08	0.0	9.50	653.4	3.34	4.6	9.50	698.9	3.1	1957.0	12.9	-0.22	0.35	0.1	2.9	905.9	
September 18, 2020	9.54	680.6	0.22	5.2	9.49	700.3	9.37	294.4	9.50	631.9	4.59	12.9	9.50	696.9	3.0	1898.3	14.2	-0.23	0.34	0.1	5.1	1230.2	0
September 19, 2020	9.51	669.4	0.31	3.2	9.50	699.7	6.31	304.6	9.50	660.6	4.75	19.4	9.51	698.9	3.4	1688.2	13.6	-0.22	0.35	0.1	4.4	1469.8	
September 20, 2020	9.50	670.0	0.41	4.0	9.52	686.2	5.93	374.5	9.50	654.9	4.00	6.5	9.50	700.6	3.3	1667.7	15.6	-0.23	0.34	0.1	4.3	1014.5	
September 21, 2020	9.49	678.5	0.46	4.5	9.47	699.7	4.25	484.2	10.19	603.3	4.25	564.2	9.50	516.4	3.0	1989.9	13.2	-0.21	0.35	0.1	4.1	367.1	
September 22, 2020	9.49	668.5	0.76	5.4	9.46	702.6	4.83	859.2	9.50	650.3	4.24	0.0	9.50	660.6	2.9	1650.7	14.1	-0.22	0.35	0.1	2.4	788.8	
September 23, 2020	9.51	671.9	0.58	6.1	9.52	702.7	4.02	405.1	9.50	656.1	4.13	0.0	9.50	700.0	3.0	1483.3	15.3	-0.22	0.33	0.0	2.0	598.3	
September 24, 2020	9.50	670.0	0.52	4.8	9.49	699.1	5.24	1146.7	9.50	646.7	4.59	23.9	9.50	698.7	3.0	1486.9	16.0	-0.22	0.32	0.1	1.8	937.6	0
September 25, 2020	9.50	670.2	0.54	5.1	9.49	699.9	4.57	1358.9	9.50	645.8	5.19	30.6	9.50	698.8	3.5	1620.2	13.9	-0.22	0.33	0.1	1.8	1426.8	
September 26, 2020	9.50	669.7	0.55	4.8	9.50	700.1	4.01	1035.1	9.50	646.9	4.52	24.4	9.50	697.0	3.8	1498.9	13.8	-0.22	0.33	0.1	1.1	1399.4	
September 27, 2020	9.50	670.7	0.52	4.7	9.49	683.5	4.30	1079.0	9.50	651.4	3.97	10.0	9.50	699.4	3.0	1442.4	17.4	-0.21	0.34	0.1	4.9	1162.6	
September 28, 2020	9.49	670.0	0.49	7.6	9.46	721.3	5.84	1129.6	9.50	653.2	3.82	0.1	9.50	698.4	2.9	1095.1	20.1	-0.22	0.34	0.1	6.7	870.0	
September 29, 2020	9.51	669.7	0.28	6.5	9.53	697.5	8.19	1920.5	9.50	671.8	3.96	7.1	9.50	700.1	2.7	1217.5	20.0	-0.22	0.33	0.1	10.2	873.4	
September 30, 2020	9.51	670.9	0.01	4.4	9.50	699.8	9.67	1721.7	9.49	657.3	3.46	23.5	9.51	558.2	2.3	1299.8	20.1	-0.22	0.34	0.1	7.5	870.1	
Avg	9.50	671.0	0.34	8.5	9.46	699.8	6.05	745.0	9.56	650.4	4.22	157.4	9.49	682.5	3.6	1528.1	14.7	-0.22	0.34	0.1	2.8	948.6	0
Min	9.44	658.4	0.00	3.0	8.92	683.5	2.36	0.0	9.43	603.3	3.34	0.0	9.16	516.4	2.3	820.4	10.5	-0.23	0.32	0.0	0.0	367.1	0
Max	9.54	680.6	0.76	17.6	9.53	721.3	10.15	1920.5	10.29	693.7	5.29	1552.4	9.52	715.3	12.6	2129.9	20.1	-0.21	0.36	0.1	10.2	1469.8	0

Appendix D - Air Pollution Control System Data

Gold Bar Wastewater Treatment Plant
Daily Average Scrubber Report
October 2020

Date	East Scrubber				Fermenter Scrubber				West Scrubber				EPT Scrubber				GRF Scrubber				Grit 6/7 Building Scrubber	Screen 4-8 Building Scrubber	Dewatering Facility Scrubber
	pH	ORP (mV)	H_2S In (ppm)	H_2S Out (ppb)	pH	ORP (mV)	H_2S In (ppm)	H_2S Out (ppb)	pH	ORP (mV)	H_2S In (ppm)	H_2S Out (ppb)	pH	ORP (mV)	H2S In (ppm)	H2S Out (ppb)	Temperature In (°C)	Pressure In (kPa)	Pressure Out (kPa)	H_2S Out (ppm)	H_2S Out (ppb)	H_2S Out (ppb)	H_2S Out (ppb)
October 1, 2020	9.45	660.2	0.58	12.9	9.49	699.5	10.39	2032.0	9.67	688.5	1.97	46.7	9.59	552.6	3.6	1163.7	19.9	-0.21	0.34	0.1	2.0	715.2	0
October 2, 2020	9.49	669.3	0.95	22.0	9.50	700.0	12.28	2049.9	9.50	662.2	2.19	0.3	9.50	700.1	3.0	1231.4	19.9	-0.22	0.33	0.1	1.4	900.8	
October 3, 2020	9.49	667.0	1.19	23.4	9.50	699.6	12.36	1862.1	9.49	664.1	2.48	0.2	9.50	699.2	3.6	1227.5	19.8	-0.21	0.34	0.1	1.2	1144.9	
October 4, 2020	9.50	669.2	1.27	21.5	9.50	699.6	14.19	1972.8	9.51	672.7	2.28	0.0	9.50	667.7	3.6	1124.6	19.5	-0.21	0.34	0.1	0.5	1337.4	
October 5, 2020	9.52	670.0	1.11	14.2	9.51	700.8	14.34	1975.5	9.51	659.3	2.08	0.0	9.51	703.5	3.1	892.9	19.5	-0.21	0.33	0.1	0.0	1166.2	
October 6, 2020	9.50	670.6	1.20	23.1	9.51	700.3	14.37	1993.5	9.50	666.3	1.80	0.7	9.50	698.8	3.3	1005.8	19.7	-0.21	0.33	0.1	0.0	789.8	
October 7, 2020	9.50	668.2	1.03	25.3	9.50	699.8	14.85	2061.5	9.50	672.6	1.82	0.0	9.50	700.0	2.8	969.1	19.9	-0.21	0.34	0.1	0.0	806.9	
October 8, 2020	9.49	668.9	1.17	56.3	9.49	698.5	0.83	1511.6	9.50	665.2	2.26	3.2	9.50	699.8	4.2	1589.2	19.9	-0.21	0.33	0.1	0.0	1023.4	0
October 9, 2020	9.51	671.2	0.91	42.8	9.51	701.2	0.41	184.6	9.49	671.4	4.62	9.0	9.50	699.9	3.3	1194.2	20.0	-0.20	0.33	0.1	0.0	594.8	
October 10, 2020	9.49	668.5	1.13	41.7	9.50	699.3	0.55	328.5	9.50	651.2	5.49	184.5	9.50	693.0	3.8	1256.6	19.9	-0.20	0.33	0.1	0.0	258.2	
October 11, 2020	9.52	677.2	0.49	32.3	9.51	701.3	0.07	136.0	9.51	687.9	4.14	200.9	9.51	654.4	4.1	731.2	20.0	-0.20	0.32	0.1	0.0	102.6	
October 12, 2020	9.50	669.4	1.00	26.6	9.50	699.5	0.13	167.7	9.50	642.4	3.91	151.3	9.50	699.5	3.5	1218.2	20.0	-0.20	0.33	0.1	0.0	188.2	
October 13, 2020	9.50	672.1	0.81	16.0	9.50	699.8	0.17	135.4	9.50	676.3	3.12	0.0	9.50	702.7	3.5	874.2	20.1	-0.20	0.34	0.1	0.0	59.9	
October 14, 2020	9.50	668.2	0.87	19.6	9.50	686.9	0.02	203.8	9.50	654.9	3.06	12.4	9.50	699.4	4.5	774.8	20.2	-0.20	0.34	0.1	0.0	62.3	
October 15, 2020	9.51	669.8	1.03	4.7	9.50	699.7	0.03	149.9	9.58	682.3	2.97	8.4	9.50	707.7	3.9	445.2	20.1	-0.20	0.34	0.1	0.0	52.1	0
October 16, 2020	9.50	670.7	1.34	20.8	9.51	683.3	0.97	350.3	9.50	665.3	3.06	21.0	9.50	699.6	4.6	598.2	20.2	-0.19	0.34	0.1	0.0	74.3	
October 17, 2020	9.52	673.0	0.59	39.5	9.50	700.0	0.02	576.1	9.50	667.5	2.53	4.0	9.50	700.4	4.6	609.3	20.4	-0.18	0.34	0.1	0.0	37.8	
October 18, 2020	9.50	669.1	0.44	38.5	9.49	699.3	0.00	810.6	9.50	673.2	1.98	0.1	9.50	700.8	4.5	586.5	20.3	-0.18	0.34	0.0	0.0	25.9	
October 19, 2020	9.51	672.4	0.45	36.8	9.50	699.5	0.06	902.1	9.50	669.2	1.92	1.5	9.50	700.4	3.3	372.4	20.5	-0.19	0.34	0.1	0.0	34.8	
October 20, 2020	9.51	671.7	0.46	25.3	9.50	700.2	0.03	699.7	9.50	665.8	2.32	10.8	9.50	700.5	3.6	413.8	20.4	-0.19	0.34	0.1	0.0	32.9	
October 21, 2020	9.38	646.4	1.38	276.0	9.50	700.0	0.02	499.3	9.50	666.9	2.26	11.2	9.51	703.7	3.4	397.9	20.3	-0.19	0.33	0.1	0.0	47.0	
October 22, 2020	9.52	674.6	2.07	110.9	9.49	697.9	0.06	387.5	9.50	665.7	3.05	18.2	9.48	696.9	2.8	226.7	20.3	-0.18	0.34	0.1	0.0	31.3	0
October 23, 2020	9.44	685.3	0.69	26.0	9.40	700.7	0.08	316.9	9.50	655.0	3.40	8.5	9.51	702.6	3.5	257.2	20.3	-0.19	0.34	0.1	0.0	64.3	
October 24, 2020	9.52	674.2	0.60	80.9	9.51	700.2	0.05	271.3	9.50	689.4	2.75	1.6	9.50	701.1	3.4	257.1	20.3	-0.19	0.34	0.1	0.0	58.2	
October 25, 2020	9.51	670.3	1.37	3.8	9.50	700.1	0.02	305.2	9.50	671.1	2.55	2.4	9.50	700.5	3.5	271.7	20.4	-0.18	0.35	0.1	0.0	49.5	
October 26, 2020	9.47	663.6	0.43	10.0	9.50	700.4	0.02	333.5	9.50	651.6	3.23	17.4	9.50	698.7	3.8	260.0	20.3	-0.19	0.34	0.1	0.0	101.8	
October 27, 2020	9.54	679.0	0.17	1.8	9.50	699.6	0.00	474.8	9.50	659.2	3.56	41.2	9.51	702.6	3.5	201.6	20.2	-0.20	0.33	0.1	0.0	64.5	
October 28, 2020	9.48	665.8	0.11	2.7	9.50	700.1	0.00	1381.5	9.50	650.0	3.60	14.4	9.49	700.3	3.8	302.9	20.2	-0.20	0.34	0.1	0.0	90.6	
October 29, 2020	9.50	670.2	0.19	1.8	9.50	699.8	0.02	1825.3	9.52	654.9	2.99	50.6	9.50	700.8	3.1	178.0	20.2	-0.20	0.33	0.1	0.0	97.6	0
October 30, 2020	9.50	674.3	0.31	6.6	9.50	699.9	0.03	1954.2	9.37	673.5	3.23	264.2	9.46	696.5	5.4	499.4	20.2	-0.19	0.33	0.1	0.0	114.5	
October 31, 2020	9.52	669.7	0.00	0.0	9.50	699.8	0.00	2061.6	9.50	670.9	3.32	39.4	9.51	710.6	3.6	218.3	20.3	-0.19	0.34	0.1	0.0	86.9	
Avg	9.50	670.0	0.82	34.3	9.50	698.9	3.11	965.0	9.50	666.7	2.90	36.3	9.50	693.4	3.7	688.7	20.1	-0.20	0.34	0.1	0.2	329.5	0
Min	9.38	646.4	0.00	0.0	9.40	683.3	0.00	135.4	9.37	642.4	1.80	0.0	9.46	552.6	2.8	178.0	19.5	-0.22	0.32	0.0	0.0	25.9	0
Max	9.54	685.3	2.07	276.0	9.51	701.3	14.85	2061.6	9.67	689.4	5.49	264.2	9.59	710.6	5.4	1589.2	20.5	-0.18	0.35	0.1	2.0	1337.4	0

Appendix D - Air Pollution Control System Data

Gold Bar Wastewater Treatment Plant
Daily Average Scrubber Report
November 2020

Date	East Scrubber				Fermenter Scrubber				West Scrubber				EPT Scrubber				GRF Scrubber				Grit 6/7 Building Scrubber	Screen 4-8 Building Scrubber	Dewatering Facility Scrubber
	pH	ORP (mV)	H_2S In (ppm)	H_2S Out (ppb)	pH	ORP (mV)	H_2S In (ppm)	H_2S Out (ppb)	pH	ORP (mV)	H_2S In (ppm)	H_2S Out (ppb)	pH	ORP (mV)	H2S In (ppm)	H2S Out (ppb)	Temperature In (°C)	Pressure In (kPa)	Pressure Out (kPa)	H_2S Out (ppm)	H_2S Out (ppb)	H_2S Out (ppb)	H_2S Out (ppb)
November 1, 2020	9.50	669.5	0.00	0.0	9.50	699.5	0.00	2060.9	9.48	681.0	3.75	9.6	9.50	701.5	4.0	254.8	20.1	-0.20	0.33	0.1	0.0	119.2	
November 2, 2020	9.50	670.3	0.00	0.0	9.49	699.8	0.00	2058.7	9.51	669.0	3.94	45.6	9.50	700.5	3.3	180.6	20.1	-0.21	0.33	0.1	0.0	134.5	
November 3, 2020	9.50	670.2	0.00	0.0	9.50	699.7	0.03	2061.7	9.50	675.5	3.71	7.7	9.50	701.3	3.5	194.9	20.2	-0.20	0.32	0.1	0.0	105.6	
November 4, 2020	9.51	669.8	0.00	0.0	9.50	699.2	0.01	2061.2	9.50	677.6	3.66	14.3	9.51	702.5	3.8	239.0	20.2	-0.20	0.33	0.1	0.0	113.7	
November 5, 2020	9.51	670.2	0.24	23.7	9.50	692.3	0.00	1123.2	9.50	677.2	3.43	4.3	9.46	674.7	6.5	511.2	20.2	-0.20	0.33	0.1	0.0	112.9	0
November 6, 2020	9.67	716.0	0.03	0.0	9.52	702.3	0.00	1443.8	9.54	707.2	2.58	299.9	9.57	707.3	3.0	80.5	20.5	-0.21	0.11	0.1	0.0	70.1	
November 7, 2020	9.48	667.2	0.18	6.1	9.49	699.5	0.02	2061.7	9.51	686.0	2.92	0.0	9.50	702.6	4.4	283.3	21.6	-0.23	-0.13	0.1	0.0	83.8	
November 8, 2020	9.51	670.5	0.07	6.1	9.50	700.0	0.03	1325.0	9.48	640.2	2.51	61.0	9.50	700.5	3.6	229.8	21.7	-0.23	-0.12	0.1	0.0	36.3	
November 9, 2020	9.49	668.2	0.14	9.7	9.49	699.3	0.02	76.9	9.53	706.0	2.99	0.0	9.50	700.2	3.9	274.4	21.9	-0.22	-0.11	0.1	0.0	66.1	
November 10, 2020	9.50	671.0	0.28	8.7	9.50	700.3	0.00	45.6	9.50	680.4	3.27	0.0	9.50	700.9	4.2	297.2	21.4	-0.23	-0.13	0.1	0.0	72.0	
November 11, 2020	9.51	668.7	0.22	10.6	9.50	699.6	0.02	18.0	9.50	693.0	2.68	7.8	9.50	698.7	3.5	120.6	21.5	-0.22	-0.12	0.1	0.0	54.8	
November 12, 2020	9.49	669.5	0.32	11.7	9.50	699.5	0.05	20.6	9.50	686.8	2.82	0.1	9.50	699.4	0.0	6.0	21.5	-0.22	-0.12	0.1	0.0	71.4	
November 13, 2020	9.49	669.2	0.48	9.6	9.50	699.7	0.04	37.0	9.49	677.8	3.46	1.8	9.50	697.2	0.0	9.2	21.5	-0.21	-0.13	0.1	0.0	105.4	0
November 14, 2020	9.51	671.9	0.41	2.4	9.50	699.9	0.01	37.1	9.50	683.3	3.35	5.7	9.50	697.6	0.0	10.5	21.3	-0.22	-0.13	0.1	0.0	89.2	
November 15, 2020	9.50	675.4	0.27	1.1	9.50	688.7	0.02	40.2	9.51	686.3	2.82	37.4	9.51	699.9	0.0	8.6	21.6	-0.22	-0.13	0.1	0.0	47.1	
November 16, 2020	9.50	670.1	0.41	2.6	9.50	699.3	4.17	113.0	9.50	692.9	3.11	8.4	9.50	695.4	1.6	58.8	21.6	-0.22	-0.12	0.1	0.0	38.4	
November 17, 2020	9.49	669.1	0.35	3.4	9.50	699.3	8.98	265.9	9.49	694.5	2.83	11.8	9.50	692.4	2.8	168.5	21.3	-0.22	-0.13	0.0	0.0	227.2	
November 18, 2020	9.50	671.0	0.41	3.1	9.50	701.1	8.53	228.5	9.50	685.3	3.44	29.8	9.50	698.7	3.0	200.2	21.3	-0.22	-0.14	0.1	0.0	322.7	0
November 19, 2020	9.51	671.0	0.30	3.7	9.50	700.9	8.14	301.3	9.49	699.0	0.90	39.4	9.50	700.7	1.9	109.6	20.9	-0.21	-0.12	0.1	0.0	262.1	
November 20, 2020	9.49	668.8	0.24	3.7	9.50	699.7	7.95	375.9	9.47	695.9	0.35	46.7	9.50	699.7	1.8	98.3	21.1	-0.21	-0.12	0.1	0.0	288.5	
November 21, 2020	9.50	670.3	0.35	0.5	9.50	699.2	8.58	452.6	9.50	693.1	0.50	0.0	9.50	694.2	2.1	127.5	20.9	-0.22	-0.13	0.1	0.0	338.4	
November 22, 2020	9.50	670.5	0.18	1.7	9.50	699.8	10.06	405.7	9.50	696.8	0.40	5.1	9.50	701.1	1.7	72.3	21.1	-0.22	-0.12	0.1	0.0	274.9	
November 23, 2020	9.49	668.5	0.25	4.1	9.50	699.4	10.47	313.0	9.49	690.8	0.49	0.7	9.50	699.6	1.8	78.8	21.1	-0.22	-0.12	0.1	0.0	296.2	
November 24, 2020	9.50	670.4	0.40	6.4	9.50	700.0	10.52	338.4	9.50	689.2	0.59	21.2	9.50	701.8	2.6	158.2	21.1	-0.22	-0.12	0.1	0.0	346.3	
November 25, 2020	9.51	671.3	0.52	1.9	9.50	699.9	11.73	260.4	9.50	702.2	1.78	3.5	9.50	700.3	1.4	42.1	20.9	-0.23	-0.13	0.1	0.0	219.2	
November 26, 2020	9.50	668.5	0.49	2.0	9.50	700.4	10.14	621.7	9.39	691.7	2.16	33.1	9.50	699.7	1.8	73.4	21.1	-0.22	-0.13	0.1	0.0	195.9	0
November 27, 2020	9.50	670.3	0.32	4.5	9.51	700.5	9.98	495.7	9.49	687.6	2.66	5.1	9.50	694.2	1.8	65.1	20.7	-0.23	-0.14	0.1	0.0	221.5	
November 28, 2020	9.50	669.4	0.50	14.3	9.50	699.7	8.33	328.2	9.50	684.4	3.30	18.1	9.50	700.0	2.6	155.1	20.8	-0.23	-0.13	0.1	0.2	235.2	
November 29, 2020	9.50	671.0	0.70	20.3	9.50	699.8	6.75	132.1	9.50	694.1	3.33	10.7	9.50	700.1	2.3	182.5	20.9	-0.22	-0.12	0.1	3.5	240.2	
November 30, 2020	9.50	670.1	0.59	14.5	9.50	700.9	5.84	0.0	9.50	689.7	4.15	1.3	9.50	698.3	1.7	377.2	20.8	-0.22	-0.13	0.1	0.0	563.2	
Avg	9.51	671.6	0.29	5.9	9.50	699.3	4.35	636.8	9.50	687.2	2.60	24.3	9.50	698.7	2.5	155.6	21.0	-0.22	-0.04	0.1	0.1	178.4	0
Min	9.48	667.2	0.00	0.0	9.49	688.7	0.00	0.0	9.39	640.2	0.35	0.0	9.46	674.7	0.0	6.0	20.1	-0.23	-0.14	0.0	0.0	36.3	0
Max	9.67	716.0	0.70	23.7	9.52	702.3	11.73	2061.7	9.54	707.2	4.15	299.9	9.57	707.3	6.5	511.2	21.9	-0.20	0.33	0.1	3.5	563.2	0

Appendix D - Air Pollution Control System Data

Gold Bar Wastewater Treatment Plant
Daily Average Scrubber Report
December 2020

Date	East Scrubber				Fermenter Scrubber				West Scrubber				EPT Scrubber				GRF Scrubber				Grit 6/7 Building Scrubber	Screen 4-8 Building Scrubber	Dewatering Facility Scrubber
	pH	ORP (mV)	H_2S In (ppm)	H_2S Out (ppb)	pH	ORP (mV)	H_2S In (ppm)	H_2S Out (ppb)	pH	ORP (mV)	H_2S In (ppm)	H_2S Out (ppb)	pH	ORP (mV)	H2S In (ppm)	H2S Out (ppb)	Temperature In (°C)	Pressure In (kPa)	Pressure Out (kPa)	H_2S Out (ppm)	H_2S Out (ppb)	H_2S Out (ppb)	H_2S Out (ppb)
December 1, 2020	9.50	670.1	0.58	14.7	9.49	698.8	5.54	0.0	9.49	693.1	3.99	2.6	9.50	700.1	1.5	231.8	20.7	-0.23	-0.13	0.1	0.0	656.6	
December 2, 2020	9.50	670.9	0.39	12.6	9.49	698.9	5.11	0.0	9.50	701.1	3.48	1.8	9.50	701.1	1.4	219.0	20.4	-0.23	-0.13	0.1	0.0	403.7	
December 3, 2020	9.41	667.9	0.58	14.9	9.44	704.9	5.33	0.0	9.48	685.4	4.20	0.0	9.49	699.0	1.7	328.6	20.8	-0.23	-0.13	0.1	0.0	592.4	
December 4, 2020	9.50	671.7	0.46	8.5	9.50	699.8	5.46	0.0	9.50	692.0	3.86	0.0	9.50	700.3	1.5	152.7	20.5	-0.23	-0.13	0.1	0.0	402.2	0
December 5, 2020	9.49	665.1	0.72	11.6	9.50	699.1	5.47	0.0	9.51	689.4	3.87	0.0	9.50	698.8	1.8	242.0	20.9	-0.23	-0.13	0.1	0.0	451.4	
December 6, 2020	9.51	673.5	0.77	10.2	9.50	700.0	5.84	0.0	9.49	713.0	4.32	0.0	9.50	699.4	1.7	224.1	20.8	-0.22	-0.13	0.1	0.0	547.9	
December 7, 2020	9.50	670.9	0.89	10.9	9.50	699.3	5.20	0.0	9.51	685.6	4.81	2.0	9.50	697.2	2.3	389.3	20.4	-0.22	-0.13	0.1	0.0	582.2	
December 8, 2020	9.52	671.9	0.26	7.1	9.50	701.3	6.17	14.1	9.50	718.1	2.17	0.0	9.50	700.6	0.6	47.4	20.3	-0.23	-0.13	0.1	0.0	184.4	
December 9, 2020	9.50	668.6	0.34	8.1	9.50	699.6	5.31	32.6	9.50	688.3	2.54	0.0	9.50	699.3	1.1	72.7	20.6	-0.23	-0.13	0.1	0.0	215.5	0
December 10, 2020	9.49	668.3	0.51	8.8	9.50	700.1	4.96	20.4	9.49	689.6	3.44	0.0	9.50	699.9	1.4	121.9	20.7	-0.22	-0.13	0.1	0.0	334.7	
December 11, 2020	9.51	671.3	0.50	7.7	9.51	701.8	4.27	17.5	9.51	703.2	3.26	0.0	9.51	700.4	1.5	190.1	21.1	-0.21	-0.13	0.1	0.0	427.1	
December 12, 2020	9.50	669.8	0.49	8.9	9.51	700.0	4.16	37.7	9.50	689.2	3.34	0.0	9.50	697.6	1.5	167.3	20.9	-0.21	-0.13	0.1	0.0	386.3	
December 13, 2020	9.51	674.6	0.43	6.1	9.51	705.1	4.03	50.9	9.49	708.8	2.86	0.0	9.51	710.7	1.3	146.3	20.6	-0.20	-0.13	0.1	0.0	410.9	
December 14, 2020	9.49	669.3	0.61	5.3	9.50	699.8	3.35	0.0	9.50	700.8	2.91	0.0	9.50	700.0	1.2	207.2	20.7	-0.21	-0.13	0.1	0.0	458.1	
December 15, 2020	9.49	669.1	0.58	2.7	9.49	699.7	14.29	376.7	9.49	691.3	3.72	0.0	9.50	699.7	1.5	274.0	20.7	-0.20	-0.13	0.1	0.0	257.1	0
December 16, 2020	9.51	670.9	0.45	0.0	9.50	699.7	23.22	627.3	9.48	694.5	4.08	7.6	9.50	700.2	1.6	275.6	20.8	-0.21	-0.13	0.1	0.0	0.0	
December 17, 2020	9.50	669.8	0.56	0.0	9.51	700.5	23.14	607.7	9.52	692.7	4.60	1.4	9.50	699.8	1.9	387.9	20.8	-0.21	-0.13	0.1	0.0	0.0	
December 18, 2020	9.50	669.6	0.52	3.9	9.49	699.6	13.31	215.2	9.50	693.2	4.22	0.2	9.50	700.0	1.5	292.8	20.9	-0.20	-0.13	0.1	0.0	0.0	
December 19, 2020	9.49	668.5	0.57	6.5	9.50	699.6	5.98	0.6	9.50	675.4	5.40	0.9	9.50	699.8	1.7	255.0	20.5	-0.22	-0.14	0.1	0.0	0.0	
December 20, 2020	9.50	670.9	0.48	6.0	9.50	700.0	6.07	0.6	9.50	680.3	5.46	3.6	9.50	700.1	1.6	242.9	20.6	-0.22	-0.14	0.0	0.0	0.0	
December 21, 2020	9.50	670.0	0.45	6.9	9.50	699.8	1.73	0.6	9.50	690.8	4.79	0.0	9.50	700.2	1.3	149.2	20.9	-0.22	-0.14	0.1	0.0	0.0	0
December 22, 2020	9.50	669.7	0.71	7.9	9.50	693.1	0.00	0.5	9.83	625.9	6.08	373.5	9.52	699.1	1.8	288.0	21.0	-0.21	-0.14	0.1	0.0	145.8	
December 23, 2020	9.50	668.8	0.54	8.4	9.50	699.6	0.00	0.7	9.49	669.3	6.21	0.0	9.50	699.8	1.6	254.5	20.8	-0.22	-0.13	0.1	0.0	422.2	
December 24, 2020	9.50	671.6	0.46	6.9	9.50	699.7	0.00	0.6	9.50	693.2	6.02	20.6	9.50	700.3	1.6	228.1	20.8	-0.23	-0.13	0.1	0.0	377.2	
December 25, 2020	9.51	670.2	0.22	5.3	9.50	700.0	0.00	0.5	9.50	688.9	4.48	11.1	9.50	699.8	1.4	193.9	20.9	-0.22	-0.13	0.1	0.0	294.4	
December 26, 2020	9.51	672.0	0.30	4.8	9.50	700.0	0.00	0.4	9.50	690.1	4.43	1.9	9.50	700.3	1.4	219.6	21.1	-0.21	-0.13	0.1	0.0	278.7	
December 27, 2020	9.50	669.1	0.29	4.5	9.50	700.2	0.00	0.4	9.50	685.7	4.14	0.7	9.50	699.5	1.2	143.1	20.9	-0.21	-0.13	0.1	0.0	280.2	
December 28, 2020	9.50	669.5	0.46	4.9	9.50	699.7	0.00	0.5	9.50	682.2	4.89	0.4	9.50	700.2	1.6	292.7	21.1	-0.22	-0.14	0.1	0.0	286.5	0
December 29, 2020	9.50	669.9	0.51	6.2	9.50	700.2	0.00	0.4	9.50	689.2	4.93	0.0	9.50	699.9	1.6	315.5	20.7	-0.21	-0.14	0.1	0.0	303.0	
December 30, 2020	9.49	669.0	0.51	5.8	9.49	699.1	3.26	0.4	9.49	685.5	4.85	0.0	9.49	699.6	1.6	277.8	20.9	-0.21	-0.12	0.1	0.0	275.4	
December 31, 2020	9.49	669.2	0.66	5.0	9.50	700.1	4.69	0.1	9.50	672.4	5.74	0.0	9.50	699.4	1.8	264.2	21.1	-0.21	-0.13	0.1	0.0	364.7	
Avg	9.50	670.1	0.51	7.1	9.50	700.0	5.35	64.7	9.51	689.0	4.29	13.8	9.50	700.1	1.5	228.9	20.8	-0.22	-0.13	0.1	0.0	301.2	0
Min	9.41	665.1	0.22	0.0	9.44	693.1	0.00	0.0	9.48	625.9	2.17	0.0	9.49	697.2	0.6	47.4	20.3	-0.23	-0.14	0.0	0.0	0.0	0
Max	9.52	674.6	0.89	14.9	9.51	705.1	23.22	627.3	9.83	718.1	6.21	373.5	9.52	710.7	2.3	389.3	21.1	-0.20	-0.12	0.1	0.0	656.6	0

Appendix E – Scrubber Chemicals

2020 Scrubber Bleach Usage (L as delivered 16% sodium hypochlorite solution)

	January	February	March	April	May	June	July	August	September	October	November	December
1	1028	914	448	510	2080	598	483	1415	1885	1518	1764	1298
2	1050	892	541	373	957	529	341	1505	2036	1749	1801	1410
3	1131	446	364	526	1015	683	439	1507	2062	1906	1750	1489
4	1033	715	367	573	492	776	453	1112	1945	1923	1848	1406
5	1023	709	303	352	528	997	636	1224	1699	1845	2112	1446
6	988	997	465	462	437	977	484	1362	1521	1434	1213	1648
7	1022	636	446	493	467	662	629	1564	1832	1289	1473	1552
8	484	811	587	694	510	759	373	1198	1777	1858	1434	1378
9	783	925	618	491	546	582	388	1214	1701	1877	1563	1270
10	1004	952	546	400	580	540	380	1379	1554	1969	1396	1323
11	921	1105	487	253	619	848	364	1149	1421	1933	1399	553
12	804	756	468	388	586	1044	475	526	1461	1816	1506	1046
13	755	740	406	604	696	1048	747	1320	1642	1260	1570	979
14	676	713	516	460	759	1175	623	1162	1025	1758	1581	938
15	642	694	527	332	832	535	721	1177	1173	1276	1523	1038
16	806	769	492	327	861	608	736	1364	1628	1702	1550	1106
17	725	628	590	393	799	941	421	1349	2000	1484	1458	1143
18	716	618	676	290	639	987	364	1468	1663	1439	1079	1127
19	774	715	543	412	879	1057	546	677	1949	1419	1191	1275
20	763	621	554	428	839	998	856	896	1793	1496	1210	1220
21	789	672	582	566	722	957	692	1626	1311	1660	1251	1193
22	832	707	543	498	385	1196	1127	1356	1513	1849	1320	1138
23	618	566	444	606	295	1062	983	1647	1261	1602	1514	1144
24	971	636	505	706	374	1540	1069	1822	1301	1879	1559	1347
25	659	1214	497	771	326	1354	884	1479	1434	1533	1404	1188
26	865	513	482	861	719	897	1074	1576	1385	1634	1538	1209
27	733	607	430	685	601	1098	1018	1620	1542	1675	1401	1162
28	757	496	245	620	768	1150	1115	2129	1629	1349	1482	1311
29	780	419	450	903	724	889	1304	1984	1433	1468	1350	1243
30	887		405	1086	992	1141	1334	1786	1146	1819	1510	1333
31	627		502		1022		1522	1926		1532		1551
Total (L)	**25,646**	**21,185**	**15,031**	**16,065**	**22,050**	**27,625**	**22,580**	**43,518**	**47,720**	**50,950**	**44,748**	**38,464**

2020 Scrubber Caustic Usage (kg)

	January	February	March	April	May	June	July	August	September	October	November	December
1	72	107	64	68	86	73	108	146	136	135	163	117
2	77	87	68	57	84	72	84	134	126	163	152	113
3	78	92	58	52	68	68	88	138	132	170	136	117
4	80	86	59	55	91	84	71	139	136	162	145	136
5	78	87	38	44	91	91	93	118	126	156	172	127
6	71	92	66	51	65	98	78	120	115	141	122	141
7	72	77	49	59	55	83	81	142	131	129	147	122
8	62	86	59	66	62	82	90	129	136	146	119	121
9	63	88	22	54	61	69	87	117	115	138	136	128
10	69	87	53	55	69	76	87	127	150	153	140	122
11	66	92	53	46	64	77	71	128	106	142	103	127
12	62	68	57	55	62	84	76	125	116	135	137	108
13	65	70	53	53	62	77	78	112	129	143	143	102
14	55	65	51	57	67	103	99	118	124	143	130	95
15	54	63	45	49	66	72	80	114	135	97	124	92
16	75	65	59	42	62	71	79	121	144	181	119	105
17	50	66	51	43	106	79	92	114	185	128	111	100
18	60	58	61	58	97	99	72	135	133	101	116	91
19	63	69	67	47	98	98	78	88	142	114	112	107
20	56	64	49	63	96	87	107	120	140	118	97	106
21	72	62	66	61	92	87	80	191	117	123	110	103
22	39	62	59	48	70	110	117	141	138	125	100	98
23	72	59	53	61	59	96	105	159	119	126	110	98
24	108	62	55	65	71	114	103	153	117	149	104	113
25	119	73	54	70	59	114	96	154	120	100	75	108
26	91	57	59	76	73	97	115	149	126	128	155	104
27	76	57	72	64	71	106	97	145	125	154	120	96
28	82	72	51	74	80	104	103	143	139	120	97	115
29	74	63	70	90	76	100	111	136	166	122	95	94
30	126		52	62	92	115	126	126	121	132	89	118
31	123		44		92		91	120		178		117
Total (kg)	**2,313**	**2,137**	**1,716**	**1,745**	**2,346**	**2,686**	**2,843**	**4,101**	**3,947**	**4,251**	**3,682**	**3,441**

Appendix F – Fence Line H2S Readings

PROVIDING MORE EPCOR

Gold Bar Wastewater Treatment Plant
Fenceline H_2S Readings
January 2020

Date	H_2S (ppb)								Comments
	1	2	3	4	5	6	7	8	
January 1, 2020	19.25	9.08	4.73	0	0	0	0	0	
January 2, 2020	5.06	3.72	3.37	0	0	0	0	0	
January 3, 2020	4.59	0	0	0	0	0	0	0	
January 4, 2020	0	0	0	0	0	0	0	0	
January 5, 2020	0	3.53	3.59	0	0	0	0	0	
January 6, 2020	0	3.27	0	0	0	0	0	0	
January 7, 2020	4.88	0	0	0	0	0	0	3.2	
January 8, 2020	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	
January 9, 2020	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	
January 10, 2020	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	
January 11, 2020	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	
January 12, 2020	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	
January 13, 2020	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	
January 14, 2020	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	Temperature too low
January 15, 2020	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	
January 16, 2020	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	
January 17, 2020	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	
January 18, 2020	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	
January 19, 2020	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	
January 20, 2020	0	0	0	0	0	0	0	0	
January 21, 2020	15.15	4.97	9.26	3.5	3.08	0	3.47	0	
January 22, 2020	0	0	9.69	7.16	0	0	0	0	
January 23, 2020	0	0	0	0	0	0	0	0	
January 24, 2020	6.22	0	3.95	0	0	0	0	0	
January 25, 2020	0	0	5.59	0	0	0	0	0	
January 26, 2020	0	0	0	0	0	0	0	3.46	
January 27, 2020	0	0	0	0	0	0	0	0	
January 28, 2020	3.71	0	3.61	0	0	0	0	0	
January 29, 2020	0	0	0	0	0	0	0	0	
January 30, 2020	0	0	0	0	0	0	0	0	
January 31, 2020	0	0	0	0	0	0	0	0	

Avg	3.10	1.29	2.30	0.56	0.16	0	0.18	0.35
Min	0	0	0	0	0	0	0	0
Max	19.25	9.08	9.69	7.16	3.08	0	3.47	3.46

PROVIDING MORE EPCOR

Gold Bar Wastewater Treatment Plant
Fenceline H_2S Readings
February 2020

Date	H_2S (ppb)								Comments
	1	2	3	4	5	6	7	8	
February 1, 2020	0	0	0	0	0	0	0	0	
February 2, 2020	0	3.36	0	0	0	3.81	0	0	
February 3, 2020	0	0	0	0	0	0	0	0	
February 4, 2020	3.52	3.61	3.21	0	0	0	3.76	0	
February 5, 2020	6.91	0	0	0	0	0	0	0	
February 6, 2020	3.06	0	0	0	0	0	0	0	
February 7, 2020	0	3.28	3.26	0	0	0	0	0	
February 8, 2020	0	0	0	0	0	0	0	0	
February 9, 2020	0	0	0	0	0	0	0	0	
February 10, 2020	0	0	0	0	0	5.01	0	0	
February 11, 2020	0	3.41	0	#N/A	0	0	0	0	
February 12, 2020	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	Temperature too low
February 13, 2020	0	0	0	0	0	0	0	0	
February 14, 2020	6.75	0	0	0	0	0	0	0	
February 15, 2020	0	0	0	0	0	0	0	0	
February 16, 2020	6.64	0	0	0	0	0	0	0	
February 17, 2020	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	Temperature too low
February 18, 2020	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	
February 19, 2020	6.5	0	0	0	0	3.09	5.72	0	
February 20, 2020	6.68	4.73	3.27	0	0	0	0	0	
February 21, 2020	0	3.34	0	0	0	3.83	0	0	
February 22, 2020	5.26	0	0	0	0	0	0	0	
February 23, 2020	0	0	0	0	0	0	0	0	
February 24, 2020	0	0	0	0	0	0	0	0	
February 25, 2020	13.06	0	0	0	0	0	7.28	0	
February 26, 2020	0	0	3.35	3.79	0	0	0	0	
February 27, 2020	0	0	0	0	0	0	0	0	
February 28, 2020	0	0	0	0	0	0	0	0	
February 29, 2020	0	0	0	0	0	0	0	0	

Avg	2.25	0.84	0.50	0.15	0	0.61	0.64	0
Min	0	0	0	0	0	0	0	0
Max	13.06	4.73	3.35	3.79	0	5.01	7.28	0

PROVIDING MORE EPCOR

Gold Bar Wastewater Treatment Plant
Fenceline H_2S Readings
March 2020

Date	H_2S (ppb)								Comments
	1	2	3	4	5	6	7	8	
March 1, 2020	3.65	0	0	0	0	0	0	0	
March 2, 2020	0	0	0	0	0	0	0	0	
March 3, 2020	6.46	0	0	0	0	0	0	0	
March 4, 2020	0	0	0	0	0	0	0	0	
March 5, 2020	0	0	0	0	0	0	0	0	
March 6, 2020	3.91	0	0	0	0	0	0	0	
March 7, 2020	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	Temperature too low
March 8, 2020	0	0	0	0	0	0	0	0	
March 9, 2020	5.65	3.48	0	0	3.56	5.01	3.85	24.79	
March 10, 2020	0	0	0	0	0	0	0	0	
March 11, 2020	0	0	0	0	0	0	0	0	
March 12, 2020	5.58	0	5.66	0	0	0	0	0	
March 13, 2020	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	Temperature too low
March 14, 2020	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	
March 15, 2020	0	3.58	0	0	0	0	0	0	
March 16, 2020	0	0	0	0	0	0	0	0	
March 17, 2020	4.79	0	0	0	0	0	0	0	
March 18, 2020	20.77	0	0	0	0	0	0	0	
March 19, 2020	0	0	0	0	0	0	4.76	0	
March 20, 2020	4.66	0	0	0	0	0	0	0	
March 21, 2020	8.68	3.89	4.2	0	0	0	0	3.15	
March 22, 2020	4.05	3.24	3.28	3.32	3.49	3.24	3.48	3.45	
March 23, 2020	4.89	0	0	3.24	3.39	3.97	3.81	3.57	
March 24, 2020	0	3.08	3.02	0	0	0	0	0	
March 25, 2020	3.95	0	0	0	0	0	3.12	0	
March 26, 2020	4.23	3.33	3.55	3.52	4.53	3.66	3.92	3.57	
March 27, 2020	4.23	0	0	0	0	0	3.84	3.29	
March 28, 2020	0	0	0	0	0	0	0	0	
March 29, 2020	0	0	0	0	0	0	0	0	
March 30, 2020	0	0	0	0	0	0	0	0	
March 31, 2020	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	Temperature too low

Avg	3.17	0.76	0.73	0.37	0.55	0.59	0.99	1.55
Min	0	0	0	0	0	0	0	0
Max	20.77	3.89	5.66	3.52	4.53	5.01	4.76	24.79

PROVIDING MORE EPCOR

Gold Bar Wastewater Treatment Plant
Fenceline H_2S Readings
April 2020

Date	H_2S (ppb)								Comments
	1	2	3	4	5	6	7	8	
April 1, 2020	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	Temperature too low
April 2, 2020	0	0	0	0	0	0	0	0	
April 3, 2020	0	0	0	0	0	0	0	0	
April 4, 2020	3.02	0	0	3.89	0	0	0	0	
April 5, 2020	0	0	0	0	0	0	3.12	0	
April 6, 2020	3.24	8.48	3.29	0	0	3.93	3.4	3.42	
April 7, 2020	10.11	0	0	0	0	0	0	0	
April 8, 2020	0	0	0	0	0	0	0	0	
April 9, 2020	3.04	0	0	0	0	3.32	0	0	
April 10, 2020	0	0	0	0	0	0	0	0	
April 11, 2020	0	0	0	0	0	0	0	0	
April 12, 2020	0	0	0	0	0	0	0	0	
April 13, 2020	0	0	0	0	0	0	0	0	
April 14, 2020	0	3.04	0	0	0	0	0	0	
April 15, 2020	0	0	0	4.03	0	0	0	0	
April 16, 2020	0	0	0	0	0	0	0	0	
April 17, 2020	0	0	0	0	0	0	0	0	
April 18, 2020	0	0	0	0	0	0	0	0	
April 19, 2020	0	0	0	0	0	3.67	0	0	
April 20, 2020	0	0	0	0	0	0	0	0	
April 21, 2020	0	3.22	0	4.5	0	0	0	0	
April 22, 2020	0	0	0	0	0	0	0	0	
April 23, 2020	0	0	0	0	0	0	0	0	
April 24, 2020	0	0	0	0	0	0	0	0	
April 25, 2020	0	0	0	0	0	0	0	0	
April 26, 2020	0	0	0	0	0	4.69	0	0	
April 27, 2020	4.51	0	3.09	0	0	0	3.37	0	
April 28, 2020	0	0	0	0	0	0	0	0	
April 29, 2020	0	0	0	0	0	0	0	0	
April 30, 2020	12.55	0	0	9.76	0	0	0	0	

Avg	1.26	0.51	0.22	0.76	0	0.54	0.34	0.12
Min	0	0	0	0	0	0	0	0
Max	12.55	8.48	3.29	9.76	0	4.69	3.4	3.42

PROVIDING MORE EPCOR

Gold Bar Wastewater Treatment Plant
Fenceline H_2S Readings
May 2020

Date	H_2S (ppb)								Comments
	1	2	3	4	5	6	7	8	
May 1, 2020	0	0	3.54	3.52	0	0	0	0	
May 2, 2020	0	0	0	5.45	0	0	3.44	0	
May 3, 2020	0	0	0	0	0	0	0	0	
May 4, 2020	0	0	0	0	0	0	3.32	0	
May 5, 2020	0	0	0	0	0	0	0	0	
May 6, 2020	0	0	0	0	0	0	0	0	
May 7, 2020	0	0	0	4.3	0	0	0	0	
May 8, 2020	0	0	0	0	0	0	0	0	
May 9, 2020	0	0	0	0	0	0	0	0	
May 10, 2020	3.18	0	0	6.71	0	0	0	0	
May 11, 2020	3.38	0	0	0	0	0	0	0	
May 12, 2020	4.63	3.57	0	0	0	0	0	0	
May 13, 2020	0	0	0	0	0	0	0	0	
May 14, 2020	0	0	0	0	0	0	0	0	
May 15, 2020	0	0	0	5.86	0	0	0	0	
May 16, 2020	0	0	0	0	0	0	0	0	
May 17, 2020	0	0	0	0	0	0	0	0	
May 18, 2020	0	0	0	0	0	0	0	0	
May 19, 2020	0	0	0	4.71	0	0	0	0	
May 20, 2020	0	0	0	7.46	0	0	0	0	
May 21, 2020	0	0	0	0	0	0	0	8.36	
May 22, 2020	0	0	0	0	1.039	5.05	0	0	
May 23, 2020	0	0	0	0	0	0	0	0	
May 24, 2020	0	0	0	0	0	0	0	0	
May 25, 2020	0	0	0	0	0	0	0	0	
May 26, 2020	0	0	0	0	0	0	0	0	
May 27, 2020	0	0	0	0	0	0	0	0	
May 28, 2020	0	0	0	4.96	0	0	0	0	
May 29, 2020	0	0	0	0	0	0	0	0	
May 30, 2020	0	0	0	0	0	0	0	0	
May 31, 2020	0	0	0	0	0	0	0	0	

