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Edmonton, Alberta

2024

Annual Wastewater System Report

Submitted to:

The Province of Alberta

Alberta Environment and Protected Areas (AEPA)

As per requirements of:

Approval to Operate No. 639-03-07

February 2025

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. 639-03-07.

The 2024 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.

The 2024 Annual Wastewater Collection System Report includes a summary of completed projects and planned major rehabilitation projects, the interconnection control strategy, and storm and CSO volumes and loadings in addition to other requirements outlined in the Approval to Operate.

Part I: Wastewater Treatment Plant Report

EPCOR Water Services

Gold Bar Wastewater Treatment Plant

Edmonton, Alberta

2024

Annual Wastewater Treatment Plant Report

Submitted to:

The Province of Alberta

Alberta Environment and Protected Areas (AEPA)

As per requirements of:

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February 2025

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Acronyms

AAAQO	Alberta Ambient Air Quality Objectives
AEPA	Alberta Environment and Protected Areas
AQMS	Air Quality Monitoring Station
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
WWTP	Wastewater Treatment Plant

2024 Overview

The Gold Bar Wastewater Treatment Plant (WWTP) located on the banks of the North Saskatchewan River in Edmonton, Alberta maintains 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 2024 include construction/rehabilitation on Digester 4, commissioning of Scrubbers 5 and 6, EPT Scrubber upgrades, PE Channel Upgrades, Laboratory Facility Integration and Odour Control Improvements for Primaries 5-8. Mobilization for the Secondary Aeration Blower Upgrades began in December 2024 construction will begin in 2025. Design and planning has progressed for the Flare Expansion Project, NSR Flood Protection and Auxiliary Control Room Electrical Upgrade. At Clover Bar, acid cleaning of sludge transfer lines 1 and 2 was completed and a new dredge was procured. Planning for the Clover Bar Edmonton Waste Management Centre Groundwater Transfer was also initiated.

In 2024, there were several exceedances of the *Alberta Ambient Air Quality Objectives* (AAAQO) for H_2S. The majority of the exceedances occurred in September and October when there was less precipitation to flush the collection system, but the temperature remained warm. There were no exceedances for NO_2 or SO_2.

The true dry weather flow in 2024 was 282 MLD. 2024 hosted 6 significant wet weather events resulting in main plant bypasses and a total of 49 secondary bypasses. The plant performed well with a WWTP Effluent Limit Performance (WELP) index of 23.87%.

2024 Annual Wastewater Treatment Report

Gold Bar WWTP Performance

The Gold Bar WWTP final effluent discharge limits of Approval to Operate 639-03-07 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

Parameter	Frequency (Minimum)	Sample Type	Sampling Location
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 31, 2024. 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. There was also a variance to the 24-hour untreated wastewater composite samples for March 15 as noted in the March 2024 Plant Performance Report, but all sampling requirements were still met. Appendix A contains the monthly Plant Performance Reports.

**Table 3: 2024 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 (ML)
		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	X10^6	X10^6	X10^6	FEC	
January	Avg/Geomean	272.0	0.9	11.3	0.0	0.0	259.8	259.8	7.5	7.6	---	7.5	324	192	---	---	3.5	3.5	321	179	---	---	2.7	2.7	8.34	6.48	---	---	0.28	0.28	39.8	32.1	---	---	3.52	3.52	54.7	43.7	---	4.6	0.04	0.05	---	8.00	112	447	---	119	2.1	1.9	---	11	73.0
	Min	249.8	0.0	8.6	0.0	0.0	237.9	237.9	7.4	7.6	---	7.4	260	192	---	---	2.6	2.6	250	179	---	---	< 2	< 2	7.54	6.48	---	---	0.23	0.23	31.8	32.1	---	---	1.22	1.22	49.7	43.7	---	2.3	< 0.01	0.05	---	6.1	72.3	447	---	74.1	2.0	1.9	---	3	
	Max	347.8	28.1	12.5	0.0	0.0	308.6	308.6	7.6	7.6	---	7.7	520	192	---	---	5.5	5.5	371	179	---	---	4	4	9.42	6.48	---	---	0.34	0.34	43.1	32.1	---	---	6.69	6.69	60.0	43.7	---	6.7	< 0.15	0.05	---	11.5	322	447	---	322	2.3	1.9	---	120	
February	Avg/Geomean	273.2	0.2	10.7	0.0	0.0	262.3	262.3	7.4	7.7	---	7.5	336	92	---	---	3.5	3.5	339	267	---	---	2.7	2.7	8.31	7.52	---	---	0.32	0.32	39.2	39.9	---	---	3.94	3.94	52.6	48.7	---	5.0	< 0.01	0.02	---	7.51	110	161	---	119	1.8	3.2	---	9.6	68.6
	Min	264.2	0.0	7.0	0.0	0.0	252.9	252.9	7.3	7.7	---	7.3	110	92	---	---	2.2	2.2	284	267	---	---	< 2	< 2	6.33	7.52	---	---	0.18	0.18	34.4	39.9	---	---	2.08	2.08	46.2	48.7	---	3.2	< 0.01	0.02	---	5.59	87.0	161	---	96.0	1.8	3.1	---	5	
	Max	290.6	5.4	12.5	0.0	0.0	279.2	279.2	7.6	7.7	---	7.6	480	92	---	---	4.9	4.9	421	267	---	---	3	3	10.4	7.52	---	---	0.98	0.98	43.3	39.9	---	---	5.39	5.39	59.1	48.7	---	6.5	< 0.01	0.02	---	10.0	138	161	---	174	1.9	3.3	---	24	
March	Avg/Geomean	290.8	9.0	9.1	0.0	0.0	272.7	272.7	7.4	7.5	---	7.5	388	110	---	---	5.1	5.1	334	157	---	---	3.1	3.1	8.47	6.55	---	---	0.38	0.38	35.7	35.2	---	---	5.39	5.39	51.6	42.4	---	6.7	< 0.01	0.11	---	7.75	131	197	---	135	2.3	1.6	---	11.1	76.9
	Min	272.1	0.0	6.8	0.0	0.0	261.3	261.3	7.4	7.3	---	7.3	160	83	---	---	1.9	1.9	207	127	---	---	< 2	< 2	7.33	4.96	---	---	0.21	0.21	27.1	31.2	---	---	2.84	2.84	43.9	31.0	---	4.1	< 0.01	< 0.01	---	5.21	83.8	104	---	98	2.2	0.9	---	4	
	Max	351.9	52.5	12.2	0.0	0.0	293.1	293.1	7.5	7.7	---	7.6	516	148	---	---	10.5	10.5	446	183	---	---	5	5	9.53	8.07	---	---	0.74	0.74	42.1	40.6	---	---	9.32	9.32	59.2	48.5	---	10.6	< 0.01	0.41	---	9.94	305	458	---	267	2.4	2.3	---	32	
April	Avg/Geomean	280.9	4.7	11.2	0.0	0.0	265.0	265.0	7.4	7.5	---	7.4	384	116	---	---	6.1	6.1	349	121	---	---	3.0	3.0	8.48	7.33	---	---	0.42	0.42	42.0	40.5	---	---	3.79	3.79	54.7	45.2	---	5.0	< 0.01	0.20	---	8.65	91.4	161	---	98.8	1.4	1.0	---	8.8	72.5
	Min	264.1	0.0	10.1	0.0	0.0	253.5	253.5	7.3	7.3	---	7.3	268	82	---	---	4.1	4.1	299	110	---	---	< 2	< 2	6.00	4.94	---	---	0.32	0.32	24.5	27.2	---	---	0.80	0.80	39.3	30.4	---	2.3	< 0.01	0.02	---	6.47	74.4	81.5	---	83.6	1.3	1.0	---	3	
	Max	455.8	134.2	12.8	0.0	0.0	310.2	310.2	7.6	7.7	---	7.6	496	150	---	---	8.9	8.9	428	132	---	---	4	4	9.4	9.72	---	---	0.74	0.74	46.5	53.7	---	---	7.16	7.16	67.2	60.0	---	7.6	< 0.01	0.37	---	10.0	148	241	---	130	1.6	1.1	---	21	
May	Avg/Geomean	326.3	25.5	11.4	0.0	0.0	289.4	289.4	7.5	7.6	---	7.5	369	83	---	---	4.9	4.9	325	109	---	---	3.0	3.0	8.13	5.68	---	---	0.39	0.39	37.5	31.8	---	---	2.40	2.40	56.5	42.4	---	4.1	0.09	0.13	---	11.0	83.1	71.2	---	88	2.0	1.2	---	10.2	76.9
	Min	276.3	0.0	9.8	0.0	0.0	264.7	264.7	7.3	7.4	---	7.2	210	43	---	---	2.6	2.6	154	55	---	---	< 2	< 2	4.33	3.72	---	---	0.09	0.09	15.5	18.8	---	---	0.61	0.61	6.0	25.6	---	1.1	< 0.01	0.01	---	5.48	46.3	44.8	---	70	1.1	0.5	---	1	
	Max	723.2	376.9	12.7	1.0	0.0	344.5	344.5	7.6	7.9	---	7.8	764	112	---	---	11.1	11.1	443	190	---	---	4	4	10.2	8.80	---	---	0.99	0.99	42.8	49.9	---	---	6.33	6.33	106	72.5	---	8.1	0.39	0.24	---	14.2	97.2	109	---	98	3.8	2.3	---	42	
June	Avg/Geomean	331.2	27.4	11.9	0.0	0.0	291.9	291.9	7.6	7.6	---	7.5	376	90.5	---	---	5.3	5.3	292	161	---	---	3.2	3.2	7.50	6.04	---	---	0.40	0.40	32.5	35.4	---	---	2.91	2.91	50.8	42.4	---	4.8	< 0.01	0.14	---	10.3	83.9	78.2	---	95.2	2.7	1.2	---	12.2	76.9
	Min	282.7	0.0	10.5	0.0	0.0	265.7	265.7	7.3	7.4	---	7.4	268	44.8	---	---	2.6	2.6	179	53	---	---	2	2	5.12	3.11	---	---	0.26	0.26	15.6	20.5	---	---	0.22	0.22	31.8	24.8	---	1.5	< 0.01	0.02	---	5.73	46.2	47.4	---	60.1	2.6	0.2	---	4	
	Max	633.8	337.9	12.9	0.4	0.0	336.5	336.5	7.7	7.8	---	7.8	636	188	---	---	9.2	9.2	368	413	---	---	5	5	9.28	9.80	---	---	0.78	0.78	42.7	48.9	---	---	5.08	5.08	62.6	57.8	---	7.2	< 0.01	0.54	---	13.4	120	124	---	111	2.8	3.8	---	31	
July	Avg/Geomean	313.0	14.5	12.1	0.0	0.0	286.4	286.4	7.6	7.6	---	7.6	416	74	---	---	4.5	4.5	303	149	---	---	2.5	2.5	7.83	5.85	---	---	0.37	0.37	32.3	34.9	---	---	1.35	1.35	53.9	43.5	---	3.0	0.03	0.07	---	9.85	84.3	79.4	---	90.9	2.8	2.5	0.2	10	80.5
	Min	283.9	0.0	11.2	0.0	0.0	271.1	271.1	7.2	7.4	---	7.3	300	47	---	---	3.0	3.0	169	86	---	---	< 2	< 2	4.33	3.61	---	---	0.26	0.26	11.9	24.8	---	---	0.44	0.44	21.9	27.5	---	1.6	< 0.01	0.01	---	6.57	37.6	59.3	---	73.6	2.2	1.6	0.2	5	
	Max	691.5	348.9	13.3	0.1	0.0	331.0	331.0	7.7	7.9	---	7.8	532	112	---	---	6.6	6.6	357	318	---	---	3	3	9.28	10.9	---	---	0.67	0.67	38.4	54.2	---	---	3.57	3.57	64.5	71.1	---	5.6	0.11	0.28	---	12.2	101	105	---	101	4.3	3.6	0.2	24	
August	Avg/Geomean	316.3	19.4	12.1	0.0	0.0	284.9	284.9	7.6	7.6	---	7.5	427	82	---	---	4.7	4.7	301	134	---	---	2.7	2.7	7.75	4.97	---	---	0.36	0.36	31.3	31.9	---	---	1.14	1.14	53.8	39.1	---	2.8	< 0.01	0.09	---	11.4	83	70.3	---	89.0	5.9	2.8	0.7	11	71.1
	Min	273.4	0.0	10.2	0.0	0.0	260.5	260.5	7.4	7.3	---	7.3	326	55	---	---	3.1	3.1	181	44	---	---	< 2	< 2	4.53	0.57	---	---	0.19	0.19	13.3	11.4	---	---	0.59	0.59	25.7	3.9	---	2.2	< 0.01	0.02	---	8.3	45	32.7	---	71.0	4.3	1.0	0.7	4	
	Max	621.0	260.2	13.2	0.0	0.0	348.1	348.1	7.8	7.9	---	7.9	568	113	---	---	7.7	7.7	365	276	---	---	4	4	10.7	8.79	---	---	0.54	0.54	40.0	44.6	---	---	1.99	1.99	70.5	62.3	---	3.9	< 0.01	0.52	---	13.8	93	97.1	---	100	8.0	9.0	0.7	37	
September	Avg/Geomean	293.0	6.4	11.0	0.0	0.0	275.5	275.5	7.5	7.7	---	7.5	345	72	---	---	5.4	5.4	286	139	---	---	3.3	3.3	8.38	5.95	---	---	0.42	0.42	38.2	36.3	---	---	1.94	1.94	61.7	49.0	---	4.0	< 0.01	0.05	---	12.5	84	78	---	94	3.8	3.0	---	16	69.9
	Min	272.2	0.0	0.0	0.0	0.0	260.4	260.4	7.4	7.5	---	7.4	276	44	---	---	3.5	3.5	204	71	---	---	2	2	6.39	3.89	---	---	0.26	0.26	23.4	21.3	---	---	0.74	0.74	44.6	31.2	---	2.2	< 0.01	0.02	---	9.7	50	52	---	80	3.6	2.0	---	5	
	Max	418.9	81.7	13.3	0.0	0.0	333.2	333.2	7.7	7.8	---	7.6	552	98	---	---	7.0	7.0	344	236	---	---	4	4	9.90	7.59	---	---	1.04	1.04	44.4	42.4	---	---	5.53	5.53	73.0	58.0	---	7.5	< 0.01	0.12	---	14.2	108	94	---	102	4.0	4.8	---	170	
October	Avg/Geomean	275.1	0.4	12.5	0.0	0.0	262.2	262.2	7.6	7.7	---	7.5	354	254	---	---	4.5	4.5	330	203	---	---	3.1	3.1	8.92	7.96	---	---	0.34	0.34	36.7	43.5	---	---	2.77	2.77	61.5	61.0	---	4.7	0.01	0.01	---	10.6	80	81	---	89	3.9	6.9	---	11	71.1
	Min	268.8	0.0	10.9	0.0	0.0	255.5	255.5	7.5	7.5	---	7.4	268	164	---	---	2.6	2.6	275	162	---	---	< 2	< 2	7.29	7.67	---	---	0.26	0.26	31.5	39.1	---	---	0.84	0.84	55.3	53.7	---	2.5	< 0.01	< 0.01	---	8.2	68	80	---	80	3.8	2.6	---	3	
	Max	282.7	10.6	13.7	0.0	0.0	269.2	269.2	7.8	7.8	---	7.7	436	344	---	---	5.6	5.6	446	244	---	---	4	4	9.94	8.25	---	---	0.50	0.50	40.3	47.9	---	---	4.40	4.40	71.5	68.3	---	7.0	0.01	0.02	---	13.3	92	82	---	105	4.0	18.0	---	42	
November	Avg/Geomean	275.6	0.0	12.5	0.0	0.0	263.0	263.0	7.6	---	---	7.5	363	---	---	---	3.8	3.8	327	---	---	---	3	3	8.87	---	---	---	0.32	0.32	39.1	---	---	---	2.62	2.62	59.6	---	---	4.2	< 0.01	---	---	10.3	89.6	---	---	92.4	3.0	---	---	6	68.3
	Min	268.0	0.0	11.5	0.0	0.0	254.8	254.8	7.5	---	---	7.4	276	---	---	---	2.6	2.6	239	---	---	---	< 2	< 2	7.92	---	---	---	0.26	0.26	32.0	---	---	---	1.20	1.20	48.8	---	---	3.3	< 0.01	---	---	6.6	75.5	---	---	78.9	2.9	---	---	2	
	Max	291.6	0.0	13.8	0.0	0.0	279.3	279.3	7.8	---	---	7.6	676	---	---	---	4.8	4.8	389	---	---	---	4	4	10.3	---	---	---	0.65	0.65	44.0	---	---	---	3.67	3.67	71.3	---	---	5.2	< 0.01	---	---	12.6	107	---	---	111	3.2	---	---	12	
December	Avg/Geomean	277.8	0.9	12.7	0.0	0.0	264.2	264.2	7.5	7.5	---	7.5	326	174	---	---	3.3	3.3	321	207	---	---	2.4	2.4	8.77	5.59	---	---	0.24	0.24	39.2	34.1	---	---	1.85	1.85	56.9	49.3	---	3.2	< 0.01	0.04	---	9.86	151	401	---	157	2.6	1.5	---	6.6	64.4
	Min	250.7	0.0	11.7	0.0	0.0	238.5	238.5	7.4	7.4	---	7.3	252	144	---	---	2.4	2.4	258	178	---	---	< 2	< 2	3.93	4.61	---	---	0.18	0.18	30.5	30.3	---	---	1.17	1.17	10.0	47.0	---	2.4	< 0.01	0.02	---	7.01	91.3	367	---	93.4	2.4	0.8	---	1	
	Max	330.8	13.4	13.5	0.0	0.0	304.2	304.2	7.7	7.6	---	7.6	396	210	---	---	4.2	4.2	371	239	---	---	3	3	10.40	6.20	---	---	0.29	0.29	45.2	36.6	---	---	3.68	3.68	67.0	53.5	---	5.1	< 0.01	0.05	---	13.1	334	450	---	311	2.9	2.7	---	12	
Annual Volume (ML)		110,088	7,009	4,064	2	0	99,016	99,016																																													870.1
2024	Avg	294	9.1	11.5	0.00	0.00	273	273	7.5	7.6	---	7.5	367	122	---	---	4.6	4.6	319	166	---	---	2.9	2.9	8.31	6.36	---	---	0.35	0.35	37.0	36.0	---	---	2.80	2.80	55.7	46.1	---	4.3	0.02	0.08	---	9.81	99	166	---	106					
2023	Avg	301	24.2	11.1	0.00	0.00	271	271	7.5	7.5	---	7.5	317	101	247	---	4.0	4.0	296	123	72	---	2.5	2.5	7.40	4.42	5.83	---	0.30	0.30	33.9	26.7	10.0	---	2.02	2.02	49.0	33.4	16.0	3.5	0.03	0.34	0.69	8.93	94	144	39	102					

PBP – Plant Bypass
TBP – Total Bypass Plant (including plant and secondary)
SEC – Secondary Bypass Plant

EPE - Enhanced Primary Effluent
EPT – Enhanced Primary Treatment

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

FEC – Final Effluent, Combined
RAW – Influent
BOD_5 – 5-day Biological Oxygen Demand

$CBOD_5$ – 5-day Inhibited BOD

TSS – Total Suspended Solids
TP – Total Phosphorus
NH_3-N – Ammonia as nitrogen

MPW – Membrane Product Water
ns – No sample
Avg/Geomean –Geomean for E.coli; Avg for others

*This table has been updated refer to the addendum attached to the end of this report

Table 4 summarizes the reclaimed water quality sample data from January 1 to December 31, 2024. 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: 2024 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	11.3	154	2.38	2	33	124	1020	<1	8.0	<1.0	9.3	3.12	0.10	600
	Min	8.6	130	0.21	<2	25	77.2	861	<1	7.8	<1.0	8.4	1.00	0.07	490
	Max	12.5	174	5.66	3	43	339	1640	<1	8.1	<1.0	10.7	5.20	0.14	918
February	Avg	10.7	152	1.91	3	35	124	1021	<1	7.9	1.0	10.0	2.7	0.12	588
	Min	7.0	149	0.22	<2	25	100	923	<1	7.8	<1.0	9.1	1.0	0.03	531
	Max	12.5	155	5.11	5	47	192	1200	<1	8.1	1.5	11.0	6.1	0.76	690
March	Avg	9.1	150	1.50	2	31	141	1,061	<1	7.9	1.1	9.4	2.3	0.11	615
	Min	6.8	135	0.11	<2	20	102	944	<1	7.8	< 1.0	8.8	0.9	0.06	557
	Max	12.2	176	5.24	4	41	278	1,490	<1	8.0	2.0	10.0	5.9	0.18	845
April	Avg	11.2	133	0.83	2	30	104	904	<1	7.9	<1.0	9.5	1.6	0.12	538
	Min	10.1	126	0.09	<2	23	89.3	836	<1	7.8	<1.0	8.8	1.0	0.09	467
	Max	12.8	140	2.85	4	38	133	1000	<1	8.0	<1.0	10.4	3.3	0.14	584
May	Avg	11.4	131	1.04	2	31	94.4	1000	<1	7.8	<1.0	10.4	2.2	0.18	622
	Min	9.8	96	0.12	<2	25	71.9	717	<1	5.6	<1.0	8.2	0.1	0.06	416
	Max	12.7	152	3.53	3	39	107	1100	<1	8.1	<1.0	11.9	5.8	0.51	704
June	Avg	11.9	145	0.51	4	37	100	1060	<1	7.9	1.0	11.5	1.5	0.12	661
	Min	10.5	132	0.09	<2	27	65.5	747	<1	7.8	<1.0	9.8	0.3	0.06	459
	Max	12.9	153	1.37	6	47	116	1160	<1	8.1	1.5	13.2	2.5	0.20	734
July	Avg	12.1	153	0.22	3	20	97.6	1012	<1	8.0	<1.0	9.5	1.2	0.13	638
	Min	11.2	131	0.09	<2	30	80.5	856	<1	7.8	<1.0	8.3	0.7	0.07	516
	Max	13.3	165	1.37	7	43	112	1130	<1	8.1	<1.0	11.4	2.4	0.22	776
August	Avg	12.1	145	0.13	2	30	96.9	957	<1	7.9	1	9.2	1.1	0.12	598
	Min	10.2	131	0.05	<2	20	80.2	793	<1	7.7	<1.0	7.8	0.7	0.03	480
	Max	13.2	165	0.44	3	48	110	1020	<1	8.1	1.2	11.1	1.6	0.24	666
September	Avg	11.0	138	0.70	<2	27	100	958	<1	7.9	<1.0	9.6	2.0	0.16	585
	Min	0.0	131	0.10	<2	20	82.9	827	<1	7.8	<1.0	8.9	1.2	0.12	515
	Max	13.3	151	4.00	<2	38	111	1030	<1	8.0	<1.0	10.5	5.2	0.23	627
October	Avg	12.5	150	1.20	3	30	93.0	911	<1	7.9	1	9.7	2.5	0.12	556
	Min	10.9	141	0.18	<2	23	83.9	862	<1	7.8	<1.0	9.1	1.3	0.05	524
	Max	13.7	158	2.65	4	36	107	957	<1	8.1	1.5	10.4	4.1	0.33	593
November	Avg	12.5	144	1.56	3	27	97.0	935	<1	7.9	<1.0	9.4	2.6	0.12	545
	Min	11.5	134	0.59	<2	20	82.8	885	<1	7.8	<1.0	8.6	1.6	0.09	508
	Max	13.9	159	2.89	8	36	116	1020	2	8.1	<1.0	10.2	3.7	0.14	592
December	Avg	12.7	139	0.70	7	30	162	1109	<1	7.9	1.0	9.3	1.7	0.09	637
	Min	11.7	127	0.20	6	22	97.3	913	<1	7.8	<1.0	8.5	1.2	0.05	535
	Max	13.5	151	2.19	9	39	317	1610	<1	8.0	1.1	10.4	3.1	0.28	895
Annual Summary	Avg	11.5	145	1.06	3	30	111	996	<1	7.9	1.0	9.7	2.0	0.12	599
	Min	0.0	96	0.05	<2	20	66	717	<1	5.6	<1.0	7.8	0.1	0.03	416
	Max	13.9	176	5.66	9	48	339	1640	<1	8.1	2.0	13.2	5.2	0.76	918

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 2024.

Table 5: 2024 Effluent Toxicity

Dates	Quarter	Microtox	Daphnia Magna	Rainbow Trout	Ceriodaphnia Dubia	Fathead Minnows	Pseudokirchneriella				
					Survival	Survival					
		% of Control	LC_{50} (% vol/vol)[1]	LC_{50} (% vol/vol)	LC_{50} (% vol/vol)	LC_{50} (% vol/vol)	IC_{25} (% vol/vol)[2]	NOEL (%)[3]	LOEL (%)[4]	TOEL (%)[5]	Toxic Units(TU)[6]
1/9/2024	1	>91	>100	>100							
2/6/2024		>91	>100	>100	>100*	>100	>91	<2.8	2.8	NA	>35.7
3/5/2024		>91	>100	>100							
4/9/2024	2	>91	>100	>100							
5/9/2024		>91	>100	>100	>100	>100	>91	11	23	15.91	9.1
6/6/2024		>91	>100	>100							
7/23/2024	3	>91	>100	>100							
8/14/2024		>91	>100	>100	>100	>100	>91	91	>91	NA	1.1
9/11/2024		>91	>100	>100							
10/8/2024	4	>91	>100	>100							
11/4/2024		>91	>100	>100	>100	>100	>91	5.7	11.4	8.061	17.5
12/12/2024		>91	>100	>100							

[1]LC_{50} - % effluent concentration at which there is a 50% mortality of test organisms; [2]IC_{25} - % effluent concentration at which there is a 25% reduction in growth or reproduction of test organisms; [3]NOEL - the concentration at which there was no observed effect level; [4]LOEL - the concentration at which you start seeing the lowest observable effect; [5]TOEL = NOEL/LOEL; [6]TU - the ratio of the concentration observed divided by the concentration for 50% inhibition. *Collection date 02/13/2024.

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 2024 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: 2024 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
PTC	Mar-23	97	0.05	98	0.11	98	-0.01	96	0.20	90	0.82	97	0.19	88	-0.79
PTC	Oct-23	91	-0.15	97	0.04	92	-0.17	98	-0.09	96	-0.17	96	0.28	93	-0.26

pH by manual meter; NH3-N by AA3; TP by AA3; E.coli by MF

In 2024, a total of 107,555 million litres (ML) of wastewater was conveyed to the plant. Secondary treatment and UV disinfection was provided to 99,979 ML (93.0%) of the total raw influent flow with 4,226 ML (3.9%) of reclaimed water provided to industrial customers.

Assessment of Annual Monitoring Results

The Gold Bar WWTP Effluent Limit Performance (WELP) index for 2024 was 23.87% (Figure 1). The 2024 index was higher than the five-year average of 19.12% due to a continued focus on sustaining system reliability with maintenance and capital work and maximizing the number of process tanks/equipment in service. Additionally, there was good performance of Ostara Nutrient Recovery Facility for supernatant treatment. Figure 2 shows the annual WELP from 2005 to 2024, including the five-year average.

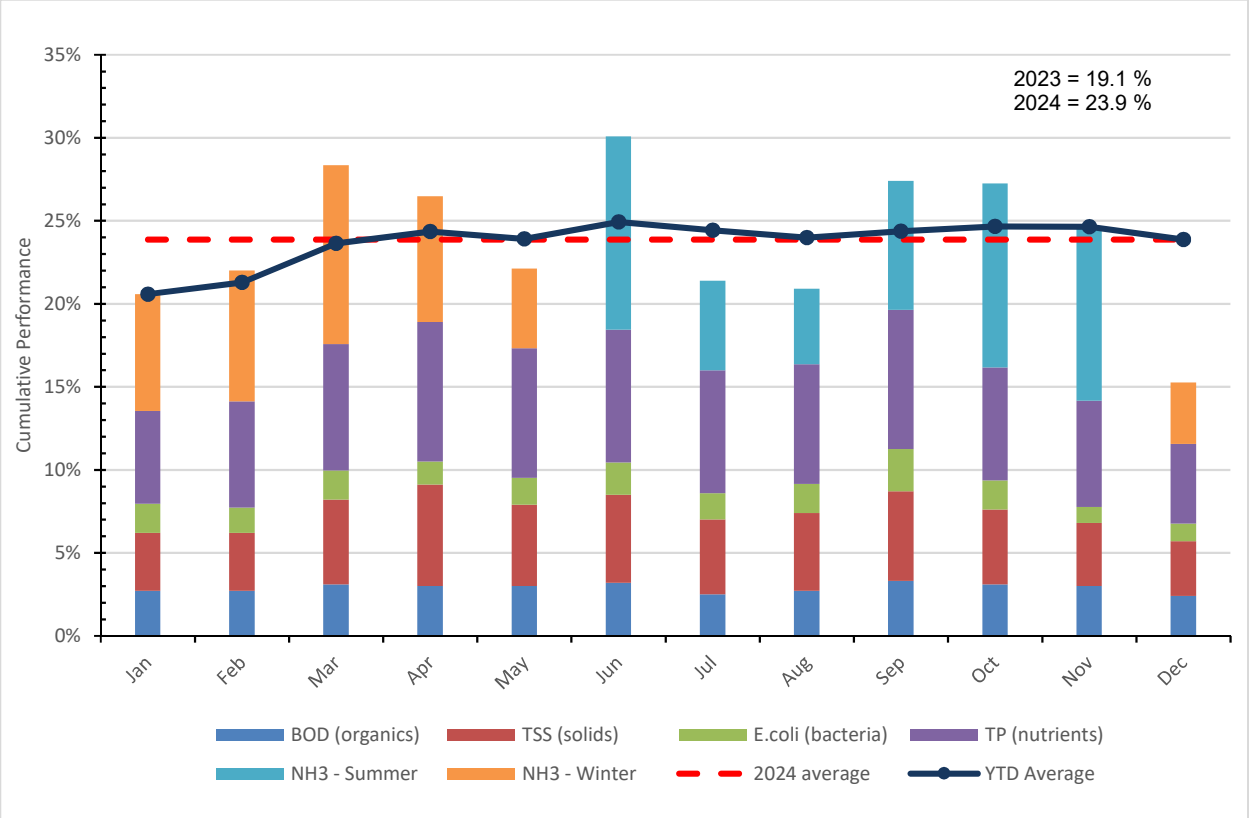

Figure 1: 2024 Monthly Gold Bar WWTP Wastewater Effluent Limit Performance (WELP) Index

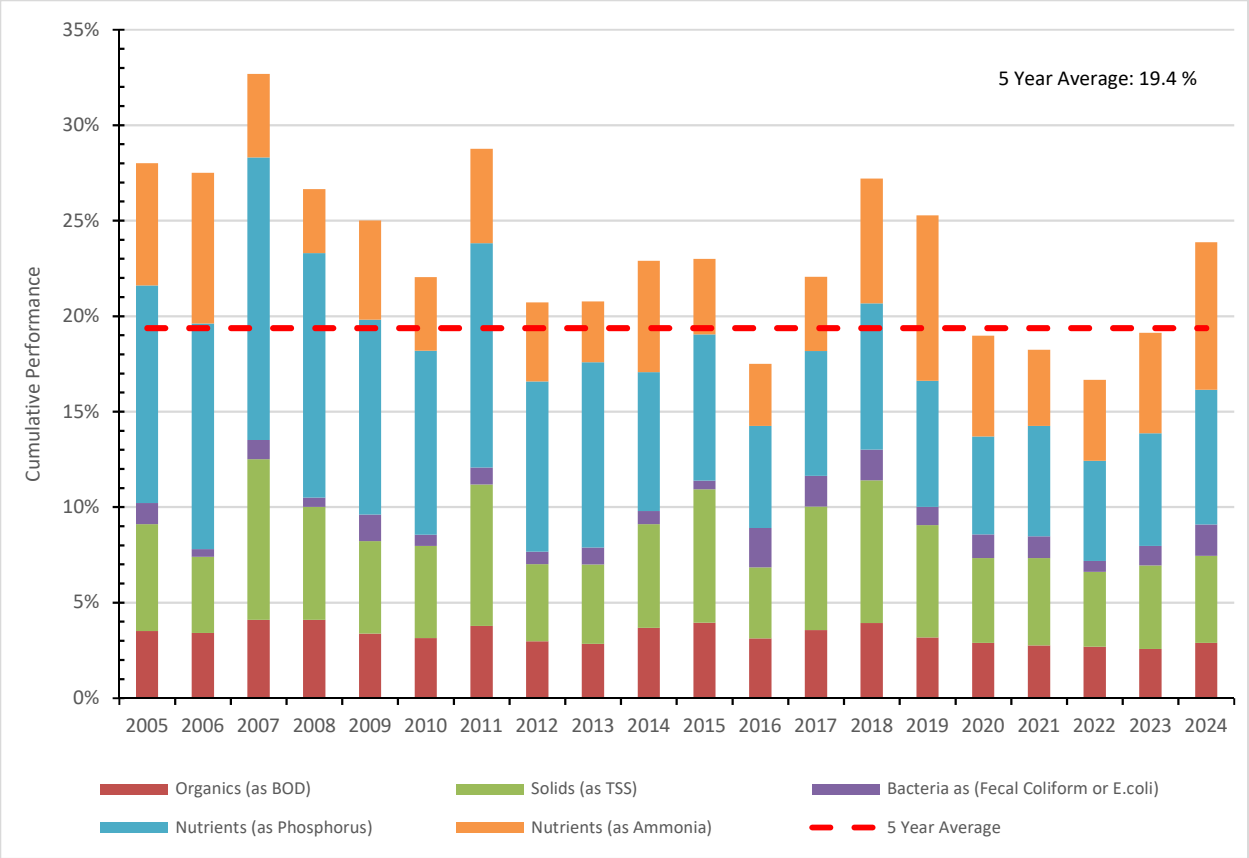

Figure 2: Gold Bar WWTP Wastewater Effluent Limit Performance (WELP Index) 2005-2024

For 2024, 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 2024. Supervising operators are also listed in the Operations Monthly Summaries in Appendix C.

Table 7: List of Certified Wastewater Treatment Operators (as of December 2024)

Name	Title	Wastewater Treatment Certification Level
Jones, Kira I	Coordinator, Hazardous Energy Isolation	IV
Lekamwasam, Janaka	Operator Crew Leader	IV
Nunes, Michael	Operator Crew Leader	IV
Penner, Jody	WWTP Lead Operator	IV
Sanche, Dagny	Coordinator, Operations Training	IV
Sandouga, Sam	Operator Crew Leader	IV
Baker, Cole	Operator Crew Leader	IV
Nieuwenhuis, Andrew	Operator Crew Leader	IV
Kelly, Adam	WWTP Operator	IV
Jama, Yusuf	WWTP Operator	IV
Omeragic, Armen	WWTP Lead Operator	IV
Holden, Derek	WWTP Operator	IV
Vogelgesang, Ryan	WWTP Operator	IV
Rees, Emma	WWTP Lead Operator	IV
Paglicauan, Jermine	Engineer, Operations	IV
Barrett, Jeremy L	Manager, Process Risk & Integration	III
Li, Bing (Frank)	WWTP Operator	III
Budden, Curt	Coordinator, Operations Shutdown	III
Rindero, Billy	Clover Bar Operations Crew Leader	III
Hahn, Kevin	Coordinator, Operations Shutdown	III
Jordan, Bradley	Coordinator, Operations Shutdown	III
Diletzoy, Kyle	WWTP Lead Operator	III
Downey, Anthony	WWTP Lead Operator	III
Lorenz, Tory	WWTP Operator	III
Ozimko, Michael	WWTP Operator	III
Price, Jeremy	WWTP Operator	III
Cousins, Kenzie	Manager, Operations Support & Training	II
Gordon, Allan	Manager, Operations	II
Gilker, Michael	WWTP Operator	II
Furber, Brandyn	WWTP Operator	II
Marling, Connor	WWTP Operator	I
Craig, Aric	WWTP Operator	I

Uncommitted Hydraulic Reserve Capacity

In 2024, Gold Bar WWTP received a total dry weather volume of 104,205 ML. This volume is the sum total of Outfall 10 effluent (99,979 ML) and membrane reclaimed water (4,226 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 2024 was 285 million litres per day (MLD). However, the true dry weather flow was lower than 285 MLD and was approximately 282 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 103,124 ML.

Based on 310 MLD of average secondary treatment capacity and a true dry weather average flow of 282 MLD, the uncommitted hydraulic reserve capacity for secondary treatment in 2024 was 28 MLD.

Wet Weather Summary

In 2024, Gold Bar WWTP had 67 days of secondary and primary plant bypasses. The total volume of secondary bypass was 3,351 ML. In addition, the total primary bypass volume was 355 ML.

There were 6 significant wet weather events with inflows to the plant greater than 1,200 MLD, all 6 resulted in a main plant bypass. The plant received a peak flow rate of approximately 1,675 MLD on August 5, 2024. The record peak flow of 2,298 MLD occurred on June 28, 2022.

Summary of Operational Issues

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

2024 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 Scrubber 5 and Scrubber 6 were commissioned and put into operation in 2024.

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

Air Pollution Control System	Monitoring Location	Parameter	Limit
East scrubber-scrubber 1; West scrubber-scrubber 2; EPT scrubber-scrubber 3; Fermenter scrubber-scrubber 4 Scrubber 5 Scrubber 6	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 Stack Sampling Code*	Effluent air stream of the carbon scrubber
East scrubber-scrubber 1; West scrubber-scrubber 2; EPT scrubber-scrubber 3; Fermenter scrubber-scrubber 4 Scrubber 5 Scrubber 6	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	

Source	Parameter	Frequency	Method of Monitoring	Sample Location
East scrubber-scrubber 1; West scrubber-scrubber 2; EPT scrubber-scrubber 3; Fermenter scrubber-scrubber 4 Scrubber 5 Scrubber 6	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, 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.

Table 10: Air Pollution Control System Report - Part I

Month	Parameter	January	February	March	April	May	June	July	August	September	October	November	December
		Avg	Avg	Avg	Avg	Avg	Avg	Avg	Avg	Avg	Avg	Avg	Avg
Scrubber 1 (East)	*pH*	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.3	N/A	N/A
	ORP (mV)	671.4	670.0	670.1	670.1	673.8	669.3	669.9	669.7	670.4	696.6	N/A	N/A
	H2S In (ppm)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	N/A	N/A
	H2S Out (ppb)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	N/A	N/A
Scrubber 2 (West)	*pH*	9.8	9.8	9.8	9.8	9.8	9.8	N/A	N/A	N/A	N/A	N/A	N/A
	ORP (mV)	667.6	670.1	667.8	669.1	668.3	667.5	N/A	N/A	N/A	N/A	N/A	N/A
	H2S In (ppm)	0.1	0.0	1.4	1.5	1.4	2.5	N/A	N/A	N/A	N/A	N/A	N/A
	H2S Out (ppb)	0.0	0.0	0.0	0.0	0.0	0.0	N/A	N/A	N/A	N/A	N/A	N/A
Scrubber 3 (EPT)	*pH*	9.8	9.8	9.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	ORP (mV)	701.1	705.6	696.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	H2S In (ppm)	1.4	0.6	2.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	H2S Out (ppb)	1059.8	304.8	726.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scrubber 4 (Fermenter)	*pH*	9.8	9.8	9.8	9.8	9.5	9.9	9.9	9.9	9.9	9.9	10.0	10.0
	ORP (mV)	678.7	670.4	669.8	670.0	650.2	690.8	687.3	690.8	689.6	681.4	674.1	688.4
	H2S In (ppm)	7.3	6.1	4.1	5.6	8.3	5.9	9.7	11.0	29.5	26.8	19.5	12.7
	H2S Out (ppb)	844.6	1107.0	230.2	359.9	990.6	154.2	0.6	0.7	463.0	2268.3	1405.0	497.4
Scrubber 5	*pH*	N/A	N/A	N/A	9.5	N/A	N/A	9.5	9.6	9.5	9.5	9.5	9.5
	ORP (mV)	N/A	N/A	N/A	670.3	N/A	N/A	670.1	669.5	670.2	670.1	703.4	670.0
	H2S In (ppm)	N/A	N/A	N/A	5.4	N/A	N/A	6.6	6.8	7.8	6.7	2.6	2.0
	H2S Out (ppb)	N/A	N/A	N/A	15.3	N/A	N/A	0.0	0.0	0.0	0.0	0.0	0.0
Scrubber 6	*pH*	N/A	N/A	N/A	N/A	9.5	9.6	9.5	9.6	9.5	9.5	9.6	9.5
	ORP (mV)	N/A	N/A	N/A	N/A	665.6	698.4	670.2	669.7	670.2	670.2	665.4	709.0
	H2S In (ppm)	N/A	N/A	N/A	N/A	3.7	0.0	6.6	6.8	8.1	6.7	2.9	2.0
	H2S Out (ppb)	N/A	N/A	N/A	N/A	22.0	8.8	19.4	2.1	0.0	0.0	0.0	0.0

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	2.3	47.1	N/A
February	Avg	0.0	15.0	N/A
March	Avg	0.0	11.4	N/A
April	Avg	7.7	854.2	N/A
May	Avg	8.1	947.9	N/A
June	Avg	8.1	2941.9	N/A
July	Avg	6.1	2434.2	N/A
August	Avg	1.1	592.0	N/A
September	Avg	0.7	508.9	N/A
October	Avg	11.8	1549.1	N/A
November	Avg	23.5	519.8	N/A
December	Avg	18.1	434.0	N/A

The annual manual stack survey was submitted to AEPA on October 30, 2024.

Assessment of Monitoring Results

For each wet scrubber, the daily average ORP and pH was maintained above 300 mV and 8, respectively throughout the year in 2024. 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. Scrubber 5 and 6 were completed and commissioned in 2024. This involved several shutdowns of the EPT Scrubber, West Scrubber, Scrubber 5 and Scrubber 6 to facilitate the switchover and testing of the new scrubbers. On July 16, 2024 a 24-hour H_2S exceedance occurred at the Air Quality Monitoring Station (AQMS) during a scrubber outage which was investigated and determined to not be a result of the outage.

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
Scrubber 2 (West)	1/2/2024 0:35	1/2/2024 1:04	0.5	No - shutdown less than 2 hours	Lost ORP for an hour. Bleach pump tube failure.	Shut down scrubber for troubleshooting. Switched bleach pumps.
Scrubber 2 (West)	1/4/2024 19:11	1/4/2024 21:58	2.8	Yes	Recirculation pump tripped and not starting.	Maintenance called in.
Scrubber 1 (East)	1/11/2024 17:10	1/11/2024 18:39	1.5	No - shutdown less than 2 hours	Foaming in scrubber tower.	Drained and filled scrubber tower.
Scrubber 1 (East)	1/11/2024 19:52	1/11/2024 20:31	0.7	No - shutdown less than 2 hours	Foaming in scrubber tower.	Drained and filled scrubber tower.
Scrubber 1 (East)	1/14/2024 18:42	1/14/2024 19:28	0.8	No - shutdown less than 2 hours	Foaming in scrubber tower.	Drained and filled scrubber tower.
Scrubber 1 (East)	1/15/2024 14:24	1/15/2024 14:40	0.3	No - shutdown less than 2 hours	Foaming in scrubber tower.	Drained and filled scrubber tower.
Scrubber 1 (East)	1/15/2024 23:24	1/16/2024 1:07	1.7	No - shutdown less than 2 hours	Foaming in scrubber tower.	Drained and filled scrubber tower.
Scrubber 1 (East)	1/16/2024 2:44	1/16/2024 3:36	0.9	No - shutdown less than 2 hours	Foaming in scrubber tower.	Drained and filled scrubber tower.
Scrubber 1 (East)	1/16/2024 14:45	1/16/2024 15:24	0.7	No - shutdown less than 2 hours	Foaming in scrubber tower.	Drained and filled scrubber tower. Calibrated ORP meter.
Scrubber 3 (EPT)	2/5/2024 9:25	2/5/2024 15:57	6.5	Yes	Low recirculation flow.	Cleaned scrubber nozzles.
Scrubber 1 (East)	2/8/2024 7:31	2/8/2024 8:11	0.7	No - shutdown less than 2 hours	Blower belt required replacement.	Blower belt replaced. Recirculation pump remained running.
Scrubber 2 (West)	2/17/2024 21:43	2/28/2024 13:11	255.5	No - scrubber not shut down	Scrubber tower level slowly dropping.	Checked inline filters, bypassed softener.
Scrubber 4 (Fermenter)	2/21/2024 8:06	2/21/2024 8:21	0.2	No - shutdown less than 2 hours	Bleach pump tube failure.	Maintenance replaced tube.
Scrubber 2 (West)	3/27/2024 10:12	3/27/2024 13:43	3.5	Yes	Bleach pump air relief valve passing. Recirculation pump seized.	Maintenance repaired bleach pump air vent and recirculation pump.

Scrubber Name	Date/Time of Shutdown	Date/Time Returned to Service	Total Time Shutdown (hr)	Fence Line H2S Readings Taken?	Operational Issue	Actions Taken
Scrubber 4 (Fermenter)	4/8/2024 8:49	4/8/2024 11:01	2.2	Yes	Maintenance required.	Recirculation pump alignment and blower work.
Scrubber 3 to Scrubber 5	4/24/2024 7:48	4/24/2024 8:45	1.0	No - shutdown less than 2 hours	No issue.	Shut down Scrubber 3. Started Scrubber 5.
Scrubber 5 to Scrubber 6	4/30/2024 9:56	4/30/2024 10:04	0.1	No - shutdown less than 2 hours	No issue.	Shut down Scrubber 5. Started Scrubber 6.
Scrubber 1 (East)	5/1/2024 15:04	5/1/2024 16:06	1.0	No - shutdown less than 2 hours	Maintenance required.	Fan belt change.
Scrubber 1 (East)	5/3/2024 8:26	5/4/2024 0:06	15.7	Yes	Foaming in scrubber tower.	Drained and filled scrubber tower. Opened Channel 1 gates to try and flush foam.
Scrubber 1 (East)	5/16/2024 18:27	5/16/2024 19:29	1.0	No - shutdown less than 2 hours	Foaming in scrubber tower.	Drained and filled scrubber tower.
Scrubber 2 (West)	5/22/2024 9:35	5/22/2024 11:12	1.6	No - shutdown less than 2 hours	Maintenance required.	Fan belt change.
Scrubber 4 (Fermenter)	5/27/2024 8:23	5/27/2024 8:53	0.5	No - shutdown less than 2 hours	Bleach pump failure.	Maintenance repaired.
Scrubber 4 (Fermenter)	5/27/2024 10:37	5/27/2024 13:09	2.5	Yes	Both bleach pumps failed.	Maintenance repaired.
Scrubber 4 (Fermenter)	6/11/2024 9:03	6/11/2024 16:03	7.0	Yes	Bleach leak on pipe above recirculation pump.	Drained, flushed, and isolated for repairs.
Scrubbers 1, 2, 4, and 6	6/13/2024 7:14	6/13/2024 8:49	1.6	No - shutdown less than 2 hours	Short power outage	Planned outage for transformer switching
Scrubbers 1 and 4	6/19/2024 7:01	6/19/2024 13:51	6.8	Yes	HEI	Shut down scrubbers 1 and 4 for sump tie ins.
Scrubber 4 (Fermenter)	7/2/2024 7:54	7/2/2024 8:58	1.1	No - shutdown less than 2 hours	HEI	Scrubber 4 shut down for check valve replacement.
Scrubber 6	7/3/2024 2:13	7/3/2024 2:59	0.8	No - shutdown less than 2 hours	ORP dropped.	Allowed ORP values to restore and restarted scrubber.
Scrubber 4 (Fermenter)	7/3/2024 14:05	7/3/2024 15:37	1.5	No - shutdown less than 2 hours	Leaking check valve on caustic pump discharge.	Shut down scrubber, flushed and locked out for repair.
Scrubber 6 to Scrubber 5	7/8/2024 10:56	7/8/2024 11:15	0.3	No - shutdown less than 2 hours	No issue.	Shut down Scrubber 6. Started Scrubber 5.
Scrubber 5 & Scrubber 2 to Scrubber 6	7/16/2024 9:59	7/16/2024 14:24	4.4	Yes	Leak in caustic overpressure tank return line piping.	Shut down Scrubber 2. Started Scrubber 6. Flush, drain, and isolate for repairs.
Scrubber 6 & Scrubber 5 to Scrubber 2	8/21/2024 8:02	8/21/2024 8:18	0.3	No - shutdown less than 2 hours	DeviceNet changes required.	Shut down Scrubber 5. Started Scrubber 2 as backup.
Scrubber 2 to Scrubber 5	8/21/2024 15:12	8/21/2024 15:22	0.2	No - shutdown less than 2 hours	No issue.	Shut down Scrubber 2. Started Scrubber 5.

Scrubber Name	Date/Time of Shutdown	Date/Time Returned to Service	Total Time Shutdown (hr)	Fence Line H2S Readings Taken?	Operational Issue	Actions Taken
Scrubber 5	9/19/2024 7:50	9/19/2024 8:15	0.4	No - shutdown less than 2 hours	Scrubber 5/6 shutdown for power switch	Scrubber 5 Shutdown to switch power
Scrubber 6	9/19/2024 7:51	9/19/2024 8:18	0.5	No - shutdown less than 2 hours	Scrubber 5/6 shutdown for power switch	Scrubber 6 Shutdown to switch power
Scrubber 5	9/19/2024 10:17	9/19/2024 10:34	0.3	No - shutdown less than 2 hours	Scrubber 5/6 shutdown for power switch	Scrubber 5 Shutdown to switch power
Scrubber 6	9/19/2024 10:17	9/19/2024 10:34	0.3	No - shutdown less than 2 hours	Scrubber 5/6 shutdown for power switch	Scrubber 6 Shutdown to switch power
Scrubber 5	10/3/2024 11:03	10/3/2024 11:51	0.8	No - shutdown less than 2 hours	Scrubber 5 shutdown for maintenance	Scrubber 5 shutdown for repairs
Scrubber 4 (Fermenter)	10/7/2024 10:00	10/7/2024 11:03	1.1	Yes	Tube Failure on both bleach pumps	Shut down Scrubber to repair tubes
Scrubber 1 (East)	10/7/2024 10:02	10/7/2024 11:00	1.0	Yes	Tube Failure on both bleach pumps	Shut down Scrubber to repair tubes
Scrubber 6	10/15/2024 9:36	10/15/2024 10:09	0.6	No - shutdown less than 2 hours	Scrubber 6 down for an oil change	Scrubber 6 down for oil change
Scrubber 1 (East)	11/25/2024 10:06	TBD	N/A	No - Notification sent to AEPA of Shutdown	No load feeding the scrubber, continued running would cause potential freezing issues	Shut down Scrubber 1 until further notice
Scrubber 6	11/25/2024 12:47	11/25/2024 14:21	0.5	No - shutdown less than 2 hours	Scrubber 6 exhaust fan loose belt.	Scrubber 6 shutdown to tighten the belt.
Scrubber 5	11/26/2024 12:44	11/26/2024 13:44	0.5	No - shutdown less than 2 hours	Maintenance PM on potable water backflow preventer	Scrubber shutdown for maintenance PM
Scrubber 6	11/26/2024 12:45	11/26/2024 13:46	0.3	No - shutdown less than 2 hours	Maintenance PM on potable water backflow preventer	Scrubber shutdown for maintenance PM
Scrubber 6	12/16/2024 9:47	12/16/2024 10:00	0.2	No - shutdown less than 2 hours	Scrubber 6 DNET issue	Scrubber 6 shutdown for DeviceNet update
Scrubber 5	12/16/2024 9:47	12/16/2024 10:23	0.6	No - shutdown less than 2 hours	Scrubber 5 DNET issue and PCP - 74381 required oil change	Scrubber 5 shutdown for DeviceNet update and pump oil change

2024 Annual Ambient Air Report

Summary of Ambient Air Monitoring

The ambient air quality monitoring station (AQMS) was commissioned as of June 30, 2022. For 2024, all ambient air monitoring was completed using the AQMS. Table 13 shows the monthly summary of results from the AQMS including H_2S, NO_2, SO_2, temperature, wind speed, and wind direction. The table shows the results of the 1-hour average data for 2024.

Table 13: Summary of Ambient Air Monitoring Results - Ambient Air Quality Monitoring Station

Month	Parameter	Min	Avg	Max
January	SO_2 (ppbv)	0.4	3.3	37.9
	NO_2 (ppbv)	2.8	19.8	44.3
	H_2S (ppbv)	0.0	0.8	11.3
	Wind Speed (m/s)	0.0	1.1	5.0
	Wind Direction (°)	-	210.9	-
	Temperature (°C)	-36.2	-12.4	-12.3
February	SO_2 (ppbv)	0.7	2.7	25.2
	NO_2 (ppbv)	1.4	16.5	48.7
	H_2S (ppbv)	0.0	0.5	15.2
	Wind Speed (m/s)	0.0	1.3	4.5
	Wind Direction (°)	-	213.1	-
	Temperature (°C)	-22.8	-5.6	11.0
March	SO_2 (ppbv)	0.0	3.1	37.9
	NO_2 (ppbv)	1.0	11.4	53.2
	H_2S (ppbv)	0.0	0.3	7.1
	Wind Speed (m/s)	0.0	1.5	4.5
	Wind Direction (°)	-	187.5	-
	Temperature (°C)	-28.9	-3.9	16.3
April	SO_2 (ppbv)	0.0	2.1	26.5
	NO_2 (ppbv)	0.7	7.2	40.2
	H_2S (ppbv)	0.0	0.8	13.5
	Wind Speed (m/s)	0.0	2.0	6.9
	Wind Direction (°)	-	221.7	-
	Temperature (°C)	-6.3	6.4	20.6
May	SO_2 (ppbv)	0.0	1.7	32.3
	NO_2 (ppbv)	0.7	5.4	29.1
	H_2S (ppbv)	0.0	0.5	24.1
	Wind Speed (m/s)	0.0	1.9	6.5
	Wind Direction (°)	-	207.9	-
	Temperature (°C)	-0.6	11.2	25.2
June	SO_2 (ppbv)	0.0	1.7	23.6
	NO_2 (ppbv)	0.4	4.5	23.6
	H_2S (ppbv)	0.0	0.9	11.2
	Wind Speed (m/s)	0.1	2.0	6.0
	Wind Direction (°)	-	207.0	-
	Temperature (°C)	3.4	14.6	26.7

Month	Parameter	Min	Avg	Max
July	SO_2 (ppbv)	0.0	1.7	23.6
	NO_2 (ppbv)	0.4	4.5	23.6
	H_2S (ppbv)	0.0	0.9	11.2
	Wind Speed (m/s)	0.1	2.0	6.0
	Wind Direction (°)	-	207.0	-
	Temperature (°C)	3.4	14.6	26.7
August	SO_2 (ppbv)	0.0	0.8	18.8
	NO_2 (ppbv)	0.6	5.3	25.1
	H_2S (ppbv)	0.0	1.9	32.1
	Wind Speed (m/s)	0.0	1.7	6.4
	Wind Direction (°)	-	213.2	-
	Temperature (°C)	10.7	21.5	35.5
September	SO_2 (ppbv)	0.0	1.1	34.9
	NO_2 (ppbv)	0.3	7.0	30.8
	H_2S (ppbv)	0.0	1.7	35.8
	Wind Speed (m/s)	0.0	1.3	5.1
	Wind Direction (°)	-	230.7	-
	Temperature (°C)	2.9	14.6	31.7
October	SO_2 (ppbv)	0.2	2.0	30.4
	NO_2 (ppbv)	0.6	9.6	30.6
	H_2S (ppbv)	0.0	1.8	24.8
	Wind Speed (m/s)	0.0	1.4	6.3
	Wind Direction (°)	-	216.8	-
	Temperature (°C)	-4.0	6.0	22.4
November	SO_2 (ppbv)	0.4	2.7	24.0
	NO_2 (ppbv)	0.9	11.7	33.3
	H_2S (ppbv)	0.1	1.1	28.9
	Wind Speed (m/s)	0.2	1.3	3.6
	Wind Direction (°)	-	194.8	-
	Temperature (°C)	-18.8	-4.4	15.5
December	SO_2 (ppbv)	0.9	2.7	28.5
	NO_2 (ppbv)	1.6	18.2	46.0
	H_2S (ppbv)	0.2	1.4	34.6
	Wind Speed (m/s)	0.0	1.1	3.8
	Wind Direction (°)	-	207.5	-
	Temperature (°C)	-23.7	-7.0	6.8

Assessment of Monitoring Results

Table 14 shows an assessment of the monthly results from the AQMS for H_2S, NO_2, and SO_2, as compared to the *Alberta Ambient Air Quality Objectives* (AAAQO). In 2024, there were a total of 124 1-hour H_2S exceedances and 21 24-hour H_2S exceedances of the AAAQO. There were no 1-hour or 24-hour exceedances for NO_2 or SO_2. The majority of the H_2S exceedances occurred in September and October when there was less precipitation to flush the collection system, but the temperatures remained warm. The exceedances tended to occur in the evenings and nights when the temperatures dipped and there was less wind. A similar trend was observed in 2023.

Table 14: Assessment of Results of Ambient Air Monitoring

Month	Parameter	1-hour AAAQO	# of 1-hour Exceedances	24-hour AAAQO	# of 24-hour Exceedances
January	H_2S (ppbv)	10	2	3.0	1
	NO_2 (ppbv)	159	0	N/A	N/A
	SO_2 (ppbv)	172	0	48.0	0
February	H_2S (ppbv)	10	3	3.0	0
	NO_2 (ppbv)	159	0	N/A	N/A
	SO_2 (ppbv)	172	0	48.0	0
March	H_2S (ppbv)	10	0	3.0	0
	NO_2 (ppbv)	159	0	N/A	N/A
	SO_2 (ppbv)	172	0	48.0	0
April	H_2S (ppbv)	10	3	3.0	0
	NO_2 (ppbv)	159	0	N/A	N/A
	SO_2 (ppbv)	172	0	48.0	0
May	H_2S (ppbv)	10	3	3.0	0
	NO_2 (ppbv)	159	0	N/A	N/A
	SO_2 (ppbv)	172	0	48.0	0
June	H_2S (ppbv)	10	1	3.0	0
	NO_2 (ppbv)	159	0	N/A	N/A
	SO_2 (ppbv)	172	0	48.0	0
July	H_2S (ppbv)	10	21	3.0	7
	NO_2 (ppbv)	159	0	N/A	N/A
	SO_2 (ppbv)	172	0	48.0	0
August	H_2S (ppbv)	10	25	3.0	1
	NO_2 (ppbv)	159	0	N/A	N/A
	SO_2 (ppbv)	172	0	48.0	0
September	H_2S (ppbv)	10	26	3.0	3
	NO_2 (ppbv)	159	0	N/A	N/A
	SO_2 (ppbv)	172	0	48.0	0
October	H_2S (ppbv)	10	28	3.0	6
	NO_2 (ppbv)	159	0	N/A	N/A
	SO_2 (ppbv)	172	0	48.0	0
November	H_2S (ppbv)	10	4	3.0	1
	NO_2 (ppbv)	159	0	N/A	N/A
	SO_2 (ppbv)	172	0	48.0	0
December	H_2S (ppbv)	10	8	3.0	2
	NO_2 (ppbv)	159	0	N/A	N/A
	SO_2 (ppbv)	172	0	48.0	0

There were also no exceedances of the 30-day objective for SO_2 (11 ppbv), the annual objective for SO_2 (8.0 ppbv), or for the annual objective for NO_2 (24 ppbv).

Summary of Public Odour Complaints

Table 15 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 15: 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	1	0
February	0	0
March	0	0
April	0	0
May	0	0
June	0	0
July	0	0
August	1	1
September	0	0
October	0	0
November	0	0
December	0	0
Total	**2**	**1**

Appendix F 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.

2024 Summary of Contraventions and Notifications to AEPA

Table 16 summarized the contraventions to Approval to Operate 639-03-07. There were 4 contraventions in 2024.

Table 16: Summary of Contraventions

Date	Summary of Contravention	AEPA Reference Number
Mar 6, 2024 17:52	On March 6 around 16:30, approximately 1 cubic meter of a mixture of grit, water, and sludge was released from a drain hose onto the ground in Hermitage Park. Contractors had launched a foam cleaning pig in the sludge line from GBWWTP to Hermitage Park and the pig got stuck. The contractor attempted to free the pig using pressurized water. The pig appeared to dislodge, causing the material to release through the drain hose into MH-D2. During this activity, the drain hose dislodged from the maintenance hole and released the material to the ground. The release was contained within the fenced area of the work site and a hydrovac truck removed the material. The spill was reported to the AEPA 24-hour hotline and a 7-day letter was submitted.	425665
May 4, 2024 15:02 AEPA Operator Rebekah	AEPA 24 hour hotline was notified regarding biosolid spill from contractor truck that occurred at 10:05 am on 88 Avenue and Highway 15. Notified that emergency crews were on site (police and fire truck), less than 30L spilled, and was cleaned up by hydrovac truck. Confirmed there was no spill into catch basins or waterway and that it was contained on road. Emergency vehicles helped block off lanes for cleanup, while keeping highway open. 7 day letter required.	427606
July 16, 2024	7-day letter submitted to AEPA by Contractor on behalf of EPCOR for a 24-hour H2S exceedance that occurred concurrently with a scrubber outage, so 7-day letter waiver did not apply.	430514
Nov 15, 2024 14:37 AEPA Operator: Shyla	AEPA was notified that the Scrubber 5 and Scrubber 6 stack heights do not meet the minimum required height above grade of 17.89 m, as per Table 4-1. As per the drawings, the stack heights are 17.826 m. Discrepancy was first noted during stack survey submitted in October. 7-day letter was submitted.	435266

Contraventions due to the exceedances of the Air Quality Monitoring Station listed in Table 14 can be referenced in the 2024 Annual Industrial Ambient Air Quality Monitoring Report submitted to AEPA on behalf of EPCOR by a third party consultant.

Table 17 summarizes the notifications to AEPA under Approval to Operate 639-03-07 as per the 2024 Operations Plan. There were 14 notifications in 2024.

Table 17: Summary of Notifications to AEPA

Date	Summary of Notifications	AEPA Reference Number
January 29, 2024 11:45 AEPA Operator: Dave	AEPA 24-hour hotline was notified of planned work on the UV control system from 7am to 2pm on Jan 31, 2024. The work is planned so no interruption to the UV process is anticipated, but this notification is being made as a precaution, as there is always a risk of impact to the UV process.	424440
February 5, 2024 10:30 AEPA Operator: Steven	AEPA was notified via the 24-hour hotline of an up to 6.5 hour outage of EPT Scrubber taking place 02/05/2024 at 10:30 am for maintenance. The scrubber is planned to be back online by 17:00 on 02/05/2024. Additional fence line monitoring for H2S will take place during the outage.	424672
Feb 9, 2024 9:45 AEPA Operator: Raymond	AEPA 24-hour hotline was notified of a planned UV outage starting at 11:00pm on Feb 14 until 11:00am on Feb 15, 2024 to support maintenance on the electrical system. Noted that UV outages are scheduled during low flow to minimize impact on downstream users and the environment.	424824
April 23, 2024 16:00 AEPA Operator Iona	AEPA 24 hour hotline was notified as a courtesy that as part of the project commissioning Gold Bar WWTP new scrubber #5 will start treating foul air starting on April 24, 2024, replacing Scrubber #3 (EPT Scrubber). All conditions of the approval to operate (i.e. daily average ORP and pH) of the new scrubber 5 are intended to be met, and if not, it will be reported to the 24 hour hotline as an approval violation with a 7 day letter report. No odour issues are anticipated.	427219
May 14, 2024 8:10 AEPA Operator: Darren	AEPA was notified via the 24-hour hotline of a planned outage of the screen building 2/3 carbon scrubber taking place 05/14/2024 at 8:30 am for media replacement. The scrubber is planned to be back online by 18:00 on 05/15/2024. Additional fence line monitoring for H2S will take place during the outage. **UPDATE: Work ended up getting cancelled. EPCOR called back at 923am 05/14/2024 to update AEPA to confirm work will be rescheduled. No scrubber outage took place.	427996
June 6, 2024 AEPA Operator: Natasha	AEPA 24-hour hotline was notified of a planned outage of the UV disinfection process 8:00am until 9:30 am on June 12, 2024 to support site wide transformer switching maintenance. Noted that UV outages are scheduled during low flow to minimize impact on downstream users and the environment. If there are elevated flows due to rainy weather this work will be rescheduled. AEPA was also notified of a planned outage of the Fermenter Odour Scrubber to take place from 8am-2pm on June 11, 2024 for planned equipment maintenance. Additional fenceline H2S monitoring will take place during the outage. **UPDATE: On June 12, 2024 at 10:20, AEPA 24-hour hotline was notified of a reschedule of the planned power outage of the UV disinfection process from 8:00am until 9:30 am on June 13, 2024 to support site wide transformer switching maintenance. Noted that UV outages are scheduled during low flow to minimize impact on downstream users and the environment. If there are elevated flows due to rainy weather this work will be rescheduled.	428864

Date	Summary of Notifications	AEPA Reference Number
June 17, 2024 14:50 AEPA Operator: Erin	AEPA was notified of a planned outage of the Fermenter Odour Scrubber to take place from 7am-3pm on June 19, 2024 for planned equipment maintenance. Additional fenceline H2S monitoring will take place during the outage.	429246
July 15, 2024 14:08 AEPA Operator: Erin	AEPA was notified of a planned outage of odour Scrubber 2 (West) and Scrubber 5 to take place from 7:30 AM - 2:00 PM on July 16, 2024 for planned equipment maintenance. Additional fenceline H2S monitoring will take place during the outage.	430424
September 4, 2024 12:27 AEPA Operator: Dave	AEPA was notified of a planned outage of the Screen 4-8 Carbon Scrubber taking place on September 5, 2024 from 07:30 to 16:30 to replace the media. Additional fenceline H2S monitoring will take place during the outage.	432577
October 2, 2024 09:47 AEPA Operator: Christopher	AEPA was notified that a commissioning test will be performed on Scrubbers 5 and 6 from October 3, 2024 19:00 to October 4, 2024 03:30. H2S will be brought on site and injected into the scrubbers at concentrations up to 50 ppm to test the designed capacity. We intend to meet all regulatory requirements and no additional odours are expected. H2S readings will be taken with our handheld meter during the test. Note this test was scheduled overnight to limit potential odour/disruption to the community.	433724
October 17, 2024 12:35 AEPA Operator: Darren	AEPA was notified of a variance from the primary treatment target operating capacity. The primary treatment capacity will be reduced from 1200 MLD to 900 MLD from October 19, 2024 to December 1, 2024, at which time the winter target operating capacities will come into effect. The purpose of the variance is to perform preventative maintenance on EPT clarifiers and to support the primary clarifier odour control improvement capital project.	434290
October 24, 2024 12:30 AEPA Operator: Rebekah	AEPA was notified that the ducting collecting foul air from the primary effluent channels was temporarily disconnected on July 8, 2024 to accommodate project work on the primary effluent channels. Foul air from the primary effluent channels is typically directed to Scrubber 1 (East Scrubber), as per our Operations Plan. The ducting is scheduled to be reconnected in June 2025.	434532
November 21, 2024 15:55 AEPA Operator: Taryn	AEPA was notified with an update to REF434290, a variance from the primary treatment target operating capacity. The primary treatment capacity will be further reduced from 900 MLD to 600 MLD from November 23, 2024 to February 14 2025, at which time it will return to the winter target operating capacity of 900 MLD. The purpose of the variance is to perform preventative maintenance on EPT clarifiers and to support the primary clarifier odour control improvement capital project. This work is done over winter months to minimize risk of wet weather flows.	434290
November 25, 2024 10:48 AEPA Operator: Christopher	AEPA was notified that Scrubber 1 (East Scrubber) will be shut down today (November 25, 2024) as there are currently no sources of foul air feeding this scrubber and the scrubber fan is at risk of freezing due to drawing in ambient air. We will notify AEPA when the scrubber is returned to service, if requested. Note that we will also not be reporting the daily average pH, ORP, H2S in, or H2S out for Scrubber 1 while it is offline. AEPA Operator requested follow-up with EPO to determine if 7-day letter is required. EPO confirmed no 7-day letter required. Additional info: As part of capital project work, Channel 1 (including Grit Tanks 1-3 and Primary Clarifiers 3-4) is offline and empty, and the ducting connecting the Primary Effluent channels is disconnected (previously notified under AEPA Ref #434532). Scrubber 1 will resume operation when Channel 1 and associated equipment goes back into service, which is expected to occur in Spring 2025.	435525

2024 Biosolids Program Summary

In 2024, the biosolids management program was able to remove 28,410 dry tonnes (DT) of biosolids from the Clover Bar Lagoons for beneficial reuse. Biosolids production from Gold Bar and Arrow Utilities (previously Alberta Capital Region Wastewater Commission) was 26,152 DT, which increased the storage inventory by 2,258 DT.

Table 18: Summary of Biosolids Program

Beneficial Application Use Method	Application Weight Removed from Lagoons (dry tonnes)	Application Volume (m^3)
Nutri-Gold (dewatered material)	9,600	41,715
Nutri-Gold (thickened material)	9,467	
Agricultural Land Application (3rd party)	9,343	144,168
Non-Agricultural Land Application	0	0
Total	28,410	332,666

Appendices G, H, and I 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 – Monthly Plant Performance Reports

Gold Bar Wastewater Treatment Plant
Plant Performance Report
January 2024

Digested Sludge: Total Monthly Volume (ML)	73.0

Volume of Flow (ML)

DATE	Peak Flow (ML/d)	Influent	Effluent							
			Non UV Disinfected				UV Disinfected			
		INFs	RAW	OUTFALL 30	OUTFALL 20	MPW	EPEPS	OUTFALL 10		
								FEC	FE
Mon-01	326.7	0.0	249.8	0.0	0.0	11.9	0.0	237.9	237.9
Tue-02	370.1	0.0	260.4	0.0	0.0	11.1	0.0	249.3	249.3
Wed-03	422.1	0.0	263.6	0.0	0.0	11.0	0.0	252.6	252.6
Thu-04	345.8	0.0	262.0	0.0	0.0	11.4	0.0	250.6	250.6
Fri-05	317.8	0.0	262.7	0.0	0.0	11.7	0.0	251.0	251.0
Sat-06	400.2	0.0	260.5	0.0	0.0	11.6	0.0	248.9	248.9
Sun-07	362.0	0.0	265.0	0.0	0.0	11.8	0.0	253.2	253.2
Mon-08	355.3	0.0	271.9	0.0	0.0	11.7	0.0	260.2	260.2
Tue-09	328.3	0.0	263.8	0.0	0.0	12.1	0.0	251.7	251.7
Wed-10	335.1	0.0	265.4	0.0	0.0	12.0	0.0	253.4	253.4
Thu-11	344.7	0.0	263.9	0.0	0.0	11.4	0.0	252.5	252.5
Fri-12	344.9	0.0	265.5	0.0	0.0	11.3	0.0	254.2	254.2
Sat-13	310.8	0.0	266.6	0.0	0.0	11.5	0.0	255.1	255.1
Sun-14	310.7	0.0	268.6	0.0	0.0	11.8	0.0	256.8	256.8
Mon-15	294.0	0.0	272.6	0.0	0.0	11.5	0.0	261.1	261.1
Tue-16	349.1	0.0	268.5	0.0	0.0	11.4	0.0	257.1	257.1
Wed-17	334.7	0.0	268.5	0.0	0.0	11.0	0.0	257.5	257.5
Thu-18	316.6	0.0	269.3	0.0	0.0	11.0	0.0	258.3	258.3
Fri-19	312.8	0.0	272.6	0.0	0.0	11.5	0.0	261.1	261.1
Sat-20	348.4	0.0	273.5	0.0	0.0	11.1	0.0	262.4	262.4
Sun-21	335.0	0.0	283.6	0.0	0.0	10.8	0.0	272.8	272.8
Mon-22	340.4	0.0	275.7	0.0	0.0	11.4	0.0	264.3	264.3
Tue-23	334.8	0.0	270.3	0.0	0.0	12.5	0.0	257.8	257.8
Wed-24	437.0	0.0	276.1	0.0	0.0	10.6	0.0	265.5	265.5
Thu-25	318.0	0.0	271.7	0.0	0.0	11.8	0.0	259.9	259.9
Fri-26	322.4	0.0	275.6	0.0	0.0	9.5	0.0	266.1	266.1
Sat-27	362.2	0.0	275.0	0.0	0.0	10.8	0.0	264.2	264.2
Sun-28	399.0	0.0	284.0	0.0	0.0	11.5	0.0	272.5	272.5
Mon-29	365.8	0.0	288.1	0.0	0.0	11.1	0.0	277.0	277.0
Tue-30	562.6	0.0	347.8	28.1	0.0	11.1	0.0	308.6	308.6
Wed-31	355.6	0.0	359.9	0.0	0.0	8.6	0.0	351.3	351.3
Average	352.0	0.0	272.0	0.9	0.0	11.3	0.0	259.8	259.8
Minimum	294.0	0.0	249.8	0.0	0.0	8.6	0.0	237.9	237.9
Maximum	562.6	0.0	347.8	28.1	0.0	12.5	0.0	308.6	308.6
Geolmean	---	---	---	---	---	---	---	---	---
TOTAL	---	0	8,432	28	0	352	0	8,055	8,055

Liquid Stream Quality

pH@25°C

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

TSS (mg/L)

DATE	RAW	OUTFALL 30	OUTFALL 20	EPEPS	OUTFALL 10 FEC	OUTFALL 10 FE
Mon-01	324				3.9	3.9
Tue-02	331				4.1	4.1
Wed-03	284				3.4	3.4
Thu-04	296				3.1	3.1
Fri-05	312				3.3	3.3
Sat-06	284				2.6	2.6
Sun-07	320				3.2	3.2
Mon-08	334				3.7	3.7
Tue-09	348				2.9	2.9
Wed-10	312				2.7	2.7
Thu-11	324				4.2	4.2
Fri-12	304				3.9	3.9
Sat-13	260				3.8	3.8
Sun-14	304				5.5	5.5
Mon-15	332				3.3	3.3
Tue-16	336				3.4	3.4
Wed-17	324				3.8	3.8
Thu-18	296				3.5	3.5
Fri-19	364				3.1	3.1
Sat-20	352				3.5	3.5
Sun-21	366				3.0	3.0
Mon-22	356				3.7	3.7
Tue-23	317				2.9	2.9
Wed-24	384				3.1	3.1
Thu-25	372				3.8	3.8
Fri-26	297				3.6	3.6
Sat-27	331				3.1	3.1
Sun-28	300				3.7	3.7
Mon-29	300				3.3	3.3
Tue-30	520	192	---	---	2.6	2.6
Wed-31	344				4.3	4.3
Average	330	192	---	---	3.5	3.5
Minimum	260	192	---	---	2.6	2.6
Maximum	520	192	---	---	5.5	5.5
Geolmean	---	---	---	---	---	---
TOTAL	---	---	---	---	---	---

BOD_5/$cBOD_5$ (mg/L)

DATE	RAW	OUTFALL 30 BOD_5	OUTFALL 20 BOD_5	EPEPS BOD_5	OUTFALL 10 FEC $cBOD_5$	OUTFALL 10 FE $cBOD_5$
Mon-01	315				2	2
Tue-02	359				3	3
Wed-03	340				3	3
Thu-04	332				3	3
Fri-05	319				2	2
Sat-06	328				3	3
Sun-07	322				3	3
Mon-08	296				2	2
Tue-09	359				3	3
Wed-10	288				3	3
Thu-11	309				3	3
Fri-12	346				3	3
Sat-13	371				4	4
Sun-14	299				3	3
Mon-15	356				3	3
Tue-16	316				2	2
Wed-17	342				3	3
Thu-18	250				3	3
Fri-19	335				< 2	< 2
Sat-20	285				3	3
Sun-21	295				3	3
Mon-22	349				3	3
Tue-23	292				< 2	2
Wed-24	344				3	3
Thu-25	349				3	3
Fri-26	316				2	2
Sat-27	329				3	3
Sun-28	310				2	2
Mon-29	266				2	2
Tue-30	263	179	---	---	3	3
Wed-31	305				2	2
Average	321	179	---	---	2.7	2.7
Minimum	250	179	---	---	< 2	< 2
Maximum	371	179	---	---	4	4
Geolmean	---	---	---	---	---	---
TOTAL	---	---	---	---	---	---

TP (mg/L)

DATE	RAW	OUTFALL 30	OUTFALL 20	EPEPS	OUTFALL 10 FEC	OUTFALL 10 FE
Mon-01	8.20				0.27	0.27
Tue-02	8.13				0.28	0.28
Wed-03	7.96				0.26	0.26
Thu-04	7.81				0.28	0.28
Fri-05	8.04				0.24	0.24
Sat-06	7.54				0.27	0.27
Sun-07	8.12				0.24	0.24
Mon-08	8.42				0.32	0.32
Tue-09	7.95				0.26	0.26
Wed-10	8.66				0.25	0.25
Thu-11	8.56				0.28	0.28
Fri-12	8.58				0.30	0.30
Sat-13	8.42				0.33	0.33
Sun-14	8.06				0.31	0.31
Mon-15	8.15				0.32	0.32
Tue-16	8.27				0.26	0.26
Wed-17	9.17				0.26	0.26
Thu-18	9.16				0.30	0.30
Fri-19	8.38				0.33	0.33
Sat-20	8.88				0.30	0.30
Sun-21	7.71				0.23	0.23
Mon-22	7.59				0.23	0.23
Tue-23	8.35				0.24	0.24
Wed-24	8.51				0.26	0.26
Thu-25	8.26				0.32	0.32
Fri-26	8.24				0.29	0.29
Sat-27	9.42				0.34	0.34
Sun-28	8.10				0.31	0.31
Mon-29	8.17				0.30	0.30
Tue-30	7.95	6.48	---	---	0.27	0.27
Wed-31	8.75				0.23	0.23
Average	8.34	6.48	---	---	0.28	0.28
Minimum	7.54	6.48	---	---	0.23	0.23
Maximum	9.42	6.48	---	---	0.34	0.34
Geolmean	---	---	---	---	---	---
TOTAL	---	---	---	---	---	---

NH_3-N (mg/L)

DATE	RAW	OUTFALL 30	OUTFALL 20	EPEPS	OUTFALL 10 FEC	OUTFALL 10 FE
Mon-01	43.1				4.32	4.32
Tue-02	41.8				2.29	2.29
Wed-03	41.8				1.22	1.22
Thu-04	39.2				1.28	1.28
Fri-05	41.0				1.46	1.46
Sat-06	35.9				1.75	1.75
Sun-07	40.4				2.70	2.70
Mon-08	39.7				2.72	2.72
Tue-09	40.3				3.62	3.62
Wed-10	41.6				4.80	4.80
Thu-11	38.7				6.38	6.38
Fri-12	41.2				5.85	5.85
Sat-13	39.5				5.28	5.28
Sun-14	40.8				6.69	6.69
Mon-15	40.1				5.69	5.69
Tue-16	40.3				2.64	2.64
Wed-17	39.4				2.40	2.40
Thu-18	41.3				3.85	3.85
Fri-19	39.1				4.47	4.47
Sat-20	40.8				2.98	2.98
Sun-21	38.0				2.83	2.83
Mon-22	31.8				2.39	2.39
Tue-23	41.2				2.99	2.99
Wed-24	40.4				4.46	4.46
Thu-25	40.7				4.04	4.04
Fri-26	40.7				3.98	3.98
Sat-27	41.5				3.35	3.35
Sun-28	40.6				3.82	3.82
Mon-29	39.1				3.30	3.30
Tue-30	32.1	32.1	---	---	2.40	2.40
Wed-31	41.5				3.14	3.14
Average	39.8	32.1	---	---	3.52	3.52
Minimum	31.8	32.1	---	---	1.22	1.22
Maximum	43.1	32.1	---	---	6.69	6.69
Geolmean	---	---	---	---	---	---
TOTAL	---	---	---	---	---	---

un-Ionized NH3-N (mg/L)

DATE	OUTFALL 30	OUTFALL 20	OUTFALL 10
Mon-01			
Tue-02			
Wed-03			
Thu-04			
Fri-05			
Sat-06			
Sun-07			
Mon-08			
Tue-09			
Wed-10			
Thu-11			
Fri-12			
Sat-13			
Sun-14			
Mon-15			
Tue-16			
Wed-17			
Thu-18			
Fri-19			
Sat-20			
Sun-21			
Mon-22			
Tue-23			
Wed-24			
Thu-25			
Fri-26			
Sat-27			
Sun-28			
Mon-29			
Tue-30	---	---	---
Wed-31			
Average	---	---	---
Minimum	---	---	---
Maximum	---	---	---
Geolmean	---	---	---
TOTAL	---	---	---

TKN (mg/L)

DATE	RAW	OUTFALL 30	OUTFALL 20	OUTFALL 10 FEC
Mon-01	53.5			5.1
Tue-02	51.0			3.0
Wed-03	51.9			2.3
Thu-04	53.9			2.6
Fri-05	55.0			2.6
Sat-06	50.6			2.9
Sun-07	56.8			3.8
Mon-08	51.0			4.5
Tue-09	53.4			5.0
Wed-10	53.1			5.9
Thu-11	53.1			6.7
Fri-12	56.3			6.5
Sat-13	53.9			6.4
Sun-14	53.9			6.4
Mon-15	52.0			5.8
Tue-16	54.6			3.7
Wed-17	59.8			3.8
Thu-18	60.0			5.1
Fri-19	59.0			5.6
Sat-20	56.2			4.4
Sun-21	57.6			4.0
Mon-22	53.6			3.7
Tue-23	53.0			4.0
Wed-24	53.8			5.3
Thu-25	57.1			5.5
Fri-26	56.9			5.0
Sat-27	59.5			4.6
Sun-28	55.4			4.9
Mon-29	54.7			3.3
Tue-30	49.7	43.7	---	2.3
Wed-31	56.0			4.3
Average	54.7	43.7	---	4.6
Minimum	49.7	43.7	---	2.3
Maximum	60.0	43.7	---	6.7
Geolmean	---	---	---	---
TOTAL	---	---	---	---

TKN (mg/L)