Avg	0.36	0.12	0.11	1.39	0.03	0.16	0.22	0.27
Min	0	0	0	0	0	0	0	0
Max	4.63	3.57	3.54	7.46	1.04	5.05	3.44	8.36

PROVIDING MORE EPCOR

Gold Bar Wastewater Treatment Plant
Fenceline H_2S Readings
June 2020

Date	H_2S (ppb)								Comments
	1	2	3	4	5	6	7	8	
June 1, 2020	0	0	0	0	0	0	0	0	
June 2, 2020	0	0	0	0	0	0	0	0	
June 3, 2020	0	0	0	0	0	0	0	0	
June 4, 2020	0	0	0	0	0	0	0	0	
June 5, 2020	0	0	0	0	0	0	0	0	
June 6, 2020	0	0	0	0	0	0	0	0	
June 7, 2020	0	0	0	0	0	0	0	0	
June 8, 2020	0	0	0	0	0	0	0	0	
June 9, 2020	0	0	0	0	0	0	0	0	
June 10, 2020	0	0	0	0	0	0	0	0	
June 11, 2020	0	0	0	5.12	0	0	0	0	
June 12, 2020	0	0	0	0	0	0	0	0	
June 13, 2020	0	0	3.4	4.92	0	0	0	0	
June 14, 2020	0	0	0	0	0	0	0	0	
June 15, 2020	0	0	0	0	0	0	0	0	
June 16, 2020	0	0	0	0	0	0	0	0	
June 17, 2020	0	0	0	0	0	0	0	0	
June 18, 2020	0	0	0	0	0	0	0	0	
June 19, 2020	0	0	0	0	0	0	0	0	
June 20, 2020	0	0	0	0	0	0	0	0	
June 21, 2020	0	0	0	0	0	0	0	0	
June 22, 2020	0	0	0	0	0	0	0	0	
June 23, 2020	0	0	0	0	0	0	0	0	
June 24, 2020	0	0	0	0	0	0	0	0	
June 25, 2020	0	0	0	0	0	0	0	0	
June 26, 2020	0	0	0	0	0	0	0	0	
June 27, 2020	0	0	0	0	0	0	0	0	
June 28, 2020	0	0	0	0	0	0	0	0	
June 29, 2020	0	0	0	0	0	0	0	0	
June 30, 2020	0	0	0	3.11	0	0	0	5.27	

Avg	0	0	0.11	0.44	0	0	0	0.18
Min	0	0	0	0	0	0	0	0
Max	0	0	3.4	5.12	0	0	0	5.27

PROVIDING MORE EPCOR

Gold Bar Wastewater Treatment Plant
Fenceline H_2S Readings
July 2020

Date	H_2S (ppb)								Comments
	1	2	3	4	5	6	7	8	
July 1, 2020	0	0	0	0	0	0	0	0	
July 2, 2020	0	0	0	0	0	0	0	0	
July 3, 2020	0	0	0	0	0	0	0	0	
July 4, 2020	0	0	3.29	0	0	0	0	0	
July 5, 2020	0	0	0	0	0	0	0	0	
July 6, 2020	0	0	0	0	0	0	0	0	
July 7, 2020	0	0	0	0	3.46	0	0	0	
July 8, 2020	0	0	0	0	0	0	0	0	
July 9, 2020	0	0	0	0	0	0	0	0	
July 10, 2020	0	0	0	0	0	0	0	0	
July 11, 2020	0	0	0	0	0	0	0	0	
July 12, 2020	0	0	0	0	0	0	0	0	
July 13, 2020	0	0	0	0	0	0	0	0	
July 14, 2020	0	0	0	0	0	0	0	0	
July 15, 2020	0	0	0	0	0	0	0	0	
July 16, 2020	0	0	0	0	0	0	0	0	
July 17, 2020	0	0	0	0	0	0	0	0	
July 18, 2020	0	0	0	0	0	0	0	0	
July 19, 2020	0	0	0	0	0	0	0	0	
July 20, 2020	0	0	0	0	0	0	0	0	
July 21, 2020	0	0	0	0	0	0	3.97	0	
July 22, 2020	0	0	0	0	0	0	0	0	
July 23, 2020	0	0	0	14.2	0	0	0	0	
July 24, 2020	0	0	0	0	0	0	0	0	
July 25, 2020	0	0	0	0	0	0	0	0	
July 26, 2020	0	0	0	0	0	0	3.26	0	
July 27, 2020	0	0	0	0	0	0	0	0	
July 28, 2020	0	0	0	11.59	3.03	0	0	0	
July 29, 2020	0	0	3.09	5.38	0	0	0	0	
July 30, 2020	0	0	0	0	0	0	0	0	
July 31, 2020	0	0	0	0	0	0	0	0	

Avg	0	0	0.21	1.01	0.21	0	0.23	0
Min	0	0	0	0	0	0	0	0
Max	0	0	3.29	14.2	3.46	0	3.97	0

PROVIDING MORE EPCOR

Gold Bar Wastewater Treatment Plant
Fenceline H_2S Readings
August 2020

Date	H_2S (ppb)								Comments
	1	2	3	4	5	6	7	8	
August 1, 2020	0	0	0	0	0	0	4.09	0	
August 2, 2020	0	0	0	0	0	0	0	0	
August 3, 2020	0	0	0	3.58	0	0	0	0	
August 4, 2020	0	0	0	0	0	0	0	0	
August 5, 2020	0	4.02	0	3.09	0	0	0	0	
August 6, 2020	0	0	0	0	0	0	0	0	
August 7, 2020	0	3.25	0	0	0	0	0	0	
August 8, 2020	12.76	0	0	0	0	0	0	0	
August 9, 2020	0	0	5.66	0	0	3.84	0	0	
August 10, 2020	12.04	0	0	0	0	0	0	0	
August 11, 2020	7.81	0	0	0	0	0	7.45	0	
August 12, 2020	0	0	0	0	0	0	0	0	
August 13, 2020	5.37	0	0	0	0	0	0	0	
August 14, 2020	0	3.39	0	0	0	0	0	0	
August 15, 2020	0	0	0	0	0	0	0	0	
August 16, 2020	0	0	0	4.9	9.21	0	0	0	
August 17, 2020	0	0	0	0	3.46	0	0	0	
August 18, 2020	0	0	3.02	7.59	0	0	0	0	
August 19, 2020	0	0	3.48	3.99	0	0	0	0	
August 20, 2020	20.54	0	0	0	0	0	0	3.17	
August 21, 2020	0	0	0	0	0	0	0	0	
August 22, 2020	4.16	4.18	11.82	4.44	3.11	0	0	0	
August 23, 2020	0	4.08	0	6.98	0	0	0	0	
August 24, 2020	4.5	0	0	4.84	0	0	0	0	
August 25, 2020	0	0	0	0	0	0	0	0	
August 26, 2020	0	0	0	0	0	0	0	0	
August 27, 2020	6.29	0	0	0	0	0	0	0	
August 28, 2020	0	0	0	0	0	0	0	0	
August 29, 2020	0	0	0	0	0	0	0	0	
August 30, 2020	19.13	4.51	3.86	0	0	0	0	0	
August 31, 2020	0	0	0	0	0	0	0	0	

Avg	2.99	0.76	0.90	1.27	0.51	0.12	0.37	0.10
Min	0	0	0	0	0	0	0	0
Max	20.54	4.51	11.82	7.59	9.21	3.84	7.45	3.17

PROVIDING MORE EPCOR

Gold Bar Wastewater Treatment Plant
Fenceline H_2S Readings
September 2020

Date	H_2S (ppb)								Comments
	1	2	3	4	5	6	7	8	
September 1, 2020	7.38	0	0	3.33	0	0	0	0	
September 2, 2020	0	0	0	0	0	0	0	0	
September 3, 2020	0	0	0	0	0	3.09	0	0	
September 4, 2020	0	0	0	0	0	0	0	0	
September 5, 2020	0	0	0	0	0	0	0	0	
September 6, 2020	0	0	0	0	0	0	0	0	
September 7, 2020	0	0	0	0	0	0	0	0	
September 8, 2020	0	0	0	0	0	0	0	0	
September 9, 2020	0	0	0	0	0	0	0	0	
September 10, 2020	0	0	0	0	0	0	0	0	
September 11, 2020	0	0	0	0	0	0	0	0	
September 12, 2020	0	0	0	0	0	0	0	0	
September 13, 2020	0	0	0	0	0	0	0	0	
September 14, 2020	5.27	0	0	0	0	0	0	0	
September 15, 2020	0	0	0	0	0	0	0	0	
September 16, 2020	3.87	0	0	0	0	0	0	0	
September 17, 2020	0	0	0	0	0	0	0	0	
September 18, 2020	0	0	0	0	0	0	0	0	
September 19, 2020	0	0	0	0	0	0	0	0	
September 20, 2020	0	0	0	0	0	0	0	0	
September 21, 2020	0	0	0	0	0	0	0	0	
September 22, 2020	0	0	0	0	0	0	0	0	
September 23, 2020	0	0	0	0	0	0	0	0	
September 24, 2020	0	0	0	0	0	0	0	0	
September 25, 2020	0	0	0	0	0	0	0	0	
September 26, 2020	0	4.68	0	0	0	0	0	0	
September 27, 2020	0	0	0	0	0	0	0	0	
September 28, 2020	0	0	0	0	0	0	0	0	
September 29, 2020	0	0	0	0	0	0	0	0	
September 30, 2020	0	0	0	0	0	0	0	0	

Avg	0.55	0.16	0	0.11	0	0.10	0	0
Min	0	0	0	0	0	0	0	0
Max	7.38	4.68	0	3.33	0	3.09	0	0

PROVIDING MORE EPCOR

Gold Bar Wastewater Treatment Plant
Fenceline H_2S Readings
October 2020

Date	H_2S (ppb)								Comments
	1	2	3	4	5	6	7	8	
October 1, 2020	0	0	0	0	0	0	0	0	
October 2, 2020	0	0	0	0	0	0	0	0	
October 3, 2020	3.53	0	0	0	0	0	0	0	
October 4, 2020	0	0	0	0	0	0	0	0	
October 5, 2020	0	0	0	0	0	0	0	0	
October 6, 2020	0	0	0	0	0	0	0	0	
October 7, 2020	0	0	0	0	0	0	0	0	
October 8, 2020	0	0	0	0	0	0	0	0	
October 9, 2020	0	0	0	0	0	0	0	0	
October 10, 2020	0	0	0	0	0	0	0	0	
October 11, 2020	0	0	0	0	0	0	0	0	
October 12, 2020	0	0	0	0	0	0	0	0	
October 13, 2020	0	0	0	0	0	0	0	0	
October 14, 2020	0	0	0	0	0	0	0	0	
October 15, 2020	0	0	0	0	0	4.85	0	0	
October 16, 2020	4.23	0	0	3.48	0	0	0	0	
October 17, 2020	0	0	0	0	0	0	0	0	
October 18, 2020	4.73	0	0	0	0	0	0	0	
October 19, 2020	5.34	0	0	0	0	0	0	3.07	
October 20, 2020	5.02	0	0	0	0	0	0	0	
October 21, 2020	0	3.38	0	0	0	0	0	0	
October 22, 2020	0	4.26	0	0	0	0	0	0	
October 23, 2020	0	0	0	0	0	0	0	0	
October 24, 2020	0	0	0	0	0	0	0	0	
October 25, 2020	0	0	0	0	0	0	0	0	
October 26, 2020	0	0	0	0	0	0	0	0	
October 27, 2020	0	0	3.17	0	0	0	0	0	
October 28, 2020	0	0	4.09	0	3.33	0	0	0	
October 29, 2020	0	0	0	0	0	0	0	0	
October 30, 2020	0	0	0	0	0	0	0	0	
October 31, 2020	5.89	1.84	1.43	1.29	3	2.47	2.07	1.32	Unusual readings due to zero air filter

Avg	0.93	0.31	0.28	0.15	0.20	0.24	0.07	0.14
Min	0	0	0	0	0	0	0	0
Max	5.89	4.26	4.09	3.48	3.33	4.85	2.07	3.07

PROVIDING MORE EPCOR

Gold Bar Wastewater Treatment Plant
Fenceline H_2S Readings
November 2020

Date	H_2S (ppb)								Comments
	1	2	3	4	5	6	7	8	
November 1, 2020	3.51	3.14	2.12	1.1	2.51	2.63	1.89	1.15	Unusual readings due to zero air filter
November 2, 2020	7.95	0	0	0	0	0	0	0	Replaced zero air filter
November 3, 2020	0	0	0	0	0	0	0	0	
November 4, 2020	0	0	0	0	0	0	0	0	
November 5, 2020	0	0	0	0	0	0	0	0	
November 6, 2020	0	0	0	0	0	0	0	0	
November 7, 2020	0	0	0	0	0	0	0	0	
November 8, 2020	0	0	0	0	0	0	0	0	
November 9, 2020	0	0	0	0	0	0	0	0	
November 10, 2020	0	0	0	0	0	0	0	0	
November 11, 2020	0	0	0	0	0	0	0	0	
November 12, 2020	0	0	0	0	0	0	0	0	
November 13, 2020	0	0	0	0	0	0	0	0	
November 14, 2020	0	0	0	0	0	0	0	0	
November 15, 2020	0	0	0	0	0	0	0	0	
November 16, 2020	0	0	0	0	0	0	0	0	
November 17, 2020	0	0	0	0	0	0	0	0	
November 18, 2020	0	0	0	0	0	0	0	0	
November 19, 2020	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	Temperature too low
November 20, 2020	0	0	0	0	0	0	0	0	
November 21, 2020	3.86	0	0	0	0	3.36	0	0	
November 22, 2020	10.65	0	0	0	0	0	0	0	
November 23, 2020	0	0	0	0	0	0	0	0	
November 24, 2020	0	0	0	0	0	0	0	0	
November 25, 2020	0	0	0	0	0	0	0	0	
November 26, 2020	0	0	0	0	0	0	0	0	
November 27, 2020	0	0	0	0	0	0	0	0	
November 28, 2020	16.02	0	0	0	0	0	0	0	
November 29, 2020	0	0	0	0	0	0	0	0	
November 30, 2020	0	0	0	0	0	0	0	0	

Avg	1.45	0.11	0.07	0.04	0.09	0.21	0.07	0.04
Min	0	0	0	0	0	0	0	0
Max	16.02	3.14	2.12	1.10	2.51	3.36	1.89	1.15

PROVIDING MORE EPCOR

Gold Bar Wastewater Treatment Plant
Fenceline H_2S Readings
December 2020

Date	H_2S (ppb)								Comments
	1	2	3	4	5	6	7	8	
December 1, 2020	0	0	0	0	0	0	0	0	
December 2, 2020	3.3	0	0	0	0	0	0	0	
December 3, 2020	38.12	0	0	4.26	0	0	0	3.22	
December 4, 2020	21.37	0	0	0	0	0	0	0	
December 5, 2020	0	0	0	0	0	0	0	0	
December 6, 2020	0	0	0	3.56	0	0	0	0	
December 7, 2020	0	0	0	0	0	0	0	0	
December 8, 2020	0	0	0	0	0	0	0	0	
December 9, 2020	0	0	0	0	0	0	0	0	
December 10, 2020	5.11	0	0	0	0	0	0	0	
December 11, 2020	10.36	0	0	0	0	0	0	0	
December 12, 2020	0	3.25	3.05	0	0	0	0	0	
December 13, 2020	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	Temperature too low
December 14, 2020	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	
December 15, 2020	0	0	0	3.52	0	0	0	0	
December 16, 2020	0	0	0	3.21	0	0	0	0	
December 17, 2020	0	0	0	0	0	0	0	0	
December 18, 2020	4.64	0	0	0	0	0	0	0	
December 19, 2020	0	0	0	0	0	0	0	0	
December 20, 2020	0	0	0	0	0	0	0	0	
December 21, 2020	0	0	0	0	0	0	0	0	
December 22, 2020	0	0	0	0	0	0	0	0	
December 23, 2020	0	0	0	0	0	0	0	0	
December 24, 2020	0	0	0	0	0	0	0	0	
December 25, 2020	0	0	0	0	0	0	0	0	
December 26, 2020	5.25	0	0	0	0	0	0	0	
December 27, 2020	15.12	3.23	0	3.58	0	0	0	0	
December 28, 2020	3.25	0	0	0	0	3.11	3.06	0	
December 29, 2020	3.44	0	0	0	0	0	0	0	
December 30, 2020	0	0	0	0	5.18	0	0	0	
December 31, 2020	0	0	0	0	0	0	0	0	

Avg	3.79	0.22	0.11	0.63	0.18	0.11	0.11	0.11
Min	0	0	0	0	0	0	0	0
Max	38.12	3.25	3.05	4.26	5.18	3.11	3.06	3.22

Appendix G – Odour Complaints

#	Date	Location	Complaint Description	Call Back Details	Wind Direction /Velocity	Scrubber Status	Maintenance Activities	Action Taken	Is GBWWTP the Likely Source? (Y/N)	Consistent with Envirosuite Model?
2020-001	1/1/2020	4424-109A Ave	SEWER ODOUR CONCERN. COMING FROM GOLD BAR TREATMENT PLANT. WOULD LIKE A CALL BACK ON THIS ISSUE. January 1, 2020 A.M.	I talked to customer to let her know wind direction at the time of call (250 degrees) which is from the west and fence line monitoring registered 19.6 ppb early this morning, all scrubbers working with no issues, odour probably caused due to low flow at that time in the morning. Called at 2:24 PM Jan 1.	250 deg	OK	N/A	Crews ensured all doors to headworks building were closed and there were no other sources of fugitive emissions discharging to atmosphere. New odour scrubbers currently under construction at the grit and screen buildings should help reduce odours under this scenario in the future.	Y	N/A
2020-002	1/1/2020	N/A	Customer phoned control room. Shift Foreman received a call at 3:30 pm about an odour complaint, I gave customer a call back to let him know that we are receiving higher than normal H2S coming into the plant at the head works, 19 ppb and that odour scrubber are all working and wind direction was from the W to NW which may affect where he lives.	Phoned customer back at 5:06 PM. Shift Foreman received a call at 3:30 pm about an odour complaint, I gave customer a call back to let him know that we are receiving higher than normal H2S coming into the plant at the head works, 19 ppb and that odour scrubber are all working and wind direction was from the W to NW which may affect where he lives.	From the W to NW	OK	N/A	Crews ensured all doors to headworks building were closed and there were no other sources of fugitive emissions discharging to atmosphere. New odour scrubbers currently under construction at the grit and screen buildings should help reduce odours under this scenario in the future.	y	N/A
2020-003	1/23/2020	4504-109 Ave	Details of customer odour complaint: very bad sewer odour coming from outside, offensive toilet smell outside Description: Odour inside or outside: outside Description of odour: Odour intensity (scale from 1-10): 6-7 Time noticed odour and for how long: this morning. Unknown Is it a reoccurring issue? Yes, lived there for 35 years and it always happens.	Phoned customer back Jan 23 11:00 AM. "Received her voice mail and left a message, even though call was just south of the plant we did not pick up any H2S from the fence line Jerome meter and wind direction was from the S to SW going N to NE. Do not believe Gold Bar was the source of the odour."	From the south	OK	None	N/A	N	N/A
2020-004	4/22/2020	3809-110 Ave	Customer called saying she was having a sewer odour in her house. It was a smell that was outside and inside the residence. A mixture of rotten eggs and sewer gas. She contacted Atco and an inspector came out and told her it was a sewer gas smell. He told her to run water in her traps she did that solved the problem for a day. The smell came back Apr 21 in the PM. Atco told her if the smell persists to call the city which they transferred her to drainage. Details of customer odour complaint: Description: Odour inside or outside BOTH Description of odour: ROTTEN EGGS MIXED WITH SEWER SMELL Odour intensity (scale from 1-10): 9 Time noticed odour and for how long: APR 20 IN THE EVENING till today Is it a reoccurring issue? FIRST TIME THIS HAS HAPPENED	Even though it was in the GB boundary, it was determined it was a drainage issue, since the smell was detected indoors. Email was sent back to Drainage Operations, and they acknowledged they would take care of it.	N/A	N/A	N/A	Even though it was in the GB boundary, it was determined it was a drainage issue, since the smell was detected indoors. Email was sent back to Drainage Operations, and they acknowledged they would take care of it.	N	N

2020-005	5/2/2020	5211-109A Ave	Details of customer odour complaint: Description: for sure a sewer odour. Odour inside or outside Description of odour: outside sewer odour. Odour intensity (scale from 1-10): 7 -8 Time noticed odour and for how long: around 7 am the smell was noticeable Is it a reoccurring issue? Very often, once a month for sure	Received voice mail so left a message. Odour looks like it is from Gold Bar and I have an Operator out to do Jerome meter readings along the fence line right now, wind direction is from the east and with low flow this morning. Staff member did say that we have odours at the diversion structure as the flow comes in, I am having Utility Crew set up an odour mister at the diversion structure to help with the odour.	Low Velocity (as per Envirosuite)	OK	N/A	Emergency WR put in to put out odour misters. Looked at Envirosuite model for this time. Wind velocity was low, and direction was variable. Model indicates some plume around the plant, but below to OU threshold. Did not create an alarm at the alert point.	Y	Y
2020-006	7/7/2020	4808-109 Ave	Details of customer odour complaint: Sewer Odour Description: Sewer Odour. Customer believes it's the GBWWTP Odour inside or outside: Outside Description of odour: Sewer Odour intensity (scale from 1-10): 8 Time noticed odour and for how long: July 7, 2020 at 17:00 30 minutes Is it a reoccurring issue? Yes	Phoned customer back at 6:43 PM, and customer asked him to phone back again after supper. Called customer back at 7:37 PM. Scrubbers were working properly. Jerome meter readings did not show any spikes. Notified customer that Bio 2 is being cleaned at this time.	From NNE, low wind velocity at this time	OK	Cleaning Bioreactor 2	Checked with the plant and all scrubbers running with no issues. Checked the wind direction and odor units and did not show much. The odor could be from Bio 2 washing so asked Shift Crew to make sure odor misters are running. Envirosuite model does not show high odour at this address, but there is a plume that is close by, but projected to be below 10 OU. There was lots of wet weather in days before, so less likely for H2S smell from diversion structure or from collection system due to flushing.	Y	Y
2020-007	7/23/2020	4424-109A Ave	Details of customer odour complaint: Odour has been unbearable from the Gold Bar Treatment plant all week now. Initial complaint was made on Monday July 20 Description: Strong, sewage smell Odour inside or outside: Outside Description of odour: Odour intensity (scale from 1-10): 10 / 10 Time noticed odour and for how long: Has been extremely noticeable now for going on a week. Seems to get worse in the early evenings Is it a reoccurring issue? Has been pretty steady throughout the week but worsening in the evenings	Phoned resident back July 23 approx. 11:30 PM to get more information. Left a message and she phoned back. She described the odour as "smells like mushrooms", which could be the smell coming from our bioreactors. The wind often comes from the north, and is low velocity overnight. Resident described the smells taking place in the middle of the night. At midnight they had to get up to close their windows. Also, she said she made a complaint to 311 a few days earlier, but did not hear anything. Advised her to phone EPCOR 4500 line directly with odour complaints related to Gold Bar. She had a lot of bigger picture concerns that the expressed. She has some questions about future projects to capture odours, how odour complaints are managed and tracked from a city wide basis, and it sounds like about the SIA stations. She admitted is getting lots of information from her neighbors. I suggested that I could put her in contact with somebody that could help walk her through some of the information EPCOR has to provided. P&GA department phone phoned her back and sent an email report around 1:40 PM. Also called customer back to confirm that no H2S was detected (additional fenceline readings were taken), all scrubbers were working properly.	From north, low velocity over night	OK	None	Additional fenceline reading taken. If smell is "mushrooms", then this is not H2S, possibly Bioreactors, which cannot be suppressed. Envirosuite model did not show any plume at this time.	N	N

2020-008	8/20/2020	4654-107 Ave	Details of customer odour complaint: SHE SAID IT IS COMING FROM THE TREATMENT PLANT Description: SEWER ODOUR VERY STRONG OUTSIDE Odour inside or outside: OUTSIDE Description of odour: SEWAGE Odour intensity (scale from 1-10): 8 Time noticed odour and for how long: 9 PM AND CONTINUING Is it a reoccurring issue? YES. SHE SAID THAT SHE IS NOTICING THIS ODOUR MORE AND MORE THAN EVER. SHE ALSO WOULD LIKE A CALL TO LET HER KNOW WHAT IS GOING ON OR WHAT WILL BE DONE TO STOP THIS FROM OCCURING.	The complaint is related to the wet weather event we had last night and have added two alert point analysis graphs as close to where the complaint is from. Also added the wet weather event flows (total plant influent flow along with RTC flow). I have also added the H2S readings we had from 2 points, one from the SE of grit building 4/5 and the other is from the NW which is the screen building, we did notice a bit of H2S and then it cleared up. We treated a maximum of 1470 ML and we did not have a screened or unscreened bypass. FI-4006 which is the static weir flow for Channel 2 did record a flow but it was due to that Channel 2 level reached 2.674. The set point is 2.67 so anything above that it assumes we had a static weir bypass and records a flow. I checked outfall 20 sample bottles and flow meter and we did not have a bypass from Outfall 20. Called customer back.	From plant	OK	None	Due to wet weather flow out Outfall 30. Crews ensured all doors to headworks building were closed and there were no other sources of fugitive emissions discharging to atmosphere.	Y	Y
2020-009	9/1/2020	Capilano	"Starting around 4:00 AM and it dissipated around 7:00 AM. There was a horrible smell from outside. The smell is like chemical and skunk. It was so strong it woke me up and gave me a headache. This is the second time this has happened in the last 2 weeks. What is the cause? Should I be concerned for my health?"	After investigation, it was determined that Gold Bar is not the source. The complaint was sent back to Drainage Operations for investigation.	From west	OK	N/A	Email sent to Drainage Operations: Good morning Drainage, We took a look at our odour model, and we are not seeing anything outside the plant boundaries at that time. Wind velocity was very low, but blowing slightly from the west. H2S readings from our fence line samples do not indicate anything. The hand held measurements were actually taken at 715am Monday morning, so at the end of the reported time by the caller. Our staff did not observe anything described by the caller coming from the site. The description of “skunky” and “chemical smell” does not match they types of odours typically attributed to the wastewater treatment plant. We don’t believe this odour reported is associated with Gold Bar WWTP. Maybe Drainage Ops wants to investigate further?	N	N

2020-010	9/4/2020	10907-38 St	Details of customer odour complaint: Customer HAS NOTICED A ROTTEN EGG SULPHUR SMELL FOR THE LAST TWO WEEKS AND IT IS NOW STARTED COMING INTO HIS HOUSE. GAVE RENE THE NUMBER FOR ATCO GAS AS WELL Description: ROTTEN EGGS SULPHUR Odour inside or outside: OUTSIDE COMING INTO HIS HOUSE Description of odour: ROTTEN EGGS AND SULPHUR Odour intensity (scale from 1-10): 10 OUT OF 10 Time noticed odour and for how long: 2 WEEKS NOW Is it a reoccurring issue? YES	Determined not to be Gold Bar - sent back to Drainage Operations for investigation. "Good morning Drainage Ops. We took a look at our plant operations, online analyzers, our recent fence line monitoring data and our odour model from the last week. We cannot seem to find anything that would point to the odour this customer is describing at their address that could be attributed to the Gold Bar WWTP. Could drainage ops have a look to see if it is possible this is coming from the collection system, or other sources? Is there still a flare stack in the rundle park area that is part of the old landfill?"	N/A	OK	N/A	Sent back to Drainage Operations.	N	N
2020-011	9/4/2020	4428-109A Ave	CALLER SAID THAT THE ODOUR FROM THE GBWWTP IS VERY BAD TODAY. TOLD HIM THAT SOMEONE WOULD CONTACT HIM MOST LIKELY ON MONDAY.	Determined not to be Gold Bar WWTP - sent back to Drainage Operations for investigation.	N/A	OK	N/A	Sent complaint back to Drainage Operations.	N	N
2020-012	9/22/2020	4609-115 Ave	From across the river in Beverley. Details of customer odour complaint: Ongoing odour from the Gold Bar area. Description: Outside odour coming from the direction of the Gold Bar plant Description of odour: Strong Sewage smell Odour intensity (scale from 1-10): 8 / 10 Time noticed odour and for how long: Ongoing	Informed caller that no noticeable odours onsite, all readings were zero. Customer confirmed that he smelled it around 7:30 AM, at that time there was nothing out of the ordinary detectable at the plant.	N/A	OK	None	Jerome meter readings reading zero around plant. Sent operator to residence across river - readings were zero. Wind speed was pretty much zero around the plant. Sent back to drainage ops for further investigation CR# 486054.	N	N/A
2020-013	9/15/2020	4615-109A Ave	Details of customer odour complaint: Sewer odour all over the neighborhood daily. Please investigate and call customer with the findings. They can't sit outside nor open any windows because of the smell outside. Description: Odour inside or outside (outside) Note this complaint initially came from drainage operator, not through normal Drainage Operations Control email channels. Came through normal email the following day (Sept 16) Description of odour: (smells like sewer) Odour intensity (scale from 1-10): (6-9) Time noticed odour and for how long: (a couple of weeks now) Is it a reoccurring issue? (yes reoccurring)	Wind was coming from the north; EPT Scrubber was out. Informed customer that we were doing scrubber maintenance, but scrubber is now back online.	From north	EPT Scrubber out for maintenance	N/A	Informed customer that we were doing scrubber maintenance, but scrubber is now back online.	Y	N/A
2020-014	9/30/2020	Gold Bar Park	Customer and her mother were walking in Gold Bar Park and noticed a strong sewage odour (outside). She states this was today September 30, 2020 at 10:00 AM. And noticed it for 2 hours. They say the odour was an 8 out of 10 intensity. Customer lives in Wabamun Alberta and her Mother lives at 10643 – 48 St.	During this time Operations was draining Secondary 11 for maintenance on a valve.	From north west	OK	Draining Secondary 11	Set up odour misters, work was finished within the day.	Y	N/A

2020-015	11/2/2020	Gold Bar Park	Details of customer odour complaint: STRONG SEWER ODOUR BY GOLD BAR Description: Odour inside or outside: OUTSIDE Description of odour: SEWAGE Odour intensity (scale from 1-10):10 Time noticed odour and for how long: AN HOUR AGO (13:40) Is it a reoccurring issue? YES BUT THIS IS THE WORST IT HAS EVER BEEN.	Phoned customer and left message. Did not get a call back. Not able to determine exact location of complaint. Let them know scrubbers working properly.	Low wind velocity, from west	OK	Cleaning Diversion Structure at the time	Odour misters at Diversion Structure if temperature above freezing.	Y	Y

Appendix H – Nutri-Gold Summary

Substance Loading Rates on Nutrigold Fields - 2020

Nutrigold Field #2020NW255627					Loading Rate		Biosolids	Field Loading			Minimum		Minimum
Wet Tonnes	Ave. %TS	Dry Tonnes	Ac	Ha	Tonnes/Ha	Substance	mg/Kg	Kg	Kg/Ha	N/TE	N/TE Ratio	P/TE	P/TE Ratio
1487	24.0	357.3	55	22	16.2	TP	25200	9004	409				
						TN	25400	9075	413				
						NH3-N	8010	2862	130				
Landowner		Greg Kyle				As	4.6	1.64	0.075				
Legal Description		NW-25-67-27-4				Cd	2.7	0.97	0.044	9338	1500	9265	600
Start Date		31-May-20				Cr	53	18.8	0.86	482	20	478	8
End Date		19-Oct-20				Cu	455	163	7.39	56	15	55	6
Soil Class		Class 1				Pb	24.2	8.6	0.393	1050	20	1041	8
Biosolids Type		Digested				Mn	300	107	4.87				
		Centrifuge Dewatered				Hg	1.03	0.368	0.017	24660	3000	24466	1100
						Ni	34.8	12.4	0.565	730	100	724	40
						Se	5.4	1.93	0.088				
						Zn	813	290	13.2	31	10	31	4
						Co	5.3	2	0.1				

Nutrigold Field #2020NW125219					Loading Rate		Biosolids	Field Loading			Minimum		Minimum
Wet Tonnes	Ave. %TS	Dry Tonnes	Ac	Ha	Tonnes/Ha	Substance	mg/Kg	Kg	Kg/Ha	N/TE	N/TE Ratio	P/TE	P/TE Ratio
23694	7.52	1783.09	225	91	19.6	TP	30000	53493	588				
						TN	32600	58129	639				
						NH3-N	16000	28529	314				
Landowner		Mike Warwa				As	6.80	12.13	0.133				
Legal Description		NW-12-52-19-4				Cd	2.33	4.15	0.046	13991	1500	12876	600
Start Date		27-May-20				Cr	100	177.6	1.95	327	20	301	8
End Date		10-Jun-20				Cu	319	569	6.25	102	15	94	6
Soil Class		Class 1				Pb	31.6	56.3	0.619	1032	20	949	8
Biosolids Type		Digested				Mn	290	517	5.68				
		Gravity Thickened				Hg	1.32	2.354	0.026	24697	3000	22727	1100
						Ni	56.3	100.4	1.103	579	100	533	40
						Se	20.5	36.55	0.402				
						Zn	700	1248	13.7	47	10	43	4
						Co	9.70	17	0.2				

Nutrigold Field #2020SE125214					Loading Rate		Biosolids	Field Loading			Minimum		Minimum
Wet Tonnes	Ave. %TS	Dry Tonnes	Ac	Ha	Tonnes/Ha	Substance	mg/Kg	Kg	Kg/Ha	N/TE	N/TE Ratio	P/TE	P/TE Ratio
29412	7.26	2136.26	241	98		TP	30000	64088	657				
						TN	32600	69642	714				
						NH3-N	16000	34180	351				
Landowner		Earnie Warawa				As	6.80	14.53	0.149				
Legal Description		SE-12-52-14-4				Cd	2.33	4.98	0.051	13991	1500	12876	600
Start Date		25-Jun-20				Cr	100	212.8	2.18	327	20	301	8
End Date		11-Jul-20				Cu	319	681	6.99	102	15	94	6
Soil Class		Class 1				Pb	31.6	67.5	0.692	1032	20	949	8
Biosolids Type		Digested				Mn	290	620	6.35				
		Gravity Thickened				Hg	1.32	2.820	0.029	24697	3000	22727	1100
						Ni	56.3	120.3	1.234	579	100	533	40
						Se	20.5	43.79	0.449				
						Zn	700	1495	15.3	47	10	43	4
						Co	9.70	21	0.2				

Nutrigold Field #2020NW125418					Loading Rate		Biosolids	Field Loading			Minimum		Minimum
Wet Tonnes	Ave. %TS	Dry Tonnes	Ac	Ha	Tonnes/Ha	Substance	mg/Kg	Kg	Kg/Ha	N/TE	N/TE Ratio	P/TE	P/TE Ratio
13707	7.70	1055.99	115	47	15.0	TP	30000	31680	681				
						TN	32600	34425	740				
						NH3-N	16000	16896	363				
Landowner		Inez Hunter				As	6.80	7.18	0.154				
Legal Description		NW-12-54-18-4				Cd	2.33	2.46	0.053	13991	1500	12876	600
Start Date		19-Jul-20				Cr	100	105.2	2.26	327	20	301	8
End Date		27-Jul-20				Cu	319	337	7.24	102	15	94	6
Soil Class		Class 1				Pb	31.6	33.4	0.718	1032	20	949	8
Biosolids Type		Digested				Mn	290	306	6.59				
		Gravity Thickened				Hg	1.32	1.394	0.030	24697	3000	22727	1100
						Ni	56.3	59.5	1.279	579	100	533	40
						Se	20.5	21.65	0.466				
						Zn	700	739	15.9	47	10	43	4
						Co	9.70	10	0.2				

Nutrigold Field #2020NE225519					Loading Rate		Biosolids	Field Loading			Minimum		Minimum
Wet Tonnes	Ave. %TS	Dry Tonnes	Ac	Ha	Tonnes/Ha	Substance	mg/Kg	Kg	Kg/Ha	N/TE	N/TE Ratio	P/TE	P/TE Ratio
23818	7.73	1843.75	204	83	16.0	TP	30000	55313	666				
						TN	32600	60106	724				
						NH3-N	16000	29500	355				
Landowner		Larry Olstad				As	6.80	12.54	0.151				
Legal Description		NE-22-55-19				Cd	2.33	4.30	0.052	13991	1500	12876	600
Start Date		30-Jul-20				Cr	100	183.6	2.21	327	20	301	8
End Date		11-Aug-20				Cu	319	588	7.09	102	15	94	6
Soil Class		Class 1				Pb	31.6	58.3	0.702	1032	20	949	8
Biosolids Type		Digested				Mn	290	535	6.44				
		Gravity Thickened				Hg	1.32	2.434	0.029	24697	3000	22727	1100
						Ni	56.3	103.8	1.251	579	100	533	40
						Se	20.5	37.80	0.455				
						Zn	700	1291	15.5	47	10	43	4
						Co	9.70	18	0.2				

Nutrigold Field #2020NW345419					Loading Rate		Biosolids	Field Loading			Minimum		Minimum
Wet Tonnes	Ave. %TS	Dry Tonnes	Ac	Ha	Tonnes/Ha	Substance	mg/Kg	Kg	Kg/Ha	N/TE	N/TE Ratio	P/TE	P/TE Ratio
2985	24.00	720.28	118	47	9.0	TP	25200	18151	386				
						TN	25400	18295	389				
						NH3-N	8010	5769	123				
Landowner		Al MacDonell				As	4.6	3.31	0.070				
Legal Description		NW-34-54-19-4				Cd	2.7	1.96	0.042	9338	1500	9265	600
Start Date		20-Oct-20				Cr	53	38.0	0.81	482	20	478	8
End Date		1-Nov-20				Cu	455	328	6.97	56	15	55	6
Soil Class		Class 1				Pb	24.2	17.4	0.371	1050	20	1041	8
Biosolids Type		Digested				Mn	300	216	4.60				
		Centrifuge Dewatered				Hg	1.03	0.742	0.016	24660	3000	24466	1100
						Ni	34.8	25.1	0.533	730	100	724	40
						Se	5.4	3.89	0.083				
						Zn	813	586	12.5	31	10	31	4
						Co	5.3	4	0.1				

Nutrigold Field #2020NW295218					Loading Rate		Biosolids	Field Loading			Minimum		Minimum
Wet Tonnes	Ave. %TS	Dry Tonnes	Ac	Ha	Tonnes/Ha	Substance	mg/Kg	Kg	Kg/Ha	N/TE	N/TE Ratio	P/TE	P/TE Ratio
82	24.3	20.01	4	2	17.0	TP	25200	504	252				
						TN	25400	508	254				
						NH3-N	8010	160	80				
Landowner		Emil Ruzycki				As	4.6	0.09	0.046				
Legal Description		NW-29-52-18-4				Cd	2.7	0.05	0.027	9338	1500	9265	600
Start Date		2-Nov-20				Cr	53	1.1	0.53	482	20	478	8
End Date		2-Nov-20				Cu	455	9	4.55	56	15	55	6
Soil Class		Class 1				Pb	24.2	0.5	0.242	1050	20	1041	8
Biosolids Type		Digested				Mn	300	6	3.00				
		Centrifuge Dewatered				Hg	1.03	0.021	0.010	24660	3000	24466	1100
						Ni	34.8	0.7	0.348	730	100	724	40
						Se	5.4	0.11	0.054				
						Zn	813	16	8.1	31	10	31	4
						Co	5.3	0	0.1				

Nutrigold Field #2020NE/SE025417					Loading Rate		Biosolids	Field Loading			Minimum		Minimum
Wet Tonnes	Ave. %TS	Dry Tonnes	Ac	Ha	Tonnes/Ha	Substance	mg/Kg	Kg	Kg/Ha	N/TE	N/TE Ratio	P/TE	P/TE Ratio
4542	23.9	1090.04	185	75	17.0	TP	25200	27469	366				
						TN	25400	27687	369				
						NH3-N	8010	8731	116				
Landowner		Ted Gavinchuk				As	4.6	5.01	0.067				
Legal Description		NE/SE-02-54-17-4				Cd	2.7	2.96	0.040	9338	1500	9265	600
Start Date		4-Nov-20				Cr	53	57.4	0.77	482	20	478	8
End Date		23-Nov-20				Cu	455	496	6.61	56	15	55	6
Soil Class		Class 1				Pb	24.2	26.4	0.352	1050	20	1041	8
Biosolids Type		Digested				Mn	300	327	4.36				
		Centrifuge Dewatered				Hg	1.03	1.123	0.015	24660	3000	24466	1100
						Ni	34.8	37.9	0.506	730	100	724	40
						Se	5.4	5.89	0.078				
						Zn	813	886	11.8	31	10	31	4
						Co	5.3	6	0.1				

Nutrigold Field #2020SE145523					Loading Rate		Biosolids	Field Loading			Minimum		Minimum
Wet Tonnes	Ave. %TS	Dry Tonnes	Ac	Ha	Tonnes/Ha	Substance	mg/Kg	Kg	Kg/Ha	N/TE	N/TE Ratio	P/TE	P/TE Ratio
1245	23.6	298.54	40	16	17.0	TP	25200	7523	470				
						TN	25400	7583	474				
						NH3-N	8010	2391	149				
Landowner		Barbara Hostyn				As	4.6	1.37	0.086				
Legal Description		SE-14-55-23-4				Cd	2.7	0.81	0.051	9338	1500	9265	600
Start Date		24-Nov-20				Cr	53	15.7	0.98	482	20	478	8
End Date		30-Nov-20				Cu	455	136	8.49	56	15	55	6
Soil Class		Class 1				Pb	24.2	7.2	0.452	1050	20	1041	8
Biosolids Type		Digested				Mn	300	90	5.60				
		Centrifuge Dewatered				Hg	1.03	0.307	0.019	24660	3000	24466	1100
						Ni	34.8	10.4	0.649	730	100	724	40
						Se	5.4	1.61	0.101				
						Zn	813	243	15.2	31	10	31	4
						Co	5.3	2	0.1				

Appendix I – Third Party Agricultural Summary

Substance Loading Rates on Olstad turnkey Fields - 2020

Olstad Field DG-01					Loading Rate		Biosolids	Field Loading			Minimum		Minimum
Wet Tonnes	Ave. %TS	Dry Tonnes	Ac	Ha	Tonnes/Ha	Substance	mg/Kg	Kg	Kg/Ha	N/TE	N/TE Ratio	P/TE	P/TE Ratio
12222	7.31%	893.04	122	49	18.1	TP	30000	26791	542				
						TN	32600	29113	589				
						NH3-N	16000	14289	289				
Landowner		Doug Gabert				As	6.8	6.07	0.123				
Legal Description		NE-07-54-21-4				Cd	2.33	2.08	0.042	13991	1500	12876	600
Start Date		12-May-20				Cr	99.6	88.9	1.80	327	20	301	8
End Date		14-May-20				Cu	319	285	5.76	102	15	94	6
Soil Class		Class 1				Pb	31.6	28.2	0.571	1032	20	949	8
Biosolids Type		Digested				Mn	290	259	5.24				
		Gravity Thickened				Hg	1.32	1.179	0.024	24697	3000	22727	1100
						Ni	56.3	50.3	1.017	579	100	533	40
						Se	20.5	18.31	0.370				
						Zn	700	625	12.6	47	10	43	4
						Co	9.7	9	0.2				

Olstad Field SG-02					Loading Rate		Biosolids	Field Loading			Minimum		Minimum
Wet Tonnes	Ave. %TS	Dry Tonnes	Ac	Ha	Tonnes/Ha	Substance	mg/Kg	Kg	Kg/Ha	N/TE	N/TE Ratio	P/TE	P/TE Ratio
15996	7.22%	1155.41	146	59	19.6	TP	30000	34662	588				
						TN	32600	37666	639				
						NH3-N	16000	18487	313				
Landowner		Scott Gabert				As	6.8	7.86	0.133				
Legal Description		SE-18-54-21-4				Cd	2.33	2.69	0.046	13991	1500	12876	600
Start Date		15-May-20				Cr	99.6	115.1	1.95	327	20	301	8
End Date		19-May-20				Cu	319	369	6.25	102	15	94	6
Soil Class		Class 1				Pb	31.6	36.5	0.619	1032	20	949	8
Biosolids Type		Digested				Mn	290	335	5.68				
		Gravity Thickened				Hg	1.32	1.525	0.026	24697	3000	22727	1100
						Ni	56.3	65.0	1.103	579	100	533	40
						Se	20.5	23.69	0.402				
						Zn	700	809	13.7	47	10	43	4
						Co	9.7	11	0.2				

Substance Loading Rates on Olstad turnkey Fields - 2020

Olstad Field OC-03					Loading Rate		Biosolids	Field Loading			Minimum		Minimum
Wet Tonnes	Ave. %TS	Dry Tonnes	Ac	Ha	Tonnes/Ha	Substance	mg/Kg	Kg	Kg/Ha	N/TE	N/TE Ratio	P/TE	P/TE Ratio
8748	7.44%	650.66	70	28	23.0	TP	30000	19520	690				
						TN	32600	21212	750				
						NH3-N	16000	10411	368				
Landowner		Larry Olstad				As	6.8	4.42	0.157				
Legal Description		NE-15-55-19-4 (east half)				Cd	2.33	1.52	0.054	13991	1500	12876	600
Start Date		14-Aug-20				Cr	99.6	64.8	2.29	327	20	301	8
End Date		18-Aug-20				Cu	319	208	7.34	102	15	94	6
Soil Class		Class 1				Pb	31.6	20.6	0.727	1032	20	949	8
Biosolids Type		Digested				Mn	290	189	6.67				
		Gravity Thickened				Hg	1.32	0.859	0.030	24697	3000	22727	1100
						Ni	56.3	36.6	1.296	579	100	533	40
						Se	20.5	13.34	0.472				
						Zn	700	455	16.1	47	10	43	4
						Co	9.7	6	0.2				

Olstad Field OC-04					Loading Rate		Biosolids	Field Loading			Minimum		Minimum
Wet Tonnes	Ave. %TS	Dry Tonnes	Ac	Ha	Tonnes/Ha	Substance	mg/Kg	Kg	Kg/Ha	N/TE	N/TE Ratio	P/TE	P/TE Ratio
27734	8.03%	2228.26	244	99	22.6	TP	30000	66848	678				
						TN	32600	72641	737				
						NH3-N	16000	35652	361				
Landowner		Larry Olstad				As	6.8	15.15	0.154				
Legal Description		NW-14-55-19-4 (north half)				Cd	2.33	5.19	0.053	13991	1500	12876	600
		NW-14-55-19-4				Cr	99.6	221.9	2.25	327	20	301	8
		SW-23-55-19-4				Cu	319	711	7.21	102	15	94	6
Start Date		18-Aug-20				Pb	31.6	70.4	0.714	1032	20	949	8
End Date		30-Aug-20				Mn	290	646	6.55				
Soil Class		Class 1				Hg	1.32	2.941	0.030	24697	3000	22727	1100
Biosolids Type		Digested				Ni	56.3	125.5	1.272	579	100	533	40
		Gravity Thickened				Se	20.5	45.68	0.463				
						Zn	700	1560	15.8	47	10	43	4
						Co	9.7	22	0.2				

Substance Loading Rates on Olstad turnkey Fields - 2020

Olstad Field LS-05					Loading Rate		Biosolids	Field Loading			Minimum		Minimum
Wet Tonnes	Ave. %TS	Dry Tonnes	Ac	Ha	Tonnes/Ha	Substance	mg/Kg	Kg	Kg/Ha	N/TE	N/TE Ratio	P/TE	P/TE Ratio
34235	7.34%	2511.99	259	105	23.9	TP	30000	75360	718				
						TN	32600	81891	781				
						NH3-N	16000	40192	383				
Landowner		Lee Speers				As	6.8	17.08	0.163				
Legal Description		NE-11-55-23-4				Cd	2.33	5.85	0.056	13991	1500	12876	600
		NW-11-55-23-4				Cr	99.6	250.2	2.39	327	20	301	8
Start Date		8-Sep-20				Cu	319	801	7.64	102	15	94	6
End Date		22-Sep-20				Pb	31.6	79.4	0.757	1032	20	949	8
Soil Class		Class 1				Mn	290	728	6.95				
Biosolids Type		Digested				Hg	1.32	3.316	0.032	24697	3000	22727	1100
		Gravity Thickened				Ni	56.3	141.4	1.348	579	100	533	40
						Se	20.5	51.50	0.491				
						Zn	700	1758	16.8	47	10	43	4
						Co	9.7	24	0.2				

Olstad Field BH-06					Loading Rate		Biosolids	Field Loading			Minimum		Minimum
Wet Tonnes	Ave. %TS	Dry Tonnes	Ac	Ha	Tonnes/Ha	Substance	mg/Kg	Kg	Kg/Ha	N/TE	N/TE Ratio	P/TE	P/TE Ratio
11243	7.46%	838.23	88	35	23.6	TP	30000	25147	709				
						TN	32600	27326	770				
						NH3-N	16000	13412	378				
Landowner		Barbara Hostyn				As	6.8	5.70	0.161				
Legal Description		SE-14-55-23-4				Cd	2.33	1.95	0.055	13991	1500	12876	600
Start Date		23-Sep-20				Cr	99.6	83.5	2.35	327	20	301	8
End Date		27-Sep-20				Cu	319	267	7.54	102	15	94	6
Soil Class		Class 1				Pb	31.6	26.5	0.747	1032	20	949	8
Biosolids Type		Digested				Mn	290	243	6.85				
		Gravity Thickened				Hg	1.32	1.106	0.031	24697	3000	22727	1100
						Ni	56.3	47.2	1.330	579	100	533	40
						Se	20.5	17.18	0.484				
						Zn	700	587	16.5	47	10	43	4
						Co	9.7	8	0.2				

Substance Loading Rates on Olstad turnkey Fields - 2020

Olstad Field CH-07					Loading Rate		Biosolids	Field Loading			Minimum		Minimum
Wet Tonnes	Ave. %TS	Dry Tonnes	Ac	Ha	Tonnes/Ha	Substance	mg/Kg	Kg	Kg/Ha	N/TE	N/TE Ratio	P/TE	P/TE Ratio
27107	7.88%	2136.49	222	90	23.8	TP	30000	64095	714				
						TN	32600	69650	776				
						NH3-N	16000	34184	381				
Landowner		Chris Hardman				As	6.8	14.53	0.162				
Legal Description		SW-07-55-23-4				Cd	2.33	4.98	0.055	13991	1500	12876	600
		SE-07-55-23-4				Cr	99.6	212.8	2.37	327	20	301	8
Start Date		30-Sep-20				Cu	319	682	7.60	102	15	94	6
End Date		8-Oct-20				Pb	31.6	67.5	0.752	1032	20	949	8
Soil Class		Class 1				Mn	290	620	6.91				
Biosolids Type		Digested				Hg	1.32	2.820	0.031	24697	3000	22727	1100
		Gravity Thickened				Ni	56.3	120.3	1.341	579	100	533	40
						Se	20.5	43.80	0.488				
						Zn	700	1496	16.7	47	10	43	4
						Co	9.7	21	0.2				

Appendix J – Non-Ag Biosolids Management Report

2020 Biosolids Land Application Management Report

January 2021

Prepared for:

EPCOR
9504 49 St NW
Edmonton, AB
Canada, T6B 2M9

Prepared by:

SYLVIS Environmental
427 Seventh Street
New Westminster, BC
Canada, V3M 3L2
Phone: 1.800.778.1377
Fax: 604.777.9791
www.SYLVIS.com

SYLVIS DOCUMENT 1375-21

EPCOR

2020 BIOSOLIDS LAND APPLICATION MANAGEMENT REPORT

GENERAL

Project Name: BIOSALIX

AER Approval/Reference Number: 00011364-03-00, as amended

Project Start Date: April 1, 2019

Project End Date: December 31, 2020

Biosolids Type: Dewatered

Total Solids Content (%): Average 23.87%

Target Biosolids Utilization – Dry Tonnes (dt): 6,000.0 dt (in 2020)

Actual Biosolids Utilization (dt): 5,995.39 dt were delivered between June 15 and October 15, 2020. In combination with the material stockpiled in 2019, a total of approximately 8,881 dt was applied to approximately 345 ha of land within the Paintearth Mine site in 2020. There are approximately 510 dt stockpiled at the land application site. This material will be land applied and incorporated during the spring of 2021.

PROJECT TYPE

- ☐ Agricultural (Thickened) – Nutri Gold
- ☐ Agricultural (Dewatered)
- ☒ Mine Reclamation
- ☐ Marginal Land Improvement
- ☐ Biomass Plantation Establishment
- ☐ Off-spec Agricultural Land (i.e. outside the purview of the guidelines)
- ☐ Other (please specify below)

REGULATORY ADMINISTRATION

- ☐ Guideline
- ☐ Letter of No Objection
- ☒ Other (please specify below)

  AER Authorization for applications outside the context of current regulatory guidance.

  Modified AEP Notifications including assessment of trace elements/metals against Alberta Tier 1 Soil and Groundwater Remediation Guidelines.

AER Approval Number: 00011364-03-00

CONTACTS

EPCOR (Owner / Biosolids Generator)

Name: David Curran
Address: 9504 49 St NW, Edmonton AB, T6B 2M9
Phone: 780-718-2126
Email: dcurran@epcor.ca

Contractor and Qualified Professional: SYLVIS Environmental
Name: John Lavery
Address: 427 Seventh Street, New Westminster, BC
Phone: 604-341-0955
Email: jlavery@sylvis.com
Core Responsibilities: Regulatory approval, demonstration project design, environmental monitoring and reporting; transportation supervision; stockpiling and land application supervision

Subcontractor: Whiterock Ventures

Name: Kal Kingra
Address: 2235 76 Ave, Edmonton, AB, T6P 1P6
Phone: 780-469-0819
Email: kal@whiterockventures.ca
Core Responsibilities: Biosolids transportation

Landowner / Leaser: Westmoreland Coal Company, Paintearth Coal Mine

Name: Mark Matthews
Address: 1100-10123 99 Street NW, Edmonton, AB
Phone: 780-420-5896
Email: Mmatthews@westmoreland.com

Regional Regulatory Liaison

Name: Fengqin Wang
Agency: Alberta Environment and Parks
Address: 111 Twin Atria Building, 4999-98 Ave, Edmonton AB, T6B 2X3
Email: fengqin.wang@gov.ab.ca

APPLICATION AREAS

Name: Paintearth Coal Mine

Physical Address: Highway 855, Forestburg, AB

Application Sites:

The application sites are legacy and newly reclaimed land located within the footprint of the Paintearth Coal Mine. The sites for which biosolids were delivered to and applied on in 2020 are described in Table 1 (Appendix One – Tables).

Truck Route Description from Edmonton Waste Management Centre, EWMC (distances estimated):

Exit EWMC, turn right onto Aurum Road NE; Take the ramp and merge unto AB-216, head south on AB-216 for 17.3 km; Exit onto AB-14 E and continue for 77.6 km; Turn right onto AB-855 S, follow AB-855 S for 91.8 km; Turn right on AB-601, follow AB-601 for 1.6 km; Turn left to enter Paintearth Coal Mine.

Distance from EWMC: Approximately 188 km

Vegetation prior to biosolids application:

Pasture grasses, annual crops, or unvegetated, freshly placed topsoil.

Vegetation following biosolids applications for next three growing seasons:

Hybrid coppice willow plantation and cereal crops. A summary of willow plantation areas during the 2019-20 planting season can be found in Figure 1 (Appendix Two – Figures).

SUPPORTING DOCUMENTATION (FILL OUT APPLICABLE FIELDS AS REQUIRED)

Road Use Agreement (if applicable):

Issuing county: County of Paintearth No. 18

Contact: Colm Fitz-Gerald, Community Peace Officer, 403-740-2997

Roads and distances: Township Road 400 – Rural Road 155 to Highway 855, Township Road 404 to mine property

Road bans (if applicable): Not Applicable for the hauling period

Value of bond posted: Not Applicable

Agreement Date: Agreement made effective on June 8, 2020 and expires on November 30, 2022

Post-project inspection completion date: A post-haul inspection may be conducted at the County's sole discretion. The County shall notify SYLVIS of the date and time of the inspection.

SITE MAP

Figure 2 (Appendix Two – Figures) provides an overview of all biosolids application areas completed in 2019 and 2020.

Table 2 (Appendix One – Tables) describes the distances from specified features for all the application sites.

HISTORIC BIOSOLIDS APPLICATIONS

Biosolids have not been applied to areas within the Paintearth mine footprint previous to this project.

QUALITY ASSURANCE

SYLVIS completed due diligence for biosolids quality assurance by reviewing laboratory results from August through October 2020. Comparison of the geometric mean to current regulatory criteria for biosolids quality and land application loading rates is provided in Table 3 and Table 4, Appendix One – Tables.

CURRENT PROJECT APPLICATION RATES AND METHODOLOGY

Biosolids Type: Dewatered

Biosolids stockpiled? Yes

Stockpile Duration[1]: September 2020 to June 2021

Application Method: Surface application with rear-discharge manure spreaders and incorporation with agricultural tillage equipment

Application rate: Included in Table 1 by application area.

Have other amendments (e.g. lime) been co-applied? If so, specify material and application rate: Yes, lime was applied to two of seven sub-areas (land units) in Section 17 at rates of 2.7 (Land Unit #6) and 3.5 (Land Unit #5) dt/ha.

POST-APPLICATION MONITORING

Required?: Yes, post-application monitoring is required as per authorizations outside of the guidelines for the *Application of Municipal Wastewater Sludges to Agricultural Lands* (13/18 and West Pit Subsoil). Notifications meeting the guidelines but subject to monitoring requirements as per the Environmental Protection and Enhancement Act approval (00011364-03, as amended) will undergo post-application monitoring for AB Tier 1 trace elements/metals. This is a clarification of the report last year indicating that all applications made in 2019 do not require post-application monitoring.

Matrix (e.g. soil, crop, surface waste): soil (authorizations and notifications), surface water (13/18 authorization)

Constituents: Nutrients (soil & surface water), Salinity (soil), Trace elements/metals (soil).

Frequency and duration: One season following application (notifications) or as specified in the respective authorization monitoring plans (authorizations).

Application of results: Soil and surface water monitoring reports to AER and AEP.

PROJECT CHALLENGES

Provided below is a summary of challenges experienced during the project and actions to improve project execution.

Challenge 1 – Variability in Biosolids Availability:

Technical dewatering issues impacted biosolids availability. This had multiple project impacts including postponement of biosolids hauling, reductions in daily hauling cycles, and occasionally underfilled trucks. Trucks were also delayed due to slow fill times when silos were low. One incident this year involving watery biosolids helped identify a lack of control measures in place for identifying this issue. SUEZ quickly developed a new process to monitor water content by switching to taking samples from the silos, which was employed until the issue was resolved. A summary of the actual hauling schedule for the 2020 hauling season can be found in Figure 3 (Appendix Two – Figures).

To resolve the scheduling impacts, frequent communication was established with the primary contact at the dewatering facility to monitor silo levels and plan hauling on a day-to-day basis. The hauling season

[1] Refers to timeframe wherein biosolids are over-wintering in stockpiles.

was extended to fulfill the 6,000 dt commitment (see Table 5, Appendix One – Tables for schedule details). To further streamline hauling next season, a 15:30 h no-go call time for hauling on a subsequent day could also be established. An enhanced feedback loop between WRV and SYLVIS is another proposed process to facilitate schedule and load solutions, i.e., information sharing would occur immediately if a truck takes too long to load or is below the 35 bt minimum.

Challenge 2 – Accurate Reporting of Biosolids Transported to Site:

Inefficiencies were identified in the data sharing process between SYLVIS, EPCOR, and SUEZ as it relates to biosolids transportation. Weekly haul reports were being produced with preliminary data that were invalidated once SUEZ monthly reports were issued with more accurate data.

The issue of providing accurate biosolids hauling information has been addressed by decreasing the turnaround time for final %TS to one week.

Challenge 3 – Haul Truck Breakdowns:

Mechanical breakdowns with WRV's haul trucks caused delays in hauling, varying from half-day to multiple-day adjustments. Open communication and information sharing was invaluable for addressing these circumstances and ensured any related safety concerns were addressed.

APPENDIX ONE – TABLES

Table 1: Biosolids application site details for the Biosalix project in 2020.

Site Name	Classification	Application Rate[(a)] (dt/ha)	Application Area (ha)	Legal Descriptions	Biosolids Application Dates
Section 5	Class 1 (SW5-SW is Class 2)	19	95.9	5-40-14W4M	May – June 2020
Section 7	Class 1	24	49	SW 7-40-15-W4M	May – June 2020; October 2020
Section 12Ag	Class 1	19	11	NW/SW 12-40-15-W4M	September 2020
Section 13SE (13N)	Class 1	24	6.5	SE13-40-16-W4M	July – August 2020
Section 17	Class 1 (Land Unit #5 is Class 2)	19	93	NW/SW 17-40-15-W4M and SW 20-40-15-W4M	October – November 2020
Section 19	Class 3	10	12.6	NE 19-40-15-W4M	May 2020
Section 19E	Class 1	10	3.5	NE 19-40-15-W4M	November 2020
Section 20 (20NW)	Class 1	24	26.2	NW/SW 20-40-15-W4M	September 2020
Section 24	Class 1	24	11.6	NW/NE 24-40-15-W4M	May 2020
Section 24N	Class 1	19	6.5	24-40-15-W4M	October 2020
West Pit – consolidated application area* (WP1, WP2, WP4, WP5, WP7, WPNW11, WPSW11, WP SE15 (1), WP SE15 (2))	Class 1 and 2	25	116	The site is a long, narrow strip of the SE 22-40-15-W4M, the NE/SE 15-40-15-W4M, NE 10-40-15-W4M, NW/SW 11-40-15-W4M, NE/NW 2-40-15-W4M, and SE 15/NE10-40-16-W4M.	June – September 2020 (applications occurred as site conditions allowed)
13/18 Authorization	Class 1	75	27	SE 13-40-16-W4M and SW 18-40-15-W4M	August – September 2020
West Pit Subsoil (WPSS) Authorization	Class 1	25	25.3	SE 22-40-16-W4M and NE 15-40-16-W4M	October – November 2020

[(a)]Highest rate shown if multiple rates used.

Table 2: Distances from specified features for all application sites.

Features	Buffer from Feature	Minimum Guideline Buffer
Property Boundaries	> 10 m	10 m
Watercourses, Drainage Courses, Surface Waters	> 30 m	30 m
Water Wells	> 20 m	20 m
Public Roads	> 30 m	30 m
Areas Zoned Residential or Urban Use	> 500 m	500 m
Occupied Dwellings	> 60 m	60 m
Public Buildings	> 60 m	60 m
School Yard Boundaries (in session)	> 200 m	200 m
Cemeteries, Playgrounds, Parks, Campgrounds	> 200 m	200 m

Table 3: Trace element (TE) concentrations and minimum acceptable ratios of nitrogen (N) and phosphorus (P) to TEs.

Constituent	Concentration[1] (mg/kg)	N/TE	Guideline N/TE Minimum Ratio[2]	P/TE	Guideline P/TE Minimum Ratio[2]
Trace Elements					
Cadmium	3.22	17,396	1,500	9,439	600
Chromium	62.9	847.0	20	460	8
Copper	522	94	15	51	6
Lead	37.2	1,633	20	886	8
Mercury	1.06	45,229	3,000	24,542	1,100
Nickel	35.4	1,330	100	722	40
Zinc	743	58	10	31	4
Fertility Parameters					
Nitrogen[2]	45,229	-	-	-	-
Total Phosphorus	24,542	-	-	-	-

[1] Concentrations are the geometric mean of data from the Quality Assurance Laboratory for Gold Bar for the months of June through October in 2020. EPCOR lab reports 202006230045, 202007310022, 202009100009, 202009150034, and 202010140040.

[2] Minimum ratios as specified in the *Guidelines for the Application of Municipal Wastewater Sludges to Agricultural Lands, 2001.*

Table 4: Trace element and nutrient loading rates based on the maximum biosolids application rate of 24 dt/ha.

Constituent	Unit	Biosolids Concentration[2]	Loading Rate (kg/ha)	Guideline Limit[1]
Trace Elements				
Arsenic	mg/kg	2.6	0.3	-
Cadmium	mg/kg	2.6	0.06	1.5
Chromium	mg/kg	53.4	1.28	100
Copper	mg/kg	480	11.5	200
Lead	mg/kg	27.7	0.66	100
Manganese	mg/kg	287	6.89	-
Mercury	mg/kg	1.0	0.02	0.5
Nickel	mg/kg	34	0.82	25
Selenium	mg/kg	5.3	0.13	-
Zinc	mg/kg	784	18.8	300
Fertility Parameters				
Total Phosphorus	mg/kg	24542	601	-
Total Nitrogen	mg/kg	45229	833	-

[1] Maximum Cumulative Additions to Class 1 Sites for a single application from the *Guidelines for the Application of Municipal Wastewater Sludges to Agricultural Land, 2001.* Where values are not provided, there is no applicable guideline.

[2] Concentrations are the geometric mean of data from the Quality Assurance Laboratory for Gold Bar for the months of June through October in 2020. EPCOR lab reports 202006230045, 202007310022, 202009100009, 202009150034, and 202010140040.

Table 5: Documentation of daily biosolids transfers to the project site.

Date	Target Biosolids Tonnage (dt)	Actual Biosolids Tonnage (dt)	Running Total (dt)	Daily Variance (dt)	Reason for Significant Variances
June 15, 2020	34.93	33.75	33.75	-1.18	
June 16, 2020	87.32	66.38	100.13	-20.94	
June 17, 2020	87.32	71.75	171.88	-15.57	
June 18, 2020	87.32	35.73	207.61	-51.59	Suez had equipment issues - insufficient materials to haul.
June 19, 2020	87.32	86.06	293.67	-1.26	
June 20, 2020	87.32	51.22	344.89	-36.10	
June 22, 2020	87.32	68.36	413.25	-18.96	
June 23, 2020	87.32	34.45	447.70	-52.87	Suez had delay in polymer delivery – insufficient materials to haul.
June 24, 2020	87.32	60.13	507.83	-27.19	Suez had equipment issues – insufficient materials to haul.
June 25, 2020	87.32	0	507.83	-87.32	
June 26, 2020	87.32	62.81	570.64	-24.51	Suez had equipment issues – insufficient materials to haul.
June 27, 2020	87.32	69.71	640.35	-17.61	
June 29, 2020	87.32	86.58	726.93	-0.74	
June 30, 2020	87.32	86.61	813.54	-0.71	
July 2, 2020	87.32	86.01	899.55	-1.31	
July 3, 2020	87.32	113.02	1012.57	25.70	
July 4, 2020	87.32	62.54	1075.11	-24.78	WRV truck broke down during haul.
July 6, 2020	87.32	75.88	1150.99	-11.44	9 loads total provided by Suez, and the remaining 1/2 load delivered from broken down WRV truck.
July 7, 2020	87.32	60.31	1211.3	-27.01	Watery biosolids resulted in washing of 2 WRV trucks, low tonnage, and delays from vacuuming for the last WRV truck of the day.
July 8, 2020	87.32	69.36	1280.66	-17.96	

Date	Target Biosolids Tonnage (dt)	Actual Biosolids Tonnage (dt)	Running Total (dt)	Daily Variance (dt)	Reason for Significant Variances
July 9, 2020	87.32	86.31	1366.97	-1.01	
July 10, 2020	87.32	114.20	1481.17	26.88	
July 11, 2020	87.32	61.21	1542.38	-26.11	
July 13, 2020	87.32	88.03	1630.41	0.71	
July 14, 2020	87.32	90.19	1720.60	2.87	
July 15, 2020	87.32	56.87	1777.47	-30.45	Equipment issues – insufficient material to haul.
July 16, 2020	87.32	86.59	1864.06	-0.73	
July 17, 2020	87.32	44.80	1908.86	-42.52	Equipment issues – insufficient material to haul.
July 18, 2020	87.32	0.00	1908.86	-87.32	Suez unable to provide any biosolids due to an issue with their production facility.
July 20, 2020	87.32	93.53	2002.39	6.21	
July 21, 2020	87.32	90.76	2092.96	3.44	
July 22, 2020	87.32	86.79	2179.75	-0.53	
July 23, 2020	87.32	89.09	2268.84	1.77	WRV truck broke down.
July 24, 2020	87.32	98.70	2367.54	11.38	
July 25, 2020	87.32	77.18	2444.72	-10.14	
July 27, 2020	87.32	78.06	2522.78	-9.26	WRV truck did not come back for second load.
July 28, 2020	87.32	95.91	2618.69	8.59	
July 29, 2020	87.32	36.58	2655.27	-50.74	Two WRV trucks broke down. Issues with dewatering the biosolids left insufficient material to haul.
July 30, 2020	87.32	62.59	2717.86	-24.73	Issues with dewatering the biosolids left insufficient material to haul.
July 31, 2020	87.32	92.01	2809.87	4.69	
August 1, 2020	87.32	71.54	2881.41	-15.78	
August 2, 2020	87.32	0.00	2881.41	-87.32	
August 4, 2020	87.32	64.41	2945.82	-22.91	Power outage at Suez facility – insufficient material to haul.

Date	Target Biosolids Tonnage (dt)	Actual Biosolids Tonnage (dt)	Running Total (dt)	Daily Variance (dt)	Reason for Significant Variances
August 5, 2020	87.32	46.69	2992.51	-40.63	Repairs from power outage at Suez facility – insufficient material to haul.
August 6, 2020	87.32	54.67	3047.18	-32.65	WRV short of drivers due to re-assignment during Suez power outage.
August 7, 2020	87.32	36.93	3084.11	-50.39	Sylvis and WRV agreed to halt hauling for the afternoon due to strong wind conditions.
August 8, 2020	87.32	54.25	3138.36	-33.07	WRV short of drivers due to re-assignment during Suez power outage.
August 10, 2020	87.32	87.89	3226.25	0.57	
August 11, 2020	87.32	89.34	3315.59	2.02	
August 12, 2020	87.32	92.02	3407.61	4.70	
August 13, 2020	87.32	85.56	3493.17	-1.76	WRV truck broke down.
August 14, 2020	87.32	94.27	3587.44	6.95	
August 15, 2020	87.32	79.42	3666.86	-7.90	
August 17, 2020	87.32	62.57	3729.43	-24.75	Suez equipment issues – insufficient material to haul. WRV truck broke down.
August 18, 2020	87.32	78.00	3807.43	-9.32	WRV truck broke down – limited loads hauled.
August 19, 2020	87.32	89.39	3896.82	2.07	
August 20, 2020	87.32	87.68	3984.5	0.36	
August 21, 2020	87.32	88.31	4072.81	0.99	Last WRV truck of day unable to deliver last load due to limited material available.
August 22, 2020	87.32	36.16	4108.97	-51.16	Suez equipment issues – insufficient material to haul.
August 24, 2020	87.32	90.78	4199.75	3.46	8 loads delivered to site, 2 trucks pre-loaded for next day.
August 25, 2020	87.32	80.26	4280.01	-7.06	WRV truck needed repairs in the morning. Only 9 loads picked up from Suez and delivered to mine.
August 26, 2020	87.32	87.83	4367.84	0.51	
August 27, 2020	87.32	87.37	4455.21	0.05	
August 28, 2020	87.32	85.27	4540.48	-2.05	
August 29, 2020	87.32	69.07	4609.55	-18.24646	

Date	Target Biosolids Tonnage (dt)	Actual Biosolids Tonnage (dt)	Running Total (dt)	Daily Variance (dt)	Reason for Significant Variances
August 30 – September 15, 2020	436.58[1]	0.00	4609.55	-436.58	Suez paused hauling for repairs.
September 16, 2020	0.00	53.49	4663.04	53.49	Pump issues – insufficient material to haul.
September 17, 2020	0.00	61.87	4724.91	61.87	Suez recovering capacity from pump issues.
September 18, 2020	0.00	88.02	4812.93	88.02	
September 19, 2020	0.00	88.87	4901.80	88.87	
September 21, 2020	0.00	87.68	4989.48	87.68	
September 22, 2020	0.00	89.04	5078.52	89.04	
September 23, 2020	0.00	87.91	5166.43	87.91	
September 24, 2020	0.00	0.00	5166.43	0	
September 25, 2020	0.00	96.92	5263.35	96.92	
September 26, 2020	0.00	81.49	5344.84	81.49	
September 28, 2020	0.00	91.36	5436.20	91.36	
September 29, 2020	0.00	87.29	5523.49	87.29	
September 30, 2020	0.00	46.09	5569.58	46.09	Suez had issues with utility water tank and centrate flow.
October 2, 2020	0.00	87.92	5657.50	87.92	WRV truck required repairs.
October 3, 2020	0.00	80.05	5737.55	80.05	
October 5, 2020	0.00	0.00	5737.55	0.00	Suez unable to produce biosolids due to utility water system issues.

Date	Target Biosolids Tonnage (dt)	Actual Biosolids Tonnage (dt)	Running Total (dt)	Daily Variance (dt)	Reason for Significant Variances
October 6, 2020	0.00	91.83	5829.38	91.83	
October 7, 2020	0.00	35.16	5864.54	35.16	Equipment issues – insufficient material to haul.
October 8, 2020	0.00	85.52	5950.06	85.52	
October 9, 2020	0.00	17.10	5967.16	17.10	Equipment issues – insufficient material to haul.
October 10, 2020	0.00	19.65	5986.81	19.65	Equipment issues – insufficient material to haul.
October 14, 2020	0.00	8.58	5995.39	8.58	Suez fulfilled final load required for end of hauling season.

[1] The Target Biosolids Tonnage (dt) accumulated to 6000 dt by September 3, 2020. This data reflects the target daily tonnage for August 30 – September 3, 2020.

APPENDIX TWO – FIGURES

Figure 1. Overview map of willow planation areas for the Biosalix project in 2019 and 2020.

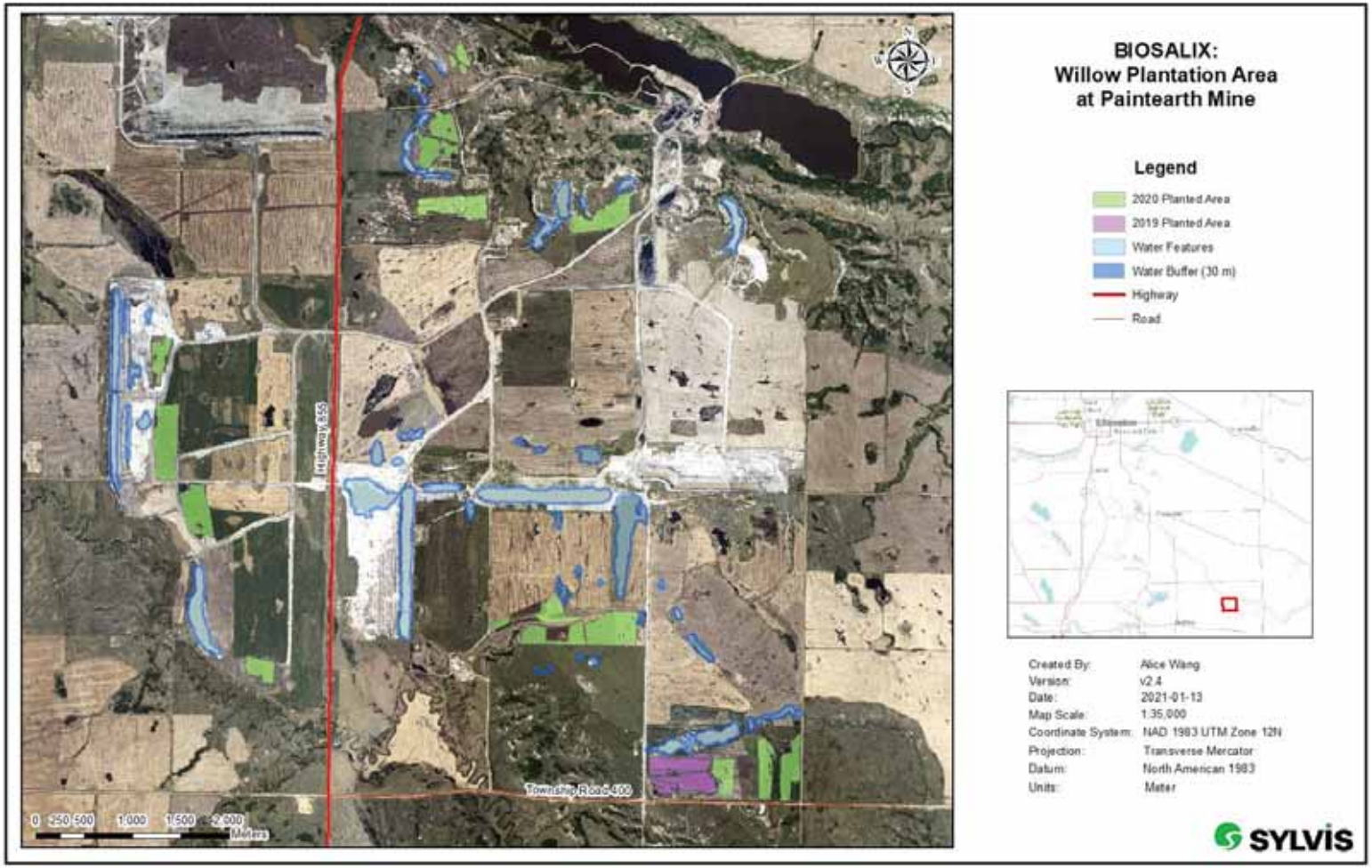


Figure 2. Overview map of application areas for biosolids delivered to the Biosalix project in 2019 and 2020.

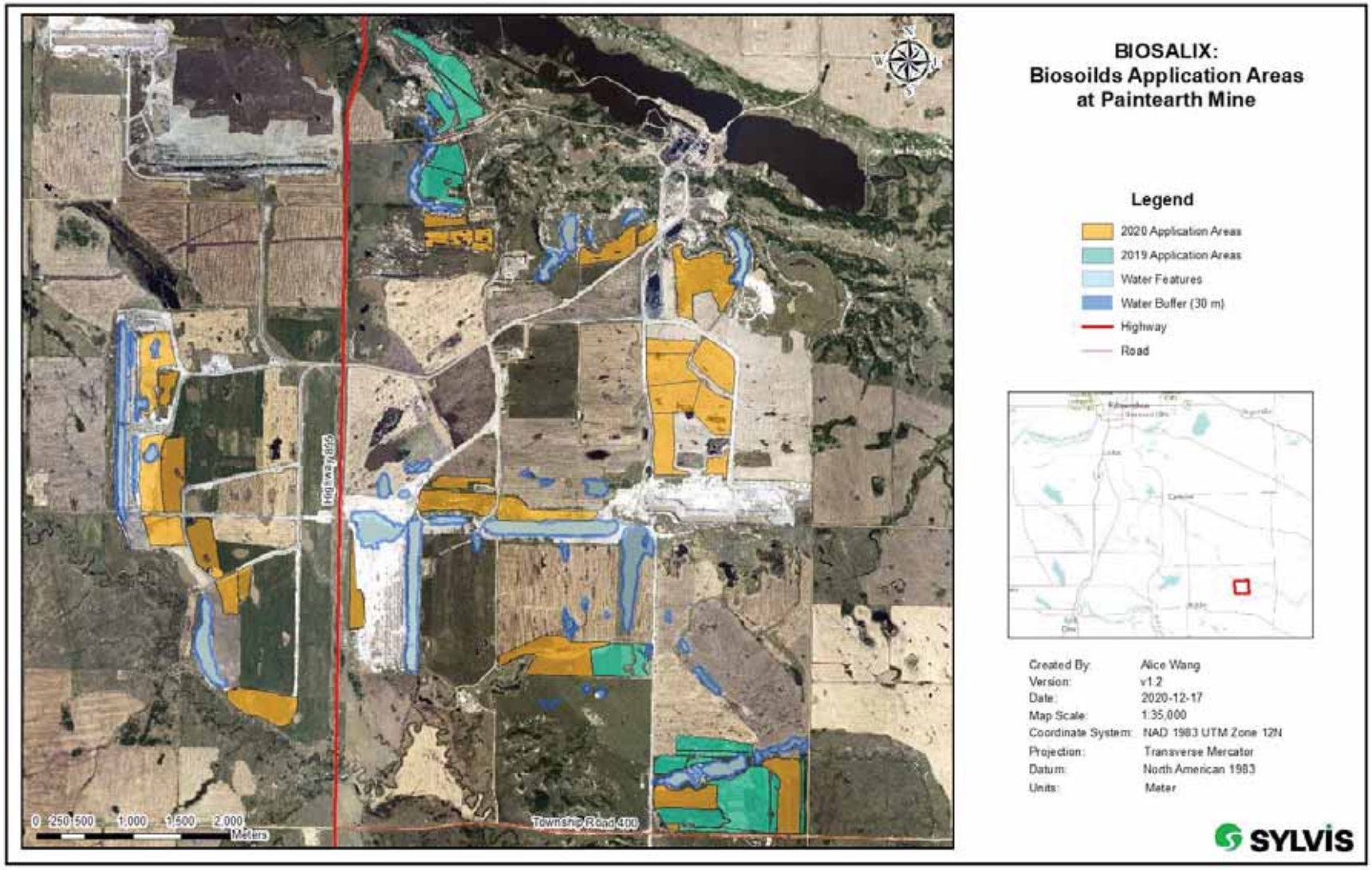
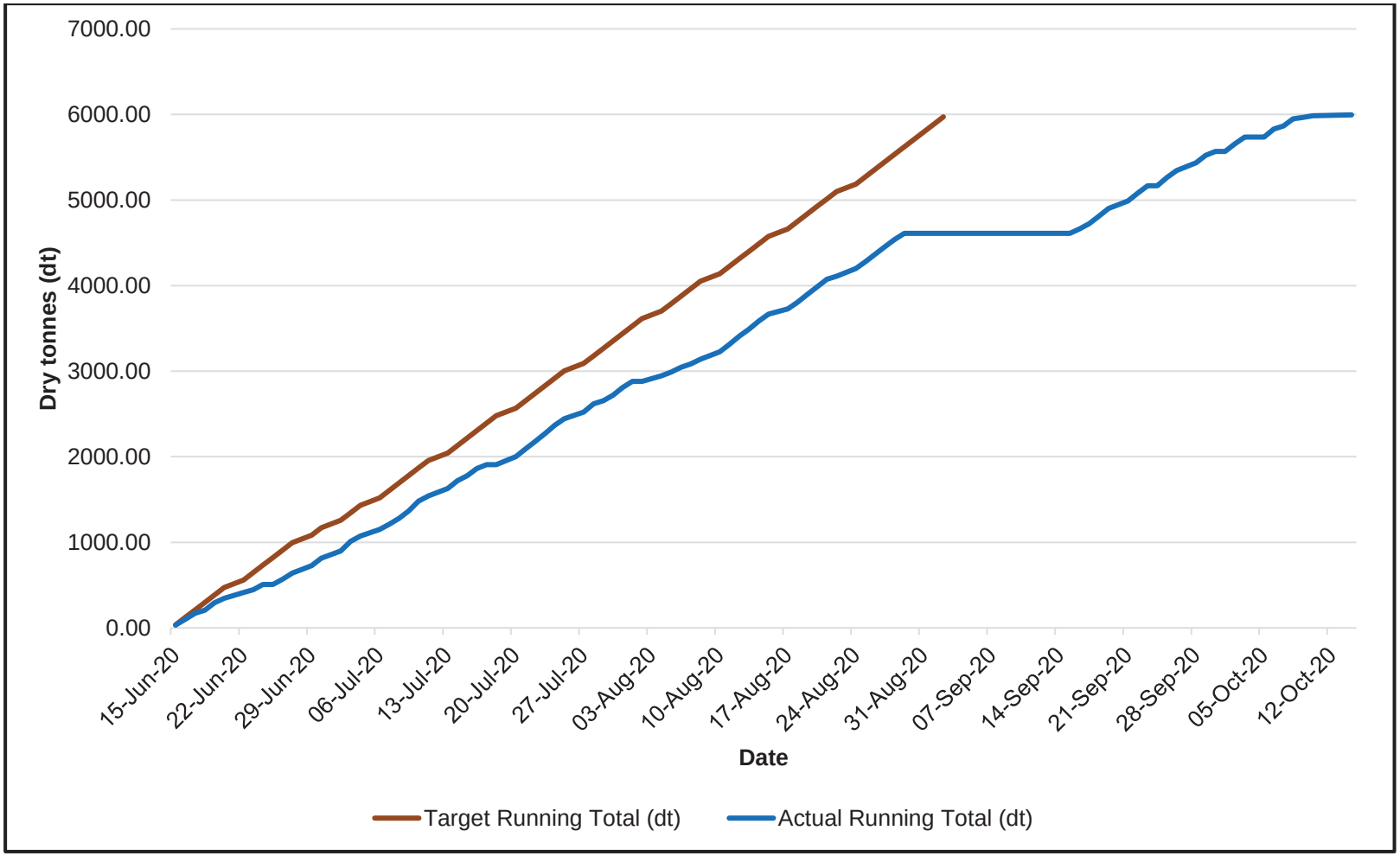


Figure 3. Cumulative targeted versus actual dry tonnage (dt) of biosolids hauled from June 15 to October 15, 2020.



Part II: Wastewater Collection System Report

EPCOR Water Services Inc.
Drainage Services
Edmonton, Alberta

2020
Annual Wastewater Collection System Report

SUBMITTED TO:

The Province of Alberta

Alberta Environment and Parks (AEP)

As per requirements of:

APPROVAL NO. 639-03-06

February – 2021

TABLE OF CONTENTS

2020 Overview

EPCOR Drainage Services provides wastewater and stormwater drainage services to City of Edmonton (the 'City') residents by planning, building, operating, and maintaining the pipes, tunnels, pump stations, and stormwater management facilities that make up the drainage network.

Project Management and Engineering are responsible for projects that are in the preliminary design or detailed design phase. They manage in-house engineering design, cost estimation, and drafting. Projects include new sewer infrastructure projects like tunnels, pipes, manholes, wetlands, and the coordination of sewer rehabilitation work.

Drainage construction services is responsible for the in-house construction and emergency repairs on the collection systems. The rehabilitation construction team uses a wide variety of construction methods to rehabilitate the system and build for growth using open-cut and trenchless techniques. The customer construction group completes service connections, renews existing drainage assets, and completes emergency and high priority repairs.

Infrastructure like sewers and structures in the drainage system require ongoing maintenance. Drainage Services Operations — which includes pipeline maintenance, flow-control facilities, monitoring and compliance, and operations engineering — inspect and monitor drainage systems to ensure service to customers is maintained and to optimize the short-term maintenance required. They also reduce the possibility of customer sewer back-ups caused by service connection blockages and minimize disruptions to the public.

Drainage Services are supported by a number of other groups throughout EPCOR such as Public and Governmental Affairs, Supply Chain Management, Fleet and Equipment, Facilities and Finance.

Collection and conveyance of wastewater and stormwater is carried out through the drainage system which consists of sanitary and stormwater collection infrastructure.

The sanitary collection infrastructure includes nearly 2,800 km of sanitary sewer, over 800 km of combined sanitary and storm sewer that connect all customers to sanitary trunk sewers. Sanitary trunks then deliver wastewater directly to the Gold Bar Wastewater Treatment Plant (WWTP).

A portion of the conveyance of wastewater is covered under a Wastewater Exchange Agreement between EPCOR and the Alberta Capital Region Wastewater Commission (ACRWC). The ACRWC Treatment Plant takes wastewater from Clareview in northeast Edmonton and from the Clover Bar Industrial Area. In exchange, the sanitary collection system conveys wastewater from the south members (City and County of Leduc, and the Town of Beaumont) for treatment at the Gold Bar WWTP.

The stormwater collection infrastructure includes over 3,100 km of storm sewer, 61,000 catch basins, and 12,000 catch basin manholes. This stormwater collection infrastructure is connected to stormwater trunk sewers. Storm trunks then discharge stormwater to natural watercourses, i.e. creeks and the North Saskatchewan River, through one of 259 outfalls. Strategically placed within the stormwater collection system are 286 stormwater management facilities which provide flood prevention, peak-flow attenuation, and treatment through stormwater retention.

Between the sanitary/combined sewer system and stormwater system there are 91 pumpstations

which ensure proper servicing to EPCOR's customers in Edmonton.

In 2020, EPCOR's Drainage capital and operational projects focused on the improvement and expansion of the underground infrastructure system, reduction of odour nuisances and protection of the drainage infrastructure due to corrosion. This work was done through its in-house construction expertise, performing open-cut and tunnel construction, as well as specialized equipment such as tunnel boring machines.

In 2019, Edmonton City Council approved EPCOR's Stormwater Integrated Resource Plan (SIRP) to provide a risk-based approach to prioritize investments in stormwater infrastructure. SIRP was identified by the City as one of the action items to support overall City ability to adapt to changing climate conditions and aligned with the City's Climate Change Adaptation and Resiliency Strategy. In 2020, further strategy development occurred along with the beginning of capital investment to protect customers in Edmonton from the effects of flooding. The risk methodology captures capacity, condition, environmental, and social factors on a risk grid overlaid on a map of the City's neighbourhoods. The goal is to slow, move, secure, predict, and respond to flooding events to prevent or reduce the impact.

A second strategy approved in 2019 is the Corrosion and Odour Reduction (CORe) Strategy. The formation and release of hydrogen sulphide (H2S) gas from the sewer system negatively impacts communities, corrodes infrastructure, and makes maintenance and inspection challenging. In 2020, under CORe, Drainage Services created a city-wide snap shot of the hydrogen sulfide distribution in Edmonton's sewer head space by deploying monitoring infrastructure across more than 80 locations in the sanitary and combined sewer system. Through CORe, Drainage Services has increased its hydrogen sulfide monitoring capacity by purchasing an additional twenty-seven gas-phase monitors as well as two liquid phase field hydrogen sulfide monitors. Based on the information collected in 2020 and in consultation with the integrated resource planning working group, CORe is now finalizing the placement locations for 10 permanent in-sewer monitoring stations and is initiating an assessment to identify candidate locations for ambient surface monitoring of hydrogen sulfide.

Drainage Services is fully committed to the protection of the environment and the health and safety of its employees, customers, and neighbours. Health and safety and the environment (HSE), including public health safety, is one of the top priorities of EPCOR. In order to continually improve our environmental performance, Drainage Services operates with an ISO 14001:2015 registered Environmental Management System (EMS). In 2021 Drainage Services is planning the roll out of an integrated management system that operates according to the ISO14001:2015 standard and the ISO 45001:2014 standard for Safety Management Systems

As required by Approval #639-03-06, EPCOR - Drainage Services is submitting the 2020 Annual Wastewater Collection System Report.

This Annual Wastewater Collection System Report submission includes: 2020 Drainage Services Capital Program summary, Interconnection Control Strategy Annual Report, Collection System Monitoring and Assessment Annual Report, and Collection System Operational details.