DATE	OUTFALL 30	OUTFALL 20	OUTFALL 10
Mon-01			
Tue-02			
Wed-03			
Thu-04			
Fri-05			
Sat-06			
Sun-07			
Mon-08			
Tue-09			
Wed-10			
Thu-11			
Fri-12			
Sat-13			
Sun-14			
Mon-15			
Tue-16			
Wed-17			
Thu-18			
Fri-19			
Sat-20			
Sun-21			
Mon-22			
Tue-23			
Wed-24			
Thu-25			
Fri-26			
Sat-27			
Sun-28			
Mon-29			
Tue-30	0.05	---	---
Wed-31			
Average	0.05	---	---
Minimum	0.05	---	---
Maximum	0.05	---	---
Geolmean	---	---	---
TOTAL	---	---	---

NO_3+NO_2 (mg/L)

DATE	RAW	OUTFALL 30	OUTFALL 20	OUTFALL 10 FEC
Mon-01				11.5
Tue-02				10.2
Wed-03	< 0.01			7.6
Thu-04				7.6
Fri-05				7.7
Sat-06				7.5
Sun-07				7.3
Mon-08				7.0
Tue-09				8.6
Wed-10	< 0.01			9.3
Thu-11				8.7
Fri-12				7.4
Sat-13				6.3
Sun-14				6.1
Mon-15				6.9
Tue-16				8.0
Wed-17	< 0.01			7.7
Thu-18				6.8
Fri-19				7.0
Sat-20				8.2
Sun-21				7.2
Mon-22				8.7
Tue-23				8.3
Wed-24	< 0.01			7.5
Thu-25				8.7
Fri-26				9.4
Sat-27				9.4
Sun-28				9.3
Mon-29				8.4
Tue-30	0.04	0.05	---	8.5
Wed-31	< 0.01			7.2
Average	0.04	0.05	---	8.0
Minimum	< 0.01	0.05	---	6.1
Maximum	< 0.01	0.05	---	11.5
Geolmean	---	---	---	---
TOTAL	---	---	---	---

Chloride (mg/L)

DATE	RAW	OUTFALL 30	OUTFALL 20	OUTFALL 10 FEC
Mon-01	73.9			80.9
Tue-02	79.8			81.3
Wed-03	86.8			93.6
Thu-04	86.2			94.4
Fri-05	87.3			97.6
Sat-06	84.6			98.4
Sun-07	87.3			87.3
Mon-08	89.1			9.1
Tue-09	95.2			107.0
Wed-10	91.5			103.0
Thu-11	83.2			98.4
Fri-12	77.5			91.8
Sat-13	72.3			84.0
Sun-14	72.8			76.9
Mon-15	77.8			74.1
Tue-16	77.6			81.2
Wed-17	86.8			90.1
Thu-18	94.8			93.4
Fri-19	91.1			98.9
Sat-20	87.5			96.4
Sun-21	95.4			90.3
Mon-22	112			97.0
Tue-23	143			117
Wed-24	151			140
Thu-25	145			161
Fri-26	148			147
Sat-27	132			149
Sun-28	188			154
Mon-29	198			194
Tue-30	335	447	---	298
Wed-31	337			322
Average	112	447	---	119
Minimum	72.3	447	---	74.1
Maximum	335	447	---	322
Geolmean	---	---	---	---
TOTAL	---	---	---	---

E. coli (Counts/100 mL)

DATE	RAW	OUTFALL 30	OUTFALL 20	OUTFALL 10 FEC
Mon-01				14
Tue-02				14
Wed-03				23
Thu-04				14
Fri-05				12
Sat-06				8
Sun-07				11
Mon-08				9
Tue-09				15
Wed-10				14
Thu-11				10
Fri-12				7
Sat-13				13
Sun-14				9
Mon-15				13
Tue-16				8
Wed-17				8
Thu-18				6
Fri-19				3
Sat-20				7
Sun-21				4
Mon-22	2.0			4
Tue-23				130
Wed-24				6
Thu-25	2.3			12
Fri-26				8
Sat-27				9
Sun-28				11
Mon-29				20
Tue-30		1.9	---	35
Wed-31				28
Average			---	
Minimum			---	
Maximum			---	130
Geolmean	2.1	1.9	---	11
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%	6	6	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

Trina Manning MSc., PEng.
Senior Manager, WWTP Operations

Jeff Charrois PhD
Senior Manager, Analytical Operations

Appendix A – Monthly Plant Performance Reports

Gold Bar Wastewater Treatment Plant
Plant Performance Report
February 2024

Digested Sludge: Total Monthly Volume (ML)	68.6

Volume of Flow (ML) / 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
Thu-01	305.6	0.0	271.6	0.0	0.0	10.3	0.0	261.3	261.3	7.4			7.4
Fri-02	363.1	0.0	264.2	0.0	0.0	11.3	0.0	252.9	252.9	7.4			7.5
Sat-03	368.4	0.0	271.0	0.0	0.0	10.7	0.0	260.3	260.3	7.4			7.5
Sun-04	378.9	0.0	274.3	0.0	0.0	11.6	0.0	262.7	262.7	7.5			7.5
Mon-05	371.0	0.0	274.3	0.0	0.0	11.0	0.0	263.3	263.3	7.4			7.6
Tue-06	383.8	0.0	269.4	0.0	0.0	10.5	0.0	258.9	258.9	7.4			7.5
Wed-07	381.3	0.0	272.1	0.0	0.0	10.5	0.0	261.6	261.6	7.5			7.6
Thu-08	332.9	0.0	266.6	0.0	0.0	10.6	0.0	256.0	256.0	7.4			7.5
Fri-09	333.6	0.0	266.2	0.0	0.0	10.6	0.0	255.6	255.6	7.3			7.5
Sat-10	578.7	0.0	272.9	0.0	0.0	10.5	0.0	262.4	262.4	7.4			7.5
Sun-11	484.6	0.0	272.4	5.4	0.0	10.5	0.0	256.5	256.5	7.5	7.7		7.5
Mon-12	353.3	0.0	273.6	0.1	0.0	11.0	0.0	262.5	262.5	7.5			7.4
Tue-13	334.0	0.0	270.4	0.0	0.0	11.6	0.0	258.8	258.8	7.4			7.5
Wed-14	330.9	0.0	274.4	0.0	0.0	11.0	0.0	263.4	263.4	7.4			7.5
Thu-15	335.2	0.0	271.9	0.0	0.0	11.7	0.0	260.2	260.2	7.4			7.6
Fri-16	322.4	0.0	275.5	0.0	0.0	11.0	0.0	264.5	264.5	7.5			7.6
Sat-17	356.8	0.0	276.5	0.0	0.0	11.1	0.0	265.4	265.4	7.5			7.6
Sun-18	348.9	0.0	270.9	0.0	0.0	11.1	0.0	259.8	259.8	7.5			7.6
Mon-19	384.9	0.0	272.9	0.0	0.0	10.9	0.0	262.0	262.0	7.5			7.5
Tue-20	335.2	0.0	275.9	0.0	0.0	12.0	0.0	263.9	263.9	7.4			7.5
Wed-21	432.1	0.0	277.9	0.0	0.0	10.9	0.0	267.0	267.0	7.4			7.3
Thu-22	410.8	0.0	282.9	0.0	0.0	10.9	0.0	272.0	272.0	7.4			7.6
Fri-23	417.3	0.0	290.6	0.0	0.0	11.4	0.0	279.2	279.2	7.4			7.4
Sat-24	340.9	0.0	272.5	0.0	0.0	12.5	0.0	260.0	260.0	7.5			7.5
Sun-25	362.8	0.0	272.9	0.0	0.0	12.3	0.0	260.6	260.6	7.6			7.6
Mon-26	323.9	0.0	271.8	0.0	0.0	10.6	0.0	261.2	261.2	7.5			7.5
Tue-27	330.8	0.0	270.5	0.0	0.0	7.5	0.0	263.0	263.0	7.4			7.5
Wed-28	311.8	0.0	272.9	0.0	0.0	8.8	0.0	264.1	264.1	7.4			7.5
Thu-29	328.9	0.0	273.3	0.0	0.0	7.0	0.0	266.3	266.3	7.5			7.6
Average	369.2	0.0	273.2	0.2	0.0	10.7	0.0	262.3	262.3	7.4	7.7	---	7.5
Minimum	311.8	0.0	264.2	0.0	0.0	7.0	0.0	252.9	252.9	7.3	7.7	---	7.3
Maximum	578.7	0.0	290.6	5.4	0.0	12.5	0.0	279.2	279.2	7.6	7.7	---	7.6
GeoMean	---	---	---	---	---	---	---	---	---	---	---	---	---
TOTAL	---	0	7,922	6	0	311	0	7,605	7,605	---	---	---	---

Liquid Stream Quality: TSS (mg/L) / BOD_5/$cBOD_5$ (mg/L) / TP (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 $cBOD_5$	TP RAW	TP OUTFALL 30	TP OUTFALL 20	TP EPEPS	TP OUTFALL 10 FEC	TP OUTFALL 10 FE
Thu-01	360				4.6	4.6	347				3	3	8.59				0.27	0.27
Fri-02	348				3.5	3.5	380				3	3	8.72				0.27	0.27
Sat-03	320				3.2	3.2	331				3	3	10.4				0.37	0.37
Sun-04	296				3.6	3.6	323				3	3	9.37				0.40	0.40
Mon-05	294				3.3	3.3	329				3	3	9.31				0.38	0.38
Tue-06	313				3.3	3.3	330				2	2	9.54				0.98	0.98
Wed-07	376				4.4	4.4	331				3	3	8.78				0.74	0.74
Thu-08	330				2.7	2.7	372				3	3	7.82				0.28	0.28
Fri-09	364				3.4	3.4	366				2	2	8.27				0.31	0.31
Sat-10	344				3.9	3.9	304				2	2	8.24				0.30	0.30
Sun-11	272	92			3.2	3.2	325	267			2	2	7.77	7.52			0.26	0.26
Mon-12	327				2.8	2.8	332				2	2	8.18				0.25	0.25
Tue-13	292				2.4	2.4	310				< 2	< 2	8.11				0.27	0.27
Wed-14	480				2.5	2.5	284				2	2	8.21				0.23	0.23
Thu-15	312				2.2	2.2	323				3	3	7.88				0.21	0.21
Fri-16	292				2.5	2.5	331				2	2	8.04				0.24	0.24
Sat-17	264				3.2	3.2	336				3	3	7.64				0.26	0.26
Sun-18	292				4.0	4.0	324				3	3	7.67				0.26	0.26
Mon-19	377				4.2	4.2	317				3	3	7.41				0.27	0.27
Tue-20	348				4.0	4.0	317				3	3	7.58				0.31	0.31
Wed-21	306				3.4	3.4	345				3	3	7.80				0.29	0.29
Thu-22	336				3.3	3.3	320				3	3	8.24				0.31	0.31
Fri-23	376				3.2	3.2	350				3	3	7.49				0.27	0.27
Sat-24	406				3.8	3.8	360				3	3	8.22				0.22	0.22
Sun-25	110				2.9	2.9	340				3	3	6.33				0.18	0.18
Mon-26	348				4.9	4.9	365				3	3	8.12				0.25	0.25
Tue-27	353				3.8	3.8	421				3	3	8.78				0.23	0.23
Wed-28	420				4.2	4.2	377				3	3	8.88				0.23	0.23
Thu-29	476				4.3	4.3	342				3	3	9.52				0.30	0.30
Average	336	92	---	---	3.5	3.5	339	267	---	---	2.7	2.7	8.31	7.52	---	---	0.32	0.32
Minimum	110	92	---	---	2.2	2.2	284	267	---	---	< 2	< 2	6.33	7.52	---	---	0.18	0.18
Maximum	480	92	---	---	4.9	4.9	421	267	---	---	3	3	10.4	7.52	---	---	0.98	0.98
GeoMean	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
TOTAL	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Liquid Stream Quality: NH3-N (mg/L) / un-ionized NH3-N (mg/L) / TKN (mg/L)

DATE	NH3-N RAW	NH3-N OUTFALL 30	NH3-N OUTFALL 20	NH3-N EPEPS	NH3-N OUTFALL 10 FEC	NH3-N OUTFALL 10 FE	un-ionized OUT-FAL 30	un-ionized OUT-FAL 20	un-ionized OUT-FAL 10	TKN RAW	TKN OUTFALL 30	TKN OUTFALL 20	TKN OUTFALL 10 FEC
Thu-01	41.8				4.40	4.40				54.4			5.5
Fri-02	43.3				3.75	3.75				57.1			4.4
Sat-03	41.9				4.93	4.93				59.1			5.9
Sun-04	41.1				5.32	5.32				54.3			6.2
Mon-05	40.8				4.94	4.94				51.8			6.0
Tue-06	41.7				5.03	5.03				53.1			6.1
Wed-07	39.3				5.01	5.01				52.1			5.8
Thu-08	39.4				3.37	3.37				51.0			4.4
Fri-09	38.0				2.84	2.84				53.9			4.2
Sat-10	39.8				2.97	2.97				53.6			4.2
Sun-11	39.8	39.9			2.95	2.95				51.4	48.7		4.3
Mon-12	38.6				2.08	2.08				52.0			3.2
Tue-13	38.1				2.10	2.10				52.9			3.4
Wed-14	38.5				2.33	2.33				50.5			3.5
Thu-15	39.4				2.50	2.50				51.1			3.5
Fri-16	38.4				3.01	3.01				49.2			4.2
Sat-17	39.8				5.00	5.00				46.3			5.6
Sun-18	38.1				4.63	4.63				47.9			5.7
Mon-19	38.7				3.02	3.02				47.4			3.7
Tue-20	37.9				2.81	2.81				54.3			3.9
Wed-21	37.7				4.00	4.00				46.2			5.1
Thu-22	38.6				5.07	5.07				49.8			6.1
Fri-23	34.4				5.39	5.39				55.2			6.5
Sat-24	40.1				4.16	4.16				58.7			5.1
Sun-25	40.4				4.30	4.30				50.2			5.6
Mon-26	39.2				4.47	4.47				57.2			5.6
Tue-27	39.5				4.58	4.58				57.8			5.4
Wed-28	37.6				4.82	4.82				55.1			5.7
Thu-29	36.1				4.50	4.50				52.8			5.5
Average	39.2	39.9	---	---	3.94	3.94	---	---	---	52.6	48.7	---	5.0
Minimum	34.4	39.9	---	---	2.08	2.08	---	---	---	46.2	48.7	---	3.2
Maximum	43.3	39.9	---	---	5.39	5.39	---	---	---	59.1	48.7	---	6.5
GeoMean	---	---	---	---	---	---	---	---	---	---	---	---	---
TOTAL	---	---	---	---	---	---	---	---	---	---	---	---	---

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

DATE	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
Thu-01				8.5	135			174				19
Fri-02				8.8	104			134				12
Sat-03				7.8	87.5			120				17
Sun-04				8.0	87.0			98.8				8
Mon-05				8.6	123			96.7				17
Tue-06				10.0	129			126				18
Wed-07	< 0.01			8.5	126			137				24
Thu-08				6.4	138			143				5
Fri-09				5.6	129			138				8
Sat-10				6.1	108			131				8
Sun-11		0.02		7.2	132	161		112		3.3		8
Mon-12				7.7	119			131		3.1		5
Tue-13				6.1	108			126				7
Wed-14	< 0.01			6.1	108			121				5
Thu-15				5.7	103			114				5
Fri-16				5.7	102			112				8
Sat-17				5.6	106			110				9
Sun-18				6.5	98.4			107				8
Mon-19				7.0	97.0			100				11
Tue-20				7.6	98.0			96.0	1.9			7
Wed-21	< 0.01			8.4	113			102				8
Thu-22				7.2	132			118	1.8			11
Fri-23				7.1	135			138				19
Sat-24				8.1	93.3			142				12
Sun-25				7.7	94.6			102				10
Mon-26				9.6	95.3			106				15
Tue-27				9.3	101			106				8
Wed-28	< 0.01			8.3	94.1			106				12
Thu-29				8.7	90.3			103				5
Average	< 0.01	0.02	---	7.51	110	161	---	119			---	
Minimum	< 0.01	0.02	---	5.59	87.0	161	---	96.0	1.8	3.1	---	5
Maximum	< 0.01	0.02	---	10.0	138	161	---	174	1.9	3.3	---	24
GeoMean	---	---	---	---	---	---	---	---	1.8	3.2	---	9.6
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
8	8	100%	14	14	100%

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

Report Comments

AEP Ref #

Allan Gordon for
Trina Manning M.Sc.; P.Eng.
Senior Manager, WWTP Operations

Jeff Charrois PhD
Senior Manager, Analytical Operations

Appendix A – Monthly Plant Performance Reports

Gold Bar Wastewater Treatment Plant
Plant Performance Report
March 2024

Digested Sludge: Total Monthly Volume (ML)	76.9

Volume of Flow (ML)

DATE	Peak Flow (ML/d)	Influent	Effluent						
			Non UV Disinfected				UV Disinfected		
							OUTFALL 10		
		INFs	OUTFALL 30	OUTFALL 20	MPW	EPBPS	FEC	FE
Fri-01	332.4	0.0	275.2	0.0	0.0	7.5	0.0	267.7	267.7
Sat-02	339.1	0.0	272.9	0.0	0.0	7.3	0.0	265.6	265.6
Sun-03	362.6	0.0	274.1	0.0	0.0	7.6	0.0	266.5	266.5
Mon-04	349.5	0.0	280.0	0.0	0.0	7.9	0.0	272.1	272.1
Tue-05	309.3	0.0	272.1	0.0	0.0	8.1	0.0	264.0	264.0
Wed-06	314.1	0.0	273.7	0.0	0.0	7.6	0.0	266.1	266.1
Thu-07	318.0	0.0	274.6	0.0	0.0	7.6	0.0	267.0	267.0
Fri-08	330.7	0.0	280.8	0.0	0.0	6.8	0.0	274.0	274.0
Sat-09	366.8	0.0	281.5	0.0	0.0	7.1	0.0	274.4	274.4
Sun-10	566.9	0.0	311.8	40.8	0.0	7.8	0.0	263.2	263.2
Mon-11	585.4	0.0	350.1	51.5	0.0	8.2	0.0	290.4	290.4
Tue-12	542.8	0.0	337.1	41.6	0.0	7.9	0.0	287.6	287.6
Wed-13	450.2	0.0	305.2	12.0	0.0	6.8	0.0	286.4	286.4
Thu-14	566.7	0.0	328.8	36.9	0.0	6.9	0.0	285.0	285.0
Fri-15	561.9	0.0	351.9	52.5	0.0	7.6	0.0	291.8	291.8
Sat-16	456.2	0.0	312.8	25.4	0.0	7.7	0.0	279.7	279.7
Sun-17	469.7	0.0	303.4	17.9	0.0	7.7	0.0	277.8	277.8
Mon-18	385.3	0.0	302.6	1.6	0.0	7.9	0.0	293.1	293.1
Tue-19	350.2	0.0	283.5	0.0	0.0	9.1	0.0	274.4	274.4
Wed-20	329.2	0.0	286.1	0.0	0.0	10.6	0.0	275.5	275.5
Thu-21	345.4	0.0	284.9	0.0	0.0	10.7	0.0	274.2	274.2
Fri-22	348.5	0.0	274.4	0.0	0.0	10.6	0.0	263.8	263.8
Sat-23	357.6	0.0	279.0	0.0	0.0	10.5	0.0	268.5	268.5
Sun-24	397.2	0.0	279.5	0.0	0.0	11.0	0.0	268.5	268.5
Mon-25	340.1	0.0	278.3	0.0	0.0	11.6	0.0	266.7	266.7
Tue-26	336.1	0.0	275.8	0.0	0.0	11.5	0.0	264.3	264.3
Wed-27	407.5	0.0	280.1	0.0	0.0	12.2	0.0	267.9	267.9
Thu-28	346.2	0.0	282.2	0.0	0.0	11.7	0.0	270.5	270.5
Fri-29	384.9	0.0	275.5	0.0	0.0	12.0	0.0	263.5	263.5
Sat-30	369.0	0.0	275.5	0.0	0.0	12.0	0.0	263.5	263.5
Sun-31	356.3	0.0	272.8	0.0	0.0	11.5	0.0	261.3	261.3
Average	397.0	0.0	290.8	9.0	0.0	9.1	0.0	272.7	272.7
Minimum	309.3	0.0	272.1	0.0	0.0	6.8	0.0	261.3	261.3
Maximum	585.4	0.0	351.9	52.5	0.0	12.2	0.0	293.1	293.1
Geomean	---	---	---	---	---	---	---	---	---
TOTAL	---	0	9,016	280	0	281	0	8,455	8,455

Liquid Stream Quality

DATE	pH@25°C				TSS (mg/L)						BOD$_5$/cBOD$_5$ (mg/L)							TP (mg/L)					NH3-N (mg/L)					un-Ionized NH3-N (mg/L)			TKN (mg/L)				NO$_3$+NO$_2$ (mg/L)				Chloride (mg/L)				E. coli (Counts/100 mL)			
	RAW	OUTFALL 30	OUTFALL 20	OUTFALL 10	RAW	OUTFALL 30	OUTFALL 20	EPBPS	OUTFALL 10		RAW	OUTFALL 30	OUTFALL 20	EPBPS	OUTFALL 10			RAW	OUTFALL 30	OUTFALL 20	EPBPS	OUTFALL 10			RAW	OUTFALL 30	OUTFALL 20	EPBPS	OUTFALL 10				RAW	OUTFALL 30	OUTFALL 20	OUTFALL 10					RAW	OUTFALL 30	OUTFALL 20	OUTFALL 10	
									FEC	FE					FEC	FE						FEC	FE						FEC	FE																
				FEC							BOD$_5$	BOD$_5$	BOD$_5$	BOD$_5$	cBOD$_5$	cBOD$_5$																													X10^6	X10^6	X10^6	FEC
Fri-01	7.4			7.5	376				4.2	4.2	337				3	3		9.53				0.30	0.30	38.7				4.99	4.99				54.2			5.7				9.44	99.2			104				10
Sat-02	7.5			7.5	404				4.3	4.3	386				3	3		8.44				0.31	0.31	39.1				5.56	5.56				50.8			6.1				9.5	88			107				4
Sun-03	7.5			7.6	408				3.9	3.9	347				3	3		7.68				0.24	0.24	39.5				6.12	6.12				49.7			6.8				9.2	84			98				5
Mon-04	7.5			7.5	424				4.7	4.7	207				3	3		8.41				0.32	0.32	39.2				5.59	5.59				47.4			6.6				9.1	106			98				12
Tue-05	7.5			7.5	360				4.8	4.8	317				2	2		8.12				0.42	0.42	39.4				5.27	5.27				47.4			6.1				9.8	114			107				10
Wed-06	7.5			7.5	426				8.1	8.1	307				4	4		9.07				0.47	0.47	40.7				6.39	6.39				51.8			7.4	<	0.01		9.9	108			110				14
Thu-07	7.4			7.5	396				7.5	7.5	360				4	4		8.55				0.51	0.51	37.5				5.60	5.60				52.5			7.3				8.8	120			106				14
Fri-08	7.4			7.5	400				5.4	5.4	446				3	3		9.13				0.39	0.39	37.6				4.66	4.66				56.8			6.4				8.2	178			116				11
Sat-09	7.5			7.5	392				8.0	8.0	387				4	4		8.97				0.59	0.59	37.3				5.60	5.60				55.7			7.3				7.8	180			169				8
Sun-10	7.5	7.4		7.5	516	148			4.3	4.3	342	173			3	3		7.94	5.53			0.39	0.39	29.9	33.2			4.58	4.58				47.9	42.2		6.2		0.08		7.1	305	456		190		2.3		10
Mon-11	7.4	7.3		7.4	432	102			3.3	3.3	276	127			3	3		7.33	5.19			0.30	0.30	28.2	32.5			2.84	2.84				43.9	39.9		4.1		0.20		7.2	213	289		267		1.6		11
Tue-12	7.5	7.5		7.3	444	114			2.7	2.7	317	164			2	2		8.01	6.41			0.28	0.28	29.6	33.2			3.56	3.56				50.6	42.5		4.7		0.17		6.8	177	210		214		1.9		9
Wed-13	7.5	7.6		7.4	400	138			4.8	4.8	292	168			<	2	2	8.35	7.72			0.33	0.33	31.5	40.6			4.09	4.09				49.8	46.7		5.5	<	0.01		7.0	133	174		160		1.5		18
Thu-14	7.5	7.5		7.3	320	97			1.9	1.9	324	144			2	2		7.80	4.96			0.21	0.21	28.6	34.8			4.92	4.92				45.6	31.0		6.4		0.41		8.7	129	170		135		1.8		13
Fri-15	7.5	7.6		7.4	356	93			3.5	3.5	321	145			3	3		8.10	6.59			0.25	0.25	27.1	31.2			3.49	3.49				46.1	38.8		5.3		0.02		6.8	135	148		136		1.6		11
Sat-16	7.4	7.5		7.4	160	128			2.7	2.7	211	160			3	3		8.83	7.65			0.26	0.26	32.0	38.3			4.17	4.17				51.6	48.5		5.4		0.01		7.4	108	120		136		1.4		12
Sun-17	7.4	7.5		7.4	356	83			3.6	3.6	321	183			3	3		7.62	8.07			0.26	0.26	32.7	39.2			4.98	4.98				51.6	48.0		6.0	<	0.01		8.9	93	104		113		1.5		10
Mon-18	7.5	7.7		7.4	388	108			3.7	3.7	316	152			3	3		8.44	6.82			0.26	0.26	33.0	33.5			5.42	5.42				51.6	43.6		6.6		0.02		7.3	105	104		110		0.9		4
Tue-19	7.4			7.5	436				6.1	6.1	335				3	3		7.98				0.39	0.39	31.6				7.29	7.29				48.4			8.8				6.6	98			114	2.4			7
Wed-20	7.4			7.5	368				5.1	5.1	316				3	3		8.34				0.37	0.37	35.3				9.32	9.32				51.6			10.6	<	0.01		6.5	135			112				19
Thu-21	7.4			7.6	384				4.3	4.3	374				3	3		8.04				0.42	0.42	33.1				7.42	7.42				45.8			8.6				5.6	171			144	2.2			8
Fri-22	7.4			7.5	354				5.9	5.9	366				4	4		8.41				0.42	0.42	34.4				6.28	6.28				54.7			8.1				5.2	121			171				32
Sat-23	7.4			7.4	368				7.9	7.9	353				4	4		8.50				0.74	0.74	34.5				5.01	5.01				48.3			7.2				5.9	124			139				18
Sun-24	7.5			7.5	408				6.7	6.7	319				3	3		8.23				0.50	0.50	34.4				4.68	4.68				55.2			6.7				5.4	112			128				23
Mon-25	7.5			7.5	440				5.0	5.0	360				3	3		9.31				0.32	0.32	41.3				5.12	5.12				59.2			5.9				6.8	109			117				16
Tue-26	7.5			7.5	428				4.5	4.5	346				3	3		8.82				0.33	0.33	41.1				4.04	4.04				54.8			5.6				7.2	111			114				10
Wed-27	7.5			7.5	392				4.6	4.6	318				3	3		8.64				0.33	0.33	40.0				3.66	3.66				54.7			6.1	<	0.01		7.7	104			114				12
Thu-28	7.5			7.5	404				4.8	4.8	352				3	3		8.61				0.36	0.36	40.0				6.15	6.15				53.4			7.0				7.8	190			127				11
Fri-29	7.4			7.4	364				5.8	5.8	336				3	3		9.45				0.40	0.40	42.1				7.74	7.74				54.2			8.2				8.1	112			192				9
Sat-30	7.5			7.5	353				6.7	6.7	372				4	4		8.56				0.44	0.44	39.2				6.56	6.56				56.1			8.2				9.6	97			129				12
Sun-31	7.5			7.4	360				10.5	10.5	326				5	5		9.16				0.56	0.56	39.7				5.90	5.90				57.6			7.4				9.1	96			109				28
Average	7.4	7.5	---	7.5	388	110	---	---	5.1	5.1	334	157	---	---	3.1	3.1		8.47	6.56	---	---	0.38	0.38	35.7	35.2	---	---	5.39	5.39	---	---	---	51.6	42.4	---	6.7	<	0.01	0.11	---	7.75	131	197	---	135				
Minimum	7.4	7.3	---	7.3	160	83	---	---	1.9	1.9	207	127	---	---	<	2	2	7.33	4.96	---	---	0.21	0.21	27.1	31.2	---	---	2.84	2.84	---	---	---	43.9	31.0	---	4.1	<	0.01	<	0.01	---	5.21	83.8	104	---	98	2.2	0.9	---	4
Maximum	7.5	7.7	---	7.6	516	148	---	---	10.5	10.5	446	183	---	---	5	5		9.53	8.07	---	---	0.74	0.74	42.1	40.6	---	---	9.32	9.32	---	---	---	59.2	48.5	---	10.6	<	0.01	0.41	---	9.94	305	458	---	267	2.4	2.3	---	32
Geomean	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
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
73	73	100%	87	87	100%

Report Comments

1	Outfall 30 composite samples for March 15th, 2024 were collected in two carboys. Both samples were analyzed seperately for chemical parameters.
	The averages of the results were calculated and reported. All sampling and analysis requirements were met.

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
---	---
EPBPS	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+EPBPS)
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

Trina Manning M.Sc., P.Eng.
Senior Manager, WWTP Operations

Jeff Charrois PhD
Senior Manager, Analytical Operations

Appendix A – Monthly Plant Performance Reports

PROVIDING MORE | EPCOR

Gold Bar Wastewater Treatment Plant
Plant Performance Report
April 2024

Digested Sludge: Total Monthly Volume (ML)	72.5

Volume of Flow (ML)

DATE	Peak Flow Rate (L/s)	Influent	Effluent						
			Non UV Disinfected				UV Disinfected		
		INFs	OUTFALL 30	OUTFALL 20	MPW	EPEPS	OUTFALL 10		
							FEC	FE	
Mon-01	365.0	0.0	0.0	0.0	11.2	0.0	268.7	268.7	
Tue-02	354.9	0.0	0.0	0.0	11.3	0.0	272.0	272.0	
Wed-03	324.4	0.0	0.0	0.0	11.8	0.0	263.7	263.7	
Thu-04	323.7	0.0	275.8	0.0	0.0	11.0	0.0	264.8	264.8
Fri-05	452.6	0.0	268.4	5.8	0.0	10.1	0.0	282.5	282.5
Sat-06	442.3	0.0	281.3	0.0	0.0	10.1	0.0	271.2	271.2
Sun-07	353.1	0.0	278.0	0.0	0.0	10.2	0.0	267.8	267.8
Mon-08	346.0	0.0	278.7	0.0	0.0	11.1	0.0	267.6	267.6
Tue-09	326.5	0.0	273.6	0.0	0.0	10.9	0.0	262.7	262.7
Wed-10	330.2	0.0	276.4	0.0	0.0	10.5	0.0	265.9	265.9
Thu-11	328.0	0.0	271.0	0.0	0.0	10.6	0.0	260.4	260.4
Fri-12	320.3	0.0	264.1	0.0	0.0	10.6	0.0	253.5	253.5
Sat-13	334.9	0.0	274.4	0.0	0.0	10.8	0.0	263.6	263.6
Sun-14	396.8	0.0	276.2	0.0	0.0	11.4	0.0	264.8	264.8
Mon-15	342.6	0.0	273.2	0.0	0.0	11.5	0.0	261.7	261.7
Tue-16	325.6	0.0	268.6	0.0	0.0	10.8	0.0	257.8	257.8
Wed-17	358.6	0.0	289.3	0.0	0.0	10.7	0.0	278.6	278.6
Thu-18	337.1	0.0	272.8	0.0	0.0	11.3	0.0	261.5	261.5
Fri-19	311.3	0.0	272.2	0.0	0.0	11.8	0.0	260.4	260.4
Sat-20	334.6	0.0	270.0	0.0	0.0	12.4	0.0	257.6	257.6
Sun-21	361.3	0.0	271.6	0.0	0.0	12.8	0.0	258.8	258.8
Mon-22	328.5	0.0	274.4	0.0	0.0	11.9	0.0	262.5	262.5
Tue-23	316.6	0.0	271.0	0.0	0.0	11.7	0.0	259.3	259.3
Wed-24	308.9	0.0	270.4	0.0	0.0	12.2	0.0	258.2	258.2
Thu-25	306.6	0.0	267.4	0.0	0.0	11.6	0.0	255.8	255.8
Fri-26	306.8	0.0	269.6	0.0	0.0	11.3	0.0	258.3	258.3
Sat-27	353.5	0.0	266.8	0.0	0.0	10.7	0.0	256.1	256.1
Sun-28	378.4	0.0	274.3	0.0	0.0	11.7	0.0	262.6	262.6
Mon-29	330.9	0.0	272.6	0.0	0.0	11.7	0.0	260.9	260.9
Tue-30	747.8	0.0	455.8	134.2	0.0	11.4	0.0	310.2	310.2
Average	358.3	0.0	280.9	4.7	0.0	11.2	0.0	265.0	265.0
Minimum	306.6	0.0	264.1	0.0	0.0	10.1	0.0	253.5	253.5
Maximum	747.8	0.0	455.8	134.2	0.0	12.8	0.0	310.2	310.2
GeoMean	---	---	---	---	---	---	---	---	---
TOTAL	---	0	8,427	140	0	337	0	7,950	7,950

Liquid Stream Quality

pH@25°C

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

TSS (mg/L)

DATE	RAW	OUTFALL 30	OUTFALL 20	EPEPS	OUTFALL 10	
					FEC	FE
Mon-01	392				7.5	7.5
Tue-02	428				6.1	6.1
Wed-03	377				6.6	6.6
Thu-04	403				6.7	6.7
Fri-05	444	150			6.9	6.9
Sat-06	404				4.4	4.4
Sun-07	428				6.2	6.2
Mon-08	496				8.9	8.9
Tue-09	432				8.2	8.2
Wed-10	404				5.2	5.2
Thu-11	420				6.5	6.5
Fri-12	404				7.4	7.4
Sat-13	436				5.6	5.6
Sun-14	394				7.0	7.0
Mon-15	352				7.3	7.3
Tue-16	312				7.0	7.0
Wed-17	400				5.4	5.4
Thu-18	352				4.8	4.8
Fri-19	268				4.6	4.6
Sat-20	317				6.4	6.4
Sun-21	272				4.4	4.4
Mon-22	340				5.3	5.3
Tue-23	356				6.8	6.8
Wed-24	344				5.5	5.5
Thu-25	384				6.4	6.4
Fri-26	354				5.2	5.2
Sat-27	347				5.6	5.6
Sun-28	397				5.7	5.7
Mon-29	392				6.0	6.0
Tue-30	484	82			4.1	4.1
Average	394	116	---	---	6.1	6.1
Minimum	268	82	---	---	4.1	4.1
Maximum	496	150	---	---	8.9	8.9
GeoMean	---	---	---	---	---	---

BOD_5/cBOD$_5$ (mg/L)

DATE	RAW	OUTFALL 30	OUTFALL 20	EPEPS	OUTFALL 10	
					cBOD$_5$	cBOD$_5$
Mon-01	320				4	4
Tue-02	339				4	4
Wed-03	428				3	3
Thu-04	353				3	3
Fri-05	315	132			3	3
Sat-06	362				3	3
Sun-07	336				3	3
Mon-08	299				3	3
Tue-09	342				3	3
Wed-10	328				3	3
Thu-11	317				3	3
Fri-12	338				3	3
Sat-13	333				3	3
Sun-14	338				3	3
Mon-15	366				4	4
Tue-16	392				4	4
Wed-17	331				3	3
Thu-18	381				3	3
Fri-19	396				3	3
Sat-20	345				3	3
Sun-21	305				2	2
Mon-22	352				3	3
Tue-23	339				2	2
Wed-24	383				3	3
Thu-25	385				3	3
Fri-26	376				3	3
Sat-27	364				3	3
Sun-28	366				3	3
Mon-29	318				3	3
Tue-30	309	110			< 2	< 2
Average	349	121	---	---	3.0	3.0
Minimum	299	110	---	---	< 2	< 2
Maximum	428	132	---	---	4	4
GeoMean	---	---	---	---	---	---

TP (mg/L)

DATE	RAW	OUTFALL 30	OUTFALL 20	EPEPS	OUTFALL 10	
					FEC	FE
Mon-01	8.98				0.45	0.45
Tue-02	9.37				0.51	0.51
Wed-03	8.76				0.40	0.40
Thu-04	9.18				0.45	0.45
Fri-05	8.26	9.72			0.46	0.46
Sat-06	8.93				0.37	0.37
Sun-07	8.60				0.41	0.41
Mon-08	9.02				0.49	0.49
Tue-09	9.30				0.52	0.52
Wed-10	8.72				0.32	0.32
Thu-11	8.50				0.43	0.43
Fri-12	8.28				0.48	0.48
Sat-13	8.96				0.43	0.43
Sun-14	8.43				0.43	0.43
Mon-15	8.80				0.44	0.44
Tue-16	8.15				0.41	0.41
Wed-17	8.08				0.44	0.44
Thu-18	8.09				0.37	0.37
Fri-19	8.01				0.35	0.35
Sat-20	8.10				0.36	0.36
Sun-21	7.64				0.32	0.32
Mon-22	8.03				0.36	0.36
Tue-23	7.77				0.57	0.57
Wed-24	8.63				0.37	0.37
Thu-25	8.92				0.37	0.37
Fri-26	8.50				0.32	0.32
Sat-27	8.67				0.41	0.41
Sun-28	8.98				0.43	0.43
Mon-29	8.71				0.74	0.74
Tue-30	6.00	4.94			0.32	0.32
Average	8.48	7.33	---	---	0.42	0.42
Minimum	6.00	4.94	---	---	0.32	0.32
Maximum	9.37	9.72	---	---	0.74	0.74
GeoMean	---	---	---	---	---	---

NH_3-N (mg/L)

DATE	RAW	OUTFALL 30	OUTFALL 20	EPEPS	OUTFALL 10	
					FEC	FE
Mon-01	41.7				5.95	5.95
Tue-02	42.7				5.68	5.66
Wed-03	44.3				3.80	3.80
Thu-04	43.9				3.24	3.24
Fri-05	40.4	53.7			5.10	5.10
Sat-06	43.4				5.32	5.32
Sun-07	42.5				4.75	4.75
Mon-08	43.1				3.73	3.73
Tue-09	40.2				2.60	2.60
Wed-10	41.2				2.99	2.99
Thu-11	44.9				3.73	3.73
Fri-12	42.7				3.75	3.75
Sat-13	43.2				3.48	3.48
Sun-14	42.9				4.60	4.60
Mon-15	44.0				3.60	3.60
Tue-16	44.6				2.36	2.36
Wed-17	36.8				6.46	6.46
Thu-18	42.7				7.16	7.16
Fri-19	42.3				4.23	4.23
Sat-20	42.2				3.04	3.04
Sun-21	45.3				2.74	2.74
Mon-22	44.0				3.00	3.00
Tue-23	41.2				3.17	3.17
Wed-24	40.9				2.25	2.25
Thu-25	46.5				3.10	3.10
Fri-26	45.7				3.38	3.38
Sat-27	42.3				3.16	3.16
Sun-28	37.8				3.54	3.54
Mon-29	43.2				3.03	3.03
Tue-30	24.5	27.2			0.80	0.80
Average	42.0	40.5	---	---	3.79	3.79
Minimum	24.5	27.2	---	---	0.80	0.80
Maximum	46.5	53.7	---	---	7.16	7.16
GeoMean	---	---	---	---	---	---

un-ionized NH_3-N (mg/L)

DATE	OUTFALL 30	OUTFALL 20	OUTFALL 10
Mon-01			
Tue-02			
Wed-03			
Thu-04			
Fri-05			
Sat-06			
Sun-07			
Mon-08			
Tue-09			
Wed-10			
Thu-11			
Fri-12			
Sat-13			
Sun-14			
Mon-15			
Tue-16			
Wed-17			
Thu-18			
Fri-19			
Sat-20			
Sun-21			
Mon-22			
Tue-23			
Wed-24			
Thu-25			
Fri-26			
Sat-27			
Sun-28			
Mon-29			
Tue-30	---	---	---
Average	---	---	---
Minimum	---	---	---
Maximum	---	---	---
GeoMean	---	---	---

TKN (mg/L)

DATE	RAW	OUTFALL 30	OUTFALL 20	OUTFALL 10	
					FEC
Mon-01	52.6				6.7
Tue-02	56.1				6.4
Wed-03	56.8				5.0
Thu-04	60.1				5.4
Fri-05	51.9	60.0			6.2
Sat-06	51.9				5.6
Sun-07	52.4				5.4
Mon-08	52.3				4.7
Tue-09	54.8				3.9
Wed-10	52.0				3.8
Thu-11	53.9				4.1
Fri-12	54.8				4.7
Sat-13	55.5				4.4
Sun-14	53.7				5.6
Mon-15	54.0				4.7
Tue-16	54.6				4.0
Wed-17	51.9				6.7
Thu-18	48.8				7.6
Fri-19	50.4				5.1
Sat-20	53.7				4.4
Sun-21	52.2				3.9
Mon-22	53.0				4.0
Tue-23	55.2				5.3
Wed-24	56.4				3.9
Thu-25	62.4				4.6
Fri-26	59.6				5.0
Sat-27	61.7				5.3
Sun-28	62.1				5.6
Mon-29	67.2				4.7
Tue-30	39.3	30.4			2.3
Average	54.7	45.2	---	---	5.0
Minimum	39.3	30.4	---	---	2.3
Maximum	67.2	60.0	---	---	7.6
GeoMean	---	---	---	---	---

NO_2+NO_3 (mg/L)

DATE	RAW	OUTFALL 30	OUTFALL 20	OUTFALL 10	
					FEC
Mon-01					8.46
Tue-02					7.79
Wed-03					8.57
Thu-04					9.32
Fri-05		0.02			9.65
Sat-06					7.85
Sun-07					8.71
Mon-08					9.55
Tue-09					8.62
Wed-10					8.79
Thu-11					9.31
Fri-12					9.94
Sat-13					10.0
Sun-14					9.16
Mon-15					9.53
Tue-16					9.48
Wed-17	< 0.01				6.47
Thu-18					6.72
Fri-19					8.95
Sat-20					8.02
Sun-21					8.01
Mon-22					8.33
Tue-23					7.36
Wed-24	< 0.01				8.85
Thu-25					8.70
Fri-26					8.01
Sat-27					9.48
Sun-28					8.91
Mon-29		0.37			8.85
Tue-30					8.01
Average	< 0.01	0.20	---	---	8.65
Minimum	< 0.01	0.02	---	---	6.47
Maximum	< 0.01	0.37	---	---	10.0
GeoMean	---	---	---	---	---

Chloride (mg/L)

DATE	RAW	OUTFALL 30	OUTFALL 20	OUTFALL 10	
					FEC
Mon-01	102				102
Tue-02	102				104
Wed-03	104				107
Thu-04	100				112
Fri-05	148	241			121
Sat-06	130				130
Sun-07	97.6				97.6
Mon-08	89.8				89.8
Tue-09	96.1	1.6			96.1
Wed-10	100				100
Thu-11	95.7	1.3			95.7
Fri-12	93.4				93.4
Sat-13	92.3				92.3
Sun-14	86.8				86.8
Mon-15	83.6				83.6
Tue-16	89.5				89.5
Wed-17	104				104
Thu-18	113				113
Fri-19	113				113
Sat-20	97.4				97.4
Sun-21	90.3				90.3
Mon-22	86.7				86.7
Tue-23	90.0				93.8
Wed-24	101				101
Thu-25	93.9				93.9
Fri-26	91.9				91.9
Sat-27	93.2				93.2
Sun-28	93.4				93.4
Mon-29	92.9				92.9
Tue-30	98.6				98.6
Average	98.6	---	---	---	---
Minimum	83.6	1.3	1.0	---	3
Maximum	130	1.6	1.1	---	21
GeoMean	---	1.4	1.0	---	8.8

E. coli (Counts/100 mL)

DATE	RAW	OUTFALL 30	OUTFALL 20	OUTFALL 10
	X10^6	X10^6	X10^6	FEC
Mon-01				21
Tue-02				7
Wed-03				10
Thu-04				12
Fri-05		1.0		7
Sat-06				6
Sun-07				4
Mon-08				8
Tue-09	1.6			11
Wed-10				16
Thu-11	1.3			13
Fri-12				12
Sat-13				12
Sun-14				15
Mon-15				10
Tue-16				12
Wed-17				5
Thu-18				11
Fri-19				10
Sat-20				11
Sun-21				8
Mon-22				12
Tue-23				13
Wed-24				5
Thu-25				7
Fri-26				4
Sat-27				9
Sun-28				3
Mon-29				7
Tue-30		1.1		7
Average	---	---	---	---
Minimum	---	---	---	---
Maximum	---	---	---	---
GeoMean	---	---	---	---

* 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

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

Trina Manning M.Sc.; P.Eng.
Senior Manager, WWTP Operations

Jeff Charrois PhD
Senior Manager, Analytical Operations

Appendix A – Monthly Plant Performance Reports

Gold Bar Wastewater Treatment Plant
Plant Performance Report
May 2024

Digested Sludge: Total Monthly Volume (ML)	76.9

Volume of Flow (ML) / **Liquid Stream Quality**

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	UV Disinfected OUTFALL 10 FEC	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	768.9	0.0	432.7	110.4	0.0	12.1	0.0	310.2	310.2	7.3	7.5		7.2
Thu-02	367.1	0.0	306.5	0.0	0.0	11.8	0.0	294.7	294.7	7.6			7.4
Fri-03	331.8	0.0	276.6	0.0	0.0	11.9	0.0	264.7	264.7	7.4			7.4
Sat-04	344.5	0.0	276.3	0.0	0.0	11.6	0.0	264.7	264.7	7.4			7.5
Sun-05	352.5	0.0	277.1	0.0	0.0	12.1	0.0	265.0	265.0	7.5			7.5
Mon-06	469.8	0.0	303.2	12.7	0.0	11.2	0.0	279.3	279.3	7.5	7.6		7.5
Tue-07	1,150.7	0.0	723.2	376.9	0.0	11.7	0.0	334.6	334.6	7.3	7.4		7.4
Wed-08	574.8	0.0	374.0	17.7	0.0	11.8	0.0	344.5	344.5	7.4	7.5		7.4
Thu-09	349.4	0.0	320.2	0.0	0.0	11.8	0.0	308.4	308.4	7.6			7.4
Fri-10	346.2	0.0	304.3	0.0	0.0	11.7	0.0	292.6	292.6	7.5			7.5
Sat-11	330.5	0.0	288.3	0.0	0.0	11.9	0.0	276.4	276.4	7.3			7.5
Sun-12	349.2	0.0	287.5	0.0	0.0	11.2	0.0	276.3	276.3	7.5			7.5
Mon-13	351.4	0.0	291.6	0.0	0.0	11.2	0.0	280.4	280.4	7.5			7.5
Tue-14	348.8	0.0	286.2	0.0	0.0	12.2	0.0	274.0	274.0	7.5			7.6
Wed-15	334.0	0.0	286.1	0.0	0.0	11.1	0.0	275.0	275.0	7.5			7.4
Thu-16	1,401.3	21.0	445.0	137.6	0.0	12.7	0.0	294.7	294.7	7.4	7.5		7.7
Fri-17	367.9	0.0	324.8	0.0	0.0	12.2	0.0	312.6	312.6	7.4			7.5
Sat-18	358.1	0.0	287.7	0.0	0.0	12.0	0.0	275.7	275.7	7.4			7.5
Sun-19	482.2	0.0	305.5	13.7	0.0	12.3	0.0	279.5	279.5	7.4	7.6		7.4
Mon-20	405.1	0.0	337.8	0.0	0.0	12.4	0.0	325.4	325.4	7.5			7.5
Tue-21	370.2	0.0	301.1	0.0	0.0	12.4	0.0	288.7	288.7	7.5			7.5
Wed-22	1,177.6	0.0	368.3	70.0	0.0	11.3	0.0	287.0	287.0	7.5	7.9		7.8
Thu-23	574.6	0.0	342.2	13.1	0.0	11.8	0.0	317.3	317.3	7.5	7.8		7.4
Fri-24	343.3	0.0	303.0	0.0	0.0	11.2	0.0	291.8	291.8	7.4			7.4
Sat-25	359.0	0.0	291.2	0.0	0.0	10.0	0.0	281.2	281.2	7.6			7.5
Sun-26	628.2	0.0	315.2	35.4	0.0	10.1	0.0	269.7	269.7	7.5	7.6		7.5
Mon-27	375.0	0.0	307.3	1.9	0.0	9.9	0.0	295.5	295.5	7.5			7.5
Tue-28	354.2	0.0	294.7	0.0	0.0	10.1	0.0	284.6	284.6	7.5			7.5
Wed-29	348.9	0.0	286.9	0.0	0.0	9.8	0.0	277.1	277.1	7.5			7.5
Thu-30	351.2	0.0	285.3	0.0	0.0	10.0	0.0	275.3	275.3	7.6			7.7
Fri-31	340.7	0.0	286.8	0.0	0.0	11.0	0.0	275.8	275.8	7.6			7.5
Average	484.1	0.7	326.3	25.5	0.0	11.4	0.0	289.4	289.4	7.5	7.6	---	7.5
Minimum	330.5	0.0	276.3	0.0	0.0	9.8	0.0	264.7	264.7	7.3	7.4	---	7.2
Maximum	1,401.3	21.0	723.2	376.9	0.0	12.7	0.0	344.5	344.5	7.6	7.9	---	7.8
GeoMean	---	---	---	---	---	---	---	---	---	---	---	---	---
TOTAL	---	21	10,117	789	0	355	0	8,973	8,973	---	---	---	---

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 $cBOD_5$
Wed-01	210	63			4.2	4.2	275	86			3	3
Thu-02	380				4.8	4.8	356				3	3
Fri-03	332				3.3	3.3	378				3	3
Sat-04	304				3.1	3.1	388				3	3
Sun-05	336				3.6	3.6	321				2	2
Mon-06	366	112			3.8	3.8	333	190			2	2
Tue-07	260	89			3.2	3.2	154	77			< 2	< 2
Wed-08	252	72			3.1	3.1	212	71			< 2	< 2
Thu-09	300				3.2	3.2	276				3	3
Fri-10	292				4.3	4.3	276				< 2	< 2
Sat-11	212				3.0	3.0	331				3	3
Sun-12	317				2.6	2.6	293				3	3
Mon-13	292				4.8	4.8	368				3	3
Tue-14	366				3.3	3.3	350				3	3
Wed-15	394				3.5	3.5	352				3	3
Thu-16	625	77			3.7	3.7	281	96			2	2
Fri-17	489				3.9	3.9	368				2	2
Sat-18	452				4.6	4.6	399				3	3
Sun-19	403	100			5.0	5.0	443	143			3	3
Mon-20	330				6.5	6.5	247				4	4
Tue-21	348				6.6	6.6	367				4	4
Wed-22	456	97			11.1	11.1	311	134			4	4
Thu-23	326	43			7.5	7.5	313	55			3	3
Fri-24	376				5.6	5.6	360				4	4
Sat-25	764				5.6	5.6	352				3	3
Sun-26	460	91			4.9	4.9	331	131			3	3
Mon-27	320				7.7	7.7	329				4	4
Tue-28	340				6.1	6.1	351				3	3
Wed-29	400				5.7	5.7	316				3	3
Thu-30	367				5.7	5.7	323				4	4
Fri-31	360				7.5	7.5	325				4	4
Average	369	83	---	---	4.9	4.9	325	109	---	---	3.0	3.0
Minimum	210	43	---	---	2.6	2.6	154	55	---	---	< 2	< 2
Maximum	764	112	---	---	11.1	11.1	443	190	---	---	4	4
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
Wed-01	5.68	4.01			0.30	0.30	24.0	25.8			0.91	0.91
Thu-02	8.09				0.30	0.30	38.0				3.28	3.28
Fri-03	8.21				0.30	0.30	40.3				2.62	2.62
Sat-04	8.08				0.30	0.30	41.5				1.58	1.58
Sun-05	8.43				0.30	0.30	41.6				1.91	1.91
Mon-06	8.11	6.82			0.26	0.26	40.2	41.3			2.24	2.24
Tue-07	4.33	4.32			0.24	0.24	15.5	20.9			0.61	0.61
Wed-08	6.24	4.92			0.09	0.09	28.9	25.8			1.66	1.66
Thu-09	6.73				0.22	0.22	37.7				3.02	3.02
Fri-10	8.00				0.27	0.27	37.9				2.20	2.20
Sat-11	7.81				0.26	0.26	38.9				2.14	2.14
Sun-12	8.99				0.27	0.27	42.8				2.27	2.27
Mon-13	9.30				0.30	0.30	41.9				2.27	2.27
Tue-14	10.2				0.32	0.32	41.6				2.00	2.00
Wed-15	9.89				0.32	0.32	42.1				1.13	1.13
Thu-16	6.78	4.74			0.35	0.35	23.9	30.2			0.61	0.61
Fri-17	8.81				0.29	0.29	37.6				0.94	0.94
Sat-18	8.92				0.32	0.32	39.6				1.65	1.65
Sun-19	7.86	8.80			0.37	0.37	41.0	49.9			1.29	1.29
Mon-20	6.95				0.55	0.55	36.9				2.47	2.47
Tue-21	8.63				0.49	0.49	42.2				2.42	2.42
Wed-22	7.30	6.70			0.99	0.99	31.7	31.8			2.10	2.10
Thu-23	6.62	3.72			0.56	0.56	34.0	18.8			1.81	1.81
Fri-24	8.03				0.43	0.43	41.3				2.94	2.94
Sat-25	10.0				0.40	0.40	39.6				4.11	4.11
Sun-26	8.65	7.07			0.34	0.34	38.3	41.6			2.70	2.70
Mon-27	7.80				0.56	0.56	39.5				1.21	1.21
Tue-28	8.78				0.52	0.52	40.6				3.43	3.43
Wed-29	9.94				0.58	0.58	40.4				5.12	5.12
Thu-30	10.0				0.80	0.80	42.0				6.33	6.33
Fri-31	8.99				0.54	0.54	40.9				5.50	5.50
Average	8.13	5.68	---	---	0.39	0.39	37.5	31.8	---	---	2.40	2.40
Minimum	4.33	3.72	---	---	0.09	0.09	15.5	18.8	---	---	0.61	0.61
Maximum	10.2	8.80	---	---	0.99	0.99	42.8	49.9	---	---	6.33	6.33
GeoMean	---	---	---	---	---	---	---	---	---	---	---	---
TOTAL	---	---	---	---	---	---	---	---	---	---	---	---

DATE	un-ionized NH3-N (mg/L) OUT-FAL 30	un-ionized NH3-N OUT-FAL 20	un-ionized NH3-N OUT-FAL 10	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
Wed-01				41.0	72.5		2.7	< 0.01	0.21		5.48
Thu-02				70.5			5.9				6.72
Fri-03				106			5.2				8.76
Sat-04				6.0			3.9				9.68
Sun-05				65.3			1.1				9.41
Mon-06				57.1	48.0		3.4		0.05		10.7
Tue-07				26.7	27.4		1.9		0.24		6.42
Wed-08				44.4	29.7		2.3	< 0.01	0.14		5.55
Thu-09				47.4			4.4				9.11
Fri-10				56.0			3.6				11.2
Sat-11				56.3			3.8				13.6
Sun-12				64.2			3.7				13.1
Mon-13				65.8			3.6				13.2
Tue-14				64.7			3.5				13.3
Wed-15				62.7			2.8	< 0.01			14.2
Thu-16				43.8	33.0		2.2		0.18		12.5
Fri-17				53.6			2.4				11.3
Sat-18				62.7			3.5				12.9
Sun-19				57.5	56.3		2.9		0.01		13.6
Mon-20				50.0			4.5				12.5
Tue-21				55.8			4.6				12.2
Wed-22				48.4	39.4		4.1	< 0.01	0.09		11.7
Thu-23				53.2	25.6		3.6		0.22		9.02
Fri-24				55.1			5.2				11.3
Sat-25				66.3			5.9				10.6
Sun-26				58.2	50.1		4.6		0.02		12.5
Mon-27				55.2			3.0				12.0
Tue-28				59.2			5.4				12.1
Wed-29				68.8			6.9	0.39			11.6
Thu-30				69.1			8.1				11.1
Fri-31				61.8			7.3				12.9
Average	---	---	---	56.5	42.4	---	4.1	0.09	0.13	---	11.0
Minimum	---	---	---	6.0	25.6	---	1.1	< 0.01	0.01	---	5.48
Maximum	---	---	---	106	72.5	---	8.1	0.39	0.24	---	14.2
GeoMean	---	---	---	---	---	---	---	---	---	---	---
TOTAL	---	---	---	---	---	---	---	---	---	---	---

DATE	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	70.7	69		82		2.1		8
Thu-02	86.2			81				11
Fri-03	88.2			89				7
Sat-04	80.1			95				5
Sun-05	78.4			86				1
Mon-06	89.5	109		87	3.8	2.1		10
Tue-07	46.3	55.8		83	1.1	0.8		16
Wed-08	76.6	57.7		70		0.5		6
Thu-09	97.2			93				21
Fri-10	94.2			95				12
Sat-11	89.8			97				13
Sun-12	90.6			93				10
Mon-13	93.8			92				10
Tue-14	95.7			98				15
Wed-15	92.5			96				15
Thu-16	62.2	64.0		92		1.3		11
Fri-17	85.0			80				5
Sat-18	88.4			90				10
Sun-19	82.6	91.2		88		1.5		6
Mon-20	73.9			80				13
Tue-21	86.2			81				31
Wed-22	72.7	76.1		89		1.7		42
Thu-23	75.5	44.8		78		0.5		7
Fri-24	84.6			85				16
Sat-25	81.9			90				19
Sun-26	73.9	73.6		87		2.3		11
Mon-27	82.4			83		1.5		13
Tue-28	87.7			89				8
Wed-29	89.7			94				12
Thu-30	92.4			97				8
Fri-31	87.8			95				6
Average	83.1	71.2	---	88			---	
Minimum	46.3	44.8	---	70	1.1	0.5	---	1
Maximum	97.2	109	---	98	3.8	2.3	---	42
GeoMean	---	---	---	---	2.0	1.2	---	10.2
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
84	84	100%	191	191	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

Trina Manning M.Sc.; P.Eng.
Senior Manager, WWTP Operations

Jeff Charrois PhD
Senior Manager, Analytical Operations

Appendix A – Monthly Plant Performance Reports

PROVIDING MORE EPCOR

Gold Bar Wastewater Treatment Plant
Plant Performance Report
June 2024

Digested Sludge: Total Monthly Volume (ML)	76.9

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
Sat-01	354.2	0.0	283.0	0.0	0.0	10.5	0.0	272.5	272.5
Sun-02	359.6	0.0	283.7	0.0	0.0	11.5	0.0	272.2	272.2
Mon-03	1,550.3	10.0	633.8	337.9	0.0	12.4	0.0	283.5	283.5
Tue-04	863.5	0.0	430.4	106.3	0.0	12.9	0.0	311.2	311.2
Wed-05	420.2	0.0	336.5	5.8	0.0	11.8	0.0	318.9	318.9
Thu-06	368.6	0.0	315.6	0.0	0.0	11.6	0.0	304.0	304.0
Fri-07	361.7	0.0	305.3	0.0	0.0	11.4	0.0	293.9	293.9
Sat-08	453.7	0.0	311.2	16.1	0.0	12.1	0.0	283.0	283.0
Sun-09	376.5	0.0	291.2	0.0	0.0	12.3	0.0	278.9	278.9
Mon-10	360.3	0.0	298.4	0.0	0.0	11.6	0.0	286.8	286.8
Tue-11	1,586.2	150.0	430.0	133.8	0.0	12.4	0.0	283.8	283.8
Wed-12	607.8	0.0	414.1	77.9	0.0	12.4	0.0	323.8	323.8
Thu-13	565.8	0.0	368.9	20.9	0.0	11.5	0.0	336.5	336.5
Fri-14	485.6	0.0	333.2	7.6	0.0	12.3	0.0	313.3	313.3
Sat-15	411.4	0.0	308.3	0.0	0.0	12.3	0.0	296.0	296.0
Sun-16	405.3	0.0	300.1	0.0	0.0	11.8	0.0	288.3	288.3
Mon-17	512.9	0.0	321.8	12.2	0.0	11.6	0.0	298.0	298.0
Tue-18	368.6	0.0	305.7	0.0	0.0	11.7	0.0	294.0	294.0
Wed-19	354.1	0.0	298.9	0.0	0.0	11.3	0.0	287.6	287.6
Thu-20	350.5	0.0	298.1	0.0	0.0	12.1	0.0	286.0	286.0
Fri-21	365.0	0.0	301.9	0.0	0.0	12.6	0.0	289.3	289.3
Sat-22	363.3	0.0	290.5	0.0	0.0	12.3	0.0	278.2	278.2
Sun-23	493.4	0.0	300.1	9.2	0.0	11.9	0.0	279.0	279.0
Mon-24	427.3	0.0	307.1	5.6	0.0	11.8	0.0	289.7	289.7
Tue-25	336.5	0.0	305.6	0.0	0.0	11.5	0.0	294.1	294.1
Wed-26	341.6	0.0	291.1	0.0	0.0	11.4	0.0	279.7	279.7
Thu-27	746.9	0.0	381.0	83.4	0.0	12.0	0.0	285.6	285.6
Fri-28	389.9	0.0	321.5	0.0	0.0	12.5	0.0	309.0	309.0
Sat-29	351.1	0.0	287.3	0.0	0.0	11.5	0.0	275.8	275.8
Sun-30	482.4	0.0	282.7	5.0	0.0	12.0	0.0	265.7	265.7
Average	513.8	5.3	331.2	27.4	0.0	11.9	0.0	291.9	291.9
Minimum	336.5	0.0	282.7	0.0	0.0	10.5	0.0	265.7	265.7
Maximum	1,586.2	150.0	633.8	337.9	0.0	12.9	0.0	336.5	336.5
GeoMean	---	---	---	---	---	---	---	---	---
TOTAL	---	160	9,937	822	0	357	0	8,758	8,758

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 $cBOD_5$
Sat-01	7.5			7.6	340				7.8	7.8	294				4	4
Sun-02	7.6			7.6	408				8.0	8.0	305				4	4
Mon-03	7.3	7.4		7.5	404	128			6.8	6.8	206	102			3	3
Tue-04	7.5	7.6		7.4	311	44.8			3.6	3.6	179	53			2	2
Wed-05	7.6	7.8		7.5	317	47.2			3.6	3.6	341	101			2	2
Thu-06	7.6			7.6	372				8.0	8.0	264				4	4
Fri-07	7.6			7.8	390				8.3	8.3	297				3	3
Sat-08	7.6	7.6		7.5	272	85.0			4.4	4.4	334	159			4	4
Sun-09	7.6			7.6	414				9.2	9.2	287				4	4
Mon-10	7.7			7.6	380				6.4	6.4	330				4	4
Tue-11	7.5	7.6		7.6	636	188			8.4	8.4	240	107			4	4
Wed-12	7.5	7.5		7.5	317	59.0			4.5	4.5	205	53			3	3
Thu-13	7.7	7.6		7.4	386	70.0			3.3	3.3	244	77			3	3
Fri-14	7.6	7.6		7.6	446	107			3.9	3.9	200	149			3	3
Sat-15	7.6			7.5	348				4.4	4.4	298				3	3
Sun-16	7.5			7.5	404				3.9	3.9	312				3	3
Mon-17	7.6	7.8		7.5	280	69.3			4.7	4.7	284	227			3	3
Tue-18	7.7			7.5	387				5.3	5.3	263				3	3
Wed-19	7.6			7.6	397				5.7	5.7	312				4	4
Thu-20	7.7			7.5	396				4.8	4.8	330				4	4
Fri-21	7.6			7.6	384				3.6	3.6	345				4	4
Sat-22	7.6			7.6	383				4.5	4.5	368				4	4
Sun-23	7.7	7.7		7.6	476	124			4.1	4.1	355	382			5	5
Mon-24	7.6	7.7		7.5	416	82.0			4.2	4.2	312	164			3	3
Tue-25	7.3			7.5	389				6.0	6.0	356				3	3
Wed-26	7.4			7.6	396				5.7	5.7	310				3	3
Thu-27	7.5	7.6		7.6	396	73.3			4.4	4.4	286	103			2	2
Fri-28	7.5			7.4	284				4.4	4.4	327				2	2
Sat-29	7.6			7.6	288				3.8	3.8	263				2	2
Sun-30	7.6	7.8		7.7	268	98.7			2.6	2.6	298	413			2	2
Average	7.6	7.6	---	7.5	376	90.5	---	---	5.3	5.3	292	161	---	---	3.2	3.2
Minimum	7.3	7.4	---	7.4	268	44.8	---	---	2.6	2.6	179	53	---	---	2	2
Maximum	7.7	7.8	---	7.8	636	188	---	---	9.2	9.2	368	413	---	---	5	5
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	un-ionized NH3-N (mg/L) OUT-FAL 30	un-ionized OUT-FAL 20	un-ionized OUT-FAL 10
Sat-01	8.95				0.66	0.66	41.0				5.08	5.08			
Sun-02	9.28				0.78	0.78	40.8				5.05	5.05			
Mon-03	5.12	4.28			0.59	0.59	15.6	20.5			3.55	3.55			
Tue-04	5.16	3.89			0.32	0.32	22.0	29.5			0.22	0.22			
Wed-05	6.92	6.46			0.36	0.36	31.1	40.5			1.94	1.94			
Thu-06	7.55				0.61	0.61	30.6				4.22	4.22			
Fri-07	7.99				0.60	0.60	32.3				3.68	3.68			
Sat-08	6.70	6.40			0.28	0.28	32.5	48.9			3.51	3.51			
Sun-09	7.71				0.62	0.62	34.8				3.39	3.39			
Mon-10	8.61				0.40	0.40	33.5				4.51	4.51			
Tue-11	6.12	3.82			0.57	0.57	19.1	23.1			4.84	4.84			
Wed-12	5.61	3.11			0.27	0.27	20.8	23.3			1.23	1.23			
Thu-13	6.23	4.82			0.26	0.26	27.6	33.4			2.72	2.72			
Fri-14	7.26	6.76			0.30	0.30	29.4	41.7			4.44	4.44			
Sat-15	7.36				0.29	0.29	30.3				2.56	2.56			
Sun-16	7.76				0.29	0.29	31.2				2.26	2.26			
Mon-17	8.11	7.93			0.33	0.33	42.7	43.8			3.20	3.20			
Tue-18	8.15				0.34	0.34	35.1				3.33	3.33			
Wed-19	8.57				0.34	0.34	33.3				4.38	4.38			
Thu-20	8.32				0.32	0.32	35.6				3.53	3.53			
Fri-21	7.91				0.32	0.32	32.2				3.27	3.27			
Sat-22	7.93				0.32	0.32	32.0				2.64	2.64			
Sun-23	8.58	9.80			0.35	0.35	33.1	42.7			2.24	2.24			
Mon-24	7.73	6.74			0.31	0.31	33.1	37.3			2.19	2.19			
Tue-25	8.72				0.36	0.36	39.6				1.84	1.84			
Wed-26	7.72				0.39	0.39	41.0				2.09	2.09			
Thu-27	6.62	5.00			0.34	0.34	30.2	33.0			1.13	1.13			
Fri-28	7.22				0.29	0.29	37.0				1.07	1.07			
Sat-29	7.57				0.35	0.35	37.8				1.87	1.87			
Sun-30	7.42	9.48			0.39	0.39	38.3	41.9			1.41	1.41			
Average	7.50	6.04	---	---	0.40	0.40	32.5	35.4	---	---	2.91	2.91	---	---	---
Minimum	5.12	3.11	---	---	0.26	0.26	15.6	20.5	---	---	0.22	0.22	---	---	---
Maximum	9.28	9.80	---	---	0.78	0.78	42.7	48.9	---	---	5.08	5.08	---	---	---
GeoMean	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
TOTAL	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

DATE	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
Sat-01	59.0			7.2				13.4	82.7			93.8				11
Sun-02	61.3			7.1				13.0	83.3			89.0				19
Mon-03	31.8	27.4		5.6		0.24		10.5	46.2	50.9		86.3		0.2		10
Tue-04	33.3	32.0		1.5		0.54		5.73	64.0	66.8		60.1		0.3		7
Wed-05	46.5	45.5		3.7	< 0.01	0.03		11.2	69.0	87.7		83.7		1.3		9
Thu-06	48.5			6.3				11.8	86.2			97.0				31
Fri-07	52.0			6.1				11.3	88.5			105				17
Sat-08	48.1	57.8		4.3		0.20		11.1	83.4	72.9		105		1.7		13
Sun-09	50.5			5.3				11.9	81.4			94.9				16
Mon-10	51.9			6.0				9.28	76.7			92.7				16
Tue-11	42.5	25.3		6.6		0.16		9.79	58.8	47.4		97.5	2.8	1.2		16
Wed-12	34.6	24.8		2.7	< 0.01	0.03		6.56	63.7	54.8		72.6		1.1		4
Thu-13	41.6	37.3		4.5		0.02		8.46	94.9	65.8		79.0	2.6	1.0		16
Fri-14	44.3	50.5		6.3		0.02		10.3	96.7	107		101		1.3		15
Sat-15	47.6			4.4				10.6	94.1			105				12
Sun-16	54.5			4.1				11.0	92.2			101				16
Mon-17	62.6	56.4		5.1		0.03		11.1	120	124		105		2.9		10
Tue-18	53.5			5.7				9.85	99.1			111				15
Wed-19	52.8			6.5	< 0.01			10.1	99.2			110				7
Thu-20	56.2			6.1				10.3	96.4			111				20
Fri-21	57.8			5.3				10.4	99.1			101				7
Sat-22	54.0			4.4				9.92	99.1			104				16
Sun-23	54.9	53.3		3.9		0.07		10.0	92.0	98.3		104		0.6		4
Mon-24	51.6	44.3		4.0		0.03		9.92	83.4	89.9		93.1		2.3		18
Tue-25	54.3			3.6				10.2	87.1			103				13
Wed-26	58.4			3.9	< 0.01			10.3	89.8			101				19
Thu-27	48.9	40.0		3.0		0.02		10.0	66.0	71.6		93.6		2.0		15
Fri-28	55.0			3.0				8.81	71.2			80.1				10
Sat-29	58.4			3.6				10.2	75.1			87.1				10
Sun-30	56.6	56.4		3.1		0.46		11.7	74.6	79.2		89.6		3.8		10
Average	50.8	42.4	---	4.8	< 0.01	0.14	---	10.3	83.8	78.2	---	95.2			---	
Minimum	31.8	24.8	---	1.5	< 0.01	0.02	---	5.73	46.2	47.4	---	60.1	2.6	0.2	---	4
Maximum	62.6	57.8	---	7.2	< 0.01	0.54	---	13.4	120	124	---	111	2.8	3.8	---	31
GeoMean	---	---	---	---	---	---	---	---	---	---	---	---	2.7	1.2	---	12.2
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
99	99	100%	290	290	100%

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

Report Comments

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AEP Ref #

Appendix A – Monthly Plant Performance Reports

PROVIDING MORE | EPCOR

Gold Bar Wastewater Treatment Plant
Plant Performance Report
July 2024

Digested Sludge: Total Monthly Volume (ML)	80.5

Liquid Stream Quality

Volume of Flow (ML)

DATE	Peak Flow Rate (L/s)	Influent	Effluent						
			Non UV Disinfected			UV Disinfected			
		INFs	RAW	OUTFALL 30	OUTFALL 20	MPW	EPEPS	OUTFALL 10 FEC	OUTFALL 10 FE
Mon-01	477.2	0.0	299.3	6.4	0.0	12.0	0.0	277.9	277.9
Tue-02	366.1	0.0	290.2	0.0	0.0	11.4	0.0	278.8	278.8
Wed-03	1,648.4	23.3	691.5	348.9	0.1	11.5	0.0	331.0	331.0
Thu-04	420.4	0.0	329.8	4.6	0.0	12.1	0.0	313.1	313.1
Fri-05	364.7	0.0	311.4	0.0	0.0	11.9	0.0	299.5	299.5
Sat-06	357.5	0.0	295.6	0.0	0.0	12.0	0.0	283.6	283.6
Sun-07	360.2	0.0	292.6	0.0	0.0	12.2	0.0	280.4	280.4
Mon-08	366.4	0.0	305.0	0.0	0.0	12.1	0.0	292.9	292.9
Tue-09	356.1	0.0	301.7	0.0	0.0	12.4	0.0	289.3	289.3
Wed-10	356.4	0.0	300.3	0.0	0.0	11.7	0.0	288.6	288.6
Thu-11	369.0	0.0	299.3	0.0	0.0	11.4	0.0	287.9	287.9
Fri-12	358.2	0.0	296.0	0.0	0.0	11.4	0.0	284.6	284.6
Sat-13	325.7	0.0	292.2	0.0	0.0	12.3	0.0	279.9	279.9
Sun-14	354.7	0.0	288.4	0.0	0.0	12.6	0.0	275.8	275.8
Mon-15	344.2	0.0	290.5	0.0	0.0	12.0	0.0	278.5	278.5
Tue-16	348.3	0.0	289.6	0.0	0.0	12.6	0.0	277.0	277.0
Wed-17	354.1	0.0	286.2	0.0	0.0	12.6	0.0	273.6	273.6
Thu-18	350.0	0.0	293.5	0.0	0.0	11.9	0.0	281.6	281.6
Fri-19	345.0	0.0	295.4	0.0	0.0	12.0	0.0	283.4	283.4
Sat-20	337.4	0.0	285.7	0.0	0.0	11.7	0.0	274.0	274.0
Sun-21	377.5	0.0	294.8	0.0	0.0	11.9	0.0	282.9	282.9
Mon-22	350.7	0.0	303.1	0.0	0.0	11.8	0.0	291.3	291.3
Tue-23	345.7	0.0	294.6	0.0	0.0	11.2	0.0	283.4	283.4
Wed-24	328.0	0.0	284.5	0.0	0.0	12.3	0.0	272.2	272.2
Thu-25	486.5	0.0	312.1	7.8	0.0	12.5	0.0	291.8	291.8
Fri-26	728.1	0.0	373.8	45.1	0.0	12.3	0.0	316.4	316.4
Sat-27	632.4	0.0	361.1	37.9	0.0	13.3	0.0	309.9	309.9
Sun-28	357.9	0.0	283.9	0.0	0.0	12.8	0.0	271.1	271.1
Mon-29	344.8	0.0	291.0	0.0	0.0	12.0	0.0	279.0	279.0
Tue-30	336.4	0.0	286.6	0.0	0.0	12.1	0.0	274.5	274.5
Wed-31	333.0	0.0	284.9	0.0	0.0	11.8	0.0	273.1	273.1
Average	425.2	0.8	313.0	14.5	0.0	12.1	0.0	286.4	286.4
Minimum	325.7	0.0	283.9	0.0	0.0	11.2	0.0	271.1	271.1
Maximum	1,648.4	23.3	691.5	348.9	0.1	13.3	0.0	331.0	331.0
GeoMean	---	---	---	---	---	---	---	---	---
TOTAL	---	23	9,702	451	0	374	0	8,877	8,877

pH@25°C

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

TSS (mg/L)

DATE	RAW	OUTFALL 30	OUTFALL 20	EPEPS	OUTFALL 10 FEC	OUTFALL 10 FE
Mon-01	300	88			4.8	4.8
Tue-02	336				4.1	4.1
Wed-03	404	58			3.5	3.5
Thu-04	356	61			3.0	3.0
Fri-05	360				3.9	3.9
Sat-06	360				3.4	3.4
Sun-07	371				3.6	3.6
Mon-08	369				5.2	5.2
Tue-09	354				5.6	5.6
Wed-10	368				3.9	3.9
Thu-11	424				4.8	4.8
Fri-12	396				4.6	4.6
Sat-13	440				4.8	4.8
Sun-14	380				5.0	5.0
Mon-15	456				4.9	4.9
Tue-16	440				4.3	4.3
Wed-17	404				3.8	3.8
Thu-18	400				4.4	4.4
Fri-19	436				4.9	4.9
Sat-20	428				4.4	4.4
Sun-21	456				3.9	3.9
Mon-22	464				4.2	4.2
Tue-23	488				4.0	4.0
Wed-24	448				4.5	4.5
Thu-25	532	112			4.4	4.4
Fri-26	428	81			5.5	5.5
Sat-27	360	47			3.9	3.9
Sun-28	468				4.1	4.1
Mon-29	460				5.8	5.8
Tue-30	508				6.6	6.6
Wed-31	492				5.0	5.0
Average	416	74	---	---	4.5	4.5
Minimum	300	47	---	---	3.0	3.0
Maximum	532	112	---	---	6.6	6.6
GeoMean	---	---	---	---	---	---
TOTAL	---	---	---	---	---	---

BOD_5/cBOD$_5$ (mg/L)

DATE	RAW	OUTFALL 30	OUTFALL 20	EPEPS	OUTFALL 10 cBOD$_5$	OUTFALL 10 cBOD$_5$
Mon-01	275	146			2	2
Tue-02	336				< 2	< 2
Wed-03	169	97			2	2
Thu-04	286	86			< 2	< 2
Fri-05	311				2	2
Sat-06	278				2	2
Sun-07	330				3	3
Mon-08	308				3	3
Tue-09	292				3	3
Wed-10	325				3	3
Thu-11	285				2	2
Fri-12	326				2	2
Sat-13	322				3	3
Sun-14	320				3	3
Mon-15	337				3	3
Tue-16	283				3	3
Wed-17	311				2	2
Thu-18	335				3	3
Fri-19	262				3	3
Sat-20	334				2	2
Sun-21	277				2	2
Mon-22	316				< 2	< 2
Tue-23	341				2	2
Wed-24	219				2	2
Thu-25	312	318			3	3
Fri-26	299	130			3	3
Sat-27	321	119			3	3
Sun-28	357				3	3
Mon-29	277				2	2
Tue-30	329				2	2
Wed-31	313				2	2
Average	303	149	---	---	2.5	2.5
Minimum	169	86	---	---	< 2	< 2
Maximum	357	318	---	---	3	3
GeoMean	---	---	---	---	---	---
TOTAL	---	---	---	---	---	---

TP (mg/L)

DATE	RAW	OUTFALL 30	OUTFALL 20	EPEPS	OUTFALL 10 FEC	OUTFALL 10 FE
Mon-01	7.26	6.10			0.39	0.39
Tue-02	6.97				0.42	0.42
Wed-03	4.33	3.61			0.32	0.32
Thu-04	6.82	4.82			0.26	0.26
Fri-05	7.36				0.33	0.33
Sat-06	6.09				0.27	0.27
Sun-07	8.16				0.33	0.33
Mon-08	8.13				0.42	0.42
Tue-09	8.61				0.50	0.50
Wed-10	8.58				0.41	0.41
Thu-11	9.28				0.39	0.39
Fri-12	8.73				0.40	0.40
Sat-13	8.52				0.36	0.36
Sun-14	8.55				0.37	0.37
Mon-15	9.26				0.35	0.35
Tue-16	9.16				0.34	0.34
Wed-17	8.14				0.55	0.55
Thu-18	7.90				0.42	0.42
Fri-19	8.06				0.67	0.67
Sat-20	7.67				0.35	0.35
Sun-21	7.72				0.31	0.31
Mon-22	7.98				0.34	0.34
Tue-23	7.94				0.35	0.35
Wed-24	7.64				0.32	0.32
Thu-25	7.89	10.9			0.34	0.34
Fri-26	6.66	5.13			0.39	0.39
Sat-27	5.81	4.55			0.31	0.31
Sun-28	8.33				0.26	0.26
Mon-29	8.29				0.33	0.33
Tue-30	8.40				0.42	0.42
Wed-31	8.45				0.38	0.38
Average	7.93	5.85	---	---	0.37	0.37
Minimum	4.33	3.61	---	---	0.26	0.26
Maximum	9.28	10.9	---	---	0.67	0.67
GeoMean	---	---	---	---	---	---
TOTAL	---	---	---	---	---	---

NH_3-N (mg/L)

DATE	RAW	OUTFALL 30	OUTFALL 20	EPEPS	OUTFALL 10 FEC	OUTFALL 10 FE
Mon-01	36.7	37.7			2.12	2.12
Tue-02	37.6				2.04	2.04
Wed-03	11.9	24.8			1.13	1.13
Thu-04	32.8	37.5			1.92	1.92
Fri-05	34.5				2.49	2.49
Sat-06	35.6				1.98	1.98
Sun-07	38.4				1.78	1.78
Mon-08	35.0				3.18	3.18
Tue-09	33.0				3.57	3.57
Wed-10	34.3				2.48	2.48
Thu-11	34.1				1.12	1.12
Fri-12	36.5				0.94	0.94
Sat-13	35.6				0.66	0.66
Sun-14	36.0				0.77	0.77
Mon-15	33.6				0.98	0.98
Tue-16	33.0				0.88	0.88
Wed-17	31.6				1.47	1.47
Thu-18	32.4				1.01	1.01
Fri-19	30.6				0.57	0.57
Sat-20	31.2				0.44	0.44
Sun-21	30.6				0.80	0.80
Mon-22	30.2				0.76	0.76
Tue-23	31.1				0.59	0.59
Wed-24	31.8				0.64	0.64
Thu-25	30.3	54.2			0.46	0.46
Fri-26	25.8	27.9			0.55	0.55
Sat-27	26.0	27.0			1.28	1.28
Sun-28	31.9				1.42	1.42
Mon-29	32.1				1.32	1.32
Tue-30	33.0				1.14	1.14
Wed-31	32.8				1.32	1.32
Average	32.3	34.9	---	---	1.35	1.35
Minimum	11.9	24.8	---	---	0.44	0.44
Maximum	38.4	54.2	---	---	3.57	3.57
GeoMean	---	---	---	---	---	---
TOTAL	---	---	---	---	---	---

un-ionized NH_3-N (mg/L)

DATE	OUTFALL 30	OUTFALL 20	OUTFALL 10
Mon-01			
Tue-02			
Wed-03			
Thu-04			
Fri-05			
Sat-06			
Sun-07			
Mon-08			
Tue-09			
Wed-10			
Thu-11			
Fri-12			
Sat-13			
Sun-14			
Mon-15			
Tue-16			
Wed-17			
Thu-18			
Fri-19			
Sat-20			
Sun-21			
Mon-22			
Tue-23			
Wed-24			
Thu-25			
Fri-26			
Sat-27			
Sun-28			
Mon-29			
Tue-30			
Wed-31			
Average	---	---	---
Minimum	---	---	---
Maximum	---	---	---
GeoMean	---	---	---
TOTAL	---	---	---