TABLE 1: Summary of 2020 Completed Projects and Planned Major Rehabilitation Projects

Program/Project	Completion
Drainage System Expansion	
Imagine Jasper	Jan-2021
Jasper New Vision	Jan-2021
SWMF Safety Review Phase II	Sep-2021
Yellowhead Trail Freeway Conversion (Area 2)	Dec-2021
Yellowhead Trail Freeway Conversion (Area 3)	Dec-2021
50 Street Wide & CPR Sewer Relocate	Dec-2021
Servicing for Downtown Intensification (105 Sewer Lateral Project)	Dec-2022
Drainage System Rehabilitation	
SW3 Trunk Sewer and Manhole Rehabilitation	Feb-2020
Whitemud Drive Steel Plates Rehabilitation	Mar-2020
Dunluce Pump Station Upgrade	Mar-2020
Jasper Utilidor Sewer Rehabilitation Project	Apr-2020
Duggan Pump Station Upgrades	Apr-2020
Wedgewood	Apr-2020
South Westridge	Apr-2020
Rhatigan Road Emergency	Apr-2020
Whitemud Drive &106 Street NW	Jun-2020
Sanitary CB Lead Removal	Jul-2020
Station Safety Upgrades	Aug-2020
Groat Road Trunk Sewer Rehabilitation	Oct-2020
Ottewell Major Flooding (62 St / 63 St at 94A Ave / 94B Ave NW)	Nov-2020
Pipe 38809 - 130 Avenue & E113A Street NW (Lauderdale)	Dec-2020
Emergency 184 Street & 57 Avenue NW	Dec-2020
Trunk Sewer - 149 Street & Stony Plain Road NW	Dec-2020
Emergency Whitemud Trestle #7	Dec-2020
Clifton Place Pump Station Upgrade	Dec-2020
Kaskitayo Carma-2C	Dec-2020
St Georges Crescent NW	Dec-2020
Metro LRT PH1 Sewer Relocate	Jan-2021
Emergency 119 Street Westbrook	Feb-2021
RTC #4 Stop Logs Rehabilitation	Feb-2021
Westridge Subsidence	Mar-2021

Program/Project	Completion
Larkspur Pond Pump Replace	Jun-2021
Double Barrel SAN-11	Jun-2021
Service Reconnection and Sanitary Sewer Replacement (15317-87Avenue)	Jun-2021
Outfall Rehabilitation - #51	Aug-2021
Trestle #5	Nov-2021
North Griesbach Pump Station	Dec-2021
Trestle #7 - Rehab and Replace	Dec-2021
Emergency Void (109 Street & 61 Avenue NW)	Dec-2021
Sanitary Chamber Repair (127 Street & 153 Avenue NW)	Dec-2021
New Buena Vista Pump Station	Dec-2021
Outfall Rehabilitation - #80	Dec-2021
Outfall Rehabilitation - #154	Dec-2021
Clareview Sanitary Trunk - Rehabilitation Project	Dec-2021
Large Trunk Rehabilitation: Area S-1	Dec-2021
Cloverbar Valve, Chamber & Piping Rehab	Dec-2021
2019-2020 Pump Station Rehabilitation	Dec-2021
2020 Drill Drop Manhole (DDMH) Rehabilitation/Replacement Projects	Dec-2021
NC1 Bypass (121 Street & 153 Avenue NW)	Jan-2022
Waterdale Pump Station #171	Dec-2022
Gold Bar Utilidor (PW552 and 147) Rehabilitation	Dec-2022
Large Trunk Rehabilitation: Area S-2a	Dec-2022
NL1 Sanitary Chamber Rehabilitation	Dec-2022
Sanitary Trunk Rehabilitation - Phase II (151 Street & 99 Avenue NW)	Dec-2023
West Valley Line LRT - Sewer Relocation	Dec-2024
2019 Trunk Sewer Rehabilitation - Area C-2	Dec-2024
Mill Creek Combined Trunk Rehabilitation	Dec-2024
Environmental Quality Enhance	
Duggan Tunnel Replacement	Jan-2025
Kinnaird Opportunistic Sewer Separation	Dec-2022
2020 Pump Station Treatment	Dec-2021
2019-2021 Manhole Access	Dec-2021
2019 - 2021 Drop Shaft Modifications	Dec-2021
EPCOR Site Rain Garden	Oct-2021
Pump Station Optimiz	Jun-2021
Accelerated Access Manhole	Dec-2020

Program/Project	Completion
2020 Ventilation Control Program	Dec-2020
Cloverbar Cell # 1-4 Redevelopment (Cell 3E Relining)	Nov-2020
Silverberry 4 Pond Naturalization Pilot	Oct-2020
Flood Mitigation	
Malcolm Tweddle & Edith Rogers Dry Ponds	Dec-2023
Rideau Park, Empire Park, Duggan Upgrade	Dec-2022
Parkdale Dry Pond	Dec-2022
Kenilworth Dry Pond	Dec-2022
Ermineskin / Steinhauer	Oct-2022
Tweddle Place	Dec-2021
2020 Overland Drainage	Dec-2021
Proactive Manhole Sealing	Dec-2021
Proactive Pipe Relining	Dec-2021
2019 2020 Low Impact Development on Public Lands Coordination Program	Dec-2020
Hurstwood Estates (Maple Ridge)	Oct-2020
2019 Manhole Relining and Insert	Oct-2020
Parkallen Dry Pond (PA1)	Sep-2020
Westbrook Estates	Jun-2020
Opportunistic Pipe Relining	Jun-2020
Morris Pond	May-2020
Aldergrove	Apr-2020
SSSF Projects	
SW5	Dec-2024
NEST NC2 & NC3	Jun-2022
SESS SW4	Dec-2021
SESS SA10A	Dec-2021
SW1 Pump Station Upgrades	Jun-2021

Interconnection Control Strategy

EXECUTIVE SUMMARY

In response to a requirement in the 1995 Approval to Operate (No. 95-MUN-117), Drainage Services prepared an Interconnection Control Strategy. Through this Strategy, EPCOR embarked on its mitigation and monitoring program in the context of “perpetual monitoring and assessment” (Figure 1).

An interconnection is designed to allow sanitary or combined sewage to overflow into the storm system, in order to relieve the sewer system under high flow conditions. Since 1998, a program has been in place to minimize the contamination of stormwater with sanitary sewage by monitoring, assessing and eliminating or mitigating all interconnections between the two systems. This will reduce the total loading of contaminants to the North Saskatchewan River.

Under the current Approval (639-03-06), issued in 2020, EPCOR intends to continue with the existing processes and reporting through the Wastewater System Operations Plan. This report presents summaries of: status and mitigation activities for known and newly discovered interconnections (I/Cs); results of the 2020 monitoring program; and status of the Interconnection Rectification Assessment project.

Interconnection Status

During 2020, no new I/C sites were discovered and no sites were closed. The I/C count for December 31, 2020 stands at 117 open I/Cs and 287 corrected sites (total 404).

The total monies spent on remedial work for I/C control in 2020 was $230,000.

Interconnection Monitoring

As of December 31, 2020, 110 of the 117 open I/Cs had monitoring devices. Two dry weather overflows (DWO) were discovered in 2020.

Interconnection Rectification Assessment Project

Two consultants were hired in 2002 and 2003 to carry out the rectification assessment of about 90 and 40 sites, respectively. Their work focused mainly on active I/Cs and I/Cs with DWOs. Previous studies and monitoring data were utilized to quantify I/Cs activity, support sewer system assessment, and provide conceptual and preliminary design for remedial works. These assessment studies were completed in 2004 and EPCOR has been following up with the recommended mitigation work since. A long list of construction works has been identified that will absorb the funding for the next several years. New assessment projects will commence once this construction is largely completed.

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1.0 INTRODUCTION

An Interconnection Control Strategy was prepared by EPCOR in response to a requirement by Alberta Environment, as part of the 1995 Approval. This program to minimize the contamination of stormwater by sanitary sewage, has been in effect since 1998.

A key commitment of the Interconnection Control Strategy is perpetual monitoring and assessment for all unmitigated interconnections (see Figure 1). This consists of identification, maintenance of data, evaluation, monitoring, correction, elimination and mitigation.

The focus of interconnection monitoring activities is to collect information on the frequency and duration of discharges from all interconnection (I/C) sites. The evaluation of the data for all sites is the core component of the assessment. All sites are to be evaluated annually for further action. More detailed monitoring will be conducted at highly active sites. Corrective measures will be taken at inactive sites or active sites where sufficient data has been collected and analyzed indicating that they can be safely closed. Monitoring information will be used as the basis for decisions in terms of remedial activity.

As part of the current Approval (639-03-06) issued in 2020, the *Interconnection Identification and Control Strategy* is continuing to be a component of the *Wastewater Collection System Operations Plan*. The *Wastewater Collection System Monitoring Protocol* includes the collection of overflow data from open (active) interconnection sites. This Protocol was submitted to Alberta Environment in 2007 and has been maintained since.

Through the *Wastewater Collection System Operations Plan*, EPCOR has committed to continue with the Interconnection Control Strategy and annual reporting of the I/C status by February 28 of each year. The intent of the annual report is to document changes and status of the I/Cs, including any corrections or closures, and to provide an updated I/C database. The following report documents the I/C status for 2020.

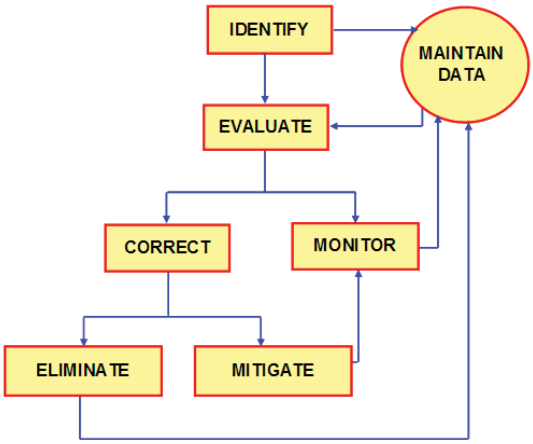

Figure 1 Interconnection Control Strategy Perpetual Monitoring and Assessment

2.0 MITIGATION MEASURES

On January 1, 2020 there were a total of 404 I/Cs. This consisted of 117 open I/Cs and 287 corrected (closed) I/Cs. The I/C count for December 31, 2020 stands at 117 open I/Cs and 287 corrected sites (total 404).

The enclosed plan "2020 Status and DWO Locations" shows the locations of all of the open I/Cs in the city. A database of I/C sites is located in Appendix A. Figure 2 shows the cumulative number of I/Cs over time.

2.1 CONSTRUCTION

The mitigation measures undertaken in 2020 included:

- Queen Mary Park Neighbourhood:
  - Preliminary design work was completed to facilitate future closure of IC 50 and IC 51 in association with double barrel and LRT utility relocation work.

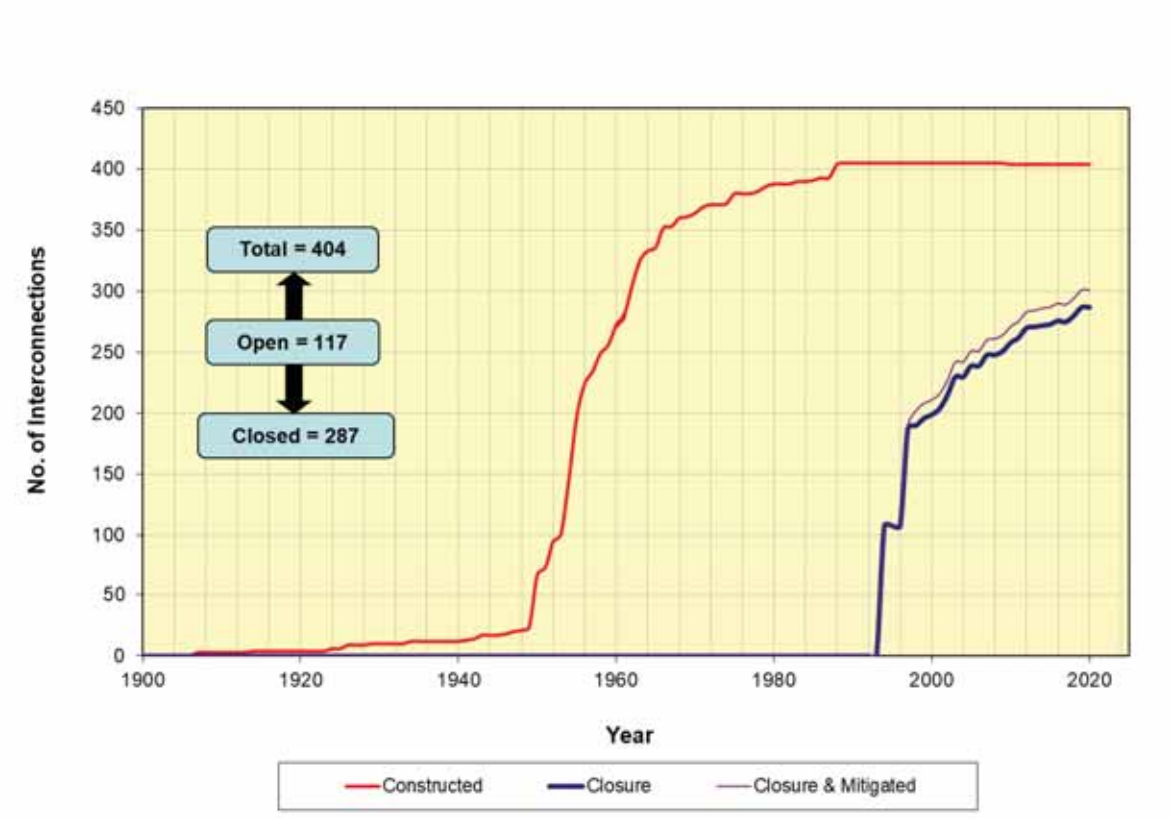

Figure 2 2020 Cumulative Number of Interconnections

2.2 COSTS

In 2020, the amount spent was $145,000 on construction work as well as $45,000 for monitoring the network.

In summary, the expenditures for the Interconnection Control Strategy each year from 1994 to 2020 include:

- Monitoring program – approximately $101,000 annually.
- Investigations consisting of personnel entry to the sewers to confirm or refute the occurrence of overflows – approximately $9,000 annually, paid for under regular operating budget (repair, blockage removal or bypass pumping costs are not included).
- Correcting the interconnections based on I/C monitoring and assessment. This can involve closure of an interconnection to eliminate overflow or raising the weir to reduce overflow frequency - approximately $528,000 annually.
- Assessing I/C sites for possible closure – approximately $63,000 annually (although the assessments are conducted on an intermittent basis).

Table 1 Interconnection Control Strategy Expenditure Summary

Year	Dollars Spent				Total
	Monitoring	Investigation	Correcting	Assessing	
1994	$0	$0	$195,000	$50,000	$245,000
1995	$40,000	$0	$0	$960,000	$1,000,000
1996	$50,000	$0	$30,000	$0	$80,000
1997	$213,000	$0	$634,000	$0	$847,000
1998	$140,000	$2,205	$197,500	$0	$339,705
1999	$104,600	$5,760	$762,200	$0	$872,560
2000	$103,000	$8,100	$834,000	$0	$945,100
2001	$122,000	$5,265	$319,000	$168,000	$614,265
2002	$149,204	$3,360	$210,000	$133,319	$495,883
2003	$145,047	$2,340	$1,055,000	$367,897	$1,570,284
2004	$97,910	$3,350	$1,221,300	$1,033	$1,323,593
2005	$91,280	$3,600	$1,067,400	$16,896	$1,179,176
2006	$92,871	$2,600	$350,000	$0	$445,471
2007	$137,920	$3,197	$100,259	$0	$241,376
2008	$124,345	$3,329	$1,505,424	$0	$1,633,098
2009	$128,668	$3,570	$740,507	$0	$872,746
2010	$134,362	$5,300	$29,931	$0	$169,594
2011	$105,796	$7,950	$122,210	$0	$235,955
2012	$90,512	$11,918	$193,000	$0	$295,430
2013	$85,936	$21,491	$539,171	$0	$646,598
2014	$97,713	$23,606	$1,750,427	$0	$1,871,747
2015	$127,257	$22,507	$1,022,873	$0	$1,172,636
2016	$98,399	$11,338	$688,140	$0	$797,877
2017	$66,869	$8,884	$304,455	$0	$380,208
2018	$70,803	$15,907	$108,640	$0	$195,349
2019	$59,305	$29,360	$130,000	$0	$218,665
2020	$44,696	$40,056	$145,548	$0	$230,299
Total	**$2,721,492**	**$244,993**	**$14,255,985**	**$1,697,145**	**$18,919,615**
Annual Ave.	**$100,796**	**$9,074**	**$527,999**	**$62,857**	**$700,726**
Proportion	**14.4%**	**1.3%**	**75.4%**	**9.0%**	

3.0 2020 MONITORING AND ASSESSMENT RESULTS

In 2017, a project was initiated to replace the loggers at all monitored interconnection sites. Data collection from the old style of logger was completed by driving a vehicle past each site, sometimes having to stop in traffic and place an antenna through the manhole cover. The new loggers are now equipped with cellular communication and no longer require a 'drive-by' to retrieve data.

Benefits to upgrading the loggers include;

- Decrease the safety risk exposure of the contractor by not requiring vehicle based data collection
- Increased data collection frequency from weekly to every 6 hours
- More data streams collected including battery voltage, signal strength, and temperature.
- Cost reduction by using cellular technology. Labour costs of collecting data are eliminated which were more than cellular service fees.
- Improved asset management as battery replacement can be planned to occur at the correct time, not too early or too late. Other data streams will help diagnose other problems as well.
- Sites not accessible by vehicle can now have sensors and loggers installed.

In the Interconnection Control Strategy, EPCOR committed to perpetual monitoring and assessment of all I/Cs. As of December 31, 2020, 110 of the 117 I/Cs had crest gauge type monitors equipped with cellular data loggers.

The rectification studies completed in the past, alongside the historical activity data for the I/C sites sets a well-defined history to draw on to inform management decisions on a go forward basis.

3.1 DRY WEATHER OVERFLOWS (DWOS)

In 2020, 235 investigations of possibly overflowing sites were made with 2 Dry Weather Overflows discovered.

3.2 INTERCONNECTION SITE ACTIVITY CHARACTERISTICS SUMMARY

As shown in Table 2 below, about 3% of the sites were found to have dry weather overflows each year during monitoring from 1997 to 2019, with an average of 2% over the past 5 years. These are the events of critical concern to the environment. Although only 2% of the sites experience dry weather overflow in a given year, different sites overflow each year. A total of 29% of the known open I/Cs (34 sites) have had a dry weather overflow event.

Table 2 Interconnection Site Activity Characteristics Summary

Year	Known I/C Sites	I/C Sites Monitored	Dry Weather Overflow	Rainfall Correlated	Inactive Sites	Unverified Overflows
1997	186	182	N/A	65	109	8
1998	188	179	3	72	64	43
1999	188	176	6	48	92	29
2000	186	173	6	36	76	56
2001	185	174	7	37	75	55
2002	179	161	6	29	110	16
2003	167	153	5	34	102	12
2004	155	139	5	64	51	19
2005	150	131	9	16	88	18
2006	151	131	5	39	70	17
2007	142	126	2	21	87	16
2008	142	126	3	25	75	24
2009	141	127	2	10	81	28
2010	133	118	3	17	72	26
2011	129	118	3	---	---	---
2012	121	113	4	---	---	---
2013	121	113	1	---	---	---
2014	124	113	2	---	---	---
2015	123	112	0	---	---	---
2016	120	112	0	---	---	---
2017	121	68	4	---	---	---
2018	116	93	4	---	---	---
2019	117	103	3	---	---	---
2020	117	107	2			
Average	**146**	**131**	**4**	**37**	**82**	**26**
Proportion of Monitored Sites =			**2.8%**	**28%**	**63%**	**20%**

4.0 RECTIFICATION ASSESSMENT PROJECT SUMMARY

Two consultants were hired in 2002 and 2003 to carry out the second phase of a large-scale Interconnection Rectification Assessment project. The first project included about 90 I/C sites and the second included about 40 sites. Their work was focused mainly on active and DWO I/Cs. This work identified many I/Cs that could be closed if funds are available.

Previous studies and monitoring data collected between 1998 and 2003 were utilized to quantify interconnection activity, support sewer system assessment, and provide conceptual and preliminary design for remedial works. Major work requirements for this rectification assessment included:

- Perform sewer system data collection and field surveys
- Carry out sewer condition and hydraulic assessment
- Evaluate various remedial measures
- Develop conceptual and preliminary design plans
- Provide Cost estimates

A computer model called MOUSE (Model For Urban Sewers) developed by DHI (Danish Hydraulics Institute) was employed in these studies to simulate the existing system and recommend remedial measures under various wet weather flow conditions. Simulation results such as hydraulic grade line and by-pass volume were summarized and evaluated to ensure that an improved level of control can be achieved, and that proposed improvements would not cause other system problems.

These two assessment projects were completed in 2004 and we have been following up with construction of the recommended mitigation works since that time. The assessments identified a long list of construction works that will absorb the funding for the next several years. New assessment projects will commence once this construction is largely complete.

In 2018, a review of select neighbourhoods was done in addition to the rectification detailed design works. Further recommendations for interconnection closure work has been developed beyond the conceptual design phase. EPCOR will evaluate these recommendations alongside infrastructure plans of other programs such as neighbourhood rehab and the Stormwater Integrated Resource Plan (SIRP).

APPENDIX A

Interconnection Database
December 31, 2020

IC Site#	Plan	IC MH#	CADAS-TRAL	SAN_MH	STRM_MH	STREET	AVENUE	OF_ NUM	IC_ AGE	SAN_ AGE	STRM_ AGE	ICTYPE	Delete date	COR-RECTED	OF_ LOC1	OF_ LOC2	OF_ DIA	NHOOD	COUNT
ACTIVE INTERCONNECTIONS																			
12	97-177	241869	313225	046	T3	146	SUMMIT D	30	71	30	49	HIGH PIPE		FALSE	RIVER	LEFT	1650	Crestwood	1
14	96-041	315813	313224	803		W142	S. SUMMI	30	61	55	61	OVERFLOW		FALSE	RIVER	LEFT	1650	Glenora	2
15	97-174	256174	343204	880		136	S102	138	43	43		OVERFLOW		FALSE	CREEK	LEFT	375	Glenora	3
16	96-040	239447	313223	801		ST GEORGE		122	55	29	55	LOW PIPE		FALSE	RIVER	LEFT	200	Glenora	4
17	97-176	239449	313223	802		E135	SVICTORI	123	43					FALSE					5
18	96-085	255955	343203	813	435	134	ST GEOR	124	64	29	64	HIGH PIPE		FALSE	CREEK	LEFT	200	Glenora	6
19	96-084	255954	343203	812	404	133	ST GEOR	126	55	55	55	OVERFLOW		FALSE	CREEK	LEFT	200	Glenora	7
20	96-086	316420	343203	826		132	TWEEDSI	134	49	29	49	OVERFLOW/WEIR		FALSE	CREEK	LEFT	200	Glenora	8
21	96-088	255983	343203	839		E132	S103	273	54					FALSE				Glenora	9
25	97-128	255832	343202	820	445	W123	102	46	50	52	50	LOW PIPE		FALSE	RIVER	LEFT	1275	Oliver	10
26	97-127	255697	343202	827	456	W122	102	46	50	9	50	LOW PIPE		FALSE	RIVER	LEFT	1275	Oliver	11
27	97-126	255840	343202	832	506	W121	102	46	50	78	50	LOW PIPE		FALSE	RIVER	LEFT	1275	Oliver	12
28	97-125	255512	343201	805	402	W120	102	46	50	90	50	LOW PIPE		FALSE	RIVER	LEFT	1275	Oliver	13
29	97-124	255520	343201	816	411	W119	102	46	50	13	50	LOW PIPE		FALSE	RIVER	LEFT	1275	Oliver	14
30	97-123	255525	343201	830	416	W118	102	46	50	12	50	LOW PIPE		FALSE	RIVER	LEFT	1275	Oliver	15
31	97-120	255534	343201	843	425	W117	102	46	50	11	50	LOW PIPE		FALSE	RIVER	LEFT	1275	Oliver	16
32	97-119	255539	343201	855	431	W116	102	46	50	11	50	LOW PIPE		FALSE	RIVER	LEFT	1275	Oliver	17
33	97-118	255562	343201	884	448	W114	102	46	50	8	50	LOW PIPE		FALSE	RIVER	LEFT	1275	Oliver	18
34	97-117	265676	343605	805	805	W113	102	46	50	8	50	LOW PIPE		FALSE	RIVER	LEFT	1275	Oliver	19
35	97-116	265685	343605	817	430	W112	102	46	50	8	50	LOW PIPE		FALSE	RIVER	LEFT	1275	Oliver	20
36	97-115	265684	343605	821	412	112	102	46	50	30	50	LOW PIPE		FALSE	RIVER	LEFT	1275	Oliver	21
37	97-114	265754	343605	833	414	111	102	46	50	46	50	LOW PIPE		FALSE	RIVER	LEFT	1275	Oliver	22
38	97-113	265728	343605	801	405	114	N101	46	50	7	50	LOW PIPE		FALSE	RIVER	LEFT	1275	Oliver	23
39	97-112	245736	343605	803	406	114	S101	46	50	7	50	LOW PIPE		FALSE	RIVER	LEFT	1275	Oliver	24
41	97-142	245620	313625	871		W113	99	46	50	10	50	LOW PIPE		FALSE	RIVER	LEFT	1275	Oliver	25
46	97-141	245582	313625	839	410	113	S99	46	50	13	50	LOW PIPE		FALSE	RIVER	LEFT	1275	Oliver	26
48	97-145	255558	343201	869	440	116	S101	46	54	7	54	LOW PIPE		FALSE	RIVER	LEFT	1275	Oliver	27
49	97-122	257004	343606	803		114	104	46	50	27	50	LOW PIPE/WEIR		FALSE	RIVER	LEFT	1275	Oliver	28
50	97-109	256913	343210	835	404	W116	106	54	64	64	64	LOW PIPE		FALSE	RIVER	LEFT	3000	Queen Mary Park	29
51	97-108	256922	343210	846	412	W115	106	54	83	64	83	LOW PIPE		FALSE	RIVER	LEFT	3000	Queen Mary Park	30
52	97-107	263239	343617	857		102	111	54	68	14	68	FLOW SPLIT		FALSE	RIVER	LEFT	3000	Spruce Avenue	31
53	96-090	266055	343625			110 ST	N111 AVE	54	55					FALSE				Prince Rupert	32
60	97-129	272723	373220		401	W120	129	31	55	55	55	OVERFLOW		FALSE	RIVER	LEFT	2400	Calder	33
75	97-099	263753	343622		416	W87	114	56	56	56	13	OVERFLOW		FALSE				Parkdale	34
76	97-098	263758	343622		422	W86	114	56	56	56	13	OVERFLOW		FALSE				Parkdale	35
78	97-096	263708	343621		401	W83	114	56	56	56	13	OVERFLOW		FALSE				Parkdale	36
79	97-095	263716	343621		406	W82	114	56	56	56	13	OVERFLOW		FALSE				Parkdale	37
80	97-080	261662	343621		423	W80	113	56	56	56	13	OVERFLOW		FALSE				Cromdale	38
81	97-078	261672	343621		430	W79	113	56	56	56	13	OVERFLOW		FALSE				Cromdale	39
83	97-081	261660	343621		422	W80	114	56	56	56	13	OVERFLOW		FALSE				Edmonton Northlar	40

IC Site#	Plan	IC MH#	CADAS-TRAL	SAN_MH	STRM_MH	STREET	AVENUE	OF_ NUM	IC_ AGE	SAN_ AGE	STRM_ AGE	ICTYPE	Delete date	COR-RECTED	OF_ LOC1	OF_ LOC2	OF_ DIA	NHOOD	COUNT
94	96-008	227272	283606	803	412	110	57	22	52	46	52	LOW PIPE		FALSE	RIVER	RIGHT	1500	Pleasantview	**41**
95	96-010	227234	283615		420	111	S61	22	54	54	54	OVERFLOW		FALSE	RIVER	RIGHT	1500	Pleasantview	**42**
106		224867	283221		445	112	N76	22	54	47	54	OVERFLOW		FALSE	RIVER	RIGHT	1500	Parkallen	**43**
107	96-007	224927	283221	813	448	112	N75	22	86	48	54	LOW PIPE		FALSE	RIVER	RIGHT	1500	McKernan	**44**
110	97-021	242851	313212	009	471	SASK DR	89	23D	53	48	50	LOW PIPE/WEIR		FALSE	RIVER	RIGHT	375	Windsor Park	**45**
111	97-022	242711	313212	008	443	W120	89	23D	53	49	50	LOW PIPE		FALSE	RIVER	RIGHT	375	Windsor Park	**46**
113	97-029	228112	283625		429	109	73	22	54	14	54	OVERFLOW		FALSE	RIVER	RIGHT	1500	McKernan	**47**
114	96-018	227757	283616	842		109	67	22	51	46	51	OVERFLOW		FALSE	RIVER	RIGHT	1500	Parkallen	**48**
116	96-009	227604	283615		406	109	65	22	54	49	54	OVERFLOW		FALSE	RIVER	RIGHT	1500	Parkallen	**49**
119	96-013	227636	283615		431	109	62	22	54	49	54	OVERFLOW		FALSE	RIVER	RIGHT	1500	Parkallen	**50**
120	97-045	227702	283615	842		109	61	22	54	54	54	DUAL		FALSE	RIVER	RIGHT	1500	Pleasantview	**51**
134	97-195	229993	313601	861	473	89	S77	44	55	49	55	LOW PIPE		FALSE	RIVER	RIGHT	3800	King Edward Park	**52**
135	96-059	246571	313601	859	471	91	S77	44	55	28	55	LOW PIPE/WEIR		FALSE	RIVER	RIGHT	3800	King Edward Park	**53**
139	96-053	229990	313601	828	435	91	S80	44	55	28	55	LOW PIPE/WEIR		FALSE	RIVER	RIGHT	3800	King Edward Park	**54**
143	96-064	243161	313610	859		93	S83	116	55	39	55	OVERFLOW/WEIR		FALSE	CREEK	RIGHT	750	Bonnie Doon	**55**
147	96-066	243180	313610	867	437	87	S83	116	50	50	50	LOW PIPE/WEIR		FALSE	CREEK	RIGHT	750	Bonnie Doon	**56**
149	96-051	243858	313601	802	403	89	82	254	52	50	52	LOW PIPE		FALSE	CREEK	RIGHT	1050	Bonnie Doon	**57**
151	97-004	246539	313601	820		89	S81	44	55	46	55	LOW PIPE		FALSE	RIVER	RIGHT	3800	King Edward Park	**58**
153	97-003	246506	313601		460	89	S78	44	55	28	55	LOW PIPE		FALSE	RIVER	RIGHT	3800	King Edward Park	**59**
154	96-025	229777	283621	804	436	87	76	44	55	49	54	LOW PIPE/WEIR		FALSE	RIVER	RIGHT	3800	King Edward Park	**60**
155	96-060	246574	313601	864	477	87	S77	44	55	49	55	LOW PIPE/WEIR		FALSE	RIVER	RIGHT	3800	King Edward Park	**61**
156	96-058	246570	313601	857		87	77	44	55	49	55	LOW PIPE/WEIR		FALSE	RIVER	RIGHT	3800	King Edward Park	**62**
159	97-211	251618	314005		423	85	S80	44	55	55	49	OVERFLOW		FALSE				King Edward Park	**63**
161	97-210	251792	314005		432	85	S79	44	55	55	49	OVERFLOW		FALSE				King Edward Park	**64**
162	97-209	251797	314005		437	85	S78	44	55	55	49	OVERFLOW		FALSE				King Edward Park	**65**
164	97-205	251779	314005	804	408	83	S82	44	55	49	55	OVERFLOW/WEIR		FALSE	RIVER	RIGHT	3800	King Edward Park	**66**
176	97-001	244348	313621	811	409	87	98	52	52	52	52	OVERFLOW		FALSE	RIVER	RIGHT	900	River Valley Rivers	**67**
177	97-218	244318	313621	809	406	88	98	52	52	52	52	HIGH PIPE		FALSE	RIVER	RIGHT	900	River Valley Rivers	**68**
178	97-217	244347	313621	804	401	92	98	256	52	52	52	OVERFLOW		FALSE	RIVER	RIGHT	500	Cloverdale	**69**
179	97-214	244406	313622	807	420	97	N97	50	69	68	69	OVERFLOW		FALSE	RIVER	RIGHT	1500	Cloverdale	**70**
180 (n/m)	97-161	244671	313617	808	418	103	97	46	50	5	50	LOW PIPE		FALSE	RIVER	LEFT	1275	Rossdale	**71**
181	97-159	245429	313624	869	447	104	S98	46	41	7	41	LOW PIPE		FALSE	RIVER	LEFT	1275	Rossdale	**72**
182 (n/m)	97-158	245174	313617	807	416	104	97	46	50	5	50	LOW PIPE		FALSE	RIVER	LEFT	1275	Downtown	**73**
183 (n/m)	97-157	245040	313617	805		105	97	46	50					FALSE				Rossdale	**74**
184	97-156	245170	313617	806		106	97	46	70					FALSE				Rossdale	**75**
185	97-138	262096	343603	913	442	99	101	243	50	8		LOW PIPE		FALSE	RIVER	LEFT	1980	Downtown	**76**
191	97-002	246377	313613	813		100	SASK DR	188	52	12	52	CHAMBER		FALSE	RIVER	RIGHT	1200	Strathcona	**77**
193	97-014	246787	313608	848	405	102	85	37	79	13	79	HIGH PIPE		FALSE	RIVER	RIGHT	900	Strathcona	**78**
194	97-013	246808	313608	863	406	102	83	37	79	35	79	HIGH PIPE		FALSE	RIVER	RIGHT	900	Strathcona	**79**
195	97-012	246799	313608	876	407	102	84	37	79	35	79	HIGH PIPE		FALSE	RIVER	RIGHT	900	Strathcona	**80**

IC Site#	Plan	IC MH#	CADAS-TRAL	SAN_MH	STRM_MH	STREET	AVENUE	OF_ NUM	IC_ AGE	SAN_ AGE	STRM_ AGE	ICTYPE	Delete date	COR-RECTED	OF_ LOC1	OF_ LOC2	OF_ DIA	NHOOD	COUNT
198	97-152a	244681	313617	024	818	105	S96	47	52	23	52	DUAL		FALSE	RIVER	LEFT	1050	Rossdale	81
199	97-151	245068	313617	818	502	105	96	47	52	23	52	LOW PIPE		FALSE	RIVER	LEFT	1050	Rossdale	82
200	97-146	245204	313613	821	443	101	94	188	52	11	52	LOW PIPE		FALSE	RIVER	RIGHT	1200	Rossdale	83
201	97-148	245013	313613	802	416	101	S94	145	52	11	52	OVERFLOW/WEIR		FALSE	RIVER	LEFT	300	Rossdale	84
202	97-163	245209	313618	805		100A	97	46	50					FALSE				Rossdale	85
204	97-221	245216				E101	96	45	57					FALSE				Rossdale	86
220	96-006	242107	313201	807	438	113	L. N. 79	22	54	47	54	LOW PIPE		FALSE	RIVER	RIGHT	1500	Parkallen	87
221		227702	283615			109	61	22	54	54	54	OVERFLOW/WEIR		FALSE	RIVER	RIGHT		Pleasantview	88
224		243209				89	83	116	56			LOW PIPE		FALSE				Bonnie Doon	89
226		245511	313625	801		111	97	46	50	5	50	HIGH PIPE		FALSE	RIVER	LEFT	1275	Oliver	90
234		246738	313614			102 (Tommy Banl	Saskatche	37	71					FALSE				Strathcona	91
235		262142	343603			100	S. Jasper /	47	26					FALSE				Downtown	92
238		246111	313608			101	81	37	79					FALSE				Ritchie	93
240 (n/m)		255527				119	S102	46	71					FALSE				Oliver	94
244 (n/m)		263246				102	110	54	68					FALSE				Central McDougall	95
245 (n/m)		263247				102	110	54	68					FALSE				Central McDougall	96
249		242945	313218			Hawrelak Park		27	66					FALSE				Hawrelak Park	97
250 (03,n/m)		255647				W114	N101	46	88					FALSE				Oliver	98
254 (03,n/m)		245584				112	98	46	50					FALSE				Oliver	99
255 (03)		245344				104	98	46	50					FALSE				Downtown	100
258 (03)		247763	313614			103	Sask. Dr	37	71					FALSE				River Valley Walter	101
265 (06, n/m)		240896				137	82	21	65			DUAL		FALSE				Laurier Heights	102
266 (08)		244346	313621	814	401	92	S98	256	46	46	46	LOW PIPE		FALSE	RIVER	RIGHT	500	Cloverdale	103
267 (09)		243667				92	98	256						FALSE	RIVER	RIGHT		Cloverdale	104
268 (09)		244163				Mill Creek		44						FALSE				Mill Creek Ravine N	105
269 (13, n/m)		261579				78	111	203				LOW PIPE		FALSE				River Valley Kinnai	106
273		330340				122	39A	2				DUAL		FALSE	Whitemud	RIGHT		Aspen Gardens	107
274		258480				123	112	31				LOW PIPE		FALSE				Inglewood	108
275		282732				37	122	88				LOW PIPE		FALSE				Beacon Heights/Be	109
276 (19)		243786	9343602			96A	98	51				TRANSVERSE WEIR		FALSE				Cloverdale	110
277 (19)		231393				111A	50	2				Dual MH with WEIR		FALSE	Whitemud	RIGHT		Malmo Plains	111
278 (19)		287019				W71	130	74				LOW PIPE		FALSE	RIVER	LEFT		Balwin	112
279 (19)		287020				W70	130	74				LOW PIPE		FALSE	RIVER	LEFT		Balwin	113
280 (19)		287021				W69	130	74				LOW PIPE		FALSE	RIVER	LEFT		Balwin	114
281 (19)		286503				W70	129	74				LOW PIPE		FALSE	RIVER	LEFT		Balwin	115
282 (19)		286554				W69	129	74				LOW PIPE		FALSE	RIVER	LEFT		Balwin	116
283 (19)		286508				70	N127	74				LOW PIPE		FALSE	RIVER	LEFT		Balwin	117

IC Site#	Plan	IC MH#	CADAS-TRAL	SAN_MH	STRM_MH	STREET	AVENUE	OF_ NUM	IC_ AGE	SAN_ AGE	STRM_ AGE	ICTYPE	Delete date	COR-RECTED	OF_ LOC1	OF_ LOC2	OF_ DIA	NHOOD	COUNT
CLOSED INTERCONNECTIONS																			
			344416	809		E34	N102	71	66	66	66	COMMON		TRUE	RIVER	LEFT	1200	Rundle Heights	1
			344416	808		35	102	71	66	66	66	COMMON		TRUE	RIVER	LEFT	1200	Rundle Heights	2
			344416	807		36	102	71	66	66	66	COMMON	######	TRUE	RIVER	LEFT	1200	Rundle Heights	3
			344020		411	37	103	71	66	66	66	COMMON	######	TRUE	RIVER	LEFT	1200	Rundle Heights	4
			344416	803		E34	103	71	66	66	66	COMMON		TRUE	RIVER	LEFT	1200	Rundle Heights	5
			374011	011	420	W38	123	88	80	80	80	HIGH PIPE	######	TRUE	CREEK	LEFT	1350	Bergman	6
			374414	PW		HOOKE RD	HERMITA	74	64	64	64	PUMPWELL		TRUE	RIVER	LEFT	7620	Canon Ridge	7
			344023	869		55	S ADA BL	62	65	65	65	OVERFLOW	######	TRUE	RIVER	LEFT	1200	River Valley Highla	8
			343621		417	W81	114		56	56	13	OVERFLOW		TRUE					9
			343602	832		94	CAMERO	148	51	51	51	DUAL	######	TRUE	RIVER	LEFT	450	Riverdale	10
			343602	831		W94	CAMERO	148	51	51	51	DUAL	######	TRUE	RIVER	LEFT	450	Riverdale	11
			343602	830		E95	CAMERO	148	51	51	51	DUAL	######	TRUE	RIVER	LEFT	450	Riverdale	12
			343602	829		E95	CAMERO	148	51	51	51	DUAL	######	TRUE	RIVER	LEFT	450	Riverdale	13
			343610	804	404	88	102	53	52	50	52	LOW PIPE	######	TRUE	RIVER	LEFT	675	Riverdale	14
			343610	810	405	87	102	53	67	52	67	LOW PIPE	######	TRUE	RIVER	LEFT	675	Riverdale	15
			343609	868	411	89	ROWLAN	152	43	11	42	LOW PIPE	######	TRUE	RIVER	LEFT	450	Riverdale	16
			343609	874		88	104	155B	24	10	24	LOW PIPE	######	TRUE	RIVER	LEFT	600	Riverdale	17
			343609	873		88	104	155A	24	10	24	HIGH PIPE	######	TRUE	RIVER	LEFT	600	Riverdale	18
			343602	858	435	94	ROWLAN	148	42	11	42	LOW PIPE	######	TRUE	RIVER	LEFT	450	River Valley Kinnai	19
			373602	835	411	89	117	56	14	14	14	CHAMBER	######	TRUE	RIVER	LEFT	1950	Parkdale	20
			373601		429	N RACE TRK	NORTHLA	56	64	64	64	OVERFLOW	######	TRUE	RIVER	LEFT	1950	Edmonton Northlar	21
			373601		411	E80	S116	56	57	57	57	OVERFLOW CH	######	TRUE	RIVER	LEFT	1950	Edmonton Northlar	22
			373619	802		86	127	74	58	58	58	DROP MANHOLE	######	TRUE	RIVER	LEFT	7620	Killarney	23
			373919	410		90	127	74	58	58	58	LOW PIPE TEE	######	TRUE	RIVER	LEFT	7620		24
			373601	870	411	E80	116	56	57	57	57	CHAMBER	######	TRUE	RIVER	LEFT	1950	Parkdale	25
			343617	835		105	KINGSWA	54	68	68			######	TRUE	RIVER	LEFT	3000	Central McDougall	26
			343211		418	116	107	54	72	72	72	MEMBRANE HOI	######	TRUE	RIVER	LEFT	3000	Queen Mary Park	27
			343605	811		113	102	46	50	30	50	OVERFLOW	######	TRUE	RIVER	LEFT	1275	Oliver	28
			343201	874	441	W115	102	46	50	8	50	LOW PIPE	######	TRUE	RIVER	LEFT	1275	Oliver	29
			343605	001	T1	114	N103	46	64	64	50	LOW PIPE TEE	######	TRUE	RIVER	LEFT	1275	Oliver	30
			343223	007		E133	S116	31	54	54	54	COMMON		TRUE	RIVER	LEFT	2400	Woodcroft	31
			373215	802		143	N YELLOV	30	61	61	61	COMMON		TRUE	RIVER	LEFT	1650	Brown Industrial	32
			373224	007		ST ALBERT	130	31	66	66	66	COMMON		TRUE	RIVER	LEFT	2400	Bonadventure Indu	33
			373215	801		149	SYELLOW	31	63	63	63	COMMON		TRUE	RIVER	LEFT	2400	Brown Industrial	34
			373219		427	W124	129	31	55	55	55	OVERFLOW	######	TRUE	RIVER	LEFT	2400	Calder	35
			373219		417	W126	129	31	55	55	55	OVERFLOW	######	TRUE	RIVER	LEFT	2400	Calder	36
			433202	PW		E DUNLUCE	161	75	78	78	78	PUMPWELL	######	TRUE	RIVER	LEFT	2250	Calder	37
			343603	854	417	100	101	48	26	5	26	LOW PIPE	######	TRUE	RIVER	LEFT	1500	Downtown	38
			343602	049		96	GRIERSO	49	62	62	62	OVERFLOW CH	######	TRUE	RIVER	LEFT	1200	Downtown	39

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			343603	862		100	101	48	70	66	50	OVERFLOW	######	TRUE	RIVER	LEFT	1500	Downtown	40
			313613	PW		101	S94	145	52	11	52	PUMPWELL	######	TRUE	RIVER	LEFT	300	Rossdale	41
			313618	821	443	101	94	145	52	11	52	LOW PIPE	######	TRUE	RIVER	LEFT	300	Rossdale	42
			313618	836	OF	E100	95	241	57	57	57	OVERFLOW		TRUE	RIVER	LEFT	375	Rossdale	43
			313617	007	479	106	95	42	85	85	58	LOW PIPE	######	TRUE	RIVER	LEFT	600	Downtown	44
			313617	504		103	96	47	52	33	52	OVERFLOW	######	TRUE	RIVER	LEFT	1050	Rossdale	45
			313616	803	402	110	97	46	50	15	50	LOW PIPE	######	TRUE	RIVER	LEFT	1275	Oliver	46
			313617	805	414	106	97	46	50	5	50	LOW PIPE	######	TRUE	RIVER	LEFT	1275	Downtown	47
			313617	806	415	105	97	46	50	5	50	LOW PIPE	######	TRUE	RIVER	LEFT	1275	Downtown	48
			313624	905	417	BELLAMY H	N97	46	50	50	50	LOW PIPE	######	TRUE	RIVER	LEFT	1275	Rossdale	49
			313617	838	419	102	97	46	50	5	50	LOW PIPE		TRUE	RIVER	LEFT	1275	Rossdale	50
			313618	802	402	101	97	46	50	5	50	LOW PIPE	######	TRUE	RIVER	LEFT	1275	Rossdale	51
			313618	805	405	100A	97	46	50	5	50	LOW PIPE	######	TRUE	RIVER	LEFT	1275	Rossdale	52
			313618	806	OF	100	97	45	50	5	50	OVERFLOW/WE	######	TRUE	RIVER	LEFT	600	Rossdale	53
			313625	843		112	98	46	50	5	50	LOW PIPE TEE	######	TRUE	RIVER	LEFT	1275	Downtown	54
			313623	827		W100	99	109	7	5	7	LOW PIPE TEE	######	TRUE	RIVER	RIGHT	500	Rossdale	55
			313623	828	511	100	99	109	7	5	7	LOW PIPE	######	TRUE	RIVER	RIGHT	500	Rossdale	56
			313623	828	511	100	99	109	7	7	7	LOW PIPE	######	TRUE	RIVER	RIGHT	500	Rossdale	57
			313623	831	OF	SW LOW LVL	BRIDGE	48	29	5	29	HOLE		TRUE	RIVER	LEFT	1500	Rossdale	58
			313617	873	417	BELLAMY RD	97	46	62	62	50	LOW PIPE	######	TRUE	RIVER	LEFT	1275	Rossdale	59
			313623	819	497	E100	MCDONAL	48	57	10	29	LOW PIPE		TRUE	RIVER	LEFT	1500	Downtown	60
			343214	801		137	N108	31	53	53	53	DUAL		TRUE	RIVER	LEFT	2400	North Glenora	61
			343213	4		133	N109A	31	52	52	52	HIGH PIPE		TRUE					62
			343218	819		133	N110A	31	52	52	52	LOW PIPE		TRUE					63
			343214	29		139	N107A	31	52	52	52	LOW PIPE		TRUE					64
			343214	56		135	N107A	31	52	52	52	LOW PIPE		TRUE					65
			343213	18		133	107A	31	52	52	52	LOW PIPE		TRUE					66
			343208	826		E132	STONY PLAIN RD		48	48	15			TRUE					67
			343202	17		125	SJASPER	46	34			PUMPWELL	######	TRUE					68
			313224	811		W139	RAVINE D	30	61	55	61	OVERFLOW		TRUE	RIVER	LEFT	1650	River Valley Capito	69
			313223	PW		ST GEORGE	VICTORIA	123	64	29	55	PUMPWELL	######	TRUE	CREEK	LEFT	200	Glenora	70
			343203	SOF		W132	TWEEDSN	135	50	50	50	OUTFALL		TRUE	CREEK	LEFT	100	Glenora	71
			343203	839		E132	S103	125	54	54		DUAL	######	TRUE	CREEK	LEFT	200	Glenora	72
			343204	841		139	101		65	65	51		######	TRUE					73
			342823	PW		163	116	18	75	74	75	PUMPWELL	######	TRUE	RIVER	LEFT	2400	Norwester Industria	74
			372810	PW		154	123	18	80	80	80	PUMPWELL	######	TRUE	RIVER	LEFT	2400	Mitchell Industrial	75
			342807	014		170	105	18	75	75	75	OVERFLOW	######	TRUE	RIVER	LEFT	2400	McNamara Industri	76
			312820	PW		151	N94	29	58			PUMPWELL	######	TRUE	RIVER	LEFT	1650	Sherwood	77
			282819	PW		WOLF WIL R	WOLF WI	13	75	75	75	PUMPWELL	######	TRUE	RIVER	LEFT	1950	Westridge	78
			252420	PW		E WEDGEWOO	WEAVER	257	88			PUMPWELL	######	TRUE	CREEK	LEFT	900	Wedgewood Heigh	79
			313204	075		BV RD	81	21	59	57	58	LOW PIPE TEE	######	TRUE	RIVER	LEFT	1350	Laurier Heights	80
			313204	PW		BV RD	VAL VIEW	21	58	57	58	PUMPWELL	######	TRUE	RIVER	LEFT	1350	Parkview	81

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			313204	803		N BV RD	VAL VIEW	21	60	60	60	COMMON	######	TRUE	RIVER	LEFT	1350	Parkview	82
			313207	085		VAL VIEW C		21	60	60	60	COMMON		TRUE	RIVER	LEFT	1350	Parkview	83
			313207	511		VAL VIEW C		21	60	60	60	COMMON		TRUE	RIVER	LEFT	1350	Parkview	84
			313207	087		VAL VIEW C		21	60	60	60	COMMON		TRUE	RIVER	LEFT	1350	Parkview	85
			313208	003		VAL VIEW C		21	60	60	60	COMMON		TRUE	RIVER	LEFT	1350	Parkview	86
			313208	002		VAL VIEW C		21	60	60	60	COMMON		TRUE	RIVER	LEFT	1350	Parkview	87
			313208	001		VAL VIEW C		21	60	60	60	COMMON		TRUE	RIVER	LEFT	1350	Parkview	88
			313207	088		E136	VAL VIEW	21	60	60	60	COMMON		TRUE	RIVER	LEFT	1350	Parkview	89
			313204	077		VAL VIEW C	86	21	60	60	60	COMMON		TRUE	RIVER	LEFT	1350	Parkview	90
			313204	076		VAL VIEW C	86	21	60	60	60	COMMON		TRUE	RIVER	LEFT	1350	Parkview	91
			344018		414	W65A	109	65	57	56	57	FLOW SPLIT		TRUE	RIVER	RIGHT	900	Capilano	92
			344007	850		W FULTON D	106	58	59	59	59	DROP MANHOLE	######	TRUE	RIVER	RIGHT	1350	Fulton Place	93
			344007	467		E CAPILANO	106	58	59	59	59	CHAMBER	######	TRUE	RIVER	RIGHT	1350	Capilano	94
			313601	858		85	82	254	52	49	52		######	TRUE	CREEK	RIGHT	1050	Bonnie Doon	95
			313622	819	408	96A	98	51	60	26	60	OVERFLOW/WE	######	TRUE	RIVER	RIGHT	600	Cloverdale	96
			313621	802	401	92	98	256	59	46	59	LOW PIPE	######	TRUE	RIVER	RIGHT	500	Cloverdale	97
			313602	848		W94	S81	254	83	58	83	DROP MANHOLE	######	TRUE	CREEK	RIGHT	1050	Mill Creek Ravine	98
			283620		436	91	70	92B	54		61	OUTFALL - NEVER WAS		TRUE	CREEK	RIGHT	750	Mill Creek Ravine	99
			283620		457	90	70	192	54			OUTFALL - NEVER WAS		TRUE	CREEK	RIGHT	300	Mill Creek Ravine	100
			283621		415	91	72	191	54		54	OUTFALL - NEVER WAS		TRUE	CREEK	RIGHT	525	Mill Creek Ravine	101
		229761?	283621		450	W87	73	93	56		56	OUTFALL - NEVER WAS		TRUE	CREEK	RIGHT	675	Mill Creek Ravine	102
			283620		420	91	66	91	54	54	54	OUTFALL - NEVER WAS		TRUE	CREEK	RIGHT	750	Mill Creek Ravine	103
			283611		419	92	63	194	54	54		OUTFALL - NEVER WAS		TRUE	CREEK	RIGHT	750	Mill Creek Ravine	104
			283611		423	91	63	193	61		54	OUTFALL - NEVER WAS		TRUE	CREEK	RIGHT	300	Mill Creek Ravine	105
		229112?	283611		416	90	65	91B	54	54		OUTFALL - NEVER WAS		TRUE	CREEK	RIGHT	600	Mill Creek Ravine	106
		229130?	283611		433	90	65	91A	54	54	54	OUTFALL - NEVER WAS		TRUE	CREEK	RIGHT	900	Mill Creek Ravine	107
			283621		413	W93	67	195	54			OUTFALL - NEVER WAS		TRUE	CREEK	RIGHT	750	Mill Creek Ravine	108
			283610	004	403	92	60	90	68	68	68	LOW PIPE	######	TRUE	CREEK	RIGHT	750	Coronet Industrial	109
			283610		403	92	60	90	68	68	68	LOW PIPE	######	TRUE	CREEK	RIGHT	750	Coronet Industrial	110
			313609	867	TUN	92	84	116	55	30	55	OUTFALL	######	TRUE	CREEK	RIGHT	750	Mill Creek Ravine	111
			313614	835	463	N QE RD		39	55	55	55	LOW PIPE	######	TRUE	RIVER	RIGHT	600	River Valley Walter	112
			313614	PW		E104	N SASK D	37	56	56	51	PUMPWELL	######	TRUE	RIVER	RIGHT	900	River Valley Walter	113
			313614	PW		E104	N SASK D	37	56	56	51	PUMPWELL	######	TRUE	RIVER	RIGHT	900	River Valley Walter	114
			313614	003		102	SASK RIV	38	56	56	56	CHECK VALVE	######	TRUE	RIVER	RIGHT	750	River Valley Walter	115
			313613	424		LAVIGNE RD	91	188	88	90				TRUE	RIVER	RIGHT	1200	River Valley Walter	116
			313219	PW		118	SASK DR	32	53	53	53	PUMPWELL	######	TRUE	RIVER	RIGHT	1200	Windsor Park	117
			313219		446	116	N SASK D	32	55	40	55	LOW PIPE TEE	######	TRUE	RIVER	RIGHT	1200	Windsor Park	118
			283619	803	403	97	S71	92B	60	50	60	LOW PIPE	######	TRUE	CREEK	RIGHT	750	Hazeldean	119
			283625	840	428	E111	73	22	54	48	54	LOW PIPE/WEIR	######	TRUE	RIVER	RIGHT	1500	McKernan	120
			283221	818		112	74	22	54	49	54	OVERFLOW	######	TRUE	RIVER	RIGHT	1500	McKernan	121
			283221	808		112	N76	22	47	47	47	OVERFLOW	######	TRUE	RIVER	RIGHT	1500	McKernan	122
			283219	801		BELGRAVIA	N68	22	59	59	59	COMMON	######	TRUE	RIVER	RIGHT	1500	Lendrum Place	123

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			253221	038		113A	46	2	63	63	63	COMMON	######	TRUE	CREEK	RIGHT	2100	Malmo Plains	124
			253221	502		112	46	2	63	63	63	COMMON		TRUE	CREEK	RIGHT	2100	Malmo Plains	125
			253221	040		111A	46	2	63	63	63	COMMON		TRUE	CREEK	RIGHT	2100	Malmo Plains	126
			253221	505		111A	N46	2	63	63	63	COMMON		TRUE	CREEK	RIGHT	2100	Malmo Plains	127
			253221	022		111A	S48	2	63	63	63	COMMON		TRUE	CREEK	RIGHT	2100	Malmo Plains	128
			253625		496	111A	N48	2	63	63	63	COMMON		TRUE	CREEK	RIGHT	2100	Malmo Plains	129
			253221	806		W111A	48	2	63	63	63	COMMON	######	TRUE	CREEK	RIGHT	2100	Malmo Plains	130
			253221	807		W111A	48	2	63	63	63	COMMON	######	TRUE	CREEK	RIGHT	2100	Malmo Plains	131
			253221	808		W111A	48	2	63	63	63	COMMON	######	TRUE	CREEK	RIGHT	2100	Malmo Plains	132
			253221	504		113A	46	2	63	63	63	COMMON		TRUE	CREEK	RIGHT	2100	Malmo Plains	133
			253212	051		E121	FAIRWAY	2	66	66	66	COMMON		TRUE	CREEK	RIGHT	2100	Aspen Gardens	134
			253212	489		E121	FAIRWAY	2	66	66	66	COMMON		TRUE	CREEK	RIGHT	2100	Aspen Gardens	135
			253212	053		E121	FAIRWAY	2	66	66	66	COMMON		TRUE	CREEK	RIGHT	2100	Aspen Gardens	136
			253219	808		ASPEN DR	40	2	63	63	63	COMMON	######	TRUE	CREEK	RIGHT	2100	Aspen Gardens	137
			253219	055		ASPEN DR	N40	2	63	63	63	COMMON		TRUE	CREEK	RIGHT	2100	Aspen Gardens	138
			253219	056		ASPEN DR	N40	2	63	63	63	COMMON		TRUE	CREEK	RIGHT	2100	Aspen Gardens	139
			253219	054		ASPEN DR	S41A	2	63	63	63	COMMON		TRUE	CREEK	RIGHT	2100	Aspen Gardens	140
			253219	053		ASPEN DR	S41A	2	63	63	63	COMMON		TRUE	CREEK	RIGHT	2100	Aspen Gardens	141
			253219		480	ASPEN DR	41A	2	63	63	63	COMMON		TRUE	CREEK	RIGHT	2100	Aspen Gardens	142
			253219	052		ASPEN DR	N41A	2	63	63	63	COMMON		TRUE	CREEK	RIGHT	2100	Aspen Gardens	143
			253219	057		ASPEN DR	N41A	2	63	63	63	COMMON		TRUE	CREEK	RIGHT	2100	Aspen Gardens	144
			253202		466	WESTBRK DR		1	62	62	62	COMMON		TRUE	CREEK	RIGHT	900	Westbrook Estate	145
			253202		465	WESTBRK DR		1	62	62	62	COMMON		TRUE	CREEK	RIGHT	900	Westbrook Estate	146
			253202		468	WESTBRK DR		1	62	62	62	COMMON		TRUE	CREEK	RIGHT	900	Westbrook Estate	147
			253202		464	WESTBRK DR		1	62	62	62	COMMON		TRUE	CREEK	RIGHT	900	Westbrook Estate	148
			253202		467	WESTBRK DR		1	62	62	62	COMMON		TRUE	CREEK	RIGHT	900	Westbrook Estate	149
			253203	018		WESTBRK DR		1	62	62	62	COMMON		TRUE	CREEK	RIGHT	900	Westbrook Estate	150
			253203		424	WESTBRK DR		1	62	62	62	COMMON		TRUE	CREEK	RIGHT	900	Westbrook Estate	151
			253203	022		WESTBRK DR		1	62	62	62	COMMON		TRUE	CREEK	RIGHT	900	Westbrook Estate	152
			253203	021		WESTBRK DR		1	62	62	62	COMMON		TRUE	CREEK	RIGHT	900	Westbrook Estate	153
			253203	020		WESTBRK DR		1	62	62	62	COMMON		TRUE	CREEK	RIGHT	900	Westbrook Estate	154
			253203	019		WESTBRK DR		1	62	62	62	COMMON		TRUE	CREEK	RIGHT	900	Westbrook Estate	155
			253203		423	WESTBRK DR		1	62	62	62	COMMON		TRUE	CREEK	RIGHT	900	Westbrook Estate	156
			253208	019		WESTBRK DR		1	62	62	62	COMMON		TRUE	CREEK	RIGHT	900	Westbrook Estate	157
			253208		417	WESTBRK DR		1	62	62	62	COMMON		TRUE	CREEK	RIGHT	900	Westbrook Estate	158
			253208		416	WESTBRK DR		1	62	62	62	COMMON		TRUE	CREEK	RIGHT	900	Westbrook Estate	159
			253208	016		WESTBRK DR		1	62	62	62	COMMON		TRUE	CREEK	RIGHT	900	Westbrook Estate	160
			253208	015		WESTBRK		1	62	62	62	COMMON		TRUE	CREEK	RIGHT	900	Westbrook Estate	161
			253208		413	WESTBRK DR		1	62	62	62	COMMON		TRUE	CREEK	RIGHT	900	Westbrook Estate	162
			253208	013		WESTBRK	FAIRWAY	1	62	62	62	COMMON		TRUE	CREEK	RIGHT	900	Westbrook Estate	163
			253208	012		WESTBRK	W FAIRW	1	62	62	62	COMMON		TRUE	CREEK	RIGHT	900	Westbrook Estate	164

IC Site#	Plan	IC MH#	CADAS-TRAL	SAN_MH	STRM_MH	STREET	AVENUE	OF_ NUM	IC_ AGE	SAN_ AGE	STRM_ AGE	ICTYPE	Delete date	COR-RECTED	OF_ LOC1	OF_ LOC2	OF_ DIA	NHOOD	COUNT
			253208		410	WESTBRK	W FAIRW	1	62	62	62	COMMON		TRUE	CREEK	RIGHT	900	Westbrook Estate	165
			253208	010		WESTBRK DR		1	62	62	62	COMMON		TRUE	CREEK	RIGHT	900	Westbrook Estate	166
			253208	001	401	WESTBRK	MARLBOF	1	64	64	61	HIGH PIPE	######	TRUE	CREEK	RIGHT	900	Westbrook Estate	167
			253213		422	MARLBORO R		1	66	66	66	COMMON		TRUE	CREEK	RIGHT	900	Westbrook Estate	168
			253214	006		MARLBORO R		1	66	66	66	COMMON		TRUE	CREEK	RIGHT	900	Westbrook Estate	169
			253214	005		MARLBORO R		1	66	66	66	COMMON		TRUE	CREEK	RIGHT	900	Westbrook Estate	170
			253214	004		MARLBORO R		1	66	66	66	COMMON		TRUE	CREEK	RIGHT	900	Westbrook Estate	171
			253213	038		MARLBORO R		1	66	66	66	COMMON		TRUE	CREEK	RIGHT	900	Westbrook Estate	172
			282810	002	403	E WHITEMUD	58	12	74	71	72	HIGH PIPE	######	TRUE	RIVER	RIGHT	750	River Valley Whiter	173
			282811	011	405	FORT EDM		14	70	70	70	PUMPWELL	######	TRUE	RIVER	RIGHT	1050	River Valley Whiter	174
			252819	PW		RODNEY CR		101	80			PUMPWELL	######	TRUE	RIVER	RIGHT	1500	Rhatigan Ridge	175
			253613	801		101	N39	9	75	75	66	COMMON	######	TRUE	RIVER	RIGHT	5100	Strathcona Industri	176
			253618	801		101	S41	9	66	66	66	COMMON	######	TRUE	RIVER	RIGHT	5100	Strathcona Industri	177
			253602	012		W97	30	9	75	75	75	MEMBRANE HOI	######	TRUE	RIVER	RIGHT	5100	Parsons Industrial	178
			253602	013		97	30	9	75	75	75	MEMBRANE HOI	######	TRUE	RIVER	RIGHT	5100	Parsons Industrial	179
			253602	014		E97	30	9	75	75	75	MEMBRANE HOI	######	TRUE	RIVER	RIGHT	5100	Parsons Industrial	180
			253603		445		30	9	71			MEMBRANE HOI	######	TRUE	RIVER	RIGHT	5100	Parsons Industrial	181
			253203		412	E125	29A	9	78	78	78		######	TRUE	RIVER	RIGHT	5100	Blue Quill Estates	182
						E101	96		57				######	TRUE					183
						100	90		52					TRUE					184
							n. Borden Park		56					TRUE					185
146 (98)	97-207	243102	313610	856	438	87	S84	116	56	56	56	LOW PIPE/WEIR		TRUE	CREEK	RIGHT	750	Bonnie Doon	186
160 (98)	96-054	246554	313601	836	424	85	79	44	55	49	55	LOW PIPE/WEIR		TRUE	RIVER	RIGHT	3800	King Edward Park	187
152 (98)	96-048	246559	313601	842	447	89	S79	44	55	53	55	LOW PIPE		TRUE	RIVER	RIGHT	3800	King Edward Park	188
222 (98)		246649	313602	876		94	81	254	55	22	55	OVERFLOW		TRUE	CREEK	RIGHT	1050	Mill Creek Ravine	189
137 (99)	96-056	246564	313601	850	457	91	S78	44	55	28	55	LOW PIPE/WEIR		TRUE	RIVER	RIGHT	3800	King Edward Park	190
138 (99)	96-055	246552	313601	840	445	91	S79	44	55	53	55	LOW PIPE/WEIR		TRUE	RIVER	RIGHT	3800	King Edward Park	191
145 (99)	96-063	243986	313610	852		93	S84	116	55	30	50	OVERFLOW/WEIR		TRUE	CREEK	RIGHT	750	Bonnie Doon	192
231 (99)		255784	343209			127	Villa Ave		88					TRUE					193
232 (99)		278099	403604			101	132		54					TRUE					194
233 (99)		293599	403604			101	134		54					TRUE					195
127 (00)	96-022	229524	283619	809		95	S71	92B	60	50	60	OVERFLOW		TRUE	CREEK	RIGHT	750	Hazeldean	196
126 (00)	96-024	229513	283619	817		95	S70	92B	60	50	60	OVERFLOW		TRUE	CREEK	RIGHT	750	Hazeldean	197
142 (00)	96-061	243861	313602	883	431	94	82	245	52	50	52	LOW PIPE		TRUE	RIVER	RIGHT	225	Mill Creek Ravine	198
23 (01)	96-089	256682	343208	826		132	S. Stony P	129	50	28	50	FLOW SPLIT		TRUE	CREEK	LEFT	250	Glenora	199
115 (01)	96-017	227606	283616		437	109	66	22	54	49	54	OVERFLOW		TRUE	RIVER	RIGHT	1500	Parkallen	200
123 (01)	96-020	229418	283618	815		98	L..S. 71	92B	61	50	61	OVERFLOW		TRUE	CREEK	RIGHT	750	Hazeldean	201
129 (01)	96-031	229911	283621	856	448	95	72	191	54	50	54	LOW PIPE/WEIR		TRUE	CREEK	RIGHT	525	Hazeldean	202
197 (01)	97-020	247820		820	504	Walterdale Rd.	Queen Elizabeth Hill		52					TRUE				River Valley Walter	203
112 (02)	97-024	242968	313219	006		118	EDINBOR	32	53	53	53	LOW PIPE		TRUE	RIVER	RIGHT	1200	Windsor Park	204
237 (02)		242084	313201			113	N78		54					TRUE					205
2 (02)	97-051	209501	253208	801		WESTBRK DR		1	88	62	62	DUAL		TRUE	CREEK	RIGHT	900	Westbrook Estate	206

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3 (02)	97-052	209500	253207	802		WESTBRK DR		1	88	62	62	DUAL		TRUE	CREEK	RIGHT	900	Westbrook Estate	207
4 (02)	97-053	209498	253207	801		WESTBRK DR		1	88	62	62	DUAL		TRUE	CREEK	RIGHT	900	Westbrook Estate	208
5 (02)	97-055	209510	253208	804		MARLBORO R		1	88	66	66	DUAL		TRUE	CREEK	RIGHT	900	Westbrook Estate	209
6 (02)	97-056	209548	253208	803		MARLBORO R		1	88	66	66	DUAL		TRUE	CREEK	RIGHT	900	Westbrook Estate	210
7 (02)	97-057	209545	253208	802		MARLBORO R		1	88	66	66	DUAL		TRUE	CREEK	RIGHT	900	Westbrook Estate	211
8 (02)	97-058	303873	253213	801		MARLBORO R		1	88	66	66	DUAL		TRUE	CREEK	RIGHT	900	Westbrook Estate	212
133 (02)	96-026	229869	283622	806	409	95	76	100	55	14	55	OVERFLOW/WEIR		TRUE	CREEK	RIGHT	300	Ritchie	213
196 (02)	97-224	247806	313614	006		E104	N SASK D	38	56	56	51	DUAL		TRUE	RIVER	RIGHT	750	River Valley Walter	214
10 (03)	97-179	240041	313207	013		142	BUENA VI	24	58	57	58	HIGH PIPE		TRUE	RIVER	LEFT	1500	Parkview	215
22 (03)	96-087	255979	343203	836		E132	N103	130	54	54	54	DUAL		TRUE	CREEK	LEFT	300	Glenora	216
24 (03)	97-171	255675	343202	16		125	SJASPER	46	34			LOW PIPE		TRUE					217
55 (03)	97-136	272597	373219		421	W125	129	31	55	55	55	OVERFLOW		TRUE	RIVER	LEFT	2400	Calder	218
56 (03)	97-133	272607	373219		433	W123A	129	31	55	55	55	OVERFLOW		TRUE	RIVER	LEFT	2400	Calder	219
58 (03)	97-131	272633	373219		449	W122	129	31	55	55	55	OVERFLOW		TRUE	RIVER	LEFT	2400	Calder	220
77 (03)	97-097	263772	343622		433	W84	114		56	56	13	OVERFLOW		TRUE					221
82 (03)	97-079	261664	343621		429	W79	114		56	56	13	OVERFLOW		TRUE					222
91 (03)	97-194	268186	344011	801	412	43	106B	105	58	58	58	LOW PIPE/WEIR		TRUE	RIVER	RIGHT	1500	Gold Bar	223
92 (03)	97-193	268200	344011	802		E42	106B	105	58	58	58	DUAL		TRUE	RIVER	RIGHT	1500	Gold Bar	224
93 (03)	97-069	231340	253624	005	405	106	N47	2	63	61	63	LOW PIPE		TRUE	CREEK	RIGHT	2100	Empire Park	225
40 (03)	97-143	239392	313625	816	402	114	100	46	50	7	50	LOW PIPE		TRUE	RIVER	LEFT	1275	Oliver	226
229 (03)		270363	344005				n. Borden Park		56					TRUE					227
257 (03)		245306				100	McDonald		57					TRUE				Downtown	228
260 (03)		240920				Buena Vista Rd	81		58					TRUE					229
84 (05)	97-225	270533		207533		W72	113		57					TRUE					230
96 (05)	97-030	227748	283616		425	110	N66	22	54	50	54	OVERFLOW/WEIR		TRUE	RIVER	RIGHT	1500	Parkallen	231
97 (05)	96-015	227670	283616		415	111	L. S. 67	22	54	50	54	OVERFLOW		TRUE	RIVER	RIGHT	1500	Parkallen	232
100 (05)	96-034	228096	283625		415	111	72	22	54	47	54	OVERFLOW		TRUE	RIVER	RIGHT	1500	McKernan	233
101 (05)	96-036	228103	283625		421	111	73	22	54	48	54	OVERFLOW		TRUE	RIVER	RIGHT	1500	McKernan	234
102 (05)	97-033	228099	283625		420	111	74	22	54	48	54	OVERFLOW		TRUE	RIVER	RIGHT	1500	McKernan	235
103 (05)	97-034	228154	283625		407	111	75	22	54	48	54	OVERFLOW		TRUE	RIVER	RIGHT	1500	McKernan	236
104 (05)	97-035	228082	283625		426	111	76	22	54	47	54	OVERFLOW		TRUE	RIVER	RIGHT	1500	McKernan	237
261 (05)		238144				151	95		58					TRUE					238
130 (07)	96-029	229891	283622	829	470	95	73	100	55	47	55	OVERFLOW/WEIR		TRUE	CREEK	RIGHT	300	Ritchie	239
166 (07)	97-199	251790	314005	817	430	81	S80	44	55	49	55	OVERFLOW/WEIR		TRUE	RIVER	RIGHT	3800	King Edward Park	240
105 (07)	96-038	228152	283625	802	401	111	N76	22	54	47	54	LOW PIPE		TRUE	RIVER	RIGHT	1500	McKernan	241
108 (07)	96-004	224871	283221		451	112	N73	22	54	47	54	OVERFLOW		TRUE	RIVER	RIGHT	1500	McKernan	242
109 (07)	96-005	224875	283221		454	112	N72	22	54	49	54	OVERFLOW		TRUE	RIVER	RIGHT	1500	McKernan	243
236 (07)		242092	313201			112	S78		86			OVERFLOW		TRUE				Parkallen	244
263 (07)		278090				105	130		59					TRUE				Lauderdale	245
121 (07)	96-019	229419	283618	816		99	70	92B	61	50	61	DUAL		TRUE	CREEK	RIGHT	750	Hazeldean	246
54 (07)	97-180	254704	342821	025	410	156	116	18	75	58	75	LOW PIPE/WEIR		TRUE	RIVER	LEFT	2400	Alberta Park Indust	247
264 (05, n/m)		278091				105	130		59					TRUE				Lauderdale	248
206 (09)	97-213	243177	313610	866		W87	S83		49			LOW PIPE		TRUE				Bonnie Doon	249

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168 (03)	97-197	252003	314005	828	438	81	S78	44	55	49	55	OVERFLOW/WEIR		TRUE	RIVER	RIGHT	3800	King Edward Park	**250**
174 (03)	97-203	251466	314004	816	412	77	S81	44	56	50	56	OVERFLOW		TRUE	RIVER	RIGHT	3800	King Edward Park	**251**
158 (10)	97-212	251782	314005		416	85	S81		55	55	49	OVERFLOW		TRUE					**252**
47 (10)	97-144	239410	313221	815		115	100	46	54	30	54	OVERFLOW		TRUE	RIVER	LEFT	1275	Oliver	**253**
122 (10)	97-027	229960	283623	833		98	S72	92B	61	49	61	OVERFLOW		TRUE	CREEK	RIGHT	750	Hazeldean	**254**
125 (10)	96-023	229520	283619	806	402	96	S71	92B	60	50	60	LOW PIPE		TRUE	CREEK	RIGHT	750	Hazeldean	**255**
131 (10)	96-028	229883	283622	821	426	95	74	100	55	14	55	OVERFLOW/WEIR		TRUE	CREEK	RIGHT	300	Ritchie	**256**
132 (10)	96-027	229875	283622	812	420	95	75	100	55	14	55	OVERFLOW/WEIR		TRUE	CREEK	RIGHT	300	Ritchie	**257**
124 (n/m) (10)	97-028	229422	283618	819		98	S70	92B	61	50	61	OVERFLOW		TRUE	CREEK	RIGHT	750	Hazeldean	**258**
165 (11)	97-200	251786	314005	813	459	81	S81	44	55	50	55	OVERFLOW		TRUE	RIVER	RIGHT	3800	King Edward Park	**259**
171 (11)	96-075	251791	314005	818	431	79	S80	44	56	50	56	OVERFLOW/WEIR		TRUE	RIVER	RIGHT	3800	King Edward Park	**260**
172 (11)	97-201	251787	314005	813	422	79	S81	44	56	50	56	OVERFLOW		TRUE	RIVER	RIGHT	3800	King Edward Park	**261**
230 (n/m) (12)		270510	344005				n. Borden Park		56					TRUE				Edmonton Northlar	**262**
243 (n/m) (12)		263242				102	111		68					TRUE				Central McDougall	**263**
167 (12)	97-198	251795	314005	824	435	81	S79	44	55	49	55	OVERFLOW		TRUE	RIVER	RIGHT	3800	King Edward Park	**264**
169 (12)	97-196	231975	314005	832	443	81	S77	44	55	52	55	OVERFLOW/WEIR		TRUE	RIVER	RIGHT	3800	King Edward Park	**265**
170 (12)	96-078	251796	314005	826	436	79	S79	44	56	49	56	OVERFLOW/WEIR		TRUE	RIVER	RIGHT	3800	King Edward Park	**266**
173 (12)	97-204	251711	314004	808	404	77	S82	44	56	50	56	OVERFLOW		TRUE	RIVER	RIGHT	3800	King Edward Park	**267**
175 (12)	97-202	251758	314004	826	415	77	S80	44	56	50	56	OVERFLOW		TRUE	RIVER	RIGHT	3800	King Edward Park	**268**
128 (13) OF 2010-103	96-030	229914	283622	855	457	95	71	92B	60	50	60	LOW PIPE/WEIR		TRUE	CREEK	RIGHT	750	Hazeldean	**269**
272 (50) RPN 0016		255496				W115	102							TRUE				Oliver	**270**
157	96-045	246533	313601	815	421	87	81	44	55	49	55	LOW PIPE		TRUE	RIVER	RIGHT	3800	King Edward Park	**271**
140 (16) OF 2011-23	96-046	246491	313601	818	425	91	S81	44	55	22	55	OVERFLOW/WEIR		TRUE	RIVER	RIGHT	3800	King Edward Park	**272**
262 (05, closed '16)		255832				W123	102	46	47					TRUE				Oliver	**273**
259 (03, closed '16)		270391				73	N112	56	56					TRUE				Virginia Park	**274**
57 (18)	97-132	272618	373219		440	W123	129	31	55	55	55	OVERFLOW		TRUE	RIVER	LEFT	2400	Calder	**275**
59 (18)	97-130	272636	373219		452	W121	129	31	55	55	55	OVERFLOW		TRUE	RIVER	LEFT	2400	Calder	**276**
136 (18)	96-057	229992	313601	856	464	91	77	44	55	28	55	LOW PIPE/WEIR		TRUE	RIVER	RIGHT	3800	King Edward Park	**277**
141 (18)	97-005	246486	313601	806	415	91	S82	44	55	31	55	OVERFLOW/WEIR		TRUE	RIVER	RIGHT	3800	King Edward Park	**278**
150 (18)	96-044	246489	313601	809		89	S82	44	55	46	55	LOW PIPE		TRUE	RIVER	RIGHT	3800	King Edward Park	**279**
98 (19)	96-002	224786	283220	807	418	112A	67	22	54	54	54	LOW PIPE		TRUE	RIVER	RIGHT	1500	Parkallen	**280**
99 (19)	96-001	224790	283220	811	421	112	67	22	51	51	51	LOW PIPE		TRUE	RIVER	RIGHT	1500	Parkallen	**281**
117 (19)	96-011	227631	283615		428	109	64	22	54	50	54	OVERFLOW		TRUE	RIVER	RIGHT	1500	Parkallen	**282**
118 (19)	96-012	227633	283615		429	109	63	22	54	49	54	OVERFLOW		TRUE	RIVER	RIGHT	1500	Parkallen	**283**
144 (19)	96-062	243904	313609	869	870	W93	L. S. 84	116	55	30	55	LOW PIPE		TRUE	CREEK	RIGHT	750	Bonnie Doon	**284**
163 (19)	97-208	231913	314005		442	85	S77	44	55	55	49	OVERFLOW		TRUE				King Edward Park	**285**
223		246523	313601	814		93	81	22	55			LOW PIPE		TRUE				Bonnie Doon	**286**

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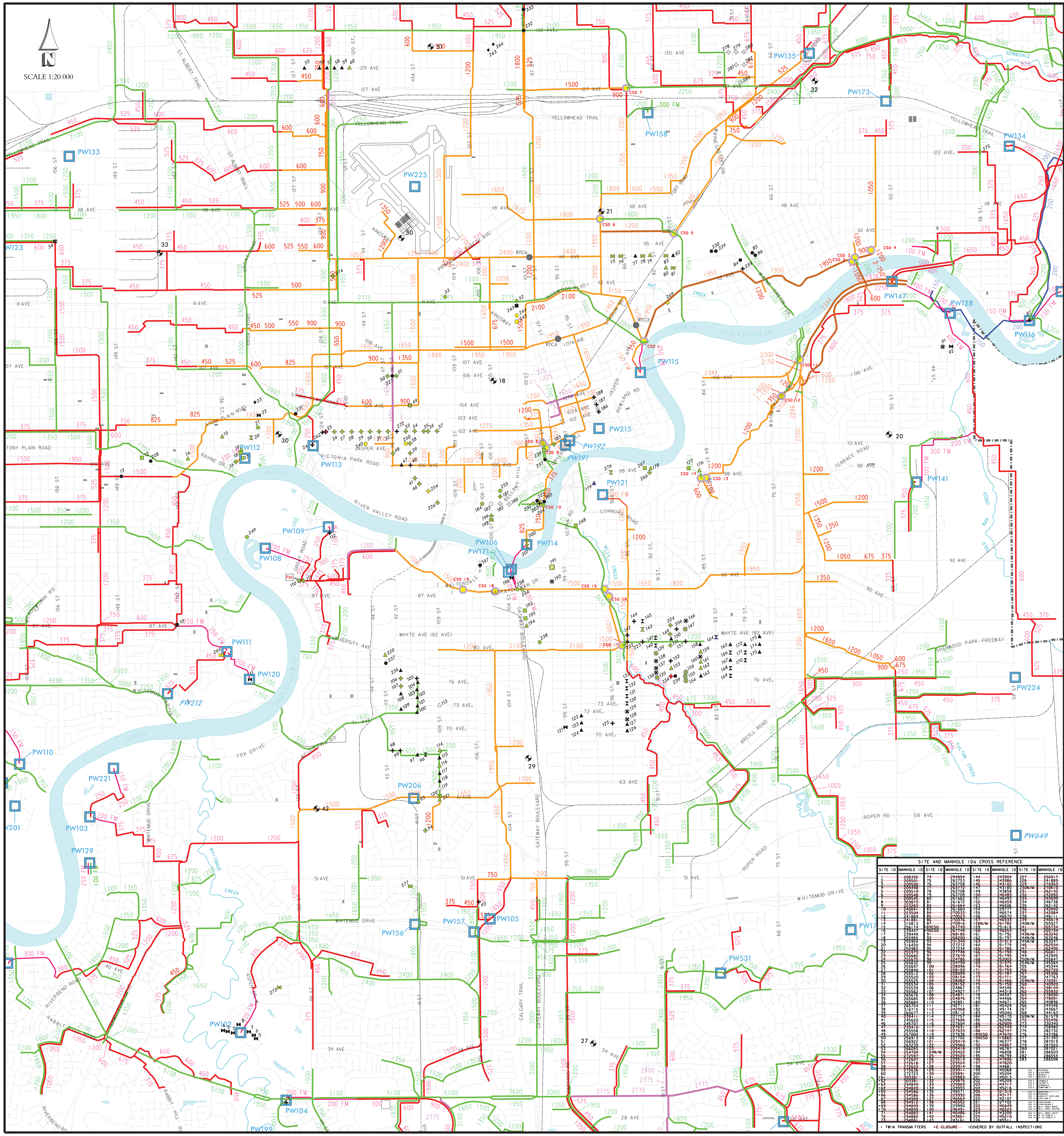
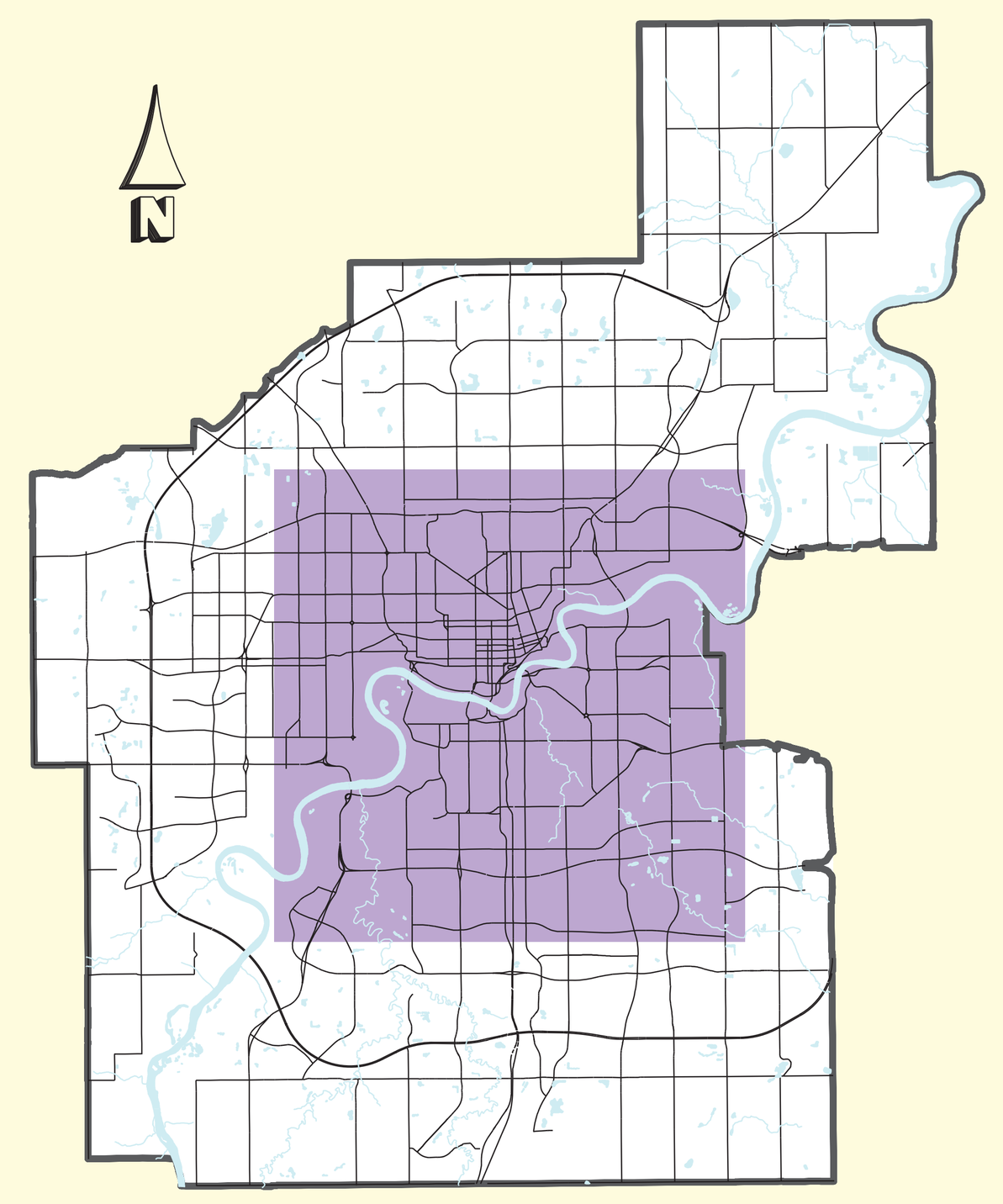
Removed from database (emergency pump overflow)																			
1 (02)	97-070	208392	253203	007	412	125	29A	1	76			LOW PIPE			CREEK	RIGHT	900	Blue Quill Estates	
9 (02)	97-059	223283	282810	PW	403	E WHITEMUD	58	12	72	70	72	PUMPWELL			RIVER	RIGHT	750	River Valley Whitemud	
11 (02)	97-187	223504	283223	006		S133	BV RD	21	58	59	58	DUAL			RIVER	LEFT	1350	Laurier Heights	
87 (02)	97-072	270916	344416	053	469	29	102	71	66	66	66	OVERFLOW			RIVER	LEFT	1200	Rundle Heights	
Removed from database (does not exist)																			
227 (03)		256917	343211		407	116	106	54	72	72	72	DROP MANHOLE STRUCTURE			RIVER	LEFT	3000	Queen Mary Park	
228 (03)		241889	343205		436	145	SUMMIT D	30	50						RIVER	LEFT	1650	Crestwood	
239 (03)		246519				89	S77												
241 (03)		265734				113	102												
242 (03)		265734				113	102												
85 (04)	97-226	270523		270523		E71	113		51										
86 (04)	97-227	270376		270376		E71	113		51										
203 (04)	97-170	244717	313618	806	407	100	97	45	50	5	50	LOW PIPE			RIVER	LEFT	600	Rossdale	
205 (04)	97-220	321318				E101	96		85										
225 (n/m) (04)		245210	313623			100	97		50										
248 (n/m) (04)		266011				W109	111		68										
256 (03,n/m) (04)		262720				96	103		49										
Removed from database (discharge back to combined system)																			
186 (04)	97-082	262009	343609	815	814	95	101	152	49	7	49	LOW PIPE			RIVER	LEFT	450	Boyle Street	
187 (04)	97-083	262749	343609	810	402	95	102A	152	49	7	49	LOW PIPE			RIVER	LEFT	450	Boyle Street	
188 (04)	97-084	262747	343609	809	401	95	103	152	49	7	49	LOW PIPE			RIVER	LEFT	450	Boyle Street	
246 (n/m) (04)		262534				W105	106		69										
247 (n/m) (04)		262495				W106	106		69										
192 (n/m) (10)	97-015	246867	313613	843	412	100	89	188	53	53	53	LOW PIPE/WEIR			RIVER	RIGHT	1200	River Valley Walterdale	
270 (13)		270548				60E	112											Highlands	
271 (13)		284287				57E	112											Highlands	

Notes:
(n/m) = not monitored
(xx) indicates the year of discovery or closure of the I/C (if known)



INTERCONNECTION CONTROL STRATEGY

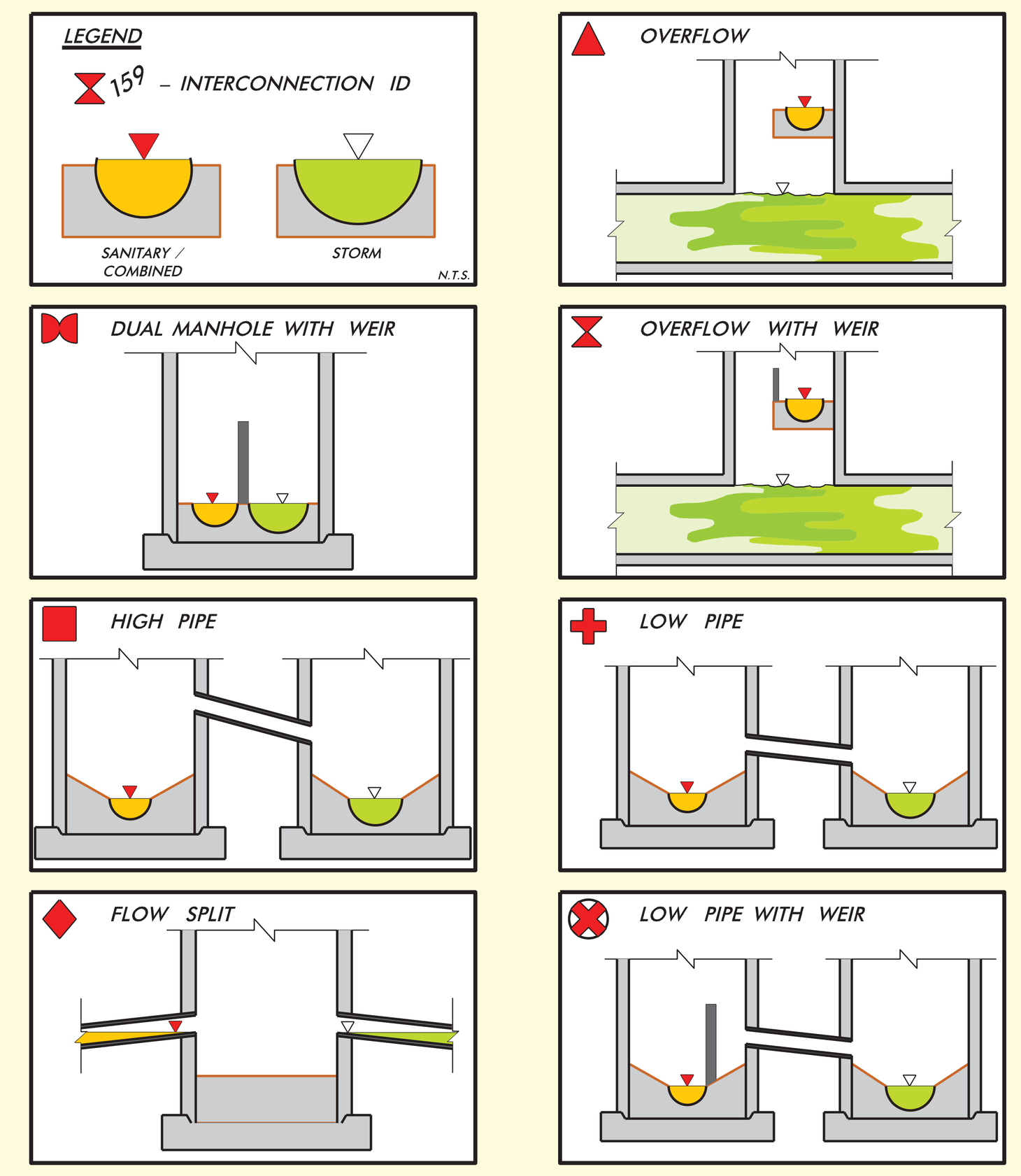
2020 STATUS & DWO LOCATIONS



LOCATION PLAN

(NOT TO SCALE)

INTERCONNECTION (I/C) TYPES



OTHER TYPES

- CHAMBER
- PUMPWELL / CHAMBER
- CSO
- NON-DEFINED OPEN
- RAINGAUGE
- FLOW MONITOR
- RTC - REAL TIME CONTROL STRUCTURE
- 1200~ PIPE SIZE AND FLOW DIRECTION
- NON-DEFINED CLOSED

INTERCONNECTION ACTIVITY CLASSIFICATION

- DRY WEATHER OVERFLOW (DWO)
- MONITORED CELLULAR INTERCONNECTION
- PLANNED LOGGER UPDATE
- IC CLOSURE
- IC COVERED BY OTHER INSPECTIONS
- IC AFFECTED BY LRT CONSTRUCTION

EPCOR PROVIDING MORE

DMA : IC20SUM.DGN FEB 2020

Storm and CSO Volumes and Loadings

This section is submitted in compliance with Section 4.4.10 and 6.3.3 of the Approval No. 639-03-06 for the one year period ending December 31, 2020.

The monthly volumes discharged to the North Saskatchewan River (NSR) are indicated on the attached plot (Figure 1 and 2) for the following locations:

- 30 Avenue Storm Outfall
- Groat Road Storm Outfall
- Quesnell Storm Outfall
- Kennedale Storm Outfall
- Rat Creek CSO
- Highlands CSO
- Capilano CSO
- Cromdale CSO
- Strathearn CSO

Estimated and measured storms volumes are indicated on Figure 3. Total monitored CSO volumes are indicated on Figure 4. A tabular summary of the flow volumes and estimations of total monthly volumes discharged is also attached (Table 2). Of the sites reported, the storm and combined system contribute 99.7% and 0.3% of the volume, respectively.

The total (measured and estimated) flow volume discharged from the storm sewer system to the NSR in 2020 was 180.6 million m^3 - a 15.6% increase compared to the 2019 volume of 156.3 million m^3. The 2020 flow volumes from the 30th Avenue, Groat Road, Quesnell, and Kennedale storm outfalls were 8.8, 3.4, 17.9, and 20.7 million m^3, respectively. The volume of flows from Mill Creek originating inside the City limits was 32.1 million m^3.

For the combined sewer system, the total CSO flow volume discharged to the NSR in 2020 was 530,677 m^3 - a 42.7% increase compared to the 2019 volume of 373,497 m^3. The 2019 flow volumes from the Rat Creek, Highlands, Capilano, Cromdale, and Strathearn CSOs, were 420,110; 98,472; 5,896; 5,289; and 910 m^3, respectively.

Water quality samples were obtained for the majority of the significant discharge events during the year. As well, a total of 75 dry-weather (baseflow) water quality samples were obtained from the storm sewer system. Table 3 provides a tabular summary of calculated flow-weighted mean monthly and annual concentrations for different constituents and the number of events sampled for water quality analysis.

In accordance with our Approval requirements, total monthly loadings to the North Saskatchewan River have been calculated for the above sites. Summaries of measured loads and estimated total loads for the City of Edmonton's storm and combined sewer system are included in Table 4. The reported loads were calculated using daily constituent concentrations, including storm sewer baseflow data, and the measured or estimated flow volumes. The combined storm and CSO total loading to the NSR consists of about 17,805 tonnes of total suspended solids (TSS), 1,326 tonnes of biochemical oxygen demand (BOD), 54 tonnes of total phosphorous (TP), 226 tonnes of nitrite and nitrate (NO_2 + NO_3), 54 tonnes of ammonia (NH_3), and 315 tonnes of total Kjeldahl nitrogen (TKN). Summaries of the Rat Creek CSO concentration statistics are shown in Table 5.