TKN (mg/L)

DATE	RAW	OUTFALL 30	OUTFALL 20	OUTFALL 10 FEC
Mon-01	52.7	43.6		3.8
Tue-02	51.9			3.7
Wed-03	21.9	27.5		2.6
Thu-04	43.2	44.2		3.3
Fri-05	54.1			4.0
Sat-06	49.5			3.5
Sun-07	62.1			3.7
Mon-08	62.8			5.1
Tue-09	54.9			5.6
Wed-10	59.7			4.4
Thu-11	62.1			2.9
Fri-12	60.1			2.7
Sat-13	60.0			2.3
Sun-14	62.1			2.4
Mon-15	63.7			2.7
Tue-16	64.5			2.5
Wed-17	55.7			2.9
Thu-18	49.7			2.4
Fri-19	50.4			1.9
Sat-20	49.4			1.6
Sun-21	48.9			2.0
Mon-22	49.7			2.4
Tue-23	53.0			2.1
Wed-24	54.2			2.3
Thu-25	55.2	71.1		2.2
Fri-26	44.9	37.7		2.6
Sat-27	40.3	36.6		2.9
Sun-28	58.1			3.0
Mon-29	57.3			3.1
Tue-30	58.2			3.0
Wed-31	59.2			3.5
Average	53.9	43.5	---	3.0
Minimum	21.9	27.5	---	1.6
Maximum	64.5	71.1	---	5.6
GeoMean	---	---	---	---
TOTAL	---	---	---	---

NO_2+NO_3 (mg/L)

DATE	RAW	OUTFALL 30	OUTFALL 20	OUTFALL 10 FEC
Mon-01		0.02		11.6
Tue-02				12.2
Wed-03	< 0.01	0.28		6.57
Thu-04		0.03		9.93
Fri-05				7.27
Sat-06				10.6
Sun-07				11.6
Mon-08				9.25
Tue-09				7.37
Wed-10	< 0.01			9.19
Thu-11				10.6
Fri-12				11.2
Sat-13				10.6
Sun-14				11.0
Mon-15				9.9
Tue-16				10.2
Wed-17	< 0.01			8.86
Thu-18				9.82
Fri-19				10.2
Sat-20				10.6
Sun-21				10.6
Mon-22				9.68
Tue-23				9.21
Wed-24	0.11			10.5
Thu-25		0.04		9.67
Fri-26		0.02		7.11
Sat-27		0.01		7.96
Sun-28				9.45
Mon-29				10.0
Tue-30				11.4
Wed-31	< 0.01			11.3
Average	0.03	0.07	---	9.85
Minimum	< 0.01	0.01	---	6.57
Maximum	0.11	0.28	---	12.2
GeoMean	---	---	---	---
TOTAL	---	---	---	---

Chloride (mg/L)

DATE	RAW	OUTFALL 30	OUTFALL 20	OUTFALL 10 FEC
Mon-01	80.3	83.9		87.6
Tue-02	84.3			87.8
Wed-03	37.6	59.3		73.6
Thu-04	84.2	105		83.5
Fri-05	101			97.8
Sat-06	101			101
Sun-07	87.7			92.8
Mon-08	89.5			92.6
Tue-09	90.7			95.6
Wed-10	83.4			96.2
Thu-11	84.8			94.4
Fri-12	92.6			90.7
Sat-13	87.8			92.4
Sun-14	89.8			86.8
Mon-15	83.7			89.7
Tue-16	86.7			94.9
Wed-17	90.9			94.0
Thu-18	87.9			94.4
Fri-19	87.3			97.6
Sat-20	80.9			94.8
Sun-21	75.4			90.6
Mon-22	85.7			88.5
Tue-23	87.2			94.8
Wed-24	88.6			92.1
Thu-25	87.1	85.8		92.1
Fri-26	71.1	71.3		85.2
Sat-27	68.6	70.8		77.8
Sun-28	81.3			84.3
Mon-29	91.4			86.3
Tue-30	91.1			93.6
Wed-31	90.7			94.8
Average	84.3	79.4	---	90.9
Minimum	37.6	59.3	---	73.6
Maximum	101	105	---	101
GeoMean	---	---	---	---
TOTAL	---	---	---	---

E. coli (Counts/100 mL)

DATE	RAW	OUTFALL 30	OUTFALL 20	OUTFALL 10 FEC
Mon-01	X10^6	X10^6	X10^6	8
Tue-02				19
Wed-03		1.6	0.2	13
Thu-04		1.7		10
Fri-05				14
Sat-06				11
Sun-07				8
Mon-08				9
Tue-09	2.2			16
Wed-10				16
Thu-11	2.3			12
Fri-12				10
Sat-13				8
Sun-14				11
Mon-15	4.3			13
Tue-16				10
Wed-17				7
Thu-18				6
Fri-19				11
Sat-20				7
Sun-21				9
Mon-22				5
Tue-23				10
Wed-24				9
Thu-25		2.2		13
Fri-26		3.6		24
Sat-27		3.4		12
Sun-28				7
Mon-29				8
Tue-30				5
Wed-31				10
Average				
Minimum	2.2	1.6	0.2	5
Maximum	4.3	3.6	0.2	24
GeoMean	2.8	2.5	0.2	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
37	37	100%	327	327	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

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Appendix A – Monthly Plant Performance Reports

PROVIDING MORE EPCOR

Gold Bar Wastewater Treatment Plant
Plant Performance Report
August 2024

Digested Sludge: Total Monthly Volume (ML)	71.1

Volume of Flow (ML)

DATE	Peak Flow (ML/D)	Influent	Effluent					
			Non UV Disinfected			UV Disinfected		
		INFs	OUTFALL 30	OUTFALL 20	MPW	EPEPS	OUTFALL 10	
							FEC	FE
Thu-01	330.7	0.0	278.7	0.0	0.0	13.2	0.0	265.5	265.5
Fri-02	324.9	0.0	277.2	0.0	0.0	13.1	0.0	264.1	264.1
Sat-03	317.1	0.0	273.4	0.0	0.0	12.9	0.0	260.5	260.5
Sun-04	1,492.7	0.6	295.9	22.6	0.0	12.3	0.0	261.0	261.0
Mon-05	1,674.9	150.0	621.0	260.2	0.0	12.7	0.0	348.1	348.1
Tue-06	379.2	0.0	313.5	0.0	0.0	12.8	0.0	300.7	300.7
Wed-07	384.4	0.0	295.4	0.0	0.0	13.2	0.0	282.2	282.2
Thu-08	335.7	0.0	291.1	0.0	0.0	12.2	0.0	278.9	278.9
Fri-09	338.6	0.0	289.2	0.0	0.0	12.4	0.0	276.8	276.8
Sat-10	339.1	0.0	279.4	0.0	0.0	12.4	0.0	267.0	267.0
Sun-11	390.8	0.0	278.9	0.0	0.0	12.5	0.0	266.4	266.4
Mon-12	344.0	0.0	289.0	0.0	0.0	12.3	0.0	276.7	276.7
Tue-13	927.8	0.0	355.8	47.0	0.0	12.5	0.0	296.3	296.3
Wed-14	354.9	0.0	295.6	0.0	0.0	12.9	0.0	282.7	282.7
Thu-15	834.9	0.0	308.3	25.7	0.0	12.2	0.0	270.4	270.4
Fri-16	1,024.8	0.0	440.7	99.5	0.0	12.2	0.0	329.0	329.0
Sat-17	407.7	0.0	316.1	0.0	0.0	12.2	0.0	303.9	303.9
Sun-18	353.1	0.0	288.5	0.0	0.0	12.3	0.0	276.2	276.2
Mon-19	488.9	0.0	302.1	9.1	0.0	12.3	0.0	280.7	280.7
Tue-20	375.3	0.0	294.7	1.1	0.0	10.6	0.0	283.0	283.0
Wed-21	340.8	0.0	287.6	0.0	0.0	11.0	0.0	276.6	276.6
Thu-22	330.0	0.0	281.6	0.0	0.0	10.2	0.0	271.4	271.4
Fri-23	348.8	0.0	290.9	0.0	0.0	10.7	0.0	280.2	280.2
Sat-24	658.2	0.0	324.4	16.2	0.0	11.4	0.0	296.8	296.8
Sun-25	923.2	0.0	423.3	83.1	0.0	10.9	0.0	329.3	329.3
Mon-26	355.7	0.0	304.3	0.0	0.0	11.2	0.0	293.1	293.1
Tue-27	551.7	0.0	299.8	7.0	0.0	11.7	0.0	281.1	281.1
Wed-28	534.1	0.0	342.2	30.1	0.0	11.7	0.0	300.4	300.4
Thu-29	371.2	0.0	299.0	0.0	0.0	12.0	0.0	287.0	287.0
Fri-30	338.1	0.0	290.1	0.0	0.0	11.8	0.0	278.3	278.3
Sat-31	349.6	0.0	278.0	0.0	0.0	11.8	0.0	266.2	266.2
Average	533.0	4.9	316.3	19.4	0.0	12.1	0.0	284.9	284.9
Minimum	317.1	0.0	273.4	0.0	0.0	10.2	0.0	260.5	260.5
Maximum	1,674.9	150.0	621.0	260.2	0.0	13.2	0.0	348.1	348.1
GeoMean	---	---	---	---	---	---	---	---	---
TOTAL	---	151	9,806	602	0	374	0	8,831	8,831

Liquid Stream Quality

pH@25°C

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

TSS (mg/L)

DATE	RAW	OUTFALL 30	OUTFALL 20	EPEPS	OUTFALL 10 FEC	OUTFALL 10 FE
Thu-01	468				4.8	4.8
Fri-02	452				3.1	3.1
Sat-03	384				4.4	4.4
Sun-04	464	113			3.5	3.5
Mon-05	380	85			5.2	5.2
Tue-06	460				4.0	4.0
Wed-07	408				4.0	4.0
Thu-08	376				4.1	4.1
Fri-09	452				3.7	3.7
Sat-10	432				4.5	4.5
Sun-11	456				4.6	4.6
Mon-12	480				7.1	7.1
Tue-13	568	55			7.7	7.7
Wed-14	440				6.3	6.3
Thu-15	432	106			4.8	4.8
Fri-16	326	68			6.3	6.3
Sat-17	408				4.4	4.4
Sun-18	366				4.7	4.7
Mon-19	420	64			4.6	4.6
Tue-20	412	83			4.7	4.7
Wed-21	468				4.4	4.4
Thu-22	420				4.1	4.1
Fri-23	400				3.1	3.1
Sat-24	380	95			4.6	4.6
Sun-25	349	69			4.5	4.5
Mon-26	408				5.0	5.0
Tue-27	460	96			5.1	5.1
Wed-28	468	71			4.3	4.3
Thu-29	428				5.0	5.0
Fri-30	420				4.9	4.9
Sat-31	448				4.3	4.3
Average	427	82	---	---	4.7	4.7
Minimum	326	55	---	---	3.1	3.1
Maximum	568	113	---	---	7.7	7.7
GeoMean	---	---	---	---	---	---
TOTAL	---	---	---	---	---	---

BOD_5/cBOD$_5$ (mg/L)

DATE	RAW	OUTFALL 30	OUTFALL 20	EPEPS	OUTFALL 10 FEC cBOD$_5$	OUTFALL 10 FE cBOD$_5$
Thu-01	276				2	2
Fri-02	358				2	2
Sat-03	315				< 2	< 2
Sun-04	309	276			3	3
Mon-05	181	44			2	2
Tue-06	321				3	3
Wed-07	308				3	3
Thu-08	302				2	2
Fri-09	307				3	3
Sat-10	314				3	3
Sun-11	310				3	3
Mon-12	341				4	4
Tue-13	307	87			3	3
Wed-14	253				3	3
Thu-15	299	178			3	3
Fri-16	216	63			3	3
Sat-17	302				3	3
Sun-18	220				3	3
Mon-19	328	184			2	2
Tue-20	326	102			3	3
Wed-21	331				3	3
Thu-22	337				2	2
Fri-23	318				2	2
Sat-24	365	205			2	2
Sun-25	225	52			3	3
Mon-26	286				3	3
Tue-27	329	188			3	3
Wed-28	287	99			< 2	< 2
Thu-29	292				3	3
Fri-30	325				2	2
Sat-31	353				3	3
Average	301	134	---	---	2.7	2.7
Minimum	181	44	---	---	< 2	< 2
Maximum	365	276	---	---	4	4
GeoMean	---	---	---	---	---	---
TOTAL	---	---	---	---	---	---

TP (mg/L)

DATE	RAW	OUTFALL 30	OUTFALL 20	EPEPS	OUTFALL 10 FE
Thu-01	8.91				0.36
Fri-02	8.65				0.35
Sat-03	8.56				0.37
Sun-04	7.95	8.79			0.32
Mon-05	4.53	1.92			0.34
Tue-06	6.53				0.41
Wed-07	7.71				0.35
Thu-08	7.70				0.32
Fri-09	7.48				0.33
Sat-10	9.40				0.38
Sun-11	9.04				0.49
Mon-12	7.87				0.45
Tue-13	7.85	4.11			0.48
Wed-14	10.7				0.38
Thu-15	7.91	0.57			0.54
Fri-16	5.30	2.96			0.37
Sat-17	7.15				0.33
Sun-18	7.89				0.30
Mon-19	7.49	7.69			0.31
Tue-20	7.69	6.62			0.30
Wed-21	8.78				0.33
Thu-22	8.83				0.32
Fri-23	8.11				0.30
Sat-24	7.19	6.29			0.31
Sun-25	5.26	3.71			0.34
Mon-26	7.46				0.33
Tue-27	8.59	7.08			0.33
Wed-28	7.42	4.96			0.34
Thu-29	7.59				0.33
Fri-30	7.42				0.19
Sat-31	7.19				0.43
Average	7.75	4.97	---	---	0.36
Minimum	4.53	0.57	---	---	0.19
Maximum	10.7	8.79	---	---	0.54
GeoMean	---	---	---	---	---
TOTAL	---	---	---	---	---

NH_3-N (mg/L)

DATE	RAW	OUTFALL 30	OUTFALL 20	EPEPS	OUTFALL 10 FEC	OUTFALL 10 FE
Thu-01	33.3				1.64	1.64
Fri-02	29.3				1.52	1.52
Sat-03	29.5				1.21	1.21
Sun-04	30.9	44.6			0.98	0.98
Mon-05	13.3	11.4			0.96	0.96
Tue-06	26.9				1.83	1.83
Wed-07	28.5				1.21	1.21
Thu-08	29.7				1.12	1.12
Fri-09	28.4				1.15	1.15
Sat-10	29.5				0.98	0.98
Sun-11	29.8				1.08	1.08
Mon-12	28.9				1.01	1.01
Tue-13	23.6	26.8			0.64	0.64
Wed-14	36.1				0.77	0.77
Thu-15	33.8	35.2			0.83	0.83
Fri-16	23.2	16.9			0.70	0.70
Sat-17	32.5				1.12	1.12
Sun-18	35.5				1.14	1.14
Mon-19	32.8	38.0			1.18	1.18
Tue-20	33.7	35.9			1.22	1.22
Wed-21	34.6				1.25	1.25
Thu-22	36.6				1.75	1.75
Fri-23	35.2				1.01	1.01
Sat-24	32.0	36.2			0.71	0.71
Sun-25	23.0	21.8			1.37	1.37
Mon-26	34.7				1.99	1.99
Tue-27	37.5	42.4			1.68	1.68
Wed-28	30.9	41.9			0.85	0.85
Thu-29	37.3				0.59	0.59
Fri-30	37.9				0.79	0.79
Sat-31	40.0				0.92	0.92
Average	31.3	31.9	---	---	1.14	1.14
Minimum	13.3	11.4	---	---	0.59	0.59
Maximum	40.0	44.6	---	---	1.99	1.99
GeoMean	---	---	---	---	---	---
TOTAL	---	---	---	---	---	---

un-ionized NH_3-N (mg/L)

DATE	OUTFALL 30	OUTFALL 20	OUTFALL 10
Thu-01			
Fri-02			
Sat-03			
Sun-04			
Mon-05			
Tue-06			
Wed-07			
Thu-08			
Fri-09			
Sat-10			
Sun-11			
Mon-12			
Tue-13			
Wed-14			
Thu-15			
Fri-16			
Sat-17			
Sun-18			
Mon-19			
Tue-20			
Wed-21			
Thu-22			
Fri-23			
Sat-24			
Sun-25			
Mon-26			
Tue-27			
Wed-28			
Thu-29			
Fri-30			
Sat-31			
Average	---	---	---
Minimum	---	---	---
Maximum	---	---	---
GeoMean	---	---	---
TOTAL	---	---	---

TKN (mg/L)

DATE	RAW	OUTFALL 30	OUTFALL 20	OUTFALL 10 FEC
Thu-01	59.7			3.6
Fri-02	59.8			3.4
Sat-03	56.1			3.2
Sun-04	53.6	62.3		2.6
Mon-05	25.7	15.0		2.3
Tue-06	44.3			3.1
Wed-07	49.0			2.8
Thu-08	45.6			2.7
Fri-09	48.2			2.7
Sat-10	55.9			2.5
Sun-11	54.4			2.9
Mon-12	47.8			2.6
Tue-13	48.3	37.3		2.4
Wed-14	70.5			2.5
Thu-15	55.9	3.9		2.9
Fri-16	37.1	20.1		2.2
Sat-17	50.5			2.5
Sun-18	53.6			2.6
Mon-19	52.8	50.4		2.7
Tue-20	60.3	49.4		3.5
Wed-21	63.2			3.2
Thu-22	65.8			3.9
Fri-23	63.1			2.9
Sat-24	55.6	52.8		2.8
Sun-25	41.9	27.7		3.0
Mon-26	57.3			3.5
Tue-27	58.2	57.7		3.4
Wed-28	54.2	53.1		2.3
Thu-29	61.2			2.3
Fri-30	58.6			2.2
Sat-31	60.9			2.7
Average	53.8	39.1	---	2.8
Minimum	25.7	3.9	---	2.2
Maximum	70.5	62.3	---	3.9
GeoMean	---	---	---	---
TOTAL	---	---	---	---

NO_2+NO_3 (mg/L)

DATE	RAW	OUTFALL 30	OUTFALL 20	OUTFALL 10 FEC
Thu-01				11.9
Fri-02				12.6
Sat-03				11.5
Sun-04		0.09		13.3
Mon-05		0.52		8.7
Tue-06				11.6
Wed-07	< 0.01			8.3
Thu-08				10.1
Fri-09				11.3
Sat-10				11.6
Sun-11				12.0
Mon-12				11.7
Tue-13		0.09		9.9
Wed-14	< 0.01			11.6
Thu-15		0.04		12.0
Fri-16		0.04		8.4
Sat-17				10.5
Sun-18				11.3
Mon-19		0.04		10.4
Tue-20		0.03		12.0
Wed-21	< 0.01			12.2
Thu-22				13.8
Fri-23				13.8
Sat-24		0.05		11.2
Sun-25		0.03		9.5
Mon-26				12.1
Tue-27		0.10		12.2
Wed-28	< 0.01	0.02		11.6
Thu-29				11.8
Fri-30				12.8
Sat-31				13.1
Average	< 0.01	0.09	---	11.4
Minimum	< 0.01	0.02	---	8.3
Maximum	< 0.01	0.52	---	13.8
GeoMean	---	---	---	---
TOTAL	---	---	---	---

Chloride (mg/L)

DATE	RAW	OUTFALL 30	OUTFALL 20	OUTFALL 10 FEC
Thu-01	92			98
Fri-02	86			99
Sat-03	87			99
Sun-04	84	83.8		95
Mon-05	45	32.7		72
Tue-06	87			79
Wed-07	88			87
Thu-08	92			93
Fri-09	92			95
Sat-10	86			95
Sun-11	80			90
Mon-12	84			87
Tue-13	72	64.0		88
Wed-14	93			86
Thu-15	83	69.2		96
Fri-16	59	42.4		78
Sat-17	74			81
Sun-18	79			82
Mon-19	81	84.9		87
Tue-20	81	81.3		88
Wed-21	92			89
Thu-22	91			92
Fri-23	89			93
Sat-24	80	79.0		88
Sun-25	64	50.2		71
Mon-26	91			79
Tue-27	89	97.1		97
Wed-28	83	88.6		94
Thu-29	91			91
Fri-30	87			100
Sat-31	82			99
Average	83	70.3	---	89
Minimum	45	32.7	---	71
Maximum	93	97.1	---	100
GeoMean	---	---	---	---
TOTAL	---	---	---	---

E. coli (Counts/100 mL)

DATE	RAW	OUTFALL 30	OUTFALL 20	OUTFALL 10 FEC
Thu-01	X10^6	X10^6	X10^6	FEC
Fri-02				7
Sat-03				12
Sun-04		3.0		6
Mon-05		1.0	0.7	18
Tue-06				37
Wed-07				13
Thu-08				11
Fri-09				16
Sat-10				14
Sun-11				6
Mon-12				11
Tue-13		1.5		6
Wed-14				4
Thu-15		3.4		9
Fri-16		1.1		6
Sat-17				28
Sun-18				13
Mon-19		1.9		10
Tue-20	4.3	4.1		11
Wed-21				16
Thu-22				8
Fri-23				9
Sat-24		3.9		4
Sun-25		3.0		14
Mon-26				12
Tue-27	8.0	9.0		19
Wed-28		5.4		20
Thu-29				11
Fri-30				14
Sat-31				9
Average	4.3	1.0	0.7	4
Minimum	8.0	9.0	0.7	37
Maximum	---	---	---	---
GeoMean	5.9	2.8	0.7	11
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
52	52	100%	379	379	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

Trina Manning M.Sc.; P.Eng.
Senior Manager, WWTP Operations

Jeff Charrois PhD
Senior Manager, Analytical Operations

Appendix A – Monthly Plant Performance Reports

PROVIDING MORE | EPCOR

Gold Bar Wastewater Treatment Plant
Plant Performance Report
September 2024

Digested Sludge: Total Monthly Volume (ML)	69.9

Liquid Stream Quality

Volume of Flow (ML)

DATE	Peak Flow MLD	Influent	Effluent					
			Non UV Disinfected				UV Disinfected	
		INFs	RAW	OUTFALL 30	OUTFALL 20	MPW	EPEPS	OUTFALL 10 FEC	OUTFALL 10 FE
Sun-01	349.4	0.0	276.9	0.0	0.0	11.8	0.0	265.1	265.1
Mon-02	582.1	0.0	294.9	11.3	0.0	12.4	0.0	271.2	271.2
Tue-03	553.7	0.0	309.5	5.5	0.0	13.1	0.0	290.9	290.9
Wed-04	349.8	0.0	285.4	0.0	0.0	12.3	0.0	273.1	273.1
Thu-05	341.6	0.0	286.3	0.0	0.0	10.4	0.0	275.9	275.9
Fri-06	336.9	0.0	288.1	0.0	0.0	10.3	0.0	277.8	277.8
Sat-07	349.0	0.0	282.8	0.0	0.0	11.5	0.0	271.3	271.3
Sun-08	410.2	0.0	286.7	0.0	0.0	12.2	0.0	274.5	274.5
Mon-09	366.5	0.0	288.4	0.0	0.0	13.1	0.0	275.3	275.3
Tue-10	343.0	0.0	281.2	0.0	0.0	12.7	0.0	268.5	268.5
Wed-11	354.5	0.0	280.1	0.0	0.0	12.7	0.0	267.4	267.4
Thu-12	594.3	0.0	345.7	30.9	0.0	12.4	0.0	302.4	302.4
Fri-13	337.3	0.0	285.2	0.0	0.0	11.9	0.0	273.3	273.3
Sat-14	568.8	0.0	306.1	22.7	0.0	12.6	0.0	270.8	270.8
Sun-15	474.6	0.0	299.5	11.9	0.0	13.3	0.0	274.3	274.3
Mon-16	412.1	0.0	292.5	2.3	0.0	13.1	0.0	277.1	277.1
Tue-17	340.6	0.0	283.0	0.0	0.0	12.4	0.0	270.6	270.6
Wed-18	338.9	0.0	283.5	0.0	0.0	12.6	0.0	270.9	270.9
Thu-19	332.1	0.0	278.2	0.0	0.0	12.1	0.0	266.1	266.1
Fri-20	349.1	0.0	287.9	0.0	0.0	12.2	0.0	275.7	275.7
Sat-21	352.3	0.0	273.8	0.0	0.0	12.4	0.0	261.4	261.4
Sun-22	591.0	0.0	298.4	24.9	0.0	13.1	0.0	260.4	260.4
Mon-23	410.6	0.0	284.1	2.2	0.0	4.8	0.0	277.1	277.1
Tue-24	345.0	0.0	272.2	0.0	0.0	0.0	0.0	272.2	272.2
Wed-25	341.3	0.0	277.9	0.0	0.0	0.0	0.0	277.9	277.9
Thu-26	1,121.1	0.0	418.9	81.7	0.0	4.0	0.0	333.2	333.2
Fri-27	355.5	0.0	294.0	0.0	0.0	13.2	0.0	280.8	280.8
Sat-28	375.2	0.0	276.2	0.0	0.0	12.5	0.0	263.7	263.7
Sun-29	375.2	0.0	284.2	0.0	0.0	12.2	0.0	272.0	272.0
Mon-30	395.9	0.0	287.2	0.0	0.0	12.7	0.0	274.5	274.5
Average	427.5	0.0	293.0	6.4	0.0	11.0	0.0	275.5	275.5
Minimum	332.1	0.0	272.2	0.0	0.0	0.0	0.0	260.4	260.4
Maximum	1,121.1	0.0	418.9	81.7	0.0	13.3	0.0	333.2	333.2
GeoMean	---	---	---	---	---	---	---	---	---
TOTAL	---	0	8,789	193	0	330	0	8,265	8,265

pH@25°C

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

TSS (mg/L)

DATE	RAW	OUTFALL 30	OUTFALL 20	EPEPS	OUTFALL 10 FEC	OUTFALL 10 FE
Sun-01	464				3.5	3.5
Mon-02	552	95			4.2	4.2
Tue-03	348	44			3.6	3.6
Wed-04	308				4.1	4.1
Thu-05	316				3.9	3.9
Fri-06	297				4.8	4.8
Sat-07	316				4.3	4.3
Sun-08	292				4.3	4.3
Mon-09	388				4.4	4.4
Tue-10	372				4.4	4.4
Wed-11	332				5.3	5.3
Thu-12	336	55			5.4	5.4
Fri-13	348				5.6	5.6
Sat-14	320	95			6.0	6.0
Sun-15	284	71			6.2	6.2
Mon-16	460	74			5.5	5.5
Tue-17	304				5.5	5.5
Wed-18	304				6.1	6.1
Thu-19	340				6.2	6.2
Fri-20	312				6.8	6.8
Sat-21	292				6.0	6.0
Sun-22	364	98			6.0	6.0
Mon-23	396	54			6.4	6.4
Tue-24	420				5.9	5.9
Wed-25	348				6.9	6.9
Thu-26	348	61			7.0	7.0
Fri-27	320				5.8	5.8
Sat-28	276				4.9	4.9
Sun-29	300				5.9	5.9
Mon-30	300				6.2	6.2
Average	346	72	---	---	5.4	5.4
Minimum	276	44	---	---	3.5	3.5
Maximum	552	98	---	---	7.0	7.0
GeoMean	---	---	---	---	---	---
TOTAL	---	---	---	---	---	---

BOD_5/cBOD$_5$ (mg/L)

DATE	RAW	OUTFALL 30	OUTFALL 20	EPEPS	OUTFALL 10 cBOD$_5$	OUTFALL 10 cBOD$_5$
Sun-01	290				2	2
Mon-02	344	236			3	3
Tue-03	226	96			3	3
Wed-04	309				3	3
Thu-05	299				3	3
Fri-06	287				4	4
Sat-07	252				3	3
Sun-08	306				3	3
Mon-09	294				3	3
Tue-10	262				3	3
Wed-11	292				3	3
Thu-12	236	109			3	3
Fri-13	294				3	3
Sat-14	301	169			3	3
Sun-15	306	160			3	3
Mon-16	257	154			4	4
Tue-17	204				3	3
Wed-18	281				4	4
Thu-19	315				4	4
Fri-20	300				4	4
Sat-21	316				4	4
Sun-22	322	158			4	4
Mon-23	302	94			3	3
Tue-24	299				4	4
Wed-25	321				4	4
Thu-26	239	71			3	3
Fri-27	270				3	3
Sat-28	269				3	3
Sun-29	301				4	4
Mon-30	294				4	4
Average	286	139	---	---	3.3	3.3
Minimum	204	71	---	---	2	2
Maximum	344	236	---	---	4	4
GeoMean	---	---	---	---	---	---
TOTAL	---	---	---	---	---	---

TP (mg/L)

DATE	RAW	OUTFALL 30	OUTFALL 20	EPEPS	OUTFALL 10 FEC	OUTFALL 10 FE
Sun-01	8.85				0.37	0.37
Mon-02	8.96	7.00			0.34	0.34
Tue-03	8.13	5.06			0.38	0.38
Wed-04	8.21				0.34	0.34
Thu-05	7.75				0.26	0.26
Fri-06	8.05				0.35	0.35
Sat-07	8.26				0.36	0.36
Sun-08	7.99				0.41	0.41
Mon-09	7.46				0.30	0.30
Tue-10	7.83				0.33	0.33
Wed-11	7.32				0.30	0.30
Thu-12	6.89	6.79			0.37	0.37
Fri-13	7.20				0.41	0.41
Sat-14	7.50	7.59			0.50	0.50
Sun-15	8.00	6.78			0.40	0.40
Mon-16	8.46	6.06			0.37	0.37
Tue-17	8.64				0.38	0.38
Wed-18	8.37				0.43	0.43
Thu-19	8.72				0.42	0.42
Fri-20	8.48				0.40	0.40
Sat-21	9.90				0.41	0.41
Sun-22	8.96	6.33			0.43	0.43
Mon-23	8.42	3.89			0.39	0.39
Tue-24	9.55				0.42	0.42
Wed-25	9.68				1.04	1.04
Thu-26	6.39	4.06			0.65	0.65
Fri-27	9.59				0.45	0.45
Sat-28	9.38				0.41	0.41
Sun-29	9.02				0.42	0.42
Mon-30	9.33				0.47	0.47
Average	8.38	5.95	---	---	0.42	0.42
Minimum	6.39	3.89	---	---	0.26	0.26
Maximum	9.90	7.59	---	---	1.04	1.04
GeoMean	---	---	---	---	---	---
TOTAL	---	---	---	---	---	---

NH3-N (mg/L)

DATE	RAW	OUTFALL 30	OUTFALL 20	EPEPS	OUTFALL 10 FEC	OUTFALL 10 FE
Sun-01	37.6				1.02	1.02
Mon-02	35.2	42.4			1.46	1.46
Tue-03	35.9	32.6			1.08	1.08
Wed-04	40.6				0.88	0.88
Thu-05	41.1				0.93	0.93
Fri-06	39.2				0.93	0.93
Sat-07	38.5				1.11	1.11
Sun-08	35.5				1.73	1.73
Mon-09	39.1				1.65	1.65
Tue-10	40.4				1.00	1.00
Wed-11	37.9				0.82	0.82
Thu-12	32.6	41.4			0.79	0.79
Fri-13	39.1				0.74	0.74
Sat-14	37.7	40.5			2.00	2.00
Sun-15	38.4	40.5			2.51	2.51
Mon-16	40.2	35.1			2.51	2.51
Tue-17	41.1				2.64	2.64
Wed-18	41.9				3.27	3.27
Thu-19	44.3				3.26	3.26
Fri-20	42.1				2.64	2.64
Sat-21	44.4				2.54	2.54
Sun-22	31.5	38.4			2.93	2.93
Mon-23	40.0	34.2			2.03	2.03
Tue-24	41.9				1.95	1.95
Wed-25	38.8				1.58	1.58
Thu-26	23.4	21.3			0.96	0.96
Fri-27	38.0				1.65	1.65
Sat-28	39.9				2.33	2.33
Sun-29	31.7				3.76	3.76
Mon-30	39.3				5.53	5.53
Average	38.2	36.3	---	---	1.94	1.94
Minimum	23.4	21.3	---	---	0.74	0.74
Maximum	44.4	42.4	---	---	5.53	5.53
GeoMean	---	---	---	---	---	---
TOTAL	---	---	---	---	---	---

un-ionized NH3-N (mg/L)

DATE	OUTFALL 30	OUTFALL 20	OUTFALL 10
Sun-01			
Mon-02			
Tue-03			
Wed-04			
Thu-05			
Fri-06			
Sat-07			
Sun-08			
Mon-09			
Tue-10			
Wed-11			
Thu-12			
Fri-13			
Sat-14			
Sun-15			
Mon-16			
Tue-17			
Wed-18			
Thu-19			
Fri-20			
Sat-21			
Sun-22			
Mon-23			
Tue-24			
Wed-25			
Thu-26			
Fri-27			
Sat-28			
Sun-29			
Mon-30			
Average	---	---	---
Minimum	---	---	---
Maximum	---	---	---
GeoMean	---	---	---
TOTAL	---	---	---

TKN (mg/L)

DATE	RAW	OUTFALL 30	OUTFALL 20	OUTFALL 10 FEC
Sun-01	61.6			3.0
Mon-02	59.9	53.7		3.3
Tue-03	62.4	46.9		3.1
Wed-04	61.8			2.8
Thu-05	60.6			2.7
Fri-06	61.2			2.8
Sat-07	61.4			3.1
Sun-08	61.3			3.8
Mon-09	57.0			3.2
Tue-10	56.1			2.8
Wed-11	50.9			2.2
Thu-12	46.6	47.7		2.7
Fri-13	52.9			2.4
Sat-14	57.7	58.0		3.7
Sun-15	61.4	51.5		4.6
Mon-16	59.8	50.4		4.6
Tue-17	67.3			5.0
Wed-18	64.5			6.1
Thu-19	70.3			6.0
Fri-20	66.6			5.2
Sat-21	73.0			4.9
Sun-22	66.9	57.7		5.4
Mon-23	62.0	44.1		4.3
Tue-24	69.3			4.1
Wed-25	67.9			3.9
Thu-26	44.6	31.2		3.1
Fri-27	65.3			3.9
Sat-28	67.5			4.6
Sun-29	66.3			6.0
Mon-30	67.5			7.5
Average	61.7	49.0	---	4.0
Minimum	44.6	31.2	---	2.2
Maximum	73.0	58.0	---	7.5
GeoMean	---	---	---	---
TOTAL	---	---	---	---

NO_2+NO_3 (mg/L)

DATE	RAW	OUTFALL 30	OUTFALL 20	OUTFALL 10 FEC
Sun-01				13.3
Mon-02	83	83		91
Tue-03	89	75		89
Wed-04	88			99
Thu-05	90			101
Fri-06	87			101
Sat-07	83			100
Sun-08	87			92
Mon-09	108			88
Tue-10	101			99
Wed-11	96			98
Thu-12	87	86		93
Fri-13	92			93
Sat-14	84	94		99
Sun-15	77	78		88
Mon-16	83	77		90
Tue-17	83			99
Wed-18	84			99
Thu-19	86			102
Fri-20	77			100
Sat-21	82			99
Sun-22	70	79		93
Mon-23	81	76		86
Tue-24	82			95
Wed-25	82			96
Thu-26	50	52		82
Fri-27	82			80
Sat-28	87			90
Sun-29	80			88
Mon-30	85			91
Average	84	78	---	94
Minimum	50	52	---	80
Maximum	108	94	---	102
GeoMean	---	---	---	---
TOTAL	---	---	---	---

Chloride (mg/L)

DATE	RAW	OUTFALL 30	OUTFALL 20	OUTFALL 10 FEC
Sun-01	13.3			94
Mon-02	13.3	0.09		91
Tue-03	12.0	0.03		89
Wed-04	13.1			99
Thu-05	14.2			101
Fri-06	13.4			101
Sat-07	12.9			100
Sun-08	12.4			92
Mon-09	12.0			88
Tue-10	13.6			99
Wed-11	14.2			98
Thu-12	12.9	0.03		93
Fri-13	13.9			93
Sat-14	13.5	0.03		99
Sun-15	11.6	0.03		88
Mon-16	11.5	0.02		90
Tue-17	11.8			99
Wed-18	10.6			99
Thu-19	11.4			102
Fri-20	12.1			100
Sat-21	13.1			99
Sun-22	12.8	0.05		93
Mon-23	11.3	0.02		86
Tue-24	12.1			95
Wed-25	13.5			96
Thu-26	9.7	0.12		82
Fri-27	12.3			80
Sat-28	13.3			90
Sun-29	13.2			88
Mon-30	11.3			91
Average	12.5	---	---	94
Minimum	9.7	0.02	---	80
Maximum	14.2	0.12	---	102
GeoMean	---	---	---	---
TOTAL	---	---	---	---

E. coli (Counts/100 mL)

DATE	RAW	OUTFALL 30	OUTFALL 20	OUTFALL 10 FEC
Sun-01				9
Mon-02				170
Tue-03				16
Wed-04				25
Thu-05				17
Fri-06				55
Sat-07				28
Sun-08				13
Mon-09				16
Tue-10	4.0			7
Wed-11				10
Thu-12	3.6	2.3		5
Fri-13				10
Sat-14		4.4		9
Sun-15		3.1		10
Mon-16		2.8		9
Tue-17				10
Wed-18				15
Thu-19				38
Fri-20				19
Sat-21				12
Sun-22		2.8		10
Mon-23		2.0		10
Tue-24				20
Wed-25				27
Thu-26		4.5		27
Fri-27				14
Sat-28				16
Sun-29				12
Mon-30				13
Average	---	---	---	---
Minimum	3.6	2.0	---	5
Maximum	4.0	4.8	---	170
GeoMean	---	---	---	---
TOTAL	3.8	3.0	---	16

* 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
32	32	100%	411	411	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

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Senior Manager, Analytical Operations

Appendix A – Monthly Plant Performance Reports

PROVIDING MORE EPCOR

Gold Bar Wastewater Treatment Plant
Plant Performance Report
October 2024

Digested Sludge: Total Monthly Volume (ML)	71.1

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
Tue-01	451.3	0.0	276.3	0.0	0.0	11.8	0.0	264.5	264.5
Wed-02	358.8	0.0	272.9	0.0	0.0	11.5	0.0	261.4	261.4
Thu-03	346.4	0.0	276.4	0.0	0.0	13.1	0.0	263.3	263.3
Fri-04	346.2	0.0	279.3	0.0	0.0	11.5	0.0	267.8	267.8
Sat-05	339.3	0.0	273.5	0.0	0.0	11.8	0.0	261.7	261.7
Sun-06	376.5	0.0	274.8	0.0	0.0	12.1	0.0	262.7	262.7
Mon-07	359.2	0.0	277.7	0.0	0.0	12.1	0.0	265.6	265.6
Tue-08	332.7	0.0	274.7	0.0	0.0	11.6	0.0	263.1	263.1
Wed-09	343.1	0.0	278.7	0.0	0.0	10.9	0.0	267.8	267.8
Thu-10	350.3	0.0	278.3	0.0	0.0	13.5	0.0	264.8	264.8
Fri-11	344.0	0.0	275.5	0.0	0.0	12.8	0.0	262.7	262.7
Sat-12	368.4	0.0	271.1	0.0	0.0	13.1	0.0	258.0	258.0
Sun-13	367.6	0.0	270.2	0.0	0.0	12.5	0.0	257.7	257.7
Mon-14	379.6	0.0	271.2	0.0	0.0	11.5	0.0	259.7	259.7
Tue-15	357.4	0.0	268.8	0.0	0.0	12.9	0.0	255.9	255.9
Wed-16	356.5	0.0	269.9	0.0	0.0	13.1	0.0	256.8	256.8
Thu-17	391.9	0.0	282.1	0.0	0.0	12.9	0.0	269.2	269.2
Fri-18	373.3	0.0	274.3	0.0	0.0	13.3	0.0	261.0	261.0
Sat-19	344.8	0.0	277.0	0.0	0.0	13.3	0.0	263.7	263.7
Sun-20	435.6	0.0	279.8	10.6	0.0	13.7	0.0	255.5	255.5
Mon-21	433.0	0.0	282.7	1.2	0.0	13.2	0.0	268.3	268.3
Tue-22	348.6	0.0	270.9	0.0	0.0	13.3	0.0	257.6	257.6
Wed-23	336.8	0.0	270.8	0.0	0.0	12.9	0.0	257.9	257.9
Thu-24	342.7	0.0	274.4	0.0	0.0	12.9	0.0	261.5	261.5
Fri-25	323.8	0.0	275.1	0.0	0.0	12.8	0.0	262.3	262.3
Sat-26	347.9	0.0	269.5	0.0	0.0	12.6	0.0	256.9	256.9
Sun-27	361.3	0.0	274.7	0.0	0.0	12.8	0.0	261.9	261.9
Mon-28	373.5	0.0	279.5	0.0	0.0	12.4	0.0	267.1	267.1
Tue-29	465.0	0.0	276.8	0.0	0.0	11.3	0.0	265.5	265.5
Wed-30	593.2	0.0	277.6	0.0	0.0	12.3	0.0	265.3	265.3
Thu-31	348.3	0.0	272.8	0.0	0.0	12.4	0.0	260.4	260.4
Average	374.1	0.0	275.1	0.4	0.0	12.5	0.0	262.2	262.2
Minimum	323.8	0.0	268.8	0.0	0.0	10.9	0.0	255.5	255.5
Maximum	593.2	0.0	282.7	10.6	0.0	13.7	0.0	269.2	269.2
GeoMean	---	---	---	---	---	---	---	---	---
TOTAL	---	0	8,527	12	0	388	0	8,128	8,128

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
Tue-01	7.6			7.5	268				5.5	5.5
Wed-02	7.5			7.5	308				5.6	5.6
Thu-03	7.6			7.5	328				5.3	5.3
Fri-04	7.5			7.5	306				5.3	5.3
Sat-05	7.5			7.6	314				4.2	4.2
Sun-06	7.6			7.4	304				5.2	5.2
Mon-07	7.6			7.5	420				5.1	5.1
Tue-08	7.6			7.6	308				4.6	4.6
Wed-09	7.6			7.5	400				4.6	4.6
Thu-10	7.7			7.5	320				4.0	4.0
Fri-11	7.6			7.7	288				4.9	4.9
Sat-12	7.6			7.5	288				3.5	3.5
Sun-13	7.6			7.6	284				4.2	4.2
Mon-14	7.6			7.6	360				4.9	4.9
Tue-15	7.5			7.5	332				4.1	4.1
Wed-16	7.5			7.7	396				3.3	3.3
Thu-17	7.5			7.5	348				4.3	4.3
Fri-18	7.6			7.5	348				4.9	4.9
Sat-19	7.5			7.6	376				4.8	4.8
Sun-20	7.8	7.5		7.6	356	344			4.3	4.3
Mon-21	7.7	7.8		7.5	292	164			2.6	2.6
Tue-22	7.6			7.5	416				4.8	4.8
Wed-23	7.8			7.6	376				5.1	5.1
Thu-24	7.5			7.5	400				4.5	4.5
Fri-25	7.5			7.5	368				3.2	3.2
Sat-26	7.6			7.5	388				4.4	4.4
Sun-27	7.6			7.5	423				4.5	4.5
Mon-28	7.7			7.5	404				5.0	5.0
Tue-29	7.5			7.5	400				4.4	4.4
Wed-30	7.6			7.4	436				4.1	4.1
Thu-31	7.7			7.5	428				5.0	5.0
Average	7.6	7.7	---	7.5	354	254	---	---	4.5	4.5
Minimum	7.5	7.5	---	7.4	268	164	---	---	2.6	2.6
Maximum	7.8	7.8	---	7.7	436	344	---	---	5.6	5.6
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
Tue-01	275				4	4	9.08				0.40	0.40
Wed-02	351				4	4	9.51				0.42	0.42
Thu-03	364				4	4	8.99				0.50	0.50
Fri-04	278				4	4	9.12				0.39	0.39
Sat-05	360				4	4	8.79				0.38	0.38
Sun-06	317				4	4	8.15				0.37	0.37
Mon-07	280				4	4	7.95				0.33	0.33
Tue-08	349				< 2	< 2	8.40				0.33	0.33
Wed-09	298				3	3	8.40				0.36	0.36
Thu-10	346				3	3	8.70				0.37	0.37
Fri-11	349				3	3	8.73				0.38	0.38
Sat-12	316				3	3	8.86				0.34	0.34
Sun-13	334				3	3	7.29				0.35	0.35
Mon-14	446				3	3	8.61				0.32	0.32
Tue-15	385				3	3	8.87				0.28	0.28
Wed-16	312				4	4	9.11				0.48	0.48
Thu-17	329				3	3	8.96				0.30	0.30
Fri-18	320				3	3	9.45				0.30	0.30
Sat-19	329				3	3	9.62				0.29	0.29
Sun-20	341	244			3	3	9.94	8.25			0.27	0.27
Mon-21	289	162			3	3	8.56	7.67			0.26	0.26
Tue-22	330				3	3	9.18				0.33	0.33
Wed-23	325				3	3	9.54				0.31	0.31
Thu-24	312				3	3	9.40				0.33	0.33
Fri-25	348				2	2	8.73				0.34	0.34
Sat-26	318				2	2	9.02				0.34	0.34
Sun-27	344				3	3	8.86				0.33	0.33
Mon-28	311				< 2	< 2	8.60				0.33	0.33
Tue-29	322				2	2	9.26				0.29	0.29
Wed-30	335				2	2	9.53				0.29	0.29
Thu-31	318				3	3	9.29				0.32	0.32
Average	330	203	---	---	3.1	3.1	8.92	7.96	---	---	0.34	0.34
Minimum	275	162	---	---	< 2	< 2	7.29	7.67	---	---	0.26	0.26
Maximum	446	244	---	---	4	4	9.94	8.25	---	---	0.50	0.50
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	un-ionized NH3-N (mg/L): OUT-FAL 30	un-ionized: OUT-FAL 20	un-ionized: OUT-FAL 10
Tue-01	39.7				3.85	3.85			
Wed-02	39.6				3.34	3.34			
Thu-03	38.7				2.65	2.65			
Fri-04	38.6				1.36	1.36			
Sat-05	38.7				1.79	1.79			
Sun-06	37.8				2.46	2.46			
Mon-07	37.1				2.78	2.78			
Tue-08	38.2				2.68	2.68			
Wed-09	36.4				1.81	1.81			
Thu-10	37.7				2.04	2.04			
Fri-11	37.0				2.17	2.17			
Sat-12	36.7				2.40	2.40			
Sun-13	37.9				2.94	2.94			
Mon-14	38.6				3.26	3.26			
Tue-15	37.1				3.98	3.98			
Wed-16	32.1				2.60	2.60			
Thu-17	33.7				1.58	1.58			
Fri-18	38.2				0.84	0.84			
Sat-19	37.2				2.02	2.02			
Sun-20	35.9	47.9			2.94	2.94			
Mon-21	36.2	39.1			2.29	2.29			
Tue-22	34.8				3.72	3.72			
Wed-23	36.0				3.52	3.52			
Thu-24	35.4				4.34	4.34			
Fri-25	31.5				3.53	3.53			
Sat-26	32.1				4.07	4.07			
Sun-27	35.1				4.40	4.40			
Mon-28	34.8				3.39	3.39			
Tue-29	33.7				1.61	1.61			
Wed-30	39.7				2.30	2.30			
Thu-31	40.3				3.23	3.23			
Average	36.7	43.5	---	---	2.77	2.77	---	---	---
Minimum	31.5	39.1	---	---	0.84	0.84	---	---	---
Maximum	40.3	47.9	---	---	4.40	4.40	---	---	---
GeoMean	---	---	---	---	---	---	---	---	---
TOTAL	---	---	---	---	---	---	---	---	---

DATE	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
Tue-01	66.7			6.3				11.60
Wed-02	63.6			5.7	< 0.01			11.8
Thu-03	63.1			4.4				12.2
Fri-04	63.1			3.3				13.3
Sat-05	61.4			3.9				12.7
Sun-06	55.7			4.2				13.3
Mon-07	55.3			4.2				11.7
Tue-08	55.8			4.1				10.6
Wed-09	55.4			3.3	0.01			12.7
Thu-10	56.7			3.7				12.3
Fri-11	60.1			4.3				11.4
Sat-12	58.7			4.0				9.8
Sun-13	60.2			4.7				9.8
Mon-14	66.5			5.0				9.9
Tue-15	62.1			6.1				8.7
Wed-16	60.7			4.8	< 0.01			10.2
Thu-17	63.2			3.3				9.8
Fri-18	65.0			2.5				9.8
Sat-19	71.2			3.9				10.2
Sun-20	66.7	68.3		4.5		< 0.01		10.0
Mon-21	58.8	53.7		4.2		0.02		9.8
Tue-22	56.6			6.0				8.2
Wed-23	61.5			5.6	< 0.01			8.5
Thu-24	60.3			6.5				9.1
Fri-25	62.4			6.2				9.6
Sat-26	64.0			7.0				10.0
Sun-27	66.5			6.8				10.3
Mon-28	61.9			5.7				9.7
Tue-29	58.7			3.9				9.4
Wed-30	62.2			3.9	< 0.01			10.7
Thu-31	61.8			5.1				11.3
Average	61.5	61.0	---	4.7	0.01	0.01	---	10.6
Minimum	55.3	53.7	---	2.5	< 0.01	< 0.01	---	8.2
Maximum	71.2	68.3	---	7.0	0.01	0.02	---	13.3
GeoMean	---	---	---	---	---	---	---	---
TOTAL	---	---	---	---	---	---	---	---

DATE	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	92			96				16
Wed-02	90			96				42
Thu-03	90			94				18
Fri-04	85			94				20
Sat-05	80			95				14
Sun-06	77			89				9
Mon-07	82			84				8
Tue-08	79			105	4.0			12
Wed-09	81			96				8
Thu-10	71			92	3.8			11
Fri-11	74			90				13
Sat-12	68			93				3
Sun-13	69			89				16
Mon-14	76			84				16
Tue-15	80			85				17
Wed-16	76			92				12
Thu-17	74			87				22
Fri-18	69			87				6
Sat-19	77			86				4
Sun-20	75	80		87		2.6		7
Mon-21	82	82		85		18.0		12
Tue-22	83			84				35
Wed-23	87			86				14
Thu-24	82			84				16
Fri-25	83			86				15
Sat-26	85			89				8
Sun-27	80			83				6
Mon-28	84			80				9
Tue-29	83			86				7
Wed-30	83			86				8
Thu-31	82			87				4
Average	80	81	---	89			---	
Minimum	68	80	---	80	3.8	2.6	---	3
Maximum	92	82	---	105	4.0	18.0	---	42
GeoMean	---	---	---	---	3.9	6.9	---	11
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
8	8	100%	419	419	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

Trina Manning M.Sc.; P.Eng.
Senior Manager, WWTP Operations

Jeff Charrois PhD
Senior Manager, Analytical Operations

Appendix A – Monthly Plant Performance Reports

PROVIDING MORE EPCOR

Gold Bar Wastewater Treatment Plant
Plant Performance Report
November 2024

Digested Sludge: Total Monthly Volume (ML)	68.3

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
Fri-01	376.4	0.0	268.0	0.0	0.0	13.2	0.0	254.8	254.8
Sat-02	362.1	0.0	275.7	0.0	0.0	12.2	0.0	263.5	263.5
Sun-03	368.4	0.0	291.6	0.0	0.0	12.3	0.0	279.3	279.3
Mon-04	356.5	0.0	284.9	0.0	0.0	13.4	0.0	271.5	271.5
Tue-05	347.8	0.0	285.8	0.0	0.0	13.5	0.0	272.3	272.3
Wed-06	343.1	0.0	278.2	0.0	0.0	12.9	0.0	265.3	265.3
Thu-07	334.9	0.0	270.3	0.0	0.0	12.6	0.0	257.7	257.7
Fri-08	335.3	0.0	272.9	0.0	0.0	13.7	0.0	259.2	259.2
Sat-09	358.5	0.0	271.3	0.0	0.0	13.8	0.0	257.5	257.5
Sun-10	327.4	0.0	275.0	0.0	0.0	12.3	0.0	262.7	262.7
Mon-11	360.9	0.0	269.6	0.0	0.0	12.7	0.0	256.9	256.9
Tue-12	333.3	0.0	274.2	0.0	0.0	12.4	0.0	261.8	261.8
Wed-13	342.9	0.0	272.6	0.0	0.0	12.6	0.0	260.0	260.0
Thu-14	317.0	0.0	271.2	0.0	0.0	12.7	0.0	258.5	258.5
Fri-15	402.9	0.0	283.0	0.0	0.0	12.8	0.0	270.2	270.2
Sat-16	354.2	0.0	269.6	0.0	0.0	12.7	0.0	256.9	256.9
Sun-17	373.3	0.0	275.3	0.0	0.0	12.0	0.0	263.3	263.3
Mon-18	355.3	0.0	280.3	0.0	0.0	11.9	0.0	268.4	268.4
Tue-19	338.9	0.0	273.7	0.0	0.0	11.6	0.0	262.1	262.1
Wed-20	343.8	0.0	273.1	0.0	0.0	11.9	0.0	261.2	261.2
Thu-21	324.4	0.0	268.9	0.0	0.0	11.9	0.0	257.0	257.0
Fri-22	334.7	0.0	273.1	0.0	0.0	12.1	0.0	261.0	261.0
Sat-23	344.6	0.0	273.0	0.0	0.0	12.3	0.0	260.7	260.7
Sun-24	366.7	0.0	276.0	0.0	0.0	13.0	0.0	263.0	263.0
Mon-25	350.0	0.0	280.1	0.0	0.0	12.1	0.0	268.0	268.0
Tue-26	340.8	0.0	275.0	0.0	0.0	11.6	0.0	263.4	263.4
Wed-27	688.0	0.0	276.8	0.0	0.0	12.7	0.0	264.1	264.1
Thu-28	688.8	0.0	278.0	0.0	0.0	13.0	0.0	265.0	265.0
Fri-29	344.7	0.0	279.1	0.0	0.0	11.5	0.0	267.6	267.6
Sat-30	346.0	0.0	270.2	0.0	0.0	11.7	0.0	258.5	258.5
Average	372.1	0.0	275.6	0.0	0.0	12.5	0.0	263.0	263.0
Minimum	317.0	0.0	268.0	0.0	0.0	11.5	0.0	254.8	254.8
Maximum	688.8	0.0	291.6	0.0	0.0	13.8	0.0	279.3	279.3
GeoMean	---	---	---	---	---	---	---	---	---
TOTAL	---	0	8,267	0	0	375	0	7,891	7,891

Liquid Stream Quality

DATE	pH@25°C RAW	pH@25°C OUTFALL 30	pH@25°C OUTFALL 20	pH@25°C OUTFALL 10 FEC	TSS (mg/L) RAW	TSS OUTFALL 30	TSS OUTFALL 20	TSS EPEPS	TSS OUTFALL 10 FEC	TSS OUTFALL 10 FE
Fri-01	7.7			7.5	437				4.4	4.4
Sat-02	7.6			7.5	392				4.0	4.0
Sun-03	7.6			7.4	400				3.5	3.5
Mon-04	7.7			7.5	408				4.2	4.2
Tue-05	7.5			7.4	376				3.5	3.5
Wed-06	7.8			7.4	676				3.5	3.5
Thu-07	7.6			7.4	436				3.6	3.6
Fri-08	7.6			7.4	444				3.1	3.1
Sat-09	7.6			7.5	392				2.6	2.6
Sun-10	7.7			7.6	400				4.4	4.4
Mon-11	7.5			7.5	364				3.8	3.8
Tue-12	7.6			7.5	288				4.4	4.4
Wed-13	7.5			7.5	360				3.1	3.1
Thu-14	7.5			7.4	304				4.3	4.3
Fri-15	7.5			7.4	340				4.3	4.3
Sat-16	7.6			7.5	316				4.3	4.3
Sun-17	7.6			7.5	340				4.8	4.8
Mon-18	7.6			7.4	320				3.9	3.9
Tue-19	7.6			7.4	324				3.4	3.4
Wed-20	7.5			7.4	408				4.3	4.3
Thu-21	7.7			7.5	336				3.7	3.7
Fri-22	7.5			7.5	300				2.9	2.9
Sat-23	7.5			7.5	324				3.9	3.9
Sun-24	7.6			7.5	284				3.5	3.5
Mon-25	7.5			7.5	276				4.6	4.6
Tue-26	7.5			7.6	320				3.5	3.5
Wed-27	7.5			7.6	328				3.7	3.7
Thu-28	7.5			7.6	380				3.0	3.0
Fri-29	7.6			7.5	277				3.9	3.9
Sat-30	7.6			7.6	332				3.1	3.1
Average	7.6	---	---	7.5	363	---	---	---	3.8	3.8
Minimum	7.5	---	---	7.4	276	---	---	---	2.6	2.6
Maximum	7.8	---	---	7.6	676	---	---	---	4.8	4.8
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
Fri-01	326				3	3	8.87				0.30	0.30
Sat-02	327				3	3	8.18				0.65	0.65
Sun-03	274				2	2	8.81				0.42	0.42
Mon-04	309				3	3	8.51				0.29	0.29
Tue-05	307				2	2	8.35				0.29	0.29
Wed-06	376				3	3	10.1				0.26	0.26
Thu-07	354				3	3	10.1				0.32	0.32
Fri-08	389				3	3	9.81				0.32	0.32
Sat-09	331				3	3	9.27				0.33	0.33
Sun-10	316				3	3	10.1				0.33	0.33
Mon-11	354				4	4	10.3				0.32	0.32
Tue-12	310				4	4	9.29				0.33	0.33
Wed-13	324				3	3	8.53				0.27	0.27
Thu-14	341				4	4	8.92				0.31	0.31
Fri-15	319				3	3	8.31				0.33	0.33
Sat-16	239				3	3	9.00				0.30	0.30
Sun-17	340				3	3	8.66				0.38	0.38
Mon-18	322				3	3	9.21				0.28	0.28
Tue-19	364				2	2	9.07				0.30	0.30
Wed-20	332				2	2	9.27				0.31	0.31
Thu-21	302				2	2	9.14				0.31	0.31
Fri-22	329				2	2	8.42				0.32	0.32
Sat-23	326				< 2	< 2	8.50				0.28	0.28
Sun-24	292				3	3	8.08				0.29	0.29
Mon-25	275				3	3	7.92				0.27	0.27
Tue-26	363				3	3	8.28				0.26	0.26
Wed-27	364				3	3	8.42				0.27	0.27
Thu-28	352				3	3	8.31				0.28	0.28
Fri-29	317				3	3	8.12				0.28	0.28
Sat-30	334				3	3	8.12				0.27	0.27
Average	327	---	---	---	3	3	8.87	---	---	---	0.32	0.32
Minimum	239	---	---	---	< 2	< 2	7.92	---	---	---	0.26	0.26
Maximum	389	---	---	---	4	4	10.3	---	---	---	0.65	0.65
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	un-ionized NH3-N (mg/L) OUT-FAL 30	un-ionized OUT-FAL 20	un-ionized OUT-FAL 10	TKN (mg/L) RAW	TKN OUTFALL 30	TKN OUTFALL 20	TKN OUTFALL 10 FEC
Fri-01	40.7				3.19	3.19				52.6			4.4
Sat-02	38.7				3.61	3.61				48.8			4.9
Sun-03	39.6				3.52	3.52				54.9			4.7
Mon-04	38.8				2.84	2.84				59.8			4.6
Tue-05	38.2				2.10	2.10				51.2			3.3
Wed-06	38.4				2.70	2.70				67.3			4.0
Thu-07	38.1				2.66	2.66				63.6			4.5
Fri-08	39.4				2.84	2.84				63.0			4.3
Sat-09	40.4				3.08	3.08				59.5			4.8
Sun-10	39.2				3.41	3.41				64.9			5.2
Mon-11	44.0				3.67	3.67				71.3			5.0
Tue-12	41.0				2.88	2.88				63.4			4.2
Wed-13	39.4				2.46	2.46				56.1			3.5
Thu-14	40.6				2.30	2.30				57.0			3.7
Fri-15	41.0				2.54	2.54				57.8			3.9
Sat-16	42.1				2.96	2.96				57.7			4.6
Sun-17	40.7				3.14	3.14				57.6			4.7
Mon-18	39.0				2.88	2.88				57.8			4.8
Tue-19	40.2				3.04	3.04				63.2			4.6
Wed-20	39.8				2.97	2.97				64.9			4.7
Thu-21	40.7				2.43	2.43				64.3			4.1
Fri-22	38.0				1.68	1.68				60.7			3.3
Sat-23	40.1				1.83	1.83				62.6			3.7
Sun-24	32.0				2.77	2.77				58.5			4.5
Mon-25	37.6				2.13	2.13				57.6			3.8
Tue-26	35.7				1.20	1.20				57.7			3.3
Wed-27	36.7				1.46	1.46				56.2			3.4
Thu-28	38.9				1.64	1.64				57.3			3.4
Fri-29	34.6				1.85	1.85				55.8			3.6
Sat-30	38.0				2.67	2.67				63.5			4.4
Average	39.1	---	---	---	2.62	2.62	---	---	---	59.6	---	---	4.2
Minimum	32.0	---	---	---	1.20	1.20	---	---	---	48.8	---	---	3.3
Maximum	44.0	---	---	---	3.67	3.67	---	---	---	71.3	---	---	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
Fri-01				11.6	83.1			86.4				7
Sat-02				11.6	79.5			86.2				8
Sun-03				11.4	90.0			83.4				6
Mon-04				10.6	83.5			79.1				12
Tue-05				10.4	104			95.2				4
Wed-06	< 0.01			11.1	88.1			103				6
Thu-07				10.9	84.1			90.5				10
Fri-08				11.4	89.9			92.0				2
Sat-09				11.1	80.5			92.5				9
Sun-10				12.2	79.8			86.4				6
Mon-11				12.6	83.9			82.7				8
Tue-12				12.1	86.2			81.6				4
Wed-13	< 0.01			12.0	86.3			88.9				6
Thu-14				12.1	83.6			89.4				4
Fri-15				12.0	94.2			91.0	3.2			6
Sat-16				12.2	78.8			98.9				6
Sun-17				11.8	75.5			82.6				6
Mon-18				11.1	82.0			78.9				6
Tue-19				11.8	90.7			85.5				7
Wed-20	< 0.01			10.5	82.9			88.6				8
Thu-21				10.6	84.9			85.3				7
Fri-22				9.4	102			91.7	2.9			4
Sat-23				7.8	103			103				6
Sun-24				7.6	94.6			101				6
Mon-25				7.0	101			95.2				12
Tue-26				6.8	107			108				7
Wed-27	< 0.01			6.6	102			111				6
Thu-28				6.9	99.7			110				6
Fri-29				7.3	95.9			104				9
Sat-30				7.7	90.5			101				8
Average	< 0.01	---	---	10.3	89.6	---	---	92.4			---	
Minimum	< 0.01	---	---	6.6	75.5	---	---	78.9	2.9	---	---	2
Maximum	< 0.01	---	---	12.6	107	---	---	111	3.2	---	---	12
GeoMean	---	---	---	---	---	---	---	---	3.0	---	---	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
0	0	100%	419	419	100%

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

Report Comments

AEP Ref #

Trina Manning M.Sc.; P.Eng.
Senior Manager, WWTP Operations

Jeff Charrois PhD
Senior Manager, Analytical Operations

Appendix A – Monthly Plant Performance Reports

Gold Bar Wastewater Treatment Plant
Plant Performance Report
December 2024

Digested Sludge: Total Monthly Volume (ML)	64.4

Liquid Stream Quality

DATE	Peak Flow (MLD)	Volume of Flow (ML) 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	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
Sun-01	366.3	0.0	272.5	0.0	0.0	12.2	0.0	260.3	260.3	7.5			7.5	320				4.2	4.2
Mon-02	359.4	0.0	277.8	0.0	0.0	11.8	0.0	266.0	266.0	7.6			7.5	328				3.1	3.1
Tue-03	443.4	0.0	309.8	5.2	0.0	11.7	0.0	292.9	292.9	7.4	7.6		7.6	352	210			3.4	3.4
Wed-04	382.4	0.0	278.2	0.0	0.0	12.1	0.0	266.1	266.1	7.5			7.5	320				3.7	3.7
Thu-05	390.5	0.0	277.3	0.0	0.0	13.2	0.0	264.1	264.1	7.6			7.4	288				2.7	2.7
Fri-06	391.5	0.0	301.5	0.0	0.0	13.4	0.0	288.1	288.1	7.6			7.5	296				2.8	2.8
Sat-07	497.4	0.0	303.5	9.0	0.0	13.4	0.0	281.1	281.1	7.5	7.5		7.4	344	144			3.0	3.0
Sun-08	490.0	0.0	330.8	13.4	0.0	13.2	0.0	304.2	304.2	7.4	7.4		7.3	252	168			3.0	3.0
Mon-09	370.2	0.0	287.5	0.3	0.0	13.0	0.0	274.2	274.2	7.5			7.5	291				3.3	3.3
Tue-10	339.6	0.0	270.6	0.0	0.0	12.1	0.0	258.5	258.5	7.4			7.5	280				2.7	2.7
Wed-11	329.7	0.0	270.8	0.0	0.0	12.1	0.0	258.7	258.7	7.5			7.5	332				2.4	2.4
Thu-12	367.3	0.0	272.0	0.0	0.0	12.3	0.0	259.7	259.7	7.6			7.5	292				2.7	2.7
Fri-13	322.5	0.0	271.3	0.0	0.0	13.2	0.0	258.1	258.1	7.6			7.5	292				3.1	3.1
Sat-14	358.6	0.0	275.6	0.0	0.0	13.3	0.0	262.3	262.3	7.5			7.5	340				3.5	3.5
Sun-15	356.1	0.0	274.8	0.0	0.0	13.3	0.0	261.5	261.5	7.5			7.5	396				2.9	2.9
Mon-16	349.3	0.0	279.4	0.0	0.0	12.6	0.0	266.8	266.8	7.6			7.6	316				3.0	3.0
Tue-17	327.9	0.0	276.0	0.0	0.0	13.5	0.0	262.5	262.5	7.5			7.5	396				3.4	3.4
Wed-18	328.2	0.0	272.2	0.0	0.0	12.9	0.0	259.3	259.3	7.6			7.4	371				3.6	3.6
Thu-19	321.4	0.0	273.0	0.0	0.0	12.9	0.0	260.1	260.1	7.5			7.5	272				3.3	3.3
Fri-20	318.1	0.0	278.5	0.0	0.0	12.9	0.0	265.6	265.6	7.7			7.5	328				3.8	3.8
Sat-21	347.7	0.0	276.0	0.0	0.0	13.2	0.0	262.8	262.8	7.5			7.5	316				3.9	3.9
Sun-22	346.6	0.0	272.1	0.0	0.0	13.3	0.0	258.8	258.8	7.6			7.4	324				3.7	3.7
Mon-23	340.2	0.0	276.6	0.0	0.0	12.7	0.0	263.9	263.9	7.6			7.5	312				2.9	2.9
Tue-24	364.8	0.0	280.7	0.0	0.0	13.0	0.0	267.7	267.7	7.5			7.5	312				3.8	3.8
Wed-25	329.6	0.0	253.3	0.0	0.0	12.8	0.0	240.5	240.5	7.6			7.5	391				3.6	3.6
Thu-26	319.9	0.0	250.7	0.0	0.0	12.2	0.0	238.5	238.5	7.6			7.4	368				3.5	3.5
Fri-27	355.1	0.0	267.1	0.0	0.0	12.4	0.0	254.7	254.7	7.5			7.4	368				2.9	2.9
Sat-28	341.9	0.0	266.7	0.0	0.0	12.2	0.0	254.5	254.5	7.6			7.5	386				3.5	3.5
Sun-29	335.2	0.0	265.2	0.0	0.0	12.9	0.0	252.3	252.3	7.6			7.5	328				3.3	3.3
Mon-30	338.5	0.0	271.4	0.0	0.0	11.8	0.0	259.6	259.6	7.6			7.6	312				3.8	3.8
Tue-31	365.9	0.0	279.9	0.0	0.0	12.0	0.0	267.9	267.9	7.5			7.6	296				4.1	4.1
Average	361.1	0.0	277.8	0.9	0.0	12.7	0.0	264.2	264.2	7.5	7.5	---	7.5	326	174	---	---	3.3	3.3
Minimum	318.1	0.0	250.7	0.0	0.0	11.7	0.0	238.5	238.5	7.4	7.4	---	7.3	252	144	---	---	2.4	2.4
Maximum	497.4	0.0	330.8	13.4	0.0	13.5	0.0	304.2	304.2	7.7	7.6	---	7.6	396	210	---	---	4.2	4.2
GeoMean	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
TOTAL	---	0	8,613	28	0	394	0	8,191	8,191	---	---	---	---	---	---	---	---	---	---

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	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
Sun-01	357				3	3	8.08				0.26	0.26	37.9				3.13	3.13
Mon-02	339				< 2	< 2	8.19				0.21	0.21	40.4				2.14	2.14
Tue-03	360	178			3	3	7.73	4.61			0.21	0.21	33.5	35.3			1.66	1.66
Wed-04	272				2	2	7.70				0.20	0.20	38.7				1.52	1.52
Thu-05	293				3	3	9.00				0.22	0.22	37.1				1.63	1.63
Fri-06	280				2	2	8.55				0.25	0.25	34.1				1.70	1.70
Sat-07	371	204			2	2	8.66	6.20			0.24	0.24	32.3	30.3			1.89	1.89
Sun-08	316	239			2	2	7.59	5.97			0.18	0.18	30.5	36.6			1.70	1.70
Mon-09	307				< 2	< 2	8.26				0.21	0.21	35.2				1.32	1.32
Tue-10	286				2	2	7.61				0.19	0.19	30.9				1.17	1.17
Wed-11	352				2	2	8.09				0.21	0.21	38.1				1.32	1.32
Thu-12	298				2	2	8.94				0.22	0.22	39.6				1.46	1.46
Fri-13	294				2	2	9.91				0.24	0.24	41.4				3.68	3.68
Sat-14	315				2	2	7.39				0.24	0.24	36.7				1.34	1.34
Sun-15	326				2	2	7.72				0.25	0.25	36.8				1.30	1.30
Mon-16	305				2	2	8.08				0.21	0.21	39.5				1.44	1.44
Tue-17	323				2	2	9.74				0.28	0.28	41.2				1.85	1.85
Wed-18	353				2	2	10.00				0.24	0.24	41.2				2.09	2.09
Thu-19	365				3	3	9.67				0.29	0.29	42.5				2.13	2.13
Fri-20	352				3	3	9.67				0.27	0.27	41.3				1.89	1.89
Sat-21	336				3	3	9.32				0.25	0.25	42.4				1.69	1.69
Sun-22	322				3	3	9.57				0.26	0.26	44.6				2.00	2.00
Mon-23	307				3	3	9.49				0.25	0.25	42.8				1.73	1.73
Tue-24	339				3	3	9.36				0.27	0.27	41.0				1.91	1.91
Wed-25	308				3	3	10.10				0.22	0.22	44.9				1.83	1.83
Thu-26	328				< 2	< 2	10.30				0.21	0.21	45.2				1.90	1.90
Fri-27	343				3	3	9.59				0.27	0.27	38.4				2.09	2.09
Sat-28	297				2	2	10.40				0.22	0.22	43.8				2.08	2.08
Sun-29	351				3	3	3.93				0.27	0.27	41.3				1.99	1.99
Mon-30	258				3	3	9.39				0.26	0.26	41.0				1.94	1.94
Tue-31	299				2	2	9.75				0.28	0.28	40.7				1.95	1.95
Average	321	207	---	---	2.4	2.4	8.77	5.59	---	---	0.24	0.24	39.2	34.1	---	---	1.85	1.85
Minimum	258	178	---	---	< 2	< 2	3.93	4.61	---	---	0.18	0.18	30.5	30.3	---	---	1.17	1.17
Maximum	371	239	---	---	3	3	10.40	6.20	---	---	0.29	0.29	45.2	36.6	---	---	3.68	3.68
GeoMean	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
TOTAL	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

DATE	un-ionized NH3-N (mg/L) OUT-FAL 30	un-ionized OUT-FAL 20	un-ionized OUT-FAL 10	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				67.0			4.4				8.85	91.3			93.5				6
Mon-02				64.5			3.6				7.88	110			93.4				7
Tue-03				53.1	47.5		3.3		0.05		7.29	255	450		154		1.5		1
Wed-04				61.3			3.0	< 0.01			7.15	141			239				7
Thu-05				56.8			3.1				8.26	250			171				5
Fri-06				58.0			3.1				7.73	334			294				9
Sat-07				54.8	47.0		3.4		0.04		7.28	250	367		304		2.7		8
Sun-08				49.6	53.5		3.1		0.02		7.31	333	387		311		1.6		6
Mon-09				54.5			2.4				7.01	175			284		0.8		7
Tue-10				50.8			2.5				7.16	119			193				5
Wed-11				48.8			2.4	< 0.01			8.01	133			145				5
Thu-12				53.1			2.7				8.66	142			155				5
Fri-13				55.8			5.1				12.3	137			149				9
Sat-14				54.5			2.6				10.3	121			149				7
Sun-15				54.7			2.8				10.0	103			123				5
Mon-16				53.8			2.6				9.32	109			110				6
Tue-17				60.4			3.4				11.0	105			117	2.4			6
Wed-18				62.1			3.3	< 0.01			11.8	105			114				6
Thu-19				60.6			3.4				11.1	109			109	2.9			12
Fri-20				58.8			3.3				11.6	126			110				6
Sat-21				64.0			3.1				11.2	148			130				6
Sun-22				64.0			3.5				10.8	134			143				8
Mon-23				60.2			2.9				11.2	167			138				7
Tue-24				63.1			3.5				10.4	186			167				9
Wed-25				66.3			3.1	< 0.01			10.0	146			170				9
Thu-26				66.0			3.1				12.2	105			128				6
Fri-27				61.5			3.4				13.1	138			113				5
Sat-28				59.7			3.3				11.9	115			132				9
Sun-29				10.0			3.3				12.0	99			110				9
Mon-30				58.5			3.3				12.0	101			100				12
Tue-31				58.5			3.4				10.8	95			105				12
Average	---	---	---	56.9	49.3	---	3.2	< 0.01	0.04	---	9.86	151	401	---	157			---	
Minimum	---	---	---	10.0	47.0	---	2.4	< 0.01	0.02	---	7.01	91.3	367	---	93.4	2.4	0.8	---	1
Maximum	---	---	---	67.0	53.5	---	5.1	< 0.01	0.05	---	13.1	334	450	---	311	2.9	2.7	---	12
GeoMean	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	2.6	1.5	---	6.6
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
20	20	100%	439	439	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

Trina Manning M.Sc.; P.Eng.
Senior Manager, WWTP Operations

Jeff Charrois PhD
Senior Manager, Analytical Operations

Appendix B – WWTP Chemicals

2024 Secondary Alum Usage (kg 100%)

	January	February	March	April	May	June	July	August	September	October	November	December
1	0	0	0	0	0	0	0	0	0	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	171	0	0	0	0	0	56	0	0	0	0
7	0	0	0	0	0	0	0	86	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	0	0	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	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	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	0	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	0	0	0	0	0	0	0	0
31	0		0		0		0	0		0		0
Total (kg)	**0**	**171**	**0**	**0**	**0**	**0**	**1**	**142**	**0**	**0**	**0**	**0**

Appendix B – WWTP Chemicals

2024 EPT Alum Usage (kg 100%)

	January	February	March	April	May	June	July	August	September	October	November	December
1	0	394	0	0	10130	0	881	0	0	0	0	0
2	0	0	0	0	0	0	0	0	1282	0	0	0
3	0	0	0	0	0	13414	16492	0	1002	6	0	3659
4	0	0	0	0	0	12416	1457	1668	0	0	0	0
5	0	0	0	2398	0	1343	0	7337	0	0	0	30
6	0	0	0	0	3033	0	0	0	0	0	0	0
7	0	0	0	0	14652	0	0	0	0	0	0	1694
8	0	0	0	0	1877	4168	0	0	0	0	0	6263
9	0	0	0	0	0	0	0	0	0	0	0	429
10	0	0	6950	0	0	0	0	0	0	0	0	0
11	0	3637	7196	0	0	8018	0	0	0	0	0	0
12	0	293	6113	0	0	9691	0	0	4174	0	0	0
13	0	0	3708	0	0	2377	0	5406	0	0	0	0
14	0	0	5006	0	0	1926	0	0	1737	0	0	0
15	0	0	7017	0	0	0	0	1959	1693	31	0	0
16	0	0	4791	0	11058	0	0	3564	396	0	0	0
17	0	0	4292	0	0	1995	0	0	0	0	0	0
18	0	0	517	0	0	0	0	0	0	0	0	0
19	0	0	0	0	3489	0	0	1625	0	0	0	0
20	0	0	0	0	0	0	0	460	0	4569	0	0
21	0	0	0	0	0	0	0	0	0	454	0	0
22	0	0	0	0	3839	0	0	0	3608	0	0	0
23	108	0	0	0	1193	1242	0	0	806	0	0	0
24	83	0	0	0	0	1388	0	2039	0	0	0	0
25	0	0	0	0	0	0	2264	3102	0	0	0	0
26	0	0	0	0	4123	0	2264	0	5295	0	0	0
27	0	0	0	0	646	6765	3187	753	0	0	0	0
28	0	0	0	0	0	0	0	4872	0	0	0	0
29	0	0	0	0	0	0	0	0	0	0	0	0
30	7148		0	11371	0	557	0	0	0	0	0	0
31	0		0		0		0	0		0		0
Total (kg)	**7,338**	**4,324**	**45,591**	**13,769**	**54,041**	**65,300**	**26,545**	**32,785**	**19,993**	**5,060**	**0**	**12,075**

Appendix B – WWTP Chemicals

2024 EPT Polymer Usage (kg 100%)

	January	February	March	April	May	June	July	August	September	October	November	December
1	0	0	0	0	171	0	3	0	0	0	0	0
2	0	0	0	0	0	0	0	0	4	0	0	0
3	0	0	0	0	0	47	60	0	4	0	0	10
4	0	0	0	0	0	42	5	4	0	0	0	0
5	0	0	0	5	0	4	0	32	0	0	0	0
6	0	0	0	0	5	0	0	0	0	0	0	0
7	0	0	0	0	61	0	0	0	0	0	0	6
8	0	0	0	0	6	12	0	0	0	0	0	45
9	0	0	0	0	0	0	0	0	0	0	0	3
10	0	0	15	0	0	0	0	0	0	0	0	0
11	0	10	17	0	0	20	0	0	0	0	0	0
12	0	1	17	0	0	33	0	0	12	0	0	0
13	0	0	11	0	0	8	0	15	0	0	0	0
14	0	0	15	0	0	5	0	0	6	0	0	0
15	0	0	20	0	0	0	0	6	6	0	0	0
16	0	0	15	0	24	0	0	18	1	0	0	0
17	0	0	13	0	0	6	0	0	0	0	0	0
18	0	0	1	0	0	0	0	0	0	0	0	0
19	0	0	0	0	10	0	0	5	0	0	0	0
20	0	0	0	0	0	0	0	2	0	12	0	0
21	0	0	0	0	0	0	0	0	0	1	0	0
22	0	0	0	0	11	0	0	0	8	0	0	0
23	0	0	0	0	4	4	0	0	2	0	0	0
24	0	0	0	0	0	4	0	7	0	0	0	0
25	0	0	0	0	0	0	5	18	0	0	0	0
26	0	0	0	0	12	0	5	0	27	0	0	0
27	0	0	0	0	1110	22	12	2	0	0	0	0
28	0	0	0	0	1124	0	0	18	0	0	0	0
29	0	0	0	0	0	0	0	0	0	0	0	0
30	12		0	30	0	2	0	0	0	0	0	0
31	0		0		0		0	0		0		0
Total (kg)	**12**	**11**	**125**	**35**	**2,539**	**209**	**91**	**127**	**70**	**13**	**0**	**64**

2024 DAF Polymer Usage (kg 100%)

	January	February	March	April	May	June	July	August	September	October	November	December
1	56	67	53	53	49	56	52	44	63	49	57	56
2	54	63	57	56	59	59	49	44	61	50	57	57
3	51	64	59	54	53	57	42	50	60	56	67	57
4	53	61	47	56	64	54	40	51	61	69	70	60
5	53	59	46	54	64	53	43	41	64	64	71	63
6	53	57	56	56	50	47	47	39	60	60	40	63
7	51	56	56	57	59	50	50	59	59	56	79	66
8	50	56	54	52	50	54	54	21	57	51	77	63
9	49	57	54	58	54	47	55	43	47	59	76	57
10	41	53	54	70	60	50	45	41	36	64	74	57
11	43	51	70	64	66	46	50	43	56	61	76	49
12	41	20	50	64	66	39	52	47	57	61	76	50
13	39	56	50	64	66	30	52	56	61	56	73	50
14	40	57	47	59	63	39	52	60	62	56	74	51
15	43	51	59	54	64	40	52	61	59	60	74	53
16	46	50	60	69	51	47	47	53	56	53	73	53
17	43	56	53	66	67	47	39	54	58	23	71	41
18	43	56	46	57	73	46	40	54	46	60	70	53
19	39	59	57	56	57	46	44	53	60	59	73	53
20	36	54	44	53	54	47	49	60	60	64	36	53
21	44	56	41	54	59	49	49	60	60	60	59	53
22	49	59	44	56	63	51	50	57	61	53	61	54
23	54	50	41	67	69	50	50	59	59	37	63	54
24	34	51	51	57	63	47	50	61	48	57	63	60
25	31	50	61	56	54	46	50	54	54	53	59	61
26	57	54	59	54	56	49	49	53	50	46	60	59
27	60	67	51	50	56	49	47	14	66	47	59	56
28	63	61	53	49	64	50	49	41	72	61	57	56
29	65	53	54	54	54	51	44	56	64	64	57	56
30	66		54	47	47	53	49	60	60	63	57	57
31	69		56		49		41	63		64		60
Total (kg)	**1,516**	**1,605**	**1,640**	**1,717**	**1,821**	**1,447**	**1,479**	**1,555**	**1,736**	**1,736**	**1,959**	**1,731**