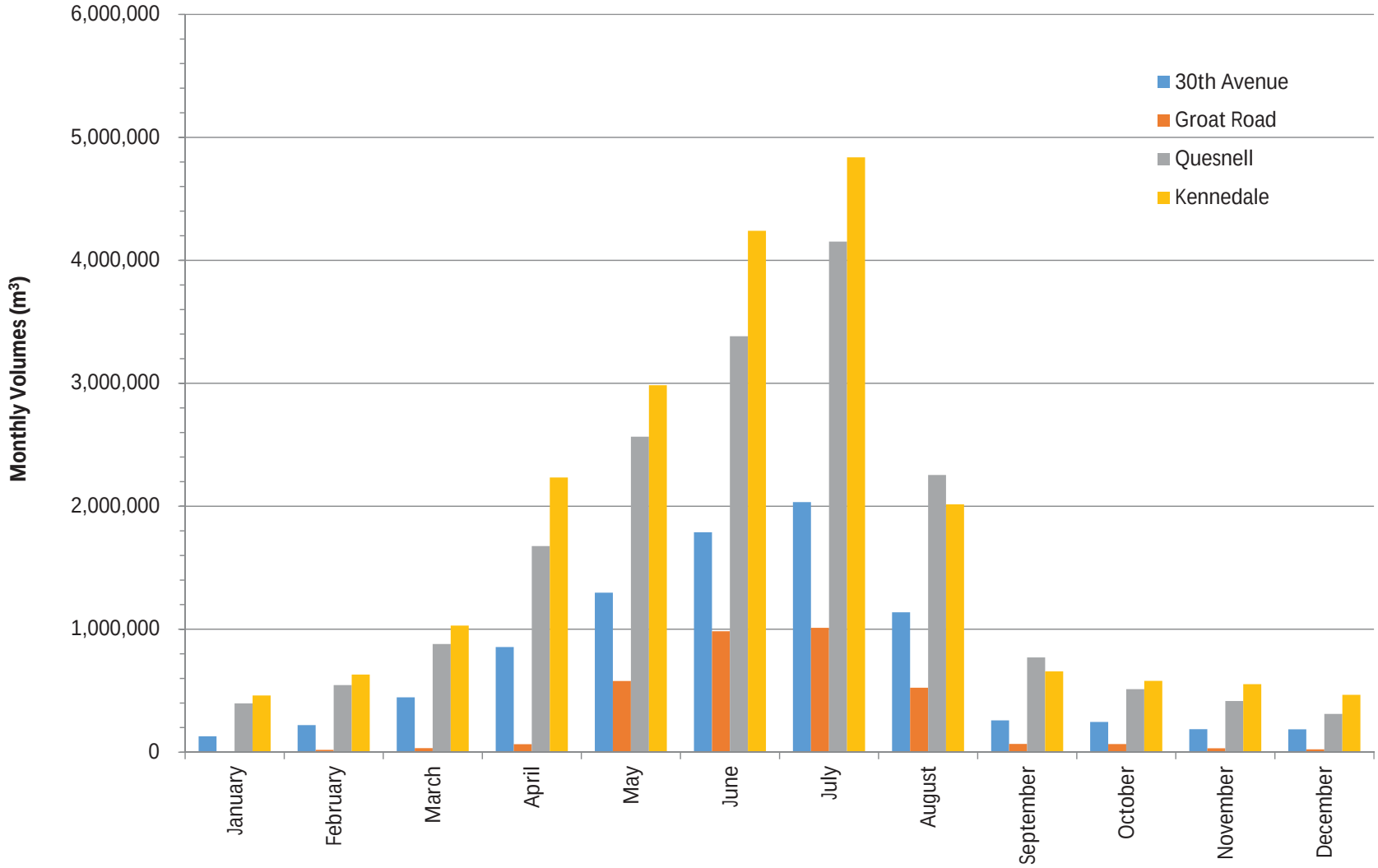


Figure 1: Total (Measured + Estimated) Storm Volume in 2020

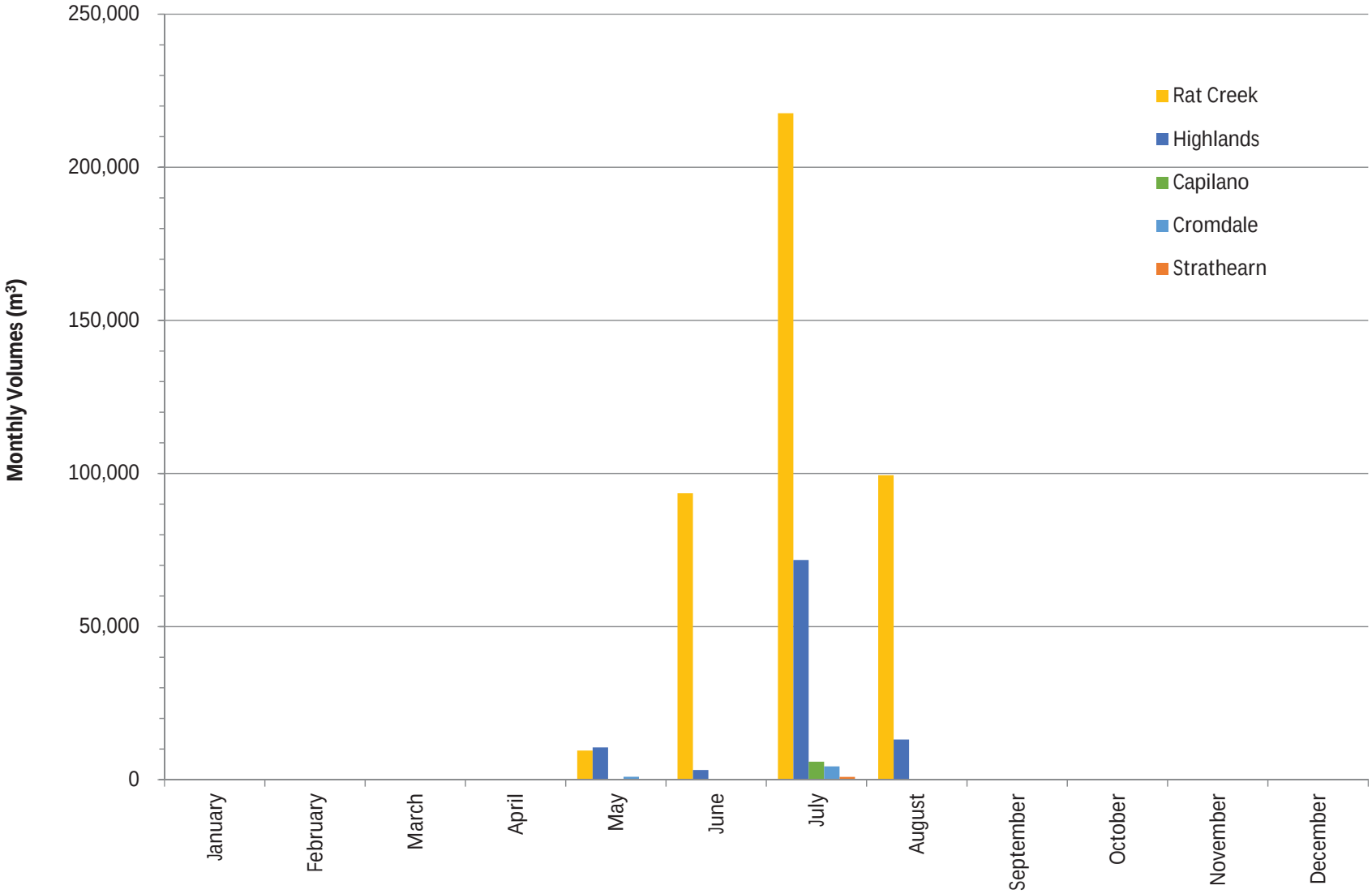


Figure 2: Total (Measured + Estimated) CSO Volumes in 2020

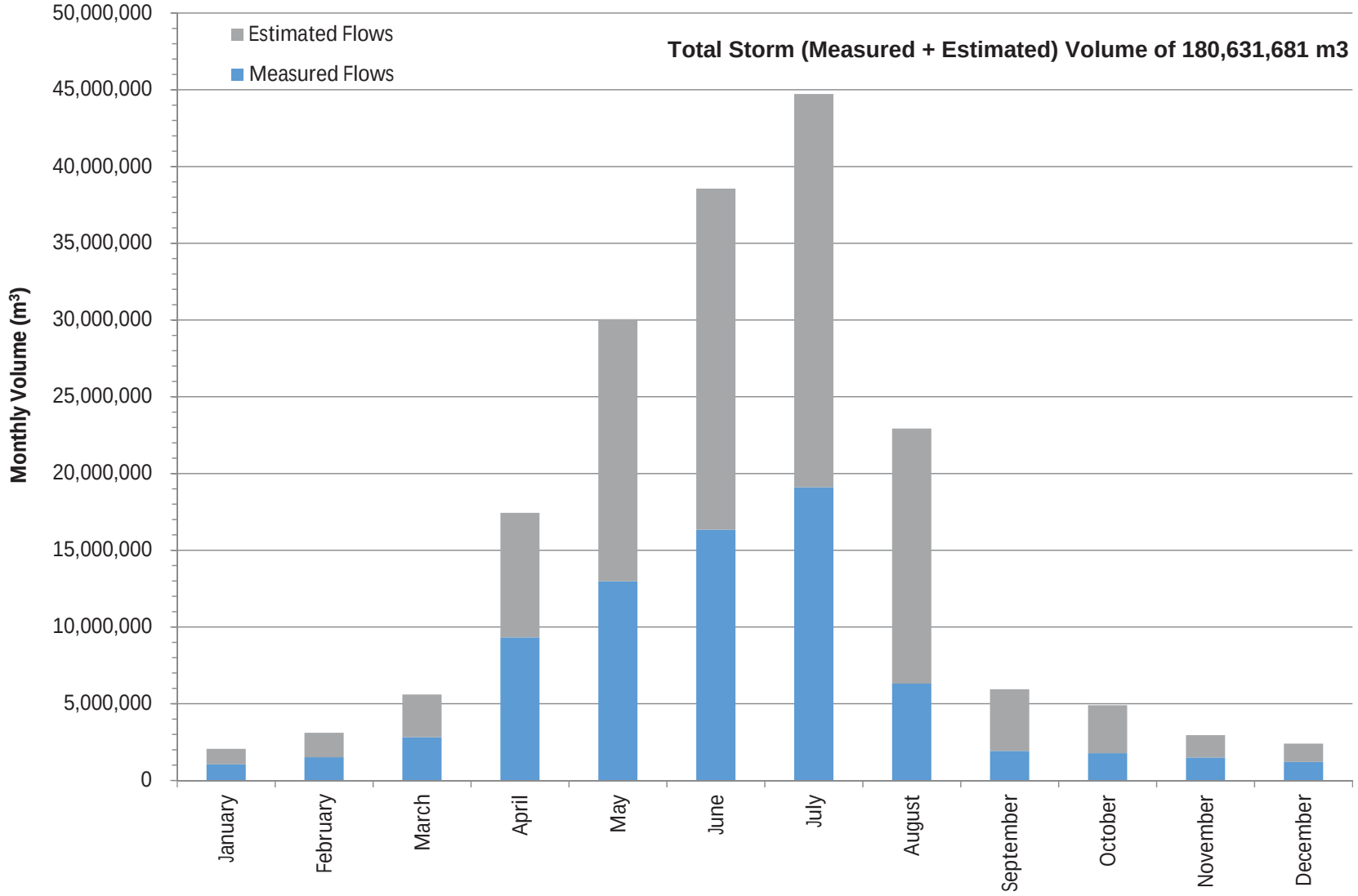


Figure 3: Total Storm (Measured + Unmonitored) Volumes in 2020 (All Storm Outfalls and Creeks)

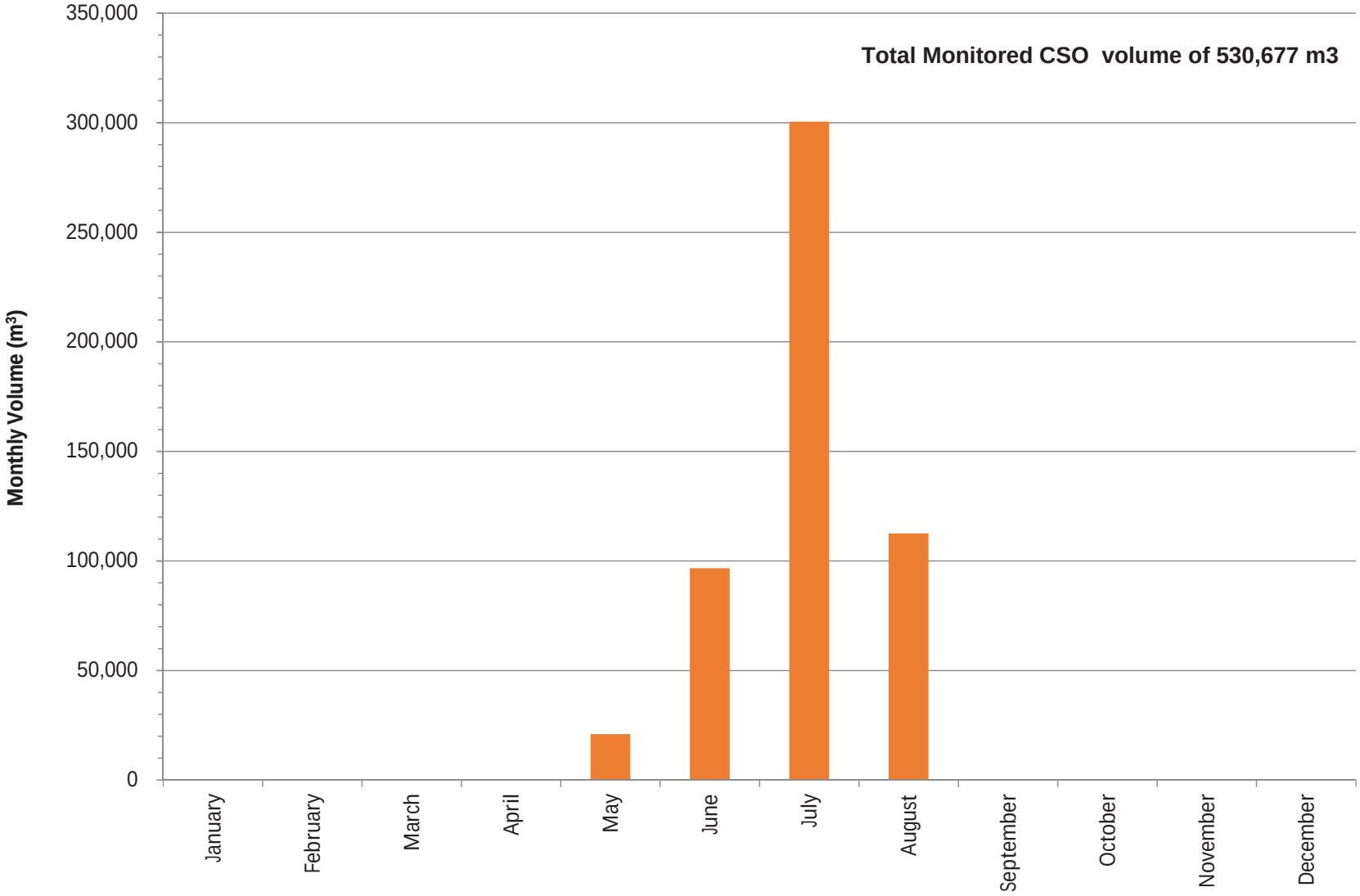


Figure 4: Total Monitored CSO Volume in 2020

Table 2: 2020 Annual Discharge Volumes (in Cubic Meters)

	Storm Outfalls				CSO Outfalls				
Month	**30th Avenue**	**Groat Road**	**Quesnell**	**Kennedale**	**Rat Creek**	**Highlands**	**Capilano**	**Cromdale**	**Strathearn**
January	129,001	29	396,229	460,563	0	0	0	0	0
February	220,104	18,409	544,919	630,927	0	0	0	0	0
March	446,052	32,019	879,029	1,028,683	0	0	0	0	0
April	854,908	64,158	1,676,169	2,233,204	0	0	0	0	0
May	1,296,927	578,616	2,565,003	2,984,092	9,513	10,518	0	951	0
June	1,787,922	983,017	3,382,395	4,239,550	93,526	3,132	0	0	0
July	2,033,287	1,010,903	4,151,847	4,837,567	217,650	71,727	5,875	4,338	900
August	1,136,982	524,258	2,253,355	2,014,595	99,422	13,094	21	0	10
September	258,759	66,243	770,055	656,878	0	0	0	0	0
October	245,221	66,062	512,179	579,300	0	0	0	0	0
November	186,319	31,124	415,849	552,710	0	0	0	0	0
December	185,012	22,915	310,461	465,527	0	0	0	0	0
Total	**8,780,494**	**3,397,753**	**17,857,491**	**20,683,597**	**420,110**	**98,472**	**5,896**	**5,289**	**910**

	Measured Flows		[3]Unmonitored Flows		Total Flow	
Month	**[1]Storm Outfalls**	**[2]CSO Outfalls**	**Storm Outfalls**	**CSO Outfalls**	**Storm Outfalls**	**CSO Outfalls**
January	1,051,007	0	1,006,819	0	2,057,826	0
February	1,510,690	0	1,596,357	0	3,107,047	0
March	2,810,235	0	2,786,570	0	5,596,805	0
April	9,320,225	0	8,117,354	0	17,437,579	0
May	12,968,782	20,982	17,084,244	0	30,053,025	20,982
June	16,334,035	96,658	22,220,754	0	38,554,788	96,658
July	19,099,450	300,490	25,619,373	0	44,718,823	300,490
August	6,308,620	112,547	16,612,612	0	22,921,232	112,547
September	1,923,598	0	4,018,180	0	5,941,778	0
October	1,771,713	0	3,131,019	0	4,902,731	0
November	1,497,521	0	1,449,151	0	2,946,672	0
December	1,204,287	0	1,189,087	0	2,393,374	0
Total	**75,800,161**	**530,677**	**104,831,519**	**0**	**180,631,681**	**530,677**

Note: [1]Measured Storm flows are actual flow volumes measured from Storm outfalls: 30th Ave, Quesnell, Groat Road, Kennedale Storm/STS/Wetland, Belgravia, Mill Creek (factored).

[2]Measured CSO flows are actual flow volumes measured from CSOs: Rat Creek, Capilano, Highlands, Cromdale, and Strathearn.

[3]Unmonitored flow volumes include estimates from monitored sites when measurements not available in addition to other remaining sites.

Table 3: Calculated Flow-Weighted Mean Monthly and Annual Constituent Concentrations for 2020

Total Suspended Solids (mg/L)

	Storm Outfalls				CSO Outfalls			No. of Samples	
Month	**30th Avenue**	**Groat Road**	**Quesnell**	**Kennedale**	**Rat Creek**	**Highlands**	**Capilano**	**Storm**	**CSO**
January	27	8	4	6	-	-	-	8	0
February	145	216	138	13	-	-	-	13	0
March	128	201	131	18	-	-	-	20	0
April	51	102	60	27	-	-	-	57	0
May	84	154	93	67	312	353	-	37	1
June	85	560	74	57	338	334	-	50	2
July	66	199	58	40	557	591	491	70	5
August	54	138	72	60	565	564	0	43	2
September	49	153	9	15	-	-	-	8	0
October	125	255	11	49	-	-	-	15	0
November	159	353	8	32	-	-	-	10	0
December	30	19	12	8	-	-	-	8	0
Mean Annual FWC =	**76**	**285**	**67**	**44**	**505**	**554**	**0**	**339**	**10**

Mean Annual FWC for all Storm = **74**

Mean Annual FWC for all CSO = **514**

Biochemical Oxygen Demand (mg/L)

	Storm Outfalls				CSO Outfalls			No. of Samples	
Month	**30th Avenue**	**Groat Road**	**Quesnell**	**Kennedale**	**Rat Creek**	**Highlands**	**Capilano**	**Storm**	**CSO**
January	4	13	1	3	-	-	-	6	0
February	12	13	8	7	-	-	-	12	0
March	13	17	10	12	-	-	-	19	0
April	9	14	8	11	-	-	-	51	0
May	7	9	9	9	99	104	-	33	1
June	9	16	4	7	113	112	-	43	2
July	5	9	3	4	88	88	89	57	5
August	6	14	6	10	161	156	0	40	2
September	5	14	9	8	-	-	-	8	0
October	10	30	7	13	-	-	-	15	0
November	10	33	3	10	-	-	-	10	0
December	9	8	2	6	-	-	-	5	0
Mean Annual FWC =	**7**	**13**	**6**	**8**	**111**	**100**	**0**	**299**	**10**

Mean Annual FWC for all Storm = **7**

Mean Annual FWC for all CSO = **109**

Table 3: Calculated Flow-Weighted Mean Monthly and Annual Constituent Concentrations for 2020 (Cont.)

Total Phosphorus (mg/L)

	Storm Outfalls				CSO Outfalls			No. of Samples	
Month	**30th Ave**	**Groat Road**	**Quesnell**	**Kennedale**	**Rat Creek**	**Highlands**	**Capilano**	**Storm**	**CSO**
January	0.9	0.1	0.1	0.2	-	-	-	8	0
February	1.1	0.4	0.4	0.5	-	-	-	13	0
March	1.1	0.6	0.5	0.5	-	-	-	22	0
April	0.4	1.1	0.5	0.7	-	-	-	61	0
May	0.3	0.4	0.3	0.3	2.0	2.1	-	37	1
June	0.2	0.6	0.2	0.2	4.6	4.5	-	52	3
July	0.1	0.4	0.2	0.2	2.2	2.2	2.2	74	5
August	0.2	0.3	0.2	0.2	3.8	3.8	0.0	44	3
September	0.5	0.3	0.1	0.2	-	-	-	8	0
October	0.3	0.9	0.1	0.3	-	-	-	15	0
November	0.3	0.9	0.1	0.2	-	-	-	10	0
December	14.9	0.4	0.1	0.3	-	-	-	8	0
Mean Annual FWC =	**0.3**	**0.5**	**0.2**	**0.3**	**3.1**	**2.4**	**0.0**	**352**	**12**

Mean Annual FWC for all Storm = **0.3** Mean Annual FWC for all CSO = **3.0**

Nitrite + Nitrate (mg/L)

	Storm Outfalls				CSO Outfalls			No. of Samples	
Month	**30th Ave**	**Groat Road**	**Quesnell**	**Kennedale**	**Rat Creek**	**Highlands**	**Capilano**	**Storm**	**CSO**
January	3.0	1.6	1.5	2.9	-	-	-	8	0
February	1.8	0.8	1.0	1.9	-	-	-	13	0
March	1.5	0.8	0.8	1.0	-	-	-	22	0
April	1.3	0.7	0.7	0.8	-	-	-	61	0
May	2.0	1.1	1.1	1.0	0.8	0.8	-	37	1
June	2.1	0.9	0.7	1.1	1.6	1.6	-	52	3
July	2.1	0.7	0.8	1.3	0.6	0.6	0.7	74	5
August	1.9	0.5	0.7	1.1	0.4	0.4	0.0	44	3
September	4.0	0.8	1.4	1.5	-	-	-	8	0
October	2.9	0.7	1.2	1.5	-	-	-	15	0
November	3.5	1.2	1.3	2.0	-	-	-	10	0
December	4.1	1.9	1.0	2.3	-	-	-	8	0
Mean Annual FWC =	**2.1**	**0.8**	**0.9**	**1.2**	**0.8**	**0.6**	**0.0**	**352**	**12**

Mean Annual FWC for all Storm = **1.2** Mean Annual FWC for all CSO = **0.8**

Table 3: Calculated Flow-Weighted Mean Monthly and Annual Constituent Concentrations for 2020 (Cont.)

Ammonia Nitrogen (mg/L)

	Storm Outfalls				CSO Outfalls			No. of Samples	
Month	**30th Ave**	**Groat Road**	**Quesnell**	**Kennedale**	**Rat Creek**	**Highlands**	**Capilano**	**Storm**	**CSO**
January	0.7	0.7	0.2	0.8	-	-	-	8	0
February	1.0	1.1	0.6	1.3	-	-	-	13	0
March	0.8	0.8	0.8	1.4	-	-	-	22	0
April	0.7	1.2	0.7	1.1	-	-	-	61	0
May	0.3	0.2	0.2	0.2	4.5	4.6	-	37	1
June	0.2	0.1	0.1	0.1	6.5	6.4	-	52	3
July	0.1	0.1	0.1	0.1	4.3	4.5	4.1	72	5
August	0.2	0.1	0.2	0.2	5.1	5.0	0.0	43	3
September	0.2	0.3	0.2	0.3	-	-	-	8	0
October	0.4	0.3	0.4	0.5	-	-	-	15	0
November	0.7	0.2	0.4	0.7	-	-	-	10	0
December	0.5	0.7	0.4	0.9	-	-	-	8	0
Mean Annual FWC =	**0.3**	**0.2**	**0.3**	**0.4**	**5.0**	**4.6**	**0.0**	**349**	**12**

Mean Annual FWC for all Storm = **0.3** Mean Annual FWC for all CSO = **4.9**

Total Kjeldahl Nitrogen (mg/L)

	Storm Outfalls				CSO Outfalls			No. of Samples	
Month	**30th Ave**	**Groat Road**	**Quesnell**	**Kennedale**	**Rat Creek**	**Highlands**	**Capilano**	**Storm**	**CSO**
January	1.9	1.5	0.9	1.7	-	-	-	8	0
February	3.2	3.3	2.1	2.9	-	-	-	13	0
March	3.3	3.3	2.9	3.3	-	-	-	22	0
April	2.6	3.7	2.6	3.1	-	-	-	61	0
May	1.8	1.9	1.7	1.9	11.5	11.7	-	37	1
June	1.7	2.4	1.0	1.4	25.2	24.5	-	52	3
July	1.3	1.8	1.1	1.2	11.6	11.4	11.9	74	5
August	1.1	1.2	1.3	1.5	17.6	17.4	0.0	44	3
September	5.5	3.2	0.9	1.9	-	-	-	8	0
October	2.5	3.2	1.2	2.6	-	-	-	15	0
November	2.3	3.8	1.3	2.1	-	-	-	10	0
December	1.6	2.2	1.0	2.0	-	-	-	8	0
Mean Annual FWC =	**1.9**	**2.0**	**1.4**	**1.9**	**16.0**	**12.7**	**0.0**	**352**	**12**

Mean Annual FWC for all Storm = **1.7** Mean Annual FWC for all CSO = **15.3**

Water quality monitoring sites include: 30th Ave, Quesnell, Groat Road and Kennedale Storm outfalls; and Rat Creek and Capilano CSOs.
FWC (mg/L) = Flow weighted concentration = 1000 x Constituent load (kg) / Volume (m3) per site for a monthly or annual period
Concentrations for unsampled flows were estimated or interpolated
No. of samples includes wet-weather and baseflow sampling. QA/QC samples not included in totals.
'-' - Concentration could not be calculated due to no flow present.

Table 4: Constituent Loads for 2020

Total Suspended Solids (kg)

	Storm Outfalls							Creeks					CSO Outfalls					
Month	30th Ave Storm	Groat Rd. Storm	Quesnell Storm	Kennedale Storm	Monitored Storm Sub-Total	Remaining Storm	**Total Storm**	Mill Creek	Whitemud Creek	Horsehills Creek	Wedgewood Creek	**Total Creek**	Rat Creek CSO	Highlands CSO	Capilano CSO	AEP CSO Sub-Total	Remaining CSO	**Total CSO**
January	3,491	0	1,644	2,856	7,991	5,536	**18,499**	926	2,718	945	613	**4,972**	0	0	0	0	0	**0**
February	31,809	3,978	75,120	8,030	118,937	102,350	**335,148**	34,563	55,853	19,421	12,597	**113,862**	0	0	0	0	0	**0**
March	56,924	6,447	114,734	18,219	196,323	171,761	**568,203**	65,195	96,038	33,394	21,660	**200,119**	0	0	0	0	0	**0**
April	43,898	6,564	100,009	59,877	210,348	167,996	**883,571**	309,652	173,125	60,197	39,046	**505,226**	0	0	0	0	0	**0**
May	108,498	88,977	238,575	200,132	636,182	913,463	**3,099,749**	1,089,607	477,489	148,640	104,590	**1,550,104**	2,967	3,717	0	6,684	201	**6,885**
June	151,439	550,885	251,260	240,971	1,194,554	1,422,083	**4,891,728**	1,473,318	735,451	246,213	185,491	**2,275,091**	31,607	1,047	0	32,654	980	**33,633**
July	134,257	201,502	238,980	193,111	767,849	942,011	**5,504,007**	4,073,389	461,272	161,963	107,723	**3,794,146**	121,258	42,401	2,885	166,544	4,988	**171,532**
August	61,052	72,272	163,332	120,407	417,063	557,004	**1,689,531**	397,566	253,296	80,249	82,950	**715,463**	56,193	7,385	0	63,578	1,908	**65,486**
September	12,627	10,146	7,191	10,033	39,996	34,502	**125,787**	11,578	27,874	8,355	6,353	**51,289**	0	0	0	0	0	**0**
October	30,668	16,860	5,536	28,585	81,648	39,614	**184,434**	25,634	25,910	13,511	4,474	**63,171**	0	0	0	0	0	**0**
November	29,640	10,981	3,173	17,686	61,480	56,927	**186,692**	23,092	32,367	11,254	7,300	**68,286**	0	0	0	0	0	**0**
December	5,599	445	3,877	3,804	13,724	11,228	**39,756**	5,614	6,727	2,339	1,517	**14,805**	0	0	0	0	0	**0**
Total	**669,901**	**969,057**	**1,203,430**	**903,709**	**3,746,097**	**4,424,474**	**17,527,105**	**7,510,135**	**2,348,120**	**786,480**	**574,314**	**9,356,534**	**212,026**	**54,550**	**2,885**	**269,460**	**8,076**	**277,535**

Total Load From Storm and CSO = 17,804,640

Biochemical Oxygen Demand (kg)

	Storm Outfalls							Creeks					CSO Outfalls					
Month	30th Ave Storm	Groat Rd. Storm	Quesnell Storm	Kennedale Storm	Monitored Storm Sub-Total	Remaining Storm	**Total Storm**	Mill Creek	Whitemud Creek	Horsehills Creek	Wedgewood Creek	**Total Creek**	Rat Creek CSO	Highlands CSO	Capilano CSO	AEP CSO Sub-Total	Remaining CSO	**Total CSO**
January	519	0	396	1,355	2,271	1,008	**4,189**	172	496	173	112	**910**	0	0	0	0	0	**0**
February	2,644	239	4,390	4,509	11,782	7,514	**27,389**	2,326	4,032	1,402	909	**8,093**	0	0	0	0	0	**0**
March	5,596	533	9,039	12,273	27,441	16,854	**63,890**	6,365	9,413	3,273	2,123	**19,595**	0	0	0	0	0	**0**
April	8,026	893	12,730	24,319	45,967	28,108	**139,371**	36,539	24,039	8,358	5,422	**65,296**	0	0	0	0	0	**0**
May	8,540	5,447	22,348	27,042	63,377	80,566	**259,214**	67,653	41,816	13,235	9,346	**115,271**	945	1,089	0	2,034	61	**2,095**
June	15,395	15,526	13,770	27,985	72,676	84,398	**275,749**	69,927	41,038	14,711	10,340	**118,674**	10,568	351	0	10,919	328	**11,246**
July	9,772	8,959	13,011	17,950	49,692	57,661	**206,571**	72,763	27,973	9,774	6,752	**99,218**	19,231	6,333	523	26,088	780	**26,867**
August	6,344	7,305	14,552	20,650	48,850	55,721	**166,568**	21,086	28,122	8,893	9,124	**61,997**	15,988	2,043	0	18,031	541	**18,572**
September	1,322	903	7,136	5,467	14,828	14,850	**47,400**	4,666	9,066	3,073	2,075	**17,723**	0	0	0	0	0	**0**
October	2,344	1,997	3,470	7,644	15,454	12,546	**42,005**	4,676	6,474	2,719	1,295	**14,005**	0	0	0	0	0	**0**
November	1,809	1,012	1,406	5,544	9,772	5,698	**22,505**	2,470	3,291	1,144	742	**7,035**	0	0	0	0	0	**0**
December	1,590	177	707	2,818	5,292	2,908	**11,977**	1,408	1,728	601	390	**3,777**	0	0	0	0	0	**0**
Total	**63,901**	**42,989**	**102,957**	**157,555**	**367,403**	**367,831**	**1,266,827**	**290,051**	**197,488**	**67,356**	**48,631**	**531,593**	**46,732**	**9,816**	**523**	**57,071**	**1,709**	**58,781**

Total Load From Storm and CSO = 1,325,608

Total Phophorus (kg)

	Storm Outfalls							Creeks					CSO Outfalls					
Month	30th Ave Storm	Groat Rd. Storm	Quesnell Storm	Kennedale Storm	Monitored Storm Sub-Total	Remaining Storm	**Total Storm**	Mill Creek	Whitemud Creek	Horsehills Creek	Wedgewood Creek	**Total Creek**	Rat Creek CSO	Highlands CSO	Capilano CSO	AEP CSO Sub-Total	Remaining CSO	**Total CSO**
January	39	0	59	110	209	107	**412**	18	53	18	12	**96**	0	0	0	0	0	**0**
February	118	8	197	290	613	346	**1,326**	102	184	64	42	**367**	0	0	0	0	0	**0**
March	234	20	428	534	1,216	751	**2,854**	295	423	147	95	**887**	0	0	0	0	0	**0**
April	513	68	828	1,504	2,912	1,790	**9,010**	2,445	1,569	546	354	**4,307**	0	0	0	0	0	**0**
May	362	240	689	889	2,181	2,765	**9,168**	2,710	1,419	447	317	**4,222**	19	22	0	41	1	**42**
June	444	603	529	819	2,394	2,700	**9,378**	2,803	1,367	467	341	**4,283**	430	14	0	444	13	**457**
July	423	411	704	869	2,408	2,721	**10,711**	4,648	1,314	460	313	**5,582**	471	155	13	639	19	**658**
August	194	153	550	459	1,356	1,908	**5,476**	1,149	820	261	267	**2,212**	378	50	0	427	13	**440**
September	178	22	104	152	457	378	**1,357**	124	280	86	63	**522**	0	0	0	0	0	**0**
October	124	62	63	189	439	330	**1,171**	141	180	81	35	**402**	0	0	0	0	0	**0**
November	74	27	55	122	277	191	**713**	90	113	39	25	**245**	0	0	0	0	0	**0**
December	54	8	35	121	219	117	**486**	56	69	24	16	**151**	0	0	0	0	0	**0**
Total	**2,757**	**1,625**	**4,242**	**6,057**	**14,681**	**14,104**	**52,062**	**14,581**	**7,791**	**2,641**	**1,880**	**23,277**	**1,298**	**240**	**13**	**1,551**	**46**	**1,598**

Total Load From Storm and CSO = 53,659

Table 4: Constituent Loads for 2020 (Cont.)

Nitrite + Nitrate (kg)

	Storm Outfalls							Creeks					CSO Outfalls					
Month	30th Ave Storm	Groat Rd. Storm	Quesnell Storm	Kennedale Storm	Monitored Storm Sub-Total	Remaining Storm	**Total Storm**	Mill Creek	Whitemud Creek	Horsehills Creek	Vedgewood Creek	**Total Creek**	Rat Creek CSO	Highlands CSO	Capilano CSO	AEP CSO Sub-Total	Remaining CSO	**Total CSO**
January	388	0	586	1,324	2,298	1,065	**4,325**	182	524	182	118	**962**	0	0	0	0	0	**0**
February	406	14	550	1,206	2,177	1,123	**4,370**	237	567	197	128	**1,070**	0	0	0	0	0	**0**
March	684	24	746	978	2,431	1,610	**5,883**	584	892	310	201	**1,842**	0	0	0	0	0	**0**
April	1,106	48	1,203	1,863	4,219	2,682	**17,950**	7,312	3,528	1,227	796	**11,049**	0	0	0	0	0	**0**
May	2,616	651	2,796	2,873	8,936	11,567	**38,358**	11,558	5,904	1,900	1,358	**17,855**	7	8	0	15	0	**16**
June	3,751	884	2,201	4,714	11,550	12,465	**42,051**	11,064	5,979	2,245	1,493	**18,037**	151	5	0	156	5	**161**
July	4,266	667	3,363	6,239	14,535	16,051	**52,688**	12,889	7,776	2,693	1,940	**22,101**	141	44	4	190	6	**195**
August	2,203	281	1,563	2,218	6,265	11,613	**27,985**	3,948	4,294	1,539	1,307	**10,108**	38	5	0	43	1	**44**
September	1,043	50	1,107	997	3,197	4,434	**12,056**	1,200	2,229	771	521	**4,425**	0	0	0	0	0	**0**
October	704	49	614	893	2,262	3,338	**8,806**	925	1,565	612	334	**3,206**	0	0	0	0	0	**0**
November	646	37	537	1,116	2,336	1,390	**5,683**	793	864	301	195	**1,956**	0	0	0	0	0	**0**
December	759	43	297	1,081	2,180	1,327	**5,190**	611	778	271	175	**1,683**	0	0	0	0	0	**0**
Total	**18,573**	**2,748**	**15,563**	**25,503**	**62,387**	**68,663**	**225,344**	**51,303**	**34,900**	**12,247**	**8,567**	**94,294**	**338**	**63**	**4**	**404**	**12**	**417**

Total Load From Storm and CSO = 225,761

Ammonia Nitrogen (kg)

	Storm Outfalls							Creeks					CSO Outfalls					
Month	30th Ave Storm	Groat Rd. Storm	Quesnell Storm	Kennedale Storm	Monitored Storm Sub-Total	Remaining Storm	**Total Storm**	Mill Creek	Whitemud Creek	Horsehills Creek	Wedgewood Creek	**Total Creek**	Rat Creek CSO	Highlands CSO	Capilano CSO	AEP CSO Sub-Total	Remaining CSO	**Total CSO**
January	92	0	99	347	537	212	**941**	36	104	36	24	**192**	0	0	0	0	0	**0**
February	220	21	302	851	1,395	645	**2,684**	160	333	116	75	**644**	0	0	0	0	0	**0**
March	372	26	669	1,400	2,466	1,266	**5,216**	487	710	247	160	**1,483**	0	0	0	0	0	**0**
April	556	75	1,214	2,446	4,292	2,499	**13,457**	3,932	2,358	820	532	**6,666**	0	0	0	0	0	**0**
May	400	108	571	633	1,712	2,314	**7,611**	2,290	1,208	383	273	**3,585**	43	49	0	92	3	**94**
June	428	113	360	522	1,422	1,633	**5,459**	1,475	802	289	203	**2,403**	606	20	0	626	19	**645**
July	241	84	470	611	1,406	1,520	**5,842**	2,300	746	261	179	**2,916**	944	320	24	1,288	38	**1,327**
August	171	35	451	395	1,053	1,715	**4,363**	711	639	218	204	**1,596**	507	65	0	571	17	**589**
September	54	17	164	166	400	444	**1,308**	124	235	81	55	**463**	0	0	0	0	0	**0**
October	87	21	183	285	576	659	**1,905**	203	321	128	67	**669**	0	0	0	0	0	**0**
November	129	7	186	364	684	366	**1,574**	216	230	80	52	**524**	0	0	0	0	0	**0**
December	90	16	117	398	621	273	**1,243**	128	161	56	36	**350**	0	0	0	0	0	**0**
Total	**2,841**	**524**	**4,784**	**8,417**	**16,566**	**13,546**	**51,603**	**12,062**	**7,846**	**2,715**	**1,860**	**21,492**	**2,099**	**454**	**24**	**2,577**	**77**	**2,654**

Total Load From Storm and CSO = 54,257

Total Kjeldahl Nitrogen (kg)

	Storm Outfalls							Creeks					CSO Outfalls					
Month	30th Ave Storm	Groat Rd. Storm	Quesnell Storm	Kennedale Storm	Monitored Storm Sub-Total	Remaining Storm	**Total Storm**	Mill Creek	Whitemud Creek	Horsehills Creek	Wedgewood Creek	**Total Creek**	Rat Creek CSO	Highlands CSO	Capilano CSO	AEP CSO Sub-Total	Remaining CSO	**Total CSO**
January	243	0	363	802	1,408	661	**2,667**	114	326	113	73	**598**	0	0	0	0	0	**0**
February	700	61	1,155	1,833	3,750	2,093	**7,992**	565	1,096	381	247	**2,149**	0	0	0	0	0	**0**
March	1,455	104	2,540	3,381	7,480	4,508	**17,252**	1,720	2,524	877	569	**5,263**	0	0	0	0	0	**0**
April	2,244	239	4,320	6,877	13,680	8,445	**46,494**	14,750	8,439	2,934	1,903	**24,369**	0	0	0	0	0	**0**
May	2,309	1,103	4,479	5,798	13,689	16,582	**56,101**	16,767	8,577	2,723	1,921	**25,830**	109	123	0	233	7	**240**
June	3,114	2,348	3,341	6,080	14,882	16,276	**56,092**	15,950	8,047	2,865	2,026	**24,933**	2,356	77	0	2,433	73	**2,506**
July	2,643	1,783	4,398	5,784	14,607	16,275	**60,639**	22,842	7,914	2,759	1,906	**29,756**	2,514	819	70	3,403	102	**3,505**
August	1,209	648	3,016	2,928	7,801	11,313	**31,731**	6,655	4,613	1,528	1,472	**12,618**	1,750	228	0	1,978	59	**2,037**
September	1,422	209	731	1,254	3,616	2,987	**10,639**	953	2,167	661	491	**4,036**	0	0	0	0	0	**0**
October	624	215	627	1,480	2,945	2,553	**8,292**	906	1,299	549	264	**2,794**	0	0	0	0	0	**0**
November	434	119	527	1,140	2,220	1,293	**5,242**	665	781	271	176	**1,728**	0	0	0	0	0	**0**
December	300	50	323	943	1,616	809	**3,467**	385	478	166	108	**1,042**	0	0	0	0	0	**0**
Total	**16,696**	**6,879**	**25,820**	**38,299**	**87,694**	**83,796**	**306,607**	**82,273**	**46,262**	**15,829**	**11,157**	**135,117**	**6,730**	**1,247**	**70**	**8,046**	**241**	**8,287**

Total Load From Storm and CSO = 314,895

Table 5: 2020 Rat Creek CSO Concentration Statistics

Month	CSO Events	TSS Mean (mg/L)	TSS Maximum (mg/L)	TSS Minimum (mg/L)	BOD Mean (mg/L)	BOD Maximum (mg/L)	BOD Minimum (mg/L)	TP Mean (mg/L)	TP Maximum (mg/L)	TP Minimum (mg/L)	*E Coli.* Geometric Mean (MPN/100 mL)
January	0	-	-	-	-	-	-	-	-	-	-
February	0	-	-	-	-	-	-	-	-	-	-
March	0	-	-	-	-	-	-	-	-	-	-
April	0	-	-	-	-	-	-	-	-	-	-
May	2	759.0	1260.0	258.0	144.0	194.0	94.0	2.5	2.9	2.0	949,437
June	4	290.5	338.0	228.0	109.0	116.0	94.0	3.7	4.6	2.0	1,666,301
July	8	694.1	1000.0	491.0	145.5	270.0	82.0	3.1	5.6	2.0	2,306,899
August	6	606.5	615.0	564.0	326.8	361.0	156.0	5.5	7.3	3.8	5,767,813
September	0	-	-	-	-	-	-	-	-	-	-
October	0	-	-	-	-	-	-	-	-	-	-
November	0	-	-	-	-	-	-	-	-	-	-
December	0	-	-	-	-	-	-	-	-	-	-

Month	CSO Events	NH^3 Mean (mg/L)	NH^3 Maximum (mg/L)	NH^3 Minimum (mg/L)	NO^3+NO^2 Mean (mg/L)	NO^3+NO^2 Maximum (mg/L)	NO^3+NO^2 Minimum (mg/L)	TKN Mean (mg/L)	TKN Maximum (mg/L)	TKN Minimum (mg/L)
January	0	-	-	-	-	-	-	-	-	-
February	0	-	-	-	-	-	-	-	-	-
March	0	-	-	-	-	-	-	-	-	-
April	0	-	-	-	-	-	-	-	-	-
May	2	5.9	7.4	4.3	0.8	0.8	0.8	14.0	16.8	11.2
June	4	8.3	15.9	4.3	1.4	1.6	0.8	21.4	25.2	11.2
July	8	9.8	19.5	4.1	0.4	0.7	0.2	19.7	38.2	8.9
August	6	13.7	18.8	5.0	0.2	0.4	0.1	32.7	43.2	17.4
September	0	-	-	-	-	-	-	-	-	-
October	0	-	-	-	-	-	-	-	-	-
November	0	-	-	-	-	-	-	-	-	-
December	0	-	-	-	-	-	-	-	-	-

Note: Number of samples might not equal to number of CSO events due to sampler malfunction and extended sampling event.