2024 Membrane Bleach Usage (L as delivered 16% sodium hypochlorite solution)

	January	February	March	April	May	June	July	August	September	October	November	December
1	393	796	413	656	557	734	1297	1074	695	409	499	439
2	458	834	430	470	275	851	1010	1004	977	577	517	689
3	604	1044	252	706	583	746	743	1056	743	586	550	477
4	608	573	481	611	692	913	501	986	744	822	523	627
5	570	210	431	497	652	894	900	997	728	698	533	523
6	472	444	305	556	447	724	1000	800	845	666	598	699
7	425	319	486	525	735	577	861	945	711	526	579	503
8	370	355	611	502	419	902	783	691	819	614	573	464
9	349	529	630	684	538	814	632	1087	615	593	589	668
10	306	509	577	789	734	770	744	968	733	657	519	420
11	268	373	854	597	621	689	884	1177	676	473	596	613
12	301	449	661	584	716	786	963	740	832	691	581	713
13	295	631	670	790	1016	683	849	1031	811	588	512	461
14	248	385	682	379	854	676	964	668	806	353	636	726
15	310	527	583	490	993	877	927	596	630	403	632	967
16	357	650	672	722	991	1083	1225	533	854	593	502	744
17	325	362	652	567	1114	746	1039	607	693	714	436	583
18	350	430	831	342	1292	757	1256	654	740	460	533	1016
19	485	575	630	697	997	710	1028	653	625	568	839	866
20	421	462	598	766	1017	905	1448	580	628	573	768	942
21	513	494	554	635	999	915	759	702	933	524	697	1066
22	494	621	364	479	341	1073	848	940	572	383	865	779
23	360	418	539	645	711	774	791	757	45	279	1058	620
24	315	478	1111	655	255	1090	878	925	0	561	1183	709
25	400	686	549	662	710	1033	804	1091	0	458	489	495
26	233	445	851	302	508	1876	789	796	419	545	751	527
27	384	499	438	474	760	957	653	866	402	543	508	582
28	399	266	429	476	724	1080	824	812	533	593	731	532
29	377	264	418	419	720	941	793	1047	412	566	510	559
30	346		367	576	568	632	870	803	394	512	651	581
31	449		452		855		873	788		421		569
Total (L)	**12,186**	**14,626**	**17,519**	**17,252**	**22,394**	**26,208**	**27,933**	**26,375**	**18,613**	**16,951**	**18,957**	**20,159**

2024 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	0	0	0	0	0	6923	7064	6591	1303	0	0
2	0	0	0	0	0	0	6589	6839	6128	3267	0	0
3	0	0	0	0	0	0	5820	6764	6227	5211	0	0
4	0	0	0	0	0	2576	7156	6737	6351	5073	0	0
5	0	0	0	0	0	4556	5565	6527	5953	5664	0	0
6	0	0	0	0	0	5261	7154	6495	6511	5333	0	0
7	0	0	0	0	0	6095	7193	6542	6194	5732	0	0
8	0	0	0	0	0	6429	7108	5387	5871	6363	0	0
9	0	0	0	0	0	5705	6148	6586	5402	5724	0	0
10	0	0	0	0	0	5198	2706	6533	4612	6421	0	0
11	0	0	0	0	0	6320	0	6399	5407	6634	0	0
12	0	0	0	0	0	5920	3825	6436	2852	5718	0	0
13	0	0	0	0	0	6803	5697	5314	6650	6072	0	0
14	0	0	0	0	0	6902	5815	6560	6374	6215	0	0
15	0	0	0	0	0	7235	5931	6782	6384	6355	0	0
16	0	0	0	0	0	7105	6607	6171	6362	6076	0	0
17	0	0	0	0	0	7178	6587	6218	6182	5428	0	0
18	0	0	0	0	0	6974	6826	6257	6619	4553	0	0
19	0	0	0	0	0	7019	6610	1967	6976	3914	0	0
20	0	0	0	0	0	6774	6644	0	7008	4325	0	0
21	0	0	0	0	0	6916	6642	0	6961	997	0	0
22	0	0	0	0	0	6789	3310	1955	6889	0	0	0
23	0	0	0	0	0	6643	0	4237	6941	0	0	0
24	0	0	0	0	0	6440	3274	4164	7561	0	0	0
25	0	0	0	0	0	5915	4938	4835	7304	0	0	0
26	0	0	0	0	0	6886	5246	5217	5912	0	0	0
27	0	0	0	0	0	6285	5487	5573	5167	0	0	0
28	0	0	0	0	0	7209	5485	5977	6771	0	0	0
29	0	0	0	0	0	7046	5859	8086	6881	0	0	0
30	0		0	0	0	6675	5017	5749	4810	0	0	0
31	0		0		0		6343	6559		0		0
Total (L)	**0**	**0**	**0**	**0**	**0**	**170,854**	**168,503**	**169,932**	**185,851**	**106,378**	**0**	**0**

2024 Ostara Caustic Usage (kg 100%)

	January	February	March	April	May	June	July	August	September	October	November	December
1	0	0	0	0	0	0	1191	885	832	141	0	0
2	0	0	0	0	0	0	1114	1013	950	122	0	0
3	0	0	0	0	0	0	1167	924	787	753	0	0
4	0	0	0	0	0	480	1255	859	884	750	0	0
5	0	0	0	0	0	868	1264	832	664	801	0	0
6	0	0	0	0	0	902	1117	809	859	697	0	0
7	0	0	0	0	0	1000	1240	928	806	845	0	0
8	0	0	0	0	0	1116	1268	858	739	879	0	0
9	0	0	0	0	0	1112	1211	700	527	881	0	0
10	0	0	0	0	0	684	296	894	515	979	0	0
11	0	0	0	0	0	1068	0	893	408	890	0	0
12	0	0	0	0	0	971	602	912	444	955	0	0
13	0	0	0	0	0	1119	978	988	972	901	0	0
14	0	0	0	0	0	1004	1101	992	983	953	0	0
15	0	0	0	0	0	1356	1016	1010	1018	909	0	0
16	0	0	0	0	0	1323	1044	917	1000	748	0	0
17	0	0	0	0	0	1249	1065	921	1054	825	0	0
18	0	0	0	0	0	1096	1151	936	1026	683	0	0
19	0	0	0	0	0	1125	1095	385	1116	437	0	0
20	0	0	0	0	0	1227	990	0	1119	581	0	0
21	0	0	0	0	0	1242	1081	0	1154	146	0	0
22	0	0	0	0	0	1259	529	272	1076	0	0	0
23	0	0	0	0	0	1196	0	432	1128	0	0	0
24	0	0	0	0	0	1042	338	549	1105	0	0	0
25	0	0	0	0	0	809	488	656	1011	0	0	0
26	0	0	0	0	0	935	589	729	858	0	0	0
27	0	0	0	0	0	1005	675	764	777	0	0	0
28	0	0	0	0	0	1109	689	877	870	0	0	0
29	0	0	0	0	0	1211	735	906	837	0	0	0
30	0		0	0	0	1110	868	919	741	0	0	0
31	0		0		0		809	898		0		0
Total (kg)	**0**	**0**	**0**	**0**	**0**	**28,618**	**26,967**	**23,657**	**26,260**	**14,876**	**0**	**0**

Appendix C – Operations Monthly Reports

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

Approval 639-03-07
Gold Bar Waste Water Treatment Plant Operations Monthly Summary

2024

SENIOR MANAGER, OPERATIONS MANAGER, OPERATIONS	• TRINA MANNING • ALLAN GORDON (LEVEL II)
LEVEL IV OPERATORS	• JANAKA LEKAMWASAM • MIKE NUNES • JODY PENNER • COLE BAKER • ANDREW NIEUWENHUIS • ISMAIL SANDOUGA • ARMEN OMERAGIC • ADAM KELLY • EMMA REES • JERMINE PAGLICAUAN • YUSUF JAMA • RYAN VOGELGESANG • DEREK HOLDEN

January

- 1 secondary bypass – Jan 30
- 4 Voltus shutdowns – Jan 12, 13, 14, & 18
- Opt out of Voltus from Jan 15 to 25 due to performance concerns
- 18 dead ducks found in secondaries/UV for Jan
- Ferm 1 TPS pump 28430 seal leaking – Jan 1
- Supernatant off due to low flow – Jan 1
- Sec 6, Cell 3 broken shear pin – Jan 1
- PE sampler not drawing samples – Jan 3
- EPT 11/12 drained and locked out – Jan 3
- West Scrubber recirc pump repaired – Jan 5
- Instrument air compressor GTC 15204 failed – Jan 5
- Outfall 30 low temp alarm – heater set up – Jan 7
- Sec 1, Cell 4 broken shear pin – Jan 7
- Prim 10 west drive broken shear pin – Jan 7

- Grit Tank 7 incline auger has a leak – Jan 8
- UV Channel 3 drain valve leaking – changed to lag 3 – Jan 10
- GRF locked out – Jan 10
- Ferm 4 TPS pump 28645 oil hose fell off – Jan 10
- Outfall 10 flow meter replaced – Jan 10
- Sec 3, Cell 2 broken shear pin – Jan 11
- PE sampler fridge failed – Jan 11
- Labatts called to report a spill of liquid with a pH of 5.88 – total volume 10.42 cubic meters – Jan 11
- East Scrubber level transmitter failed – Jan 12
- Membrane center feed pump leaking oil (lag 2) – Jan 12
- UV Channel 4 unhealthy bank alarm – Channel 3 now lag 2 – Jan 13
- North and south poly mixing systems issues – north no water and south is plugged – Jan 13
- West Scrubber filters plugged – bypassed – Jan 14
- InDense sprayers frozen – Jan 15
- Lag has broken hot water line – Jan 16
- South poly system mixing pot broken – Jan 17
- Membrane day bleach tank leaking at bottom – Jan 18
- Sec 2, Cell 5 broken flight – Jan 21
- Scum tank 5 level indicator issues – Jan 20
- Ferm 3 scum tank level transmitter failure – Jan 23
- Odour complaint – Jan 24
- Sec 2, Cell 1 broken shear pin – Jan 25
- Prim 8 east pass broken shear pin – Jan 25
- Product water pump 45357 check valve passing (lead) – Jan 27
- Dig 7 influent flow meter blown fuse – Jan 28
- UV main sampler stopped sampling – Jan 28
- Ferm 1/2 scum tank level indicator 3650 bad PV – Jan 29
- EPT poly in auto for bypass – in cascade the program shut down – Jan 30
- DAF 1 broken shear pin – Jan 30
- Membrane sampler not drawing samples – Jan 31
- Membrane plant tripping off due to low contact tank levels – Jan 31
- Recovery cleans started for all membrane tanks – Jan 31
- Quills cleaned at membrane plant – Jan 31

February

- 1 secondary bypass – Feb 11-12
- 2 Voltus shutdowns – Feb 2 and 29
- 5 dead ducks found in secondaries/UV for Feb
- Membrane recovery cleans started again due to low permeability – Feb 1
- Product water pump 45348 check valve failed – Feb 1
- Grit Tank 4 back to Ops and filling – Feb 2
- DAF 6 poly pump failed – Feb
- Prim 8 cross collector broken shear pin – Feb 4
- Grit Tank 4 back in full service – Feb 5
- Membrane west sample pump failed – Feb 5
- Labatts called about caustic spill pH of 11.5 – 57.67 cubic meters – Feb 6

- Grit Tank 7 O/S and dewatered for inspection – Feb 7
- Sec 4, Cell 4 broken shear pin – Feb 7
- Filling EPT 11/12 with FE – Feb 8
- EPT 10 west drive broken shear pin – Feb 11
- EPT 12 cross collector broken shear pin – Feb 11
- UV Channel 4 relamp started – Feb 12
- EPT 11/12 in full service – Feb 12
- EPT 9/10 O/S and thinning – Feb 12
- UV outage 11:00 pm to 4:30 a.m. for breaker replacement – Feb 14-15
- EPT 11 broken shear pin – Feb 15
- Sec 11, Cell 2 scum actuator failed – Feb 16
- EPT 9/10 draining for cleaning/inspection – Feb 17
- EPT 12 broken shear pin – Feb 17
- Prim 6 scum tank discharge line plugged – Feb 18
- Dig 2 recirculation pump keeps tripping – Feb 17 – Overload replaced – Feb 21
- Grit Tank 6 incline auger has a hole on the underside of trough – Feb 21
- Ferm bleach pump 65314 tube failure – Feb 21
- Broken shear pin Prim 8 – Feb 21
- EPCOR Compliance called to report a 25 L gasoline spill – Feb 23
- Sec 2, Cell 5 scum trough failed – Feb 24
- Broken FE line by Sec 3 – Feb 26
- Prim 8 scum line plugged – Feb 26
- Bio 8, Cell 3 air flow meter not reading – Feb 26
- South poly screw feeder will not run – Feb 27
- Boiler 7 stack cover falling off – Feb 27
- UV Channel 1 bulb replacement started – Feb 27
- Membrane back pulse valve leaking air – shut down plant a few times – Feb 28
- UV Channel 1 bulb replacement complete – ready for service – Feb 29
- Membrane plant shutdown for 2 hours to replace back pulse valve actuator – Feb 29
- Glycol air relief valve leaking from roof of west scrubber onto road way – isolated and cleaned up – Feb 29
- Small glycol leak in gas room 1 from air relief valve by K102 – Feb 29

March

- 2 Voltus shutdowns – Mar 9 & 10
- 8 secondary bypass events – Mar 10-11, 11-12,12-13, 13-14, 14-15, 15-16, 16-17, & 17-18
- 2 dead ducks
- Membrane transfer bleach line A repaired – ready to use – Mar 4
- Prim scum tanks 6/8 back in service after discharge lined cleaned – Mar 5
- Grit Tank 7 back in service after inspection/repair – Mar 6
- Prim 6 broken shear pin cross collector – Mar 7
- EPT 12 cross collector broken shear pin – Mar 8
- Testing Bio 4 in spring mode – Mar 8
- Broken shear pin Prim 8 cross collector – Mar 8
- Blower 6 tripped on surge alarm due to element alarm – Mar 10
- Grit Tank 5 pre-screen scraper bars misaligned due to rope coming in – Mar 11

- Grit Tank 5 isolated/drained for pre-screen repair – Mar 11
- Blower 6 available again after temp element reset by E/I – Mar 11
- Ferm 1 TPS pump 28432 broken shear pin – Mar 12
- Grit Tank 5 back in service after pre-screen repair – Mar 13
- Prim 8 cross collector broken shear pin – Mar 15
- EPT 12 east sludge collector drive broken shear pin – Mar 16
- Sec 4, Cell 3 collector chain fell off of sprocket – dewatering for repair – Mar 18
- Sec 6 waste pump replacement – Mar 19
- Prim 8 scum tank plugged – Mar 21
- Ferm 1 TPS pump 28430 pillow block bearing cracked – O/S – Mar 21
- Sec 4 filling after repair – Mar 22
- Sec 4 back in full service – Mar 24
- Sec 2 clarifier blanket lifting – Mar 23 & 24
- Scum tank Prim 6/8 cleaning started – Mar 25
- Boiler House 2 south expansion tank isolated for bladder replacement – Mar 25
- Chemscan 1174 nitrate readings O/S until software upgrade happens – Mar 26
- EPT 12 cross collector broken shear pin – Mar 26
- West Scrubber offline (4 hrs) for bleach pump vent repair – Mar 27
- EPT 12 broken shear pin – Mar 29

April

- 2 Secondary Bypass Events – Apr 5 & 30
- Voltus shutdown – Apr 22
- Grit Tank 6 O/S for cleaning/inspection – Apr 1
- Grit Tank 3 dewatered for Screen 3 chain replacement – Apr 2
- Grit Tank/Screen 2 back in service after screen chain replacement – Apr 3
- TWAS pump 1 O/S for replacement – Apr 4
- EPT 12 broken shear pin – Apr 4
- Sec 2 clarifier lifting – InDense tank – increased RAS – Apr 8
- Sec 2, Cell 2 broken shear pin – Apr 8
- EPT poly pump 66459 tube replaced – Apr 8
- West biogas line to flare purged and isolated for projects – Apr 11
- EPT 9/10 full and back in service – Apr 12
- Dewatered Prim 7/8 for cleaning/inspection – Apr 13
- Prim 6 cross collector broken shear pin – Apr 13
- Blown rupture disc on north heat exchanger in the blend tank area – switched to south – Apr 14
- Ferm 1 TPS pump 28430 broken positioner – Apr 14
- Prim 5 west pass broken shear pin – Apr 15
- Ferm Scrubber north bleach pump tube failure – Apr 16
- Sec 11 broken shear pin – Apr 16
- EPT 12 cross collector broken shear pin – Apr 18
- Grit Tank 5 pre-screen scraper assembly broke – Apr 19
- EPT 9 west collector drive broken shear pin – Apr 21
- Blower 1 & 4 tripped – Apr 22
- Grit Tank 4 dewatered 4 feet to inspect incline auger – back in service same day – Apr 22
- Clean of the Primary Scum system completed – back into service Apr 23

- Blower 1 & 4 DeltaV card replaced – Blowers 1 & 4 available – Apr 23
- Ferm Scrubber bleach pump 65314 roller failure – Apr 23
- Bio 5 air line leak – bio isolated to repair air line – Apr 23 – Secondary 5 back in service Apr 29
- Scrubber 5 commissioning started – EPT scrubber off line – Apr 24
- EPT 12 cross collector broken shear pin – Apr 24
- Grit Tank 5 dewatered for pre-screen repair – Apr 29
- Scrubber 5 commissioning complete – Apr 30
- Scrubber 6 commissioning started – Apr 30
- Prim 6 cross collector drive shaft not moving – Apr 30
- 2024 Operations Plan submitted to AEPA – Apr 30

May

- Biosolid truck spill on 88 Ave and Highway 15 – May 4
- Voltus outage – May 2, 23, 25, 29 & 30
- 6 Sec Bypass Events – May 1, 6-8, 16, 19, 22-23 & 26-27
- Dead ducks – 1
- EPT poly system plugged – May 1
- Prim 8 west pass broken shear pin – May 4
- Prim 7/8 back in service – May 4
- Prim 5/6 O/S for inspection – May 5
- EPT 11 west pass broken shear pin – May 5
- Ferm Scrubber bleach pump 65314 failed on overcurrent – May 7
- Ferm Scrubber bleach pump 65313 tube failure – May 7
- Prim 7 collector drive broken chain – May 7
- Prim 8 west pass broken shear pin – May 7
- Low permeability on all membrane trains – hypo cleans started
- EPT 11 broken shear pin – May 12
- Prim 8 broken shear pin – May 12
- North blend tank heat exchanger rupture disc failed – May 13
- EPT 9 broken shear pin - May 14
- Sec 9 cross collector broken shear pin – May 14
- Sec 2, Cell 3 broken shear pin – May 16
- Sec 6 cross collector broken shear pin – May 18
- Prim 5/6 back in service – May 18
- Draining Prim 8 for repair – May 20
- Sec 10, Cell 5 broken shear pin – May 20
- Prim 7/8 scum tanks cleaned by Canessco – May 21
- Sec 8, Cell 5 broken shear pin – May 21
- Citric cleans started in membrane – May 22
- Ferm Scrubber bleach pump 65314 tube failure – May 25
- Prim 8 cross collector broken shear pin – May 25
- Sec 1, Cell 4 broken shear pin – May 25
- Prim 4 broken shear pin – May 25
- Ferm Scrubber bleach pump 65313 failed – May 27
- Sec 9 cross collector broken shear pin – May 28
- Sec 5 equalization valve replaced – May 29
- RAS 1 pin hole leaks temporary repair complete – May 29

- Filling prim 8 with F.E. – May 29
- Prim 5 broken shear pin – long pass – May 29
- Labatts reported spill of 14 cubic meters of liquid with a pH of 5.8 – May 29
- Prim 8 broken shear pin – May 29
- Phosphate spike the evening of May 30
- Prim 5, Cell 1/2 & Prim 8, Cell 3/4 broken shear pins – May 31

June

- 9 Secondary Bypass Events – June 3-5, 8, 11-12, 12-13, 14, 17,, 23-24, 27th & June 30th – July 1st.
- Voltus outage – June 12, 18, & 23
- EPT roof leaking – June 3
- Bio 1 RAS discharge line leaking/ temp repair complete – June 5
- Hot water cleaning scum tanks 5 thru 8 before boiler house 1 shutdown – June 10
- Ostara feed pump tripped – June 9 & 12
- Bio 4 back in service – June 12
- Solids shutdown to prepare for power outage – June 11
- Prim 5 broken shear pin cross collector – June 12
- EPT 11 broken shear pin – June 12
- Sec 8, Cell 2 broken shear pin – June 12
- Ferm Scrubber caustic pump 65322 tube leaking – June 13
- Ferm 4 level transmitter failed – June 13
- Membrane chlorine dosing pump 26627 union leaking – O/S – June 13
- Planned power outage complete – June 13
- Prim 5 scum tank level indicator faulty – June 14
- Ferm Scrubber bleach pump 65313 tube failure – June 13
- Membrane conductivity meter faulty – June 13
- Broken shear pin Sec 10, Cell 3 – June 15
- Starting 2 hypo & 2 citric cleans for Train 3 to see how permeability responds – June 15
- Prim 7 cross collector broken shear pin – June 16
- Prim 5 broken shear pin – June 16
- Bio/Sec 6 O/S for inspection & air line repair – June 17
- Boiler house 1 O/S for summer – June 17
- East & Fermenter scrubber off line due to planned power outage (8 hrs) – June 19th.
- EPT 12 broken shear pin – blanket 0.61m – June 20
- Prim 5 broken shear pin – June 20
- New PE sampler not counting on DeltaV – June 21
- WAS 11 VFD failure – temp VFD setup – June 22
- Sec 9 cross collector broken shear pin – blanket 4.5 ft – June 22
- Sec 3 broken shear pin – June 25
- Membrane train 3 – 2 hypo and 1 citric cleans complete – June 25
- Prim 5 west pass broken shaer pin – 0.15 M blanket – June 28
- Outfall 20 sump alarming periodically – June 29

- Sec 8 – cell 5 broken shaer pin – June 30
- Bio 6 draining complete for inspection – June 30

July

- Bypass Events – July 1, 3-4, 25, 26, 27
- Voltus outage – July 4, 8, 9
- EPT 12 east collector broken shear pin – July 1
- Heating pump 7 (Boiler House 1) leaking seal – July 2
- EPT 11 cross collector broken shear pin – July 3
- Prim 6 cross collector broken shear pin – July 4
- UV design dose changed from 21 to 23 to troubleshoot ecoli values – July 5th.
- Prim 7 scum collector tripped on phase loss – July 6th.
- Sec 1 RAS discharge line temp repair is leaking a lot – July 6th.
- Sec 5 RAS pump has a pin hole leak on volute – July 7th.
- Grit tank 4 pre-screen incline auger guide wheel came off of bearing – July 7th.
- Scrubber 5 bleach pump 74385 has a leak at the check valve – July 8th.
- Started draining bio 1 to replace RAS 1 discharge spool piece – July 8th.
- EPCOR drainage reported a hydraulic spill of 2 to 3 Litres – July 9th.
- East liquid ring compressor has a broken steel plate – O/S – July 9th.
- RAS 1 dischrage piping repair complete – July 9th.
- Prim 5 west cell broken shear pin July 9th.
- Sec/Bio 1 back in service – July 10th.
- Backup RAW sampler faulted a few times, over sampling at times – July 11th.
- EPT 12 broken shear pin – 2 ft blanket – July 11th.
- Broken shear pin sec 10 – cell 3 – blanket 5 ft – July 11th.
- Ferm caustic pump 65322 pin hole leak on suction – July 11th.
- EPT 11 cross collector broken shear pin – July 11th.
- Raw backup sampler not advancing to next bottle - July 12th.
- Sec 9 cell 2 broken shear pin – blanket 4 ft – July 16th.
- Scrubber 5/6 now running together – west scrubber now off line – July 16th.
- Sec 6 back in full service – July 19th.
- DAF 2 recycle pump seal leaking – July 20th
- Sec 7 clarifier O/S and draining for inspection – July 22nd.
- Fire alarm in Ops Center: False alarm- smoke detector issue – July 23
- EPT 11 cross collector shear pin break – July 24
- Roof leak in lab – July 26
- Sec 8 broken shear pin – July 28
- EPT 9 collector shear pin break – blanket 1 ft- July 26
- EPT 9 drive shear pin break – July 31

August

- 8 Bypass Events Aug 4th–5th, 13th, 15th-16th, 19th, 24th, 24th-25th, 27th, 28th,
- EPT 11 shear pin break – Aug 1
- Primary 5 broken shear pin (2x) – Aug 2
- Secondary 7 back into service – August 2
- Secondary 1 out for planned RAS pump and piping replacement – Aug 3
- Bio 10 Cell 5 air valve stuck open – Aug 3
- Sec 6 croll shear pin break – Aug 4
- Issue with diversionstructure level sensors, EI called in to clean – Aug 5
- Grit 6 incline auger jammed – Aug 5
- Sec 10 Cross Shear Pin Break – Aug 5
- Outfall 30 short term sampler – temp too cold. – Aug 5
- RAS 4 flow seems to be limited to 30 MLD – Aug 5
- Sec 1 O/S, drained for inspection and bio flow meter replacement – Aug 6th.
- Leak on DAF WAS line – repaired – Aug 6th.
- Bio gas leak - dig square 1 to basement blower/boiler room 1 – Aug 8th.
- Sec 4 cell 4 broken shear pin – Aug 9th.
- EPT 11 cross collector broken shear pin – Aug 9th.
- Sec 10 cell 1scum trough actuator failed – Aug 10th.
- Sec 9 northe west pass boken shear piun – Aug 11th.
- RAS 2 discharge pipe pin hole leak/repaired – Aug 13th.
- Citric quill cleaned – Aug 14th
- PE channel flume installed – Aug 15th.
- Bio 1 filled with FE to just above diffusers – Aug 16th
- Sec 9 cell 2 broken shear pin – Aug 17th.
- Prim 5 east pass broken shear pin – blanket 0.33 M – Aug 18th.
- Sec 10 cell 3 broken shear pin – blanket 5 ft – Aug 18th.
- Citric cleans started on membranes – Aug 19th.
- PE channel flume pulled out of PE channel – gasket leaking – Aug 20th.
- Sec 6 cross collector broken shear pin _ aug 21st.
- Ferm bleach pump 65313 tube failure – Aug 22nd.
- Maintenance cleans started on all trains – bleach pumping issue noticed – Aug 22nd.
- EPT 10 cross collector broken shear pin – Aug 22nd.
- Prim 5 west collector drive broken shear pin – Aug 23rd.
- APG pipe failure berm of cell 5 – contained – Aug 24th.
- Sec 9 cell 2 broken shear pin – blanket 2 ft – Aug 25th.
- Sec 6 cell 1 broken shear pin – blanket 3 ft – Aug 25th.
- Diversion structure level indicator 2775B dropping to zero – Aug 27th.

September

- 6 Secondary Bypass Events – Sept 2nd-3rd, 12th, 14th-15th, 15th, 22nd & 26th.
- Voltus outage – Sept 19th & 26th.
- Dead beaver found in UV screens – Sept 16th.
- Ferm 1 O/S – Sept 3rd.
- Dig 7 foam control pump repaired – Sepr 4th.
- Ferm 3 sludge blanket level indicator showing fault – Sepr 4th.
- Sec 7 – cell 2 broken shear pin – Sept 6th.

- Membrane bleach dosing pump 26628 discharge leaning – Sept 8th.
- Draining prim ¾ - Sept 8th.
- GRF carbon scrubber back in service – Sept 8th.
- Sec 6 & 7 scum troughs stuck forward – Sept 8th.
- Membrane bleach doing pump 26627 leaking from suction side of pump – Sept 9th.
- North flame arrestor cleaned – Sept 10th.
- Solids shutdown – Sept 10th.
- %6 WAS pump replaced – Sept 12th.
- Draining sec/bio 5 for inspection and RAS replacement – Sept 14th.
- Dig 6 heat exchanger high pressure wash complete – Sept 16th.
- Diversion structure screen 31710 hydraulic leak - Sept 16th.
- Sec 2 – cell 3 broken shear pin – Sept 18th.
- Ferm scrubber bleach pump tube failure – Sept 19th
- Grit tank 7 incline auger VFD replacement complete – Sept 19th.
- Prim 5/6 density meter reading 0% - Sept 22nd
- RAS 3 volute leaking on the suction side (hole in the bottom of the volute) Sept 23rd.
- Filling bio/sec 5 – Sept 23rd, bio/sec 5 back in service – Sept 25th.
- Membrane plant shutdown for maintenance work – Sept 23rd.
- Broken flight sec 4 – cell 5 – removed – Sept 23rd.
- Boiler started in boiler house 1 for plant heating – Sept 24th.
- Ferm ½ scum tank discharge line has a blockage – Sept 25th.
- Membrane plant start up – Sept 26th
- Bios 2-5 influent pumps cavitating due to hydraulic bottleneck - Sept 26th
- East scrubber sump LT not reading correctly, submersible with float dropped in - Sept 26th
- Secondary Bypass – Sept. 26th
- Voltus – Sept. 26th
- Voltus – Sept. 28th
- Secondary 10 shear pin - Sept 28th
- Membrane having issue maintaining levels - Sept 28th
- Chemscan 1173 not reading correctly - Sept 29th
- Secondary 9 shear pin - Sept 29th
- Voltus – Sept. 29th

October

- 1 Sec Bypass Event – Oct 20th,
- 4 Voltus outages – Oct 8th,, 15th, 22nd & 29th.
- Sec 11 dewatering for inspection – Oct 1st.
- Testing high pressure bio gas line from chiller room to boler house 1 – Oct 1st.
- Sec 11 back in service due to hydraulic restraints on PE chanel level (north) – Oct 2nd.
- Membrane bleach pump 26628 suction valve leaking – Oct 4th.
- Broken shear pin sec 4 – cell 4 – Oct 5th.
- Bio 8 and 9 influent pumps replaced – Oct 5th.
- Broken shear pin sec 4 – cell 5 – Oct 5th.
- Influent channel flow meter flow dropping out during peak flow periods – Oct 6th.
- Membrane center strainer cleaned out – Oct 7th.

- Thinning out bio/sec 4 for inspection and flight repair – Oct 8th.
- Bio 6 influent pump replaced (faulty pump) – Oct 9th.
- Thinning out EPT 9/10 to prepare for draining and inspection – Oct 10th.
- Bio gas leaking from gas valve located in chiller room/isolated – Oct 11th.
- Dewatered sec/bio 4 to replace flight in clarifier – Oct 13th. – unplanned outage broken flight.
- Broken shear pin sec 6 – cross collector – Oct 13th.
- Sec 4 back in service after flight replacement – Oct 16th.
- Solids shutdown and draining blend tanks – Oct 16th.
- North blend tank O/S for contractor work – Oct 16th.
- Broken shear pin – prim 6 cross collector – blanket 0.5 ft – Oct 17th.
- DAF 1 back inservcie after pressure tank repair – Oct 17th
- Dewatered DAF 2 for pressure tank repair – Oct 18th.
- Labatts called about a spill of caustic solution – pH of 5.7 – 2.4 cubci meters released – Oct 18th.
- Broken shear pin EPT 10 – west collector drive – Oct 18th.
- EPT 9/10 deawtering stared for yearly inspection – Oct 19th.
- Broken shear pin – sec 3 – cell 5 – Oct 19th.
- Dewatering bio/sec 3 for inspection - Oct 20th. – unplanned outage RAS volute failure.
- Labatt called to report spill – 7.2 cubic meters caustic – pH of 11.5-12.7 range – Oct 20th,
- East scrubber sump pump falied – Oct 21st.
- Running fem scrubber in AI control – Oct 22nd.
- Broken shear pin sec 10 – cell 3 – Oct 23rd.
- Filling sec/bio 1 – Oct 25th.
- 2 broken shear pin sec 1 – Oct 26th.
- Sec/bio 1 back in full service – Oct 26th.
- Boiler house 2 shutdown for natural gas connections – Oct 28th.
- Bio 11 – cell 3 mixer tripped onoverload – Oct 29th.
- Boiler house 2 back in service after natural gas conections complete – Oct 29th.
- Brken shear pin sec 4 – cell ? – Oct 29th.
- Sec 7 waste pump coupling failed – replaced – Oct 29th.
- East primary influent channel flow meter failed – Oct 29th.
- Filling sec/bio 3 to have ready for service –Oct 31st.
- Dig 8 gas space level indicator bouncing around – needs to be cleaned. – Oct 31st.

November

- Sec Bypass Events – 0
- Voltus outages – Nov 8th, 27th. & 30th
- Dead Duck Count – 4
- Prim 5 broken shear pin – Nov 1st.
- Sec 8 – cell 3 broken shear pin – Nov 1st.
- Sec 3 back in service after RAS volute replacement and clarifier inspection – Nov 2nd.
- Prim 5 scum tank level indicator failed – Nov 2nd.
- PE chanel level indicator LIT 4174 replaced – Nov 4th.

- Grit tank 5 dewatered and isolated for incline auger replacement – Nov 5th.
- EPT 12 broken shear pin – Nov 7th.
- DAF 2 back in service after pressure tank repair – Nov 7th.
- West primary influent channel flow meter failed FI-2826 – Nov 8th.
- EPT 9/10 back in service after inspection – Nov 8th.
- Sec 6 cross collector broken shear pin – Nov 9th.
- Draining prim 5/6 for project work – Nov 10th.
- Sec 6 – cell ½ broken scum trough mount – Nov 11th.
- East scrubber bleach pump tube failure – Nov 12th.
- Realigning membrane cassettes, add cassettes to train 8 week of – Nov 12th.
- EPT 11 west flights broken shear pin – Nov 14th.
- PE chanel LIT 4174 dropping out again – using 4713 for pump control – Nov 14th.
- DAF poly pump 2 leaking at seal – Nov 14th.
- Delta V loss of power alarms coming in – troubleshooting in progress – looks like Delta V cabinet in EPT chemical room is causing the alarm, backup power supply to all Delta V cabinets – Nov 15th.
- Influent channel 2 gate MOG 0102 device card failed – postion of gate showing 0%, simuted open so that we get a flow reading for channel 2 – Nov 18th.
- Boiler 2 tripping on flame failure – Nov 19th.
- Solids shutdown to prepare for electrical panel outage – running north flare in manual during outage – Nov 20th.
- Sec 6 cross collector broken shear pin – Nov 20th.
- Sec 4 cross collector broken shear pin – Nov 20th.
- East scrubber recirc flow dropping off – Nov 21st
- Supernatant pumps off – low flow – Nov 22nd.
- Dewatering EPT 11/12 – Nov 22nd.
- EPT 1/12 empty and locked out for inspection – Nov 24th.
- Channel 2 level transmitter bouncing around (flow going to zero) – Nov 24th.
- Shut off east scrubber fan due to ice build up in fan, low air suction temp – recirc pump still running – Nov 24th.
- Broke shear pin sec 4 – cell 4 – 5 ft blanket – Nov 27th.
- Broken weir in EPT 12, noticed during cleaning – Nov 27th.
- EPT 9 broken shear pin – Nov 27th
- Membrane train 1 aeration valve failed – shuts of train – Nov 28th
- Strathcona and waste discharge redirected to influent channel 3 – Nov 28th
- Sec 4 cross collector broken shear pin – Nov 29th.
- Voltus outage – Nov 30th.
- Grit tank 7 incline auger has multiple leaks.

December

- secondary bypass events – Dec 3, 7,8
- Grit tank 7 back in service - December 2 –
- Sec 6 cross collector shear pin broken - December 4
- Screen 8 VFD tripping – Dec 4
- Sec 1 Cell 5 Shear Pin Break – Dec 6
- Sec 4 cell 3 Shear Pin Break – Dec 6
- Sec 1 Cell 5 Shear Pin Break – Dec 6
- Fermenter scrubber bleach pump tube failures – Dec 7

- Sec 4 cell 3 Shear pin break – Dec 9
- EPT Ploy Pump Tube Failure – Dec 9
- Sec 1 cell 1 shear pin break – Dec 11
- Screen 8 VFD tripping – Dec 11
- NG line pressure testing in boiler house 2- Dec 11
- DAF 2 poly pump tripping – Dec 11
- Sec 4 cell 4 broken shear pin – Dec 14
- Secondary 9 Cell 2 broken shear pin – Dec 15
- Bio 5 cell 8 mixer fail to start – Dec 15
- DAF 6 taken out of service – Dec 15
- Lagoon supernatant return back on – 2.0 MLD- Dec 16
- Sec 4 cross collector shear pin – Dec 16
- Instrument Air compressor commication module error – Dec 17
- Gas Compressor K102 back in service - Dec 18
- DAF 6 back into service – Dec 20
- Sec 10 and 11 cell 3 shearping break – Dec 22
- Screen 8 back in service – Dec 23
- Sec 7 cell 4 Shear pin break – Dec 24
- Sec 4 cell 9 shear pin break – Dec 24
- Sec 10 cell 3 shear pin break – Dec 26
- Sec 6 cross collector shear pin break – Dec 26
- Sec 2 RAS pump making noise, then cleared itself – Dec 27
- Sec 4 cell 2 – Broken shear pin – Dec 28
- Sec 4 cell5 scum trough stuck in forward position – Dec 28
- Pri 8 Cross shear pin break – Dec 30
- Secondary 8 cell 5 shear pin break – Dec 31

Appendix D – Air Pollution Control System Data

Appendix D – Air Pollution Control System Data

Gold Bar Wastewater Treatment Plant
Daily Average Scrubber Report
January 2024

Date	Scrubber 1 - East				Scrubber 4 - Fermenter				Scrubber 2 - West				Scrubber 3 - EPT				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)
January 1, 2024	9.5	670.0	0.0	0.0	9.8	669.8	6.0	931.7	9.8	663.0	0.1	0.0	9.8	667.6	23.1	4927.7	20.6	0.1	0.3	0.1	0.7	65.5	
January 2, 2024	9.5	669.9	0.0	0.0	9.8	670.1	6.1	988.9	9.8	626.9	0.1	0.0	9.8	676.7	23.5	5092.4	20.6	0.1	0.3	0.1	0.0	52.4	
January 3, 2024	9.5	670.1	0.8	0.0	9.8	669.9	7.6	1058.4	9.8	667.8	0.1	0.0	9.8	671.3	25.4	5492.1	20.8	0.1	0.3	0.1	0.0	184.7	
January 4, 2024	9.5	669.9	0.0	0.0	9.8	669.9	6.7	1036.2	10.0	646.1	0.1	0.0	9.8	670.1	26.5	5725.5	20.9	0.1	0.3	0.1	0.5	120.2	
January 5, 2024	9.5	670.0	0.0	0.0	9.8	670.0	6.7	1019.1	9.8	665.3	0.1	0.0	9.8	678.5	26.1	5785.8	20.1	0.1	0.3	0.1	0.0	86.4	
January 6, 2024	9.5	670.0	0.0	0.0	9.8	669.9	6.8	1087.4	9.8	666.1	0.1	0.0	9.8	672.0	28.5	6482.7	20.2	0.1	0.3	0.1	0.0	17.1	
January 7, 2024	9.5	669.9	0.0	0.0	9.8	670.1	7.2	1244.1	9.8	668.0	0.1	0.0	9.8	680.1	25.2	5767.1	20.3	0.1	0.3	0.1	0.1	48.8	
January 8, 2024	9.5	668.2	0.0	0.0	9.8	670.5	6.3	1162.6	9.8	667.0	0.1	0.0	9.8	689.8	16.1	3630.4	20.4	0.1	0.3	0.1	0.0	18.4	
January 9, 2024	9.5	668.3	0.4	1.6	9.8	669.6	6.2	1206.4	9.8	666.4	0.1	0.0	9.8	688.3	19.8	4519.9	20.6	0.1	0.3	0.1	0.0	0.0	
January 10, 2024	9.5	669.9	0.7	73.7	9.8	669.8	8.3	1868.9	9.8	666.9	0.3	69.2	9.8	695.4	20.4	4640.4	20.7	0.1	0.3	0.1	0.0	32.7	
January 11, 2024	9.6	675.1	1.0	110.6	9.8	672.7	9.2	2349.2	9.8	668.2	0.1	0.0	9.8	695.6	8.9	2300.6	21.0	0.1	0.3	0.1	69.3	283.6	
January 12, 2024	9.5	670.7	0.5	110.2	9.8	669.9	10.8	3027.5	9.8	668.9	0.1	0.0	9.8	693.7	1.4	385.2	22.9	0.0	0.3	0.1	0.0	212.5	
January 13, 2024	9.5	669.9	0.0	0.2	9.8	669.9	11.4	3923.0	9.8	669.0	0.1	0.0	9.8	693.2	1.4	241.8	21.6	0.1	0.3	0.1	0.0	12.9	
January 14, 2024	9.5	669.7	0.2	72.0	9.8	670.0	11.6	3965.8	9.8	668.1	0.1	0.0	9.8	698.8	1.5	171.1	20.9	0.1	0.3	0.1	0.4	0.0	
January 15, 2024	9.5	668.7	0.1	88.3	9.8	670.2	12.0	3558.1	9.8	668.0	0.1	0.0	9.8	699.8	1.3	67.3	20.7	0.1	0.3	0.1	0.0	0.0	
January 16, 2024	9.6	672.8	0.4	370.8	9.8	670.0	9.9	2638.1	9.8	667.0	0.1	0.0	9.8	691.3	1.6	0.1	20.5	0.1	0.3	0.1	0.0	0.3	Out of service
January 17, 2024	9.5	670.1	0.5	30.0	9.8	670.1	8.4	2195.4	9.8	667.9	0.2	0.0	9.8	699.7	1.7	0.0	20.6	0.1	0.3	0.1	0.0	26.7	
January 18, 2024	9.5	670.7	0.5	27.0	9.8	670.0	8.6	2129.2	9.8	667.7	0.1	0.0	9.8	694.9	1.5	0.0	20.9	0.1	0.3	0.1	0.0	13.8	
January 19, 2024	9.5	670.4	0.4	49.6	9.8	670.1	8.6	2274.6	9.8	667.7	0.1	0.0	9.8	702.4	1.7	3.6	20.5	0.1	0.3	0.1	0.3	37.7	
January 20, 2024	9.5	669.2	0.5	89.2	9.8	669.9	6.5	1705.6	9.8	666.9	0.1	0.0	9.8	693.7	2.1	0.0	20.4	0.1	0.3	0.1	0.0	33.7	
January 21, 2024	9.5	670.0	0.4	60.5	9.8	670.0	5.9	1534.7	9.8	668.3	0.1	0.0	9.8	702.4	1.5	11.6	19.8	0.1	0.3	0.1	0.0	0.0	
January 22, 2024	9.5	669.7	0.5	79.4	9.8	670.4	6.3	1503.9	9.8	668.0	0.1	0.0	9.8	687.1	1.8	35.8	20.4	0.1	0.3	0.1	0.0	18.3	
January 23, 2024	9.5	670.3	0.5	51.5	9.8	667.9	7.9	1864.6	9.8	667.3	0.2	0.0	9.8	683.9	2.2	430.7	20.6	0.1	0.3	0.1	0.0	28.6	
January 24, 2024	9.5	673.4	0.1	8.7	9.8	667.5	6.2	974.1	9.8	666.1	0.2	0.0	9.8	683.8	1.9	1320.2	20.7	0.1	0.6	0.1	0.0	37.7	
January 25, 2024	9.5	670.2	0.1	0.0	9.8	668.2	7.4	1113.2	9.8	666.7	0.2	0.0	9.8	691.6	1.8	1300.4	21.5	-0.1	1.6	0.0	0.0	24.6	
January 26, 2024	9.5	670.2	0.0	0.0	9.8	665.8	10.1	1245.2	9.8	667.1	0.1	0.0	9.8	691.7	1.8	1307.5	24.0	-0.5	1.4	0.1	0.0	32.2	
January 27, 2024	9.5	669.9	0.0	0.0	9.8	668.5	7.6	517.7	9.8	666.4	0.1	0.0	9.8	691.5	2.0	1406.7	23.7	-0.5	0.7	0.1	0.0	28.9	
January 28, 2024	9.5	670.1	0.0	0.0	9.8	670.9	7.1	163.7	9.8	666.8	0.1	0.0	9.8	696.8	2.0	1416.4	20.9	0.1	0.3	0.1	0.0	29.1	
January 29, 2024	9.5	671.4	0.0	0.0	9.8	678.7	7.3	844.6	9.8	667.6	0.1	0.0	9.8	701.1	1.4	1059.8	21.0	0.1	0.3	0.2	0.0	6.4	
January 30, 2024	9.5	670.4	0.0	0.0	9.8	671.1	6.6	914.4	9.8	670.2	0.0	0.0	9.8	715.3	0.3	362.0	20.9	0.1	0.3	0.1	0.0	1.0	
January 31, 2024	9.5	669.6	0.0	0.0	9.8	669.8	3.9	408.7	9.8	667.4	0.0	0.0	9.8	708.3	1.1	938.3	21.5	-0.2	0.5	0.1	1.3	5.8	
Avg	9.5	670.3	0.2	39.5	9.8	670.1	7.8	1627.6	9.8	665.3	0.1	2.2	9.8	690.5	8.9	2091.1	21.0	0.1	0.4	0.1	2.3	47.1	N/A
Min	9.5	668.2	0.0	0.0	9.8	665.8	3.9	163.7	9.8	626.9	0.0	0.0	9.8	667.6	0.3	0.0	19.8	-0.5	0.3	0.0	0.0	0.0	N/A
Max	9.6	675.1	1.0	370.8	9.8	678.7	12.0	3965.8	10.0	670.2	0.3	69.2	9.8	715.3	28.5	6482.7	24.0	0.1	1.6	0.2	69.3	283.6	N/A

Appendix D – Air Pollution Control System Data

Gold Bar Wastewater Treatment Plant
Daily Average Scrubber Report
February 2024

Date	Scrubber 1 - East				Scrubber 4 - Fermenter				Scrubber 2 - West				Scrubber 3 - EPT				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)
February 1, 2024	9.50	670.1	0.00	0.0	9.80	658.3	5.52	552.9	9.80	668.1	0.11	0.0	9.81	701.1	1.5	1221.4	22.0	-0.28	0.51	0.1	0.0	15.6	
February 2, 2024	9.50	669.9	0.00	0.0	9.80	685.6	7.43	509.2	9.80	667.4	0.11	0.0	9.80	704.7	1.9	1612.4	23.7	-0.46	0.76	0.1	0.0	9.3	
February 3, 2024	9.50	669.8	0.00	0.0	9.80	669.9	7.34	813.3	9.81	667.9	0.11	0.0	9.80	705.1	1.9	1631.2	23.8	-0.47	0.74	0.1	0.0	1.8	
February 4, 2024	9.50	670.0	0.00	0.0	9.80	670.0	7.47	954.6	9.80	668.3	0.09	0.0	9.80	713.2	1.8	1493.8	24.7	-0.46	0.76	0.1	0.0	0.2	
February 5, 2024	9.50	670.3	0.00	0.0	9.80	670.3	7.91	1075.7	9.80	668.6	0.04	0.0	9.80	711.6	2.7	2290.4	24.8	-0.45	0.76	0.1	0.0	0.3	
February 6, 2024	9.50	689.7	0.00	0.0	9.80	670.0	7.54	931.0	9.81	669.7	0.04	0.0	9.82	701.8	1.3	854.9	24.5	-0.45	0.77	0.1	0.0	16.4	
February 7, 2024	9.50	669.9	0.00	0.0	9.80	670.1	7.56	752.1	9.80	668.6	0.04	0.0	9.80	703.6	1.2	763.8	24.2	-0.46	0.76	0.1	0.0	9.3	
February 8, 2024	9.50	668.1	0.00	0.0	9.80	671.4	7.10	671.6	9.80	667.4	0.05	0.0	9.80	692.9	1.6	1042.9	24.1	-0.47	0.76	0.1	0.5	6.4	
February 9, 2024	9.50	670.0	0.00	0.0	9.80	670.2	6.89	707.8	9.80	667.9	0.07	0.0	9.80	693.4	1.5	976.3	24.5	-0.46	0.76	0.1	0.0	5.3	
February 10, 2024	9.50	670.0	0.00	0.0	9.80	670.1	6.73	714.1	9.80	667.7	0.07	0.0	9.80	689.5	1.7	1131.7	24.9	-0.45	0.77	0.1	0.0	13.3	
February 11, 2024	9.50	669.9	0.01	0.0	9.80	670.1	6.30	589.3	9.80	666.7	0.05	0.0	9.80	687.5	2.0	1179.3	23.8	-0.48	0.75	0.1	0.0	16.3	
February 12, 2024	9.50	669.9	0.00	0.0	9.80	669.6	5.82	644.0	9.80	667.5	0.08	0.0	9.80	683.6	1.9	1148.3	24.1	-0.46	0.87	0.1	0.2	4.0	
February 13, 2024	9.63	693.6	0.00	0.0	9.77	669.6	8.22	1037.6	9.80	667.1	0.08	0.0	9.80	685.9	2.0	1153.5	24.0	-0.47	0.76	0.1	0.0	19.5	
February 14, 2024	9.50	670.1	0.00	0.0	9.80	671.3	5.41	573.1	9.80	668.3	0.05	0.0	9.80	677.6	2.6	1538.0	24.6	-0.47	0.76	0.1	0.0	22.1	
February 15, 2024	9.50	670.1	0.00	0.0	9.80	670.1	4.73	551.4	9.80	667.9	0.10	0.0	9.80	675.4	3.2	1892.3	24.5	-0.46	0.77	0.1	0.0	7.5	Out of Service
February 16, 2024	9.50	670.0	0.00	0.0	9.80	669.8	5.07	581.0	9.79	668.1	0.05	0.0	9.80	673.2	3.4	1991.5	24.6	-0.46	0.76	0.1	0.0	3.1	
February 17, 2024	9.50	669.9	0.00	0.0	9.80	670.0	5.02	523.3	9.79	666.8	0.09	0.0	9.80	676.6	2.9	1695.2	24.2	-0.47	0.77	0.1	0.3	1.2	
February 18, 2024	9.50	670.0	0.00	0.0	9.80	669.8	5.51	604.2	9.80	665.6	0.24	0.0	9.80	686.1	1.7	1036.9	24.4	-0.47	0.76	0.1	0.0	45.4	
February 19, 2024	9.50	670.0	0.00	0.0	9.80	669.9	5.95	642.8	9.80	666.2	0.22	0.0	9.80	694.7	1.3	789.5	24.3	-0.46	0.76	0.1	0.0	3.1	
February 20, 2024	9.50	670.2	0.00	0.0	9.80	669.6	6.86	756.5	9.80	665.2	0.11	0.0	9.80	696.4	1.0	647.0	24.0	-0.46	0.76	0.1	0.0	9.8	
February 21, 2024	9.50	670.0	0.00	0.0	9.77	667.1	7.05	872.2	9.80	667.9	0.03	0.0	9.80	706.1	0.8	527.3	23.9	-0.47	0.77	0.0	0.0	5.6	
February 22, 2024	9.51	674.3	0.00	0.0	9.81	671.0	6.36	706.9	9.81	670.2	0.05	0.0	9.79	717.5	0.9	544.2	23.5	-0.48	0.76	0.1	0.0	4.0	
February 23, 2024	9.50	670.0	0.00	0.0	9.80	670.0	6.27	809.5	9.80	669.8	0.03	0.0	9.81	698.7	0.7	448.7	23.1	-0.48	0.75	0.1	0.0	5.4	
February 24, 2024	9.50	669.9	0.00	0.0	9.80	670.0	6.38	849.2	9.79	668.9	0.03	0.0	9.80	699.2	1.0	571.6	23.4	-0.48	0.75	0.1	0.0	30.7	
February 25, 2024	9.50	670.1	0.00	0.0	9.80	669.5	8.03	1272.1	9.81	669.4	0.09	0.0	9.81	694.1	1.0	604.2	24.2	-0.46	0.75	0.1	0.0	38.9	
February 26, 2024	9.50	670.0	0.00	0.0	9.81	670.8	6.74	1075.7	9.80	669.8	0.06	0.0	9.81	716.2	0.6	378.9	24.2	-0.46	0.77	0.1	0.0	9.8	
February 27, 2024	9.50	670.0	0.00	0.0	9.80	670.4	6.08	1107.0	9.76	670.1	0.02	0.0	9.80	705.6	0.6	304.8	25.0	-0.44	0.77	0.1	0.0	55.6	
February 28, 2024	9.50	670.1	0.00	0.0	9.80	669.9	6.63	1745.2	9.80	669.4	1.09	0.0	9.79	713.2	1.5	504.3	25.5	-0.43	0.75	0.1	0.0	62.5	
February 29, 2024	9.50	669.9	0.00	0.0	9.80	670.2	5.71	1701.4	9.80	667.9	1.84	0.0	9.80	705.2	2.5	737.1	25.4	-0.44	0.75	0.1	0.0	11.8	
Avg	9.50	671.6	0.00	0.0	9.80	670.2	6.54	838.8	9.80	668.1	0.17	0.00	9.80	696.9	1.7	1059.0	24.2	-0.46	0.75	0.1	0.0	15.0	N/A
Min	9.50	668.1	0.00	0.0	9.77	658.3	4.73	509.2	9.76	665.2	0.02	0.00	9.79	673.2	0.6	304.8	22.0	-0.48	0.51	0.0	0.0	0.2	N/A
Max	9.63	693.6	0.01	0.0	9.81	685.6	8.22	1745.2	9.81	670.2	1.84	0.00	9.82	717.5	3.4	2290.4	25.5	-0.28	0.87	0.1	0.5	62.5	N/A

Appendix D – Air Pollution Control System Data

Gold Bar Wastewater Treatment Plant
Daily Average Scrubber Report
March 2024

Date	Scrubber 1 - East				Scrubber 4 - Fermenter				Scrubber 2 - West				Scrubber 3 - EPT				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)
March 1, 2024	9.50	670.0	0.00	0.0	9.80	669.9	6.22	1825.5	9.80	667.9	1.98	0.0	9.80	709.4	2.6	786.1	25.6	-0.45	0.76	0.1	0.0	0.2	
March 2, 2024	9.50	670.0	0.00	0.0	9.80	669.8	6.47	2115.0	9.80	667.4	1.88	0.0	9.80	707.3	2.7	824.1	25.8	-0.45	0.77	0.1	0.0	0.1	
March 3, 2024	9.50	669.9	0.00	0.0	9.80	670.0	7.57	2649.4	9.80	667.2	1.99	0.0	9.80	708.9	2.5	759.7	25.9	-0.45	0.76	0.1	0.0	0.4	
March 4, 2024	9.50	670.1	0.00	0.0	9.80	670.0	7.80	2859.4	9.80	668.7	1.68	0.0	9.80	711.5	1.8	523.6	25.1	-0.45	0.76	0.1	0.0	13.9	
March 5, 2024	9.50	670.0	0.00	0.0	9.80	670.1	7.41	2642.8	9.80	667.8	1.78	0.0	9.80	716.9	2.3	704.8	25.0	-0.45	0.76	0.1	0.0	12.6	
March 6, 2024	9.48	675.4	0.00	0.0	9.79	670.1	7.82	2549.6	9.79	668.9	1.66	0.0	9.80	692.7	2.1	655.5	24.0	-0.45	0.77	0.1	0.1	27.3	
March 7, 2024	9.50	669.9	0.00	0.0	9.81	670.2	7.31	1126.3	9.80	667.8	1.68	0.0	9.80	689.8	2.4	715.6	25.4	-0.45	0.76	0.1	0.0	14.9	
March 8, 2024	9.50	670.0	0.00	0.0	9.80	670.1	5.23	710.2	9.80	667.1	1.78	0.0	9.80	683.6	2.8	842.9	24.3	-0.47	0.76	0.1	0.0	8.3	
March 9, 2024	9.50	669.9	0.00	0.0	9.80	669.5	5.41	692.8	9.80	666.7	1.99	0.0	9.80	680.7	3.3	980.3	23.4	-0.47	0.75	0.1	0.0	7.4	
March 10, 2024	9.50	669.3	0.01	0.1	9.80	670.3	5.53	617.8	9.80	667.6	1.59	0.0	9.80	679.3	4.1	1356.2	22.8	-0.48	0.75	0.1	0.0	6.5	
March 11, 2024	9.50	670.5	0.18	0.0	9.80	670.0	4.25	453.2	9.81	668.9	0.54	0.0	9.80	700.9	1.9	515.9	23.3	-0.49	0.75	0.1	0.0	2.2	
March 12, 2024	9.46	702.0	0.00	0.0	9.78	669.9	3.28	247.2	9.79	667.5	0.78	0.0	9.80	692.8	2.2	716.8	23.4	-0.49	0.75	0.1	0.0	1.0	
March 13, 2024	9.50	670.2	0.00	0.0	9.80	669.8	2.67	128.6	9.80	668.0	0.61	0.0	9.80	702.6	1.6	426.1	23.6	-0.48	0.77	0.1	0.0	0.2	
March 14, 2024	9.50	670.1	0.00	0.0	9.80	670.4	2.70	112.2	9.80	669.2	0.46	0.0	9.80	703.1	1.9	494.5	23.1	-0.50	0.76	0.1	0.0	0.0	
March 15, 2024	9.49	670.0	0.00	0.0	9.80	670.2	2.50	86.2	9.80	669.9	0.29	0.0	9.80	713.4	1.5	366.4	16.6	-0.53	0.76	0.1	0.0	0.0	
March 16, 2024	9.51	669.9	0.00	0.0	9.80	669.8	2.24	66.1	9.80	668.8	0.58	0.0	9.80	703.8	2.2	614.6	7.7	-0.54	0.80	0.1	0.0	0.0	Out of Service
March 17, 2024	9.50	669.8	0.00	0.0	9.80	669.6	2.98	114.6	9.80	669.0	0.86	0.0	9.80	697.0	2.5	697.5	8.6	-0.10	0.45	0.1	0.0	0.0	
March 18, 2024	9.50	669.8	0.00	0.0	9.77	669.3	3.33	131.8	9.81	668.9	0.85	0.0	9.81	710.1	1.3	304.6	18.1	0.09	0.27	0.1	0.0	0.7	
March 19, 2024	9.50	670.0	0.00	0.0	9.78	670.7	3.47	178.5	9.80	668.5	0.92	0.0	9.80	697.7	1.6	398.2	21.8	0.10	0.27	0.1	0.0	0.1	
March 20, 2024	9.50	669.9	0.00	0.0	9.80	669.8	4.52	340.8	9.80	668.5	1.18	0.0	9.80	699.5	1.8	439.1	21.4	0.11	0.27	0.1	0.0	3.5	
March 21, 2024	9.51	675.5	0.00	0.0	9.80	669.5	4.48	298.0	9.80	668.8	1.24	0.0	9.80	704.9	1.7	425.6	21.2	0.11	0.28	0.1	0.0	11.8	
March 22, 2024	9.50	669.9	0.00	0.0	9.80	669.8	4.24	186.9	9.80	668.3	1.41	0.0	9.80	701.3	1.9	471.7	20.9	0.11	0.28	0.1	0.0	3.8	
March 23, 2024	9.50	670.2	0.00	0.0	9.80	670.1	4.47	191.7	9.80	667.5	1.73	0.0	9.80	694.4	2.4	648.3	21.3	0.12	0.28	0.1	0.0	23.0	
March 24, 2024	9.50	670.0	0.00	0.0	9.80	670.2	4.43	172.1	9.80	585.2	1.59	0.0	9.80	620.2	2.4	728.0	21.2	0.11	0.27	0.1	0.0	24.2	
March 25, 2024	9.50	670.1	0.00	0.0	9.80	670.0	4.23	149.5	9.80	668.4	1.60	0.0	9.80	694.2	2.0	549.8	21.5	0.07	0.30	0.0	0.0	19.7	
March 26, 2024	9.50	670.1	0.00	0.0	9.80	669.8	4.32	154.3	9.80	668.6	1.48	0.0	9.80	691.6	2.3	634.2	24.2	-0.47	0.75	0.1	0.0	24.4	
March 27, 2024	9.50	670.2	0.00	0.0	9.80	670.1	4.37	114.1	9.84	647.6	1.30	0.0	9.80	693.2	2.5	680.9	23.3	-0.49	0.74	0.1	0.0	18.3	
March 28, 2024	9.50	670.2	0.00	0.0	9.80	670.7	4.49	228.9	9.80	668.0	1.30	0.0	9.80	696.4	2.4	702.8	24.2	-0.49	1.22	0.1	0.0	0.1	
March 29, 2024	9.50	670.1	0.00	0.0	9.80	669.8	4.14	230.2	9.80	667.8	1.39	0.0	9.80	696.1	2.5	726.9	24.6	-0.48	1.68	0.1	0.0	3.1	
March 30, 2024	9.50	669.9	0.00	0.0	9.80	669.9	4.44	230.2	9.80	667.6	1.72	0.0	9.80	693.2	2.5	727.0	24.2	-0.48	0.76	0.1	0.0	43.6	
March 31, 2024	9.50	669.8	0.00	0.0	9.80	669.9	5.06	230.3	9.80	667.6	1.73	0.0	9.80	689.7	2.8	835.2	23.5	-0.49	0.75	0.1	0.0	81.7	
Avg	9.50	671.4	0.01	0.0	9.80	670.0	4.75	704.3	9.80	664.8	1.34	0.0	9.80	696.0	2.3	653.3	22.1	-0.32	0.67	0.1	0.0	11.4	N/A
Min	9.46	669.3	0.00	0.0	9.77	669.3	2.24	66.1	9.79	585.2	0.29	0.0	9.80	620.2	1.3	304.6	7.7	-0.54	0.27	0.0	0.0	0.0	N/A
Max	9.51	702.0	0.18	0.1	9.81	670.7	7.82	2859.4	9.84	669.9	1.99	0.0	9.81	716.9	4.1	1356.2	25.9	0.12	1.68	0.1	0.1	81.7	N/A

Appendix D – Air Pollution Control System Data

Gold Bar Wastewater Treatment Plant
Daily Average Scrubber Report
April 2024

Date	Scrubber 1 - East				Scrubber 4 - Fermenter				Scrubber 2 - West				Scrubber 3 - EPT				Scrubber 5				Scrubber 6				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)	pH	ORP (mV)	H2S In (ppm)	H2S 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)
April 1, 2024	9.49	670.0	0.00	0.0	9.80	670.4	4.56	230.3	9.80	667.4	1.76	0.0	9.80	692.6	2.9	893.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	22.6	-0.51	0.76	0.1	0.0	14.6	
April 2, 2024	9.53	672.5	0.00	0.0	9.81	671.9	4.93	247.8	9.81	669.3	1.55	0.0	9.80	710.3	2.7	826.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	22.4	-0.51	0.75	0.1	0.0	37.2	
April 3, 2024	9.50	670.2	0.00	0.0	9.80	670.1	4.98	370.6	9.80	668.6	1.44	0.0	9.80	697.3	2.8	941.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	22.9	-0.52	0.75	0.1	0.0	43.4	
April 4, 2024	9.51	670.5	0.00	0.0	9.82	670.0	5.08	372.2	9.80	668.3	1.40	0.0	9.80	694.7	2.7	913.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	23.4	-0.49	0.76	0.1	0.0	27.2	
April 5, 2024	9.50	670.1	0.00	0.0	9.80	669.8	5.33	492.7	9.80	668.5	1.28	0.0	9.80	687.6	3.2	1101.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	23.3	-0.49	0.66	0.1	0.0	8.4	
April 6, 2024	9.50	669.8	0.00	0.0	9.80	670.0	4.16	299.5	9.80	667.8	1.26	0.0	9.80	695.1	2.8	897.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	23.4	-0.49	0.76	0.1	0.0	19.6	
April 7, 2024	9.50	669.8	0.00	0.0	9.80	669.7	4.67	314.8	9.80	667.2	1.80	0.0	9.80	690.8	2.9	912.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	23.0	-0.50	0.76	0.1	0.0	80.0	
April 8, 2024	9.50	670.0	0.35	0.1	9.80	669.2	5.72	557.7	9.80	668.0	1.81	64.0	9.80	695.6	2.7	924.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	22.4	-0.52	0.74	0.1	0.0	235.3	
April 9, 2024	9.50	670.0	0.00	0.0	9.80	669.8	5.72	469.1	9.80	667.9	1.42	0.0	9.80	691.2	1.8	609.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	22.4	-0.52	0.75	0.1	0.0	516.6	
April 10, 2024	9.50	670.1	0.00	0.0	9.80	670.3	5.46	415.3	9.80	667.7	1.30	0.0	9.80	694.7	1.7	608.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	22.6	-0.52	0.75	0.1	0.0	512.1	
April 11, 2024	9.50	669.9	0.00	0.0	9.81	670.0	5.59	488.2	9.77	668.4	1.15	0.0	9.80	689.9	1.8	643.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	22.5	-0.51	0.74	0.1	0.0	435.6	
April 12, 2024	9.50	670.1	0.00	0.0	9.80	670.4	5.40	498.2	9.80	668.9	1.26	0.0	9.80	686.5	2.1	770.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	22.0	-0.51	0.76	0.1	0.0	338.3	
April 13, 2024	9.50	670.0	0.00	0.0	9.80	670.0	4.97	426.5	9.80	668.2	1.28	0.0	9.80	694.4	2.1	757.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	22.3	-0.51	0.76	0.1	0.0	163.8	
April 14, 2024	9.50	669.8	0.00	0.0	9.80	670.1	4.57	379.5	9.80	669.2	1.06	0.0	9.80	687.3	2.2	811.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	22.2	-0.51	0.76	0.1	0.0	216.3	
April 15, 2024	9.50	670.2	0.00	0.0	9.79	669.5	5.15	453.5	9.80	670.4	0.88	0.0	9.80	695.3	1.8	643.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	22.1	-0.52	0.74	0.1	0.0	83.4	
April 16, 2024	9.50	670.2	0.00	159.7	9.80	670.4	5.47	511.5	9.80	670.1	0.71	0.0	9.80	690.9	2.4	924.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	23.3	-0.51	0.74	0.1	117.1	112.9	Out of Service
April 17, 2024	9.50	670.1	0.00	0.0	9.80	670.3	4.73	360.8	9.80	670.2	0.47	0.0	9.80	699.9	1.4	513.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	23.7	-0.51	0.71	0.1	0.0	58.9	
April 18, 2024	9.51	673.9	0.00	0.0	9.80	672.4	4.51	370.8	9.79	668.5	0.72	0.0	9.79	691.3	2.2	860.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	23.1	-0.51	0.56	0.1	0.0	304.8	
April 19, 2024	9.50	670.0	0.00	0.0	9.80	670.0	4.76	362.9	9.80	670.1	0.77	0.0	9.80	679.7	2.3	981.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	23.4	-0.50	0.51	0.1	0.0	483.1	
April 20, 2024	9.50	669.8	0.00	0.0	9.80	670.1	4.52	287.2	9.80	669.6	1.04	0.0	9.80	680.0	3.3	1401.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	22.7	-0.51	0.51	0.1	0.0	783.6	
April 21, 2024	9.50	670.1	0.00	0.0	9.80	669.6	4.67	300.7	9.80	669.8	0.96	0.0	9.80	677.9	3.0	1228.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	22.3	-0.52	0.49	0.1	0.4	536.8	
April 22, 2024	9.50	670.0	0.00	0.0	9.80	669.9	4.60	251.9	9.80	670.3	0.95	0.0	9.80	688.1	2.6	1002.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	21.5	-0.54	0.47	0.1	0.1	379.4	
April 23, 2024	9.50	669.9	0.00	0.0	9.80	669.2	4.50	224.6	9.80	669.5	1.14	0.0	9.80	685.9	2.6	983.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	21.7	-0.53	0.50	0.1	0.0	1490.7	
April 24, 2024	9.50	669.7	0.00	0.0	9.79	677.8	4.84	119.6	9.80	667.9	1.86	0.0	9.49	662.3	1.2	273.4	9.4	658.5	1.8	102.5	N/A	N/A	N/A	N/A	21.5	-0.53	0.48	0.1	0.0	2012.4	
April 25, 2024	9.50	670.0	0.00	0.0	9.80	672.8	4.79	249.7	9.80	669.7	1.00	0.0	N/A	N/A	N/A	N/A	9.5	668.9	2.6	11.3	N/A	N/A	N/A	N/A	22.0	-0.53	0.49	0.1	0.7	2524.8	
April 26, 2024	9.50	670.4	0.00	0.0	9.80	670.7	5.53	387.8	9.80	669.7	1.22	0.0	N/A	N/A	N/A	N/A	9.5	670.0	4.0	7.5	N/A	N/A	N/A	N/A	22.7	-0.53	0.49	0.1	0.7	3098.5	
April 27, 2024	9.50	669.7	0.00	0.0	9.80	669.8	5.38	393.0	9.80	669.5	1.45	0.0	N/A	N/A	N/A	N/A	9.5	669.9	5.1	6.8	N/A	N/A	N/A	N/A	22.1	-0.55	0.49	0.1	5.9	3841.9	
April 28, 2024	9.50	670.1	0.00	0.0	9.80	670.0	5.64	359.9	9.80	669.1	1.48	0.0	N/A	N/A	N/A	N/A	9.5	670.3	5.4	15.3	N/A	N/A	N/A	N/A	22.0	-0.54	0.49	0.1	44.5	4368.0	
April 29, 2024	9.48	665.2	0.00	0.0	9.79	671.2	6.16	347.1	9.79	665.5	1.04	0.0	N/A	N/A	N/A	N/A	9.5	668.4	3.5	18.1	N/A	N/A	N/A	N/A	22.2	-0.55	0.48	0.1	42.4	1377.1	
April 30, 2024	9.51	674.8	0.16	0.0	9.80	670.3	5.24	249.7	9.80	670.8	0.57	0.0	N/A	N/A	N/A	N/A	9.4	652.0	5.2	16.6	9.4	689.6	0.0	-0.4	22.8	-0.52	0.37	0.1	18.3	1521.4	
Avg	9.50	670.2	0.02	5.3	9.80	670.5	5.05	359.8	9.80	668.9	1.20	2.1	9.79	690.0	2.4	851.0	9.5	665.4	4.0	25.4	9.4	689.6	0.0	-0.4	22.6	-0.52	0.63	0.1	7.7	854.2	N/A
Min	9.48	665.2	0.00	0.0	9.79	669.2	4.16	119.6	9.77	665.5	0.47	0.0	9.49	662.3	1.2	273.4	9.4	652.0	1.8	6.8	9.4	689.6	0.0	-0.4	21.5	-0.55	0.37	0.1	0.0	8.4	N/A
Max	9.53	674.8	0.35	159.7	9.82	677.8	6.16	557.7	9.81	670.8	1.86	64.0	9.80	710.3	3.3	1401.9	9.5	670.3	5.4	102.5	9.4	689.6	0.0	-0.4	23.7	-0.49	0.76	0.1	117.1	4368.0	N/A

Indicates data for partial day

Appendix D – Air Pollution Control System Data

Gold Bar Wastewater Treatment Plant
Daily Average Scrubber Report
May 2024

Date	Scrubber 1 - East				Scrubber 4 - Fermenter				Scrubber 2 - West				Scrubber 3 - EPT				Scrubber 5				Scrubber 6				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)	pH	ORP (mV)	H2S In (ppm)	H2S 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)
May 1, 2024	9.49	678.5	0.00	0.0	9.81	672.2	3.37	68.4	9.80	669.9	0.01	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	670.2	0.0	0.0	22.7	-0.54	0.44	0.1	13.0	226.2	
May 2, 2024	9.50	669.5	0.00	0.0	9.80	669.5	2.72	33.0	9.80	669.3	0.34	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	669.6	0.5	0.0	22.4	-0.55	0.48	0.1	5.2	403.0	
May 3, 2024	9.45	664.5	0.01	0.0	9.80	670.0	3.20	42.7	9.79	669.2	0.67	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	669.8	2.7	0.0	22.4	-0.54	0.48	0.1	0.0	989.9	
May 4, 2024	9.51	674.9	0.00	0.0	9.80	669.7	3.84	63.4	9.80	668.3	0.95	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	669.8	3.6	0.1	22.4	-0.54	0.47	0.1	0.0	1137.0	
May 5, 2024	9.50	674.5	0.00	0.0	9.80	669.3	4.28	55.8	9.80	666.6	1.15	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	669.9	4.3	4.5	21.7	-0.56	0.48	0.1	0.1	1311.0	
May 6, 2024	9.50	670.7	0.00	0.0	9.78	681.2	4.39	38.7	9.80	666.7	0.75	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	666.6	4.4	9.2	22.1	-0.55	0.44	0.1	25.9	678.6	
May 7, 2024	9.51	671.4	0.00	0.0	9.80	644.3	4.72	118.0	9.81	669.0	0.11	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	673.1	3.0	1.5	22.4	-0.54	0.31	0.1	22.0	364.4	
May 8, 2024	9.49	696.3	0.00	0.0	9.82	659.3	2.54	59.8	9.72	652.0	0.00	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	678.2	0.6	7.3	21.9	-0.56	0.50	0.1	3.5	56.6	
May 9, 2024	9.48	702.3	0.00	0.0	9.80	636.3	2.51	130.1	9.80	669.8	0.00	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	672.2	1.5	13.7	21.6	-0.57	0.48	0.1	0.0	68.8	
May 10, 2024	9.51	678.2	0.00	0.0	9.80	649.2	2.89	133.0	9.80	670.0	0.06	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	669.8	2.7	21.7	22.5	-0.57	0.48	0.1	1.6	164.0	
May 11, 2024	9.50	669.5	0.02	0.0	9.80	669.3	3.18	44.9	9.79	667.4	0.53	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	669.4	3.9	22.8	20.7	-0.57	0.48	0.1	0.0	721.7	
May 12, 2024	9.50	673.1	0.10	0.5	9.80	669.6	3.62	61.8	9.81	667.8	0.69	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	670.1	4.7	16.4	21.4	-0.57	0.48	0.1	7.7	822.6	
May 13, 2024	9.50	671.0	0.16	0.0	9.94	668.3	3.86	45.1	9.79	665.0	1.02	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	670.2	4.7	16.9	21.3	-0.57	0.48	0.1	15.9	1488.9	
May 14, 2024	9.50	676.4	0.04	0.0	9.99	667.6	4.90	8.5	9.80	667.2	0.65	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	670.0	2.6	19.1	21.2	-0.58	0.47	0.1	2.2	1047.7	
May 15, 2024	9.50	668.8	0.16	0.0	9.73	675.7	5.53	109.2	9.81	667.2	0.78	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	669.9	4.7	15.2	21.4	-0.57	0.49	0.1	10.0	1487.0	
May 16, 2024	9.55	672.6	0.26	0.0	9.50	670.4	4.86	289.8	9.81	669.2	0.45	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.4	670.1	6.4	9.4	21.9	-0.54	0.42	0.1	19.5	1307.1	Out of Service
May 17, 2024	9.50	669.9	0.00	0.0	9.34	670.2	3.35	208.7	9.80	669.1	0.23	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.6	670.4	2.0	3.7	22.4	-0.54	0.47	0.1	5.7	828.5	
May 18, 2024	9.50	670.8	0.00	0.0	9.30	670.1	4.47	381.1	9.79	668.0	0.67	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	669.5	4.0	5.2	22.4	-0.55	0.47	0.1	1.1	1309.8	
May 19, 2024	9.50	668.7	0.01	0.0	9.43	668.2	4.66	373.3	9.80	667.2	0.63	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.4	668.6	5.6	1.0	22.3	-0.54	0.44	0.1	4.4	836.8	
May 20, 2024	9.50	670.0	0.06	0.0	9.80	670.3	5.43	63.2	9.80	667.8	0.28	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.6	671.9	2.2	0.6	22.4	-0.56	0.44	0.1	8.9	797.7	
May 21, 2024	9.50	670.5	0.02	0.0	9.80	668.9	6.12	112.6	9.80	666.4	0.82	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	669.2	3.0	6.7	22.1	-0.54	0.49	0.1	4.0	986.1	
May 22, 2024	9.49	670.1	0.07	0.0	9.80	670.0	6.76	105.2	9.77	664.7	0.83	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.4	652.2	5.6	11.2	21.9	-0.53	0.49	0.1	8.9	1022.4	
May 23, 2024	9.50	668.7	0.04	0.0	9.80	671.2	5.62	53.8	9.80	667.6	0.12	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.6	686.6	2.2	8.0	22.0	-0.52	0.49	0.1	0.8	321.0	
May 24, 2024	9.51	671.2	0.01	0.0	9.80	668.4	6.77	92.1	9.80	666.9	1.16	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	669.9	3.2	9.9	21.9	-0.53	0.46	0.1	1.4	1861.5	
May 25, 2024	9.50	670.4	0.00	0.0	9.80	670.3	6.51	101.0	9.80	668.4	0.89	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	670.1	3.9	13.5	21.4	-0.53	0.47	0.1	2.2	1217.7	
May 26, 2024	9.49	669.7	0.08	0.0	9.80	667.3	6.50	129.2	9.79	668.5	0.90	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.4	659.9	6.6	18.1	21.4	-0.53	0.49	0.1	16.4	1116.3	
May 27, 2024	9.50	669.4	0.02	0.0	9.79	542.2	5.77	246.1	9.78	666.7	1.20	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.6	679.1	3.8	20.2	21.6	-0.54	0.48	0.1	11.1	1123.1	
May 28, 2024	9.50	670.7	0.00	0.0	9.59	660.7	8.81	664.4	9.81	666.3	1.59	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	666.7	3.6	22.8	21.4	-0.55	0.48	0.0	13.3	944.0	
May 29, 2024	9.51	673.8	0.00	0.0	9.50	650.2	8.33	990.6	9.81	668.3	1.38	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	665.6	3.7	22.0	20.9	-0.55	0.48	0.1	7.8	1198.5	
May 30, 2024	9.50	670.3	0.00	0.0	9.50	650.2	8.52	1199.2	9.80	667.5	1.75	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	669.6	4.2	12.7	21.6	-0.55	0.46	0.1	18.3	1799.9	
May 31, 2024	9.50	670.1	0.00	0.0	9.50	650.1	8.84	1135.1	9.80	668.1	1.51	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	669.6	4.8	13.6	21.6	-0.54	0.47	0.1	20.8	1747.5	
Avg	9.50	673.1	0.03	0.0	9.72	661.0	5.06	230.9	9.80	667.3	0.71	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	669.9	3.5	10.6	21.8	-0.55	0.47	0.1	8.1	947.9	N/A
Min	9.45	664.5	0.00	0.0	9.30	542.2	2.51	8.5	9.72	652.0	0.00	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.4	652.2	0.0	0.0	20.7	-0.58	0.31	0.0	0.0	56.6	N/A
Max	9.55	702.3	0.26	0.5	9.99	681.2	8.84	1199.2	9.81	670.0	1.75	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.6	686.6	6.6	22.8	22.7	-0.52	0.50	0.1	25.9	1861.5	N/A