TABLE 6: List of Certified Collection System Operators

Certified collection system Operators per Level of WWC Certification:

(1) Operators Level IV WWC Certified
(2) Operators Level III WWC Certified
(44) Operators Level II WWC Certified
(47) Operators Level I WWC Certified

Name	Title	WWC Certification Level
Fechner, Frank	Senior Manager, Operational Strategies	IV
Gunderson, John	Engineering Technologist	III
L'Heureux, Robin	Engineering Technologist	III
Acker, Timothy	Drainage System MTV Operator	II
Bertin, Wendy	Engineering Technologist	II
Bishop, Shawn	Drainage System Combo Operator	II
Blinn, Bill	Tradesman (Millwright 2 / Welder)	II
Branicki, Roman	Labour Foreman 1	II
Bronca, Robert	Labour Foreman 3	II
Brownoff, Nicholas	Tradesman (Millwright)	II
Charrupi, Carlos	Maintenance Repairman I	II
Cuglietta, Carmine	Labour Foreman 1	II
Dennis, Clarence	Labour Foreman 3	II
Ewing, Nicole	Engineering Technologist	II
Ferenac, Nikola	Labour Foreman 3	II
Forrest, Scott	Water System Technical Support / Special	II
Fraser, Gordon	Labourer 2	II
Gawreletz, Kevin	Labour Foreman 1	II
Gilker, Michael	Sewer Substructure Inspector	II
Guidoccio, Natalino	Drainage System Serviceman	II
Hajar, Norm	Millwright Foreman	II
Hillier, Denis	Foreman (Dual Trade)	II
Horrocks, Curtis	Drainage System MTV Operator	II
Khakh, Surjit	Engineering Technologist	II
Lawson, Linsey	Drainage Network Specialist	II
Littlechilds, Stan	Drainage Network Specialist	II
Lukenbill, Durward (Dylan)	Tradesman (Millwright 2)	II
Macrury, Robert	Labour Foreman 1	II
Manao, Manuel	Sewer Substructure Inspector	II
McConnell, Peter	Drainage System MTV Operator	II

Name	Title	WWT Certification Level
Miller, Wade	Tradesman (Millwright 2)	II
Montague, Thomas (Ian)	Labour Foreman 3	II
Murphy, Steven	Drainage System Combo Operator	II
Naicken, Wade	Water System Technical Support / Special	II
Nelson, Tim	Environmental Specialist	II
Pearce, Craig	Drainage Network Specialist	II
Perron, Clayton	Tradesman (Millwright 2)	II
Powell, Ryan	Tradesman (Millwright)	II
Rivard, Shaune	Drainage Network Specialist	II
Russell, Randy	Team Lead Inspection Assessment	II
Samarasinghe, Kalutota	Labourer 2	II
Sigstad, Lane	Tradesman (Millwright 2)	II
Soni, Rohit	Planner (FCF Maintenance)	II
Sorenson, Melvin	Labour Foreman 1	II
Sorenson, Tim	Labour Foreman 3	II
Swanepoel, Christiaan	Drainage System MTV Operator	II
Ursuliak, Wes	Labour Foreman 3	II
Ambrosio, Jeffrey	Sewer Substructure Inspector	I
Aniskou, Evgeni	Engineering Technologist	I
Bellerose, Richard	Tradesman (Millwright 2)	I
Braunig, Alex	Drainage System MTV Operator	I
Campbell, Brent	Sewer Substructure Inspector	I
Casella, Carmen	Labourer 3	I
Clark, Daniel	Drainage Network Specialist	I
Dilts, Scott	Drainage System Combo Operator	I
Divino, Patrick	Drainage System Serviceman	I
Dowds, Alexander	Labourer 3	I
Draghici, Courtney	Drainage System Combo Operator	I
Dzenkiw, Michelle	Manager, Service Maintenance	I
Fehr, Brittany	Engineering Technologist	I
Fola, Miressa	Manager, Drainage Environment Services	I
Girhiny, Leah	Engineering Technologist	I
Goodine, John	Tradesman (Millwright 2)	I
Goonewardane, Anton	Equipment Operator 3	I

Name	Title	WWT Certification Level
Guidoccio, Nicholas	Labourer 3	I
Hammond, Richard	Labourer 3	I
Handfield, Terrence	Drainage System Combo Operator	I
Hill, James	Electrician 1	I
Hao, Yufu (Owen)	Industrial Wastewater Inspector	I
Hoffman, Edward	Drainage System Combo Operator	I
Ledl, Ryan	Industrial Wastewater Investigator	I
Ledrew, Travis	Labour Foreman 1	I
Liao, Hongyu (Tony)	Project Manager, Elec Engineering Process	I
Lirazan, Warren	Drainage System Combo Operator	I
MacPherson, Blayne	Drainage System Combo Operator	I
Marcoux-Mansbridge, Nikita	Tradesman (Millwright)	I
Maughan, Tim	Labour Foreman 1	I
McHale, Ken	Drainage System Combo Operator	I
McKay, Brandy	Engineering Technologist	I
McLellan, Christine	Water System Technical Support / Special	I
O'Neill, John	Maintenance Repairman 1	I
Persaud, Shawna	Equipment Operator 3	I
Rahal, Osman	Engineering Technologist	I
Runco, Frank	Drainage System Combo Operator	I
Schlacht, Shawn	Labour Foreman 3	I
Sedurante, Benjamin	Sewer Substructure Inspector	I
Slonetzky, Tyler	Sewer Substructure Inspector	I
Spila, Leanne	Drainage Network Specialist	I
Swanson, Amy	Labour Foreman 1	I
Trahan, Tessa	Industrial Wastewater Investigator	I
Underhay, Dominic	Drainage System Combo Operator	I
Valentini, Marco	Maintenance Repairman 1	I
Webster, Kenneth	Labour Foreman 3	I
Yang, Guang	Drainage System Combo Operator	I

TABLE 7: 2020 Annual Product Usage at Pump Stations

The Biomaxx Canada OXYN8 solution is used for odor control at sanitary pump stations.
The Biomaxx Canada ELIMIN8 solution is used to enhance grease removal.

Pump Station	Product	Total Addition (Litres)
203 Ambleside	Biomaxx Canada OXYN8	14,760
213 Big Lake	Biomaxx Canada OXYN8	3120
	Total Usage (OXYN8):	**17,880**
166 Pembina	Biomaxx Canada ELIMIN8	4,546
193 SECS	Biomaxx Canada ELIMIN8	5,411
	Total Usage (ELIMIN8):	**9,957**

TABLE 8: 2020 Annual Usage of Reward® Herbicide

Date of Application	Stormwater Management Facility	Quantity Used (L)
09-Jul-20	Ellerslie (6 Avenue & 85 Street SW)	26
10-Jul-20	Oxford #1 (13102 - 158 Avenue NW)	15
04-Aug-20	Elsinore (17503 - 103 Street NW)	15
	Total Usage (L):	**56**
	Total Number of Applications:	**3**

Table 9a: 2020 Usage of Potassium Permanganate

The use of Potassium Permanganate in the **Monitoring and Compliance** section is related to the identification of cross-connections in the collection system and supports enforcement activities associated with Drainage Bylaw 18100 (EPCOR) and Drainage Bylaw 18093 (City of Edmonton) and investigations of industrial and commercial customers.

Date Tested	Location of Test	Department / Section	Tests per Location	Potassium Permanganate (g)
08-Jan-20	9405 - 58 Avenue NW	Monitoring and Compliance	1	10
05-Feb-20	10550 - 116 Street NW	Monitoring and Compliance	1	5
05-Feb-20	106 Avenue & 116 Street NW	Monitoring and Compliance	1	5
06-Feb-20	106 Avenue & 116 Street NW	Monitoring and Compliance	1	5
24-Feb-20	4030 - 78 Avenue NW	Monitoring and Compliance	1	10
			Total Usage (g):	**35**
			Total Number of Tests:	**5**

Table 9b: 2020 Usage of Bright Dye

The use of Bright Dye in the **Environmental Services** section is related to the identification of cross-connections in the collection system. The **Monitoring & Compliance** usage supports enforcement activities associated with Drainage Bylaw 18100 (EPCOR) and Drainage Bylaw 18093 (City of Edmonton) and investigations of industrial and commercial customers.

Date Tested	Location of Test	Department / Section	Tests per Location	Bright Dye (ml)
02-Jan-20	2318 - Ware Crescent NW	Environmental Services	1	10
28-Jan-20	8505 - Argyll Road NW	Environmental Services	4	330
28-Jan-20	8531 - Coronet Road NW	Environmental Services	7	600
29-Jan-20	11029 - 135 Street NW	Environmental Services	1	30
29-Jan-20	11033 - 135 Street NW	Environmental Services	1	30
07-Feb-20	10753 - Jasper Avenue NW	Environmental Services	11	330
10-Jul-20	10711 – Saskatchewan Dr NW	Field Operations	1	25
12-Aug-20	7803 -100 Ave (Capilano Park)	Field Operations	1	50
6-Aug-20	10715 – 53 Ave	Field Operations	1	50
18-Sep-20	14319 - Stony Plain Road NW	Environmental Services	1	330
18-Sep-20	14319 - Stony Plain Road NW	Environmental Services	1	300
21-Sep-20	31A Ave – 67A St	Field Operations	1	50
02-Oct-20	9330 - 80 Avenue NW	Monitoring & Compliance	1	50
05-Oct-20	7225 - 50 Street NW	Monitoring & Compliance	2	100
07-Oct-20	7225 - 50 Street NW	Monitoring & Compliance	1	50
			Total Usage (mL):	**2335**
			Total Number of Tests:	**35**

Table 10: 2020 Usage of De-Icing Product (Arctic Blast)

Date	Outfall Number	Directly Affected Watercourse	Number of Applications	Total Amount of De-Icing Product Applied (Kg)
06-Jan-20	108	North Sask. River	I	40
06-Jan-20	47	North Sask. River	I	50
06-Jan-20	4	Whitemud Creek	I	60
06-Jan-20	274	Blackmud Creek	I	40
07-Jan-20	265	Whitemud Creek	I	70
07-Jan-20	207	Blackmud Creek	I	40
07-Jan-20	277	Blackmud Creek	I	80
09-Jan-20	101	North Sask. River	I	60
09-Jan-20	298	North Sask. River	I	80
09-Jan-20	257	Wedgewood Creek	I	30
09-Jan-20	121	North Sask. River	I	40
10-Jan-20	268	North Sask. River	I	40
10-Jan-20	195	Mill Creek	I	40
10-Jan-20	139	North Sask. River	I	50
10-Jan-20	29	North Sask. River	I	96
10-Jan-20	25	North Sask. River	I	48
10-Jan-20	31	North Sask. River	I	16
10-Jan-20	65	North Sask. River	I	64
10-Jan-20	88	North Sask. River	I	48
10-Jan-20	119	Westridge Ravine	I	80
10-Jan-20	30	North Sask. River	I	80
10-Jan-20	109	North Sask. River	I	20
10-Jan-20	71	North Sask. River	I	40
13-Jan-20	87	North Sask. River	I	70
13-Jan-20	109	North Sask. River	I	20
14-Jan-20	191	Mill Creek	I	50
14-Jan-20	92B	Mill Creek	I	40
14-Jan-20	91	Mill Creek	I	50
17-Jan-20	257	Wedgewood Creek	I	90
17-Jan-20	15	North Sask. River	I	80
20-Jan-20	71	North Sask. River	I	20
20-Jan-20	87	Kennedale Ravine	I	40
20-Jan-20	88	Kennedale Ravine	I	60
20-Jan-20	21	North Sask. River	I	40
20-Jan-20	125	Ramsay Ravine	I	20

Date	Outfall Number	Directly Affected Watercourse	Number of Applications	Total Amount of De-Icing Product Applied (Kg)
20-Jan-20	126	Ramsay Ravine	I	20
20-Jan-20	52	North Sask. River	I	70
20-Jan-20	78	Goldbar Creek	I	60
20-Jan-20	57	North Sask. River	I	100
20-Jan-20	58	North Sask. River	I	100
20-Jan-20	N/A	Shallow Storm Main	I	50
21-Jan-20	139	Ramsay Ravine	I	20
21-Jan-20	24	North Sask. River	I	100
21-Jan-20	123	Ramsay Ravine	I	30
21-Jan-20	124	Ramsay Ravine	I	40
21-Jan-20	132	Ramsay Ravine	I	20
21-Jan-20	136	Ramsay Ravine	I	30
21-Jan-20	65	North Sask. River	I	40
21-Jan-20	156	Fulton Ravine	I	40
21-Jan-20	77	Goldbar Creek	I	100
23-Jan-20	191	Mill Creek	I	80
23-Jan-20	195	Mill Creek	I	90
23-Jan-20	92B	Mill Creek	I	60
23-Jan-20	91	Mill Creek	I	60
23-Jan-20	192	Mill Creek	I	40
23-Jan-20	153	North Sask. River	I	60
23-Jan-20	47	North Sask. River	I	80
23-Jan-20	108	North Sask. River	I	50
31-Jan-20	298	North Sask. River	I	120
31-Jan-20	257	Wedgewood Creek	I	50
31-Jan-20	257	Wedgewood Creek	I	50
31-Jan-20	101	North Sask. River	I	120
31-Jan-20	277	Blackmud Creek	I	100
31-Jan-20	265	Whitemud Creek	I	90
03-Feb-20	120	North Sask. River	I	80
03-Feb-20	5	Whitemud Creek	I	80
03-Feb-20	4	Whitemud Creek	I	100
04-Feb-20	3	Whitemud Creek	I	30
04-Feb-20	121	North Sask. River	I	50
04-Feb-20	78	Goldbar Creek	I	80
04-Feb-20	52	North Sask. River	I	80
05-Feb-20	119	Westridge Ravine	I	100
05-Feb-20	21	North Sask. River	I	100

Date	Outfall Number	Directly Affected Watercourse	Number of Applications	Total Amount of De-Icing Product Applied (Kg)
05-Feb-20	30	North Sask. River	I	100
05-Feb-20	29	North Sask. River	I	80
06-Feb-20	257	Wedgewood Creek	I	20
06-Feb-20	298	North Sask. River	I	20
06-Feb-20	59	North Sask. River	I	30
20-Feb-20	1	Whitemud Creek	I	20
20-Feb-20	277	Whitemud Creek	I	20
21-Feb-20	264	Blackmud Creek	I	20
21-Feb-20	274	Blackmud Creek	I	20
21-Feb-20	25	North Sask. River	I	20
21-Feb-20	264	North Sask. River	I	20
21-Feb-20	274	North Sask. River	I	20
21-Feb-20	25	North Sask. River	I	20
26-Feb-20	4	Whitemud Creek	I	80
26-Feb-20	5	Whitemud Creek	I	60
27-Feb-20	257	Wedgewood Creek	I	40
27-Feb-20	78	Goldbar Creek	I	30
03-Mar-20	192	Mill Creek	I	40
03-Mar-20	156	Fulton Ravine	I	40
03-Mar-20	191	Mill Creek	I	30
03-Mar-20	195	Mill Creek	I	20
03-Mar-20	92B	Mill Creek	I	40
04-Mar-20	52	North Sask. River	I	80
05-Mar-20	1	Whitemud Creek	I	20
05-Mar-20	3	Whitemud Creek	I	60
05-Mar-20	274	Blackmud Creek	I	60
05-Mar-20	120	North Sask. River	I	40
06-Mar-20	4	Whitemud Creek	I	40
06-Mar-20	101	North Sask. River	I	30
06-Mar-20	265	Whitemud Creek	I	40
09-Mar-20	25	North Sask. River	I	20
09-Mar-20	23D	North Sask. River	I	40
09-Mar-20	207	Blackmud Creek	I	40
09-Mar-20	277	Blackmud Creek	I	40
10-Mar-20	5	Whitemud Creek	I	30
10-Mar-20	264	Blackmud Creek	I	30
11-Mar-20	71	North Sask. River	I	20
11-Mar-20	87	Kennedale Ravine	I	20

Date	Outfall Number	Directly Affected Watercourse	Number of Applications	Total Amount of De-Icing Product Applied (Kg)
11-Mar-20	88	Kennedale Ravine	I	20
17-Mar-20	257	Wedgewood Creek	I	60
01-Apr-20	153	North Sask. River	I	20
02-Apr-20	1	Whitemud Creek	I	20
02-Apr-20	3	Whitemud Creek	I	20
02-Apr-20	5	Whitemud Creek	I	40
02-Apr-20	264	Blackmud Creek	I	20
02-Apr-20	274	Blackmud Creek	I	20
02-Apr-20	N/A	Shallow Storm Main	I	20
03-Apr-20	207	Blackmud Creek	I	20
03-Apr-20	277	Blackmud Creek	I	40
03-Apr-20	25	North Sask. River	I	20
03-Apr-20	120	North Sask. River	I	40
03-Apr-20	265	Whitemud Creek	I	20
06-Apr-20	23D	North Sask. River	I	40
06-Apr-20	101	North Sask. River	I	40
07-Apr-20	47	North Sask. River	I	40
07-Apr-20	108	North Sask. River	I	50
07-Apr-20	195	North Sask. River	I	100
07-Apr-20	101	North Sask. River	I	20
09-Apr-20	195	North Sask. River	I	50
09-Apr-20	47	North Sask. River	I	50
27-Nov-20	126	Ramsay Ravine	I	50
27-Nov-20	124	Ramsay Ravine	I	50
27-Nov-20	123	Ramsay Ravine	I	30
27-Nov-20	123A	Ramsay Ravine	I	50
27-Nov-20	191	Mill Creek	I	60
27-Nov-20	195	Mill Creek	I	60
27-Nov-20	192	Mill Creek	I	50
07-Dec-20	29	North Sask. River	I	100
09-Dec-20	268	North Sask. River	I	40
09-Dec-20	148	North Sask. River	I	40
09-Dec-20	108	North Sask. River	I	50
09-Dec-20	47	North Sask. River	I	70
09-Dec-20	109	North Sask. River	I	30
09-Dec-20	119	Westridge Ravine	I	40
10-Dec-20	183	North Sask. River	I	40
10-Dec-20	131	Ramsay Ravine	I	30

Date	Outfall Number	Directly Affected Watercourse	Number of Applications	Total Amount of De-Icing Product Applied (Kg)
10-Dec-20	125	Ramsay Ravine	I	70
10-Dec-20	15	North Sask. River	I	50
11-Dec-20	78	Goldbar Creek	I	80
14-Dec-20	90	Mill Creek	I	20
14-Dec-20	274	Blackmud Creek	I	70
14-Dec-20	275	Blackmud Creek	I	70
14-Dec-20	265	Whitemud Creek	I	100
15-Dec-20	25	North Sask. River	I	60
15-Dec-20	23D	North Sask. River	I	60
15-Dec-20	101	North Sask. River	I	110
18-Dec-20	195	Mill Creek	I	80
18-Dec-20	192	Mill Creek	I	40
18-Dec-20	191	Mill Creek	I	40
18-Dec-20	92B	Mill Creek	I	40
22-Dec-20	47	North Sask. River	I	60
23-Dec-20	268	North Sask. River	I	40
23-Dec-20	148	North Sask. River	I	40
23-Dec-20	183	North Sask. River	I	20
23-Dec-20	182	North Sask. River	I	30
24-Dec-20	30	North Sask. River	I	100
24-Dec-20	125	Ramsay Ravine	I	20
24-Dec-20	132	Ramsay Ravine	I	20
31-Dec-20	24	North Sask. River	I	100
			Total Usage (Kg):	**8642**
			Total Number of Applications:	**172**

TABLE 11: 2020 Operational Issues - Drainage Services

Date of Occurrence	Location	Incident Description	Type	AEP Reference Number
04-Jan-20	3403-Chickadee Drive NW	A broken riser in a sanitary force main released approximately 38m^3 of untreated wastewater to the ground and adjacent storm water management facility. Pumps at the upstream pump station were shutoff stopping the release of untreated wastewater. EPCOR equipment attended the site and completed cleanup of impacted ground. Emergency repairs to the sanitary line were completed on January 4, 2020. In response to this release, EPCOR will be completing a high priority permanent repair to remove the riser pipe and flange. Additional sampling of the storm water management facility is scheduled for the spring. This release was originally reported to AEP on January 04, 2020. A written report was issued to AEP on January 10, 2020.	Reportable-Drainage Operations	362459
07-Jan-20	4344-99 Street NW	Approximately 5m^3 of caustic process water (pH = 12.9) was released into the sanitary collection system by Labatt's Brewery. Labatt's Brewery has been issued a Notice to Comply to discontinue the release of hazardous waste into the sewerage system. This release was reported to AEP on January 07, 2020 by Labatt's Brewery. A written report was not required by AEP.	Reportable-3rd Party Release	362540
08-Jan-20	Beverly Bridge & Yellowhead Trail NW	Sample results of a discharge into the storm sewer manhole MH287805 near Outfall #73 were reviewed by EPCOR Drainage investigators. The stormwater sample result had elevated levels of *E.coli* (25,000 CFU/100ml). Drainage investigators have initiated an investigation to confirm the source of untreated wastewater in the storm collection system. The release was reported to AEP on January 08, 2020. A written report was issued to AEP on January 15, 2020.	Reportable-Drainage Operations	362551
08-Jan-20	9405-58 Avenue NW	An unknown volume of contaminated wastewater was released from a shop sump into the storm collection system at Wynn Machine & Manufacturing Ltd. Wynn Machine & Manufacturing has been issued a Notice to Comply to discontinue the release of restricted waste (2,540 mg/L COD, 0.260 mg/L Copper, pH 4.49) and hazardous waste (91.8 mg/L Nickel, 652 mg/L Zinc, 317 mg/L Phosphorus) into the storm sewerage system. This release was reported to AEP on January 08, 2020 by Wynn Machine & Manufacturing Ltd. A written report was issued to AEP on January 30, 2020.	Reportable-3rd Party Release	362560
11-Jan-20	1338-99 Street NW	Untreated wastewater (approx. 5-10L) was released into the storm collection system from a surcharging private sanitary manhole at the South Edmonton Common Shopping Centre. Cameron Corporation was issued a Notice to Comply to discontinue the release of untreated wastewater into the storm sewerage system. Notices have also been issued to three nearby businesses to reduce their fats, oils and grease releases into the sanitary collection system. This release was reported to AEP on January 11, 2020. A written report was issued to AEP on January 16, 2020.	Reportable-3rd Party Release	362655
20-Jan-20	145-Avenue & 16-Street NW	EPCOR responded to a report of water pooling in the bottom of Fraser Ravine above a suspended sanitary main. On January 21st, staff were able to confirm that a recent increase in temperature had caused melt water to flow into the ravine, melting snow and exposing ground and vegetation. There was no release of untreated wastewater to the environment. This release was reported to AEP on January 20, 2020 as a precaution while the source of the water was investigated. A written report was issued to AEP on January 23, 2020.	Reportable-Drainage Operations	362902
24-Jan-20	8505-Argyll Road NW	EPCOR identified a cross connection discharging untreated wastewater into the storm collection system. This cross connection is on the EPCOR portion of the sanitary service and were assigned for priority repairs. This release was reported to AEP on January 24, 2020. A written report was issued to AEP on January 30, 2020.	Reportable-Drainage Operations	363081
24-Jan-20	8531-Coronet Road NW	EPCOR identified a cross connection discharging untreated wastewater into the storm collection system. This cross connection is on the EPCOR portion of the sanitary service and were assigned for priority repairs. This release was reported to AEP on January 24, 2020. A written report was issued to AEP on January 31, 2020.	Reportable-Drainage Operations	363082
30-Jan-20	108-Avenue & 116-Street NW	During the technical review of documents associated with ongoing condition assessments EPCOR Drainage Services identified a compromised membrane in a double barrel pipe which separated the storm and sanitary mains at this location. The compromised membrane would have allowed for the release of untreated wastewater (unknown volume) from the sanitary collection system to the storm collection system during high flow / wet weather conditions. Engineering and constructability assessments of repair options have been	Reportable-Drainage Operations	363288

		completed and the scheduling of the repair is in progress. The release was reported to AEP on January 30, 2020. A written report was issued to AEP on February 6, 2020.		
03-Feb-20	6609-Gateway Boulevard NW	A calcium chloride solution (approx. 2000L) was released into a bermed area at the City of Edmonton – SW District Yard and an unknown volume leaked out of the bermed area and into private storm catch basins located at the yard. The storm lines from this property drain into the combined sewer system. A 3rd party contractor was called in to clean up the site and pump out the impacted storm catch basins. The release was reported to AEP on February 03, 2020 by the City of Edmonton. A written report was issued to AEP on February 7, 2020.	Reportable-3rd Party Release	363342
04-Feb-20	11623-106 Avenue NW	EPCOR Drainage Services received laboratory results from a sample that was collected on January 30th from a storm sewer manhole (MH256913). The results of the sample (260,000 CFU/100ml) indicated the presence of untreated wastewater in the storm collection system. During dry weather, storm flow at this location is directed for treatment at the Gold Bar WWTP through the Rat Creek diversion structure. During storm events and snowmelt, this would increase the CSO discharge to the North Saskatchewan River. This location is being analyzed in order to divert the sanitary wastewater flows away from the storm sewer as part of the opportunistic sewer separation project. This release was reported to AEP on February 04, 2020. A written report was issued to AEP on February 11, 2020.	Reportable-Drainage Operations	363418
06-Feb-20	3643-99 Street NW	EPCOR Drainage investigators responded to an Edmonton Police Service report of illegal dumping into a storm catch basin at a commercial complex. EPCOR attended the site and noted that oil / grease waste was present inside the catch basin. The property management company (McCOR Management Inc.) dispatched a 3rd party hydrovac company to clean out the impacted catch basin / storm lines. A Notice to Comply was issued to the property management company to discontinue the release of non-permitted waste into the storm sewerage system. This release was reported to AEP on February 6, 2020 by the property management company. A written report was not required by AEP.	Reportable-3rd Party Release	363490
07-Feb-20	Multiple Locations	During a technical review of documents associated with ongoing condition assessments for the drill drop manhole rehabilitation program 5 drill drop manholes where structural deficiencies would have resulted in untreated wastewater being released to soil were identified. EPCOR is currently evaluating rehabilitation and construction options for each of the 5 drill drop manholes. The rehabilitation of these structures will stop the release of untreated wastewater to the soil. Delineation, removal, remediation and restoration of impacted material (including soil) will be incorporated into future planning for the five locations. EPCOR will continue to monitor the condition of the drill drop manholes. This release was reported to AEP on February 7, 2020. A written report was issued to AEP on February 14, 2020.	Reportable-Drainage Operations	363518
12-Feb-20	Highway 19 & 135-Street NW	Potable water (unknown volume) was released into storm sewer lines from flushing activities by a public contractor (Sureway Construction). The contractor was using dechlorination pucks during their flushing activities, however, EPCOR determined that the Total Chlorine levels of the potable water entering the storm lines was above the Bylaw 18100 limit (0.02 mg/L). Sureway Construction added additional dechlorination pucks at their flushing sites to lower the chlorine levels of the water being released into the storm lines. This release was reported to AEP on February 12, 2020 by Sureway Construction. A written report was issued to AEP on February 19, 2020.	Reportable-3rd Party Release	363655
16-Feb-20	2804-Calgary Trail NW	Untreated wastewater was released from a sanitary manhole blockage at a commercial complex. The release was contained in the parking lot area of the complex and no untreated wastewater entered the storm collection system. EPCOR equipment cleaned up approximately 10,000L of untreated wastewater / snow mix from the impacted area. EPCOR inspected adjacent businesses to assess compliance with Drainage bylaws. This release was reported to AEP on February 16, 2020. A written report was issued to AEP on February 19, 2020.	Reportable-Drainage Operations	363771
17-Feb-20	65-Avenue & 50 Street NW	Untreated wastewater (approx. 200L) was released from a private sanitary manhole at a commercial complex. The release was isolated to the roadway and nearby storm catch basin sump. There was no release of untreated wastewater into the storm collection system. EPCOR will inspect nearby businesses to assess compliance with Drainage bylaws. This release was reported to AEP on February 17, 2020. A written report was issued to AEP on February 19, 2020.	Reportable-3rd Party Release	363786
18-Feb-20	153-Avenue & 76 Street NW	During decommissioning of the Mayliewan Pump Station (#174) a large volume of untreated wastewater and fats oils and grease (FOG) was released into the downstream sanitary collection system. The release of concentrated untreated wastewater and FOG caused performance concerns at the Alberta Capital Region Wastewater Commission (ACRWC) plant. EPCOR stopped cleaning activity, put additional controls in place and completed the cleaning and decommissioning of the pump station. EPCOR continues to work with ACRWC to ensure there is no further performance issues at the ACRWC plant related to large trunk cleaning.	Reportable-EPCOR Contractor	N/A
28-Feb-20	12262-109 Street NW	During a review of the results of a Multi-Sensor-Inspection (MSI) a void in a 1200mm combined sewer line within the Blatchford Airport redevelopment area was discovered. The void is situated near the crown of the pipe, which would have limited the release of untreated wastewater into the surrounding soil during periods of high flow (ie. spring melt or precipitation events). There was no above ground release of untreated wastewater or release to the storm collection system. This event was reported to AEP on February 28, 2020. A written report was issued to AEP on March 5, 2020.	Reportable-Drainage Construction	364130

02-Mar-20	Rhatigan Road West NW	During a response to a potential plugged main on February 28, 2020 a collapsed sanitary line was discovered. A bypass was established at this location to isolate the impacted infrastructure and Drainage Construction crews were mobilized to complete open cut repairs of impacted infrastructure. Further evaluation of engineering and design work on March 2, 2020 determined that untreated wastewater may have been released into the surrounding soil (unknown volume). The event was reported to AEP as EPCOR continued restorative activities related to the collapsed line. Due to the location of the sanitary line, the release of untreated wastewater would have been limited to the immediate area surrounding the pipe. There was no release of untreated wastewater to the surface or to the storm collection system. This release were reported to AEP on March 2, 2020. A written report was issued to AEP on March 6, 2020.	Reportable-Drainage Operations	364243
02-Mar-20	Groat Road & 108-Avenue NW	An EPCOR contractor (CKB Construction) was completing excavation work as part of the Groat Road Storm Trunk Rehabilitation Project. During the excavation hydrocarbon contamination was discovered. Further testing of soil and groundwater were conducted by the contractor to determine the extent of contamination in the area. The contractor developed a safe work and disposal plan for this site, contaminated soil was removed and remediation completed. This release was reported to AEP on March 2, 2020. A written report was not required by AEP.	Reportable-EPCOR Contractor	364265
03-Mar-20	Rainbow Valley Road NW	A hydrocarbon sheen (unknown volume) was observed along Whitemud Creek. The hydrocarbon residue was traced back to Outfall #2. There was no hydrocarbons present in the lines upstream of the outfall so the source could not be determined. An absorbent boom was placed by the bridge to collect any hydrocarbon residue. The release was reported to AEP on March 3, 2020. A written report was issued to AEP on March 10, 2020.	Reportable-3rd Party Release	364282
04-Mar-20	16707-14 Street NE	During a site walkthrough, an EPCOR contractor (Insituform Technologies Ltd) identified evidence of a release of untreated wastewater (unknown volume) at the station entrance of PW901. EPCOR staff confirmed that there was no active flow of untreated wastewater from the station and that the release had occurred prior to March 4, 2020. An EPCOR maintenance crew completed clean-up of the spill site on March 5th. A monthly preventative maintenance task has been created to clean debris from the inlet chamber of the pump station. This release was reported to AEP on March 4, 2020. A written report was issued to AEP on March 11, 2020.	Reportable-EPCOR Contractor	364311
04-Mar-20	3516-79 Street NW	Analytical results from a storm collection system sample collected by EPCOR Drainage investigators on February 27, 2020 indicated high *E. coli* concentrations (170,000 CFU/100ml). The sample was collected from a storm manhole (MH216124) as part of an investigation into a sewer odour at a residential property. The storm line at this location discharges to the North Saskatchewan River through Outfall #9 which is located 10 km downstream of the release. The residential property has been written a Notice Comply to repair the cross connection at this location. This release was reported to AEP on March 4, 2020. A written report was issued to AEP on March 11, 2020.	Reportable-3rd Party Release	364330
04-Mar-20	9507-141 Street NW	Analytical results from a storm collection system sample collected by EPCOR Drainage investigators on February 27, 2020 indicated high *E. coli* concentrations (110,000 CFU/100ml). The sample was collected from a storm manhole (MH241731) as part of an investigation into a sewer odour at a residential property. The storm line at this location discharges to the North Saskatchewan River through Outfall #29 which is located 800 m downstream of the release. The residential property has been written a Notice Comply to repair the cross connection at this location. This release was reported to AEP on March 4, 2020. A written report was issued to AEP on March 11, 2020.	Reportable-3rd Party Release	364334
04-Mar-20	14511-123 Avenue NW	A release of hydrocarbons (unknown volume) was observed from a commercial establishment (A1 Delivery & Moving). An oily sheen was coming off the property and into a nearby storm manhole. A 3rd party vacuum truck was called in to clean up the various hydrocarbon contaminants at this site. A Notice to Comply was issued to the company to discontinue the release of other than permitted matter into the storm collection system. This release was reported to AEP on March 4, 2020 by A1 Delivery & Moving. A written report was issued to AEP on March 5, 2020	Reportable-3rd Party Release	364328
17-Mar-20	12403-Fort Road NW	Approximately 200L of an industrial cleaner (E5 – Guardian Chemical) was added into the potable water system at the City of Edmonton - Kathleen Andrews Transit Facility. The potable water lines at this facility were then flushed into the sanitary sewer system. A review of the SDS for this product was conducted by EPCOR and it was determined to have had no impact to the underground infrastructure or downstream wastewater treatment process. This release was reported to AEP on March 17, 2020 by the City of Edmonton. A written report was issued to AEP on March 24, 2020.	Reportable-3rd Party Release	364656
18-Mar-20	13707-14 Street NW	An EPCOR crew identified a leak of an unknown volume of untreated wastewater in the North sanitary line inside the regional tunnel (PW902). This pipe provides redundancy in case of failure of the South sanitary line and is currently out of use. The leak would have released untreated wastewater (unknown volume) into a sump that collects infiltrated water from the tunnel. The sump then discharges the infiltrated water to the North Saskatchewan River. EPCOR is evaluating options to affect repairs and stop the leak from the North line. Work to conduct the repair will commence following the evaluation of the repair options. This release was reported to AEP on March 24, 2020. A written report was issued to AEP on March 30, 2020.	Reportable-Drainage Operations	364890

19-Mar-20	8750-Stadium Road / 116-Avenue & 85-Street NW	During a technical review of documents associated with ongoing assessments of the Large Trunk Rehabilitation capital planning project structural deficiencies were identified in two combined trunk lines. The structural deficiencies of these pipes would have allowed for the release of untreated wastewater (unknown volume) to the surrounding soil. Any release of untreated wastewater would have been contained underground in the vicinity of the pipe. There was no release of untreated wastewater to the storm collection system or the surface at these locations. This release was reported to AEP on March 25, 2020. A written report was issued to AEP on March 31, 2020.	Reportable-Drainage Planning	364829
19-Mar-20	Groat Road & River Valley Road NW	Hydraulic oil (<1L) was released from a sky jack lifting boom by a 3rd party working at the Groat Road Bridge rehabilitation construction site. The release was contained on the surface (ice) and was cleaned up by Graham Construction workers. No hydraulic oil entered into the river itself. This release was reported to AEP on March 19, 2020 by Graham Construction. A written report was not required by AEP.	Reportable-3rd Party Release	364681
23-Mar-20	4225-92 Avenue NW	A private sanitary line blockage released untreated wastewater (approx. 20 cubic meters) into the storm collection system at the IPEX facility. The blockage to the sanitary line was released by a 3rd party vacuum truck. A Notice to Comply was issued to IPEX to discontinue the release of other than permitted matter into the storm collection system. This release was reported to AEP on March 23, 2020 by IPEX. A written report was issued to AEP on March 24, 2020.	Reportable-3rd Party Release	364774
24-Mar-20	10510-45 Avenue NW	A missing section of pipe was identified in a sanitary trunk line. The missing section of pipe would have allowed for the release of untreated wastewater (unknown volume) to the surrounding soil. There was no release of untreated wastewater to the storm collection system or the surface at this location. The impacted pipe is scheduled for abandonment in 2025 and the pipe will be replaced by a new sanitary trunkline. EPCOR will continue to monitor the condition of this sanitary trunk. A written report was issued to AEP on March 25, 2020. A written report was issued to AEP on March 30, 2020.	Reportable-Drainage Operations	364826
25-Mar-20	2064-49 Street NW	Diesel fuel (<100L) was released from a suspected fuel theft at a private residence. The spill was contained on the roadway (mixed with snow / ice) and was cleaned up by EPCOR staff. There was no release of diesel fuel into the storm collection system. This release was reported to AEP on March 25, 2020 by the City of Edmonton – Fire Services. A written report was issued to AEP on March 31, 2020.	Reportable-3rd Party Release	364812
26-Mar-20	10126-156 Street NW	Hydrocarbons contaminants (<1L) were released into the storm collection system from a small area of fresh asphalt located in the alleyway at Sunlight Landscaping Ltd. A hydrocarbon sheen was observed flowing from the asphalt and down the alley into a sanitary manhole and storm catch basin. Absorbent booms and spill pads were placed near the storm catch basin to prevent any further contaminants from going into the storm collection system. The fresh asphalt was removed from the alley by the landscaping company. A Notice to Comply was issued to Sunlight Landscaping to discontinue the release of other than permitted matter into the storm collection system. This release was reported to AEP on March 26, 2020 by Sunlight Landscaping Ltd. A written report was issued to AEP on March 30, 2020.	Reportable-3rd Party Release	364892
03-Apr-20	22130-Stony Plain Road NW	Analytical results from a sample collected on March 30, 2020 by EPCOR Drainage investigators indicated high *E. coli* concentrations (1,200,000 CFU/100ml). The sample was collected from a pool of water (possibly an overflowing sewage tank) at an apartment complex. The release was on private property and the nearby drainage ditches were not impacted. A Notice to Comply was issued to the property owner to discontinue the release of restricted / prohibited waste into the storm sewerage system. Alberta Health Services and the City of Edmonton were also contacted about this release. This release was reported to AEP on April 03, 2020. A written report was not required by AEP.	Reportable-3rd Party Release	365041
10-Apr-20	6311-144 Avenue NW	Hydraulic oil (approx. 100L) was released from a private garbage truck (Collective Waste Solutions). Approximately 10L of hydraulic oil was released into a nearby storm catch basin (DR #298757) and storm line. Absorbent pads and booms were placed at the site to contain the spill. A 3rd party vacuum truck was called in to remove the hydraulic oil from the catch basin, storm collection system and impacted area. This release was reported to AEP on April 10, 2020 by Collective Waste Solutions. A written report was not required by AEP.	Reportable-3rd Party Release	365183
21-Apr-20	10370-Queen Elizabeth Park Road NW	Untreated wastewater (unknown volume) was released into the North Saskatchewan River (NSR) from the Walterdale Pump Station #171. On April 21st the level of the NSR rapidly increased (estimated 4m) due to the release of a large upstream ice dam and heavy spring melt flow. In response to the sudden elevation change a number of outfall river gates were closed as per high river level protocols. It was determined that a buildup of ice / debris at Gate #2 did not allow the gate to fully close. This allowed water to enter the combined collection system and rapidly fill the storage tunnel at PW #171. There is a possibility as the storm water filled the storage tunnel at PW #171 that an unknown volume of river water mixed with untreated wastewater was released into the NSR. This release was reported to AEP on April 21, 2020. A written report was issued to AEP on April 29, 2020.	Reportable-Drainage Operations	365564
21-Apr-20	1270-Inland Way NW	Sodium hydroxide solution (approx. 80L) was released into the private storm sewer system at Clear Tech Industries. EPCOR was informed of the release by Alberta Environment and Parks on April 22nd. On April 22nd the catch basins on site were inspected and traces of a release to the storm collection system was observed. A Notice to Comply was issued to Clear Tech to discontinue the release of prohibited matter	Reportable-3rd Party Release	365580

		into the storm collection system. This release was reported to AEP on April 21, 2020 by Clear Tech Industries. A written report was issued to AEP on April 28, 2020.		
30-Apr-20	12151-160 Street NW	A yeast mixture (approx. 10,000Kg) was released into the sanitary collection system from Canada Bread Company. The Gold Bar WWTP was notified that a large volume of biologically active material had entered the sanitary collection system. A Notice to Comply was issued to Canada Bread Company to discontinue the release of non-permitted matter into the sewerage system. This release was reported to AEP on April 30, 2020 by Canada Bread Company. A written report was not required by AEP.	Reportable-3rd Party Release	365938
01-May-20	5320-104A Street NW	Hydraulic oil (1L) was released onto a roadway from a private company vehicle (Waste Management Inc.). The oil was contained in the sump of a nearby storm catch basin (CB228209) and was not released into the storm collection system. EPCOR used absorbent pads to remove the hydraulic oil from the impacted catch basin. This release was reported to AEP on May 1, 2020 by Waste Management Inc. A written report was not required by AEP.	Reportable-3rd Party Release	365992
05-May-20	14402-114 Avenue NW	Sample results of the stormwater discharge from the City of Edmonton (COE) NW district yard (14402-114 Avenue NW) were received and reviewed by the COE Enviso Coordinator for Parks and Road Services. The results of the sample exceeded Bylaw 18100 Appendix C and Bylaw 18093 Schedule B Restricted Wastes Applicable to Storm Sewers and Watercourses for COD at 781 mg/L, Phosphorous at 2.93 mg/L, Cadmium at 0.00148 mg/L, Copper at 0.174 mg/L, Lead at 0.173 mg/L, Nickel at 0.085 mg/L, Zinc at 1.30 mg/L, Oil & Grease at 160 mg/L and Phenols at 0.006 mg/L. The original sample from the NW district yard was collected on April 24, 2020 by COE Environmental Technologists. This release was reported to AEP on May 5, 2020 by the City of Edmonton. A written report was issued to AEP on May 12, 2020.	Reportable-3rd Party Release	366150
06-May-20	170 Street & Whitemud Drive NW	EPCOR Drainage Services responded to a report of a subsidence at a sanitary sewer manhole (MH220917). Following further investigation on May 7th a release of untreated wastewater (unknown volume) to the ground was identified due to the physical deficiencies in the sanitary pipe. The release was contained to the immediate vicinity of the subsidence and did not enter the storm collection system. An emergency project was completed to rehabilitate the manhole stopping the release. This release was reported to AEP on May 7, 2020. A written report was not required by AEP.	Reportable-Drainage Construction	366241
07-May-20	16503-134 Street NW	Antifreeze (approx. 15L) was released from a City of Edmonton Waste Management truck onto a roadway. Antifreeze had entered a nearby storm catch basin (CB465211) but was contained within the catch basin sump and did not enter the storm collection system. EPCOR staff cleaned up the antifreeze from inside the catch basin with absorbent pads. The release was reported to AEP by the City of Edmonton. A written report was not required by AEP.	Reportable-3rd Party Release	366498
07-May-20	6615-51 Avenue NW	Hydraulic oil (120L) was released from a street sweeper (TransEd LRT Design Build) onto a roadway. Hydraulic oil had entered nearby storm catch basins, but was contained within the catch basin sumps and did not enter the storm collection system. A 3rd party flusher unit was called in to clean up the oil spill from the road and storm catch basins. This release was reported to AEP on May 7, 2020 by TransEd LRT Design. A written report was issued to AEP on May 11, 2020.	Reportable-3rd Party Release	366242
08-May-20	13003-56 Street NW	Sample results of the stormwater discharge from the City of Edmonton (COE) NE district yard were received and reviewed by the COE Enviso Coordinator for Parks and Road Services. The results of the sample exceeded Bylaw 18100 Appendix C and Bylaw 18093 Schedule B Restricted Wastes Applicable to Storm Sewers and Watercourses for COD at 211 mg/L, Ammonia at 2.14 mg/L, Cadmium at 0.00102 mg/L, Selenium at 0.0231 mg/L and Phenols at 0.006 mg/L. The original sample from the NE district yard was collected on April 30, 2020 by COE Environmental Technologists. This release was reported to AEP on May 8, 2020 by the City of Edmonton. A written report was issued to AEP on May 12, 2020.	Reportable-3rd Party Release	366272
08-May-20	5404-59 Avenue NW	Sample results of the stormwater discharge from the City of Edmonton (COE) SE district yard were received and reviewed by the COE Enviso Coordinator for Parks and Road Services. The results of the sample exceeded Bylaw 18100 Appendix C and Bylaw 18093 Schedule B Restricted Wastes Applicable to Storm Sewers and Watercourses for COD at 239 mg/L, Phosphorous at 1.18 mg/L, Cadmium at 0.00372 mg/L, Selenium at 0.0234 mg/L, Lead at 0.0341 mg/L, Zinc at 0.71 mg/L and Oil & Grease at 31.4 mg/L. The original sample from the SE district yard was collected on April 30, 2020 by COE Environmental Technologists. This release was reported to AEP on May 8, 2020 by the City of Edmonton. A written report was issued to AEP on May 12, 2020.	Reportable-3rd Party Release	366270
18-May-20	5208-162 Avenue NW	Motor oil (2L) was released from a private vehicle onto a roadway. EPCOR responded to site and observed that oil residue was present in a nearby storm catch basin (CB399446) and downstream storm manhole (MH395598). Absorbent pads were used to remove the oil from the catch basin sump and storm manhole. Motor oil residue on the road was cleaned-up by the homeowner. This release was reported to AEP on May 18, 2020. A written report was not required by AEP.	Reportable-3rd Party Release	366579

18-May-20	7912-18 Avenue SW	Grout and tiling wastewater (approx. 50L) was released into the storm collection system from a private residence. EPCOR equipment was called in to clean out the impacted storm collection system. A Notice to Comply was issued to the homeowner to discontinue the release of prohibited waste into the storm sewerage system. This release was reported to AEP on May 18, 2020. A written report was not required by AEP.	Reportable-3rd Party Release	366620
19-May-20	4620-26 Avenue NW	During the investigation of an odour complaint EPCOR identified a plugged sanitary main (MH203607) that was allowing untreated wastewater (unknown volume) to infiltrate into an adjacent storm line. EPCOR equipment removed the obstruction stopping the release of untreated wastewater into the storm collection system. Condition assessments of the sanitary and storm lines were completed to ensure there were no physical deficiencies present that would allow a regular flow of untreated wastewater to enter the storm collection system. This release was reported to AEP on May 19, 2020. A written report was issued to AEP on May 26, 2020.	Reportable-Drainage Operations	366616
22-May-20	10054-167 Street NW	Transmission fluid (1L) was released from a City of Edmonton – ETS bus into the storm collection system. Rain had washed the transmission fluid into a nearby storm catch basin (CB253450) and storm line. EPCOR used absorbent booms / pads to clean up any transmission fluid residue left in the catch basin. This release was reported to AEP on May 22, 2020 by the City of Edmonton.	Reportable-3rd Party Release	366741
25-May-20	9304-64 Avenue NW	Paint waste (<5L) was released into a storm catch basin (CB229228) by an unknown 3rd party contractor. GFL Environmental Inc. was called in to clean the impacted storm collection system. EPCOR completed follow up investigation but were unable to identify the contractor that released the paint into the storm catch basin. This release was reported to AEP on May 25, 2020. A written report was not required by AEP.	Reportable-3rd Party Release	366817
27-May-20	10231-157 Street NW	Cement wash water (15-20L) was released into a storm catch basin (CB320344) by Rolling Mix Concrete. The wash water was contained in the sump of the catch basin and was not released into the storm collection system. A Notice to Comply was issued to Rolling Mix Concrete to discontinue the release of prohibited waste into the sewerage system. This release was reported to AEP on May 27, 2020 by Tech View Homes. A written report was not required by AEP.	Reportable-3rd Party Release	366874
05-Jun-20	10963-101 Street NW	Used oil (1-3L) was released into a storm catch basin from an oil filter storage barrel at the BC Auto Center. Oil had entered a nearby storm catch basin (CB265134) but was contained within the catch basin sump and did not enter the storm collection system. A Notice to Comply was issued to BC Auto Center to discontinue the release of prohibited waste into the sewerage system. This release was reported to AEP on June 5, 2020 by the City of Edmonton – Fire Services.	Reportable-3rd Party Release	367261
10-Jun-20	13003-56 Street NW	Sample results of the stormwater discharge from the City of Edmonton (COE) NE district yard were received and reviewed by the COE Enviso Coordinator for Parks and Road Services. The results of the sample exceeded Bylaw 18100 Appendix C and Bylaw 18093 Schedule B Restricted Wastes Applicable to Storm Sewers and Watercourses for COD at 111 mg/L, Ammonia at 1.57 mg/L, Cadmium at 0.000983 mg/L, Lead at 0.0217 mg/L, Selenium at 0.0114 mg/L and Phenols at 0.009 mg/L. The original sample from the NE district yard was collected on June 2, 2020 by COE Environmental Technologists. This release was reported to AEP on June 10, 2020 by the City of Edmonton. A written report was issued to AEP on June 11, 2020.	Reportable-3rd Party Release	367492
10-Jun-20	14402-114 Avenue NW	Sample results of the stormwater discharge from the City of Edmonton (COE) NW district yard were received and reviewed by the COE Enviso Coordinator for Parks and Road Services. The results of the sample exceeded Bylaw 18100 Appendix C and Bylaw 18093 Schedule B Restricted Wastes Applicable to Storm Sewers and Watercourses for Phenols at 0.007 mg/L. The original sample from the NW district yard was collected on June 2, 2020 by COE Environmental Technologists. This release was reported to AEP on June 10, 2020 by the City of Edmonton. A written report was issued to AEP on June 11, 2020.	Reportable-3rd Party Release	367493
10-Jun-20	5404-59 Avenue NW	Sample results of the stormwater discharge from the City of Edmonton (COE) SE district yard were received and reviewed by the COE Enviso Coordinator for Parks and Road Services. The results of the sample exceeded Bylaw 18100 Appendix C and Bylaw 18093 Schedule B Restricted Wastes Applicable to Storm Sewers and Watercourses for COD at 539 mg/L, BOD at 200 mg/L Phosphorous at 1.31 mg/L, Ammonia at 15.0 mg/L, Cadmium at 0.00638 mg/L, Lead at 0.0272 mg/L, Silver at 0.00160 mg/L, Zinc at 0.71 mg/L and Phenols at 0.009 mg/L. The original sample from the SE district yard was collected on June 2, 2020 by COE Environmental Technologists. This release was reported to AEP on June 10, 2020 by the City of Edmonton. A written report was issued to AEP on June 11, 2020.	Reportable-3rd Party Release	367491
13-Jun-20	17010-90 Avenue NW	Untreated wastewater (approx. 20 cubic meters) was released into the storm collection system from a blocked sanitary line located at the Westgate Shopping Center. EPCOR equipment released the blockage stopping the flow of untreated wastewater into the storm collection system. EPCOR completed additional inspections of the adjacent businesses in the area to ensure compliance with Drainage Services bylaws. This release was reported to AEP on June 14, 2020. A written report was issued to AEP on June 19, 2020.	Reportable-3rd Party Release	367664
14-Jun-20		A mixture of storm water and untreated wastewater (93,740 cubic meters) was released from Outfall #54. Heavy rainfall exceeded the storage capacity of the downtown sewer network. The program logic controller at Real Time Control (RTC) #3 was not controlling the CSO	Reportable-Drainage	367659