Appendix D – Air Pollution Control System Data

Gold Bar Wastewater Treatment Plant
Daily Average Scrubber Report
June 2024

Date	Scrubber 1 - East				Scrubber 4 - Fermenter				Scrubber 2 - West				Scrubber 3 - EPT				Scrubber 5				Scrubber 6				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)	pH	ORP (mV)	H2S In (ppm)	H2S 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)
June 1, 2024	9.50	669.9	0.00	0.0	9.50	650.3	8.45	976.4	9.80	666.0	2.16	0.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	669.9	6.1	15.6	21.3	-0.55	0.47	0.1	28.2	2290.3	
June 2, 2024	9.50	669.6	0.02	0.0	9.50	649.8	8.63	1017.6	9.80	666.3	2.41	3.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	670.0	6.0	16.8	21.4	-0.56	0.46	0.1	13.8	2132.7	
June 3, 2024	9.51	671.1	0.02	0.0	9.79	669.3	7.56	392.2	9.81	667.6	1.58	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.4	667.8	7.3	15.2	18.2	-0.55	0.40	0.1	16.8	918.9	
June 4, 2024	9.50	669.8	0.00	0.0	9.97	695.3	4.06	13.6	9.80	669.3	0.10	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.6	669.3	2.8	17.5	15.0	-0.55	0.49	0.1	20.8	49.4	
June 5, 2024	9.50	669.4	0.00	0.0	10.01	696.5	4.11	0.0	9.80	667.8	0.74	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	670.6	2.5	13.9	15.6	-0.57	0.47	0.1	5.9	333.2	
June 6, 2024	9.50	669.5	0.00	0.0	9.99	697.1	5.02	0.0	9.80	667.4	1.34	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	669.8	2.8	13.9	15.9	-0.57	0.48	0.1	0.0	548.0	
June 7, 2024	9.50	670.3	0.02	0.0	10.00	704.1	5.33	0.1	9.80	667.0	1.59	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	669.9	5.8	13.3	15.8	-0.56	0.48	0.1	1.7	838.7	
June 8, 2024	9.50	670.1	0.00	0.0	10.00	702.3	6.15	22.6	9.80	667.6	1.84	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.4	667.4	6.6	2.2	10.3	-0.56	0.43	0.1	29.0	1656.5	
June 9, 2024	9.50	670.4	0.00	0.0	10.00	700.0	6.84	37.7	9.80	667.2	2.09	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.6	671.2	6.6	1.1	11.6	-0.35	0.33	0.1	22.9	2504.1	
June 10, 2024	9.50	669.9	0.00	0.0	10.00	700.0	8.30	39.2	9.80	667.1	2.38	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	670.1	6.6	13.2	15.8	-0.57	0.48	0.1	33.2	2190.6	
June 11, 2024	9.51	670.8	0.01	0.0	9.97	700.9	16.15	2246.7	9.77	666.1	2.14	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.3	659.1	6.6	22.1	18.3	-0.56	0.46	0.1	44.0	2076.4	
June 12, 2024	9.47	670.7	0.00	0.0	9.93	701.0	7.13	60.9	9.79	668.8	0.38	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.6	670.8	6.6	15.2	22.3	-0.52	0.42	0.1	20.2	399.0	
June 13, 2024	9.50	671.1	0.00	0.0	9.97	697.4	9.38	104.2	9.96	650.4	1.01	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.4	647.9	6.6	16.4	21.5	-0.24	0.22	0.1	7.5	1328.0	
June 14, 2024	9.50	670.3	0.00	0.0	9.99	700.3	9.66	56.6	9.80	666.7	1.78	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.4	668.9	6.6	7.4	20.9	-0.55	0.46	0.1	0.0	1918.2	
June 15, 2024	9.50	669.9	0.00	0.0	10.02	702.3	8.77	96.6	9.80	667.0	1.80	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	670.2	6.6	1.9	21.2	-0.53	0.46	0.1	0.0	2287.2	
June 16, 2024	9.50	670.2	0.00	0.0	9.95	694.9	8.87	346.7	9.80	667.3	2.20	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	669.8	6.6	0.0	21.4	-0.53	0.50	0.1	0.0	2844.8	
June 17, 2024	9.50	670.3	0.00	0.0	9.70	659.6	7.45	718.2	9.80	665.3	1.96	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.4	668.6	6.6	0.0	21.9	-0.52	0.39	0.1	0.0	3207.1	
June 18, 2024	9.50	669.7	0.00	0.0	9.70	660.0	7.48	399.8	9.80	666.7	1.51	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.6	670.8	6.6	0.0	21.8	-0.53	0.48	0.1	0.0	2814.3	
June 19, 2024	9.53	687.3	0.00	0.3	9.70	670.7	12.66	399.8	9.86	662.1	1.76	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	670.0	6.6	0.1	21.4	-0.54	0.47	0.0	0.0	3244.9	
June 20, 2024	9.50	669.8	0.00	0.0	9.70	660.0	6.95	523.4	9.80	666.5	2.02	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	670.0	6.6	5.1	21.1	-0.55	0.47	0.1	0.0	3844.8	
June 21, 2024	9.50	669.9	0.00	0.0	9.70	659.9	7.40	1171.6	9.80	666.1	2.48	7.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	669.8	6.6	9.0	21.5	-0.56	0.47	0.1	0.0	4330.1	
June 22, 2024	9.50	669.9	0.00	0.0	9.70	659.8	6.92	1230.8	9.80	666.1	2.71	0.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	670.1	6.6	10.0	22.0	-0.55	0.45	0.1	0.0	3908.6	
June 23, 2024	9.50	670.0	0.00	0.0	9.70	659.8	7.84	1196.0	9.79	665.2	3.21	35.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	662.3	6.6	18.5	22.1	-0.55	0.46	0.1	0.0	3935.8	
June 24, 2024	9.51	674.1	0.00	0.0	9.78	672.1	8.26	917.3	9.81	667.8	3.01	7.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.6	671.5	4.0	8.6	20.7	-0.55	0.46	0.1	0.0	3455.0	
June 25, 2024	9.50	669.9	0.00	0.0	9.90	689.9	8.06	437.2	9.79	665.4	3.19	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	683.7	0.0	5.3	20.9	-0.55	0.47	0.1	0.0	6910.8	
June 26, 2024	9.50	669.9	0.00	0.0	9.90	689.8	7.36	278.1	9.80	667.2	3.27	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	682.0	0.0	10.4	21.5	-0.55	0.46	0.1	0.0	7608.8	
June 27, 2024	9.50	670.8	0.00	0.0	9.90	689.6	7.97	365.5	9.80	667.4	2.66	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.4	671.6	0.0	11.6	20.4	-0.54	0.39	0.1	0.0	4694.6	
June 28, 2024	9.50	669.3	0.00	0.0	9.90	690.8	5.88	154.2	9.80	667.5	2.54	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.6	698.4	0.0	8.8	20.8	-0.56	0.47	0.1	0.1	5784.8	
June 29, 2024	9.50	669.7	0.00	0.0	9.90	689.6	6.63	180.2	9.80	667.0	2.95	4.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	692.1	0.0	13.2	21.9	-0.56	0.45	0.1	0.0	6341.4	
June 30, 2024	9.50	670.1	0.00	0.0	9.90	689.6	7.31	255.2	9.79	666.6	3.28	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	686.1	0.0	16.3	21.2	-0.55	0.46	0.1	0.0	3861.1	
Avg	9.50	670.8	0.00	0.0	9.86	683.4	7.75	454.6	9.81	666.2	2.07	2.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	671.7	4.8	10.1	19.5	-0.53	0.45	0.1	8.1	2941.9	N/A
Min	9.47	669.3	0.00	0.0	9.50	649.8	4.06	0.0	9.77	650.4	0.10	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.3	647.9	0.0	0.0	10.3	-0.57	0.22	0.0	0.0	49.4	N/A
Max	9.53	687.3	0.02	0.3	10.02	704.1	16.15	2246.7	9.96	669.3	3.28	35.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.6	698.4	7.3	22.1	22.3	-0.24	0.50	0.1	44.0	7608.8	N/A

Out of Service

Appendix D – Air Pollution Control System Data

Gold Bar Wastewater Treatment Plant
Daily Average Scrubber Report
July 2024

Date	Scrubber 1 - East				Scrubber 4 - Fermenter				Scrubber 2 - West				Scrubber 3 - EPT				Scrubber 5				Scrubber 6				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)	pH	ORP (mV)	H2S In (ppm)	H2S 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, 2024	9.49	670.1	0.02	0.0	9.90	690.2	8.00	259.3	9.80	666.1	3.05	4.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	689.9	0.0	15.1	20.7	-0.55	0.46	0.1	0.0	452.6	
July 2, 2024	9.51	669.8	0.00	0.0	9.84	690.4	9.36	727.0	9.80	666.7	3.28	7.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	694.9	0.0	15.3	20.9	-0.56	0.45	0.1	0.1	501.7	
July 3, 2024	9.50	671.1	0.00	0.0	9.89	690.9	7.24	395.9	9.81	670.1	0.84	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.4	674.9	2.0	13.2	20.6	-0.55	0.43	0.1	1.4	188.7	
July 4, 2024	9.49	669.2	0.00	0.0	9.90	689.0	4.73	38.9	9.80	668.2	1.30	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	672.7	3.4	16.2	21.3	-0.56	0.47	0.1	0.0	697.2	
July 5, 2024	9.50	669.7	0.00	0.0	9.90	689.9	6.09	102.3	9.80	667.7	2.16	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	669.7	3.9	19.2	22.2	-0.56	0.46	0.1	0.0	2338.6	
July 6, 2024	9.50	670.0	0.00	0.0	9.90	689.8	6.43	113.6	9.80	667.4	2.40	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	678.8	4.9	20.5	22.1	-0.56	0.45	0.1	0.0	3441.4	
July 7, 2024	9.51	669.9	0.00	0.0	9.90	689.8	7.11	152.7	9.80	667.4	2.12	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	674.3	4.2	22.0	23.0	-0.56	0.45	0.1	0.0	1800.5	
July 8, 2024	9.47	673.0	0.00	0.0	9.89	689.0	8.42	155.2	9.74	670.0	3.37	0.0	N/A	N/A	N/A	N/A	9.2	688.3	0.0	11.2	9.5	652.9	4.5	21.3	24.9	-0.56	0.44	0.1	0.0	4058.1	
July 9, 2024	9.49	669.5	0.00	0.0	9.84	689.5	7.98	148.1	9.77	666.6	3.96	0.0	N/A	N/A	N/A	N/A	9.5	673.6	2.6	0.0	N/A	N/A	N/A	N/A	25.7	-0.56	0.44	0.1	0.0	5716.7	
July 10, 2024	9.47	670.7	0.00	0.0	9.89	689.3	8.59	42.2	9.80	666.7	3.86	0.0	N/A	N/A	N/A	N/A	9.5	662.6	3.9	0.2	N/A	N/A	N/A	N/A	27.2	-0.56	0.44	0.1	0.0	4439.9	
July 11, 2024	9.53	669.8	0.00	0.0	9.88	690.8	9.30	0.0	9.81	665.7	4.07	0.0	N/A	N/A	N/A	N/A	9.5	669.6	4.3	0.1	N/A	N/A	N/A	N/A	25.4	-0.56	0.44	0.1	0.0	5515.5	
July 12, 2024	9.50	669.7	0.00	0.0	9.90	689.7	9.85	0.0	9.80	666.6	3.99	0.0	N/A	N/A	N/A	N/A	9.5	669.8	4.2	0.0	N/A	N/A	N/A	N/A	22.0	-0.56	0.46	0.1	0.0	7903.8	
July 13, 2024	9.50	669.7	0.00	0.0	9.90	689.7	9.94	0.0	9.80	665.5	4.57	6.8	N/A	N/A	N/A	N/A	9.5	670.1	5.0	0.0	N/A	N/A	N/A	N/A	21.1	-0.55	0.46	0.1	0.0	10654.8	
July 14, 2024	9.50	670.7	0.00	0.0	9.91	691.1	8.99	0.0	9.80	665.4	3.76	0.0	N/A	N/A	N/A	N/A	9.5	670.1	4.1	0.0	N/A	N/A	N/A	N/A	21.3	-0.55	0.47	0.1	0.0	6642.3	
July 15, 2024	9.49	671.8	0.00	0.0	9.89	689.1	9.19	33.9	9.79	664.4	4.98	5.6	N/A	N/A	N/A	N/A	9.5	669.8	4.7	0.0	N/A	N/A	N/A	N/A	22.7	-0.55	0.46	0.1	110.5	5526.5	
July 16, 2024	9.49	669.8	0.43	167.0	9.90	689.7	9.61	732.8	9.85	666.0	4.47	337.7	N/A	N/A	N/A	N/A	9.5	670.3	6.6	7.1	9.4	652.4	0.0	34.5	24.5	-0.58	0.44	0.0	0.0	1358.5	Out of Service
July 17, 2024	9.50	668.9	0.00	0.0	9.90	689.4	10.44	72.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	670.4	7.0	6.4	9.5	670.4	5.0	30.0	25.6	-0.56	0.45	0.1	0.0	1512.2	
July 18, 2024	9.48	670.4	0.02	0.0	9.90	689.9	11.18	81.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	669.2	9.0	9.6	9.5	667.8	9.0	28.8	26.4	-0.53	0.45	0.1	0.0	1664.4	
July 19, 2024	9.52	669.9	0.00	0.0	9.90	690.5	10.40	52.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	670.1	7.8	0.0	9.5	673.3	7.9	29.6	25.6	-0.56	0.44	0.1	0.0	1660.7	
July 20, 2024	9.49	670.3	0.00	0.0	9.90	689.0	11.61	39.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	670.2	7.8	0.0	9.5	672.8	8.0	31.3	25.0	-0.56	0.45	0.1	0.0	1546.2	
July 21, 2024	9.52	669.6	0.00	0.0	9.89	689.5	11.43	0.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	669.7	7.4	0.0	9.5	673.0	7.6	31.9	26.4	-0.56	0.44	0.1	0.0	1795.4	
July 22, 2024	9.51	669.8	0.00	0.0	9.91	690.1	10.78	3.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	670.0	6.5	0.0	9.5	679.1	6.5	32.1	27.1	-0.56	0.44	0.1	0.0	1318.1	
July 23, 2024	9.49	670.0	0.00	0.0	9.90	689.7	10.49	5.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	670.1	7.9	0.0	9.5	668.2	7.8	29.9	25.0	-0.56	0.45	0.1	0.1	1387.8	
July 24, 2024	9.49	671.5	0.00	0.0	9.85	687.9	10.30	3.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	669.0	7.8	0.0	9.5	666.7	7.9	21.5	21.8	-0.55	0.46	0.1	0.8	495.5	
July 25, 2024	9.51	670.7	0.00	0.0	9.87	681.8	11.45	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	669.6	10.5	0.0	9.4	671.7	10.7	8.1	20.3	-0.53	0.45	0.1	46.9	1044.2	
July 26, 2024	9.50	670.3	0.00	0.0	9.90	693.7	10.32	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.6	670.7	8.0	0.0	9.6	670.1	8.3	2.5	20.9	-0.53	0.44	0.1	6.2	433.4	
July 27, 2024	9.49	669.8	0.00	0.0	9.92	695.3	9.31	0.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	670.7	6.6	0.0	9.5	670.3	6.8	6.2	21.0	-0.54	0.46	0.1	2.1	215.3	
July 28, 2024	9.49	669.8	0.00	0.0	9.90	690.9	8.76	1.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	669.6	6.9	0.0	9.5	669.5	7.0	16.4	21.3	-0.53	0.46	0.1	0.5	273.4	
July 29, 2024	9.51	669.9	0.00	0.0	9.90	687.3	9.71	0.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	670.1	6.6	0.0	9.5	670.2	6.6	19.4	22.2	-0.53	0.45	0.1	8.6	175.2	
July 30, 2024	9.48	671.9	0.00	0.0	9.92	681.7	9.21	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	669.5	6.8	0.0	9.5	669.3	6.8	15.7	21.6	-0.53	0.46	0.1	6.8	453.1	
July 31, 2024	9.52	670.7	0.00	0.0	9.90	685.9	9.06	188.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	670.2	7.0	0.0	9.5	670.3	7.0	18.7	22.6	-0.54	0.46	0.1	3.7	249.2	
Avg	9.50	670.3	0.02	5.4	9.89	689.4	9.20	108.1	9.80	666.9	3.26	22.6	N/A	N/A	N/A	N/A	9.5	670.6	6.2	1.4	9.5	671.8	5.7	20.8	23.2	-0.55	0.45	0.1	6.1	2434.2	N/A
Min	9.47	668.9	0.00	0.0	9.84	681.7	4.73	0.0	9.74	664.4	0.84	0.0	N/A	N/A	N/A	N/A	9.2	662.6	0.0	0.0	9.4	652.4	0.0	2.5	20.3	-0.58	0.43	0.0	0.0	175.2	N/A
Max	9.53	673.0	0.43	167.0	9.92	695.3	11.61	732.8	9.85	670.1	4.98	337.7	N/A	N/A	N/A	N/A	9.6	688.3	10.5	11.2	9.6	694.9	10.7	34.5	27.2	-0.53	0.47	0.1	110.5	10654.8	N/A

Indicates data for partial day

Appendix D – Air Pollution Control System Data

Gold Bar Wastewater Treatment Plant
Daily Average Scrubber Report
August 2024

Date	Scrubber 1 - East				Scrubber 4 - Fermenter				Scrubber 2 - West				Scrubber 3 - EPT				Scrubber 5				Scrubber 6				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)	pH	ORP (mV)	H2S In (ppm)	H2S Out (ppb)	pH	ORP (mV)	H2S In (ppm)	H2S Out (ppb)	Temperature In (°C)	Pressure In (kPa)	Pressure Out (kPa)	H_2S Out (ppb)	H_2S Out (ppb)	H_2S Out (ppb)	H_2S Out (ppb)
August 1, 2024	9.50	670.3	0.00	0.0	9.88	685.8	8.50	17.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	670.3	7.0	0.0	9.5	670.2	7.0	12.4	22.3	-0.54	0.46	0.1	14.8	339.0	
August 2, 2024	9.50	669.8	0.00	0.0	9.90	687.7	7.67	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	669.9	6.8	0.0	9.5	669.9	6.8	12.0	22.1	-0.54	0.45	0.1	0.0	221.6	
August 3, 2024	9.51	670.3	0.00	0.0	9.94	699.8	8.99	39.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	670.8	7.2	0.0	9.5	670.9	7.3	10.5	22.5	-0.54	0.45	0.1	0.0	294.9	
August 4, 2024	9.50	669.8	0.00	0.0	9.86	680.2	10.02	200.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	665.3	7.0	0.0	9.5	664.1	7.1	8.4	21.0	-0.53	0.46	0.1	0.6	169.4	
August 5, 2024	9.50	670.1	0.00	0.0	9.93	690.2	8.36	4.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.6	682.7	3.0	0.0	9.6	676.3	3.3	3.5	20.5	-0.53	0.45	0.2	0.0	57.1	
August 6, 2024	9.51	673.1	0.00	0.0	9.90	696.9	6.98	192.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	669.2	6.2	0.0	9.5	669.7	6.3	3.4	20.8	-0.53	0.47	0.1	0.0	247.1	
August 7, 2024	9.48	662.1	0.00	0.0	9.89	689.4	9.37	379.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	670.1	5.5	0.0	9.5	670.2	5.6	6.4	20.8	-0.54	0.47	0.1	0.0	802.0	
August 8, 2024	9.50	670.0	0.00	0.0	9.88	690.5	8.40	292.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	670.0	5.7	0.0	9.5	670.0	5.7	6.8	21.2	-0.53	0.46	0.1	0.0	931.9	
August 9, 2024	9.50	670.1	0.00	0.0	9.90	690.1	9.62	189.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	670.2	5.9	0.0	9.5	670.1	6.0	7.1	21.5	-0.54	0.46	0.1	0.0	1080.1	
August 10, 2024	9.50	670.0	0.00	0.0	9.89	690.2	9.91	200.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	670.0	5.9	0.0	9.5	670.1	6.0	7.5	22.2	-0.55	0.45	0.1	0.0	548.2	
August 11, 2024	9.50	669.9	0.00	0.0	9.90	689.7	10.00	178.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	669.9	6.2	0.0	9.5	669.9	6.2	8.5	22.7	-0.55	0.45	0.1	0.0	585.5	
August 12, 2024	9.50	670.0	0.00	0.0	9.90	689.7	11.30	238.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	669.8	6.3	0.0	9.5	669.7	6.3	7.8	23.0	-0.55	0.45	0.1	0.0	1102.9	
August 13, 2024	9.49	670.1	0.00	0.0	9.90	690.4	10.98	231.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	670.5	7.9	0.0	9.5	669.7	8.0	7.0	21.8	-0.52	0.45	0.1	0.0	1135.1	
August 14, 2024	9.50	669.7	0.00	0.0	9.90	689.4	9.96	92.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	668.5	7.2	0.0	9.5	668.4	7.2	10.1	21.4	-0.54	0.46	0.1	0.2	1668.9	
August 15, 2024	9.51	670.2	0.00	0.0	9.90	691.0	10.51	158.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	666.6	10.6	0.0	9.5	665.6	10.6	12.2	21.8	-0.53	0.46	0.1	0.6	1940.3	
August 16, 2024	9.49	669.9	0.00	0.0	9.91	690.2	8.76	266.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.6	674.7	4.7	0.0	9.6	675.5	4.7	1.8	20.3	-0.53	0.45	0.1	0.0	660.8	Out of Service
August 17, 2024	9.50	670.2	0.00	0.0	9.90	689.6	9.01	173.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	670.1	6.5	0.0	9.5	670.1	6.4	3.2	20.5	-0.53	0.46	0.1	0.1	1253.7	
August 18, 2024	9.50	669.8	0.00	0.0	9.90	689.7	9.40	141.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	669.3	7.2	0.0	9.5	669.1	7.2	8.3	21.3	-0.53	0.46	0.1	0.3	531.9	
August 19, 2024	9.50	669.7	0.00	0.0	9.89	689.7	11.12	166.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.4	667.0	8.7	0.0	9.4	665.9	8.5	12.7	21.6	-0.53	0.47	0.1	1.8	554.3	
August 20, 2024	9.50	674.3	0.02	0.0	9.88	687.2	12.25	159.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.6	675.3	5.5	0.0	9.5	673.6	5.5	14.6	22.3	-0.54	0.45	0.0	0.7	395.9	
August 21, 2024	9.50	669.8	0.00	0.0	9.89	687.9	14.18	32.7	9.60	659.1	2.48	0.0	N/A	N/A	N/A	N/A	9.5	664.8	6.6	1.1	9.5	666.8	6.9	8.0	21.2	-0.53	0.45	0.1	2.0	241.8	
August 22, 2024	9.50	670.1	0.00	0.0	9.93	673.7	14.03	165.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	669.7	7.1	0.0	9.5	669.7	7.1	1.7	20.6	-0.52	0.46	0.1	4.4	217.1	
August 23, 2024	9.50	670.0	0.00	0.0	9.88	686.9	13.73	151.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	670.1	8.0	0.0	9.5	669.8	7.9	6.9	22.8	-0.53	0.44	0.1	0.0	293.3	
August 24, 2024	9.50	670.0	0.00	0.0	9.92	690.4	13.12	38.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	668.7	8.5	0.0	9.5	667.9	8.5	5.2	20.5	-0.52	0.44	0.1	0.0	407.0	
August 25, 2024	9.50	670.0	0.00	0.0	9.90	690.1	10.47	35.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	675.4	5.6	0.0	9.5	672.5	5.7	1.7	21.1	-0.54	0.47	0.1	0.0	207.5	
August 26, 2024	9.51	670.2	0.00	0.0	9.90	688.6	10.70	0.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	670.2	6.4	0.0	9.5	670.2	6.4	4.9	21.6	-0.55	0.46	0.1	1.0	202.8	
August 27, 2024	9.53	671.5	0.00	0.0	9.86	690.1	11.91	243.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	666.0	7.9	0.0	9.5	665.4	7.9	1.1	20.7	-0.54	0.45	0.1	1.1	248.4	
August 28, 2024	9.50	670.2	0.00	0.0	9.89	687.3	12.91	97.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.4	674.3	9.6	0.0	9.4	674.4	9.8	0.0	21.1	-0.54	0.42	0.1	3.6	189.4	
August 29, 2024	9.50	669.7	0.00	0.0	9.90	690.8	11.01	0.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.6	669.5	6.8	0.0	9.6	669.7	6.8	2.1	21.6	-0.55	0.46	0.1	1.9	458.2	
August 30, 2024	9.50	670.2	0.00	0.0	9.94	684.2	11.09	60.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	670.0	8.2	0.0	9.5	670.0	8.2	0.2	21.1	-0.54	0.46	0.1	0.0	734.1	
August 31, 2024	9.49	670.1	0.00	0.0	9.87	640.6	12.22	1461.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	670.2	7.8	0.0	9.5	670.3	7.7	2.3	21.2	-0.55	0.46	0.1	0.1	630.3	
Avg	9.50	670.0	0.00	0.0	9.90	687.4	10.53	180.9	9.60	659.1	2.48	0.0	N/A	N/A	N/A	N/A	9.5	670.3	6.9	0.0	9.5	669.9	6.9	6.4	21.5	-0.54	0.46	0.1	1.1	592.0	N/A
Min	9.48	662.1	0.00	0.0	9.86	640.6	6.98	0.0	9.60	659.1	2.48	0.0	N/A	N/A	N/A	N/A	9.4	664.8	3.0	0.0	9.4	664.1	3.3	0.0	20.3	-0.55	0.42	0.0	0.0	57.1	N/A
Max	9.53	674.3	0.02	0.0	9.94	699.8	14.18	1461.0	9.60	659.1	2.48	0.0	N/A	N/A	N/A	N/A	9.6	682.7	10.6	1.1	9.6	676.3	10.6	14.6	23.0	-0.52	0.47	0.2	14.8	1940.3	N/A

Indicates data for partial day

Appendix D – Air Pollution Control System Data

Gold Bar Wastewater Treatment Plant
Daily Average Scrubber Report
September 2024

Date	Scrubber 1 - East				Scrubber 4 - Fermenter				Scrubber 2 - West				Scrubber 3 - EPT				Scrubber 5				Scrubber 6				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)	pH	ORP (mV)	H2S In (ppm)	H2S Out (ppb)	pH	ORP (mV)	H2S In (ppm)	H2S Out (ppb)	Temperature In (°C)	Pressure In (kPa)	Pressure Out (kPa)	H_2S Out (ppb)	H_2S Out (ppb)	H_2S Out (ppb)	H_2S Out (ppb)
September 1, 2024	9.50	669.8	0.00	0.0	9.89	689.6	12.55	303.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	670.4	6.6	0.0	9.5	670.5	6.5	6.3	22.2	-0.55	0.45	0.1	0.0	547.4	
September 2, 2024	9.50	670.1	0.00	0.0	9.90	689.9	11.13	78.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	667.1	6.7	0.0	9.5	666.5	6.8	7.0	22.9	-0.56	0.45	0.1	0.0	824.5	
September 3, 2024	9.50	670.0	0.00	0.0	9.91	689.9	11.12	14.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	672.5	7.2	0.2	9.4	672.9	7.3	2.2	21.1	-0.55	0.46	0.1	0.0	1105.9	
September 4, 2024	9.50	672.3	0.00	0.0	9.90	693.5	10.56	6.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	670.6	7.7	0.0	9.5	669.3	7.7	0.0	20.7	-0.54	0.46	0.1	0.1	1767.5	
September 5, 2024	9.50	669.6	0.00	0.0	9.90	690.8	10.42	20.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	670.0	7.2	0.0	9.5	669.9	7.2	0.3	21.7	-0.55	0.45	0.1	0.0	860.7	
September 6, 2024	9.48	669.6	0.00	0.0	9.90	689.3	10.68	4.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	670.4	7.7	0.0	9.5	670.5	7.7	4.0	22.3	-0.56	0.45	0.1	0.0	241.1	
September 7, 2024	9.51	670.4	0.00	0.0	9.89	689.2	10.46	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	670.0	8.2	0.0	9.5	669.8	8.2	5.0	22.3	-0.55	0.45	0.1	0.0	398.0	
September 8, 2024	9.50	669.5	0.00	0.0	9.89	688.9	12.01	0.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	670.1	7.6	0.0	9.5	670.0	7.6	3.4	22.7	-0.44	0.93	0.1	0.0	338.3	
September 9, 2024	9.52	671.2	0.00	0.0	9.91	690.0	12.11	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.6	669.8	6.6	0.0	9.6	670.0	6.7	0.0	20.8	-0.37	1.23	0.1	0.0	415.1	
September 10, 2024	9.49	669.4	0.00	0.0	9.90	690.9	10.42	0.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	670.0	9.0	0.0	9.5	669.8	9.1	0.0	21.1	-0.35	1.24	0.1	0.0	878.4	
September 11, 2024	9.50	670.1	0.00	0.0	9.90	688.6	11.12	4.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	670.0	8.6	0.0	9.5	670.1	8.7	0.0	20.7	-0.35	1.23	0.1	0.0	448.0	
September 12, 2024	9.50	669.9	0.00	0.0	9.90	690.3	10.74	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	671.1	8.0	0.0	9.5	670.3	8.2	0.0	20.9	-0.35	1.18	0.1	0.8	156.6	
September 13, 2024	9.50	670.0	0.00	0.0	9.90	693.9	8.74	0.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	669.8	7.9	0.0	9.5	669.6	8.0	0.0	21.1	-0.34	1.23	0.1	0.0	450.5	
September 14, 2024	9.50	669.9	0.00	0.0	9.91	689.8	9.45	18.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	666.2	9.5	0.0	9.5	664.6	9.7	0.0	21.0	-0.35	1.21	0.1	0.9	267.4	
September 15, 2024	9.50	670.1	0.00	0.0	9.89	689.3	10.27	45.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	670.9	8.6	0.0	9.5	671.5	8.7	0.0	21.1	-0.35	1.29	0.1	0.0	158.1	
September 16, 2024	9.50	670.0	0.00	0.0	9.90	689.9	14.29	153.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	672.2	8.0	0.0	9.5	673.0	8.0	0.0	20.9	-0.30	1.13	0.1	0.0	216.4	
September 17, 2024	9.50	669.9	0.00	0.0	9.90	689.7	24.78	56.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	670.3	8.5	0.0	9.5	670.2	8.6	0.0	21.3	-0.35	1.22	0.1	0.6	333.1	
September 18, 2024	9.50	670.1	0.00	0.0	9.90	689.4	30.06	61.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	669.9	8.6	0.0	9.5	669.7	8.6	0.0	21.0	-0.35	1.22	0.1	5.9	301.0	
September 19, 2024	9.49	671.3	0.00	0.0	9.91	694.9	36.43	209.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	673.3	9.0	0.0	9.5	669.4	9.2	0.0	21.0	-0.35	1.22	0.1	1.4	370.0	
September 20, 2024	9.50	670.6	0.00	0.0	9.91	691.1	37.02	663.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	670.4	8.2	0.0	9.5	670.6	8.2	0.0	21.2	-0.34	1.23	0.1	1.5	305.1	
September 21, 2024	9.50	669.7	0.00	0.0	9.90	689.6	35.57	1128.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	670.2	8.1	0.0	9.5	670.2	8.2	0.0	21.1	-0.35	1.24	0.1	0.0	327.7	
September 22, 2024	9.49	669.7	0.01	0.0	9.89	689.9	38.85	1181.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.4	666.2	10.7	0.4	9.4	664.1	11.0	0.0	21.0	-0.35	1.23	0.1	0.1	211.9	
September 23, 2024	9.50	669.8	0.00	0.0	9.90	689.6	40.06	1081.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.6	673.6	8.7	1.0	9.6	675.1	8.8	0.0	20.7	-0.35	1.27	0.1	2.3	272.0	
September 24, 2024	9.50	670.2	0.00	0.0	9.90	689.8	37.52	672.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	670.2	8.6	0.0	9.5	670.1	8.7	0.0	21.5	-0.36	1.23	0.1	4.2	616.0	
September 25, 2024	9.50	670.0	0.00	0.0	9.89	688.2	41.40	752.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	669.8	8.9	0.0	9.5	669.7	9.1	0.0	20.9	-0.35	1.22	0.1	0.1	599.3	
September 26, 2024	9.51	670.4	0.00	0.0	9.92	694.1	29.19	148.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.6	671.6	7.6	0.5	9.5	674.1	7.9	0.0	20.7	-0.34	1.20	0.1	0.4	457.5	
September 27, 2024	9.50	669.7	0.00	0.0	9.90	688.8	26.44	259.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	669.4	7.7	0.0	9.5	669.9	8.0	0.0	20.9	-0.35	1.22	0.1	0.0	1016.0	
September 28, 2024	9.50	670.4	0.00	0.0	9.90	689.6	29.54	463.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	670.2	7.8	0.0	9.5	670.2	8.1	0.0	21.2	-0.35	1.24	0.1	0.0	991.8	
September 29, 2024	9.50	669.7	0.00	0.0	9.90	689.8	31.09	551.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	670.6	5.0	0.0	9.5	670.7	5.2	0.0	21.3	-0.34	1.24	0.1	2.6	257.2	
September 30, 2024	9.50	670.0	0.00	0.0	9.90	689.9	34.35	859.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	670.0	5.7	0.0	9.5	670.1	5.8	0.0	21.7	-0.34	1.24	0.1	0.0	134.2	
Avg	9.50	670.1	0.00	0.0	9.90	690.3	21.61	291.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	670.2	7.9	0.1	9.5	670.1	8.0	0.9	21.3	-0.40	1.03	0.1	0.7	508.9	N/A
Min	9.48	669.4	0.00	0.0	9.89	688.2	8.74	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.4	666.2	5.0	0.0	9.4	664.1	5.2	0.0	20.7	-0.56	0.45	0.1	0.0	134.2	N/A
Max	9.52	672.3	0.01	0.0	9.92	694.9	41.40	1181.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.6	673.6	10.7	1.0	9.6	675.1	11.0	7.0	22.9	-0.30	1.29	0.1	5.9	1767.5	N/A

Out of Service

Appendix D – Air Pollution Control System Data

Gold Bar Wastewater Treatment Plant
Daily Average Scrubber Report
October 2024

Date	Scrubber 1 - East				Scrubber 4 - Fermenter				Scrubber 2 - West				Scrubber 3 - EPT				Scrubber 5				Scrubber 6				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)	pH	ORP (mV)	H2S In (ppm)	H2S 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, 2024	9.50	670.1	0.00	0.0	9.90	688.8	40.07	1002.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	669.2	6.7	0.0	9.5	668.9	6.9	0.0	21.6	-0.33	1.24	0.1	19.7	215.4	
October 2, 2024	9.50	670.6	0.00	0.0	9.96	677.1	36.26	630.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	669.9	7.9	0.0	9.5	668.4	8.0	0.0	21.6	-0.34	1.24	0.1	80.1	1027.9	
October 3, 2024	9.50	670.4	0.00	0.0	9.89	692.4	36.24	54.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	666.9	9.2	0.0	9.5	665.1	9.8	0.0	21.7	-0.34	1.25	0.1	21.6	493.0	
October 4, 2024	9.50	670.1	0.00	0.0	9.93	688.6	33.81	47.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	673.2	8.8	0.0	9.5	674.4	9.1	0.0	21.3	-0.33	1.23	0.1	1.9	393.7	
October 5, 2024	9.50	669.7	0.00	0.0	9.88	667.7	31.38	297.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	670.2	7.8	0.0	9.5	670.3	8.1	0.0	21.8	-0.33	1.24	0.1	0.1	308.6	
October 6, 2024	9.49	669.9	0.00	0.0	9.91	679.9	31.48	368.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	669.7	6.7	0.0	9.5	669.7	6.8	0.0	21.3	-0.34	1.25	0.1	0.4	143.4	
October 7, 2024	9.49	670.2	0.00	0.0	9.75	689.5	32.98	2175.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	670.0	7.4	0.0	9.5	669.9	7.6	0.0	21.3	-0.33	1.25	0.1	1.2	98.4	
October 8, 2024	9.47	671.4	0.00	0.0	9.82	679.5	33.29	2418.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	669.8	8.1	0.0	9.5	669.7	8.3	0.0	21.1	-0.34	1.24	0.1	0.5	141.1	
October 9, 2024	9.51	671.7	0.00	0.0	9.79	679.7	36.03	3347.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	669.9	7.9	0.0	9.5	670.1	8.1	0.0	21.6	-0.33	1.17	0.1	0.0	128.4	
October 10, 2024	9.50	670.2	0.00	0.0	9.80	680.0	29.98	2368.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	669.8	8.0	0.0	9.5	669.7	8.1	0.0	21.7	-0.33	1.24	0.2	7.9	85.3	
October 11, 2024	9.50	670.0	0.00	0.0	9.78	684.2	30.35	1573.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	670.0	8.3	0.0	9.5	669.9	8.4	0.0	21.6	-0.34	1.25	0.1	2.9	63.8	
October 12, 2024	9.50	670.0	0.00	0.0	9.80	689.3	33.06	1108.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	670.6	8.0	0.0	9.5	670.7	8.2	0.0	21.7	-0.34	1.26	0.1	13.0	41.2	
October 13, 2024	9.50	669.5	0.00	0.0	9.80	688.8	37.76	1175.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	669.0	7.8	0.2	9.5	668.9	7.9	0.0	21.4	-0.34	1.25	0.1	0.0	32.7	
October 14, 2024	9.49	670.3	0.00	0.0	9.79	689.8	38.61	1022.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	670.5	7.9	0.2	9.5	670.6	8.2	0.0	21.5	-0.33	1.25	0.1	0.2	60.3	
October 15, 2024	9.54	671.3	0.51	0.0	9.88	692.0	39.14	905.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	671.2	8.6	0.0	9.5	669.6	8.7	0.0	21.5	-0.34	1.25	0.1	0.0	34.7	
October 16, 2024	9.50	670.2	1.25	211.8	9.95	677.3	41.37	2452.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	670.2	9.2	0.0	9.5	670.3	9.5	0.0	21.5	-0.33	1.24	0.1	0.4	431.3	Out of Service
October 17, 2024	9.50	670.0	0.00	0.0	9.97	684.3	25.80	926.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	670.0	9.1	0.0	9.5	670.1	9.3	0.0	19.7	-0.34	1.24	0.1	196.6	946.8	
October 18, 2024	9.50	670.0	0.00	0.0	9.89	685.3	33.31	1397.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	670.3	9.4	0.0	9.5	670.3	9.5	0.0	9.7	-0.35	1.28	0.1	0.0	841.0	
October 19, 2024	9.50	670.2	0.00	0.0	9.94	699.7	32.07	325.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	670.2	8.1	0.0	9.5	670.3	8.2	0.0	15.1	-0.34	1.14	0.1	6.0	1499.7	
October 20, 2024	9.50	670.2	0.00	0.0	9.92	659.6	38.80	2734.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	668.2	9.0	0.0	9.5	667.6	9.2	0.0	22.2	-0.34	1.24	0.1	4.0	873.3	
October 21, 2024	9.50	670.0	0.00	0.0	10.00	681.7	35.87	2434.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.6	671.9	7.1	0.0	9.6	672.6	7.3	0.0	22.4	-0.33	1.24	0.1	0.0	683.9	
October 22, 2024	9.50	670.1	0.00	0.0	9.91	683.3	36.72	2854.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	670.1	7.2	0.0	9.5	670.1	7.3	0.0	22.0	-0.33	1.25	0.1	0.0	3773.7	
October 23, 2024	9.50	669.9	0.00	0.0	9.95	690.5	31.33	1706.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	670.3	7.1	0.0	9.5	670.3	7.1	0.0	21.8	-0.33	1.25	0.1	0.8	4030.7	
October 24, 2024	9.50	673.9	0.00	0.0	9.91	691.7	34.41	1876.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	670.0	6.0	0.0	9.5	670.2	6.1	0.0	21.8	-0.33	1.24	0.0	0.5	3157.4	
October 25, 2024	9.50	671.9	0.00	0.0	9.81	691.1	28.80	1722.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	669.8	6.8	0.0	9.5	669.6	6.9	0.0	21.7	-0.33	1.25	0.1	0.0	4906.7	
October 26, 2024	9.50	672.4	0.00	0.0	10.00	655.1	27.78	3346.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	670.0	6.8	0.0	9.5	670.0	6.9	0.0	21.7	-0.33	1.25	0.1	0.0	5493.8	
October 27, 2024	9.50	714.2	0.00	0.0	9.92	671.1	31.76	3970.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	670.5	5.2	0.0	9.5	670.7	5.4	0.0	21.8	-0.32	1.23	0.1	5.3	3647.3	
October 28, 2024	9.50	671.3	0.00	0.0	9.99	657.4	28.31	3798.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	669.7	5.6	0.0	9.5	669.6	5.6	0.0	21.8	-0.32	1.24	0.1	1.8	3861.5	
October 29, 2024	9.28	696.6	0.00	0.0	9.91	681.4	26.81	2268.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	670.1	6.7	0.0	9.5	670.2	6.7	0.0	21.7	-0.32	1.25	0.1	1.2	5046.0	
October 30, 2024	9.49	676.5	0.00	0.0	9.77	668.9	28.12	6380.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	631.2	5.2	0.0	9.5	671.1	5.2	0.0	21.9	-0.32	1.25	0.1	0.4	3611.4	
October 31, 2024	9.50	673.7	0.00	0.0	9.61	671.2	33.03	7301.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	669.8	5.2	0.0	9.5	669.9	5.2	0.0	22.0	-0.32	1.25	0.1	0.0	1950.8	
Avg	9.49	673.1	0.06	6.8	9.87	681.2	33.38	2064.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	668.8	7.5	0.0	9.5	670.0	7.7	0.0	21.0	-0.33	1.24	0.1	11.8	1549.1	N/A
Min	9.28	669.5	0.00	0.0	9.61	655.1	25.80	47.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	631.2	5.2	0.0	9.5	665.1	5.2	0.0	9.7	-0.35	1.14	0.0	0.0	32.7	N/A
Max	9.54	714.2	1.25	211.8	10.00	699.7	41.37	7301.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.6	673.2	9.4	0.2	9.6	674.4	9.8	0.0	22.4	-0.32	1.28	0.2	196.6	5493.8	N/A

Appendix D – Air Pollution Control System Data

Gold Bar Wastewater Treatment Plant
Daily Average Scrubber Report
November 2024

Date	Scrubber 1 - East				Scrubber 4 - Fermenter				Scrubber 2 - West				Scrubber 3 - EPT				Scrubber 5				Scrubber 6				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)	pH	ORP (mV)	H2S In (ppm)	H2S 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, 2024	9.51	675.9	0.00	0.0	9.90	692.6	32.93	844.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	670.3	4.9	0.0	9.5	670.3	4.9	0.0	21.8	-0.32	1.24	0.1	0.0	941.3	
November 2, 2024	9.50	670.0	0.00	0.0	10.00	658.1	33.29	2049.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	670.0	4.1	0.0	9.5	669.9	4.2	0.0	22.0	-0.32	1.24	0.1	0.0	643.1	
November 3, 2024	9.50	669.8	0.00	0.0	9.88	661.1	28.83	2034.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	670.0	4.7	0.0	9.5	670.0	4.7	0.0	22.0	-0.32	1.25	0.1	0.0	494.6	
November 4, 2024	9.50	670.0	0.00	0.0	9.95	655.1	27.04	1862.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	669.9	5.4	0.0	9.5	669.8	5.5	0.0	22.0	-0.32	1.24	0.1	0.0	541.1	
November 5, 2024	9.50	669.9	0.00	0.0	9.96	684.9	25.94	471.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	670.4	4.9	0.0	9.5	670.4	5.0	0.0	21.9	-0.32	1.19	0.1	0.0	273.9	
November 6, 2024	9.50	670.2	0.00	0.0	9.98	672.8	20.45	587.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	670.1	4.2	0.0	9.5	670.0	4.3	0.0	21.6	-0.33	1.25	0.1	1.9	405.1	
November 7, 2024	9.49	669.9	0.00	0.0	9.94	657.7	34.64	2273.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	670.1	4.5	0.0	9.5	670.0	4.5	0.0	21.4	-0.34	1.24	0.1	0.0	415.6	
November 8, 2024	9.50	670.0	0.00	0.0	9.97	655.7	30.83	2069.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	670.4	5.1	0.0	9.5	670.2	5.2	0.0	21.4	-0.32	1.25	0.1	5.2	378.9	
November 9, 2024	9.50	670.1	0.00	0.0	9.91	676.3	29.80	1357.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	670.0	4.7	0.0	9.5	669.9	4.8	0.0	21.9	-0.32	1.25	0.1	0.0	352.5	
November 10, 2024	9.51	670.0	0.00	0.0	9.95	674.4	29.70	681.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	670.1	4.1	0.0	9.5	670.1	4.3	0.0	21.8	-0.32	1.25	0.1	0.1	308.2	
November 11, 2024	9.50	669.9	0.00	0.0	9.97	661.0	29.78	599.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	669.9	3.8	0.0	9.5	670.0	4.0	0.0	21.6	-0.31	1.24	0.1	0.0	194.4	
November 12, 2024	9.49	678.7	0.00	0.0	9.95	685.9	29.37	607.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	669.9	4.0	0.0	9.5	669.8	4.1	0.0	21.8	-0.32	1.23	0.1	4.4	440.9	
November 13, 2024	9.51	684.6	0.00	0.0	10.00	678.1	28.46	901.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	670.7	4.6	0.0	9.5	673.1	4.8	0.0	21.8	-0.31	1.23	0.1	0.2	585.1	
November 14, 2024	9.50	671.8	0.00	0.0	9.90	681.8	28.34	947.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	670.3	4.0	0.0	9.5	670.4	4.3	0.0	21.9	-0.31	1.24	0.1	1.6	204.5	
November 15, 2024	9.50	670.4	0.00	0.0	9.93	664.7	27.58	1141.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	670.2	4.0	0.0	9.5	670.2	4.2	0.0	21.8	-0.31	0.95	0.1	1.6	305.2	
November 16, 2024	9.51	670.0	0.00	0.0	9.99	672.7	26.23	509.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	669.5	4.1	0.0	9.5	669.3	4.3	0.0	21.9	-0.31	0.53	0.1	0.0	838.1	
November 17, 2024	9.49	670.1	0.00	0.0	9.79	672.9	27.02	1331.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	670.2	4.5	0.0	9.5	670.2	4.7	0.0	21.9	-0.30	1.22	0.1	16.8	914.5	
November 18, 2024	9.50	670.0	0.00	0.0	9.79	677.5	26.54	1368.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	670.3	3.8	0.0	9.5	670.3	4.0	0.0	21.8	-0.30	1.24	0.1	0.0	676.0	
November 19, 2024	9.50	669.6	0.00	0.0	9.98	666.1	23.67	1385.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	670.0	4.3	0.0	9.5	669.8	4.5	0.0	22.8	-0.32	1.25	0.0	0.4	387.3	
November 20, 2024	9.55	680.4	0.00	0.0	9.93	669.7	17.47	1117.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	669.8	3.9	0.7	9.5	669.7	4.1	0.3	22.4	-0.31	1.26	0.1	6.3	276.9	
November 21, 2024	9.50	669.9	0.00	0.0	9.99	667.3	23.17	1232.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.4	669.5	5.4	0.0	9.4	668.7	5.2	0.0	22.4	-0.31	1.26	0.1	160.4	264.4	
November 22, 2024	9.50	670.0	0.00	0.0	9.98	661.8	23.51	1478.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	669.9	4.9	0.7	9.5	670.0	5.3	0.2	22.5	-0.30	1.26	0.1	229.5	584.0	
November 23, 2024	9.50	670.9	0.00	0.0	9.98	665.6	22.36	1174.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	670.2	4.0	0.0	9.5	670.4	4.1	0.0	23.2	-0.30	1.25	0.1	170.8	265.9	
November 24, 2024	9.49	671.4	0.00	0.0	9.97	662.7	18.74	1001.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	670.4	3.0	1.0	9.5	670.4	3.1	0.5	22.7	-0.30	1.26	0.1	96.9	151.2	
November 25, 2024	9.1	681.3	0.00	0.0	9.94	660.8	19.27	959.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	670.1	2.2	0.5	9.5	677.3	2.1	0.2	22.2	-0.30	1.26	0.1	3.2	841.4	
November 26, 2024	N/A	N/A	N/A	N/A	9.99	661.1	19.07	1081.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	669.3	3.3	0.0	9.5	685.4	3.4	0.0	21.7	-0.30	1.26	0.1	0.0	3233.3	
November 27, 2024	N/A	N/A	N/A	N/A	9.96	661.6	17.26	1031.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	691.9	2.7	0.0	9.5	692.2	3.0	0.0	21.9	-0.31	1.27	0.1	5.0	464.5	
November 28, 2024	N/A	N/A	N/A	N/A	9.97	674.1	19.47	1405.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	703.4	2.6	0.0	9.6	665.4	2.9	0.0	22.2	-0.30	1.28	0.1	0.0	179.5	
November 29, 2024	N/A	N/A	N/A	N/A	9.94	679.4	20.63	973.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	690.1	3.0	0.0	9.5	675.3	3.1	0.0	22.4	-0.30	1.27	0.1	0.0	21.5	
November 30, 2024	N/A	N/A	N/A	N/A	9.95	664.4	19.74	1027.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	693.1	2.8	0.0	9.5	690.1	2.9	0.0	22.2	-0.29	1.27	0.1	0.0	11.0	
Avg	9.49	672.2	0.00	0.0	9.94	669.3	25.37	1183.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	673.3	4.0	0.1	9.5	672.3	4.2	0.0	22.0	-0.31	1.22	0.1	23.5	519.8	N/A
Min	9.09	669.6	0.00	0.0	9.79	655.1	17.26	471.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.4	669.3	2.2	0.0	9.4	665.4	2.1	0.0	21.4	-0.34	0.53	0.0	0.0	11.0	N/A
Max	9.55	684.6	0.00	0.0	10.00	692.6	34.64	2273.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	703.4	5.4	1.0	9.6	692.2	5.5	0.5	23.2	-0.29	1.28	0.1	229.5	3233.3	N/A

Out of Service

Indicates data for partial day

Appendix D – Air Pollution Control System Data

Gold Bar Wastewater Treatment Plant
Daily Average Scrubber Report
December 2024

Date	Scrubber 1 - East				Scrubber 4 - Fermenter				Scrubber 2 - West				Scrubber 3 - EPT				Scrubber 5				Scrubber 6				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)	pH	ORP (mV)	H2S In (ppm)	H2S 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, 2024	N/A	N/A	N/A	N/A	9.97	664.5	19.03	909.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	700.0	2.4	0.0	9.5	695.5	2.7	0.0	22.5	-0.30	1.28	0.1	0.0	3.2	
December 2, 2024	N/A	N/A	N/A	N/A	9.96	664.8	18.41	921.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	696.0	2.7	0.0	9.5	696.4	2.9	0.0	21.9	-0.30	1.27	0.1	115.2	175.9	
December 3, 2024	N/A	N/A	N/A	N/A	9.93	668.4	15.40	703.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	697.8	2.8	0.0	9.5	695.0	3.0	0.0	22.3	-0.40	0.82	0.1	115.7	271.3	
December 4, 2024	N/A	N/A	N/A	N/A	9.88	682.2	12.86	618.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	700.8	2.4	0.0	9.5	693.8	2.5	0.0	24.1	-0.45	0.46	0.1	10.9	213.6	
December 5, 2024	N/A	N/A	N/A	N/A	9.97	666.6	17.83	1031.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	694.7	2.8	0.0	9.5	689.7	2.9	0.0	23.1	-0.47	0.42	0.1	36.8	284.3	
December 6, 2024	N/A	N/A	N/A	N/A	9.98	669.5	18.26	906.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	699.3	2.5	0.0	9.5	699.0	2.6	0.0	22.5	-0.47	0.46	0.1	34.4	138.6	
December 7, 2024	N/A	N/A	N/A	N/A	9.84	626.7	17.62	876.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	694.9	3.0	0.0	9.5	697.6	3.1	0.0	22.5	-0.47	0.44	0.1	77.0	136.9	
December 8, 2024	N/A	N/A	N/A	N/A	9.71	683.3	15.96	1447.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	690.0	3.1	0.0	9.5	695.0	3.1	0.0	22.6	-0.48	0.41	0.1	73.8	31.3	
December 9, 2024	N/A	N/A	N/A	N/A	9.92	684.6	17.97	1096.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	695.9	2.5	0.0	9.5	699.3	2.6	0.0	23.3	-0.48	0.45	0.1	0.0	103.2	
December 10, 2024	N/A	N/A	N/A	N/A	9.69	679.7	22.07	2791.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	694.7	2.5	0.1	9.5	695.9	2.6	0.0	23.4	-0.47	0.47	0.1	0.0	134.4	
December 11, 2024	N/A	N/A	N/A	N/A	9.77	685.0	20.64	2346.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	694.2	2.3	0.0	9.5	691.6	2.4	0.0	22.9	-0.46	0.46	0.1	4.8	340.5	
December 12, 2024	N/A	N/A	N/A	N/A	9.97	687.4	17.64	845.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	688.0	2.4	0.0	9.5	695.6	2.5	0.0	24.4	-0.45	0.45	0.1	13.9	472.0	
December 13, 2024	N/A	N/A	N/A	N/A	9.97	692.2	16.62	771.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	689.8	2.6	0.0	9.5	697.5	2.7	0.0	24.2	-0.46	0.45	0.1	0.0	452.0	
December 14, 2024	N/A	N/A	N/A	N/A	9.95	688.2	15.75	756.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	687.8	3.1	0.0	9.5	694.5	3.1	0.0	24.2	-0.46	0.44	0.1	0.0	967.1	
December 15, 2024	N/A	N/A	N/A	N/A	9.88	692.0	14.95	737.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	691.0	2.5	0.0	9.5	697.7	2.5	0.0	24.5	-0.46	0.45	0.1	0.0	1702.2	
December 16, 2024	N/A	N/A	N/A	N/A	9.96	690.1	15.76	636.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.4	705.1	1.9	0.0	9.4	699.1	1.9	0.0	25.1	-0.45	0.46	0.1	2.0	1103.0	Out of Service
December 17, 2024	N/A	N/A	N/A	N/A	9.95	688.0	14.71	774.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	700.6	2.0	0.0	9.5	704.3	2.0	0.0	25.4	-0.45	0.46	0.1	1.7	1069.0	
December 18, 2024	N/A	N/A	N/A	N/A	9.95	690.9	17.39	707.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	701.7	2.0	0.0	9.5	707.1	1.9	0.0	25.3	-0.45	0.45	0.1	0.5	962.2	
December 19, 2024	N/A	N/A	N/A	N/A	9.95	680.7	16.24	880.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	699.7	2.2	0.0	9.5	704.6	2.0	0.0	25.5	-0.45	0.46	0.1	0.0	1591.4	
December 20, 2024	N/A	N/A	N/A	N/A	9.98	687.3	15.97	634.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	707.3	1.5	0.0	9.5	718.1	1.5	0.0	25.0	-0.45	0.45	0.1	0.0	764.4	
December 21, 2024	N/A	N/A	N/A	N/A	9.98	683.9	15.41	552.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	704.9	1.9	0.0	9.5	708.6	1.9	0.0	24.3	-0.46	0.45	0.1	0.0	409.8	
December 22, 2024	N/A	N/A	N/A	N/A	9.90	687.2	14.46	555.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	708.0	1.8	0.0	9.5	711.9	1.7	0.0	24.5	-0.47	0.45	0.1	34.7	396.3	
December 23, 2024	N/A	N/A	N/A	N/A	9.99	678.6	12.75	517.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	703.5	1.8	0.0	9.5	711.8	1.8	0.0	23.8	-0.45	0.78	0.1	32.2	325.7	
December 24, 2024	N/A	N/A	N/A	N/A	9.85	676.9	13.36	540.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.6	689.5	2.1	0.0	9.5	701.1	2.1	0.0	23.3	-0.46	0.75	0.1	0.1	345.1	
December 25, 2024	N/A	N/A	N/A	N/A	9.96	689.3	14.14	666.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	669.8	2.4	0.0	9.5	698.9	2.4	0.0	23.4	-0.47	0.44	0.1	0.0	282.7	
December 26, 2024	N/A	N/A	N/A	N/A	9.91	690.2	13.20	720.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	670.3	2.3	0.0	9.5	704.6	2.3	0.0	24.0	-0.46	0.44	0.1	7.7	167.5	
December 27, 2024	N/A	N/A	N/A	N/A	9.95	689.8	12.65	588.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	669.9	2.0	0.0	9.5	710.1	2.0	0.0	23.6	-0.46	0.45	0.1	0.0	143.8	
December 28, 2024	N/A	N/A	N/A	N/A	9.97	692.1	10.90	414.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	670.0	2.4	0.0	9.5	703.1	2.5	0.0	23.9	-0.46	0.45	0.1	0.0	224.0	
December 29, 2024	N/A	N/A	N/A	N/A	9.98	688.4	12.72	497.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	670.0	2.0	0.0	9.5	709.0	2.0	0.0	24.4	-0.46	0.44	0.1	0.0	117.8	
December 30, 2024	N/A	N/A	N/A	N/A	9.90	689.5	14.69	711.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	670.1	1.8	0.0	9.5	708.7	1.8	0.0	24.4	-0.45	0.45	0.1	0.0	74.5	
December 31, 2024	N/A	N/A	N/A	N/A	9.89	688.1	15.25	813.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	669.5	1.8	0.1	9.5	708.8	1.8	0.1	24.7	-0.46	0.45	0.1	0.0	51.2	
Avg	N/A	N/A	N/A	N/A	9.92	681.5	15.83	870.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.5	691.1	2.3	0.0	9.5	701.4	2.3	0.0	23.8	-0.45	0.53	0.1	18.1	434.0	N/A
Min	N/A	N/A	N/A	N/A	9.69	626.7	10.90	414.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.4	669.5	1.5	0.0	9.4	689.7	1.5	0.0	21.9	-0.48	0.41	0.1	0.0	3.2	N/A
Max	N/A	N/A	N/A	N/A	9.99	692.2	22.07	2791.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.6	708.0	3.1	0.1	9.5	718.1	3.1	0.1	25.5	-0.30	1.28	0.1	115.7	1702.2	N/A

Appendix E – Scrubber Chemicals

2024 Scrubber Bleach Usage (L as delivered 16% sodium hypochlorite solution)

	January		February		March		April		May		June		July		August		September		October		November		December	
	East	West	East	West	East	West	East	West	East	West	East	West	East	West	East	West	East	West	East	West	East	West	East	West
1	329	608	0	422	283	446	483	550	447	159	287	916	632	858	1621	913	1193	778	938	767	939	602	484	369
2	331	641	591	412	297	430	414	444	361	306	297	938	524	824	2154	780	1165	796	1721	942	471	522	527	444
3	347	723	397	442	323	441	380	402	357	1369	434	823	552	601	1288	856	1209	863	2997	1099	484	643	460	400
4	344	576	401	424	281	409	414	452	437	604	1236	438	452	540	1413	832	1191	979	2047	1053	431	658	444	390
5	337	643	430	431	290	378	384	447	502	719	1446	514	575	615	927	407	1132	929	2326	918	1319	626	402	418
6	362	757	481	389	341	367	374	467	982	784	2021	583	603	706	438	754	1118	973	906	815	503	556	514	422
7	324	726	526	430	360	474	434	500	1409	550	1988	608	631	628	739	710	1285	1013	569	889	427	528	538	448
8	323	601	512	524	312	527	436	492	80	283	1311	783	788	806	616	741	1463	966	262	934	409	582	455	444
9	332	529	464	507	316	575	604	506	196	314	1244	756	836	512	714	747	1477	853	542	937	559	577	405	393
10	389	473	521	493	333	536	574	500	269	422	1240	731	987	1012	748	773	1380	1120	568	956	723	526	322	422
11	271	429	473	549	317	417	565	447	327	567	716	836	873	846	747	771	1491	1015	861	979	448	490	606	399
12	385	380	421	561	274	430	427	419	383	680	747	538	942	886	799	803	1486	948	1036	911	1111	503	460	384
13	405	402	501	532	232	381	468	472	678	758	801	507	1006	1016	840	966	1214	953	1196	867	706	573	500	432
14	384	395	279	554	152	295	456	427	741	637	1399	677	896	896	775	920	892	1111	1304	906	767	536	448	471
15	382	432	304	596	180	310	516	348	713	725	1054	698	928	990	714	1286	1067	1031	1366	1009	1001	520	553	414
16	388	505	352	592	180	378	472	310	466	737	795	819	958	805	594	521	1016	980	1444	1043	955	507	531	341
17	316	483	355	624	273	420	515	257	188	430	307	826	1027	833	696	736	1055	1011	1457	1060	644	597	514	342
18	250	509	387	715	237	378	480	332	251	663	360	700	1107	796	749	839	1042	1048	1768	1099	729	486	589	334
19	306	481	420	674	253	389	588	316	346	811	328	692	780	977	831	985	859	1120	2299	953	531	555	457	362
20	323	541	435	649	304	395	619	372	568	527	380	704	1177	985	1045	658	678	962	1171	1017	416	536	601	269
21	246	501	450	393	445	410	603	387	706	613	354	736	1347	974	1492	861	724	958	700	823	572	628	557	379
22	337	516	390	383	515	415	633	326	723	836	386	762	1327	794	1057	847	756	1206	721	812	496	653	459	319
23	455	549	440	321	552	500	609	404	654	555	315	916	1373	872	1311	989	799	1038	995	760	560	513	399	263
24	941	563	391	375	564	-36	1409	516	737	556	443	879	1358	929	1134	1006	762	1003	1023	676	541	440	418	288
25	1272	531	390	413	510	480	684	440	849	590	443	804	2779	1260	1241	684	864	992	786	755	502	341	387	384
26	1689	515	366	337	498	459	514	531	806	737	333	825	3239	931	1232	778	701	908	393	775	453	461	374	346
27	2136	527	250	259	564	431	533	529	1091	624	585	916	1980	795	1009	996	603	871	653	609	391	480	398	322
28	2190	526	321	358	394	464	565	575	516	701	522	698	1571	880	1750	1179	651	925	425	632	433	418	483	391
29	442	475	251	406	346	475	582	501	380	605	550	810	1641	848	1688	635	672	681	754	780	617	404	472	292
30	253	304			409	499	663	583	312	675	516	856	291	876	1210	937	736	653	422	1043	666	412	438	287
31	279	419			492	528			311	710			583	913	626	930			451	623			415	303
Total (L)	17,068	16,260	11,499	13,765	10,826	13,002	16,399	13,253	16,789	19,248	22,839	22,290	33,762	26,206	32,197	25,839	30,679	28,683	34,104	27,446	18,805	15,871	14,612	11,476
Total (L)	33,329		25,264		23,829		29,652		36,037		45,129		59,969		58,036		59,362		61,550		34,676		26,088	

2024 Scrubber Caustic Usage (kg 100%)

	January		February		March		April		May		June		July		August		September		October		November		December	
	East	West	East	West	East	West	East	West	East	West	East	West	East	West	East	West	East	West	East	West	East	West	East	West
1	40	60	44	56	51	65	54	61	55	39	39	73	68	78	94	65	113	76	116	55	75	51	52	27
2	35	56	46	63	38	56	45	51	44	38	42	71	58	79	102	63	105	66	97	65	67	52	55	31
3	41	54	53	60	52	58	42	56	7	53	54	74	45	73	93	67	102	73	131	73	51	55	40	45
4	29	43	35	58	37	52	38	51	70	59	90	72	64	83	73	60	100	69	121	81	59	50	51	29
5	41	76	48	55	45	45	44	43	51	46	83	53	61	69	81	77	97	81	110	69	72	49	49	36
6	41	86	35	61	44	54	37	51	51	66	95	59	61	79	63	51	98	76	92	64	83	95	50	46
7	34	70	49	50	44	66	53	48	64	68	94	58	59	77	71	53	99	86	58	69	78	53	39	40
8	34	63	46	58	40	60	41	50	49	46	85	60	76	78	76	57	107	84	65	72	75	50	35	46
9	35	57	49	58	33	60	56	47	42	41	80	70	68	95	81	56	103	66	60	68	75	53	41	45
10	38	62	40	52	47	66	48	47	39	51	93	66	86	75	80	54	97	78	79	70	76	45	34	38
11	41	59	51	57	39	73	38	40	48	76	67	73	76	89	79	54	96	75	92	70	69	40	43	34
12	21	51	40	57	48	57	56	49	37	77	75	68	71	80	80	53	94	81	99	73	85	44	50	40
13	46	51	52	53	37	56	48	54	44	76	87	65	72	79	80	73	95	68	99	60	80	46	54	48
14	40	51	35	52	39	56	41	47	81	68	108	63	80	81	79	56	73	70	106	67	67	43	42	51
15	22	49	18	54	41	56	55	44	49	71	95	64	82	87	79	72	88	86	96	73	75	42	45	49
16	30	54	57	49	43	65	51	41	49	87	65	63	83	63	65	67	92	76	99	70	80	39	44	39
17	25	50	41	56	48	57	48	39	33	59	37	67	99	59	80	54	91	75	83	70	62	46	43	32
18	39	58	53	63	51	58	50	40	64	61	44	69	133	55	79	61	95	73	94	99	61	45	49	42
19	11	53	46	61	43	59	49	46	57	71	38	72	110	67	79	67	84	69	105	87	65	39	43	41
20	18	54	49	62	51	56	49	31	70	65	41	70	106	66	97	93	78	66	87	80	53	37	48	38
21	23	58	37	58	54	56	44	30	68	64	42	70	111	67	116	59	73	61	57	75	66	36	53	52
22	27	52	41	52	50	53	58	44	69	65	34	71	104	62	102	56	79	67	69	66	64	43	45	47
23	29	56	45	45	47	57	43	45	67	73	43	74	105	55	113	75	84	83	96	67	69	36	49	47
24	65	69	35	53	56	55	61	55	62	56	47	75	93	61	92	68	81	69	85	66	30	30	43	34
25	50	60	44	55	53	53	52	46	65	64	51	73	129	83	97	65	90	71	48	55	58	31	40	35
26	75	61	42	52	48	50	45	51	68	71	58	79	135	80	106	76	69	79	54	53	52	36	39	44
27	75	59	16	49	49	47	52	40	58	76	51	79	132	66	115	80	68	56	58	52	47	52	39	27
28	71	65	62	37	54	52	46	46	57	71	69	82	114	67	131	95	68	63	48	50	49	37	40	42
29	42	56	52	46	44	57	58	52	53	60	47	75	105	65	132	79	66	49	67	61	56	28	39	34
30	46	53			50	51	53	58	41	57	50	73	93	64	117	77	74	49	71	53	50	37	41	31
31	34	56			51	53			48	57			74	73	81	75			41	48			37	27
Total (kg)	1,201	1,802	1,261	1,581	1,428	1,760	1,455	1,405	1,659	1,933	1,903	2,081	2,752	2,256	2,814	2,059	2,656	2,143	2,584	2,079	1,951	1,337	1,372	1,218
Total (kg)	3,002		2,841		3,188		2,861		3,592		3,984		5,008		4,873		4,799		4,663		3,288		2,591	

Appendix F – Odour Complaints

Appendix F – Odour Complaints

Date	Time	Loacation	Complaint Description	Call Back Details	Wind Direction	Scrubber Status	Maintenance Activities	Action Taken	Is GBWWTP the Likely Source (Y/N)	Consistent with EnviroSuite Model
8/30/2024		4407 109 Ave	Details of customer odour complaint: Smells very strong Odour inside or outside Outside Description of odour: Sewage Odour intensity (scale from 1-10): 10 Time noticed odour and for how long: Starting Aug 28 till Aug 30 Is it a reoccurring issue? Yes	Called customer back on August 30 at 09:20. Customer noticed odour in the past couple days, but last night, it was especially bad, so they called in to report it. Let the customer know we have a bioreactor tank down for maintenance right now and we believe that is the source of the odour. Noted we also observed H2S at the AQMS last night around 7-8 PM, but it has otherwise been low. Also noted there was a shift in wind direction on Aug 27 which likely did not help. Let the customer know we will look into adding a water cap to the tank to try and reduce odour and that the tank will be returned to service in ~2 weeks. (Customer just moved back into the area after being away for a few years and asked her neighbours if the odours are still bad and they said it is getting better and only bad about 2x per year. Customer also noted they don't like the perfume smell (from odour mister)).	N/A	Operational	Bioreactor 1	Scaffolding was taken out of the tank earlier this week, but no FE was added. Looking to add water cap to tank to prevent odours.	Y	Y
1/24/2024	14:25	5304 Ada Blvd	Voicemail recieved through Water Canada Projects noting smell is really bad today and requesting someone to look into it.	Gold Bar Operations called customer back to get more information. Customer described that they had previously had issues with collection system odour.	S	Operational	N/A	Unable to identify any causes from GB. Forwarded to Wastewater Collection Network Operations who went out and plugged some manholes that were emitting odour.	N	N/A

Appendix G – Nutri-Gold Summary

Substance Loading Rates on Nutrigold Fields - 2024

Nutrigold Field #2024SE255519			OC-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
21492.9	5.46	1172	145	58	20.2	TP	31836	37311	643				
						TN	34221	40106	691				
						NH3-N	20582	24121	416				
Landowner		Gary Koenig				As	5.2	6.09	0.105				
Legal Description		SE-25-55-19 W4				Cd	2.7	3.16	0.055	12674	1500	11791	600
Start Date		24-Apr-24				Cr	94	110.2	1.90	364	20	339	8
End Date		13-May-24				Cu	379	444	7.66	90	15	84	6
Soil Class		Class 1				Pb	35	41.0	0.707	978	20	910	8
Biosolids Type		Gravity Thickened				Mn	275	322	5.56				
						Hg	1.29	1.512	0.026	26528	3000	24679	1100
						Ni	76	89.1	1.536	450	100	419	40
						Se	28.6	33.52	0.578				
						Zn	824	966	16.6	42	10	39	4
						Co	17.8	20.9	0.4				

Nutrigold Field #2024SW/SE065518			OC-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
33323.87	6.19	2063	234	95	21.7	TP	31836	65678	691				
						TN	34221	70598	743				
						NH3-N	20582	42461	447				
Landowner		Nathaniel Ostashewski				As	5.2	10.73	0.113				
Legal Description		SW/SE-06-55-18 W4				Cd	2.7	5.57	0.059	12674	1500	11791	600
Start Date		3-May-24				Cr	94	193.9	2.04	364	20	339	8
End Date		5-Jun-24				Cu	379	782	8.23	90	15	84	6
Soil Class		Class 1				Pb	35	72.2	0.760	978	20	910	8
Biosolids Type		Gravity Thickened				Mn	275	567	5.97				
						Hg	1.29	2.661	0.028	26528	3000	24679	1100
						Ni	76	156.8	1.650	450	100	419	40
						Se	28.6	59.00	0.621				
						Zn	824	1700	17.9	42	10	39	4
						Co	17.8	36.7	0.4				

Nutrigold Field #2024SE015419			OC-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
8793.47	6.55	579	66	27	21.5	TP	31836	18439	683				
						TN	34221	19820	734				
						NH3-N	20582	11921	442				
Landowner		Barry Pich				As	5.2	3.01	0.112				
Legal Description		SE-01-54-19 W4				Cd	2.7	1.56	0.058	12674	1500	11791	600
Start Date		23-Jun-24				Cr	94	54.4	2.02	364	20	339	8
End Date		26-Jun-24				Cu	379	220	8.13	90	15	84	6
Soil Class		Class 1				Pb	35	20.3	0.751	978	20	910	8
Biosolids Type		Gravity Thickened				Mn	275	159	5.90				
						Hg	1.29	0.747	0.028	26528	3000	24679	1100
						Ni	76	44.0	1.630	450	100	419	40
						Se	28.6	16.56	0.614				
						Zn	824	477	17.7	42	10	39	4
						Co	17.8	10.3	0.4				

Appendix G – Nutri-Gold Summary

Nutrigold Field #2024NW165318			OC-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
9529.14	6.51	624	71	29	21.5	TP	31836	19852	685				
						TN	34221	21339	736				
						NH3-N	20582	12834	443				
Landowner		Allan Sarafinchan				As	5.2	3.24	0.112				
Legal Description		NW-16-53-18 W4				Cd	2.7	1.68	0.058	12674	1500	11791	600
Start Date		2-Jul-24				Cr	94	58.6	2.02	364	20	339	8
End Date		5-Jul-24				Cu	379	236	8.15	90	15	84	6
Soil Class		Class 1				Pb	35	21.8	0.753	978	20	910	8
Biosolids Type		Gravity Thickened				Mn	275	171	5.91				
						Hg	1.29	0.804	0.028	26528	3000	24679	1100
						Ni	76	47.4	1.634	450	100	419	40
						Se	28.6	17.83	0.615				
						Zn	824	514	17.7	42	10	39	4
						Co	17.8	11.1	0.4				

Nutrigold Field #2024NW/SW355419			OC-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
36017.9	6.85	2479	281	114	21.7	TP	31836	78921	692				
						TN	34221	84832	744				
						NH3-N	20582	51022	448				
Landowner		Dale Mandrusiak				As	5.2	12.89	0.113				
Legal Description		NW/SW-35-54-19 W4				Cd	2.7	6.69	0.059	12674	1500	11791	600
Start Date		6-Jul-24				Cr	94	233.0	2.04	364	20	339	8
End Date		25-Jul-24				Cu	379	940	8.24	90	15	84	6
Soil Class		Class 1				Pb	35	86.8	0.761	978	20	910	8
Biosolids Type		Gravity Thickened				Mn	275	682	5.98				
						Hg	1.29	3.198	0.028	26528	3000	24679	1100
						Ni	76	188.4	1.653	450	100	419	40
						Se	28.6	70.90	0.622				
						Zn	824	2043	17.9	42	10	39	4
						Co	17.8	44.1	0.4				

Nutrigold Field #SE/SW075518			OC-08		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
37625.49	6.78	2550	291	118	21.6	TP	31836	81190	688				
						TN	34221	87272	740				
						NH3-N	20582	52489	445				
Landowner		Nathaniel Ostashewski				As	5.2	13.26	0.112				
Legal Description		SE/SW-07-55-18 W4				Cd	2.7	6.89	0.058	12674	1500	11791	600
Start Date		29-Jul-24				Cr	94	239.7	2.03	364	20	339	8
End Date		21-Aug-24				Cu	379	967	8.19	90	15	84	6
Soil Class		1				Pb	35	89.3	0.756	978	20	910	8
Biosolids Type		Gravity Thickened				Mn	275	701	5.94				
						Hg	1.29	3.290	0.028	26528	3000	24679	1100
						Ni	76	193.8	1.643	450	100	419	40
						Se	28.6	72.94	0.618				
						Zn	824	2101	17.8	42	10	39	4
						Co	17.8	45.4	0.4				

Substance Loading Rates on Nutrigold Fields - 2024

Nutrigold Field #2024SE145419			DW-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
5807.82	22.0	1277	126	51	25.0	TP	28260	36088	708				
						TN	30740	39255	770				
						NH3-N	6972	8903	175				
Landowner		Dwayne Stach				As	5.0	6.39	0.125				
Legal Description		SE-14-54-19 W4				Cd	4.9	6.26	0.123	6273	1500	5767	600
Start Date		31-Aug-24				Cr	147	187.7	3.68	209	20	192	8
End Date		12-Sep-24				Cu	448	572	11.22	69	15	63	6
Soil Class		Class 1				Pb	58	74.1	1.452	530	20	487	8
Biosolids Type		Centrifuge Dewatered				Mn	344	439	8.61				
						Hg	1.54	1.967	0.039	19961	3000	18351	1100
						Ni	39	49.8	0.977	788	100	725	40
						Se	6.6	8.43	0.165				
						Zn	844	1078	21.1	36	10	33	4
						Co	6.9	8.8	0.2				

Nutrigold Field #2024SE/SW285519			DW-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
10175.02	20.8	2100	215	87	24.1	TP	28260	59332	682				
						TN	30740	64539	742				
						NH3-N	6972	14638	168				
Landowner		Rick Anderson				As	5.0	10.50	0.121				
Legal Description		SE/SW-28-55-19 W4				Cd	4.9	10.29	0.118	6273	1500	5767	600
Start Date		22-Jun-24				Cr	147	308.6	3.55	209	20	192	8
End Date		15-Jul-24				Cu	448	941	10.81	69	15	63	6
Soil Class		Class 1				Pb	58	121.8	1.400	530	20	487	8
Biosolids Type		Centrifuge Dewatered				Mn	344	722	8.30				
						Hg	1.54	3.233	0.037	19961	3000	18351	1100
						Ni	39	81.9	0.941	788	100	725	40
						Se	6.6	13.86	0.159				
						Zn	844	1772	20.4	36	10	33	4
						Co	6.9	14.5	0.2				

Nutrigold Field #2024NE195518			DW-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
6201.53	22.5	1383	150	61	22.7	TP	28260	39071	641				
						TN	30740	42499	697				
						NH3-N	6972	9639	158				
Landowner		Rick Anderson				As	5.0	6.91	0.113				
Legal Description		NE-19-55-18 W4				Cd	4.9	6.77	0.111	6273	1500	5767	600
Start Date		16-Jul-24				Cr	147	203.2	3.33	209	20	192	8
End Date		31-Jul-24				Cu	448	619	10.15	69	15	63	6
Soil Class		Class 1				Pb	58	80.2	1.315	530	20	487	8
Biosolids Type		Centrifuge Dewatered				Mn	344	476	7.80				
						Hg	1.54	2.129	0.035	19961	3000	18351	1100
						Ni	39	53.9	0.884	788	100	725	40
						Se	6.6	9.12	0.150				
						Zn	844	1167	19.1	36	10	33	4
						Co	6.9	9.5	0.2				

Appendix G – Nutri-Gold Summary

Nutrigold Field #2024NE215519			DW-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
5974	21.76	1304	126	52.5	24.8	TP	28260	36845	702				
						TN	30740	40079	763				
						NH3-N	6972	9090	173				
Landowner		Dwayne Stach				As	5.0	6.52	0.124				
Legal Description		NE-21-55-19 W4				Cd	4.9	6.39	0.122	6273	1500	5767	600
Start Date		1-Aug-24				Cr	147	191.7	3.65	209	20	192	8
End Date		14-Aug-24				Cu	448	584	11.13	69	15	63	6
Soil Class		Class 1				Pb	58	75.6	1.440	530	20	487	8
Biosolids Type		Centrifuge Dewatered				Mn	344	449	8.54				
						Hg	1.54	2.008	0.038	19961	3000	18351	1100
						Ni	39	50.8	0.969	788	100	725	40
						Se	6.6	8.61	0.164				
						Zn	844	1100	21.0	36	10	33	4
						Co	6.9	9.0	0.2				

Nutrigold Field #2024NE115419			DW-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
6234.57	22.93	1430	150	60	23.8	TP	28260	40410	674				
						TN	30740	43957	733				
						NH3-N	6972	9970	166				
Landowner		Dwayne Stach				As	5.0	7.15	0.119				
Legal Description		NE-11-54-19 W4				Cd	4.9	7.01	0.117	6273	1500	5767	600
Start Date		15-Aug-24				Cr	147	210.2	3.50	209	20	192	8
End Date		30-Aug-24				Cu	448	641	10.68	69	15	63	6
Soil Class		Class 1				Pb	58	82.9	1.382	530	20	487	8
Biosolids Type		Centrifuge Dewatered				Mn	344	492	8.20				
						Hg	1.54	2.202	0.037	19961	3000	18351	1100
						Ni	39	55.8	0.929	788	100	725	40
						Se	6.6	9.44	0.157				
						Zn	844	1207	20.1	36	10	33	4
						Co	6.9	9.9	0.2				

Nutrigold Field #2024NE205318			DW-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
2082.66	24.49	512	58	24	21.3	TP	28260	14464	603				
						TN	30740	15734	656				
						NH3-N	6972	3568	149				
Landowner		Suzie Stack				As	5.0	2.56	0.107				
Legal Description		NE-20-53-18 W4				Cd	4.9	2.51	0.104	6273	1500	5767	600
Start Date		14-Sep-24				Cr	147	75.2	3.13	209	20	192	8
End Date		1-Oct-24				Cu	448	229	9.55	69	15	63	6
Soil Class		Class 1				Pb	58	29.7	1.237	530	20	487	8
Biosolids Type		Centrifuge Dewatered				Mn	344	176	7.34				
						Hg	1.54	0.788	0.033	19961	3000	18351	1100
						Ni	39	20.0	0.832	788	100	725	40
						Se	6.6	3.38	0.141				
						Zn	844	432	18.0	36	10	33	4
						Co	6.9	3.5	0.1				

Appendix G – Nutri-Gold Summary

Nutrigold Field #2024NW085317			DW-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
5239.79	24.01	1260	126	51	24.7	TP	28260	35608	698				
						TN	30740	38732	759				
						NH3-N	6972	8785	172				
Landowner		Myron Fill (Brad Sabo)				As	5.0	6.30	0.124				
Legal Description		NW-08-53-17 W4				Cd	4.9	6.17	0.121	6273	1500	5767	600
Start Date		17-Sep-24				Cr	147	185.2	3.63	209	20	192	8
End Date		28-Sep-24				Cu	448	564	11.07	69	15	63	6
Soil Class		Class 1				Pb	58	73.1	1.433	530	20	487	8
Biosolids Type		Centifuge Dewatered				Mn	344	433	8.50				
						Hg	1.54	1.940	0.038	19961	3000	18351	1100
						Ni	39	49.1	0.964	788	100	725	40
						Se	6.6	8.32	0.163				
						Zn	844	1063	20.9	36	10	33	4
						Co	6.9	8.7	0.2				

Appendix H – Third Party Agricultural Summary

Substance Loading Rates on Olstad Fields - 2024

Olstad Field #2024NE095319			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
17613	6.11	1056	120	48.5	21.8	TP	31836	33631	693				
						TN	34221	36150	745				
						NH3-N	20582	21742	448				
Landowner		Tom Cossey				As	5.2	5.49	0.113				
Legal Description		NE-09-53-19 W4				Cd	2.7	2.85	0.059	12674	1500	11791	600
Start Date		14-May-24				Cr	94	99.3	2.05	364	20	339	8
End Date		2-Jun-24				Cu	379	400	8.25	90	15	84	6
Soil Class		Clas 1				Pb	35	37.0	0.762	978	20	910	8
Biosolids Type		Gravity Thickened				Mn	275	290	5.99				
						Hg	1.29	1.363	0.028	26528	3000	24679	1100
						Ni	76	80.3	1.655	450	100	419	40
						Se	28.6	30.21	0.623				
						Zn	824	870	17.9	42	10	39	4
						Co	17.8	18.8	0.4				

Olstad Field #2024SW065418			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
18783	6.27	1180	140	57	20.7	TP	31836	37552	659				
						TN	34221	40365	708				
						NH3-N	20582	24277	426				
Landowner		Suzie Stack				As	5.2	6.13	0.108				
Legal Description		SW-06-54-18 W4				Cd	2.7	3.18	0.056	12674	1500	11791	600
Start Date		7-Jun-24				Cr	94	110.9	1.95	364	20	339	8
End Date		21-Jun-24				Cu	379	447	7.84	90	15	84	6
Soil Class		Class 1				Pb	35	41.3	0.724	978	20	910	8
Biosolids Type		Gravity Thickened				Mn	275	324	5.69				
						Hg	1.29	1.522	0.027	26528	3000	24679	1100
						Ni	76	89.6	1.573	450	100	419	40
						Se	28.6	33.73	0.592				
						Zn	824	972	17.1	42	10	39	4
						Co	17.8	21.0	0.4				

Olstad Field #2024SE065418			OC-09		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
12574	6.48	816	100	40	20.4	TP	31836	25979	649				
						TN	34221	27924	698				
						NH3-N	20582	16795	420				
Landowner		Ed Dupont				As	5.2	4.24	0.106				
Legal Description		SE-06-54-18 W4				Cd	2.7	2.20	0.055	12674	1500	11791	600
Start Date		23-Aug-24				Cr	94	76.7	1.92	364	20	339	8
End Date		28-Aug-24				Cu	379	309	7.73	90	15	84	6
Soil Class		Class 1				Pb	35	28.6	0.714	978	20	910	8
Biosolids Type		Gravity Thickened				Mn	275	224	5.61				
						Hg	1.29	1.053	0.026	26528	3000	24679	1100
						Ni	76	62.0	1.550	450	100	419	40
						Se	28.6	23.34	0.583				
						Zn	824	672	16.8	42	10	39	4
						Co	17.8	14.5	0.4				

Appendix H – Third Party Agricultural Summary

Olstad Field #2024SW055523			OC-10		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
21190	6.54	1383	157	63.5	21.8	TP	31836	44030	693				
						TN	34221	47328	745				
						NH3-N	20582	28465	448				
Landowner		Rick Shewchuk				As	5.2	7.19	0.113				
Legal Description		SW-05-55-23 W4				Cd	2.7	3.73	0.059	12674	1500	11791	600
Start Date		4-Sep-24				Cr	94	130.0	2.05	364	20	339	8
End Date		10-Sep-24				Cu	379	524	8.25	90	15	84	6
Soil Class		Class 1				Pb	35	48.4	0.762	978	20	910	8
Biosolids Type		Gravity Thickened				Mn	275	380	5.99				
						Hg	1.29	1.784	0.028	26528	3000	24679	1100
						Ni	76	105.1	1.655	450	100	419	40
						Se	28.6	39.55	0.623				
						Zn	824	1140	17.9	42	10	39	4
						Co	17.8	24.6	0.4				

Olstad Field #2024SW325423			OC-11		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
36808	6.59	2426	280	113	21.5	TP	31836	77235	683				
						TN	34221	83020	735				
						NH3-N	20582	49932	442				
Landowner		Lee Watrin/Watrin Grain				As	5.2	12.62	0.112				
Legal Description		NW/SW-32-54-23 W4				Cd	2.7	6.55	0.058	12674	1500	11791	600
Start Date		11-Sep-24				Cr	94	228.0	2.02	364	20	339	8
End Date		30-Sep-24				Cu	379	919	8.14	90	15	84	6
Soil Class		Class 1				Pb	35	84.9	0.751	978	20	910	8
Biosolids Type		Gravity Thickened				Mn	275	667	5.90				
						Hg	1.29	3.130	0.028	26528	3000	24679	1100
						Ni	76	184.4	1.632	450	100	419	40
						Se	28.6	69.38	0.614				
						Zn	824	1999	17.7	42	10	39	4
						Co	17.8	43.2	0.4				

Olstad Field #2024NE105523			OC-12		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
20600	6.57	1351	153	62	21.8	TP	31836	43011	694				
						TN	34221	46233	746				
						NH3-N	20582	27806	448				
Landowner		Lee Watrin/Watrin Grain				As	5.2	7.03	0.113				
Legal Description		NE-10-55-23 W4				Cd	2.7	3.65	0.059	12674	1500	11791	600
Start Date		24-Sep-24				Cr	94	127.0	2.05	364	20	339	8
End Date		3-Oct-24				Cu	379	512	8.26	90	15	84	6
Soil Class		Class 1				Pb	35	47.3	0.763	978	20	910	8
Biosolids Type		Gravity Thickened				Mn	275	372	5.99				
						Hg	1.29	1.743	0.028	26528	3000	24679	1100
						Ni	76	102.7	1.656	450	100	419	40
						Se	28.6	38.64	0.623				
						Zn	824	1113	18.0	42	10	39	4
						Co	17.8	24.0	0.4				

Appendix H – Third Party Agricultural Summary

Olstad Field #2024NE245519			OC-14		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
16569	6.81	1126	130	52	21.7	TP	31836	35841	689				
						TN	34221	38526	741				
						NH3-N	20582	23171	446				
Landowner		Gary Koenig				As	5.2	5.85	0.113				
Legal Description		NE-24-55-19 W4				Cd	2.7	3.04	0.058	12674	1500	11791	600
Start Date		4-Oct-24				Cr	94	105.8	2.04	364	20	339	8
End Date		11-Oct-24				Cu	379	427	8.21	90	15	84	6
Soil Class		Class 1				Pb	35	39.4	0.758	978	20	910	8
Biosolids Type		Gravity Thickened				Mn	275	310	5.95				
						Hg	1.29	1.452	0.028	26528	3000	24679	1100
						Ni	76	85.6	1.645	450	100	419	40
						Se	28.6	32.20	0.619				
						Zn	824	928	17.8	42	10	39	4
						Co	17.8	20.0	0.4				

Appendix I – Non-Ag Biosolids Management Report

TETRA TECH

February 24, 2025

ISSUED FOR USE
FILE: ENW.BIOS03089-02
Via Email: DBartlett@epcor.com
olstad.co@gmail.com

Alberta Environment and Protected Areas
111 Twin Atria Building
4999 – 98 Avenue NW
Edmonton, AB T6B 2X3

Attention: Mohammad Raham, P.Eng.
Environmental Protection and Enhancement Act Team Lead
Capital District – Regulatory Assurance Division North

Subject: 2024 Summary Report on Dewatered Biosolids Application to Marginal Lands within Strathcona County (Authorization No. 639-32733-SLU) and within Sturgeon County (Authorization No. 639-32787-SLU)

1.0 INTRODUCTION

Tetra Tech Canada Inc. (Tetra Tech) was retained by Olstad & Company Ltd. (Olstad & Company) and EPCOR Water Services Inc. (EPCOR) to prepare the 2024 Summary Report for Dewatered Biosolids Application to Marginal Land. Biosolids application was completed in 2023 in general accordance with the Alberta Environment and Protected Areas (EPA, formerly Alberta Environment [AENV]) 2001 Guidelines for the Application of Municipal Wastewater Sludges to Agricultural Lands (the Guidelines)[1] as a beneficial, non-agricultural use of biosolids.

The 2024 Summary Report provides an update to the 2023 Summary Report[2] and includes post-application metals sampling data and monitoring results (Section 6.0) for Alberta Tier 1 metals as required in the authorizations.

Olstad & Company applied dewatered biosolids to two areas in 2023. The first area included one field located in Strathcona County near Josephburg, AB comprising approximately 71.4 hectares (ha) of land across two quarter sections (Figure 1). The second area included three fields in Sturgeon County near Gibbons, AB comprising approximately 120 ha of land within three quarter sections (Figures 2, 3, and 4). The fields were considered marginal lands as they are generally lower producing (due the lower soil pH).

The objective was to maximize the organic matter application from biosolids in an effort to increase the organic matter content of the soil without exceeding the maximum allowable nitrogen application rates. The increased soil organic matter content is expected to:

- Improve soil health through increased soil tilth and increased soil moisture holding capacity.
- Improve productivity through the application of crop nutrients in an environmentally sound manner.
- Improve productivity through increased crop response to chemical fertilizers in the future.

In an effort to increase the organic matter content of the soil, the biosolids application rate was limited by the volume of available biosolids and/or the maximum allowable nitrogen application rate (the most limiting of either total or ammonium nitrogen based on the dewatered biosolids analytical data) rather than the total solids content.

[1] Alberta Environment. 2001. Guidelines for the Application of Municipal Wastewater Sludges to Agricultural Lands. Municipal Program Development Branch. Environmental Services Division. Environmental Services. Edmonton, Alberta. Pub No. T/594. ISBN: 0-7785-1490-0.

[2] Tetra Tech Canada Inc. 2024. 2023 Summary Report on Dewatered Biosolids Application to Marginal Lands within Strathcona County (Authorization No. 639-32733-SLU) and within Sturgeon County (Authorization No. 639-32787-SLU).

Tetra Tech Canada Inc.
14940 - 123 Avenue
Edmonton, AB T5V 1B4 CANADA
Tel 780.451.2121 Fax 780.454.5688

2.0 REGULATORY APPROVALS

On behalf of Olstad & Company and EPCOR, Tetra Tech prepared Applications[3,4] to EPA for Authorization to surface apply and incorporate Dewatered Biosolids (anaerobically digested sludge) from EPCOR's Clover Bar lagoons. Separate Letters of Authorization were sought for this project because the marginal lands were not eligible for inclusion under the normal Notification process described in section 4.6 of EPCOR Wastewater Approval No. 639-03-06. The marginal lands had a 0-30 centimetre (cm) average pH value less than 6.0, and as such, fell outside of the standard definition of agricultural lands as defined in the Guidelines and the permitted variance which allows application of biosolids to lands with a pH of 6.0 and higher[5].

On June 16, 2023, EPCOR submitted a Biosolids Stockpile Notification letter to EPA notifying the Director that, in accordance with section 4.6 of Environmental Protection and Enhancement Act (EPEA) Approval 639-03-06, EPCOR planned to stockpile municipal biosolids at SW 23-55-23 W4M within Sturgeon County. Due to crop logistics and landowner request, the stockpiling location was changed to the NW 14-55-23 W4M.

On September 6, 2023, EPCOR submitted a Biosolids Stockpile Notification letter to EPA, notifying the Director that, in accordance with section 4.6 of EPEA Approval 639-03-06, EPCOR planned to stockpile municipal biosolids at SE 07-54-21 W4M within Strathcona County.

On October 16, 2023, EPCOR received Authorization No. 639-32733-SLU to apply wastewater biosolids to the following quarter sections in Strathcona County:

- NW 07-54-21 W4M
- SW 07-54-21 W4M
- SE 07-54-21 W4M

On October 18, 2023, EPCOR received Authorization No. 639-32787-SLU to apply wastewater biosolids to the following quarter sections in Sturgeon County:

- NW 02-55-23 W4M
- SW 11-55-23 W4M
- NW 14-55-23 W4M
- NE 14-55-23 W4M
- SW 23-55-23 W4M

Stockpiling Notification letters and Application Authorization letters are attached in Appendix B.

[3] Tetra Tech Canada Inc. July 2023. Application for Authorization to Apply Dewatered Biosolids to Marginal Lands within Sturgeon County, Alberta. File: ENW.BIOS03089-01. Application No. 639-32787-SLU.

[4] Tetra Tech Canada Inc. September 2023. Application for Authorization to Apply Dewatered Biosolids to Marginal Lands within Strathcona County, Alberta. File: ENW.BIOS03089-01. Application No. 639-32733-SLU.

[5] Patterson, S. (Science and Technology Specialist, EPA). 2023. Email communication: Guideline variance for land applying biosolids to fields with a pH of 6.0 or greater – Revision. January 31, 2023.

3.0 APPROVAL CONDITIONS

The following approval conditions for both Authorization No. 639-32733-SLU and Authorization No. 639-32787-SLU were adhered to during completion of the 2023 dewatered biosolids application to marginal lands:

- All dewatered biosolids were stockpiled in accordance with the Alberta Environment and Parks Draft Dewatered Biosolids Stockpiling Guidelines for stockpiles to be used within nine months of placement.
  - All stockpiles were placed on snow free ground.
  - All stockpiles were located outside of areas with standing water or depressional areas.
  - Permission letters were obtained from the landowners authorizing biosolids stockpiling on their property.
  - Dewatered biosolids stockpiles were located in a cultivated field with no exposure to domestic animals.
  - All buffer distances were maintained between the dewatered biosolids stockpiles and the features listed in the draft guidelines.
- Biosolids were applied in accordance with the Guidelines.
- Dewatered biosolids were cultivated into the soil the same day of application, or within 24 hours of application.
- No biosolids were applied to frozen or snow-covered ground (Photo 4).
- No parcels of land that received biosolids in 2023 had received biosolids within the previous three years.
- Olstad & Company only used agricultural equipment (Photos 1, 2, and 3) to spread biosolids, and therefore was not required to obtain written approval from any pipeline authorities. No pipelines were crossed during hauling and stockpiling activities.
- A minimum 30 metre (m) buffer with no biosolids application was maintained around all wetlands and no biosolids were applied to areas where periodic flooding or ponding crosses onto an adjacent landowner's property.
- All equipment was well maintained and no biosolids were deposited or spilled onto public roadways.
- No releases, spills, or discharge of biosolids into a watercourse or onto land not designated to receive biosolids occurred.

Post-application monitoring requirements included:

- Sampling and analysis for Alberta Tier 1 metals for all land units where pre-application soil pH was lower than 6.0 in the 0-30 cm depth and lime is not added to adjust pH accordingly.

4.0 BIOSOLIDS APPLICATION: AUTHORIZATION NO. 639-32733-SLU

In September 2023 dewatered biosolids were hauled to the SE 07-54-21 W4M in Strathcona County and in October 2023 dewatered biosolids were applied to SW 07-54-21 W4M and SE 07-54-21 W4M in accordance with Authorization No. 639-32733-SLU.

Olstad & Company and EPCOR did not apply biosolids to the NW 07-54-21 W4M in 2023 or 2024 due to limitations in the amount of dewatered biosolids available for application.

4.1 Landowner Information

The landowner is Chris Allam (780-777-4276). A signed acknowledgement and authorization letter from Chris Allam is attached in Appendix C.

4.2 Receiving Site Conditions

A summary of soil analytical results for the receiving site, prior to biosolids application, are provided in Table A. Within NW 07-54-21 W4M there is 20 ha which have 2-5% slopes, which make them Land Class 2, however this area did not receive biosolids in 2023. Figure 1 shows the biosolids application areas and buffer distances for Chris Allam's fields.

Table A: Marginal Lands 2020 Soil Analytical Results

Parameter	NW/SW/SE-07-54-21 W4M	NW-07-54-21 W4M
Area	125 ha (310 acres [ac])	20 ha (50 ac)
Surface pH (0-30 cm)	*5.99*	
Average pH (30-100 cm)	7.16	
Texture [1]	CL	
Slope %	<2	2-5
Depth to Potable Aquifer (m)	12.5	
Plant Available Nitrogen (kg/ha)	145	
Plant Available Phosphorus (kg/ha)	67	
Overall Land Class [2]	1	2

[1] CL = clay loam

[2] The overall land class shown is based on all classification parameters except the 0-30 cm surface pH. All marginal land fields shown have a 0-30 cm surface pH less than 6.0 and fall outside of the standard definition of agricultural lands.

4.3 Biosolids Characterization and Application Rate Calculations

EPCOR collects and analyses digested biosolids samples on a regular basis throughout the year and submits them to an accredited laboratory for analysis of percent total solids, total nitrogen (Total Kjeldahl Nitrogen, TKN), ammonium nitrogen (NH_4-N), total phosphorus, and trace elements. Dewatered biosolids analytical data from a sample collected June 10, 2023 was provided to Tetra Tech by EPCOR. This data was used to calculate preliminary biosolids application rates of 19.8 dry tonnes per hectare (dt/ha) for Class 1 land, 15.4 dt/ha for Class 2 land, and 8.8 dt/ha for Class 3 land in the September 2023 Authorization Application.

In accordance with the Authorization Applications submitted to EPA, EPCOR collected and analyzed additional dewatered biosolids samples prior to application. Daily samples collected in September 2023 during dewatered biosolids production indicated an average solids content of 24.3% in the material hauled and stockpiled on the SE 07-54-21 W4M in Strathcona County (Table 1).

Olstad & Company and EPCOR also proposed to collect samples of the stockpiled biosolids prior to application, as nitrogen losses in the stockpiled biosolids were expected between the stockpiling and application dates due to volatilization and mineralization. In addition to the sample collected on September 7, 2023 while stockpiling the dewatered biosolids, a composite sample of the stockpiled material on the SE 07-54-21 W4M was collected on September 19, 2023. The two samples were analyzed for trace element, total phosphorus, TKN, NH4-N, and available sulphate parameters. Analytical results are summarized in Table 1.

The average nitrogen (TKN and NH_4-N) concentrations of the samples collected during dewatered biosolids production (September 7 sample) and from the stockpile (September 19 sample) were used to calculate a final biosolids application rate based on the maximum allowable nitrogen application rate in order to maximize the organic matter application rate to these marginal lands. Application limits based on the total solids content was not applied to these marginal lands as this had the potential to limit the amount of organic matter applied.

A final calculated maximum biosolids application rate for the marginal lands described in Authorization No. 639-32733-SLU was 30.8 dt/ha for Class 1 land, 24.0 dt/ha for Class 2 land, and 13.7 dt/ha for Class 3 land (Table 2). Total nitrogen was the most limiting parameter for determination of the biosolids application rate.

4.4 Biosolids Application Results

A summary of biosolids application details is provided in Table B. Detailed biosolids application rate details are provided in Tables 3A and 3B.

Table B: 2023 Marginal Lands Biosolids Application Site Details

Legal Location	Land Class [1]	Calculated Rate (dt/ha)	Area (ha)	Total Applied (dt)	Final Application Rate (dt/ha)	Stockpiling Dates	Application Dates
NW 07-54-21 W4M	4 (2)	-	-	0	No Biosolids Applied	Not Applicable	Not Applicable
NW 07-54-21 W4M	4 (1)	-	-	0	No Biosolids Applied	Not Applicable	Not Applicable
SW 07-54-21 W4M	4 (1)	*30.8*	31.5	701	**22.3**	Not Applicable	October 15-16, 2023
SE 07-54-21 W4M	4 (1)	*30.8*	39.9	888	**22.3**	September 6-27, 2023	October 15-16, 2023

[1] All marginal land fields are land class 4 based on a 0-30 cm surface pH less than 6.0. The overall land class shown in brackets is based on all classification parameters except the 0-30 cm surface pH and is used to determine the allowable application rate based on the nitrogen content of the biosolids.

On the SW 07-54-21 W4M and SE 07-54-21 W4M quarters where the biosolids were applied, a final application rate of 22.3 dt/ha was achieved. The application rate on this field was limited by the total amount of biosolids available for application.

Biosolids were not applied to the NW 07-54-21 W4M quarter section in 2023 or 2024 due to the limited quantity of dewatered biosolids available for application.

5.0 BIOSOLIDS APPLICATION: AUTHORIZATION NO. 639-32787-SLU

In June, July, and August 2023 dewatered biosolids were hauled to the NW 14-55-23 W4M in Sturgeon County and in October 2023 dewatered biosolids were applied to fields in the NW 14-55-23 W4M, NE 14-55-23 W4M, and SW 23-55-23 W4M in accordance with Authorization No. 639-32787-SLU.

Olstad & Company and EPCOR decided to not apply biosolids to two fields (NW 02-55-23 W4M and SW 11-55-23 W4M) in 2023 or 2024 due to Authorization Appendix Condition No. 4 requiring lime application prior to biosolids application.

5.1 Landowner Information

The landowner is Blair Nikiforuk (780-818-1028). A signed acknowledgement and authorization letter from Blair Nikiforuk is attached in Appendix C.

5.2 Receiving Site Conditions

A summary of soil analytical results for the receiving sites, prior to biosolids application, are provided in Table C. Figures 2, 3 and 4 show the biosolids application areas and buffer distances for Blair Nikiforuk's fields.

Table C: Marginal Lands 2022 Soil Analytical Results

Parameter	NW 14-55-23 W4M	NE 14-55-23 W4M	SW 23-55-23 W4M
Surface pH (0-30 cm)	*5.89*	*5.77*	*5.89*
Average pH (30-100 cm)	7.6	7.6	7.7
Texture [1]	CL	SL	SL
Slope %	1	<2	<2
Depth to Potable Aquifer (m)	11	11	11
Plant Available Nitrogen (kg/ha)	70	160	145
Plant Available Phosphorus (kg/ha)	40	101	116
Overall Land Class [2]	1	3	3

[1] CL = clay loam, SL = sandy loam

[2] The overall land class shown is based on all classification parameters except the 0-30 cm surface pH. All marginal land fields shown have a 0-30 cm surface pH less than 6.0 and fall outside of the standard definition of agricultural lands.

5.3 Biosolids Characterization and Application Rate Calculations

EPCOR collects and analyses digested biosolids samples on a regular basis throughout the year and submits them to an accredited laboratory for analysis of percent total solids, total nitrogen (Total Kjeldahl Nitrogen, TKN), ammonium nitrogen (NH_4-N), total phosphorus, and trace elements. Dewatered biosolids analytical data from a sample collected June 10, 2023 was provided to Tetra Tech by EPCOR. This data was used to calculate preliminary biosolids application rates of 19.8 dry tonnes per hectare (dt/ha) for Class 1 land, 15.4 dt/ha for Class 2 land, and 8.8 dt/ha for Class 3 land in the July 2023 Authorization Application.

In accordance with the Authorization Application submitted to EPA, EPCOR collected and analyzed additional dewatered biosolids samples prior to application. Daily samples collected in June, July, and August 2023 during dewatered biosolids production indicated an average solids content of 22.6% in the material hauled and stockpiled on the NW 14-55-23 W4M in Sturgeon County (Table 4).

Olstad & Company and EPCOR also proposed to collect samples of the stockpiled biosolids prior to application, as nitrogen losses in the stockpiled biosolids were expected between the stockpiling and application dates due to volatilization and mineralization. In addition to the sample collected on July 10, 2023 during stockpiling of the dewatered biosolids, two additional composite samples were collected on October 12, 2023 from the stockpiled material on the NW 14-55-23 W4M. All samples were analyzed for trace element, total phosphorus, TKN, NH4-N, and available sulphate parameters; analytical results are summarized in Table 4.

The average nitrogen (TKN and NH_4-N) concentrations of the samples collected during dewatered biosolids production (July 10 sample) and from the stockpile (October 12 samples) were used to calculate a final biosolids application rate based on the maximum allowable nitrogen application rate in order to maximize the organic matter application rate to these marginal lands. Application limits based on the total solids content was not applied to these marginal lands as this had the potential to limit the amount of organic matter applied.

A final calculated biosolids application rate for the marginal lands described in Authorization No. 639-32787-SLU was 46.7 dt/ha for Class 1 land, 36.3 dt/ha for Class 2 land, and 20.8 dt/ha for Class 3 land (Table 5). Ammonium nitrogen was the most limiting parameter for determination of the biosolids application rate.

5.4 Biosolids Application Results

A summary of biosolids application details is provided in Table D. Detailed biosolids application rate details are provided in Tables 6A, 6B, and 6C. The equipment used and the dewatered biosolids application spread pattern is shown on Photos 1 to 4.

Table D: 2023 Marginal Lands Biosolids Application Rate Details

Legal Location	Land Class [1]	Calculated Rate (dt/ha)	Area (ha)	Total Applied (dt)	Final Application Rate (dt/ha)	Stockpiling Dates	Application Dates
NW-02-55-23 W4M	4 (1)	-	-	0	No Biosolids Applied	Not Applicable	Not Applicable
SW-11-55-23 W4M	4 (1)	-	-	0	No Biosolids Applied	Not Applicable	Not Applicable
NW-14-55-23 W4M	4 (1)	*46.7*	27	574	**21.1**	June 22 to August 28, 2023	October 18-21, 2023
NE-14-55-23 W4M	4 (3)	*20.8*	49	881	**18.1**	Not Applicable	October 18-21, 2023
SW-23-55-23 W4M	4 (3)	*20.8*	44	900	**20.7**	Not Applicable	October 18-21, 2023

[1] All marginal land fields are land class 4 based on a 0-30 cm surface pH less than 6.0. The overall land class shown in brackets is based on all classification parameters except the 0-30 cm surface pH and is used to determine the allowable application rate based on the nitrogen content of the biosolids.

On the NE 14-55-23 W4M and SW 23-55-23 W4M quarters, biosolids application rates were maximized based on the available ammonium nitrogen content of the biosolids, with rates of 18.1 dt/ha and 20.7 dt/ha applied, respectively. These application rates were used in order to maximize the amount of organic matter applied to these sandy loam textured soils.

On the NW 14-55-23 W4M quarter where the biosolids were stockpiled, a final application rate of 21.1 dt/ha was achieved. The application rate on this field was limited by the total amount of dewatered biosolids available for application.

Biosolids were not applied to the NW 02-55-23 W4M and SW 11-55-23 W4M quarter sections in 2023 or 2024. Approval condition 4 specified that these two quarters were not eligible to receive biosolids unless lime was applied prior to biosolids application. EPCOR and Olstad & Company made the decision to not apply biosolids rather than attempt to obtain a suitable supply of lime.

6.0 MONITORING PROGRAMS

6.1 Authorization No. 639-32733-SLU (Strathcona County)

As per Authorization No. 639-32733-SLU, post-application sampling and analysis for Alberta Tier 1[6] metals in the 0-15 cm and 15-30 cm depths was conducted in 2024 in all land units where the pre-application soil pH was lower than 6.0 in the 0-30 cm depth and where dewatered biosolids were applied in 2023 (Table 7 and Figure 1). These include:

- SW 07-54-21 W4M, Land Unit 2.
- SE 07-54-21 W4M, Land Units 1, 2, and 3.

Pre-application metals data was not collected prior to biosolids application and therefore a predicted loading rate was not modeled.

Post application soil metals data is summarized in Table 8. All analyzed metal concentrations were less than their respective maximum allowable concentration (MAC; the Alberta Tier 1 guideline value) and all post application metal concentrations were less than 80% of the Tier 1 guideline except one. The selenium concentration (0.9 mg/kg) in the SE-07-54-21 W4M Land Unit 1, 15-30 cm sample was marginally greater then the 80% of MAC value of 0.8 mg/kg and likely represents the range of natural variability for selenium in the field. The 15-30 cm field average for selenium (0.6 mg/kg) was well below the 80% of MAC threshold.

The post application average concentrations of regulated metals[7] in biosolids (arsenic, cadmium, chromium, cobalt, copper, lead, mercury, molybdenum, nickel, selenium, and zinc) are shown in Appendix D (Figures D1.As to D1.Zn) in relation to the MAC (Alberta Tier 1 guideline) and 80% of MAC values. Note that in cases where the metal concentrations were reported as less then the laboratory detections limit (e.g., <0.05 mg/kg), half of the detection limit (e.g., 0.025 mg/kg) was used to obtain a numerical average for graphing.

The application of biosolids to SW 07-54-21 W4M and SE 07-54-21 W4M field in Strathcona County did not result in metal concentrations greater than the Alberta Tier 1 Guidelines in the 0-15 cm and 15-30 cm sample depths.

6.2 Authorization No. 639-32787-SLU (Sturgeon County)

As per Authorization No. 639-32787-SLU, post-application sampling and analysis for Alberta Tier 1 metals in the 0-15 cm and 15-30 cm depths was conducted in 2024 in all land units where the pre-application soil pH was lower than 6.0 in the 0-30 cm depth and where dewatered biosolids were applied in 2023 (Table 9 and Figures 2-4). These include:

- NW 14-55-23 W4M, Land Units 1 and 2.
- NE 14-55-23 W4M, Land Units 2, 3, and 4.
- SW 23-55-23 W4M, Land Units 1, 2, and 3.

[6] Alberta Environment and Protected Areas (AEPA). 2024. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. AEPA, Lands Policy, 2024, No. 1.

[7] Regulated metals under *draft* AEPA Guidelines for the Application of Municipal Wastewater Sludges to Agricultural Lands.

Pre-application soil metals data was collected in 2022 (Table 10). Preliminary trace element (metals) loading modelling data provided in Application No 639-32787-SLU[8] indicated that the application of dewatered biosolids to these marginal lands would not result in the regulated metal concentrations exceeding the MAC (Alberta Tier 1 guideline value) or 80% of MAC threshold. Prior to application in fall 2023, the stockpiled biosolids were analyzed (Table 4) and a revised allowable application rate calculated. The predicated loading rate model was also updated prior to application, confirming that the increased application rates would not result in the regulated metal concentrations exceeding the MAC or 80% of MAC thresholds.

Post application, the stockpiled biosolids metals data and final (actual) application rate data was used to model the final metals loading rate for each field (Tables 11A-11C). For all three fields, the calculated metals loading rate was below the MAC and 80% or MAC thresholds.

Post application soil metals data is summarized in Table 12. All analyzed metal concentrations were less than their respective MAC (the Alberta Tier 1 guideline value) and all post application metal concentrations were less than 80% of the Tier 1 guideline except one. The selenium concentration (0.9 mg/kg) in the NE-14-55-23 W4M Land Unit 4, 0-15 cm sample was marginally greater then the 80% of MAC value of 0.8 mg/kg and likely represents the range of natural variability for selenium in the field. The 0-15 cm field average for selenium (0.7 mg/kg) was well below the 80% of MAC threshold.

The post application average concentrations of regulated metals in biosolids are shown in Appendix D (Figures D2.As to D2.Zn) in relation to the MAC and 80% of MAC values. For the regulated metals arsenic, cadmium, chromium, cobalt, copper, lead, nickel, and zinc, the post-application regulated metal concentrations were equivalent to or lower than the pre-application concentrations and lower than the predicted loading concentration. For mercury and molybdenum, the post-application concentrations appear to have increased relative to the pre-application concentrations, but results were reported as less then the laboratory detections limit (e.g., <0.05 mg/kg) and half of the detection limit (e.g., 0.025 mg/kg) was used for graphing purposes. There is no indication that mercury and molybdenum concentrations have increased as a result of biosolids application. For selenium, the post-application concentrations were lower than the pre-application concentrations and lower than the predicted loading concentration in the NE-14 and SW-23 fields. In the NW-14 field, the post-application selenium concentrations were slightly higher than the pre-application concentration but well below the MAC and 80% of MAC values, and are likely representative of the range of natural variability within the field.

The application of biosolids to NW 14-55-23 W4M, NE 14-55-23 W4M, and SW 23-55-23 W4M fields in Sturgeon County did not result in metal concentrations greater than the Alberta Tier 1 Guidelines in the 0-15 cm and 15-30 cm sample depths.

[8] Tetra Tech Canada Inc. July 2023. Application for Authorization to Apply Dewatered Biosolids to Marginal Lands within Sturgeon County, Alberta. File: ENW.BIOS03089-01. Application No. 639-32787-SLU.

7.0 LIMITATIONS OF REPORT

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8.0 CLOSURE

We trust this report meets your present requirements. If you have any questions or comments, please contact the undersigned.

Respectfully submitted,
Tetra Tech Canada Inc.

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Feb. 24, 2025

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TABLES

Table 1: Dewatered Biosolids Laboratory Analysis - 2023 Application Year - SW/SE 07-54-21 W4M

Lab ID	Date 2023 Analytical	Average Solids Concentration %	Al[2]	Sb[2]	As[2]	Ba[2]	Be[2]	Sat Paste B[2]	Cd[2]	Cr[2]	Co[2]	Cu[2]	Fe[2]	Pb[2]	Mn[2]	Mo[2]	Ni[2]	Se[2]	Ag[2]	Sr[2]	Tl[2]	Sn[2]	Ti[2]	V[2]	Zn[2]	Hg[2]	K[2]	Total Phosphorus[2] mg/kg	Total Kjeldahl Nitrogen[2] (excluding NO_3-N) mg/kg	Ammonium Nitrogen (NH4-N)[2] mg/kg	Available Sulphate[2] mg/kg
			mg/kg					mg/L	mg/kg																						
GB-23-11216	September 7th, 2023	24.3 [1]	9,480	2.6	4.7	308	0.3	<0.5	4.41	141	7.1	416	15,800	51.4	380	13.0	40.1	6.9	13.1	209	0.12	19.5	42.0	16.3	794	1.36	2,600	35900	23100	6300	2,520
GB-23-11578	September 19,2023	24.8	7,930	3.0	5.2	416	0.3	<0.5	4.64	127	6.2	508	13,100	53.3	300	16.1	36.6	6.6	14.2	241	0.12	25.7	49.7	16.5	902	1.77	2,400	23600	35300	6070	2,400
Average[3]		NA	**8,705**	**2.8**	**5.0**	**362**	**0.3**	**0.5**	**4.53**	**134**	**6.7**	**462**	**14,450**	**52.4**	**340**	**14.6**	**38.4**	**6.8**	**13.7**	**225**	**0.12**	**22.6**	**45.9**	**16.4**	**848**	**1.57**	**2,500**	**29750**	**29200**	**6185**	**2,460**
Minimum		NA	7,930	2.6	4.7	308	0.3	<0.5	4.41	127	6.2	416	13,100	51.4	300	13.0	36.6	6.6	13.1	209	0.12	19.5	42.0	16.3	794	1.36	2,400	23600	23100	6070	2,400
Maximum		NA	9,480	3.0	5.2	416	0.3	<0.5	4.64	141	7.1	508	15,800	53.3	380	16.1	40.1	6.9	14.2	241	0.12	25.7	49.7	16.5	902	1.77	2,600	35900	35300	6300	2,520
Standard Deviation		NA	1,096	0.3	0.4	76	0.0	NA	0.16	10	0.6	65	1,909	1.3	57	2.2	2.5	0.2	0.8	23	0.00	4.4	5.4	0.1	76	0.29	141	8697	8627	163	85

Notes:

The data was collected in 2023 and used to determine the application rates for 2023.

[1] Concentrations are the percent solids results after the daily field samples have been composited.

[2] Data presented as per the laboratory results. Reported concentrations are with respect to Dry Weight

[3] The detection limit was used to calculate the average for values reported less than the detection limit.

NA - Not Applicable.

Table 2: Municipal Biosolids Application Rate Calculations Worksheet - SW/SE 07-54-21 W4M

MUNICIPAL BIOSOLIDS QUALITY REPORT*

Biosolids Data [1]	Average (%)
Solids %	24.3
Total Nitrogen % [2]	2.92
Ammonium Nitrogen %	0.62
Total Phosphorus %	2.98

Average solids content of the dewatered biosolids transported to the Strathcona County fields.

Total nitrogen, ammonium nitrogen, total phosporous, and metal concentrations are an average of the September 7, 2023 and September 19, 2023 samples of stockpiled dewatered biosolids.

Notes:

[1] Dewatered biosolids analytical data provided by EPCOR.

[2] Total Kjeldahl Nitrogen (TKN).

* The Quality Report is taken from Alberta Environment (AENV) 2001 Guidelines for the Application of Municipal Wastewater Sludges to Agricultural Lands, Page 27.

Metal Concentration in Biosolids	Average Biosolids Data (µg/g)	Nitrogen Calculations			Phosphorus Calculations		
		Calculations[1] N:metal Ratio[3]	Guide Minimum[2]	Difference[5]	Calculations[1] P:metal Ratio[4]	Guide Minimum[2]	Difference[5]
Cd	4.53	6,446	1,500	4,946	6,567	600	5,967
Cr	134	218	20	198	222	8	214
Cu	462	63	15	48	64.4	6	58.4
Pb	52.4	557	20	537	568	8	560
Hg	1.57	18,599	3,000	15,599	18,949	1,100	17,849
Ni	38.4	760	100	660	775	40	735
Zn	848	34	10	24	35.1	4	31.1

Notes:

[1] N/metal ratio = [Total N (%) *10,000]/metal (µg/g) or P/metal ratio = [Total P (%) *10,000]/metal (µg/g).

[2] The Guide Minimums are stipulated in Table 1 of the 2001 AENV Wastewater Guidelines (page 17). Biosolids is unacceptable if either the nitrogen or phosphorus criterion is not met. Spiking biosolids with nitrogen or phosphorus to achieve these ratios is not permitted.

[3] N:metal ratio is calculated as the total Nitrogen % in the biosolids divided by the metal concentration.

[4] P:metal ratio is calculated as the total phosphorus % in the biosolids divided by the metal concentration.

[5] The difference value is the guide minimum subtracted from the recorded ratio for either nitrogen or phosphorus.

MUNICIPAL BIOSOLIDS PARAMETERS LIMITING APPLICATION RATE

Parameter[1]	Calculation Formula[2,3]	CLASS 1 - Digested[4]	Calculation Formula[2,3]	CLASS 2 - Digested[4]	Calculation Formula[2,3]	CLASS 3 - Digested[4]
Solids		**25**		**20**		**10**
Total N	90/total N (%)	30.8	70/total N (%)	24.0	40/total N (%)	13.7
NH_4-N (Injected)	20/NH_4-N (%)[5]	32.3	20/NH_4-N (%)[5]	32.3	15/NH_4-N (%)[5]	24.3
NH_4-N (Surface)	45/NH_4-N (%)[5]	72.8	35/NH_4-N (%)[5]	56.6	20/NH_4-N (%)[5]	32.3
Cd	1,500/[3*Cd(µg/g)]	110	1,100/[3*Cd(µg/g)]	81	800/[3*Cd(µg/g)]	59
Cr	100,000/[3*Cr (µg/g)]	249	75,000/[3*Cr (µg/g)]	187	50,000/[3*Cr (µg/g)]	124
Cu	200,000/[3*Cu (µg/g)]	144	150,000/[3*Cu (µg/g)]	108	100,000/[3*Cu (µg/g)]	72.2
Pb	100,000/[3*Pb (µg/g)]	636	75,000/[3*Pb (µg/g)]	477	50,000/[3*Pb (µg/g)]	318
Hg	500/[3*Hg (µg/g)]	106	400/[3*Hg (µg/g)]	85	200/[3*Hg (µg/g)]	42.5
Ni	25,000/[3*Ni (µg/g)]	217	19,000/[3*Ni (µg/g)]	165	12,000/[3*Ni (µg/g)]	104
Zn	300,000/[3*Zn (µg/g)]	118	200,000/[3*Zn (µg/g)]	79	150,000/[3*Zn (µg/g)]	59.0
Rate (t/ha)		30.8		24.0		13.7
Parameter Most Limiting[6]		Total N		Total N		Total N

Notes:

[1] The parameter is the name that is given to each row (i.e., solids, total N) and the name that is used to indicate which row is the most limiting.

[2] The calculation formulae for digested waste are taken from AENV 2001 Guidelines for the Application of Municipal Wastewater Sludges to Agricultural Lands, Page 28.

[3] Note that the laboratory reports metal analysis in units of mg/kg, which is the same as µg/g.

[4] The class relates to the site classification status where Class 1 is the most suitable, Class 2 the second most suitable, Class 3 more suitable than Class 4, and Class 4 is not at all suitable (fail).

[5] The AENV 2001 Guidelines for the Application of Municipal Wastewater Sludges to Agricultural Lands, Page 28 show the units for NH_4-N as µg/g. This is incorrect, units are NH_4-N(%) as shown in this table.

[6] The most limiting parameter relates to the lowest value for each class number and is calculated as per the given formula.

Table 3A: Dewatered Biosolids Application Results - 2023 Application Year - SW 07-54-21 W4M

Authorization No. 639-32733-SLI					Loading Rate	Biosolids	Field Loading		Minimum		Minimum	
Wet Tonnes	Ave. %TS	Dry Tonnes	Acres	Hectares	Tonnes/Ha	Substance	mg/Kg	Kg	Kg/Ha	N/TE	N/TE Ratio	P/TE	P/TE Ratio
2883	24.3	701	77.8	31.5	22.3	TP	29750	20863	663				
						TN	29200	20477	650				
						NH3-N	6185	4337	138				
Landowner		Chris Allam				As	5.0	3.51	0.111				
Legal Description		SW 07-54-21 W4M				Cd	4.53	3.18	0.101	6446	1500	6567	600
Stockpiling Date		September 6-27, 2023				Cr	134	94.0	2.98	218	20	222	8
Application Date		October 15-16, 2023				Co	6.7	4.7	0.1				
Soil Class		1				Cu	462	324	10.29	63	15	64	6
Biosolids Type		Digested, Centrifudge Dewatered				Pb	52.4	36.7	1.167	557	20	568	8
						Mn	340	238	7.57				
Biosolids Sample		GB-23-11216 - September 7, 2023				Hg	1.57	1.101	0.035	18599	3000	18949	1100
		GB-23-11578 - September 19, 2023				Ni	38.4	26.9	0.855	760	100	775	40
						Se	6.8	4.77	0.151				
						Zn	848	595	18.9	34	10	35	4

Note: The numbers shown may not add up due to rounding.

Table 3B: Dewatered Biosolids Application Results - 2023 Application Year - SE 07-54-21 W4M

Authorization No. 639-32733-SLI					Loading Rate	Biosolids	Field Loading		Minimum		Minimum	
Wet Tonnes	Ave. %TS	Dry Tonnes	Acres	Hectares	Tonnes/Ha	Substance	mg/Kg	Kg	Kg/Ha	N/TE	N/TE Ratio	P/TE	P/TE Ratio
3652	24.3	888	98.6	39.9	22.3	TP	29750	26427	663				
						TN	29200	25939	650				
						NH3-N	6185	5494	138				
Landowner		Chris Allam				As	5.0	4.44	0.111				
Legal Description		SE 07-54-21 W4M				Cd	4.53	4.02	0.101	6446	1500	6567	600
Stockpiling Date		September 6-27, 2023				Cr	134	119.0	2.98	218	20	222	8
Application Date		October 15-16, 2023				Co	6.7	6.0	0.1				
Soil Class		1				Cu	462	410	10.29	63	15	64	6
Biosolids Type		Digested, Centrifudge Dewatered				Pb	52.4	46.5	1.167	557	20	568	8
						Mn	340	302	7.57				
Biosolids Sample		GB-23-11216 - September 7, 2023				Hg	1.57	1.395	0.035	18599	3000	18949	1100
		GB-23-11578 - September 19, 2023				Ni	38.4	34.1	0.855	760	100	775	40
						Se	6.8	6.04	0.151				
						Zn	848	753	18.9	34	10	35	4

Note: The numbers shown may not add up due to rounding.

Table 4: Dewatered Biosolids Laboratory Analysis - 2023 Application Year - NW/NE 14-55-23 W4M and SW 23-55-23 W4M

Lab ID	Date 2023 Analytical	Average Solids Concentration %	Al[2]	Sb[2]	As[2]	Ba[2]	Be[2]	Sat Paste B[2]	Cd[2]	Cr[2]	Co[2]	Cu[2]	Fe[2]	Pb[2]	Mn[2]	Mo[2]	Ni[2]	Se[2]	Ag[2]	Sr[2]	Tl[2]	Sn[2]	Ti[2]	V[2]	Zn[2]	Hg[2]	K[2]	Total Phosphorus[2] mg/kg	Total Kjeldahl Nitrogen[2] (excluding NO_3-N) mg/kg	Ammonium Nitrogen (NH4-N)[2] mg/kg	Available Sulphate[2] mg/kg
			mg/kg					mg/L	mg/kg																						
GB-23-08795	July 10th, 2023	22.6 [1]	10,200	3.0	5.4	350	0.3	<0.5	5.31	121	6.6	468.0	15,900	52.8	350	15.5	38.1	7.2	13.1	223	0.13	27.2	40.2	16.6	902	1.4	3,400	29400	12500	7810	608
GB-23-12256	October 12, 2023	16.5	8,190	2.5	5.1	333	0.3	<0.5	3.13	60.7	6.3	443	14,700	33.7	310	14.3	36.7	6.9	7.4	192	0.13	21.9	43.2	16.0	809	1.09	2,800	24500	11500	10100	299
GB-23-12257	October 12, 2023	16.3	7,570	2.6	4.8	314	0.2	<0.5	3.11	61.0	6.1	457	13,300	33.1	290	15.1	36.9	7.0	6.9	197	0.12	23.8	39.4	14.7	853	1.14	2,900	24900	11500	11000	750
Average[3]		NA	**8,653**	**2.7**	**5.1**	**332**	**0.3**	**0.5**	**3.85**	**81**	**6.3**	**456**	**14,633**	**39.9**	**317**	**15.0**	**37.2**	**7.0**	**9.1**	**204**	**0.13**	**24.3**	**40.9**	**15.8**	**855**	**1.22**	**3,033**	**26267**	**11833**	**9637**	**552**
Minimum		NA	7,570	2.5	4.8	314	0.2	<0.5	3.11	61	6.1	443	13,300	33.1	290	14.3	36.7	6.9	6.9	192	0.12	21.9	39.4	14.7	809	1.09	2,800	24500	11500	7810	299
Maximum		NA	10,200	3.0	5.4	350	0.3	<0.5	5.31	121	6.6	468	15,900	52.8	350	15.5	38.1	7.2	13.1	223	0.13	27.2	43.2	16.6	902	1.42	3,400	29400	12500	11000	750
Standard Deviation		NA	1,375	0.3	0.3	18	0.1	NA	1.26	35	0.3	13	1,301	11.2	31	0.6	0.8	0.2	3.4	17	0.01	2.7	2.0	1.0	47	0.18	321	2721	577	1645	231

Notes:

The data was collected in 2023 and used to determine the application rates for 2023.

[1] Concentrations are the percent solids results after the daily field samples have been composited.

[2] Data presented as per the laboratory results. Reported concentrations are with respect to Dry Weight

[3] The detection limit was used to calculate the average for values reported less than the detection limit.

NA - Not Applicable.

Table 5: Municipal Biosolids Application Rate Calculations Worksheet - NW/NE 14-55-23 W4M and SW 23-55-23 W4M

MUNICIPAL BIOSOLIDS QUALITY REPORT*

Biosolids Data [1]	Average (%)
Solids %	22.6
Total Nitrogen % [2]	1.18
Ammonium Nitrogen %	0.96
Total Phosphorus %	2.63

Average solids content of the dewatered biosolids transported to the Sturgeon County fields

Total nitrogen, ammonium nitrogen, total phosporous, and metal concentrations are an average of the July 10, 2023 and October 12, 2023 samples of stockpiled dewatered biosolids

Notes:

[1] Dewatered biosolids analytical data provided by EPCOR.

[2] Total Kjeldahl Nitrogen (TKN).

* The Quality Report is taken from Alberta Environment (AENV) 2001 Guidelines for the Application of Municipal Wastewater Sludges to Agricultural Lands, Page 27.

Metal Concentration in Biosolids	Average Biosolids Data (µg/g)	Nitrogen Calculations			Phosphorus Calculations		
		Calculations[1] N:metal Ratio[3]	Guide Minimum[2]	Difference[5]	Calculations[1] P:metal Ratio[4]	Guide Minimum[2]	Difference[5]
Cd	3.85	3,074	1,500	1,574	6,823	600	6,223
Cr	81.0	146	20	126	324	8	316
Cu	456	26	15	11	57.6	6	51.6
Pb	39.9	297	20	277	658	8	650
Hg	1.22	9,699	3,000	6,699	21,530	1,100	20,430
Ni	37.2	318	100	218	706	40	666
Zn	855	14	10	4	30.7	4	26.7

Notes:

[1] N/metal ratio = [Total N (%) *10,000]/metal (µg/g) or P/metal ratio = [Total P (%) *10,000]/metal (µg/g).

[2] The Guide Minimums are stipulated in Table 1 of the 2001 AENV Wastewater Guidelines (page 17). Biosolids is unacceptable if either the nitrogen or phosphorus criterion is not met. Spiking biosolids with nitrogen or phosphorus to achieve these ratios is not permitted.

[3] N:metal ratio is calculated as the total Nitrogen % in the biosolids divided by the metal concentration.

[4] P:metal ratio is calculated as the total phosphorus % in the biosolids divided by the metal concentration.

[5] The difference value is the guide minimum subtracted from the recorded ratio for either nitrogen or phosphorus.

MUNICIPAL BIOSOLIDS PARAMETERS LIMITING APPLICATION RATE

Parameter[1]	Calculation Formula[2,3]	CLASS 1 - Digested[4]	Calculation Formula[2,3]	CLASS 2 - Digested[4]	Calculation Formula[2,3]	CLASS 3 - Digested[4]
Solids		**25**		**20**		**10**
Total N	90/total N (%)	76.1	70/total N (%)	59.2	40/total N (%)	33.8
NH_4-N (Injected)	20/NH_4-N (%)[5]	20.8	20/NH_4-N (%)[5]	20.8	15/NH_4-N (%)[5]	15.6
NH_4-N (Surface)	45/NH_4-N (%)[5]	46.7	35/NH_4-N (%)[5]	36.3	20/NH_4-N (%)[5]	20.8
Cd	1,500/[3*Cd(µg/g)]	130	1,100/[3*Cd(µg/g)]	95	800/[3*Cd(µg/g)]	69
Cr	100,000/[3*Cr (µg/g)]	412	75,000/[3*Cr (µg/g)]	309	50,000/[3*Cr (µg/g)]	206
Cu	200,000/[3*Cu (µg/g)]	146	150,000/[3*Cu (µg/g)]	110	100,000/[3*Cu (µg/g)]	73.1
Pb	100,000/[3*Pb (µg/g)]	835	75,000/[3*Pb (µg/g)]	627	50,000/[3*Pb (µg/g)]	418
Hg	500/[3*Hg (µg/g)]	137	400/[3*Hg (µg/g)]	109	200/[3*Hg (µg/g)]	54.6
Ni	25,000/[3*Ni (µg/g)]	224	19,000/[3*Ni (µg/g)]	170	12,000/[3*Ni (µg/g)]	108
Zn	300,000/[3*Zn (µg/g)]	117	200,000/[3*Zn (µg/g)]	78	150,000/[3*Zn (µg/g)]	58.5
Rate (t/ha)		46.7		36.3		20.8
Parameter Most Limiting[6]		NH4-N		NH4-N		NH4-N

Notes:

[1] The parameter is the name that is given to each row (i.e., solids, total N) and the name that is used to indicate which row is the most limiting.

[2] The calculation formulae for digested waste are taken from AENV 2001 Guidelines for the Application of Municipal Wastewater Sludges to Agricultural Lands, Page 28.

[3] Note that the laboratory reports metal analysis in units of mg/kg, which is the same as µg/g.

[4] The class relates to the site classification status where Class 1 is the most suitable, Class 2 the second most suitable, Class 3 more suitable than Class 4, and Class 4 is not at all suitable (fail).

[5] The AENV 2001 Guidelines for the Application of Municipal Wastewater Sludges to Agricultural Lands, Page 28 show the units for NH_4-N as µg/g. This is incorrect, units are NH_4-N(%) as shown in this table.

[6] The most limiting parameter relates to the lowest value for each class number and is calculated as per the given formula.

Table 6A: Dewatered Biosolids Application Results - 2023 Application Year - NW 14-55-23 W4M

Authorization No. 639-32787-SLU					Loading Rate		Biosolids	Field Loading			Minimum		Minimum
Wet Tonnes	Ave. %TS	Dry Tonnes	Acres	Hectares	Tonnes/Ha	Substance	mg/Kg	Kg	Kg/Ha	N/TE	N/TE Ratio	P/TE	P/TE Ratio
2541	22.6	574	67	27	21.1	TP	26267	15086	554				
						TN	11833	6796	250				
						NH3-N	9637	5535	203				
Landowner		Blair Nikiforuk				As	5.1	2.9	0.1				
Legal Description		NW 14-55-23 W4M				Cd	3.85	2.21	0.08	3074	1500	6823	600
Stockpiling Date		June 22 - August 28, 2023				Cr	81.0	46.5	1.7	146	20	324	8
Application Date		October 18-21, 2023				Co	6.3	3.6	0.1				
Soil Class		1				Cu	456	262	10	26	15	58	6
Biosolids Type		Digested, Centrifudge Dewatered				Pb	39.9	22.9	0.8	297	20	658	8
						Mn	317	182	7				
Biosolids Sample		GB-23-08795 - July 10, 2023				Hg	1.22	0.70	0.03	9699	3000	21530	1100
		GB-23-12256 - October 12, 2023				Ni	37.2	21.4	0.8	318	100	706	40
		GB-23-12257 - October 12, 2023				Se	7.0	4.0	0.1				
						Zn	855	491	18	14	40	31	4

Note: The numbers shown may not add up due to rounding.

Table 6B: Dewatered Biosolids Application Results - 2023 Application Year - NE 14-55-23 W4M

Authorization No. 639-32787-SLU					Loading Rate		Biosolids	Field Loading			Minimum		Minimum
Wet Tonnes	Ave. %TS	Dry Tonnes	Acres	Hectares	Tonnes/Ha	Substance	mg/Kg	Kg	Kg/Ha	N/TE	N/TE Ratio	P/TE	P/TE Ratio
3898	22.6	881	120	49	18.1	TP	26267	23141	476				
						TN	11833	10425	215				
						NH3-N	9637	8490	175				
Landowner		Blair Nikiforuk				As	5.1	4.5	0.1				
Legal Description		NE 14-55-23 W4M				Cd	3.85	3.39	0.07	3074	1500	6823	600
Stockpiling Date		June 22 - August 28, 2023				Cr	81.0	71.4	1.5	146	20	324	8
Application Date		October 18-21, 2023				Co	6.3	5.6	0.1				
Soil Class		3				Cu	456	402	8	26	15	58	6
Biosolids Type		Digested, Centrifudge Dewatered				Pb	39.9	35.2	0.7	297	20	658	8
						Mn	317	279	6				
Biosolids Sample		GB-23-08795 - July 10, 2023				Hg	1.22	1.07	0.02	9699	3000	21530	1100
		GB-23-12256 - October 12, 2023				Ni	37.2	32.8	0.7	318	100	706	40
		GB-23-12257 - October 12, 2023				Se	7.0	6.2	0.1				
						Zn	855	753	16	14	10	31	4

Note: The numbers shown may not add up due to rounding.

Table 6C: Dewatered Biosolids Application Results - 2023 Application Year - SW 23-55-23 W4M

Authorization No. 639-32787-SLU					Loading Rate		Biosolids	Field Loading			Minimum		Minimum
Wet Tonnes	Ave. %TS	Dry Tonnes	Acres	Hectares	Tonnes/Ha	Substance	mg/Kg	Kg	Kg/Ha	N/TE	N/TE Ratio	P/TE	P/TE Ratio
3984	22.6	900	108	44	20.7	TP	26267	23652	543				
						TN	11833	10655	245				
						NH3-N	9637	8678	199				
Landowner		Blair Nikiforuk				As	5.1	4.6	0.1				
Legal Description		SW 23-55-23 W4M				Cd	3.85	3.47	0.08	3074	1500	6823	600
Stockpiling Date		June 22 - August 28, 2023				Cr	81.0	72.9	1.7	146	20	324	8
Application Date		October 18-21, 2023				Co	6.3	5.7	0.1				
Soil Class		3				Cu	456	411	9	26	15	58	6
Biosolids Type		Digested, Centrifudge Dewatered				Pb	39.9	35.9	0.8	297	20	658	8
						Mn	317	285	7				
Biosolids Sample		GB-23-08795 - July 10, 2023				Hg	1.22	1.10	0.03	9699	3000	21530	1100
		GB-23-12256 - October 12, 2023				Ni	37.2	33.5	0.8	318	100	706	40
		GB-23-12257 - October 12, 2023				Se	7.0	6.3	0.1				
						Zn	855	770	18	14	10	31	4

Note: The numbers shown may not add up due to rounding.

Table 7: Pre-Application Soil Analytical Results - pH - Authorization No. 639-32733-SLU

Land Unit	Sample Depth (cm)	pH [1]	Land Unit Average
Receiving Site: SW-07-54-21-W4			
LU 1	0-15	6.68	6.76
	15-30	6.83	
LU 2	0-15	5.58	**5.92**
	15-30	6.25	
LU 3	0-15	5.65	6.12
	15-30	6.58	
Surface pH (0-30 cm average)		6.26	
Receiving Site: SE-07-54-21-W4			
LU 1	0-15	5.28	**5.47**
	15-30	5.65	
LU 2	0-15	5.15	**5.37**
	15-30	5.58	
LU 3	0-15	5.45	**5.75**
	15-30	6.04	
Surface pH (0-30 cm average)		5.53	

Notes:

[1] Tetra Tech Canada Inc. 2023. Application for Authorization to Apply Dewatered Biosolids to Marginal Lands within Strathcona County, Alberta. File: ENW.BIOS03089-01.

BOLD - soil pH is lower than 6.0 in the 0-30 cm depth

Table 8: 2024 Soil Analytical Results - Post Application Alberta Tier 1 Metals - Authorization No. 639-32733-SLU

Parameter				Antimony	**Arsenic** [2]	Barium	Beryllium	**Cadmium** [2]	**Chromium** [2]	**Cobalt** [2]	**Copper** [2]	**Lead** [2]	**Mercury** [2]	**Molybdenum** [2]	**Nickel** [2]	**Selenium** [2]	Silver	Thallium	Tin	Uranium	Vanadium	**Zinc** [2]
Unit				mg/kg																		
Tier 1 Guideline[1] (Agricultural) Maximum Allowable Concentration (MAC)				20	17	750	5	1.4	64	20	63	70	6.6	4.0	45	1.0	20	1.0	5.0	23	130	250
80% of MAC				16.0	13.6	600.0	4.0	1.12	51.2	16.0	50.4	56.0	5.28	3.2	36.0	0.8	16.0	0.8	4.0	18.4	104.0	200.0
Land Unit	**Sample Depth (cm)**	**Laboratory Sample ID**	**Sample Date**																			
Receiving Site: SW-07-54-21-W4																						
LU 2	0-15	1773460 - 1	31/10/2024	0.3	5.4	139	0.5	0.29	15.5	7.6	20	8.7	<0.05	<1.0	20.1	0.6	0.1	0.15	<1.0	2.4	25.3	71
	15-30	1773460 - 2	31/10/2024	0.2	5.5	130	0.5	0.27	14.9	8.1	17	8.3	<0.05	<1.0	20.4	0.6	0.1	0.14	<1.0	2.6	23.9	67
Receiving Site: SE-07-54-21-W4																						
LU 1	0-15	1773459 - 1	31/10/2024	0.2	5.4	173	0.6	0.31	15.3	7.2	19	9.7	<0.05	<1.0	18.5	0.7	0.1	0.13	<1.0	1.1	27.4	72
	15-30	1773459 - 2	31/10/2024	0.2	5.7	192	0.7	0.28	17.0	7.4	18	10.3	<0.05	<1.0	20.0	**0.9**	0.1	0.15	<1.0	1.1	30.1	78
LU 2	0-15	1773459 - 3	31/10/2024	0.2	5.0	160	0.6	0.27	13.5	6.8	15	8.3	<0.05	<1.0	17.3	0.4	0.1	0.11	<1.0	1.1	22.9	55
	15-30	1773459 - 4	31/10/2024	<0.2	5.2	152	0.5	0.17	13.5	7.2	13	7.8	<0.05	<1.0	17.1	0.4	0.1	0.12	<1.0	0.9	23.4	54
LU 3	0-15	1773459 - 5	31/10/2024	0.2	5.7	153	0.6	0.24	13.9	7.3	18	11.3	<0.05	<1.0	17.5	0.5	<0.1	0.13	<1.0	1.1	24.6	60
	15-30	1773459 - 6	31/10/2024	0.2	5.8	134	0.5	0.17	14.3	6.7	13	7.9	<0.05	<1.0	17.6	0.5	<0.1	0.11	<1.0	0.8	20.7	52
0-15 Average				0.2	5.4	162.0	0.6	0.27	14.2	7.1	17.3	9.8	<0.05	<1.0	17.8	0.5	0.1	0.1	<1.0	1.1	25.0	62.3
15-30 Average				0.2	5.6	159.3	0.6	0.21	14.9	7.1	14.7	8.7	<0.05	<1.0	18.2	0.6	0.1	0.1	<1.0	0.9	24.7	61.3

Notes:

[1] Alberta Environment and Protected Areas (AEPA). 2024. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. AEPA, Lands Policy, 2024, No. 1. Referenced guidelines are for fine and coarse textured soils under Agricultural land use.

[2] Regulated metals under *draft* AEPA Guidelines for the Application of Municipal Wastewater Sludges to Agricultural Lands.

BOLD - Greater than Tier 1 Agricultural Guideline

BOLD - Greater than MAC (80% of Tier 1) Threshold

Italicized - Average concentration equals laboratory detection limit.

Table 9: Pre-Application Soil Analytical Results - pH - Authorization No. 639-32787-SLU

Land Unit	Sample Depth (cm)	pH [2]	Land Unit Average
Receiving Site: NW-14-55-23-W4			
LU 1	0-15	5.45	**5.84**
	15-30	6.22	
LU 2	0-15	5.53	**5.94**
	15-30	6.35	
Surface pH (0-30 cm average)		5.89	
Receiving Site: NE-14-55-23-W4			
LU 1	0-15	5.84	6.39
	15-30	6.93	
LU 2	0-15	4.99	**5.24**
	15-30	5.48	
LU 3	0-15	5.39	**5.79**
	15-30	6.18	
LU 4	0-15	5.22	**5.66**
	15-30	6.09	
Surface pH (0-30 cm average)		5.77	
Receiving Site: SW-23-55-23-W4			
LU 1	0-15	5.25	**5.37**
	15-30	5.48	
LU 2	0-15	5.28	**5.61**
	15-30	5.93	
LU 3	0-15	5.48	**5.67**
	15-30	5.86	
LU 4	0-15	6.82	6.92
	15-30	7.02	
Surface pH (0-30 cm average)		5.89	

Notes:

[2] Tetra Tech Canada Inc. 2023. Application for Authorization to Apply Dewatered Biosolids to Marginal Lands within Sturgeon County, Alberta. File: ENW.BIOS03089-01.

BOLD - soil pH is lower than 6.0 in the 0-30 cm depth

Table 10: Pre-Application Soil Analytical Results[3] - Alberta Tier 1 Metals[1] - Authorization No. 639-32787-SLU

Parameter				Antimony	Arsenic [2]	Barium	Beryllium	Cadmium [2]	Chromium [2]	Cobalt [2]	Copper [2]	Lead [2]	Mercury [2]	Molybdenum [2]	Nickel [2]	Selenium [2]	Silver	Thallium	Tin	Uranium	Vanadium	Zinc [2]
Unit				mg/kg																		
Tier 1 Guideline[1] (Agricultural) Maximum Allowable Concentration (MAC)				20	17	750	5	1.4	64	20	63	70	6.6	4.0	45	1.0	20	1.0	5.0	23	130	250
80% of MAC				16.0	13.6	600.0	4.0	1.12	51.2	16.0	50.4	56.0	5.28	3.2	36.0	0.8	16.0	0.8	4.0	18.4	104.0	200.0
Land Unit	**Sample Depth (m)**	**Sample Date**	**Laboratory Sample ID**																			
Receiving Site: NW-14-55-23 W4M																						
LU 1	0-15 cm	17-Nov-2022	EO2210209-001	0.14	5.42	151	0.52	0.258	18.3	7.37	16.7	9.08	0.0231	0.56	17.9	0.58	<0.10	0.11	<2.0	2.66	31.1	63.2
LU 2	0-15 cm	17-Nov-2022	EO2210209-005	0.12	5.08	157	0.48	0.261	17.3	7.50	14.9	8.62	0.0220	0.52	18.4	0.46	<0.10	0.11	<2.0	2.67	28.2	61.2
TE: 0-15 Average				0.13	5.25	154	0.50	0.260	17.8	7.44	15.8	8.85	0.0226	0.54	18.2	0.52	*0.10*	0.11	*2.0*	2.67	29.7	62.2
Receiving Site: NE-14-55-23 W4M																						
LU 1	0-15 cm	17-Nov-2022	EO2210208-001	0.14	3.44	116	0.28	0.118	10.9	5.19	8.12	5.06	0.0124	0.27	12.7	0.23	<0.10	0.063	<2.0	0.655	16.4	33.6
LU 2	0-15 cm	17-Nov-2022	EO2210208-005	<0.10	2.95	80.9	0.2	0.117	7.68	3.97	6.05	4.52	0.0086	0.25	8.85	<0.20	<0.10	<0.050	<2.0	0.477	13.0	28.4
LU 3	0-15 cm	17-Nov-2022	EO2210208-009	0.13	5.66	181	0.43	0.229	15.7	8.22	15.9	7.64	0.0212	0.52	18.9	0.73	<0.10	0.101	<2.0	1.91	27.3	54.3
LU 4	0-15 cm	17-Nov-2022	EO2210208-013	0.14	5.47	176	0.48	0.276	17.2	7.65	15.0	8.17	0.0240	0.44	20.0	0.69	<0.10	0.117	<2.0	1.67	29.4	57.7
TE: 0-15 Average				0.14	4.38	138	0.35	0.185	12.9	6.26	11.3	6.35	0.0166	0.37	15.1	0.55	*0.10*	0.094	*2.0*	1.18	21.5	43.5
Receiving Site: SW-23-55-23 W4M																						
LU 1	0-15 cm	18-Nov-2022	EO2210211-001	<0.10	2.96	116	0.24	0.13	9.49	4.84	8.57	5.62	0.0121	0.32	10.9	0.22	<0.10	0.068	<2.0	0.642	14.5	37.5
LU 2	0-15 cm	18-Nov-2022	EO2210211-005	<0.10	3.37	121	0.28	0.164	9.97	4.68	10.7	5.56	0.0162	0.34	11.1	0.37	<0.10	0.065	<2.0	0.786	15.7	37.1
LU 3	0-15 cm	17-Nov-2022	EO2210211-009	0.1	3.95	147	0.38	0.130	11.4	5.15	9.86	5.95	0.0186	0.36	12.3	0.52	<0.10	0.071	<2.0	1.1	17.4	36.9
LU 4	0-15 cm	18-Nov-2022	EO2210211-013	<0.10	2.94	124	0.25	0.143	10.6	4.73	10.8	5.25	0.0118	0.26	12.0	<0.20	<0.10	0.059	<2.0	0.54	14.6	38.4
TE: 0-15 Average				0.10	3.31	127	0.29	0.142	10.4	4.85	10.0	5.60	0.0147	0.32	11.6	0.37	*0.10*	0.066	*2.0*	0.77	15.6	37.5

Notes:

[1] Alberta Environment and Protected Areas (AEPA). 2024. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. AEPA, Lands Policy, 2024, No. 1.

[2] Regulated metals under *draft* AEPA Guidelines for the Application of Municipal Wastewater Sludges to Agricultural Lands.

[3] Tetra Tech Canada Inc. 2023. Application for Authorization to Apply Dewatered Biosolids to Marginal Lands within Sturgeon County, Alberta. File: ENW.BIOS03089-01.

TE - Trace Element

"-" No applicable guideline or not analyzed

BOLD - Greater than Tier 1 Agricultural Guideline

BOLD - Greater than MAC (80% of Tier 1) Threshold

Italicized - TE 0-15 Average concentration equals laboratory detection limit

Table 11A: Municipal Biosolids Trace Element (Metals) Post Application Modelling Calculations[1] - NW-14-55-23 W4M

Soil

		Increment (cm)	
		0-15	**15-30**
Depth	**cm**	15	15
Bulk Density	**Mg / m^3**	1.30	1.30
Mass of soil	**Mg / ha**	1,950	1,950

Biosolids

Actual Application Rate (dry, Mg/ha) 21.1 *(Fill in)*

	Maximum Allowable Concentration (MAC; mg/kg)			Lab Analyses:Concentration (dry; mg/kg)					Loading Calculations				
	Biosolids	Soils		Biosolids		Soil Depth Increment (cm):			Final Application Rate (dry, Mg/ha):				21.1
	MAC[2]	MAC[3]	80% of MAC	Geometric Mean[4]	Biosolid Suitability[5,6]	0-15 cm	15-30 cm[7]	Geometric Mean[4]	Biosolids: kg/ha	Biosolids: mg/kg	Final Loading mg/kg	# of applications: # of Applications	# of applications: Suitability[8]
				(Fill in)		*(Fill in)*	*(Fill in)*						
Arsenic (As)	41	17.0	13.6	5.1	*Suitable*	5.25	5.25	5.25	0.11	0.03	5.3	302.6	Suitable
Cadmium (Cd)	15	1.4	1.1	3.85	*Suitable*	0.260	0.260	0.260	0.08	0.02	0.3	41.2	Suitable
Chromium (Cr)	1,000	64.0	51.2	81	*Suitable*	17.8	17.8	17.8	1.71	0.44	18.2	76.2	Suitable
Cobalt (Co)	150	20.0	16.0	6.3	*Suitable*	7.44	7.44	7.44	0.13	0.03	7.5	251.1	Suitable
Copper (Cu)	1,500	63.0	50.4	456	*Suitable*	15.8	15.8	15.8	9.62	2.47	18.3	14.0	Suitable
Lead (Pb)	300	70.0	56.0	39.9	*Suitable*	8.85	8.85	8.85	0.84	0.22	9.1	218.4	Suitable
Mercury (Hg)	4	6.6	5.3	1.22	*Suitable*	0.0226	0.0226	0.0226	0.03	0.01	0.03	796.5	Suitable
Molybdenum (Mo)	20	4.0	3.2	15.0	*Suitable*	0.54	0.54	0.54	0.32	0.08	0.6	32.7	Suitable
Nickel (Ni)	180	45.0	36.0	37.2	*Suitable*	18.2	18.2	18.2	0.78	0.20	18.4	88.4	Suitable
Selenium (Se)	25	1.0	0.8	7.0	*Suitable*	0.52	0.52	0.52	0.15	0.04	0.6	7.3	Suitable
Zinc (Zn)	1,850	250.0	200.0	855	*Suitable*	62.2	62.2	62.2	18.04	4.63	66.8	29.7	Suitable

Notes:

[1] Biosolids_Municipal_Calculations_Draft_Calculator_JAN162023_Metals only.xlsx. Patterson, S. (Science and Technology Specialist, AEPA). 2023. Email communication: RE: Land Application Guideline - Follow Up. January 18, 2023.

[2] Maximum allowable concentration in biosolids. Adopted from the CAN/BNQ National Standard of Canada, values were taken from Table 5 (A comparison of trace element concentrations in manures, municipal sludge and septage) from the Guidance Document for the Beneficial Use of Municipal Biosolids, Municipal Sludge, and Treated Septage (CCME, 2012).

[3] Maximum allowable concentration in soil: The default selected is the Alberta Tier - 1 Guideline Value for agricultural land use.

[4] Geometric mean was selected to align with *A Protocol for the Derivation of Environmental and Human Health Soil Quality Guidelines* (CCME 2006).

[5] Suitability of the biosolids for land application. "Unsuitable" indicates this geometric mean of the biosolid quality for a given parameter exceeds the maximum allowable concentration (MAC) for that parameter.

[6] Formula correction applied such that if the biosolids geometric mean is less than the Biosolids MAC, the Biosolids Suitability is displayed as "Suitable".

[7] Laboratory analysis of the 15-30 cm depth sample is optional. For trace element modelling purposes, Tetra Tech has assumed the 15-30 cm depth sample concentrations are the same as the 0-15 cm depth samples.

[8] Suitablity of the proposed application rate at the receiving site. Suitability takes into consideration the application rate and quality of the biosolids being applied as well as the quality of the receiving soils. "Unsuitable" means that one or more of these factors may affecting whether or not biosolids may be applied at the receiving site.

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Table 11B: Municipal Biosolids Trace Element (Metals) Post Application Modelling Calculations[1] - NE-14-55-23 W4M

Soil

		Increment (cm) 0-15	15-30
Depth	**cm**	15	15
Bulk Density	**Mg / m^3**	1.30	1.30
Mass of soil	**Mg / ha**	1,950	1,950

Biosolids

Actual Application Rate (dry, Mg/ha) 18.1 *(Fill in)*

	Maximum Allowable Concentration (MAC; mg/kg)			Lab Analyses:Concentration (dry; mg/kg)					Loading Calculations				
	Biosolids	Soils		Biosolids		Soil Depth Increment (cm):			Final Application Rate (dry, Mg/ha):				18.1
	MAC[2]	MAC[3]	80% of MAC	Geometric Mean[4]	Biosolid Suitability[5,6]	0-15 cm	15-30 cm[7]	Geometric Mean[4]	Biosolids: kg/ha	mg/kg	Final Loading mg/kg	# of applications: # of Applications	Suitability[8]
				(Fill in)		*(Fill in)*	*(Fill in)*						
Arsenic (As)	41	17.0	13.6	5.1	*Suitable*	4.38	4.38	4.38	0.09	0.02	4.4	389.5	Suitable
Cadmium (Cd)	15	1.4	1.1	3.85	*Suitable*	0.185	0.185	0.185	0.07	0.02	0.2	52.3	Suitable
Chromium (Cr)	1,000	64.0	51.2	81	*Suitable*	12.9	12.9	12.9	1.47	0.38	13.3	101.8	Suitable
Cobalt (Co)	150	20.0	16.0	6.3	*Suitable*	6.26	6.26	6.26	0.11	0.03	6.3	333.1	Suitable
Copper (Cu)	1,500	63.0	50.4	456	*Suitable*	11.3	11.3	11.3	8.25	2.12	13.4	18.4	Suitable
Lead (Pb)	300	70.0	56.0	39.9	*Suitable*	6.35	6.35	6.35	0.72	0.19	6.5	268.1	Suitable
Mercury (Hg)	4	6.6	5.3	1.22	*Suitable*	0.0166	0.0166	0.0166	0.02	0.01	0.0223	929.5	Suitable
Molybdenum (Mo)	20	4.0	3.2	15.0	*Suitable*	0.37	0.37	0.37	0.27	0.07	0.4	40.6	Suitable
Nickel (Ni)	180	45.0	36.0	37.2	*Suitable*	15.1	15.1	15.1	0.67	0.17	15.3	121.0	Suitable
Selenium (Se)	25	1.0	0.8	7.0	*Suitable*	0.55	0.55	0.55	0.13	0.03	0.6	7.6	Suitable
Zinc (Zn)	1,850	250.0	200.0	855	*Suitable*	43.5	43.5	43.5	15.48	3.97	47.5	39.4	Suitable

Notes:

[1] Biosolids_Municipal_Calculations_Draft_Calculator_JAN162023_Metals only.xlsx. Patterson, S. (Science and Technology Specialist, AEPA). 2023. Email communication: RE: Land Application Guideline - Follow Up. January 18, 2023.

[2] Maximum allowable concentration in biosolids. Adopted from the CAN/BNQ National Standard of Canada, values were taken from Table 5 (A comparison of trace element concentrations in manures, municipal sludge and septage) from the Guidance Document for the Beneficial Use of Municipal Biosolids, Municipal Sludge, and Treated Septage (CCME, 2012).

[3] Maximum allowable concentration in soil: The default selected is the Alberta Tier - 1 Guideline Value for agricultural land use.

[4] Geometric mean was selected to align with *A Protocol for the Derivation of Environmental and Human Health Soil Quality Guidelines* (CCME 2006).

[5] Suitability of the biosolids for land application. "Unsuitable" indicates this geometric mean of the biosolid quality for a given parameter exceeds the maximum allowable concentration (MAC) for that parameter.

[6] Formula correction applied such that if the biosolids geometric mean is less than the MAC, the Biosolids Suitability is displayed as "Suitable".

[7] Laboratory analysis of the 15-30 cm depth sample is optional. For trace element modelling purposes, Tetra Tech has assumed the 15-30 cm depth sample concentrations are the same as the 0-15 cm depth samples.

[8] Suitablity of the proposed application rate at the receiving site. Suitability takes into consideration the application rate and quality of the biosolids being applied as well as the quality of the receiving soils. "Unsuitable" means that one or more of these factors may affecting whether or not biosolids may be applied at the receiving site.

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Table 11C: Municipal Biosolids Trace Element (Metals) Post Application Modelling Calculations[1] - SW-23-55-23 W4M

Soil

		Increment (cm) 0-15	15-30
Depth	**cm**	15	15
Bulk Density	**Mg / m^3**	1.30	1.30
Mass of soil	**Mg / ha**	1,950	1,950

Biosolids

Actual Application Rate (dry, Mg/ha) 20.7 *(Fill in)*

	Maximum Allowable Concentration (MAC; mg/kg)			Lab Analyses:Concentration (dry; mg/kg)					Loading Calculations				
	Biosolids	Soils		Biosolids		Soil Depth Increment (cm):			Final Application Rate (dry, Mg/ha):				20.7
	MAC[2]	MAC[3]	80% of MAC	Geometric Mean[4]	Biosolid Suitability[5,6]	0-15 cm	15-30 cm[7]	Geometric Mean[4]	Biosolids: kg/ha	mg/kg	Final Loading mg/kg	# of applications: # of Applications	Suitability[8]
				(Fill in)		*(Fill in)*	*(Fill in)*						
Arsenic (As)	41	17.0	13.6	5.1	*Suitable*	3.31	3.31	3.31	0.11	0.03	3.3	380.1	Suitable
Cadmium (Cd)	15	1.4	1.1	3.85	*Suitable*	0.142	0.142	0.142	0.08	0.02	0.2	47.8	Suitable
Chromium (Cr)	1,000	64.0	51.2	81	*Suitable*	10.4	10.4	10.4	1.68	0.43	10.8	94.9	Suitable
Cobalt (Co)	150	20.0	16.0	6.3	*Suitable*	4.85	4.85	4.85	0.13	0.03	4.9	333.4	Suitable
Copper (Cu)	1,500	63.0	50.4	456	*Suitable*	10.0	10.0	10.0	9.44	2.42	12.4	16.6	Suitable
Lead (Pb)	300	70.0	56.0	39.9	*Suitable*	5.60	5.60	5.60	0.83	0.21	5.8	237.9	Suitable
Mercury (Hg)	4	6.6	5.3	1.22	*Suitable*	0.0147	0.0147	0.0147	0.03	0.01	0.0212	813.1	Suitable
Molybdenum (Mo)	20	4.0	3.2	15.0	*Suitable*	0.32	0.32	0.32	0.31	0.08	0.40	36.1	Suitable
Nickel (Ni)	180	45.0	36.0	37.2	*Suitable*	11.6	11.6	11.6	0.77	0.20	11.8	123.5	Suitable
Selenium (Se)	25	1.0	0.8	7.0	*Suitable*	0.37	0.37	0.37	0.14	0.04	0.4	11.5	Suitable
Zinc (Zn)	1,850	250.0	200.0	855	*Suitable*	37.5	37.5	37.5	17.70	4.54	42.0	35.8	Suitable

Notes:

[1] Biosolids_Municipal_Calculations_Draft_Calculator_JAN162023_Metals only.xlsx. Patterson, S. (Science and Technology Specialist, AEPA). 2023. Email communication: RE: Land Application Guideline - Follow Up. January 18, 2023.

[2] Maximum allowable concentration in biosolids. Adopted from the CAN/BNQ National Standard of Canada, values were taken from Table 5 (A comparison of trace element concentrations in manures, municipal sludge and septage) from the Guidance Document for the Beneficial Use of Municipal Biosolids, Municipal Sludge, and Treated Septage (CCME, 2012).

[3] Maximum allowable concentration in soil: The default selected is the Alberta Tier - 1 Guideline Value for agricultural land use.

[4] Geometric mean was selected to align with *A Protocol for the Derivation of Environmental and Human Health Soil Quality Guidelines* (CCME 2006).

[5] Suitability of the biosolids for land application. "Unsuitable" indicates this geometric mean of the biosolid quality for a given parameter exceeds the maximum allowable concentration (MAC) for that parameter.

[6] Formula correction applied such that if the biosolids geometric mean is less than the MAC, the Biosolids Suitability is displayed as "Suitable".

[7] Laboratory analysis of the 15-30 cm depth sample is optional. For trace element modelling purposes, Tetra Tech has assumed the 15-30 cm depth sample concentrations are the same as the 0-15 cm depth samples.

[8] Suitablity of the proposed application rate at the receiving site. Suitability takes into consideration the application rate and quality of the biosolids being applied as well as the quality of the receiving soils. "Unsuitable" means that one or more of these factors may affecting whether or not biosolids may be applied at the receiving site.

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Table 12: 2024 Soil Analytical Results - Post Application Alberta Tier 1 Metals - Authorization No. 639-32787-SLU

Parameter				Antimony	**Arsenic [2]**	Barium	Beryllium	**Cadmium [2]**	**Chromium [2]**	**Cobalt [2]**	**Copper [2]**	**Lead [2]**	**Mercury [2]**	**Molybdenum [2]**	**Nickel [2]**	**Selenium [2]**	Silver	Thallium	Tin	Uranium	Vanadium	**Zinc [2]**
Unit				mg/kg																		
Tier 1 Guideline[1] (Agricultural) Maximum Allowable Concentration (MAC)				20	17	750	5	1.4	64	20	63	70	6.6	4.0	45	1.0	20	1.0	5.0	23	130	250
80% of MAC				16.0	13.6	600.0	4.0	1.12	51.2	16.0	50.4	56.0	5.28	3.2	36.0	0.8	16.0	0.8	4.0	18.4	104.0	200.0
Land Unit	**Sample Depth (cm)**	**Laboratory Sample ID**	**Sample Date**																			
Receiving Site: NW-14-55-23-W4																						
LU 1	0-15	1773457 - 1	31/10/2024	<0.2	5.1	158	0.6	0.26	14.2	6.6	16	8.2	<0.05	<1.0	16.7	0.7	0.2	0.10	<1.0	2.3	23.9	63
	15-30	1773457 - 2	31/10/2024	<0.2	5.3	160	0.6	0.25	14.6	7.3	16	9.6	<0.05	<1.0	17.0	0.6	0.2	0.11	<1.0	1.9	25.4	64
LU 2	0-15	1773457 - 3	31/10/2024	<0.2	4.8	155	0.6	0.22	14.0	6.4	16	8.7	<0.05	<1.0	16.5	0.6	0.1	0.10	<1.0	2.2	23.9	62
	15-30	1773457 - 4	31/10/2024	<0.2	5.2	151	0.6	0.20	16.9	6.3	15	8.4	<0.05	<1.0	17.8	0.5	0.2	0.11	<1.0	1.9	24.7	59
0-15 Average				*0.2*	5.0	156.5	0.6	0.24	14.1	6.5	16.0	8.5	*0.05*	*1.0*	16.6	0.7	0.2	0.1	*1.0*	2.3	23.9	62.5
15-30 Average				*0.2*	5.3	155.5	0.6	0.23	15.8	6.8	15.5	9.0	*0.05*	*1.0*	17.4	0.6	0.2	0.1	*1.0*	1.9	25.1	61.5
Receiving Site: NE-14-55-23-W4																						
LU 2	0-15	1773456 - 1	31/10/2024	<0.2	2.6	83	0.2	0.14	6.7	3.4	7	4.8	<0.05	<1.0	8.0	<0.3	0.1	<0.05	<1.0	<0.5	10.1	30
	15-30	1773456 - 2	31/10/2024	<0.2	2.9	81	0.2	0.09	6.2	3.8	5	4.4	<0.05	<1.0	7.8	<0.3	<0.1	0.05	<1.0	<0.5	10.3	30
LU 3	0-15	1773456 - 3	31/10/2024	<0.2	3.8	103	0.4	0.16	9.4	4.5	10	5.7	<0.05	<1.0	11.4	0.4	<0.1	0.07	<1.0	1.2	15.9	41
	15-30	1773456 - 4	31/10/2024	<0.2	4.9	126	0.5	0.13	11.5	6.3	10	6.6	<0.05	<1.0	13.6	0.5	0.1	0.08	<1.0	1.2	19.8	44
LU 4	0-15	1773456 - 5	31/10/2024	<0.2	5.4	166	0.5	0.22	13.6	6.5	16	8.6	<0.05	<1.0	17.0	**0.9**	0.1	0.09	<1.0	2.2	23.3	57
	15-30	1773456 - 6	31/10/2024	<0.2	5.1	169	0.6	0.18	13.1	6.8	14	8.2	<0.05	<1.0	16.8	0.7	0.1	0.10	<1.0	2.3	22.9	55
0-15 Average				*0.2*	3.9	117.3	0.4	0.17	9.9	4.8	11.0	6.4	*0.05*	*1.0*	12.1	0.7	0.1	0.1	*1.0*	1.7	16.4	42.7
15-30 Average				*0.2*	4.3	125.3	0.4	0.13	10.3	5.6	9.7	6.4	*0.05*	*1.0*	12.7	0.6	0.1	0.1	*1.0*	1.8	17.7	43.0
Receiving Site: SW-23-55-23-W4																						
LU 1	0-15	1773458 - 1	31/10/2024	<0.2	2.9	85	0.2	0.12	6.6	3.5	7	4.6	<0.05	<1.0	8.1	<0.3	<0.1	<0.05	<1.0	0.6	11.0	28
	15-30	1773458 - 2	31/10/2024	<0.2	2.8	80	0.3	0.07	6.5	4.0	5	4.1	<0.05	<1.0	7.6	<0.3	<0.1	0.05	<1.0	0.6	11.1	25
LU 2	0-15	1773458 - 3	31/10/2024	<0.2	3.4	111	0.4	0.17	8.4	4.1	10	6.0	<0.05	<1.0	9.7	0.4	<0.1	0.06	<1.0	0.8	14.3	37
	15-30	1773458 - 4	31/10/2024	<0.2	3.1	89	0.3	0.11	7.8	3.5	7	4.9	<0.05	<1.0	7.8	0.4	<0.1	0.06	<1.0	0.6	12.6	30
LU 3	0-15	1773458 - 5	31/10/2024	<0.2	3.3	119	0.3	0.13	8.7	4.5	10	5.9	<0.05	<1.0	10.2	0.3	<0.1	0.06	<1.0	0.7	13.9	36
	15-30	1773458 - 6	31/10/2024	<0.2	3.8	124	0.3	0.09	9.1	5.2	8	5.8	<0.05	<1.0	10.7	0.3	0.1	0.07	<1.0	0.6	14.9	38
0-15 Average				*0.2*	3.2	105.0	0.3	0.14	7.9	4.0	9.0	5.5	*0.05*	*1.0*	9.3	0.4	*0.1*	0.1	*1.0*	0.7	13.1	33.7
15-30 Average				*0.2*	3.2	97.7	0.3	0.09	7.8	4.2	6.7	4.9	*0.05*	*1.0*	8.7	0.4	*0.1*	0.1	*1.0*	0.6	12.9	31.0

Notes:

[1] Alberta Environment and Protected Areas (AEPA). 2024. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. AEPA, Lands Policy, 2024, No. 1. Referenced guidelines are for fine and coarse textured soils under Agricultural land use.