	86 Street & Jasper Avenue NW	gates based on its programmed set points. RTC#3 was not able to maximize storage which resulted in an increased combined sewer overflow volume into the North Saskatchewan River. The programming issue has been corrected and RTC#3 has been returned to service. This release was reported to AEP on June 14, 2020. A written report was issued to AEP on June 19, 2020.	Operations	
15-Jun-20	12690-161 Avenue NW	Untreated wastewater (unknown volume) was released from EPCOR Drainage - Pump Station #159. During a scheduled inspection of the bypass at this location EPCOR staff observed water seeping up from the ground down stream of the station. After further investigation the crew determined that the forcemain on the discharge end of pump had collapsed. The pump was taken out of service until emergency repairs could be made and the bypass discharge was relocated downstream. This release was reported to AEP on June 15, 2020. A written report was issued to AEP on June 19, 2020.	Reportable-Drainage Operations	367673
17-Jun-20	9504-49 Street NW	Potable water (approx. 100L) was released into the storm collection system from a City of Edmonton (COE) water truck. The results of a sample collected from the catch basin exceeded Bylaw 18100 Appendix C and Bylaw 18093 Schedule B Restricted Wastes Applicable to Storm Sewers and Watercourses for Total Chlorine at 0.50 mg/L. EPCOR Drainage Services contacted the COE vehicle operator and supervisor to educate them in regards to releases of potable water to the storm collection system. This release was reported to AEP on June 17, 2020. A written report was issued to AEP on June 23, 2020.	Reportable-3rd Party Release	367867
19-Jun-20	13851-127 Street NW	Untreated wastewater (100-200L) was released into the storm collection system from a surcharging sanitary manhole located at Lucky Supermarket. EPCOR equipment was called in to release the blockage from the sanitary line. The property owner called in a 3rd party vacuum truck to clean and flush private storm manholes. A Notice to Comply was issued to the property owner to discontinue the release of restricted wastes into the sewerage system. This release was reported to AEP on June 19, 2020 by the property owner. A written report was not required by AEP.	Reportable-3rd Party Release	367934
23-Jun-20	9504-49 Street NW	Potable water (<20L) was released into the storm collection system from a City of Edmonton (COE) water truck. The results of a sample collected from the catch basin exceeded Bylaw 18100 Appendix C and Bylaw 18093 Schedule B Restricted Wastes Applicable to Storm Sewers and Watercourses for Total Chlorine at 1.05 mg/L EPCOR Drainage Services contacted the COE vehicle operator and supervisor to inform them that potable water could not be released into the storm collection system. This release was reported to AEP on June 23, 2020 by the City of Edmonton. A written report was not required by AEP.	Reportable-3rd Party Release	368077
27-Jun-20	99-Street & Jasper Avenue NW	An EPCOR water main at this site was damaged during excavation work by PCL Construction and potable water (unknown volume) was released to the storm collection system. An EPCOR Water crew was contacted and completed repairs to the water main. The storm catch basins in this area are connected to the combined sewer system. There was no release of potable water to the storm collection system. This release was reported to AEP on June 27, 2020.	Reportable-3rd Party Release	368302
29-Jun-20	6222-Maynard Point NW	Laboratory results from a water sample collected at the Mactaggart Stormwater Management Facility #2 the sample results showed 6 mg/L for Oil & Grease and 125 mg/L for Chemical Oxygen Demand. Absorbent pads / booms were used to collect residue and sheen that had accumulated along the bank of the storm water management facility. Based on further testing / investigation it was determined that there was no release of hydrocarbons into the storm management facility. The sheen initially observed in the pond was determined to have been from naturally occurring biological activity. This release was reported to AEP on June 29, 2020. A written report was not required by AEP.	Reportable-Drainage Operations	368357
02-Jul-20	7516-152A Avenue NW	Used motor oil (approx. 20L) was released into the storm collection system from a private residence. EPCOR staff used absorbent booms to contain and absorb oil residue from the release. EPCOR equipment and a 3rd party vacuum truck (GFL) were called to the site to clean oil contaminants from impacted storm lines and manholes. This release was reported to AEP on July 3, 2020. A written report was not required by AEP.	Reportable-3rd Party Release	368506
02-Jul-20	530-Hooke Road NW	A plugged storm inlet pipe at Hermitage Park was identified by EPCOR as requiring maintenance to restore normal flow and limit impact to the surrounding area. This issue was forwarded into the AEP reporting system on the recommendation of Elise Neuman (AEP Land Management Specialist) to prevent significant delays in gaining approval for the required emergency maintenance work. This release was reported to AEP on July 2, 2020. A written report was not required by AEP.	Reportable-Drainage Operations	368449
02-Jul-20	1801-Garnett Way NW	During a routine inspection an EPCOR crew identified hydraulic oil (<5L) being released into the storm collection system from the bottom of a control gate (Gate#585) at the Glastonbury Storm Water Management Facility #2. An absorbent boom was used to contain and absorb any hydraulic oil residue. On July 3, 2020 a more detailed follow-up inspection was completed at the gate structure. The hydraulic fluid was determined to have been residue from and earlier repair. This release was reported to AEP on July 3, 2020. A written report was not required by AEP.	Reportable-Drainage Operations	368519
03-Jul-20	14402-114 Avenue NW	Sample results of the storm water discharge from the City of Edmonton (COE) NW district yard were received and reviewed by the COE Enviso Coordinator for Parks and Road Services. The results of the sample exceeded Bylaw 18100 Appendix C and Bylaw 18093 Schedule B	Reportable-3rd Party	368528

		Restricted Wastes Applicable to Storm Sewers and Watercourses for COD at 106 mg/L, Ammonia at 2.08 mg/L, Cadmium at 0.00078 mg/L and Selenium at 0.0199 mg/L. The original sample from the NW district yard was collected on June 24, 2020 by COE Environmental Technologists. This release was reported to AEP on July 3, 2020 by the City of Edmonton. A written report was issued to AEP on July 7, 2020.	Release	
03-Jul-20	13003-56 Street NW	Sample results of the storm water discharge from the City of Edmonton (COE) NE district yard were received and reviewed by the COE Enviso Coordinator for Parks and Road Services. The results of the sample exceeded Bylaw 18100 Appendix C and Bylaw 18093 Schedule B Restricted Wastes Applicable to Storm Sewers and Watercourses for COD at 193 mg/L, Oil & Grease at 15.9 mg/L, Cadmium at 0.00052 mg/L and Phenols at 0.008 mg/L. The original sample from the NE district yard was collected on June 24, 2020 by COE Environmental Technologists. This release was reported to AEP on July 3, 2020 by the City of Edmonton. A written report was issued to AEP on July 7, 2020.	Reportable-3rd Party Release	368523
03-Jul-20	5404-59 Avenue NW	Sample results of the storm water discharge from the City of Edmonton (COE) SE district yard were received and reviewed by the COE Enviso Coordinator for Parks and Road Services. The results of the sample exceeded Bylaw 18100 Appendix C and Bylaw 18093 Schedule B Restricted Wastes Applicable to Storm Sewers and Watercourses for COD at 198 mg/L, Ammonia at 3.21 mg/L and Cadmium at 0.00187 mg/L. The original sample from the SE district yard was collected on June 24, 2020 by COE Environmental Technologists. This release was reported to AEP on July 3, 2020 by the City of Edmonton. A written report was issued to AEP on July 7, 2020.	Reportable-3rd Party Release	368529
07-Jul-20	12512-Landsdowne Drive NW	A concrete waste / slurry (unknown volume) was released by a private company (Canyon Springs Master Builder). EPCOR observed concrete residue along the road gutter and in nearby storm catch basins. A 3rd party vacuum truck and the concrete company cleaned the concrete residue from the impacted storm catch basins and along the roadway. This release was reported to AEP on July 7, 2020 by the company.	Reportable-3rd Party Release	368669
09-Jul-20	108-Street & Bearspaw Drive NW	Sample results of the North storm water inlet at the Bearspaw Storm Water Management Facility were received and reviewed by EPCOR Drainage investigators. The concentrations of *E. coli* for these samples were 14,000 CFU/100ml (MH200786), 1100 CFU/100ml (MH200788), and 3100 CFU/100ml (MH200792). Based on further investigation, EPCOR does not believe that there was any release from a sanitary sewer into the storm water management facility. The investigation determined that the first sample was mistakenly taken from a sanitary line adjacent to the storm manhole. Follow up sampling of the storm inlet were consistent with urban stormwater quality. This release was reported to AEP on July 9, 2020. A written report was issued to AEP on July 16, 2020.	Reportable-Drainage Operations	368846
11-Jul-20	876-Twin Books Close NW	A release of motor oil (0.5L) from a vehicle was reported by a private resident. The spill had occurred approximately two weeks earlier and recent rain events had likely released the motor oil into Whitemud Creek through Outfall #265. A Notice to Comply has been issued to the resident to discontinue the release of other than permitted matter (oil) into the sewerage system. The vehicle is no longer being stored at this location. This release was reported to AEP on July 11, 2020. A written report was not required by AEP.	Reportable-3rd Party Release	368930
16-Jul-20	12422-29A Avenue / 94-Westbook Drive NW	Untreated wastewater and storm water mixture (unknown volume) was released into the storm collection system from Pump Station #102 and Pump Station #104. An influx of storm water from a heavy rain event overwhelmed both stations which then reached overflow levels. An EPCOR Drainage crew attended both sites during the rain event to confirm that the pumps at both stations were running at full capacity and as per design. This release was reported to AEP on July 16, 2020. A written report was issued to AEP on July 21, 2020.	Reportable-Drainage Operations	369135
17-Jul-20	8723-160 Avenue NW	Gasoline (approx. 10L) was released into the storm collection system from a vehicle accident. The City of Edmonton – Fire Services was on site and had placed absorbent booms along the roadway and in a nearby storm catch basin (CB69617) to contain and absorb the fuel spill. The storm water from the catch basin enters into the Belle Rive Storm Water Management Facility #2 (157-Avenue & 89-Street NW). EPCOR Drainage investigators inspected this facility and did not observe any unusual odours or hydrocarbon sheen. This release was reported to AEP on July 18, 2020. A written report was not required by AEP.	Reportable-3rd Party Release	369194
20-Jul-20	10144-123 Street NW	Untreated wastewater (unknown volume) was released through a monitored interconnection. A blockage (fats and grease) occurred in a sanitary mainline (PIP49447) which then released untreated wastewater through the interconnection into the nearby storm line (PIP49362). The blockage was released by an EPCOR equipment. EPCOR completed additional inspections of nearby businesses to ensure compliance with EPCOR Drainage Bylaws 18100 and Bylaw 18093. This release was reported to AEP on July 20, 2020. A written report was issued to AEP on July 22, 2020.	Reportable-Drainage Operations	369258
21-Jul-20	9519-174 Avenue NW	Concrete waste and slurry (approx. 15L) was released by a contractor (Diamond Concrete Works). EPCOR responded to a citizen complaint and observed concrete residue along the road gutter and in a nearby storm catch basin (CB302481). A 3rd party vacuum truck was called in to clean up the concrete residue from the roadway and the impacted storm catch basin. A Notice to Comply was issued to Diamond Concrete	Reportable-3rd Party Release	369325

		Works to discontinue the release of prohibited waste (concrete slurry) into the sewerage system. This release was reported to AEP on July 21, 2020 by the contractor. A written report was not required by AEP.		
22-Jul-20	7411-51 Avenue NW	Hydraulic oil (approx. 40L) was released by a private company (TransEd Design Build). Absorbent booms were used to contain and absorb the hydraulic oil spill. A 3rd party vacuum truck was called in to clean hydraulic oil contaminants from the impacted storm collection system and surrounding area. This release was reported to AEP on July 22, 2020 by the company. A written report was issued to AEP on July 28, 2020.	Reportable-3rd Party Release	369333
22-Jul-20	Mill Creek & 76-Avenue NW	Laboratory results of a foam sample collected from Mill Creek were received and reviewed by EPCOR Drainage investigators. The results of the sample exceeded Bylaw 18100 Appendix C and Bylaw 18093 Schedule B Restricted Wastes Applicable to Storm Sewers and Watercourses for COD at 132 mg/L. The investigators did not identify a visible sheen or unusual odours in the water and the foam appeared to be from natural sources. Upstream investigation also showed no evidence of releases to the storm system. This release was reported to AEP on July 22, 2020. A written report was not required by AEP.	Reportable-3rd Party Release	369667
23-Jul-20	9059-167 Avenue NW	Untreated wastewater (approx. 100L) was released into the storm collection system from a surcharging sanitary manhole (MH301924) located at Pump Station #160. An influx of storm water from a heavy rain event overwhelmed the sanitary line which resulted in untreated wastewater surcharging from the sanitary manhole and being released into a nearby storm catch basin. EPCOR equipment was called in to remove untreated wastewater that had pooled near the sanitary manhole and from the nearby storm catch basin. This release was reported to AEP on July 23, 2020. A written report was issued to AEP on July 28, 2020.	Reportable-Drainage Operations	369408
30-Jul-20	1801-Garnet Way NW	Hydraulic oil (approx. 5L) was observed in the chamber of Control Gate #585 (Glastonbury Storm Water Management Facility #2). Absorbent booms and pads were installed to contain and absorb the hydraulic oil residue. On August 4, 2020 an additional inspection was completed by EPCOR on the gate structure to determine if there was an additional leak occurring and no issues were found. This inspection showed that there was hydraulic oil adhering to the chamber walls from previous repairs to the gate. On August 5, 2020 additional clean up actions were completed at the facility to further remove hydraulic oil contaminants. This release was reported to AEP on July 30, 2020. A written report was issued to AEP on August 6, 2020.	Reportable-Drainage Operations	369666
31-Jul-20	115-Avenue & 214-Street NW	Sample results from a storm manhole (MH537954) were received and reviewed by EPCOR. The concentrations of *E. coli* for this sample was 260 CFU/100ml. This result is above the limit for *E. coli* that is in Appendix C of the EPCOR Drainage Services Bylaw 18100 and reported to AEP. This sample was collected on July 28, 2020 in response to a citizen complaint of wastewater being released by a 3rd party vacuum truck into a manhole. Based on the information available EPCOR were unable to determine the identity of the vacuum truck company and what type of wastewater was released into the sewerage system. This release was reported to AEP on July 31, 2020. A written report was not required by AEP.	Reportable-3rd Party Release	369721
02-Aug-20	10550-116 Street NW	Potable water and melted tire residue (unknown volume) was released into the storm collection system from a fire at Trail Tire. City of Edmonton - Fire Services responded and while putting out the fire a mixture of potable water and melted tire was released into a nearby private storm catch basin. The melted tire residue plugged the private catch basin and the downstream storm catch basin (CB259930). A 3rd party vacuum truck (Supreme Hydrovac) was called into to clean out the impacted catch basins. This release was reported to AEP on August 2, 2020 by City of Edmonton – Fire and Rescue Services. A written report was not required by AEP.	Reportable-3rd Party Release	369768
03-Aug-20	483-Rooney Crescent NW	A SCADA overflow alarm was generated during a heavy rain event at Pump Station #140. Due to a false return from a sensor at the station EPCOR is unable to determine if an overflow actually occurred. Due to the discrepancy in the sensor readings EPCOR reported the event to the regulator. The pumps at the station were continuously monitored through the SCADA system during this rain event and were running at maximum capacity and as per design. This release was reported to AEP on August 4, 2020. A written report was issued to AEP on August 10, 2020.	Reportable-Drainage Operations	369855
03-Aug-20	University Farm & Whitemud Creek Ravine NW	EPCOR Drainage Services received notification of a potential release of untreated wastewater from a damaged sanitary pipe at Trestle Bridge #7. An EPCOR crew responded to this notification and confirmed that there was a release from the steel pipe running across the trestle bridge. Due to the unknown condition of the pipe / trestle structure it was not possible to safely access the trestle or area below the trestle to complete further assessments immediately after the incident occurred. EPCOR is evaluating long term options for repair of the pipe / trestle with an expected completion date in Q4 2021. EPCOR will also complete a thorough investigation of the event to determine the root causes of the failure and identify any additional corrective actions. The release was reported to AEP on August 3, 2020. A written report was issued to AEP on August 10, 2020.	Reportable-Drainage Operations	369801
05-Aug-20	19-Hamilton Crescent NW	EPCOR responded to a complaint of motor oil (approx. 4L) being released into the storm collection system from a private residence. EPCOR staff placed an absorbent boom in a nearby storm catch basin to collect any oil contaminants. EPCOR staff instructed the homeowner to	Reportable-3rd Party	370029

		clean up oil residue on their driveway and not to allow any oil to enter the storm collection system. On August 6th EPCOR staff responded to a second complaint of oil being released into a storm catch basin from the same address. The catch basin was again contaminated with oil. A 3rd party vacuum truck (GFL) was called in to clean out the impacted catch basin. This release was reported to AEP on August 7, 2020. A written report was not required by AEP.	Release	
05-Aug-20	7411-51 Avenue NW	Sediment (approx. 0.5Kg) was released into a storm catch basin (CB544029) from a broken sediment filter bag at a TransEd construction site. The sediment was contained in the catch basin sump and did not enter the storm collection system. The sediment that remained on the surface was cleaned up by the company. EPCOR completed additional inspections at this location to check for any sediment buildup in the catch basin and erosion sediment control is in place. This release was reported to AEP on August 5, 2020. A written report was not required by AEP.	Reportable-3rd Party Release	369922
06-Aug-20	69-Avenue & 170-Street NW	Untreated wastewater (unknown volume) was released into the storm collection system through a previously unidentified interconnection. The release was discovered by an EPCOR crew during an unrelated bypass pumping operation. A temporary plug has been installed at the interconnection which has stopped the release of untreated wastewater from sanitary manhole (MH221327) to the nearby storm manhole (MH221381). This release was reported to AEP on August 6, 2020. A written report was issued to AEP on August 13, 2020. And the interconnection has been permanently sealed to prevent future releases.	Reportable-Drainage Operations	369968
10-Aug-20	3010-33 Avenue NW	Hydraulic oil (approx. 5L) was released into the storm collection system from a City of Edmonton - Waste Management truck. EPCOR staff placed absorbent pads into a nearby storm catch basin and manhole to contain and absorb the release. This release was reported to AEP on August 10, 2020 by the City of Edmonton. A written report was not required by AEP.	Reportable-3rd Party Release	370128
11-Aug-20	1569-Hector Road NW	Potable water (approx. 500L) was released into a storm catch basin (CB382842) from a concrete company (Edmonton Concrete Ltd). EPCOR has issued a Notice to Comply to discontinue the release of chlorinated water to the storm collection system. This release was reported to AEP on August 11, 2020 by the company. A written report was issued to AEP on August 19, 2020.	Reportable-3rd Party Release	370207
11-Aug-20	14402-114 Avenue NW	Sample results of the storm water discharge from the City of Edmonton (COE) NW district yard were received and reviewed by the COE Enviso Coordinator for Parks and Road Services. The results of the sample exceeded Bylaw 18100 Appendix C and Bylaw 18093 Schedule B Restricted Wastes Applicable to Storm Sewers and Watercourses for Selenium at 0.0139 mg/L. The original sample from the NW district yard was collected on July 30, 2020 by COE Environmental Technologists. This release was reported to AEP on August 11, 2020 by the City of Edmonton. A written report was not required by AEP.	Reportable-3rd Party Release	370177
11-Aug-20	13003-56 Street NW	Sample results of the storm water discharge from the City of Edmonton (COE) NE district yard were received and reviewed by the COE Enviso Coordinator for Parks and Road Services. The results of the sample exceeded Bylaw 18100 Appendix C and Bylaw 18093 Schedule B Restricted Wastes Applicable to Storm Sewers and Watercourses for Total Chlorine at 0.06 mg/L. The original sample from the NE district yard was collected on July 30, 2020 by COE Environmental Technologists. This release was reported to AEP on August 11, 2020 by the City of Edmonton. A written report was not required by AEP.	Reportable-3rd Party Release	370178
11-Aug-20	5404-59 Avenue NW	Sample results of the storm water discharge from the City of Edmonton (COE) SE district yard were received and reviewed by the COE Enviso Coordinator for Parks and Road Services. The results of the sample exceeded Bylaw 18100 Appendix C and Bylaw 18093 Schedule B Restricted Wastes Applicable to Storm Sewers and Watercourses for Ammonia at 2.78 mg/L, Cadmium at 0.00137 mg/L & Selenium at 0.0273 mg/L. The original sample from the SE district yard was collected on July 30, 2020 by COE Environmental Technologists. This release was reported to AEP on August 11, 2020. A written report was not required by AEP.	Reportable-3rd Party Release	370173
12-Aug-20	17-Street & Aurum Road NE	A 900mm culvert crossing 17-Street NE was obstructed causing the upstream ravine to store water and flood 17-Street NE. Emergency pumping activity was initiated by EPCOR Drainage. An assessment of the pumping site has identified an area of erosion of the downstream bank on the west side of 17-Street NE. Due to the potential for the pumping to have contributed to the erosion, EPCOR has reported this event to the regulator. The obstruction in the culvert has been partially released and is running at 1/4 flow. The pumping activity has been discontinued. This release was reported to AEP on August 12, 2020. A written report was issued to AEP on August 19, 2020.	Reportable-Drainage Operations	370228
12-Aug-20	1485-37C Avenue NW	Cooking oil (approx. 40L) was released into a storm catch basin (CB429083). An estimated 1L of the oil was released from the catch basin into the storm collection system. EPCOR was unable to determine the source of the cooking oil. The area of the release has been noted for follow up inspections and a letter was issued to all nearby residents indicating that no release or disposal of wastes is permitted into any storm catch basin or manhole. This release was reported to AEP on August 12, 2020. A written report was issued to AEP on August 17, 2020.	Reportable-3rd Party Release	370284
12-Aug-20	3920-150 Street NW	Concrete slurry (unknown volume) was released into a storm catch basin (CB208199) by Eiffel Construction. EPCOR observed staining on the roadway and around the storm catch basin. This location had received precipitation from when the concrete work was performed to	Reportable-3rd Party	370477

		when it was reported to EPCOR. A Notice to Comply has been issued to discontinue the release of other than permitted matter (concrete slurry) to the EPCOR sewerage system. This release was reported to AEP on August 12, 2020 by the company. A written report was not required by AEP.	Release	
18-Aug-20	99-Street & Whitemud Drive NW	Concrete slurry (unknown volume) was released into the storm collection system by CanWest Concrete. EPCOR determined that there were a number of storm catch basins in the area that were contaminated with concrete residue. A 3rd party vacuum truck was called to the site to clean out contaminants from the impacted catch basins. A Notice to Comply was issued to the company to discontinue the release of other than permitted matter (concrete cutting slurry) into the EPCOR sewerage system. This release was reported to AEP on August 18, 2020 by the prime contractor (Standard General). A written report was issued to AEP on August 19, 2020.	Reportable-3rd Party Release	370490
24-Aug-20	11508-139 Street NW	EPCOR responded to an AEP report of a homeowner releasing the contents of two large containers into a storm catch basin (CB261278). EPCOR observed that there was no evidence of a release was present in the catch basin or surrounding area. A follow up inspection confirmed that the liquid release by the homeowner was rainwater. The AEP reference number (#370755) for this event was assigned by AEP.	Reportable-3rd Party Release	370755
25-Aug-20	Keswich Boulevard & Kennedy Cove SW	Members of EPCOR Drainage Operations met with an Alberta Environment fisheries biologist and aquatic invasive species specialist at the Keswick storm water management facilities. Keswick 1, Keswick 2 and Outfall 115 were sampled to determine if goldfish may be present. The presence of goldfish at Keswick 2 has been confirmed. The Drainage Services - Environmental Manager has contacted AEP to discuss follow-up actions.	Reportable-Drainage Operations	N/A
26-Aug-20	9863-74 Avenue NW	Tack oil (unknown volume) was released into the storm collection system by a City of Edmonton contractor (Lafarge Construction). After placing tack oil onto the street precipitation washed tack oil into adjacent storm catch basins. A 3rd party vacuum truck (GFL) and an EPCOR flushing unit cleaned out the impacted storm collection system. A Notice to Comply was issued to the City of Edmonton to discontinue the release of prohibited waste (tack oil/asphalt) to the sewerage system. This release was reported to AEP on August 26, 2020 by the City of Edmonton. A written report was issued to AEP on August 28, 2020.	Reportable-3rd Party Release	370846
26-Aug-20	4225-92 Avenue NW	Hydraulic oil (205L) was released into the sanitary collection system from IPEX Inc. EPCOR confirmed that the hydraulic oil was released into a floor drain at the IPEX facility. This release was reported to AEP on August 26, 2020 by the company. A written report was not required by AEP.	Reportable-3rd Party Release	370937
28-Aug-20	74-Fairway Drive NW	Natural gas (unknown volume) was released by an EPCOR Contractor (GS Construction). During the replacement of a sanitary main unstable ground conditions caused a leak to develop in a nearby gas line. ATCO Gas was called in to turn off the leaking gas line and complete repairs. These releases were reported to AEP on August 28, 2020 by the contractor. A written report was not required by AEP.	Reportable-EPCOR Contractor	370918
01-Sep-20	6615-51 Avenue NW	Sediment (unknown volume) was released into the storm collection system by a private company (TransEd). Sediment from street sweeping equipment used by the company at a work site had entered into storm catch basins along the roadway and had caused sediment loading into Mill Creek. A 3rd party vacuum truck was called in to clean out the impacted catch basins. A Notice to Comply was issued to TransEd to discontinue the release of other than permitted matter into the sewerage system. This release was reported to AEP on September 1, 2020 by the company. A written report was issued to AEP on September 1, 2020.	Reportable-3rd Party Release	370982
03-Sep-20	125A-Avenue & 62-Street NW	EPCOR Drainage responded to a report from the City of Edmonton that motor oil (<5L) had been released from abandoned oil pails along a roadway. Absorbent material was used by City of Edmonton staff to clean up the spill site and the abandoned oil pails were taken away for disposal. There was no release of oil to the storm / sanitary sewer. This release was reported to AEP on September 3, 2020 by the City of Edmonton.	Reportable-3rd Party Release	371176
05-Sep-20	5150-99 Street NW	Hydraulic oil (5L) was released into a private storm catch basin from a company vehicle (Super Save Group) at a City of Edmonton – Eco Station. EPCOR staff observed that the hydraulic oil was contained in the catch basin sump and did not enter the storm collection system. A 3rd party vacuum truck was called in to remove contaminants from the impacted catch basin. This release was reported to AEP on September 5, 2020 by the City of Edmonton. A written report was not required by AEP.	Reportable-3rd Party Release	371248
09-Sep-20	129-Street & Stony Plain Road NW	Potable water (unknown volume) was released by an EPCOR contractor (PME Inc.). A water line service was damaged during excavation work resulting in water being released into an excavated trench. Dechlorination pucks were placed into the trench and the accumulated water was drained into a nearby catch basin (CB259809) that is connected to the combined sewer system. EPCOR Water responded to this event and turned off the water and completed repairs to the damaged line. This release was reported to AEP on September 9, 2020 by the contractor. A written report was not required by AEP.	Reportable-EPCOR Contractor	371380

09-Sep-20	3751-139 Avenue NW	A sodium bisulfate solution (approx. 0.5L) was released into the sanitary collection system from the Clareview Recreation Center. Absorbent pads were used to clean up the spill site. This release was reported to AEP on September 9, 2020 by the City of Edmonton. A written report was issued to AEP on September 10, 2020	Reportable-3rd Party Release	371398
10-Sep-20	149-Street & Summit Drive NW	Cement grout (approx. 2Kg) was released into the storm collection system by an EPCOR Contractor (Whitson Contracting) located at the MacKinnon Ravine storm trunk rehabilitation site. A sediment boom was placed downstream of the work site to contain the release. Any contaminants from the spill site that were not contained by the boom would have been discharged to the North Saskatchewan River thru Outfall #30 (SE of 135-Street and Ravine Drive NW). This release was reported to AEP on September 10, 2020 by the contractor. A written report was not required by AEP.	Reportable-EPCOR Contractor	371474
14-Sep-20	2619-49 Street NW	Hydraulic oil (175L) was released from a private contractor (GCS General Contracting Services) work site. EPCOR staff observed that hydraulic oil (approx. 10L) had been released into nearby storm catch basins but was contained in the catch basin sumps and did not enter the storm collection system. A 3rd party vacuum truck was called in to clean out the impacted storm catch basins. This release was reported to AEP on September 14, 2020 by the contractor. A written report was issued to AEP on September 17, 2020.	Reportable-3rd Party Release	371529
18-Sep-20	6619-8 Street NW	Sample results of an untreated wastewater discharge (unknown volume) at Amar Trucking Ltd. were received and reviewed by EPCOR. The results of the sample exceeded Bylaw 18100 Appendix C for 4 parameters (8.5 mg/L Ammonia, 400mg/L COD, Total Phosphorus 6.57 mg/L and *E. coli* 16000 CFU/100ml). The wastewater was being pumped from the basement of the premises and was flowing across 8th street into a ditch and accumulating at the newly installed culverts tied to the Hurstwood Stormwater Pond that is currently under construction directly West of the premises. The stormwater pond will eventually be tied into the areas storm water system but the pond is not currently operational. The occupant of the property has been issued a Notice to Comply to discontinue the release. This release was reported to AEP on September 18, 2020. A written report was issued to AEP on September 25, 2020.	Reportable-3rd Party Release	371743
21-Sep-20	101-Avenue & Goldstick Park Road NW	Sample results of an unknown hydrocarbon discharge (<5L) at Gold Bar Creek were received and reviewed by EPCOR. The results of the sample exceeded Bylaw 18100 Appendix C for Oil & Grease at 109 mg/L. EPCOR staff placed a boom across Outfall #76 to prevent the further release of hydrocarbons into Gold Bark Creek. A number of upstream storm manholes were inspected to determine the source of the oil & grease contaminants, but there was no evidence of a release at these locations. EPCOR will continue to complete routine inspections of the contributing area of Outfall #76. This release was reported to AEP on September 21, 2020. A written report was issued to AEP on September 28, 2020.	Reportable-3rd Party Release	371887
22-Sep-20	7229-50 Street NW	Untreated wastewater was released into the storm collection system from a cross connection at a commercial building complex. The untreated wastewater was observed during a routine inspection of a stormwater trunkline (PIP338198) by EPCOR. EPCOR completed a dye test that has confirmed a private cross connection at this location. EPCOR Drainage will televise the sewer lines coming from the building complex to determine the exact location of the cross connection and location of the private service. This release was reported to AEP on September 23, 2020. A written report was issued to AEP on September 29, 2020.	Reportable-3rd Party Release	371989
23-Sep-20	250-Aurum Road NE	EPCOR was notified by the City of Edmonton – Waste Management Center of a brownish discharge coming from Outfall #216. EPCOR reviewed data from a sample collected on September 14, 2020 by City of Edmonton – Waste Management. The results of the sample exceeded Bylaw 18100 Appendix C for Ammonia = 2.18 mg/L. The Waste Management Center has stopped the pumping of groundwater to Outfall # 216, while they further investigate this release. A Notice to Comply was issued to the City of Edmonton – Waste Management Center to discontinue the release of restricted waste into the sewerage system. This release was reported to AEP on September 16, 2020 by the City of Edmonton. A written report was issued to AEP on September 23, 2020.	Reportable-3rd Party Release	371688
23-Sep-20	16503-121A Avenue NW	Concrete residue (unknown volume) was released into the storm collection system by Stel-Marr Concrete Ltd. EPCOR staff observed concrete residue leading out of the Stel-Marr Concrete facility and onto 121A Avenue. A pH test of a storm catch basin (CB272173) next to the Stel-Marr facility exceeded Bylaw 18100 Appendix C for pH = 13.5. A 3rd party vacuum truck was called in to clean out the impacted catch basin. A Notice to Comply has been issued to Stel-Marr Concrete to discontinue the release of prohibited waste into the sewerage system. This release was reported to AEP on September 23, 2020 by the company.	Reportable-3rd Party Release	371966
25-Sep-20	51-Avenue & 74-Street NW	A concrete slurry (approx. 10L) was released into a storm catch basin (CB543915) by TransEd. The concrete slurry was contained within the catch basin sump and had not entered the storm collection system. A 3rd party vacuum truck was called in to clean out the impacted catch basin. This release was reported to AEP on September 25, 2020 by the company. A written report was issued to AEP on September 29, 2020.	Reportable-3rd Party Release	372075

26-Sep-20	18817-Stony Plain Road NW	Diesel fuel (approx. 100L) was released into the storm collection system from a vehicle accident (Professional Car Carriers Ltd.). A 3rd party vacuum truck was called in to clean out the impacted storm catch basins / lines. This release was reported to AEP on September 26, 2020 by the City of Edmonton – Fire Services.	Reportable-3rd Party Release	372098
28-Sep-20	13150-205 Street NW	A BioMaxx chemical solution (<5L) was released into the storm collection system at Pump Station #213. The chemical was released from a storage container into a storm catch basin (MH492163) adjacent to the pump station. EPCOR crews used absorbent material to clean up the spill site. This release was reported to AEP on September 28, 2020. A written report was issued to AEP on October 7, 2020.	Reportable-Drainage Operations	372280
01-Oct-20	3660-Claxton Place SW	Cooking oil (approx. 1L) was released into the storm collection system at a residential neighborhood. A container of cooking oil was left out on the front street by a resident which was run over by a vehicle and released into a nearby storm catch basin (CB471701). The release was discovered by City of Edmonton – Waste Management. A 3rd party vacuum truck (Peak Energy) was called in to clean up contaminants from the impacted catch basin and surrounding area. This release was reported to AEP on October 1, 2020 by City of Edmonton – Waste Management. A written report was not required by AEP	Reportable-3rd Party Release	372338
03-Oct-20	17-Street & Maple Ridge Drive NW	Untreated wastewater (50-75 cubic meters) was released into the storm collection system from an obstructed private sanitary line located at a residential trailer park. EPCOR noted that the impacted storm collection system drains through a culvert and into a natural waterbody on the West side of 17 Street NW. EPCOR equipment was mobilized to release the blockage and clean up the impacted storm collection system. EPCOR recommended follow up activity from the property owners. Additional clean up or remediation for this release would be the responsibility of the property owner as the generator. A Notice to Comply was issued to the property manager to discontinue the release of prohibited / restricted waste to the storm sewerage system. This release was reported to AEP on October 3, 2020 by the property manager. A written report was issued to AEP on October 8, 2020.	Reportable-3rd Party Release	372412
03-Oct-20	University Farm & Whitemud Creek Ravine	EPCOR responded to a report of untreated wastewater (unknown volume) being released from a damaged sanitary pipe at Trestle Bridge #7. An inspection by an EPCOR contractor on October 3rd and 4th confirmed that there were 3 holes in the trestle pipe. Repairs to the holes were completed on October 5th. No further releases have occurred at this location. Prior to the release EPCOR had engaged a contractor to complete an intermediate repair of the trestle pipe pending rehabilitation of the trestle. On October 8th EPCOR identified a void and related obstruction in a 1650mm combined line at 61 Avenue and 109 Street NW as the likely source of the surcharge at Trestle #7. EPCOR is in the process of completing an emergency repair at this location. This release was reported to AEP on October 3, 2020. A written report was issued to AEP on October 10, 2020.	Reportable-Drainage Operations	372420
12-Oct-20	130-Avenue & 109-Street NW	Untreated wastewater (approx. 1500L) was released into a storm catch basin (CB278184) by an EPCOR subcontractor (Rocor Fluid Transfer Services). During bypass pumping a hose clamp failed releasing untreated wastewater onto the road and into a nearby catch basin. This catch basin is connected to the combined sewer system. A 3rd party vacuum truck was called in to clean up the untreated wastewater from the impacted catch basin and nearby roadway. This release was reported to AEP on October 12, 2020. A written report was issued to AEP on October 15, 2020.	Reportable-EPCOR Contractor	372680
14-Oct-20	98A Avenue & 96A Street NW	EPCOR responded to a report from City of Edmonton – Fire Services of an oily sheen near the Tawatina LRT bridge construction site. EPCOR inspected the shore of the North Saskatchewan River, Mill Creek and the Mill Creek Oil Separator (8501-70 Avenue NW) but observed no sign of hydrocarbons. The Alberta Environment and Parks duty officer was contacted by EPCOR and informed that no hydrocarbon or oily substances were observed at any of the outfalls along Mill Creek. This event was reported to AEP on October 14, 2020 by the City of Edmonton – Fire Services. A written report was not required by AEP.	Reportable-3rd Party Release	372770
14-Oct-20	57-Avenue & 184-Street NW	EPCOR received laboratory results from a sample that was collected on October 7th from a storm manhole (CB219319). The results of the sample (42,000 CFU/100ml) indicated the presence of untreated wastewater (unknown volume) in the storm collection system and system tracing was initiated. On October 20th the sanitary sewer line upstream of this location was identified as having structural issues. Untreated wastewater from the sanitary line was saturating the ground and entering the adjacent storm collection system. Emergency repairs to the sanitary line were undertaken by EPCOR. After the repairs are completed, follow up sampling of the stormwater system will be conducted to verify if the deficiencies in the sanitary line were the cause of the elevated *E. coli* in the nearby storm line. This release was reported to AEP on October 14, 2020. A written report was issued to AEP on October 21, 2020.	Reportable-Drainage Operations	372762
15-Oct-20	17424-129 Avenue NW	An anti-scalant was released into the storm collection system from a damaged tote at Ryder MCC Logistics. It was determined that 1055 L of the anti-scalant was released onto a paved parking lot and approximately 350 L entered into a nearby private storm catch basin. EPCOR equipment and a 3rd party vacuum truck (GFL) were called in to remove the anti-scalant from the impacted storm collection system. A Notice to Comply was issued to the company to discontinue the release of other than permitted matter to the storm sewerage system. This release was reported to AEP on October 15, 2020 by the company. A written report was issued to AEP on October 22, 2020.	Reportable-3rd Party Release	372816

15-Oct-20	4661-Roper Road NW	Contaminated wastewater (unknown volume) was released into the sanitary collection system from the EPCOR Technologies Pylypow Hydrovac Waste Transfer Station. Sample results were received and reviewed by EPCOR Drainage investigators on October 21, 2020 and indicated that the wastewater exceeded Drainage Bylaw 18100 Appendix B limits for TSS, As, Cu, Pb, Ni, and Zn. The wastewater also exceeded Alberta Environment and Parks limits (class 9.3 substances) for both Ni (5.5 mg/L) and Fe (4570 mg/L). A Notice to Comply was issued to EPCOR Technologies to discontinue the release of restricted waste into the sewerage system. This release was reported to AEP on October 21, 2020 by EPCOR Technologies. A written report was not required by AEP.	Reportable-EPCOR Technologies	373019
16-Oct-20	199-Street & Lessard Road NW	Hydraulic oil (approx. 25L) was released into a private storm catch basin from a City of Edmonton sanding truck. A 3rd party vacuum truck (Noralta Environmental Services) was called in to clean out hydraulic oil from two impacted catch basins and the nearby roadway. This release was reported to AEP on October 16, 2020 by the City of Edmonton. A written report was not required by AEP.	Reportable-3rd Party Release	372817
20-Oct-20	37A-Avenue & 9-Street NW	Fuel / hydrocarbon contaminants (unknown volume) were released into a storm catch basin (CB69119) from a vehicle accident. A 3rd party vacuum truck (GFL) and EPCOR equipment were called in to remove the contaminants from the impacted storm collection system. This release was reported to AEP on October 20, 2020 by the City of Edmonton – Fire Services. A written report was not required by AEP.	Reportable-3rd Party Release	372964
30-Oct-20	19023-70 Avenue NW	An unknown substance (approx. 30L) was released into a storm catch basin located in a residential neighborhood. A citizen reported that a contractor had dumped a white liquid into a nearby catch basin (CB308178). EPCOR staff inspected the catch basin after a rain event and did not observe any contaminants. EPCOR was unable to determine the origin or identity of the substance. This release was reported to AEP on October 30, 2020. A written report was issued to AEP on November 6, 2020.	Reportable-3rd Party Release	373250
02-Nov-20	4344-99 Street NW	Sample results from a sanitary discharge at Labatts Brewery were received and reviewed by EPCOR. The results of the sample exceeded Bylaw 18100 Appendix C for Total Kjeldahl Nitrogen at 1440 mg N/L and Total Phosphorus at 102 mg P/L. The discharge also exceeded Alberta Environment and Parks limits (class 9.3 substances) for Total Phosphorus. A Notice to Comply has been issued to the Labatts Brewing Company to discontinue the release of restricted / hazardous waste into the sewerage system. This release was reported to AEP on November 2, 2020 by the company. A written report was not required by AEP.	Reportable-3rd Party Release	373344
17-Nov-20	183-Hyndman Crescent NW	Untreated wastewater (unknown volume) was released into the storm collection system (CB288184) from a sanitary manhole surcharge. EPCOR equipment was called in to release the blockage (rags, fats, oil and grease) and to remove contaminants from the storm collection system and nearby roadway. This release was reported to AEP on November 18, 2020. A written report was issued to AEP on November 24, 2020.	Reportable-Drainage Operations	373764
19-Nov-20	77-Avenue & 89-Street NW	Untreated wastewater (unknown volume) was released into the storm collection system. A combined sewer line blockage caused a discharge of wastewater into an adjacent storm line through a monitored interconnection (PIP341651). EPCOR Drainage equipment released the blockage (toilet paper and grease) and removed contaminants from the storm collection system. This release was reported to AEP on November 19, 2020. A written report was issued to AEP on November 26, 2020.	Reportable-Drainage Operations	373819
23-Nov-20	98-Avenue & 102 Street NW	As part of a routine inspection an EPCOR Drainage crew was televising what they believed was a storm sewer line (PIP29672). During the inspection the crew observed a flow of untreated wastewater in the line. The potential release of untreated wastewater into the storm collection system was reported to AEP pending further investigation by EPCOR. Further investigation has determined that the records identifying the line as part of the storm collection system are incorrect and the line is actually part of the combined sewer system in that neighborhood. All sanitary / storm wastewater flowing thru the line (PIP29672) on November 23rd would have been collected by the combined sewer system and there was no release into the storm collection system. EPCOR will update their electronic records to identify the line as being part of the combined sewer system. This release was reported to AEP on November 24, 2020. A written report was issued to AEP on November 30, 2020.	Reportable-Drainage Operations	373932
04-Dec-20	11140-68 Avenue NW	Untreated wastewater (unknown volume) was released into the storm collection system (PIP75244) from a private sanitary manhole surcharge at a residential apartment / condominium building. EPCOR equipment cleared the blockage (rags, fats, oil and grease) and removed contaminants from the impacted storm collection system. This release was reported to AEP on December 4, 2020. A written report was issued to AEP on December 10, 2020.	Reportable-3rd Party Release	374231
05-Dec-20	12621-156 Street NW	A diluted phenol formaldehyde resin (approx. 100-200L) was released into the storm collection system (PIP463659) from Hexion Canada. A buildup of sediment in the downstream storm lines prevented the release of resin into the nearby Mistatim SWMF #6. A 3rd party vacuum truck (GFL) removed the contaminants from the impacted storm collection system. A Notice to Comply has been issued to Hexion Canada to discontinue the release of restricted / prohibited waste into the storm sewerage system. This release was reported to AEP on December 5, 2020 by Hexion Canada. A written report was issued to AEP on December 11, 2020.	Reportable-3rd Party Release	374245

27-Dec-20	11410-104 Avenue NW	Untreated wastewater (approx. 5000L) was released into a storm sewer manhole (MH390088) from a private sanitary manhole surcharge at a Canada Safeway store. EPCOR equipment cleared the blockage (fats, oil and grease) in the sanitary line and removed contaminants from the impacted storm collection system. EPCOR confirmed that the storm sewer lines from this property connects downstream to the combined sewer system and the release on December 27th would have been directed to the Gold Bar WWTP for treatment. A Notice to Comply has been issued to Sobey's Inc. to clean and maintain the private sanitary manholes and grease interceptors at their facility. This release was reported to AEP on December 27, 2020. A written report was issued to AEP on December 30, 2020.	Reportable-3rd Party Release	374789
31-Dec-20	16104-121A Avenue NW	Diesel fuel (approx. 100L) was released into a storm catch basin (CB272170) from a damaged commercial vehicle located near Loblaws Inc. The diesel fuel was contained within the catch basin sump and there was no release to the storm collection system. A 3rd party vacuum truck (Riteways Vacuum Service) removed the diesel fuel from the impacted catch basin and surrounding area. This release was reported to AEP on December 31, 2020 by Loblaws Inc. A written report was not required by AEP.	Reportable-3rd Party Release	374837