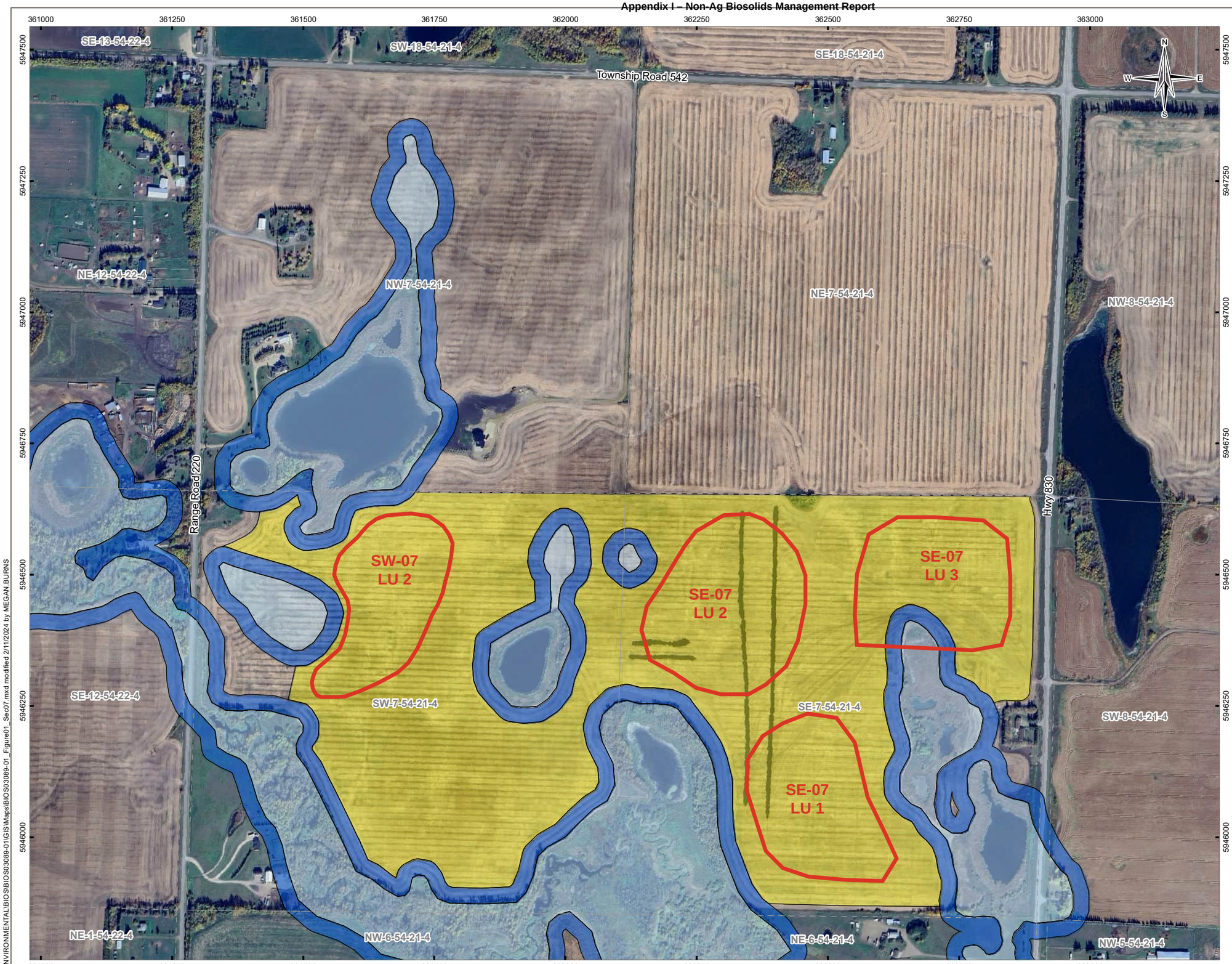
[2] Regulated metals under *draft* AEPA Guidelines for the Application of Municipal Wastewater Sludges to Agricultural Lands.

BOLD - Greater than Tier 1 Agricultural Guideline

BOLD - Greater than MAC (80% of Tier 1) Threshold

Italicized - 0-15 cm average concentration equals laboratory detection limit

FIGURES



LEGEND

- Application Area
- Wetland Buffer (30 m)
- Wetland

NOTES
Base data source: Imagery provided by Google Earth; Airbus (2023)

STATUS
ISSUED FOR USE

2023 MARGINAL LANDS BIOSOLIDS APPLICATION

NW 07-54-21-W4
SW 07-54-21-W4
SE 07-54-21-W4

PROJECTION UTM Zone 12	**DATUM** NAD83	**CLIENT** EPCOR
Scale: 1:7,000 (100 50 0 100 Metres)		TETRA TECH
FILE NO. BIOS03089-01_Figure01_Sec07.mxd		
OFFICE Tt-VANC	**DWN** MRB / **CKD** SL / **APVD** MF / **REV** 0	**Figure 1**
DATE February 18, 2025	**PROJECT NO.** ENW.BIOS03089-02	

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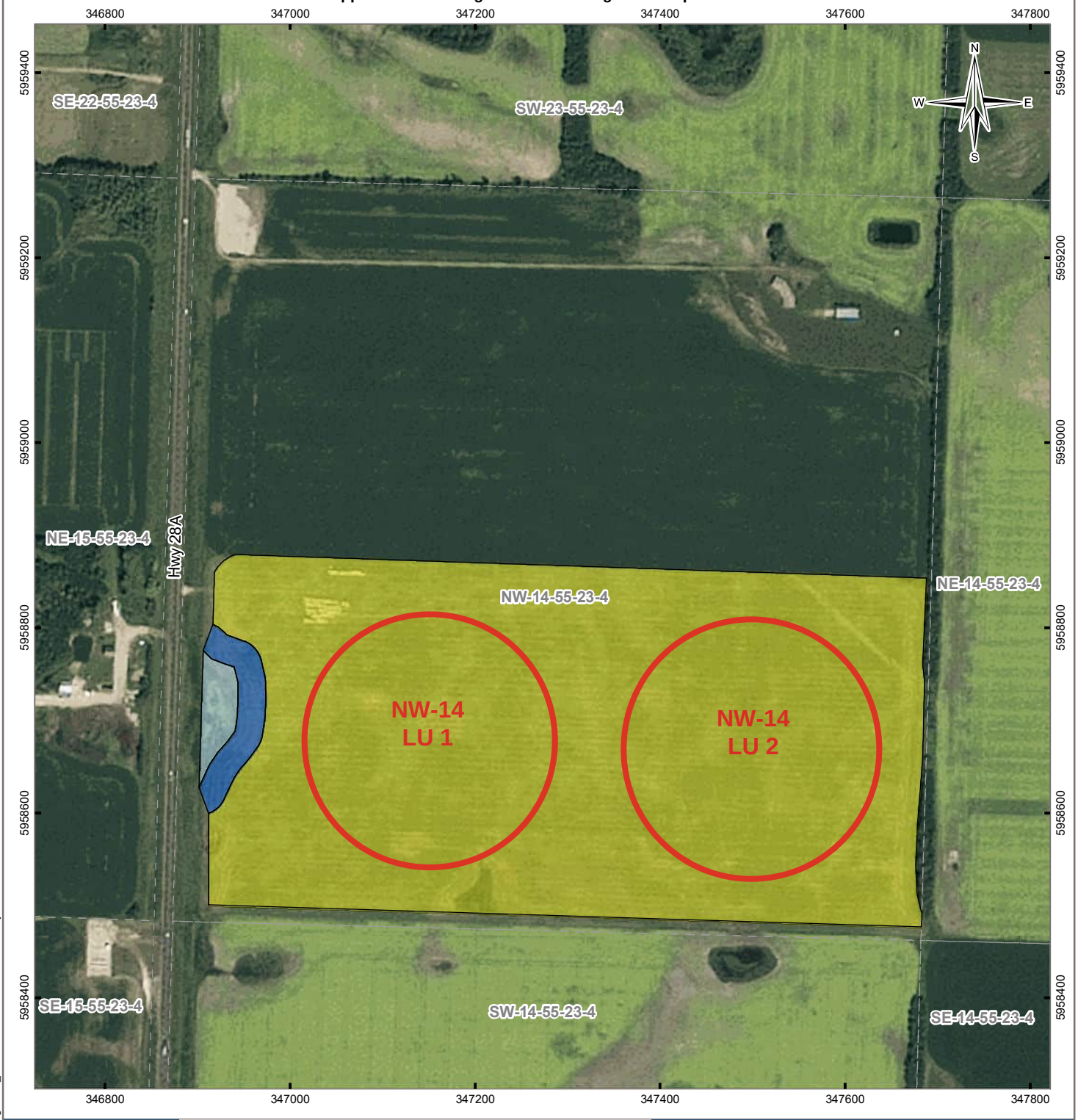

LEGEND

- Application Area
- Wetland Buffer (30 m)
- Wetland

NOTES
Base data source: Imagery provided by AbaData (2022)

STATUS
ISSUED FOR USE

2023 MARGINAL LANDS BIOSOLIDS APPLICATION

NW 14-55-23-W4

PROJECTION	DATUM	CLIENT
UTM Zone 12	NAD83	EPCOR

Scale: 1:6,000
100 50 0 100
Metres

TETRA TECH

FILE NO. BIOS03089-01_Figure02_NW14.mxd

OFFICE	DWN	CKD	APVD	REV
Tt-VANC	MRB	SL	MF	0

DATE February 18, 2025
PROJECT NO. ENW.BIOS03089-02

Figure 2

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LEGEND

- Application Area
- Wetland Buffer (30 m)
- Wetland

NOTES
Base data source: Imagery provided by AbaData (2022)

STATUS
ISSUED FOR USE

2023 MARGINAL LANDS BIOSOLIDS APPLICATION

NE 14-55-23-W4

PROJECTION	DATUM	CLIENT
UTM Zone 12	NAD83	EPCOR

Scale: 1:6,000
100 50 0 100
Metres

TETRA TECH

FILE NO. BIOS03089-01_Figure03_NE14.mxd

OFFICE	DWN	CKD	APVD	REV
Tt-VANC	MRB	SL	MF	0

DATE February 18, 2025
PROJECT NO. ENW.BIOS03089-02

Figure 3

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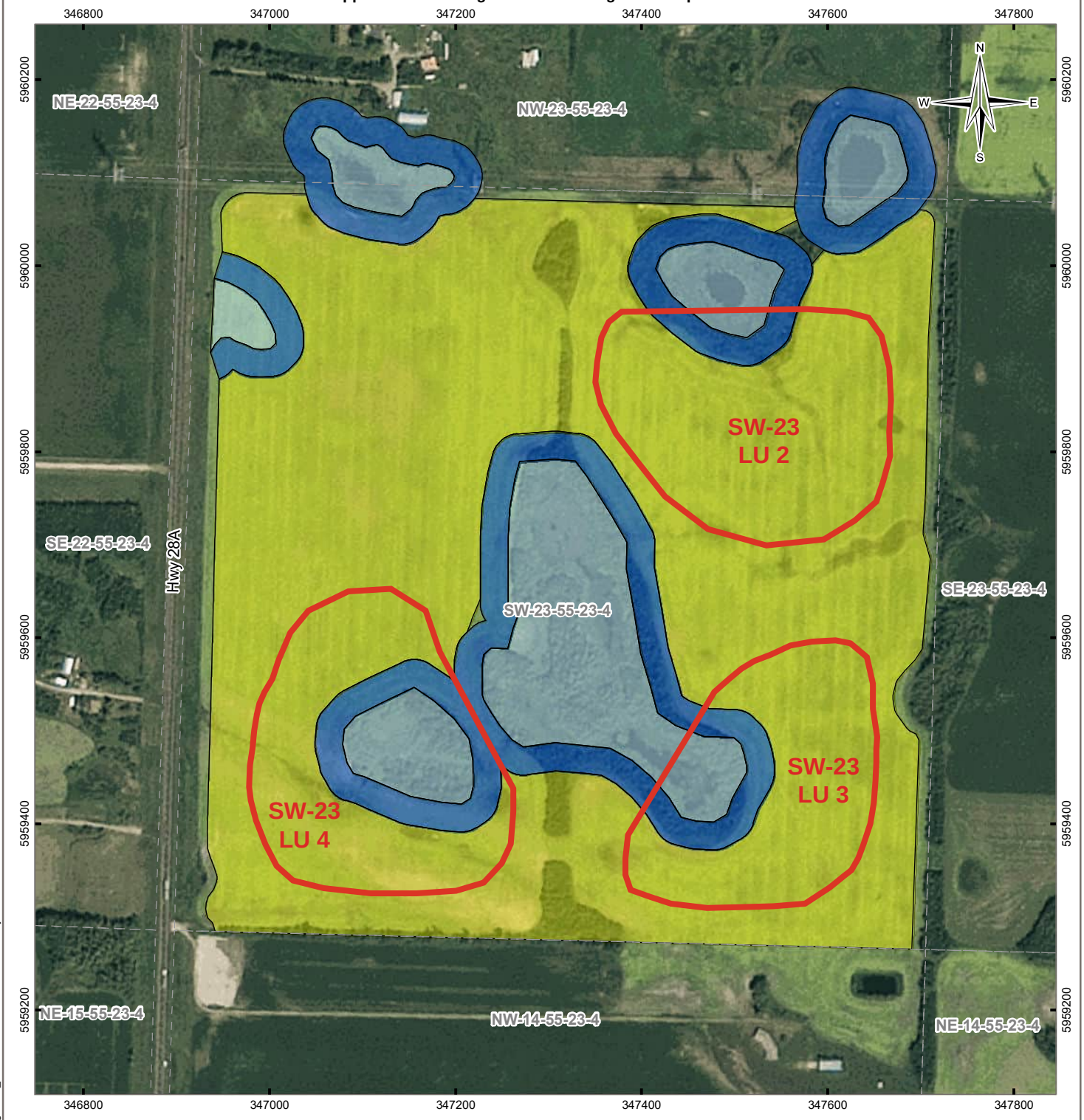

LEGEND

- Application Area
- Wetland Buffer (30 m)
- Wetland

NOTES
Base data source: Imagery provided by AbaData (2022)

STATUS
ISSUED FOR USE

2023 MARGINAL LANDS BIOSOLIDS APPLICATION

SW 23-55-23-W4

PROJECTION	DATUM	CLIENT
UTM Zone 12	NAD83	EPCOR

Scale: 1:6,000
100 50 0 100
Metres

TETRA TECH

FILE NO. BIOS03089-01_Figure04_SW23.mxd

OFFICE	DWN	CKD	APVD	REV
Tt-VANC	MRB	SL	MF	0

DATE February 18, 2025
PROJECT NO. ENW.BIOS03089-02

Figure 4

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SITE PHOTOGRAPHS

Photo 1: October 18, 2023. Agricultural spreader used to spread dewatered biosolids, cleaned prior to mobilization to Sturgeon County fields.

Photo 2: October 18, 2023. Agricultural spreader used to spread dewatered biosolids, cleaned prior to mobilization to Sturgeon County fields

Photo 3: October 18, 2023. Spreading dewatered biosolids on SW 23-55-23 W4M with agricultural spreader.

Photo 4: October 18, 2023. Spread pattern of dewatered biosolids on SW 23-55-23 W4M.

APPENDIX A

TETRA TECH'S LIMITATIONS ON THE USE OF THIS DOCUMENT

LIMITATIONS ON USE OF THIS DOCUMENT

NATURAL SCIENCES

1.1 USE OF DOCUMENT AND OWNERSHIP

This document pertains to a specific site, a specific development, and a specific scope of work. The document may include plans, drawings, profiles and other supporting documents that collectively constitute the document (the "Professional Document").

The Professional Document is intended for the sole use of TETRA TECH's Client (the "Client") as specifically identified in the TETRA TECH Services Agreement or other Contractual Agreement entered into with the Client (either of which is termed the "Contract" herein). TETRA TECH does not accept any responsibility for the accuracy of any of the data, analyses, recommendations or other contents of the Professional Document when it is used or relied upon by any party other than the Client, unless authorized in writing by TETRA TECH.

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1.2 ALTERNATIVE DOCUMENT FORMAT

Where TETRA TECH submits electronic file and/or hard copy versions of the Professional Document or any drawings or other project-related documents and deliverables (collectively termed TETRA TECH's "Instruments of Professional Service"), only the signed and/or sealed versions shall be considered final. The original signed and/or sealed electronic file and/or hard copy version archived by TETRA TECH shall be deemed to be the original. TETRA TECH will archive a protected digital copy of the original signed and/or sealed version for a period of 10 years.

Both electronic file and/or hard copy versions of TETRA TECH's Instruments of Professional Service shall not, under any circumstances, be altered by any party except TETRA TECH. TETRA TECH's Instruments of Professional Service will be used only and exactly as submitted by TETRA TECH.

Electronic files submitted by TETRA TECH have been prepared and submitted using specific software and hardware systems. TETRA TECH makes no representation about the compatibility of these files with the Client's current or future software and hardware systems.

1.3 STANDARD OF CARE

Services performed by TETRA TECH for the Professional Document have been conducted in accordance with the Contract, in a manner consistent with the level of skill ordinarily exercised by members of the profession currently practicing under similar conditions in the jurisdiction in which the services are provided. Professional judgment has been applied in developing the conclusions and/or recommendations provided in this Professional Document. No warranty or guarantee, express or implied, is made concerning the test results, comments, recommendations, or any other portion of the Professional Document.

If any error or omission is detected by the Client or an Authorized Party, the error or omission must be immediately brought to the attention of TETRA TECH.

1.4 DISCLOSURE OF INFORMATION BY CLIENT

The Client acknowledges that it has fully cooperated with TETRA TECH with respect to the provision of all available information on the past, present, and proposed conditions on the site, including historical information respecting the use of the site. The Client further acknowledges that in order for TETRA TECH to properly provide the services contracted for in the Contract, TETRA TECH has relied upon the Client with respect to both the full disclosure and accuracy of any such information.

1.5 INFORMATION PROVIDED TO TETRA TECH BY OTHERS

During the performance of the work and the preparation of this Professional Document, TETRA TECH may have relied on information provided by persons other than the Client.

While TETRA TECH endeavours to verify the accuracy of such information, TETRA TECH accepts no responsibility for the accuracy or the reliability of such information even where inaccurate or unreliable information impacts any recommendations, design or other deliverables and causes the Client or an Authorized Party loss or damage.

1.6 GENERAL LIMITATIONS OF DOCUMENT

This Professional Document is based solely on the conditions presented and the data available to TETRA TECH at the time the data were collected in the field or gathered from available databases.

The Client, and any Authorized Party, acknowledges that the Professional Document is based on limited data and that the conclusions, opinions, and recommendations contained in the Professional Document are the result of the application of professional judgment to such limited data.

The Professional Document is not applicable to any other sites, nor should it be relied upon for types of development other than those to which it refers. Any variation from the site conditions present or variation in assumed conditions which might form the basis of design or recommendations as outlined in this report, at or on the development proposed as of the date of the Professional Document requires a supplementary investigation and assessment.

TETRA TECH is neither qualified to, nor is it making, any recommendations with respect to the purchase, sale, investment or development of the property, the decisions on which are the sole responsibility of the Client.

1.7 ENVIRONMENTAL ISSUES

The ability to rely upon and generalize from environmental baseline data is dependent on data collection activities occurring within biologically relevant survey windows.

It is incumbent upon the Client and any Authorized Party, to be knowledgeable of the level of risk that has been incorporated into the project design or scope, in consideration of the level of the environmental baseline information that was reasonably acquired to facilitate completion of the scope.

1.8 NOTIFICATION OF AUTHORITIES

TETRA TECH professionals are bound by their ethical commitments to act within the bounds of all pertinent regulations. In certain instances, observations by TETRA TECH of regulatory contravention may require that regulatory agencies and other persons be informed. The client agrees that notification to such bodies or persons as required may be done by TETRA TECH in its reasonably exercised discretion.

APPENDIX B

LETTERS OF AUTHORIZATION - BIOSOLIDS APPLICATION TO LAND

9504-49 Street,
Edmonton, Alberta
T6B 2M9 Canada
Epcor.com

September 6, 2023

Mr. Mohammad Rahman, P.Eng.
EPEA Team Leader
Capital District – RAD North
Alberta Environment and Protected Areas
111 Twin Atria Building
4999-98 Avenue
Edmonton, AB T6B 2X3

Re: 2023 Edmonton Wastewater Approval No. 639-03-06, Biosolids Stockpile Notification

Dear Mr. Rahman:

As per section 4.6 of approval number 639-03-06, this is a notification for an EPCOR land application of municipal biosolids stockpile location. The site is located SE 7-54-21 W4M. Attached is the site report and landowner acknowledgement.

Please contact me with any questions or clarifications at 780-718-2126.

Regards,

David Curran, P.Eng.
Biosolids Manager
Operations, Gold Bar WWTP

Cc: Deidre Bartlett, EPCOR
Larry Olstad, Olstad & Company

Alberta Environment and Protected Areas

Regulatory Assurance Division
North Region – Capital District
111 Twin Atria Building
4999 98 Avenue
Edmonton AB T6B 2X3
Telephone: 780-427-7617
https://www.alberta.ca/environment-and-protected-areas.aspx

Date: October 16, 2023

File No.: 0202-639
Application No.: 639-32733-SLU

David Curran, P. Eng.
Manager Biosolids, Operations
EPCOR Water Services
9504 49 ST NW
Edmonton, AB T6B 2M9

Delivered Via E-mail to: dcurran@epcor.com

Dear Mr. Curran:

Re: Letter of Authorization – Biosolids Application to Land
EPCOR Water Services Inc. (EWSI) – Edmonton Wastewater System
***Environmental Protection and Enhancement Act (EPEA)* Approval No. 639-03-00**

Environment and Protected Areas (EPA) has reviewed the submission made by EPCOR Water Services Inc. (EWSI) dated September 12, 2023. EWSI is requesting an authorization to apply wastewater biosolids to lands located at the following quarter sections within the Strathcona County:

- NW 07-54-21 W4M
- SW 07-54-21 W4M
- SE 07-54-21 W4M

This Letter of Authorization is issued pursuant to the *Environmental Protection and Enhancement Act*, Wastewater and Storm Drainage Regulation 119/93, Section 8.

Please note, as per the Condition No.12 of the attached Appendix to this Letter of Authorization, the Approval Holder shall submit summary reports to the Director as described.

If you have any questions regarding this letter, please contact Mohammad M. Rahman at (780) 422-1721.

Sincerely,

Gerald Feschuk, P. Eng.
Designated Director under the Act

cc: Deidre Bartlett, Dbartlett@epcor.com
Mark Fawcett, mark.fawcett@tetratech.com
Mohammad M. Rahman, EPA

AUTHORIZATION NO.
639-32557-SLU

APPENDIX

1. The dewatered biosolids from the Edmonton Wastewater System shall be stockpiled in accordance with the Alberta Environment and Parks' Draft Dewatered Biosolids Stockpiling Guidelines (October 19, 2009, prepared by Sylvis Environmental Services Inc.).

2. The following parcels of land may receive biosolids from the Edmonton Wastewater System at a rate not exceeding the dry biosoilds per hectare of land as described below:

Land Description	Area (ha)	Classification	Application Rate (dt/ha)
NW 07-54-21 W4M	20	2	15.4
NW 07-54-21 W4M	125	1	19.8
SW 07-54-21 W4M			
SE 07-54-21 W4M			

3. Post sampling and analysis for Alberta Tier 1 metals shall be conducted for the land units where pre-application soil pH is lower than 6.0 in the 0-30 cm depth and lime is not added to adjust pH accordingly including NW 07-54-21, SW 07-54-21 W4M and SE 07-54-21 W4M.

4. Biosolids shall be applied in accordance with Alberta Environment's *Guidelines for the Application of Municipal Wastewater Sludges to Agricultural Lands*.

5. Land to which biosolids is applied shall be cultivated as soon as possible following the biosolids application.

6. Biosolids shall not be applied to soil that is frozen or snow covered.

7. Parcels of lands which have received biosolids within the past 3 years may only have biosolids applied to the portion of the parcel that was not completed during the prior application.

8. EWSI shall obtain written approval from the appropriate pipeline authority or authorities before any biosolids transport or spreading vehicles cross any pipeline or pipeline corridors located on the aforementioned parcels of land. Should permission not be obtained to travel over a pipeline or pipeline corridor then the area over the corridor must be marked and tanker travel over same prohibited.

9. Any parts of the aforementioned parcels of land which may be subject to periodic flooding or water ponding shall not receive biosolids if said flooding or ponding crosses onto an adjacent landowner's property.

10. Biosolids haulage and/or spreading vehicles shall be operated and maintained such that biosolids deposition on public roadways is minimized and does not create a public nuisance.

11. Any release, spill, or discharge into a watercourse or on land not designated to receive biosolids shall immediately be reported to the Environment and Protected Areas at 1-780-422-4505.

12. Following completion of the 2023 and 2024 biosolids spreading program, and no later than February 28, 2024, and 2025 respectively, EWSI shall submit biosoilds application summary report including the monitoring results to the Director.

13. This Letter of Authorization expires on June 30, 2024.

DATED October 16, 2023

Gerald Feschuk, P. Eng.
Designated Director under the Act

9504-49 Street,
Edmonton, Alberta
T6B 2M9 Canada
Epcor.com

June 16, 2023

Mr. Mohammad Rahman, P.Eng.
EPEA Team Leader
Capital District – RAD North
Alberta Environment and Protected Areas
111 Twin Atria Building
4999-98 Avenue
Edmonton, AB T6B 2X3

Re: 2023 Edmonton Wastewater Approval No. 639-03-06, Biosolids Stockpile Notification

Dear Mr. Rahman:

As per section 4.6 of approval number 639-03-06, this is a notification for an EPCOR land application of municipal biosolids stockpile location. The site is located SW 23-55-23 W4M. Attached is the site report and landowner acknowledgement.

Please contact me with any questions or clarifications at 780-718-2126.

Regards,

David Curran, P.Eng.
Biosolids Manager
Operations, Gold Bar WWTP

Cc: Deidre Bartlett, EPCOR
Larry Olstad, Olstad & Company

Alberta Environment and Protected Areas

Regulatory Assurance Division
North Region – Capital District
111 Twin Atria Building
4999 98 Avenue
Edmonton AB T6B 2X3
Telephone: 780-427-7617
https://www.alberta.ca/environment-and-protected-areas.aspx

Date: October 18, 2023

File No.: 0202-639
Application No.: 639-32787-SLU

David Curran, P. Eng.
Manager Biosolids, Operations
EPCOR Water Services
9504 49 ST NW, Edmonton

Delivered Via E-mail to: dcurran@epcor.com

Dear Mr. Curran:

Re: Letter of Authorization – Biosolids Application to Land
EPCOR Water Services Inc. (EWSI) – Edmonton Wastewater System
***Environmental Protection and Enhancement Act (EPEA)* Approval No. 639-03-00**

We are enclosing the Letter of Authorization to apply wastewater biosolids to lands located at:

- NW 02-55-23 W4M
- SW 11-55-23 W4M
- NW 14-55-23 W4M
- NE 14-55-23 W4M
- SW 23-55-23 W4M

in Sturgeon County as described in your submission dated September 22, 2023. This Letter of Authorization is issued pursuant to the *Environmental Protection and Enhancement Act* (EPEA), Wastewater and Storm Drainage Regulation 119/93, Section 8.

Please note, as per the Condition No.13 of the attached Appendix to this Letter of Authorization, the Approval Holder shall submit summary reports to the Director as described. The letter of Authorization 639-32557 SLU issued on September 12, 2023, is cancelled.

If you have any questions regarding this letter, please contact Mohammad M. Rahman at (780) 422-1721 or via email to Mohammad.m.rahman@gov.ab.ca.

Sincerely,

Gerald Feschuk, P. Eng.
Designated Director under the Act

cc: Deidre Bartlett, dbarlett@epcor.com
Mark Fawcett, mark.fawcett@tetratech.com
Mohammad M. Rahman, EPA

AUTHORIZATION NO.
639-32787-SLU

APPENDIX

1. The dewatered biosolids from the Edmonton Wastewater System shall be stockpiled in accordance with the Alberta Environment and Parks' Draft Dewatered Biosolids Stockpiling Guidelines (October 19, 2009, prepared by Sylvis Environmental Services Inc.).

2. The following parcels of land may receive biosolids from the Edmonton Wastewater System at a rate not exceeding the dry biosolids per hectare of land as described below:

Land Description	Area (ha)	Classification	Application Rate (dt/ha)
NW 02-55-23 W4M	65	1	19.8
SW 11-55-23 W4M	52	1	19.8
NW 14-55-23 W4M	32	1	19.8
NE 14-55-23 W4M	56	3	8.8
SW 23-55-23 W4M	52	3	8.8

3. Post application Alberta Tier 1 metals in the 0-15 cm and 15-30 cm depths shall be conducted for all applicable land units where pre-application soil pH is lower than 6.0 in the 0-30 cm depth and lime is not added to adjust pH, accordingly, including NW 14-55-23 W4M, NE 14-55-23 W4M and SW 23-55-23 W4M.

4. Biosolids shall not be applied in NW 02-55-23 W4M and SW 11-55-23 W4M unless the two fields are limed accordingly prior to biosolids being applied.

5. Biosolids shall be applied in accordance with Alberta Environment's *Guidelines for the* Application *of Municipal Wastewater Sludges to Agricultural Lands*.

6. Land to which biosolids is applied shall be cultivated as soon as possible following the biosolids application.

7. Biosolids shall not be applied to soil that is frozen or snow covered.

8. Parcels of lands which have received biosolids within the past 3 years may only have biosolids applied to the portion of the parcel that was not completed during the prior application.

9. EWSI shall obtain written approval from the appropriate pipeline authority or authorities before any biosolids transport or non-agricultural spreading vehicles cross any pipeline or pipeline corridors located on the aforementioned parcels of land. Should permission not be obtained to travel over a pipeline or pipeline corridor then the area over the corridor must be marked and tanker travel over same prohibited.

10. Any parts of the aforementioned parcels of land which may be subject to periodic flooding or water ponding shall not receive biosolids if said flooding or ponding crosses onto an adjacent landowner's property.

11. Biosolids haulage and/or spreading vehicles shall be operated and maintained such that biosolids deposition on public roadways is minimized and does not create a public nuisance.

12. Any release, spill, or discharge into a watercourse or on land not designated to receive biosolids shall immediately be reported to the Environment and Protected Areas at 1-780-422-4505.

13. Following completion of the 2023 and 2024 biosolids spreading program, and no later than February 28, 2024, and 2025 respectively, EWSI shall submit biosolids application summary report including the monitoring results to the Director.

14. This Letter of Authorization expires on June 30, 2024.

DATED: October 18, 2023

Gerald Feschuk, P. Eng.
Designated Director Under the Act

APPENDIX C

LANDOWNER ACKNOWLEDGEMENT

Fluid Movement

Box 1059,
Lamont, Alberta
T0B 2R0 Canada

Dear Sir/Madame:

Thank you for your interest in the Olstad & Company Ltd. ("OLSTAD") City to Soil program.

This letter is to confirm that you have requested that the agricultural land described as:

S½ 7-54-21-W4 NW 7-54-21-W4

(the "Land") be considered a candidate site for the City to Soil program. As you know, the City to Soil program involves the application of biosolids to agricultural land in accordance with the Guidelines for the Application of Municipal Wastewater Sludges to Agricultural Lands (Alberta Environment March 2001).

If acceptable to you, please return a fully signed original of the enclosed Acknowledgement and Authorization to the attention of Larry Olstad at the above address or email a fully signed copy to olstad.co@gmail.com. The Acknowledgement and Authorization must be signed by all owners and lessees of the Land. Once the fully signed Acknowledgement and Authorization has been received, OLSTAD will commence its assessment of the Land to determine if the Land is an appropriate candidate site for the City to Soil program.

For further information about the Nutri-Gold program please call 780-940- 4803.

LARRY OLSTAD

Signature

May 4th

Date

ACKNOWLEDGEMENT AND AUTHORIZATION:

Re: Potential application of biosolids to agricultural land described

as 5½-7-54-21-W4 NW7-54-21-W4 (the "Lands)

In consideration of Olstad & Company Ltd. ("OLSTAD"}: (i) evaluating the Lands as a potential candidate site for the Nutri-Gold program; and (ii) potentially applying biosolids to the Lands (if the Lands are determined to be suitable and are selected for application of biosolids, all as decided by OLSTAD in its sole discretion), the undersigned hereby agree(s) as follows:

1. I/We [insert name of land owner(s) and lessee(s)], hereby certify that we are the registered owner(s)/lessee{s) of the Lands and hereby request that the Lands be considered a candidate site for the Nutri-Gold program.

2. I/We understand that the Guidelines for the Application of Municipal Wastewater Sludges to Agricultural Lands (Alberta Environment March 2001) (the "Guidelines") indicate as follows:

    a. biosolids application to agricultural land is intended for the production of forages, oil seeds, small grains (see the Guidelines for further recommendations), dried legumes (peas, beans, etc), trees and commercial sod;

    b. that no direct grazing be permitted on the Lands for a period of at least three years following application of biosolids; and

    c. that biosolids not be applied on land intended for production of root crops, tobacco and crops eaten raw (including without limitation fresh fruits and vegetables) or used in dairy farm pasturing.

3. I/We acknowledge and agree that any biosolids applied to or stockpiled on the Lands are provided on an as-is where-is basis and that OLSTAD disclaims all representations or warranties. express or implied, including without limitation any implied warranties of merchantability or fitness for any particular purpose.

4. I/We understand that there may be certain inherent risks associated with the application of biosolids to the Lands and I/we assume those risks. I/we hereby release and indemnify OLSTAD, its directors, officers, employees and affiliates from any losses, injuries, claims, demands, liabilities, damages or actions brought or made against OLSTAD, its directors, officers, employees or affiliates or which they may sustain or incur as a result of or in connection with the activities described herein, including without limitation performance of soil testing. the application of biosolids to the Lands and the stockpiling of biosolids on the Lands.

5. I/We hereby authorize OLSTAD, and its authorized agents, to enter upon the Lands in order to conduct soil testing to determine the suitability of the Lands for the City to Soil program and to communicate the results of this testing to third parties as may be required by law and for OLSTAD's administrative purposes.

6. If the Lands are determined to be suitable and are selected for the application of biosolids, I/We further authorize OLSTAD, and it authorized agents, to enter upon the Lands and apply the biosolids.

7. If OLSTAD has dewatered biosolids or lime that it wishes to stockpile on the Lands, I/We hereby authorize OLSTAD, and its authorized agents, to enter upon the Lands to stockpile the dewatered biosolids.

8. I/We understand that the City to Soil program is a program offered by OLSTAD at the sole discretion of OLSTAD as part of its biosolids management program and that OLSTAD may cancel, withdraw or adjust the application of biosolids at any time, without liability or notice, at OLSTAD's sole discretion.

9. I/We further agree that no compensation is payable by OLSTAD for the City to Soil program, including without limitation, for the soil testing, application of biosolids, stockpiling of biosolids/lime, or the cancellation, withdrawal or adjustment of any application of biosolids on the Lands.

10. I/We agree to advise OLSTAD if the ownership of the Lands changes or if the lessee(s) of the Lands change.

11. I/We agree to disclose that biosolids have been applied to the Lands to any potential purchaser or lessee of the Lands.

12. I/We agree that this Acknowledgement and Authorization will be valid for a period of three (3) years from the date of the final signature below.

13. I/We acknowledge that OLSTAD will be relying on the accuracy of and authorizations contained in the foregoing statements in performing the activities outlined herein, including without limitation soil testing, application of biosolids to the Lands and stockpiling of biosolids on the Lands.

14. This Acknowledgement and Authorization may be signed in any number of counterparts, each of which will be deemed to be an original and all of which taken together will be deemed to constitute one and the same document. Counterparts may be delivered in original form or by email and each copy will be deemed to be anoriginal.

15. I/We acknowledge that I/We understand that this agreement is exclusive and binding for 5 years and that no other biosolids may be applied or similar agreements can be entered into without the written permission of OLSTAD. I/We understand that this exclusive agreement is with OLSTAD and all Lands owned, rented or otherwise control are subject to this agreement with regards to any biosolids application for 5 years.

16. I/We acknowledge that I/We have read, understand and agree with all of the provisions of this Acknowledgement and Authorization, and acknowledge that I/We have had the opportunity to obtain independent legal advice with respect to it.

CHRIS ALAM
Print Name(s) (land owner(s))

Print Name(s) (lessee(s))

Signature

Signature

MAY 24/19
Date

Date

Chris. 780-777-4276
S½ 7-54-21-W4 & NW-7-54-21-W4

~~Chris Hackman.~~
~~780-222-9273~~

NW-7-54-21-W4 old pasture
~~S½ 7-54-21-W4 hay land for after first cut~~

City to Soil
Delivered by Olstad & Company
Box 1059 Lamont, AB T0B 2R0

Dear Sir/Madam:

Re: Olstad & Company Ltd.- City to Soil Program Acknowledgement and Authorization

Thank you for your interest in the Olstad & Company Ltd. ("OLSTAD") City to Soil program.

This letter is to confirm that you have requested that the agricultural land described as:
N½ E&W NW2, SW11 55, 23 W4
~~S½ 14 55 23 W4~~ SW2355-23-W4 (the "Land")
be considered a candidate site for the City to Soil program. As you know, the City to Soil program involves the application of biosolids to agricultural land in accordance with the Guidelines for the Application of Municipal Wastewater Sludges to Agricultural Lands (Updated August 2009).

If acceptable to you, please return a fully signed original of the enclosed Acknowledgement and Authorization to the attention of Larry Olstad, Director at the above-noted mailing address or email to olstad.co@gmail.com.

The Acknowledgement and Authorization must be signed by all owners and lessees of the Land. Once the fully signed Acknowledgement and Authorization has been received, OLSTAD will commence its assessment of the Land to determine if the Land is an appropriate candidate site for the City to Soil program.

For further information about the City to Soil program please call Larry Olstad [780-940-4803].

Additional Notes:

Enclosure (1): Acknowledgement and Authorization Form

ACKNOWLEDGEMENT AND AUTHORIZATION

ication of biosolids to agricultural land described as:

55-23-W4 SW23-55-23-W4 (the "Lands").

Olstad & Company Ltd. ("OLSTAD") (I) evaluating the Lands as a potential candidate site for gram; and (ii) potentially applying biosolids to the Lands (if the Lands are determined to be selected for application of biosolids, all as decided by OLSTAD in its sole discretion), the by agree(s) as follows:

_____, hereby certify that we are the registered owner(s)/lessee(s) and hereby request that the Lands be considered a candidate site for the City to Soil program.

stand that the Guidelines for the Application of Municipal Wastewater Sludges to Agricultural lated August 2009) (the "Guidelines") indicate as follows:

solids application to agricultural land is intended for the production of forages, oil seeds, small ains (see the Guidelines for further recommendations), dried legumes (peas, beans, etc.), trees nd commercial sod;

nat no direct grazing be permitted on the Lands for a period of at least three years following application of biosolids; and

that biosolids not be applied on land intended for production of root crops, tobacco and crops eaten raw (including without limitation fresh fruits and vegetables) or used in dairy farm pasturing.

acknowledge and agree that any biosolids applied to or stockpiled on the Lands are provided on an as-ere-is basis and that OLSTAD disclaims all representations or warranties, express or implied, including out limitation any implied warranties of merchantability or fitness for any particular purpose.

e understand that there may be certain inherent risks associated with the application of biosolids to the nds and I/we assume those risks. I/we hereby release and indemnify OLSTAD, its directors, officers, nployees and affiliates from any losses, injuries, claims, demands, liabilities, damages or actions brought made against OLSTAD, its directors, officers, employees or affiliates or which they may sustain or incur s a result of or in connection with the activities described herein, including without limitation performance of oil testing, the application of biosolids to the Lands and the stockpiling of biosolids on the Lands.

I/We hereby authorize OLSTAD, and its authorized agents, to enter upon the Lands at any time this Acknowledgement and Authorization is in effect, in order to conduct soil testing to determine the suitability of the Lands for the City to Soil program and to communicate the results of this testing to third parties as may be required by law and for OLSTAD's administrative purposes.

If the Lands are determined to be suitable and are selected for the application of biosolids, I/We further authorize OLSTAD, and its authorized agents, to enter upon the Lands and apply the biosolids.

7. If OLSTAD has dewatered biosolids that it wishes to stockpile on the Lands, I/We hereby authorize OLSTAD, and its authorized agents, to enter upon the Lands to stockpile the dewatered biosolids in accordance with OLSTAD's program requirements. If there are unforeseen circumstances, including a weather event, I/We agree that OLSTAD may leave the stockpiled biosolids on the Lands until it is safe and able, in OLSTAD's sole discretion, to spread and incorporate the material onto the Lands.

8. I/We understand that the City to Soil program is a program offered by OLSTAD at the sole discretion of OLSTAD as part of its biosolids management program and that OLSTAD may cancel, withdraw or adjust the application of biosolids at any time, without liability or notice, at OLSTAD's sole discretion.

9. I/We further agree that no compensation is payable by OLSTAD for the City to Soil program, including without limitation, for the soil testing, application of biosolids, stockpiling of biosolids, or the cancellation, withdrawal or adjustment of any application of biosolids on the Lands.

10. I/We agree to advise OLSTAD if the ownership of the Lands changes or if the lessee(s) of the Lands change.

11. I/We agree to disclose that biosolids have been applied to the Lands to any potential purchaser or lessee of the Lands.

12. I/We agree that this Acknowledgement and Authorization is effective from the date of the final signature below and will be valid for a period of three (3) years.

13. I/We acknowledge that OLSTAD will be relying on the accuracy of and authorizations contained in the foregoing statements in performing the activities outlined herein, including without limitation soil testing, application of biosolids to the Lands and stockpiling of biosolids on the Lands.

14. This Acknowledgement and Authorization may be signed in any number of counterparts, each of which will be deemed to be an original and all of which taken together will be deemed to constitute one and the same document. *Counterparts may be delivered in original form or by email or text message and each will be deemed to be an original.*

15. I/We acknowledge that this agreement is exclusive and binding for 5 years and that no other biosolids may be applied or that similar agreements can be entered into without any written permission from OLSTAD. I/We understand that this exclusive agreement is with OLSTAD and all lands owned, rented or otherwise are subject to this agreement with regards to any biosolids application for 5 years.

16. I/We acknowledge that if dewatered material is stockpiled on the land, it may remain on the land for up to 18 months after the completion of hauling before incorporation. OLSTAD will determine when the biosolids will be incorporated. OLSTAD is not responsible for any inconvenience or loss of revenue if stockpiles have to be farmed around.

17. I/We acknowledge that I/We have read, understand and agree with all of the provisions of this Acknowledgement and Authorization, and acknowledge that I/We have had the opportunity to obtain independent legal advice with respect to it.

Oct 6/2022
Date

Larry Olstad

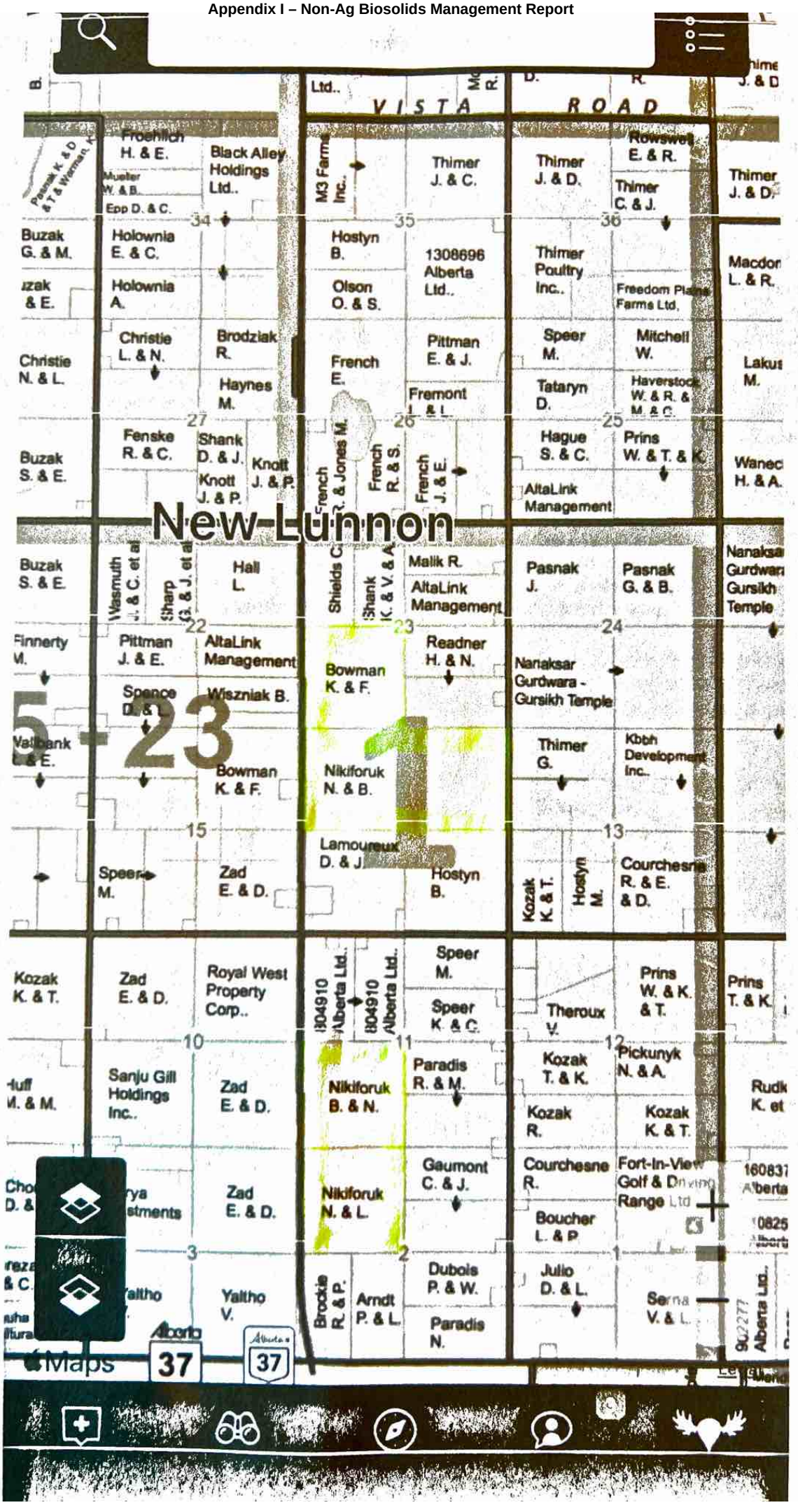
As described earlier
Legal Land Description

Blair Nikiforuk
Name: Landowner

Signature

780-818-1028
Phone Number

bnikifor@gmail.com
Email


New Lunnon
5-23-1
VISTA
ROAD
Froehlich H. & E.
Black Alley Holdings Ltd..
Holownia E. & C.
Holownia A.
Christie L. & N.
Brodziak R.
Haynes M.
Fenske R. & C.
Shank D. & J.
Knott J. & P.
M3 Farms Inc..
Thimer J. & C.
Hostyn B.
1308696 Alberta Ltd..
Olson O. & S.
Pittman E. & J.
French E.
Fremont J. & I.
French R. & S.
French J. & E.
Thimer J. & D.
Thimer C. & J.
Thimer Poultry Inc..
Freedom Plains Farms Ltd.
Speer M.
Mitchell W.
Tataryn D.
Haverstock W. & R. & M. & C.
Hague S. & C.
Prins W. & T. & K.
AltaLink Management
Malik R.
AltaLink Management
Pasnak J.
Pasnak G. & B.
Hall L.
Pittman J. & E.
AltaLink Management
Spence D. & L.
Wiszniak B.
Bowman K. & F.
Readner H. & N.
Nanaksar Gurdwara - Gursikh Temple
Thimer G.
Kbbh Development Inc..
Nikiforuk N. & B.
Lamoureux D. & J.
Hostyn B.
Courchesne R. & E. & D.
Speer M.
Zad E. & D.
Kozak K. & T.
Zad E. & D.
Royal West Property Corp..
1804910 Alberta Ltd.
Speer K. & C.
Theroux V.
Prins W. & K. & T.
Sanju Gill Holdings Inc..
Zad E. & D.
Nikiforuk B. & N.
Paradis R. & M.
Kozak T. & K.
Pickunyk N. & A.
Kozak R.
Kozak K. & T.
Courchesne R.
Gaumont C. & J.
Nikiforuk N. & L.
Fort-In-View Golf & Driving Range Ltd
Boucher L. & P.
Julio D. & L.
Serna V. & L.
Brodie R. & P.
Arndt P. & L.
Dubois P. & W.
Paradis N.
Yaltho V.
Alberta 37
Maps

APPENDIX D

MONITORING PROGRAM METAL CONCENTRATIONS

MAC – Maximum Allowable Concentration – Alberta Tier 1 guideline value.

80% of MAC – 80% or the Maximum Allowable Concentration. Used for monitoring purposes only as an indication of potential environmental concerns related to application of biosolids to agricultural lands.

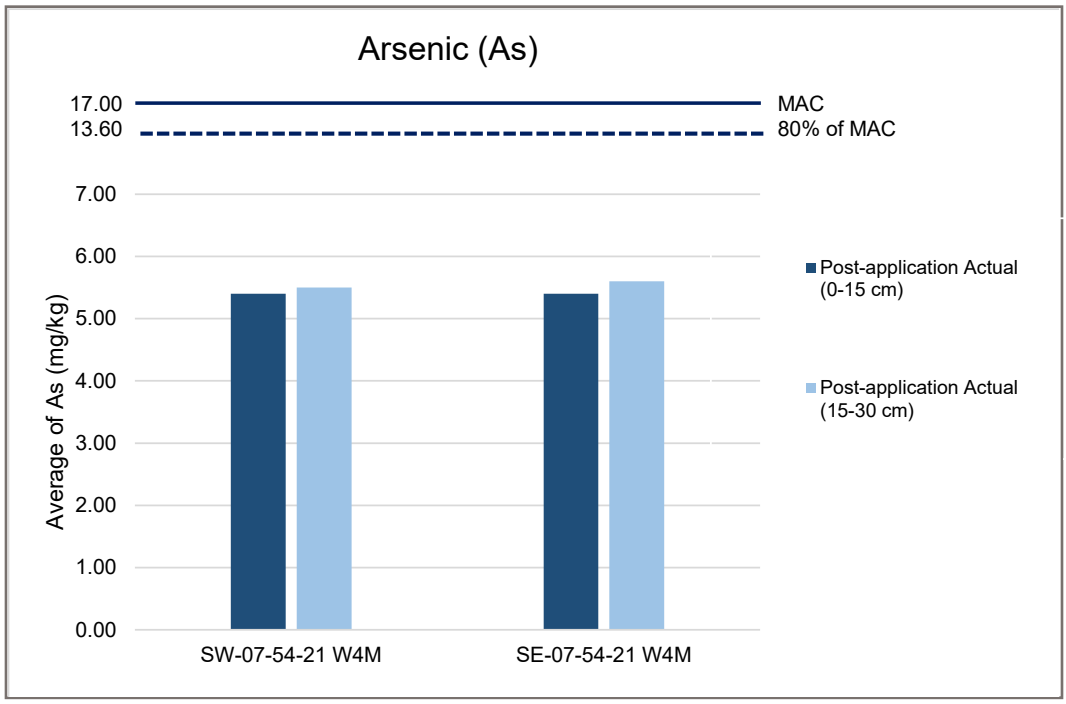


Figure D1.As: In SW-07 and SE-07 the arsenic concentrations are well below the MAC[1] and 80% of MAC thresholds for both the 0-15 cm and 15-30 cm depths.

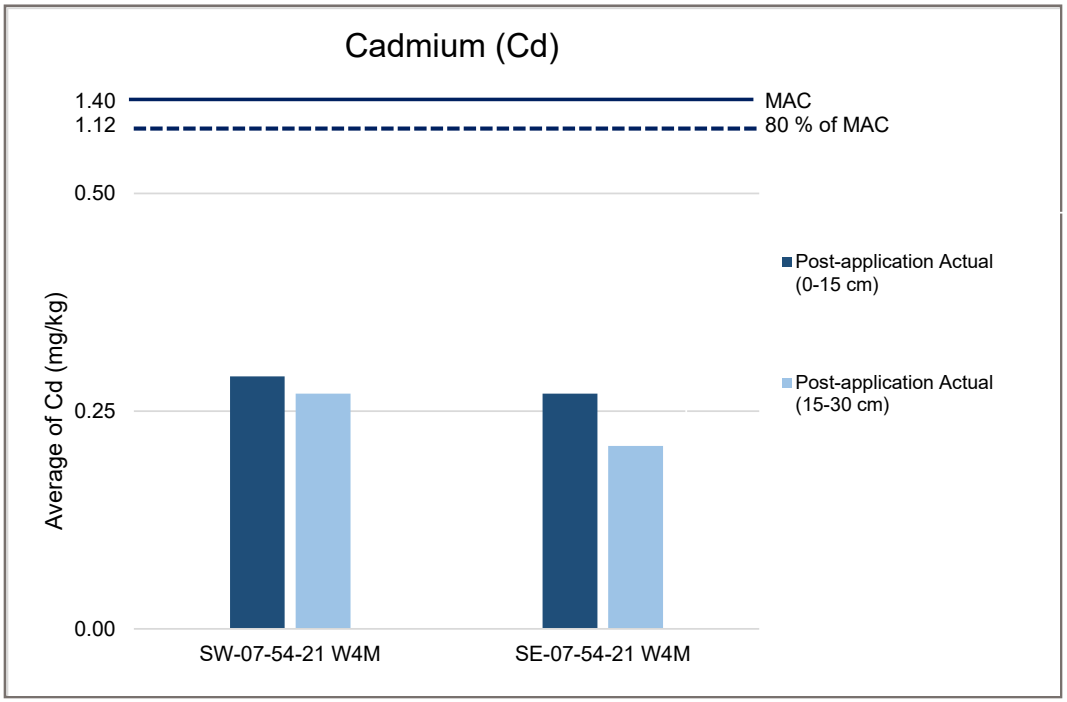


Figure D1.Cd: In SW-07 and SE-07 the cadmium concentrations are well below the MAC and 80% of MAC thresholds for both the 0-15 cm and 15-30 cm depths.

[1] The Alberta Tier 1 guideline value or Maximum Allowable Concentration (MAC).

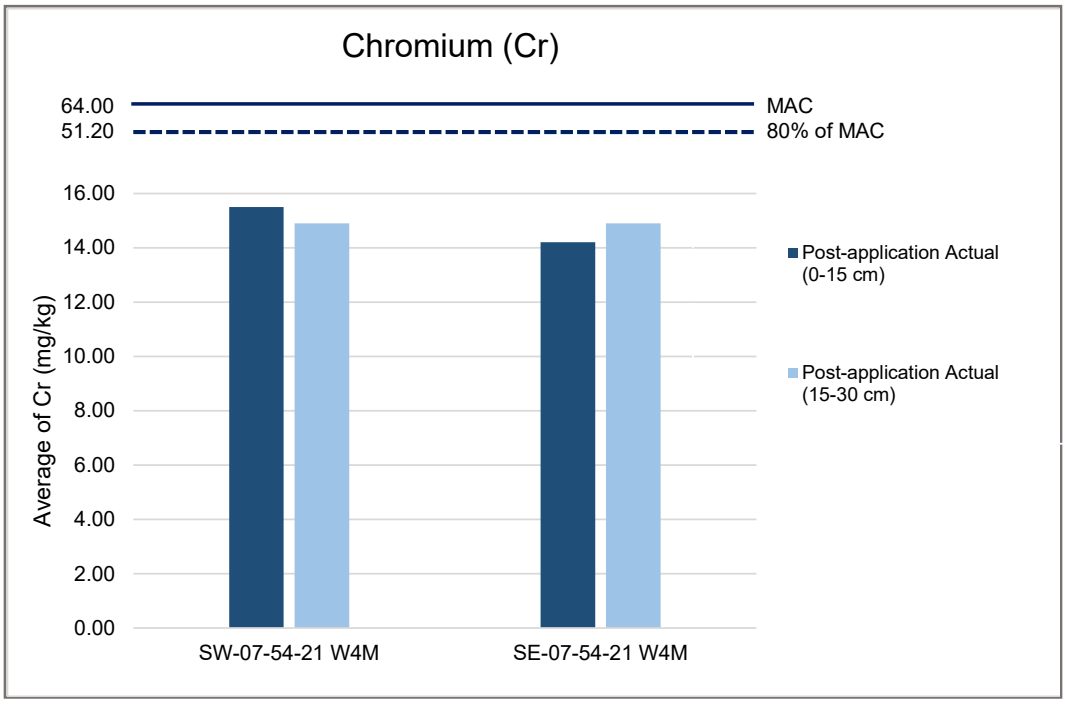


Figure D1.Cr: In SW-07 and SE-07 the chromium concentrations are well below the MAC and 80% of MAC thresholds for both the 0-15 cm and 15-30 cm depths.

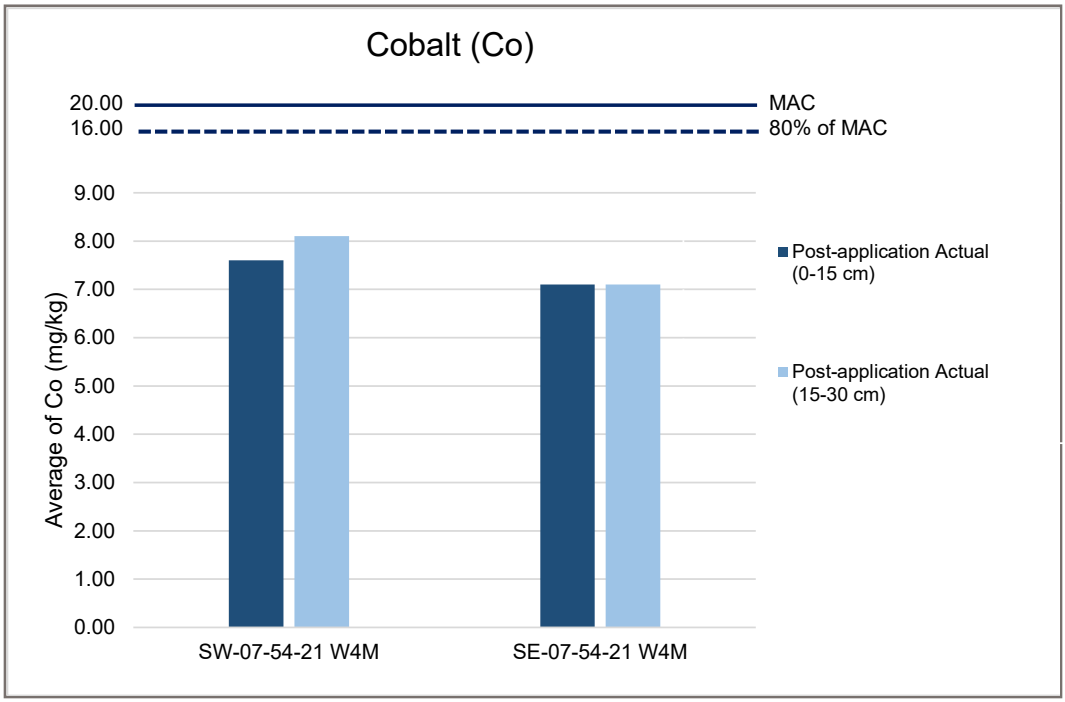


Figure D1.Co: In SW-07 and SE-07 the cobalt concentrations are well below the MAC and 80% of MAC thresholds for both the 0-15 cm and 15-30 cm depths.

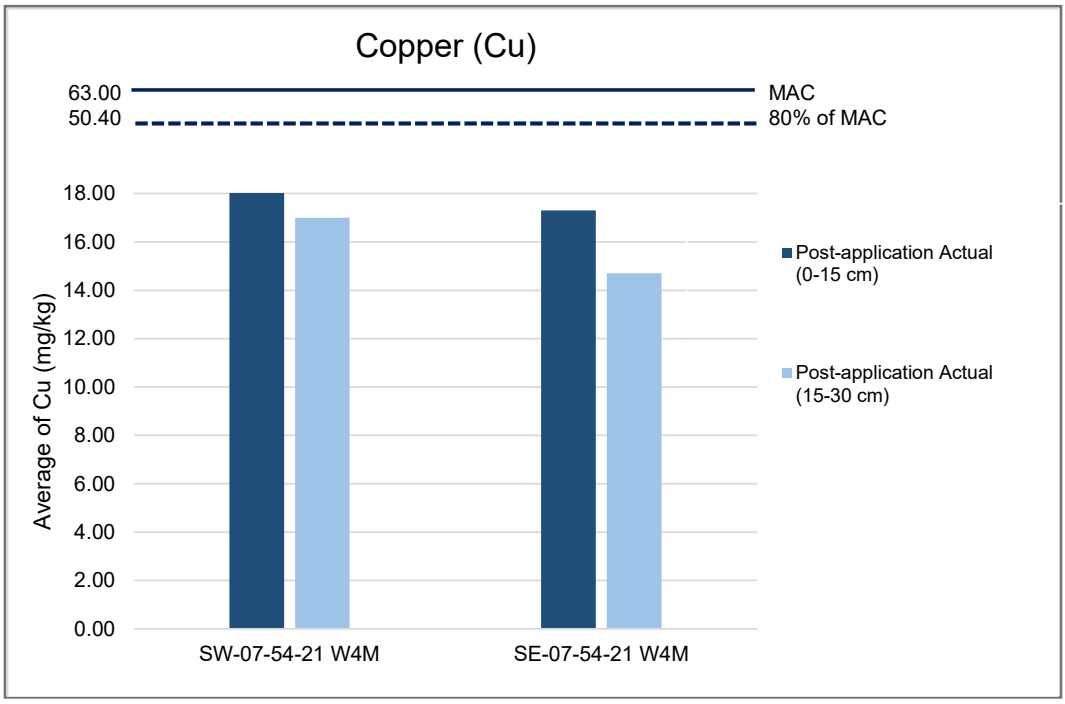


Figure D1.Cu: In SW-07 and SE-07 the copper concentrations are well below the MAC and 80% of MAC thresholds for both the 0-15 cm and 15-30 cm depths.

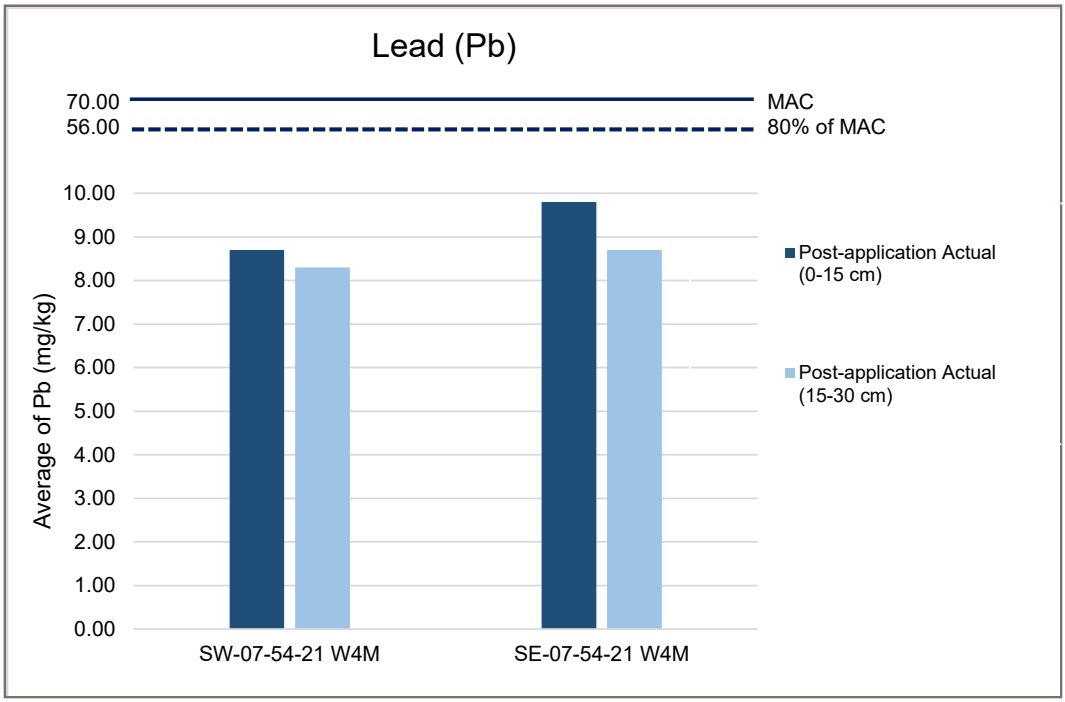


Figure D1.Pb: In SW-07 and SE-07 the lead concentrations are well below the MAC and 80% of MAC thresholds for both the 0-15 cm and 15-30 cm depths.

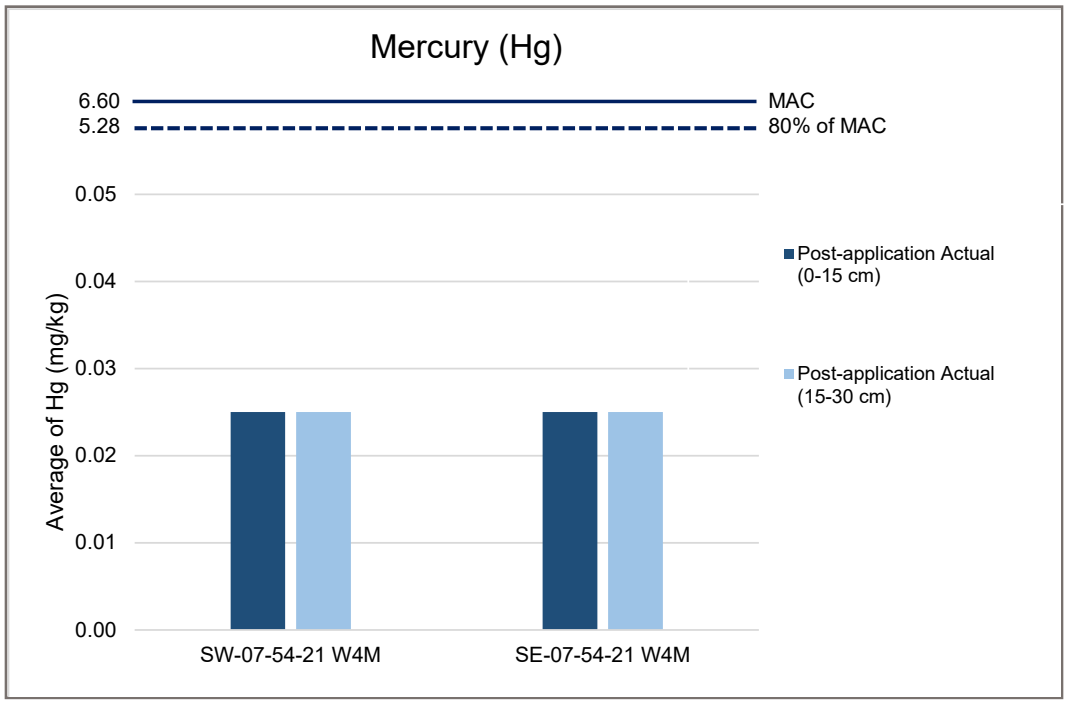


Figure D1.Hg[2]: In SW-07 and SE-07 the mercury concentrations are well below the MAC and 80% of MAC thresholds for both the 0-15 cm and 15-30 cm depths.

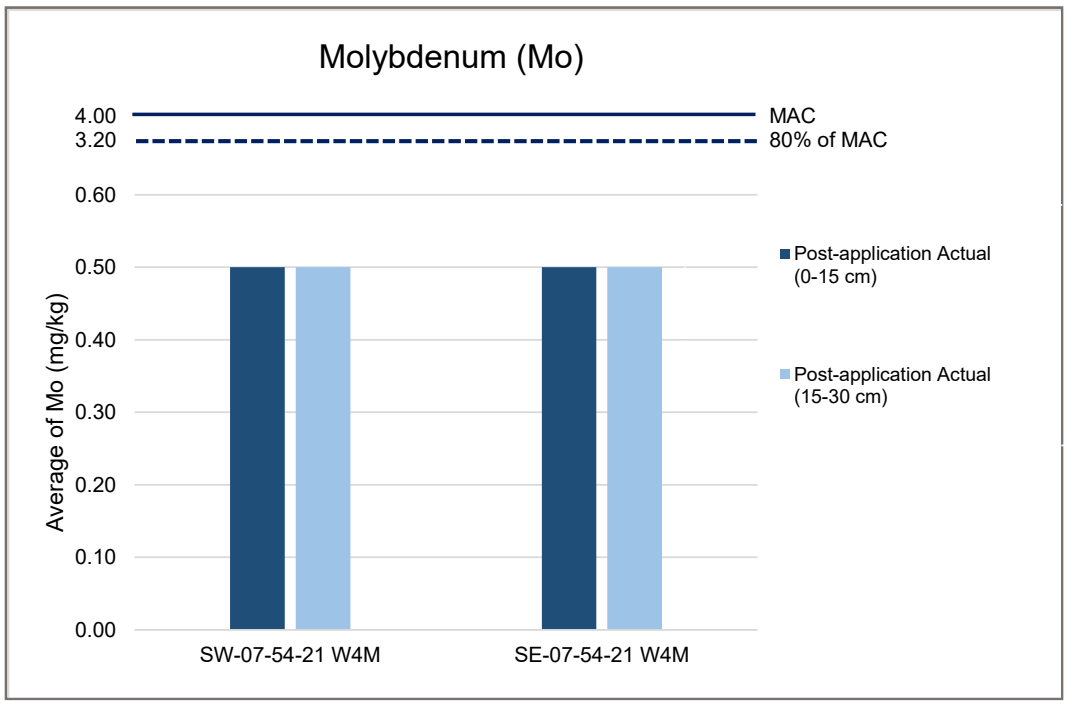


Figure D1.Mo[2]: In SW-07 and SE-07 the molybdenum concentrations are well below the MAC and 80% of MAC thresholds for both the 0-15 cm and 15-30 cm depths.

[2] Post application mercury and molybdenum concentrations were reported as below laboratory detection limit. Concentrations shown represent one half of the detection limit.

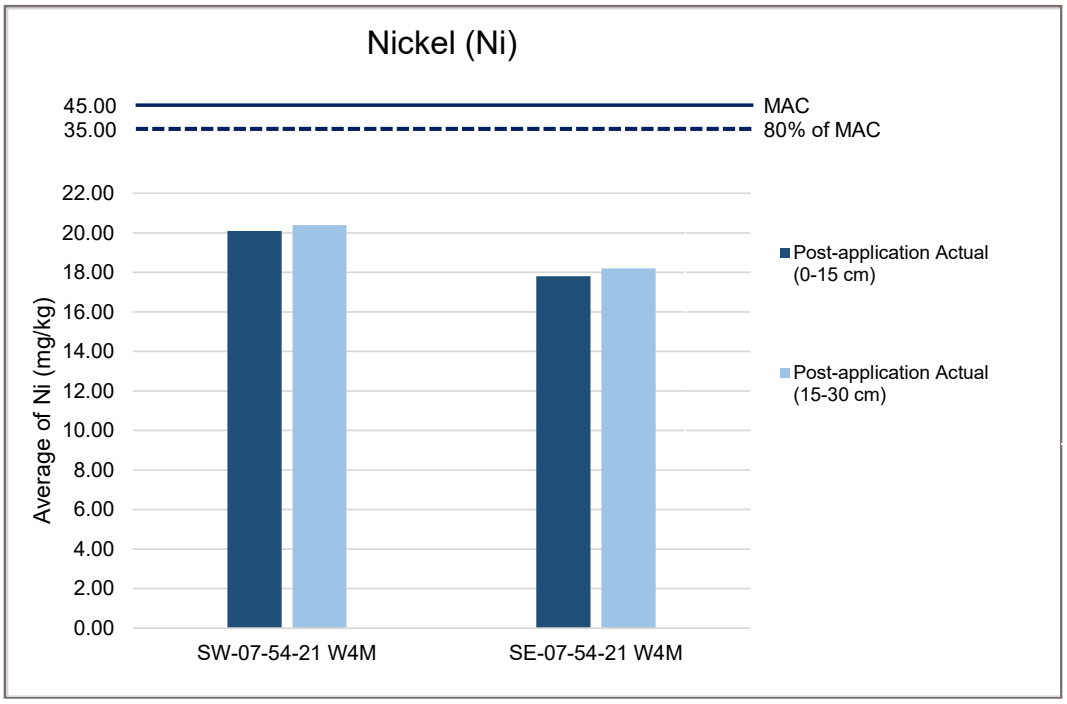


Figure D1.Ni: In SW-07 and SE-07 the nickel concentrations are well below the MAC and 80% of MAC thresholds for both the 0-15 cm and 15-30 cm depths.

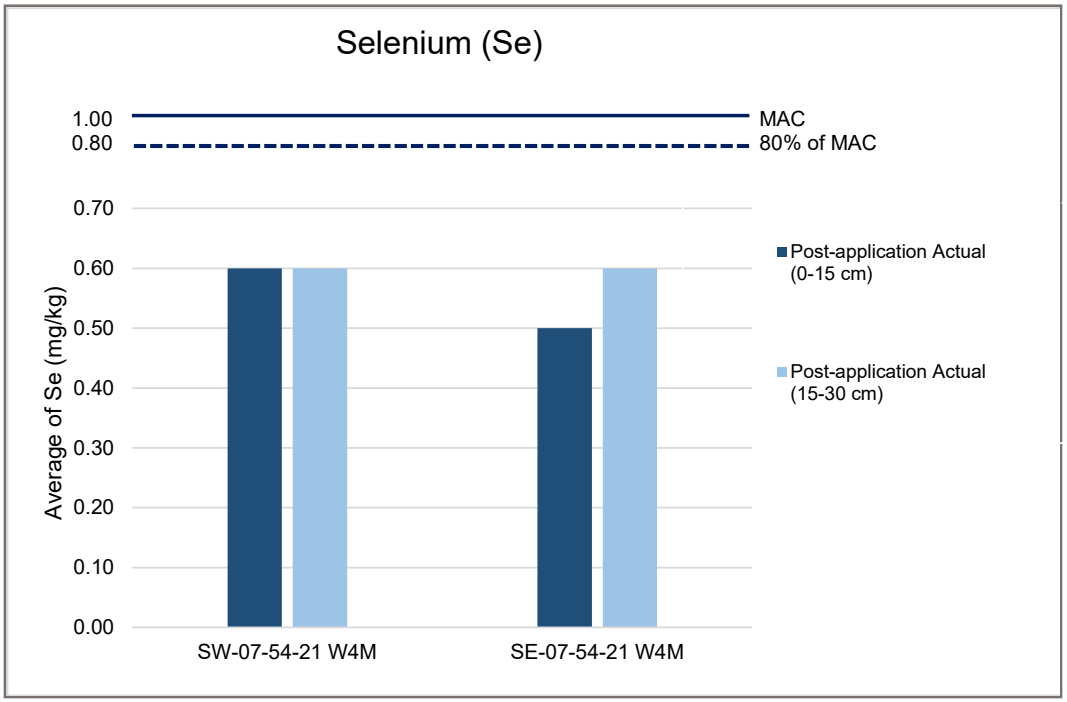


Figure D1.Se: In SW-07 and SE-07 the selenium concentrations are well below the MAC and 80% of MAC thresholds for both the 0-15 cm and 15-30 cm depths.

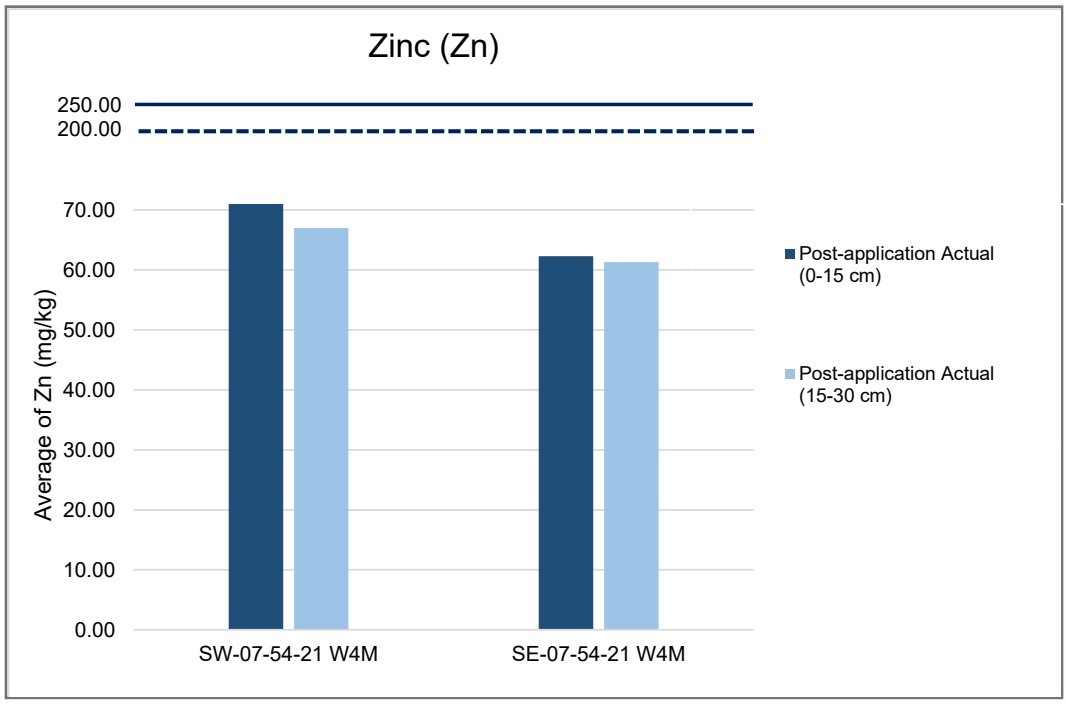


Figure D1.Zn: In SW-07 and SE-07 the zinc concentrations are well below the MAC and 80% of MAC thresholds for both the 0-15 cm and 15-30 cm depths.

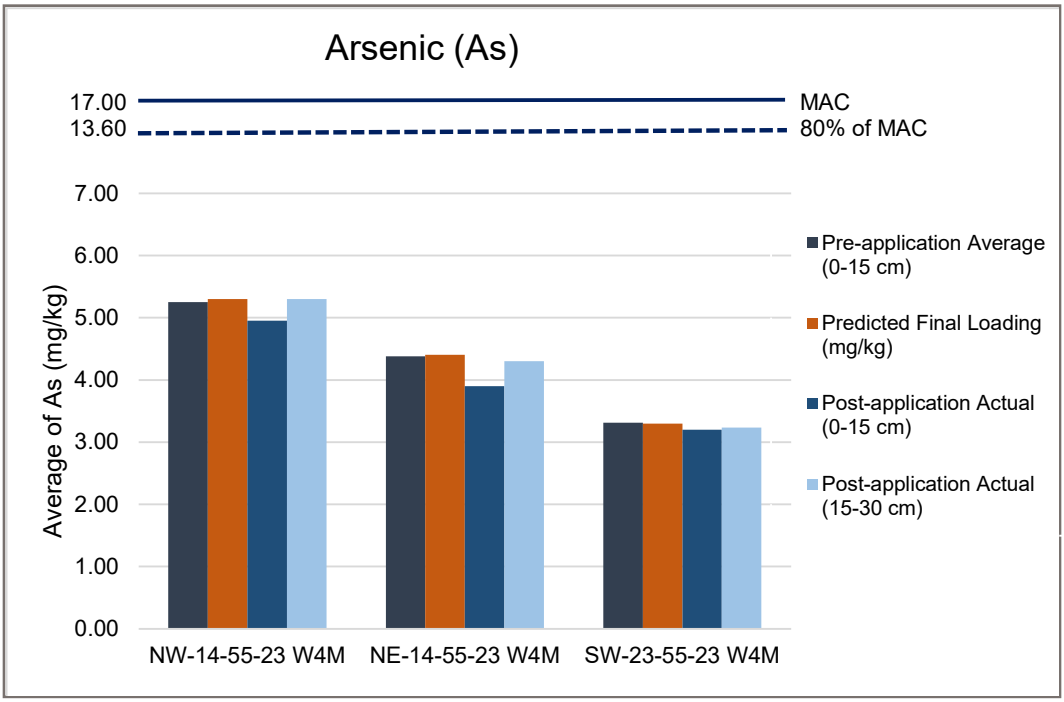


Figure D2.As: All the fields reported lower concentrations for arsenic in the 0-15 cm average after the biosolid application. Additionally, all fields reported a post-application 15-30 cm concentration that was equal to or marginally less than the predicted loading concentration. All reported values are well below the MAC and 80% of MAC thresholds.

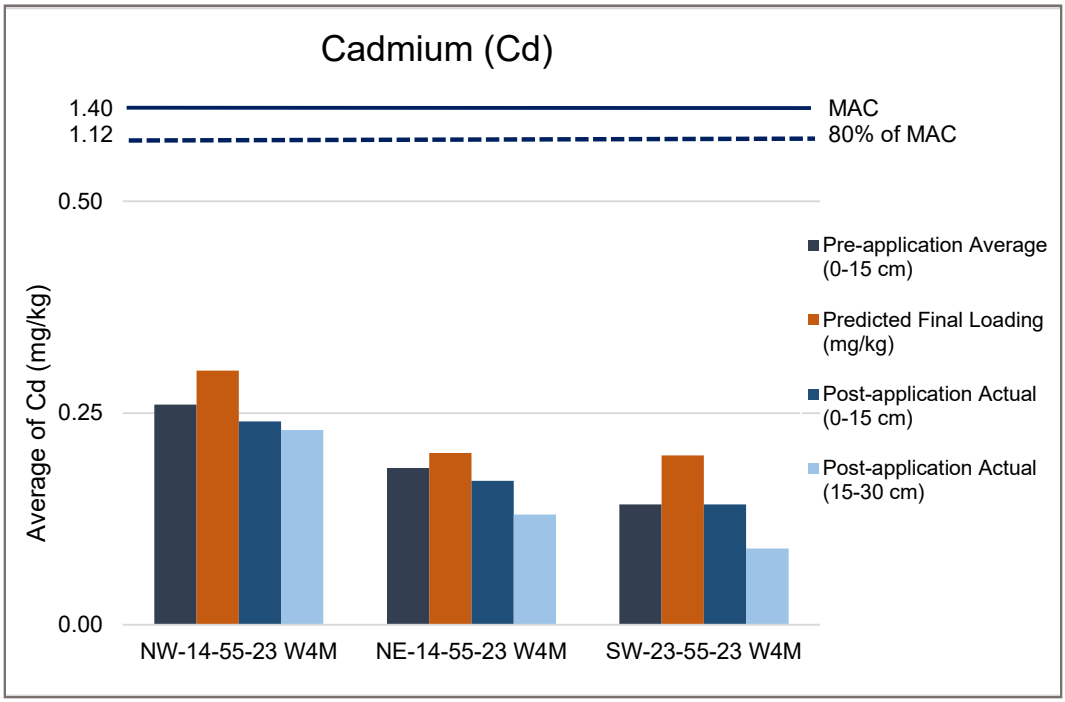


Figure D2.Cd: Overall, the predicted loading concentration of cadmium was greater than the post-application averages, all of which are well below the MAC and 80% of MAC thresholds for both the 0-15 cm and 15-30 cm depths.

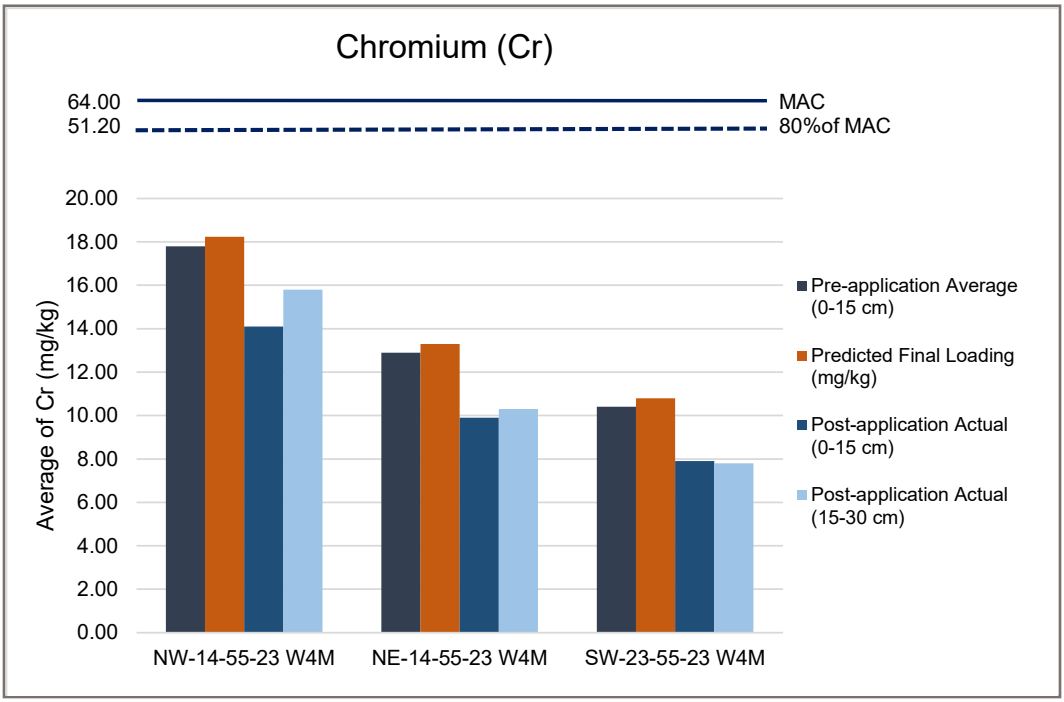


Figure D2.Cr: The 0-15 cm and 15-30 cm post application chromium concentration averages were below the pre-application and predicted loading concentrations. All reported values are well below the MAC and 80% of MAC thresholds.

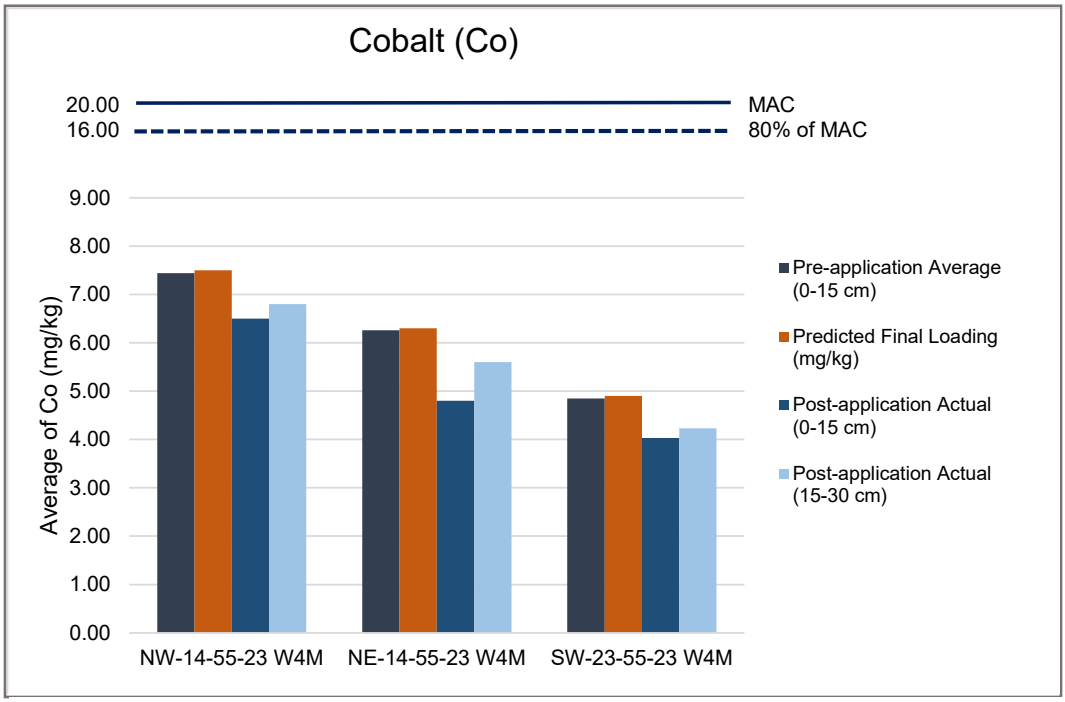


Figure D2.Co: All the fields reported lower concentrations for cobalt in the 0-15 cm averages post application. Although the post-application 15-30 cm concentration were marginally greater than the post 0-15 cm average, the concentrations were still well below the predicted loading. All reported values are well below the MAC and 80% of MAC thresholds.

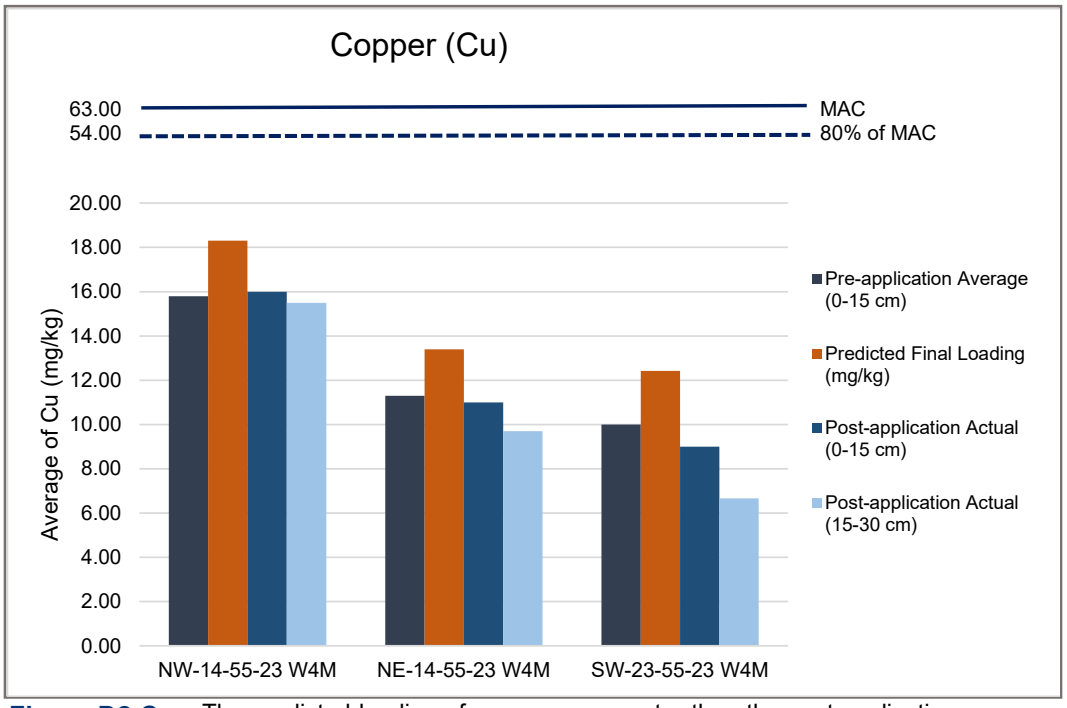


Figure D2.Cu: The predicted loading of copper was greater than the post-application averages. NW-14 was the only field to report a post-application concentration that was marginally greater than the pre-application concentration. All reported values are well below the MAC and 80% of MAC thresholds.

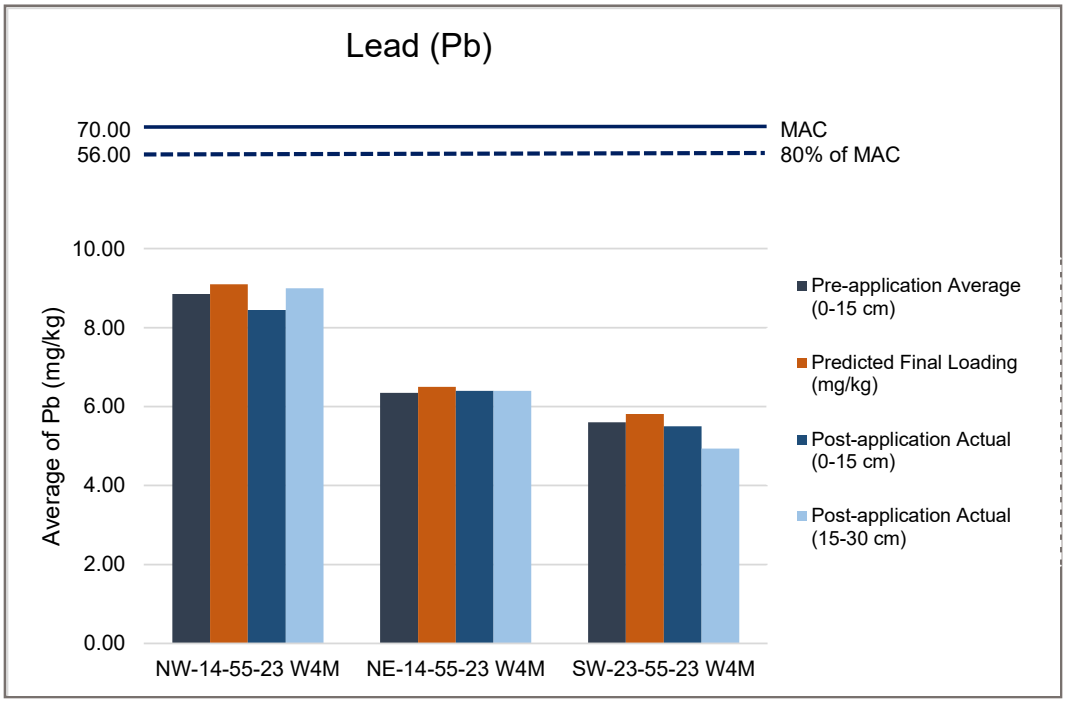


Figure D2.Pb: The predicted loading of lead was greater than the post-application averages. However, in NE-14 and SE-14, the post-application concentration in 0-15 cm was marginally greater than the pre-application concentration. All reported values are well below the MAC and 80% of MAC thresholds.

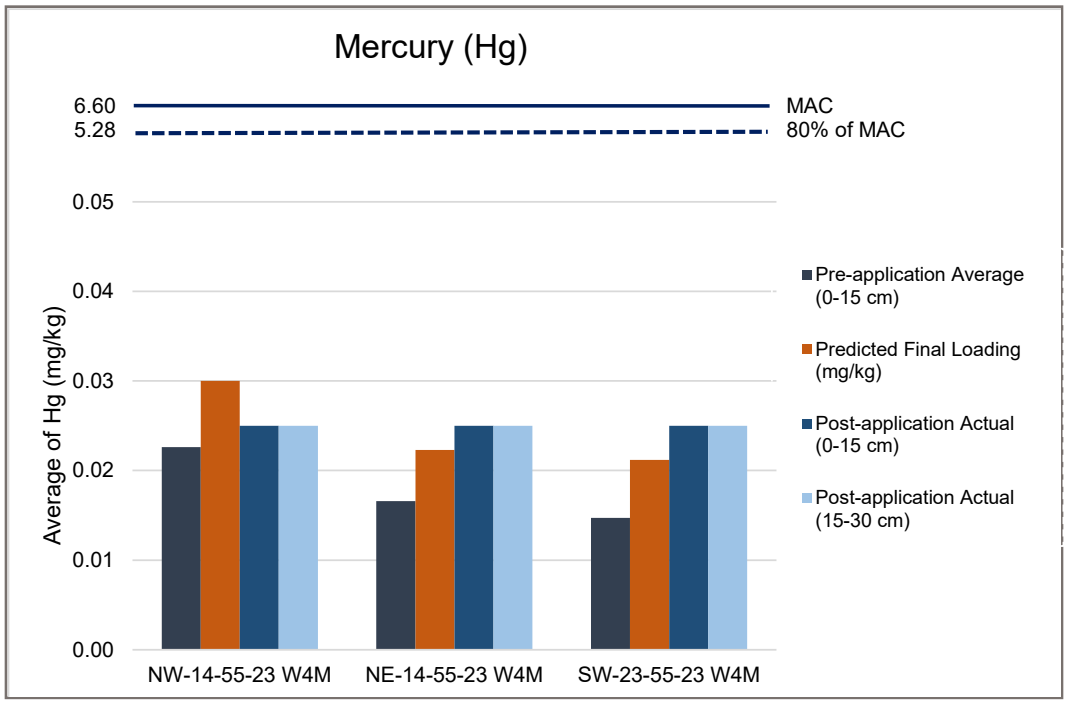


Figure D2.Hg[3]: All values reported for mercury well below the MAC and 80% of MAC thresholds.

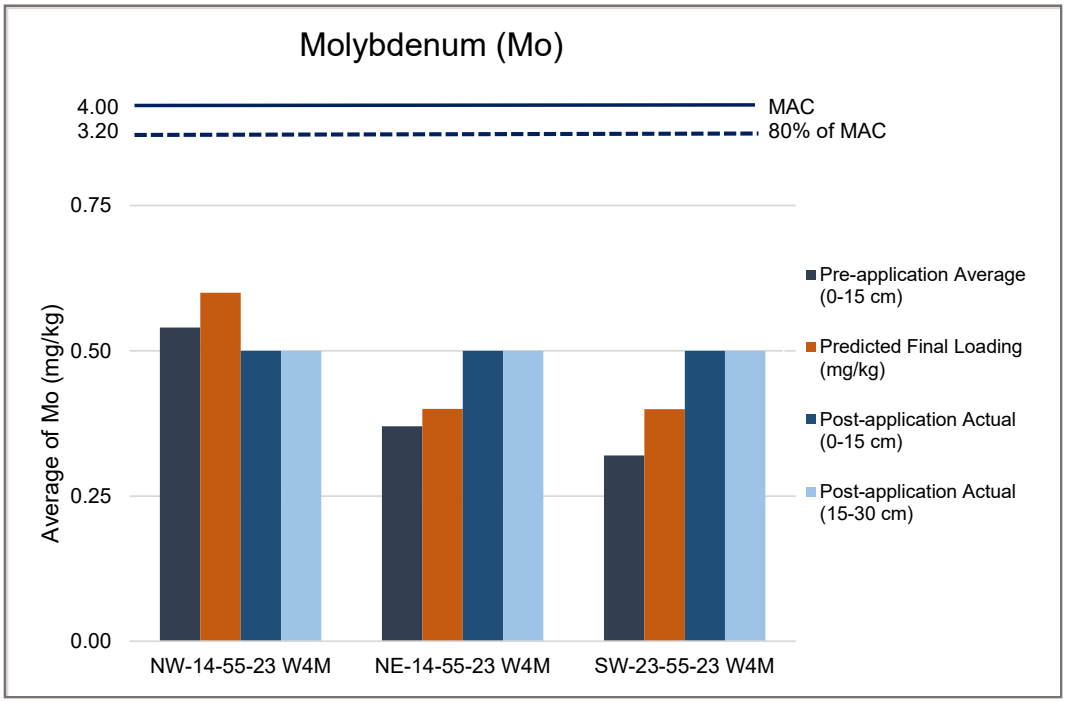


Figure D2.Mo[3]: All values reported for mercury well below the MAC and 80% of MAC thresholds.

[3] Post application mercury and molybdenum concentrations were reported as below laboratory detection limit. Concentrations shown represent one half of the detection limit.

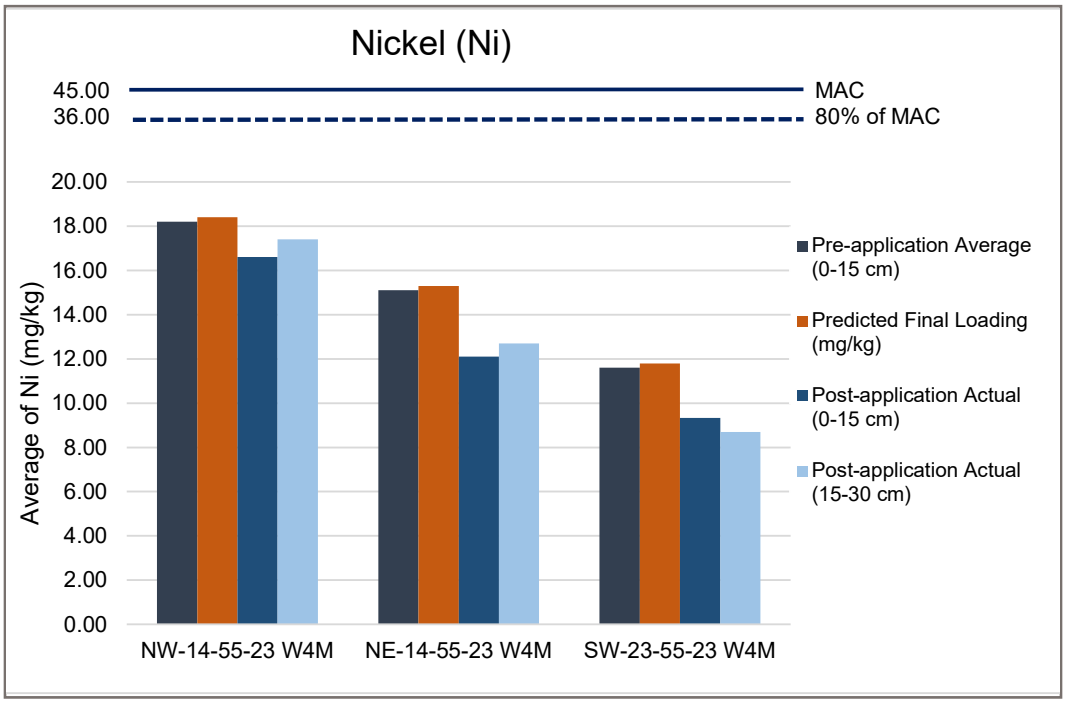


Figure D2.Ni: In all fields the 0-15 cm concentrations decreased after the biosolids application. Although, NW-14 and NE-14 post-application concentrations in 15-30 cm were greater then then the 0-15 cm values, they are below the predicted loading concentration, which is well below the MAC and 80% of MAC thresholds.

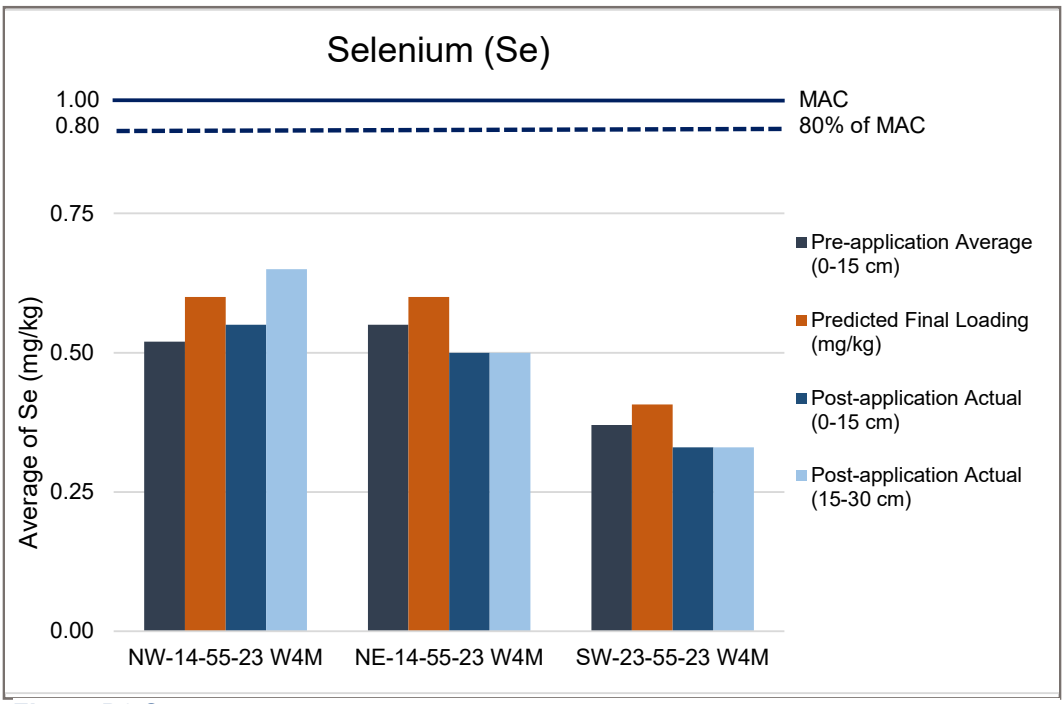


Figure D2.Se: In all fields, the post-application concentrations of selenium were less then the predicted loading concentration, except for NW-14 15-30 cm. All reported values are well below the MAC and 80% of MAC thresholds.

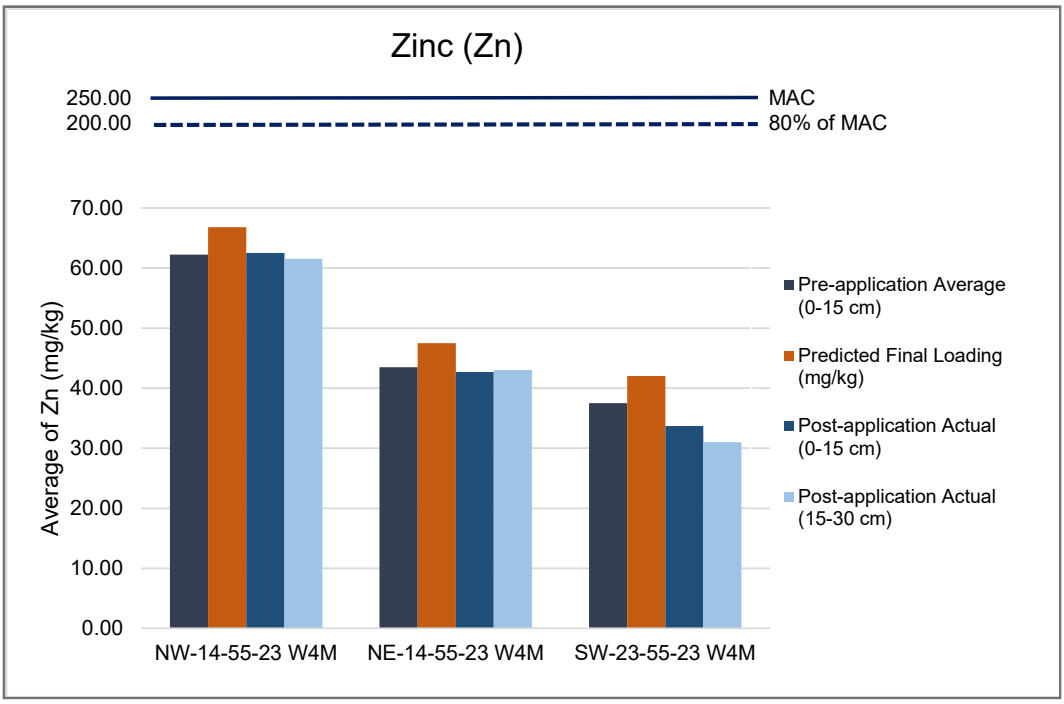


Figure D2.Zn: In all fields, the post-application concentrations of zinc are equal to or marginally less then the pre-application concentration, and all of which are well below the MAC and 80% of MAC thresholds. The application of biosolids did not result in an increase of zinc in the field.

APPENDIX E

2024 LABORATORY CERTIFICATES OF ANALYSIS

Element
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Report Transmission Cover Page

Bill To: Tetra Tech EBA Inc
14940 - 123 Avenue
Edmonton, AB, Canada
T5V 1B4
Attn: Accounts Payable
Sampled By: ALEX COPAN
Company: TETRA TECH CANADA INC.

Project ID: ENW.BIOS03089-02
Project Name: OLSTAD_EPCOR BIOSOLIDS
Project Location:
LSD: NE-14-55-23-W4
P.O.:
Proj. Acct. code:

Lot ID: **1773456**
Control Number:
Date Received: Oct 31, 2024
Date Reported: Nov 6, 2024
Report Number: 3071279
Report Type: Final Report

Contact	Company	Address
Accounts Payable	**Tetra Tech EBA Inc**	14940 - 123 Avenue Edmonton, AB T5V 1B4 Phone: (780) 451-2121 Fax: (780) 454-5688 Email: EBA.accounts.Payable@tetratech.com

Delivery	Format	Deliverables
Email - Merge	PDF	COC / Invoice

Contact	Company	Address
Edmonton Data Management	**Tetra Tech EBA Inc**	100, 140 Quarry Park Blvd SE Calgary, AB T2C 3G3 Phone: (403) 203-3355 Fax: Email: eba.labdata@tetratech.com,ets.svc.eba_esdat@tetratech.com

Delivery	Format	Deliverables
Email	PDF	COA / COC
Email	PDF	COC / Test Report
Email	Standard Crosstab With Tabs	Test Report
Email	Standard Reverse Crosstab With Tabs	Test Report
Email - Zip	EBA ESDAT Chemistry File	Test Report
Email - Zip	EBA ESDAT Sample File	Test Report
Email - Zip	Generic ESDAT Header	Test Report

Contact	Company	Address
Mark Fawcett	**Tetra Tech EBA Inc**	14940 - 123 Avenue Edmonton, AB T5V 1B4 Phone: (780) 451-2130 Fax: (780) 454-5688 Email: mark.fawcett@tetratech.com

Delivery	Format	Deliverables
Email	AB Tier 1 Custom Excel	Test Report
Email	PDF	COA / COC
Email	PDF	COC / Test Report
Email	Standard Crosstab With Tabs	Test Report
Email	Standard Reverse Crosstab With Tabs	Test Report
Email - Merge	PDF	COA / COC
Email - Zip	EBA ESDAT Chemistry File	Test Report
Email - Zip	EBA ESDAT Sample File	Test Report
Email - Zip	Generic ESDAT Header	Test Report

Notes To Clients:

- All wet soil samples received in a soil bag will be disposed 30 days after receipt on 2024-11-30.

Element
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W: www.element.com

Analytical Report

Bill To: Tetra Tech EBA Inc
14940 - 123 Avenue
Edmonton, AB, Canada
T5V 1B4
Attn: Accounts Payable
Sampled By: ALEX COPAN
Company: TETRA TECH CANADA INC.

Project ID: ENW.BIOS03089-02
Project Name: OLSTAD_EPCOR BIOSOLIDS
Project Location:
LSD: NE-14-55-23-W4
P.O.:
Proj. Acct. code:

Lot ID: **1773456**
Control Number:
Date Received: Oct 31, 2024
Date Reported: Nov 6, 2024
Report Number: 3071279
Report Type: Final Report

Reference Number	1773456-1	1773456-2	1773456-3
Sample Date	Oct 31, 2024	Oct 31, 2024	Oct 31, 2024
Sample Time	NA	NA	NA
Sample Location			
Sample Description	NE-14-02-0-15	NE-14-02-15-30	NE-14-03-0-15
Matrix	Soil	Soil	Soil

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Hot Water Soluble						
Boron	Hot Water Soluble	mg/kg	0.52	0.48	1.3	0.2
Metals Strong Acid Digestion						
Antimony	Strong Acid Extractable	mg/kg	<0.2	<0.2	<0.2	0.2
Arsenic	Strong Acid Extractable	mg/kg	2.6	2.9	3.8	0.2
Barium	Strong Acid Extractable	mg/kg	83	81	103	1
Beryllium	Strong Acid Extractable	mg/kg	0.2	0.2	0.4	0.1
Cadmium	Strong Acid Extractable	mg/kg	0.14	0.09	0.16	0.01
Chromium	Strong Acid Extractable	mg/kg	6.7	6.2	9.4	0.5
Cobalt	Strong Acid Extractable	mg/kg	3.4	3.8	4.5	0.1
Copper	Strong Acid Extractable	mg/kg	7	5	10	1
Lead	Strong Acid Extractable	mg/kg	4.8	4.4	5.7	0.1
Mercury	Strong Acid Extractable	mg/kg	<0.05	<0.05	<0.05	0.05
Molybdenum	Strong Acid Extractable	mg/kg	<1.0	<1.0	<1.0	1.0
Nickel	Strong Acid Extractable	mg/kg	8.0	7.8	11.4	0.5
Selenium	Strong Acid Extractable	mg/kg	<0.3	<0.3	0.4	0.3
Silver	Strong Acid Extractable	mg/kg	0.1	<0.1	<0.1	0.1
Thallium	Strong Acid Extractable	mg/kg	<0.05	0.05	0.07	0.05
Tin	Strong Acid Extractable	mg/kg	<1.0	<1.0	<1.0	1.0
Uranium	Strong Acid Extractable	mg/kg	<0.5	<0.5	1.2	0.5
Vanadium	Strong Acid Extractable	mg/kg	10.1	10.3	15.9	0.1
Zinc	Strong Acid Extractable	mg/kg	30	30	41	1

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Analytical Report

Bill To: Tetra Tech EBA Inc
14940 - 123 Avenue
Edmonton, AB, Canada
T5V 1B4
Attn: Accounts Payable
Sampled By: ALEX COPAN
Company: TETRA TECH CANADA INC.

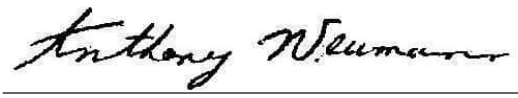
Project ID: ENW.BIOS03089-02
Project Name: OLSTAD_EPCOR BIOSOLIDS
Project Location:
LSD: NE-14-55-23-W4
P.O.:
Proj. Acct. code:

Lot ID: **1773456**
Control Number:
Date Received: Oct 31, 2024
Date Reported: Nov 6, 2024
Report Number: 3071279
Report Type: Final Report

Reference Number	1773456-4	1773456-5	1773456-6
Sample Date	Oct 31, 2024	Oct 31, 2024	Oct 31, 2024
Sample Time	NA	NA	NA
Sample Location			
Sample Description	NE-14-03-15-30	NE-14-04-0-15	NE-14-04-15-30
Matrix	Soil	Soil	Soil

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Hot Water Soluble						
Boron	Hot Water Soluble	mg/kg	1.4	1.6	1.7	0.2
Metals Strong Acid Digestion						
Antimony	Strong Acid Extractable	mg/kg	<0.2	<0.2	<0.2	0.2
Arsenic	Strong Acid Extractable	mg/kg	4.9	5.4	5.1	0.2
Barium	Strong Acid Extractable	mg/kg	126	166	169	1
Beryllium	Strong Acid Extractable	mg/kg	0.5	0.5	0.6	0.1
Cadmium	Strong Acid Extractable	mg/kg	0.13	0.22	0.18	0.01
Chromium	Strong Acid Extractable	mg/kg	11.5	13.6	13.1	0.5
Cobalt	Strong Acid Extractable	mg/kg	6.3	6.5	6.8	0.1
Copper	Strong Acid Extractable	mg/kg	10	16	14	1
Lead	Strong Acid Extractable	mg/kg	6.6	8.6	8.2	0.1
Mercury	Strong Acid Extractable	mg/kg	<0.05	<0.05	<0.05	0.05
Molybdenum	Strong Acid Extractable	mg/kg	<1.0	<1.0	<1.0	1.0
Nickel	Strong Acid Extractable	mg/kg	13.6	17.0	16.8	0.5
Selenium	Strong Acid Extractable	mg/kg	0.5	0.9	0.7	0.3
Silver	Strong Acid Extractable	mg/kg	0.1	0.1	0.1	0.1
Thallium	Strong Acid Extractable	mg/kg	0.08	0.09	0.10	0.05
Tin	Strong Acid Extractable	mg/kg	<1.0	<1.0	<1.0	1.0
Uranium	Strong Acid Extractable	mg/kg	1.2	2.2	2.3	0.5
Vanadium	Strong Acid Extractable	mg/kg	19.8	23.3	22.9	0.1
Zinc	Strong Acid Extractable	mg/kg	44	57	55	1

Approved by:



Anthony Neumann, MSc
General Manager

Data have been validated by Analytical Quality Control and Element's Integrated Data Validation System (IDVS).
Generation and distribution of the report, and approval by the digitized signature above, are performed through a secure and controlled automatic process.

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Quality Control

Bill To: Tetra Tech EBA Inc
14940 - 123 Avenue
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Attn: Accounts Payable
Sampled By: ALEX COPAN
Company: TETRA TECH CANADA INC.

Project ID: ENW.BIOS03089-02
Project Name: OLSTAD_EPCOR BIOSOLIDS
Project Location:
LSD: NE-14-55-23-W4
P.O.:
Proj. Acct. code:

Lot ID: **1773456**
Control Number:
Date Received: Oct 31, 2024
Date Reported: Nov 6, 2024
Report Number: 3071279
Report Type: Final Report

Sample Type	Sample ID	Analysis Date	Analyte	Units	Result	RDL	SPK Value	Ref Value	%REC	RPD	Limits	Passed
Hot Water Soluble												
Batch: 2516083 - Boron in general soil												
Control Sample	6646103	Oct 31, 2024	Boron	mg/kg	0.43						0.37 - 0.65	yes
Control Sample	6646104	Oct 31, 2024	Boron	mg/kg	<0.1						-0.2 - 0.2	yes
Control Sample	6646109	Oct 31, 2024	Boron	mg/kg	0.10						0.09 - 0.11	yes
Replicate	6646105	Oct 31, 2024	Boron	mg/kg	1.4			1.4		2.57	10 % or 0.1 Abs	yes
Metals Strong Acid Digestion												
Batch: 2516170 - Metals ICP (Hot Block) in soil												
Blank	6646372	Nov 01, 2024	Antimony	µg/L	<0.2	0.2	0.0				0.2	yes
Blank	6646372	Nov 01, 2024	Arsenic	µg/L	<0.2	0.2	0.0				0.2	yes
Blank	6646372	Nov 01, 2024	Barium	µg/L	<1	1	0.0				1	yes
Blank	6646372	Nov 01, 2024	Beryllium	µg/L	<0.1	0.1	0.0				0.1	yes
Blank	6646372	Nov 01, 2024	Cadmium	µg/L	<0.01	0.01	0.0				0.01	yes
Blank	6646372	Nov 01, 2024	Chromium	µg/L	<0.5	0.5	0.0				0.5	yes
Blank	6646372	Nov 01, 2024	Cobalt	µg/L	<0.1	0.1	0.0				0.1	yes
Blank	6646372	Nov 01, 2024	Copper	µg/L	<1	1	0.0				1	yes
Blank	6646372	Nov 01, 2024	Lead	µg/L	<0.1	0.1	0.0				0.1	yes
Blank	6646372	Nov 01, 2024	Mercury	µg/L	<0.05	0.05					0.05	yes
Blank	6646372	Nov 01, 2024	Molybdenum	µg/L	<1.0	1.0	0.0				1	yes
Blank	6646372	Nov 01, 2024	Nickel	µg/L	<0.5	0.5	0.0				0.5	yes
Blank	6646372	Nov 01, 2024	Selenium	µg/L	<0.3	0.3	0.0				0.3	yes
Blank	6646372	Nov 01, 2024	Silver	µg/L	<0.1	0.1	0.0				0.1	yes
Blank	6646372	Nov 01, 2024	Thallium	µg/L	<0.05	0.05					1	yes
Blank	6646372	Nov 01, 2024	Tin	µg/L	<1.0	1.0					0.5	yes
Blank	6646372	Nov 01, 2024	Uranium	µg/L	<0.5	0.5					0.5	yes
Blank	6646372	Nov 01, 2024	Vanadium	µg/L	<0.1	0.1					0.1	yes
Blank	6646372	Nov 01, 2024	Zinc	µg/L	<1	1					1	yes
Control Sample	6646371	Nov 01, 2024	Antimony	mg/kg	40.5						36.1 - 43.9	yes
Control Sample	6646371	Nov 01, 2024	Arsenic	mg/kg	39.5						36.3 - 43.9	yes

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Quality Control

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Project ID: ENW.BIOS03089-02
Project Name: OLSTAD_EPCOR BIOSOLIDS
Project Location:
LSD: NE-14-55-23-W4
P.O.:
Proj. Acct. code:

Lot ID: **1773456**
Control Number:
Date Received: Oct 31, 2024
Date Reported: Nov 6, 2024
Report Number: 3071279
Report Type: Final Report

Sample Type	Sample ID	Analysis Date	Analyte	Units	Result	RDL	SPK Value	Ref Value	%REC	RPD	Limits	Passed
Metals Strong Acid Digestion - Continued												
Control Sample	6646371	Nov 01, 2024	Barium	mg/kg	202						181 - 220	yes
Control Sample	6646371	Nov 01, 2024	Beryllium	mg/kg	20.6						17.4 - 22.2	yes
Control Sample	6646371	Nov 01, 2024	Cadmium	mg/kg	2.05						1.88 - 2.28	yes
Control Sample	6646371	Nov 01, 2024	Chromium	mg/kg	99.0						93.2 - 107	yes
Control Sample	6646371	Nov 01, 2024	Cobalt	mg/kg	19.5						18.3 - 21.5	yes
Control Sample	6646371	Nov 01, 2024	Copper	mg/kg	196						184 - 214	yes
Control Sample	6646371	Nov 01, 2024	Lead	mg/kg	19.6						18.3 - 21.3	yes
Control Sample	6646371	Nov 01, 2024	Mercury	mg/kg	3.03						2.64 - 3.36	yes
Control Sample	6646371	Nov 01, 2024	Molybdenum	mg/kg	198						182.8 - 223.6	yes
Control Sample	6646371	Nov 01, 2024	Nickel	mg/kg	102						92.4 - 106.2	yes
Control Sample	6646371	Nov 01, 2024	Selenium	mg/kg	39.3						35.2 - 44.2	yes
Control Sample	6646371	Nov 01, 2024	Silver	mg/kg	20.0						18 - 22	yes
Control Sample	6646371	Nov 01, 2024	Thallium	mg/kg	9.59						8.87 - 11.03	yes
Control Sample	6646371	Nov 01, 2024	Tin	mg/kg	206						183.1 - 223.3	yes
Control Sample	6646371	Nov 01, 2024	Uranium	mg/kg	104						86 - 116	yes
Control Sample	6646371	Nov 01, 2024	Vanadium	mg/kg	19.8						18 - 21.6	yes
Control Sample	6646371	Nov 01, 2024	Zinc	mg/kg	197						186 - 212	yes
Control Sample	6646373	Nov 01, 2024	Antimony	mg/kg	1.3						0.7 - 1.5	yes
Control Sample	6646373	Nov 01, 2024	Arsenic	mg/kg	11.3						9 - 15	yes
Control Sample	6646373	Nov 01, 2024	Barium	mg/kg	106						86 - 143	yes
Control Sample	6646373	Nov 01, 2024	Cadmium	mg/kg	0.42						0.3 - 0.49	yes
Control Sample	6646373	Nov 01, 2024	Chromium	mg/kg	5.1						4.2 - 7	yes
Control Sample	6646373	Nov 01, 2024	Cobalt	mg/kg	1.7						1.5 - 2.3	yes
Control Sample	6646373	Nov 01, 2024	Copper	mg/kg	23						18 - 29	yes
Control Sample	6646373	Nov 01, 2024	Lead	mg/kg	72.6						56.7 - 94.5	yes
Control Sample	6646373	Nov 01, 2024	Mercury	mg/kg	<0.05						0.04 - 0.06	yes
Control Sample	6646373	Nov 01, 2024	Molybdenum	mg/kg	3.6						2.9 - 4.7	yes
Control Sample	6646373	Nov 01, 2024	Nickel	mg/kg	5.9						4.7 - 7.8	yes
Control Sample	6646373	Nov 01, 2024	Selenium	mg/kg	<0.3						0 - 0.6	yes
Control Sample	6646373	Nov 01, 2024	Silver	mg/kg	0.2						0.1 - 0.2	yes

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Attn: Accounts Payable
Sampled By: ALEX COPAN
Company: TETRA TECH CANADA INC.

Project ID: ENW.BIOS03089-02
Project Name: OLSTAD_EPCOR BIOSOLIDS
Project Location:
LSD: NE-14-55-23-W4
P.O.:
Proj. Acct. code:

Lot ID: **1773456**
Control Number:
Date Received: Oct 31, 2024
Date Reported: Nov 6, 2024
Report Number: 3071279
Report Type: Final Report

Sample Type	Sample ID	Analysis Date	Analyte	Units	Result	RDL	SPK Value	Ref Value	%REC	RPD	Limits	Passed
Metals Strong Acid Digestion - Continued												
Control Sample	6646373	Nov 01, 2024	Thallium	mg/kg	0.27						0.21 - 0.36	yes
Control Sample	6646373	Nov 01, 2024	Tin	mg/kg	22.8						17 - 28.4	yes
Control Sample	6646373	Nov 01, 2024	Uranium	mg/kg	11.0						8.8 - 14.8	yes
Control Sample	6646373	Nov 01, 2024	Vanadium	mg/kg	2.8						2.3 - 3.8	yes
Control Sample	6646373	Nov 01, 2024	Zinc	mg/kg	132						108 - 177	yes
Control Sample	6646379	Nov 01, 2024	Beryllium	mg/kg	1.6						1.1 - 1.7	yes
Replicate	6646375	Nov 01, 2024	Antimony	mg/kg	0.5			0.4		2.57	30 % or 0.44 Abs	yes
Replicate	6646375	Nov 01, 2024	Arsenic	mg/kg	5.4			5.2		5.06	30 % or 0.44 Abs	yes
Replicate	6646375	Nov 01, 2024	Barium	mg/kg	127			120		5.71	30 % or 2.2 Abs	yes
Replicate	6646375	Nov 01, 2024	Beryllium	mg/kg	0.4			0.4		0.13	30 % or 0.22 Abs	yes
Replicate	6646375	Nov 01, 2024	Cadmium	mg/kg	0.18			0.16		14.05	30 % or 0.022 Abs	yes
Replicate	6646375	Nov 01, 2024	Chromium	mg/kg	7.9			8.1		1.61	30 % or 1.1 Abs	yes
Replicate	6646375	Nov 01, 2024	Cobalt	mg/kg	5.6			5.3		4.19	30 % or 0.22 Abs	yes
Replicate	6646375	Nov 01, 2024	Copper	mg/kg	16			16		2.11	30 % or 2.2 Abs	yes
Replicate	6646375	Nov 01, 2024	Lead	mg/kg	18.2			18.3		0.32	30 % or 0.22 Abs	yes
Replicate	6646375	Nov 01, 2024	Mercury	mg/kg	0.07			0.09		18.89	30 % or 0.05 Abs	yes
Replicate	6646375	Nov 01, 2024	Molybdenum	mg/kg	<1.0			<1.0		0.21	30 % or 2.2 Abs	yes
Replicate	6646375	Nov 01, 2024	Nickel	mg/kg	13.4			13.1		2.15	30 % or 1.1 Abs	yes
Replicate	6646375	Nov 01, 2024	Selenium	mg/kg	<0.3			<0.3		0.21	30 % or 0.66 Abs	yes
Replicate	6646375	Nov 01, 2024	Silver	mg/kg	<0.1			<0.1		0.21	30 % or 0.22 Abs	yes
Replicate	6646375	Nov 01, 2024	Thallium	mg/kg	0.10			0.10		2.13	30 % or 0.11 Abs	yes
Replicate	6646375	Nov 01, 2024	Tin	mg/kg	<1.0			<1.0		0.21	30 % or 2.2 Abs	yes
Replicate	6646375	Nov 01, 2024	Uranium	mg/kg	0.5			0.5		0.94	30 % or 1.1 Abs	yes
Replicate	6646375	Nov 01, 2024	Vanadium	mg/kg	14.3			13.9		2.76	30 % or 0.22 Abs	yes
Replicate	6646375	Nov 01, 2024	Zinc	mg/kg	43			41		5.48	30 % or 2.2 Abs	yes

SPK Value = Spike Value
Ref Value = Reference Value
%REC = Percent Recovery
RPD = Relative Percent Difference
Abs = Absolute Difference

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Methodology and Notes

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Company: TETRA TECH CANADA INC.

Project ID: ENW.BIOS03089-02
Project Name: OLSTAD_EPCOR BIOSOLIDS
Project Location:
LSD: NE-14-55-23-W4
P.O.:
Proj. Acct. code:

Lot ID: **1773456**
Control Number:
Date Received: Oct 31, 2024
Date Reported: Nov 6, 2024
Report Number: 3071279
Report Type: Final Report

Method of Analysis

Method Name	Reference		Method	Date Analysis Started	Location
Boron in general soil	BCELM	*	Hot Water Soluble Boron, HWS-Boron	Oct 31, 2024	Element Edmonton - Roper Road
Metals ICP (Hot Block) in soil	EPA	*	Sample Preparation Procedure for Spectrochemical Determination of Total Recoverable Elements, October 1999, 200.2	Nov 01, 2024	Element Edmonton - Roper Road
Metals ICP (Hot Block) in soil	US EPA	*	Determination of Trace Elements in Waters and Wastes by ICP-MS, 200.8	Nov 01, 2024	Element Edmonton - Roper Road

** Reference Method Modified*

References

BCELM	B.C. Environmental Laboratory Manual
EPA	Environmental Protection Agency Test Methods - US
US EPA	US Environmental Protection Agency Test Methods

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Report Transmission Cover Page

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Project Name: OLSTAD_EPCOR BIOSOLIDS
Project Location:
LSD: NW-14-55-23-W4
P.O.:
Proj. Acct. code:

Lot ID: **1773457**
Control Number:
Date Received: Oct 31, 2024
Date Reported: Nov 6, 2024
Report Number: 3071281
Report Type: Final Report

Contact	Company	Address
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Delivery	Format	Deliverables
Email - Merge	PDF	COC / Invoice

Contact	Company	Address
Edmonton Data Management	**Tetra Tech EBA Inc**	100, 140 Quarry Park Blvd SE Calgary, AB T2C 3G3 Phone: (403) 203-3355 Fax: Email: eba.labdata@tetratech.com,ets.svc.eba_esdat@tetratech.com

Delivery	Format	Deliverables
Email	PDF	COA / COC
Email	PDF	COC / Test Report
Email	Standard Crosstab With Tabs	Test Report
Email	Standard Reverse Crosstab With Tabs	Test Report
Email - Zip	EBA ESDAT Chemistry File	Test Report
Email - Zip	EBA ESDAT Sample File	Test Report
Email - Zip	Generic ESDAT Header	Test Report

Contact	Company	Address
Mark Fawcett	**Tetra Tech EBA Inc**	14940 - 123 Avenue Edmonton, AB T5V 1B4 Phone: (780) 451-2130 Fax: (780) 454-5688 Email: mark.fawcett@tetratech.com

Delivery	Format	Deliverables
Email	AB Tier 1 Custom Excel	Test Report
Email	PDF	COA / COC
Email	PDF	COC / Test Report
Email	Standard Crosstab With Tabs	Test Report
Email	Standard Reverse Crosstab With Tabs	Test Report
Email - Merge	PDF	COA / COC
Email - Zip	EBA ESDAT Chemistry File	Test Report
Email - Zip	EBA ESDAT Sample File	Test Report
Email - Zip	Generic ESDAT Header	Test Report

Notes To Clients:

- All wet soil samples received in a soil bag will be disposed 30 days after receipt on 2024-11-30.

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Analytical Report

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Sampled By: ALEX COPAN
Company: TETRA TECH CANADA INC.

Project ID: ENW.BIOS03089-02
Project Name: OLSTAD_EPCOR BIOSOLIDS
Project Location:
LSD: NW-14-55-23-W4
P.O.:
Proj. Acct. code:

Lot ID: **1773457**
Control Number:
Date Received: Oct 31, 2024
Date Reported: Nov 6, 2024
Report Number: 3071281
Report Type: Final Report

Reference Number	1773457-1	1773457-2	1773457-3
Sample Date	Oct 31, 2024	Oct 31, 2024	Oct 31, 2024
Sample Time	NA	NA	NA
Sample Location			
Sample Description	NW-14-01-0-15	NW-14-01-15-30	NW-14-02-0-15
Matrix	Soil	Soil	Soil

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Hot Water Soluble						
Boron	Hot Water Soluble	mg/kg	2.16	1.1	1.7	0.2
Metals Strong Acid Digestion						
Antimony	Strong Acid Extractable	mg/kg	<0.2	<0.2	<0.2	0.2
Arsenic	Strong Acid Extractable	mg/kg	5.1	5.3	4.8	0.2
Barium	Strong Acid Extractable	mg/kg	158	160	155	1
Beryllium	Strong Acid Extractable	mg/kg	0.6	0.6	0.6	0.1
Cadmium	Strong Acid Extractable	mg/kg	0.26	0.25	0.22	0.01
Chromium	Strong Acid Extractable	mg/kg	14.2	14.6	14.0	0.5
Cobalt	Strong Acid Extractable	mg/kg	6.6	7.3	6.4	0.1
Copper	Strong Acid Extractable	mg/kg	16	16	16	1
Lead	Strong Acid Extractable	mg/kg	8.2	9.6	8.7	0.1
Mercury	Strong Acid Extractable	mg/kg	<0.05	<0.05	<0.05	0.05
Molybdenum	Strong Acid Extractable	mg/kg	<1.0	<1.0	<1.0	1.0
Nickel	Strong Acid Extractable	mg/kg	16.7	17.0	16.5	0.5
Selenium	Strong Acid Extractable	mg/kg	0.7	0.6	0.6	0.3
Silver	Strong Acid Extractable	mg/kg	0.2	0.2	0.1	0.1
Thallium	Strong Acid Extractable	mg/kg	0.10	0.11	0.10	0.05
Tin	Strong Acid Extractable	mg/kg	<1.0	<1.0	<1.0	1.0
Uranium	Strong Acid Extractable	mg/kg	2.3	1.9	2.2	0.5
Vanadium	Strong Acid Extractable	mg/kg	23.9	25.4	23.9	0.1
Zinc	Strong Acid Extractable	mg/kg	63	64	62	1

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Analytical Report

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Sampled By: ALEX COPAN
Company: TETRA TECH CANADA INC.

Project ID: ENW.BIOS03089-02
Project Name: OLSTAD_EPCOR BIOSOLIDS
Project Location:
LSD: NW-14-55-23-W4
P.O.:
Proj. Acct. code:

Lot ID: **1773457**
Control Number:
Date Received: Oct 31, 2024
Date Reported: Nov 6, 2024
Report Number: 3071281
Report Type: Final Report

Reference Number	1773457-4
Sample Date	Oct 31, 2024
Sample Time	NA
Sample Location	
Sample Description	NW-14-02-15-30
Matrix	Soil

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Hot Water Soluble						
Boron	Hot Water Soluble	mg/kg	2.17			0.2
Metals Strong Acid Digestion						
Antimony	Strong Acid Extractable	mg/kg	<0.2			0.2
Arsenic	Strong Acid Extractable	mg/kg	5.2			0.2
Barium	Strong Acid Extractable	mg/kg	151			1
Beryllium	Strong Acid Extractable	mg/kg	0.6			0.1
Cadmium	Strong Acid Extractable	mg/kg	0.20			0.01
Chromium	Strong Acid Extractable	mg/kg	16.9			0.5
Cobalt	Strong Acid Extractable	mg/kg	6.3			0.1
Copper	Strong Acid Extractable	mg/kg	15			1
Lead	Strong Acid Extractable	mg/kg	8.4			0.1
Mercury	Strong Acid Extractable	mg/kg	<0.05			0.05
Molybdenum	Strong Acid Extractable	mg/kg	<1.0			1.0
Nickel	Strong Acid Extractable	mg/kg	17.8			0.5
Selenium	Strong Acid Extractable	mg/kg	0.5			0.3
Silver	Strong Acid Extractable	mg/kg	0.2			0.1
Thallium	Strong Acid Extractable	mg/kg	0.11			0.05
Tin	Strong Acid Extractable	mg/kg	<1.0			1.0
Uranium	Strong Acid Extractable	mg/kg	1.9			0.5
Vanadium	Strong Acid Extractable	mg/kg	24.7			0.1
Zinc	Strong Acid Extractable	mg/kg	59			1

Approved by:

Anthony Neumann, MSc
General Manager

Data have been validated by Analytical Quality Control and Element's Integrated Data Validation System (IDVS).
Generation and distribution of the report, and approval by the digitized signature above, are performed through a secure and controlled automatic process.

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Project ID: ENW.BIOS03089-02
Project Name: OLSTAD_EPCOR BIOSOLIDS
Project Location:
LSD: NW-14-55-23-W4
P.O.:
Proj. Acct. code:

Lot ID: **1773457**
Control Number:
Date Received: Oct 31, 2024
Date Reported: Nov 6, 2024
Report Number: 3071281
Report Type: Final Report

Sample Type	Sample ID	Analysis Date	Analyte	Units	Result	RDL	SPK Value	Ref Value	%REC	RPD	Limits	Passed
Hot Water Soluble												
Batch: 2516083 - Boron in general soil												
Control Sample	6646103	Oct 31, 2024	Boron	mg/kg	0.43						0.37 - 0.65	yes
Control Sample	6646104	Oct 31, 2024	Boron	mg/kg	<0.1						-0.2 - 0.2	yes
Control Sample	6646109	Oct 31, 2024	Boron	mg/kg	0.10						0.09 - 0.11	yes
Replicate	6646105	Oct 31, 2024	Boron	mg/kg	1.4			1.4		2.57	10 % or 0.1 Abs	yes
Metals Strong Acid Digestion												
Batch: 2516170 - Metals ICP (Hot Block) in soil												
Blank	6646372	Nov 01, 2024	Antimony	µg/L	<0.2	0.2	0.0				0.2	yes
Blank	6646372	Nov 01, 2024	Arsenic	µg/L	<0.2	0.2	0.0				0.2	yes
Blank	6646372	Nov 01, 2024	Barium	µg/L	<1	1	0.0				1	yes
Blank	6646372	Nov 01, 2024	Beryllium	µg/L	<0.1	0.1	0.0				0.1	yes
Blank	6646372	Nov 01, 2024	Cadmium	µg/L	<0.01	0.01	0.0				0.01	yes
Blank	6646372	Nov 01, 2024	Chromium	µg/L	<0.5	0.5	0.0				0.5	yes
Blank	6646372	Nov 01, 2024	Cobalt	µg/L	<0.1	0.1	0.0				0.1	yes
Blank	6646372	Nov 01, 2024	Copper	µg/L	<1	1	0.0				1	yes
Blank	6646372	Nov 01, 2024	Lead	µg/L	<0.1	0.1	0.0				0.1	yes
Blank	6646372	Nov 01, 2024	Mercury	µg/L	<0.05	0.05					0.05	yes
Blank	6646372	Nov 01, 2024	Molybdenum	µg/L	<1.0	1.0	0.0				1	yes
Blank	6646372	Nov 01, 2024	Nickel	µg/L	<0.5	0.5	0.0				0.5	yes
Blank	6646372	Nov 01, 2024	Selenium	µg/L	<0.3	0.3	0.0				0.3	yes
Blank	6646372	Nov 01, 2024	Silver	µg/L	<0.1	0.1	0.0				0.1	yes
Blank	6646372	Nov 01, 2024	Thallium	µg/L	<0.05	0.05					1	yes
Blank	6646372	Nov 01, 2024	Tin	µg/L	<1.0	1.0					0.5	yes
Blank	6646372	Nov 01, 2024	Uranium	µg/L	<0.5	0.5					0.5	yes
Blank	6646372	Nov 01, 2024	Vanadium	µg/L	<0.1	0.1					0.1	yes
Blank	6646372	Nov 01, 2024	Zinc	µg/L	<1	1					1	yes
Control Sample	6646371	Nov 01, 2024	Antimony	mg/kg	40.5						36.1 - 43.9	yes
Control Sample	6646371	Nov 01, 2024	Arsenic	mg/kg	39.5						36.3 - 43.9	yes

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Project ID: ENW.BIOS03089-02
Project Name: OLSTAD_EPCOR BIOSOLIDS
Project Location:
LSD: NW-14-55-23-W4
P.O.:
Proj. Acct. code:

Lot ID: **1773457**
Control Number:
Date Received: Oct 31, 2024
Date Reported: Nov 6, 2024
Report Number: 3071281
Report Type: Final Report

Sample Type	Sample ID	Analysis Date	Analyte	Units	Result	RDL	SPK Value	Ref Value	%REC	RPD	Limits	Passed
Metals Strong Acid Digestion - Continued												
Control Sample	6646371	Nov 01, 2024	Barium	mg/kg	202						181 - 220	yes
Control Sample	6646371	Nov 01, 2024	Beryllium	mg/kg	20.6						17.4 - 22.2	yes
Control Sample	6646371	Nov 01, 2024	Cadmium	mg/kg	2.05						1.88 - 2.28	yes
Control Sample	6646371	Nov 01, 2024	Chromium	mg/kg	99.0						93.2 - 107	yes
Control Sample	6646371	Nov 01, 2024	Cobalt	mg/kg	19.5						18.3 - 21.5	yes
Control Sample	6646371	Nov 01, 2024	Copper	mg/kg	196						184 - 214	yes
Control Sample	6646371	Nov 01, 2024	Lead	mg/kg	19.6						18.3 - 21.3	yes
Control Sample	6646371	Nov 01, 2024	Mercury	mg/kg	3.03						2.64 - 3.36	yes
Control Sample	6646371	Nov 01, 2024	Molybdenum	mg/kg	198						182.8 - 223.6	yes
Control Sample	6646371	Nov 01, 2024	Nickel	mg/kg	102						92.4 - 106.2	yes
Control Sample	6646371	Nov 01, 2024	Selenium	mg/kg	39.3						35.2 - 44.2	yes
Control Sample	6646371	Nov 01, 2024	Silver	mg/kg	20.0						18 - 22	yes
Control Sample	6646371	Nov 01, 2024	Thallium	mg/kg	9.59						8.87 - 11.03	yes
Control Sample	6646371	Nov 01, 2024	Tin	mg/kg	206						183.1 - 223.3	yes
Control Sample	6646371	Nov 01, 2024	Uranium	mg/kg	104						86 - 116	yes
Control Sample	6646371	Nov 01, 2024	Vanadium	mg/kg	19.8						18 - 21.6	yes
Control Sample	6646371	Nov 01, 2024	Zinc	mg/kg	197						186 - 212	yes
Control Sample	6646373	Nov 01, 2024	Antimony	mg/kg	1.3						0.7 - 1.5	yes
Control Sample	6646373	Nov 01, 2024	Arsenic	mg/kg	11.3						9 - 15	yes
Control Sample	6646373	Nov 01, 2024	Barium	mg/kg	106						86 - 143	yes
Control Sample	6646373	Nov 01, 2024	Cadmium	mg/kg	0.42						0.3 - 0.49	yes
Control Sample	6646373	Nov 01, 2024	Chromium	mg/kg	5.1						4.2 - 7	yes
Control Sample	6646373	Nov 01, 2024	Cobalt	mg/kg	1.7						1.5 - 2.3	yes
Control Sample	6646373	Nov 01, 2024	Copper	mg/kg	23						18 - 29	yes
Control Sample	6646373	Nov 01, 2024	Lead	mg/kg	72.6						56.7 - 94.5	yes
Control Sample	6646373	Nov 01, 2024	Mercury	mg/kg	<0.05						0.04 - 0.06	yes
Control Sample	6646373	Nov 01, 2024	Molybdenum	mg/kg	3.6						2.9 - 4.7	yes
Control Sample	6646373	Nov 01, 2024	Nickel	mg/kg	5.9						4.7 - 7.8	yes
Control Sample	6646373	Nov 01, 2024	Selenium	mg/kg	<0.3						0 - 0.6	yes
Control Sample	6646373	Nov 01, 2024	Silver	mg/kg	0.2						0.1 - 0.2	yes

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Company: TETRA TECH CANADA INC.

Project ID: ENW.BIOS03089-02
Project Name: OLSTAD_EPCOR BIOSOLIDS
Project Location:
LSD: NW-14-55-23-W4
P.O.:
Proj. Acct. code:

Lot ID: **1773457**
Control Number:
Date Received: Oct 31, 2024
Date Reported: Nov 6, 2024
Report Number: 3071281
Report Type: Final Report

Sample Type	Sample ID	Analysis Date	Analyte	Units	Result	RDL	SPK Value	Ref Value	%REC	RPD	Limits	Passed
Metals Strong Acid Digestion - Continued												
Control Sample	6646373	Nov 01, 2024	Thallium	mg/kg	0.27						0.21 - 0.36	yes
Control Sample	6646373	Nov 01, 2024	Tin	mg/kg	22.8						17 - 28.4	yes
Control Sample	6646373	Nov 01, 2024	Uranium	mg/kg	11.0						8.8 - 14.8	yes
Control Sample	6646373	Nov 01, 2024	Vanadium	mg/kg	2.8						2.3 - 3.8	yes
Control Sample	6646373	Nov 01, 2024	Zinc	mg/kg	132						108 - 177	yes
Control Sample	6646379	Nov 01, 2024	Beryllium	mg/kg	1.6						1.1 - 1.7	yes
Replicate	6646375	Nov 01, 2024	Antimony	mg/kg	0.5			0.4		2.57	30 % or 0.44 Abs	yes
Replicate	6646375	Nov 01, 2024	Arsenic	mg/kg	5.4			5.2		5.06	30 % or 0.44 Abs	yes
Replicate	6646375	Nov 01, 2024	Barium	mg/kg	127			120		5.71	30 % or 2.2 Abs	yes
Replicate	6646375	Nov 01, 2024	Beryllium	mg/kg	0.4			0.4		0.13	30 % or 0.22 Abs	yes
Replicate	6646375	Nov 01, 2024	Cadmium	mg/kg	0.18			0.16		14.05	30 % or 0.022 Abs	yes
Replicate	6646375	Nov 01, 2024	Chromium	mg/kg	7.9			8.1		1.61	30 % or 1.1 Abs	yes
Replicate	6646375	Nov 01, 2024	Cobalt	mg/kg	5.6			5.3		4.19	30 % or 0.22 Abs	yes
Replicate	6646375	Nov 01, 2024	Copper	mg/kg	16			16		2.11	30 % or 2.2 Abs	yes
Replicate	6646375	Nov 01, 2024	Lead	mg/kg	18.2			18.3		0.32	30 % or 0.22 Abs	yes
Replicate	6646375	Nov 01, 2024	Mercury	mg/kg	0.07			0.09		18.89	30 % or 0.05 Abs	yes
Replicate	6646375	Nov 01, 2024	Molybdenum	mg/kg	<1.0			<1.0		0.21	30 % or 2.2 Abs	yes
Replicate	6646375	Nov 01, 2024	Nickel	mg/kg	13.4			13.1		2.15	30 % or 1.1 Abs	yes
Replicate	6646375	Nov 01, 2024	Selenium	mg/kg	<0.3			<0.3		0.21	30 % or 0.66 Abs	yes
Replicate	6646375	Nov 01, 2024	Silver	mg/kg	<0.1			<0.1		0.21	30 % or 0.22 Abs	yes
Replicate	6646375	Nov 01, 2024	Thallium	mg/kg	0.10			0.10		2.13	30 % or 0.11 Abs	yes
Replicate	6646375	Nov 01, 2024	Tin	mg/kg	<1.0			<1.0		0.21	30 % or 2.2 Abs	yes
Replicate	6646375	Nov 01, 2024	Uranium	mg/kg	0.5			0.5		0.94	30 % or 1.1 Abs	yes
Replicate	6646375	Nov 01, 2024	Vanadium	mg/kg	14.3			13.9		2.76	30 % or 0.22 Abs	yes
Replicate	6646375	Nov 01, 2024	Zinc	mg/kg	43			41		5.48	30 % or 2.2 Abs	yes

SPK Value = Spike Value
Ref Value = Reference Value
%REC = Percent Recovery
RPD = Relative Percent Difference
Abs = Absolute Difference

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Methodology and Notes

Bill To:	Tetra Tech EBA Inc 14940 - 123 Avenue Edmonton, AB, Canada T5V 1B4
Attn:	Accounts Payable
Sampled By:	ALEX COPAN
Company:	TETRA TECH CANADA INC.

Project ID:	ENW.BIOS03089-02
Project Name:	OLSTAD_EPCOR BIOSOLIDS
Project Location:	
LSD:	NW-14-55-23-W4
P.O.:	
Proj. Acct. code:	

Lot ID:	**1773457**
Control Number:	
Date Received:	Oct 31, 2024
Date Reported:	Nov 6, 2024
Report Number:	3071281
Report Type:	Final Report

Method of Analysis

Method Name	Reference		Method	Date Analysis Started	Location
Boron in general soil	BCELM	*	Hot Water Soluble Boron, HWS-Boron	Oct 31, 2024	Element Edmonton - Roper Road
Metals ICP (Hot Block) in soil	EPA	*	Sample Preparation Procedure for Spectrochemical Determination of Total Recoverable Elements, October 1999, 200.2	Nov 01, 2024	Element Edmonton - Roper Road
Metals ICP (Hot Block) in soil	US EPA	*	Determination of Trace Elements in Waters and Wastes by ICP-MS, 200.8	Nov 01, 2024	Element Edmonton - Roper Road

** Reference Method Modified*

References

BCELM	B.C. Environmental Laboratory Manual
EPA	Environmental Protection Agency Test Methods - US
US EPA	US Environmental Protection Agency Test Methods

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Report Transmission Cover Page

Bill To: Tetra Tech EBA Inc
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Attn: Accounts Payable
Sampled By: ALEX COPAN
Company: TETRA TECH CANADA INC.

Project ID: ENW.BIOS03089-02
Project Name: OLSTAD_EPCOR BIOSOLIDS
Project Location:
LSD: SW-23-55-23-W4
P.O.:
Proj. Acct. code:

Lot ID: **1773458**
Control Number:
Date Received: Oct 31, 2024
Date Reported: Nov 6, 2024
Report Number: 3071282
Report Type: Final Report

Contact	Company	Address
Accounts Payable	**Tetra Tech EBA Inc**	14940 - 123 Avenue Edmonton, AB T5V 1B4 Phone: (780) 451-2121 Fax: (780) 454-5688 Email: EBA.accounts.Payable@tetratech.com

Delivery	Format	Deliverables
Email - Merge	PDF	COC / Invoice

Contact	Company	Address
Edmonton Data Management	**Tetra Tech EBA Inc**	100, 140 Quarry Park Blvd SE Calgary, AB T2C 3G3 Phone: (403) 203-3355 Fax: Email: eba.labdata@tetratech.com,ets.svc.eba_esdat@tetratech.com

Delivery	Format	Deliverables
Email	PDF	COA / COC
Email	PDF	COC / Test Report
Email	Standard Crosstab With Tabs	Test Report
Email	Standard Reverse Crosstab With Tabs	Test Report
Email - Zip	EBA ESDAT Chemistry File	Test Report
Email - Zip	EBA ESDAT Sample File	Test Report
Email - Zip	Generic ESDAT Header	Test Report

Contact	Company	Address
Mark Fawcett	**Tetra Tech EBA Inc**	14940 - 123 Avenue Edmonton, AB T5V 1B4 Phone: (780) 451-2130 Fax: (780) 454-5688 Email: mark.fawcett@tetratech.com

Delivery	Format	Deliverables
Email	AB Tier 1 Custom Excel	Test Report
Email	PDF	COA / COC
Email	PDF	COC / Test Report
Email	Standard Crosstab With Tabs	Test Report
Email	Standard Reverse Crosstab With Tabs	Test Report
Email - Merge	PDF	COA / COC
Email - Zip	EBA ESDAT Chemistry File	Test Report
Email - Zip	EBA ESDAT Sample File	Test Report
Email - Zip	Generic ESDAT Header	Test Report

Notes To Clients:

- All wet soil samples received in a soil bag will be disposed 30 days after receipt on 2024-11-30.

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Analytical Report

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Attn: Accounts Payable
Sampled By: ALEX COPAN
Company: TETRA TECH CANADA INC.

Project ID: ENW.BIOS03089-02
Project Name: OLSTAD_EPCOR BIOSOLIDS
Project Location:
LSD: SW-23-55-23-W4
P.O.:
Proj. Acct. code:

Lot ID: **1773458**
Control Number:
Date Received: Oct 31, 2024
Date Reported: Nov 6, 2024
Report Number: 3071282
Report Type: Final Report

Reference Number	1773458-1	1773458-2	1773458-3
Sample Date	Oct 31, 2024	Oct 31, 2024	Oct 31, 2024
Sample Time	NA	NA	NA
Sample Location			
Sample Description	SW-23-01-0-15	SW-23-01-15-30	SW-23-02-0-15
Matrix	Soil	Soil	Soil

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Hot Water Soluble						
Boron	Hot Water Soluble	mg/kg	0.79	0.53	1.2	0.2
Metals Strong Acid Digestion						
Antimony	Strong Acid Extractable	mg/kg	<0.2	<0.2	<0.2	0.2
Arsenic	Strong Acid Extractable	mg/kg	2.9	2.8	3.4	0.2
Barium	Strong Acid Extractable	mg/kg	85	80	111	1
Beryllium	Strong Acid Extractable	mg/kg	0.2	0.3	0.4	0.1
Cadmium	Strong Acid Extractable	mg/kg	0.12	0.07	0.17	0.01
Chromium	Strong Acid Extractable	mg/kg	6.6	6.5	8.4	0.5
Cobalt	Strong Acid Extractable	mg/kg	3.5	4.0	4.1	0.1
Copper	Strong Acid Extractable	mg/kg	7	5	10	1
Lead	Strong Acid Extractable	mg/kg	4.6	4.1	6.0	0.1
Mercury	Strong Acid Extractable	mg/kg	<0.05	<0.05	<0.05	0.05
Molybdenum	Strong Acid Extractable	mg/kg	<1.0	<1.0	<1.0	1.0
Nickel	Strong Acid Extractable	mg/kg	8.1	7.6	9.7	0.5
Selenium	Strong Acid Extractable	mg/kg	<0.3	<0.3	0.4	0.3
Silver	Strong Acid Extractable	mg/kg	<0.1	<0.1	<0.1	0.1
Thallium	Strong Acid Extractable	mg/kg	<0.05	0.05	0.06	0.05
Tin	Strong Acid Extractable	mg/kg	<1.0	<1.0	<1.0	1.0
Uranium	Strong Acid Extractable	mg/kg	0.6	0.6	0.8	0.5
Vanadium	Strong Acid Extractable	mg/kg	11.0	11.1	14.3	0.1
Zinc	Strong Acid Extractable	mg/kg	28	25	37	1

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Analytical Report

Bill To: Tetra Tech EBA Inc
14940 - 123 Avenue
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Attn: Accounts Payable
Sampled By: ALEX COPAN
Company: TETRA TECH CANADA INC.

Project ID: ENW.BIOS03089-02
Project Name: OLSTAD_EPCOR BIOSOLIDS
Project Location:
LSD: SW-23-55-23-W4
P.O.:
Proj. Acct. code:

Lot ID: **1773458**
Control Number:
Date Received: Oct 31, 2024
Date Reported: Nov 6, 2024
Report Number: 3071282
Report Type: Final Report

Reference Number	1773458-4	1773458-5	1773458-6
Sample Date	Oct 31, 2024	Oct 31, 2024	Oct 31, 2024
Sample Time	NA	NA	NA
Sample Location			
Sample Description	SW-23-02-15-30	SW-23-03-0-15	SW-23-03-15-30
Matrix	Soil	Soil	Soil

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Hot Water Soluble						
Boron	Hot Water Soluble	mg/kg	0.80	0.86	0.78	0.2
Metals Strong Acid Digestion						
Antimony	Strong Acid Extractable	mg/kg	<0.2	<0.2	<0.2	0.2
Arsenic	Strong Acid Extractable	mg/kg	3.1	3.3	3.8	0.2
Barium	Strong Acid Extractable	mg/kg	89	119	124	1
Beryllium	Strong Acid Extractable	mg/kg	0.3	0.3	0.3	0.1
Cadmium	Strong Acid Extractable	mg/kg	0.11	0.13	0.09	0.01
Chromium	Strong Acid Extractable	mg/kg	7.8	8.7	9.1	0.5
Cobalt	Strong Acid Extractable	mg/kg	3.5	4.5	5.2	0.1
Copper	Strong Acid Extractable	mg/kg	7	10	8	1
Lead	Strong Acid Extractable	mg/kg	4.9	5.9	5.8	0.1
Mercury	Strong Acid Extractable	mg/kg	<0.05	<0.05	<0.05	0.05
Molybdenum	Strong Acid Extractable	mg/kg	<1.0	<1.0	<1.0	1.0
Nickel	Strong Acid Extractable	mg/kg	7.8	10.2	10.7	0.5
Selenium	Strong Acid Extractable	mg/kg	0.4	0.3	0.3	0.3
Silver	Strong Acid Extractable	mg/kg	<0.1	<0.1	0.1	0.1
Thallium	Strong Acid Extractable	mg/kg	0.06	0.06	0.07	0.05
Tin	Strong Acid Extractable	mg/kg	<1.0	<1.0	<1.0	1.0
Uranium	Strong Acid Extractable	mg/kg	0.6	0.7	0.6	0.5
Vanadium	Strong Acid Extractable	mg/kg	12.6	13.9	14.9	0.1
Zinc	Strong Acid Extractable	mg/kg	30	36	38	1

Approved by:

Anthony Neumann, MSc
General Manager

Data have been validated by Analytical Quality Control and Element's Integrated Data Validation System (IDVS).
Generation and distribution of the report, and approval by the digitized signature above, are performed through a secure and controlled automatic process.

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Quality Control

Bill To: Tetra Tech EBA Inc
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Attn: Accounts Payable
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Company: TETRA TECH CANADA INC.

Project ID: ENW.BIOS03089-02
Project Name: OLSTAD_EPCOR BIOSOLIDS
Project Location:
LSD: SW-23-55-23-W4
P.O.:
Proj. Acct. code:

Lot ID: **1773458**
Control Number:
Date Received: Oct 31, 2024
Date Reported: Nov 6, 2024
Report Number: 3071282
Report Type: Final Report

Sample Type	Sample ID	Analysis Date	Analyte	Units	Result	RDL	SPK Value	Ref Value	%REC	RPD	Limits	Passed
Hot Water Soluble												
Batch: 2516083 - Boron in general soil												
Control Sample	6646103	Oct 31, 2024	Boron	mg/kg	0.43						0.37 - 0.65	yes
Control Sample	6646104	Oct 31, 2024	Boron	mg/kg	<0.1						-0.2 - 0.2	yes
Control Sample	6646109	Oct 31, 2024	Boron	mg/kg	0.10						0.09 - 0.11	yes
Replicate	6646105	Oct 31, 2024	Boron	mg/kg	1.4			1.4		2.57	10 % or 0.1 Abs	yes
Metals Strong Acid Digestion												
Batch: 2516170 - Metals ICP (Hot Block) in soil												
Blank	6646378	Nov 01, 2024	Antimony	µg/L	<0.2	0.2	0.0				0.2	yes
Blank	6646378	Nov 01, 2024	Arsenic	µg/L	<0.2	0.2	0.0				0.2	yes
Blank	6646378	Nov 01, 2024	Barium	µg/L	<1	1	0.0				1	yes
Blank	6646378	Nov 01, 2024	Beryllium	µg/L	<0.1	0.1	0.0				0.1	yes
Blank	6646378	Nov 01, 2024	Cadmium	µg/L	<0.01	0.01	0.0				0.01	yes
Blank	6646378	Nov 01, 2024	Chromium	µg/L	<0.5	0.5	0.0				0.5	yes
Blank	6646378	Nov 01, 2024	Cobalt	µg/L	<0.1	0.1	0.0				0.1	yes
Blank	6646378	Nov 01, 2024	Copper	µg/L	<1	1	0.0				1	yes
Blank	6646378	Nov 01, 2024	Lead	µg/L	<0.1	0.1	0.0				0.1	yes
Blank	6646378	Nov 01, 2024	Mercury	µg/L	<0.05	0.05					0.05	yes
Blank	6646378	Nov 01, 2024	Molybdenum	µg/L	<1.0	1.0	0.0				1	yes
Blank	6646378	Nov 01, 2024	Nickel	µg/L	<0.5	0.5	0.0				0.5	yes
Blank	6646378	Nov 01, 2024	Selenium	µg/L	<0.3	0.3	0.0				0.3	yes
Blank	6646378	Nov 01, 2024	Silver	µg/L	<0.1	0.1	0.0				0.1	yes
Blank	6646378	Nov 01, 2024	Thallium	µg/L	<0.05	0.05					1	yes
Blank	6646378	Nov 01, 2024	Tin	µg/L	<1.0	1.0					0.5	yes
Blank	6646378	Nov 01, 2024	Uranium	µg/L	<0.5	0.5					0.5	yes
Blank	6646378	Nov 01, 2024	Vanadium	µg/L	<0.1	0.1					0.1	yes
Blank	6646378	Nov 01, 2024	Zinc	µg/L	<1	1					1	yes
Control Sample	6646377	Nov 01, 2024	Antimony	mg/kg	40.3						36.1 - 43.9	yes
Control Sample	6646377	Nov 01, 2024	Arsenic	mg/kg	39.5						36.3 - 43.9	yes

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Quality Control

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Project ID: ENW.BIOS03089-02
Project Name: OLSTAD_EPCOR BIOSOLIDS
Project Location:
LSD: SW-23-55-23-W4
P.O.:
Proj. Acct. code:

Lot ID: **1773458**
Control Number:
Date Received: Oct 31, 2024
Date Reported: Nov 6, 2024
Report Number: 3071282
Report Type: Final Report

Sample Type	Sample ID	Analysis Date	Analyte	Units	Result	RDL	SPK Value	Ref Value	%REC	RPD	Limits	Passed
Metals Strong Acid Digestion - Continued												
Control Sample	6646377	Nov 01, 2024	Barium	mg/kg	200						181 - 220	yes
Control Sample	6646377	Nov 01, 2024	Beryllium	mg/kg	20.0						17.4 - 22.2	yes
Control Sample	6646377	Nov 01, 2024	Cadmium	mg/kg	2.10						1.88 - 2.28	yes
Control Sample	6646377	Nov 01, 2024	Chromium	mg/kg	101						93.2 - 107	yes
Control Sample	6646377	Nov 01, 2024	Cobalt	mg/kg	19.5						18.3 - 21.5	yes
Control Sample	6646377	Nov 01, 2024	Copper	mg/kg	198						184 - 214	yes
Control Sample	6646377	Nov 01, 2024	Lead	mg/kg	19.8						18.3 - 21.3	yes
Control Sample	6646377	Nov 01, 2024	Mercury	mg/kg	3.02						2.64 - 3.36	yes
Control Sample	6646377	Nov 01, 2024	Molybdenum	mg/kg	202						182.8 - 223.6	yes
Control Sample	6646377	Nov 01, 2024	Nickel	mg/kg	99.9						92.4 - 106.2	yes
Control Sample	6646377	Nov 01, 2024	Selenium	mg/kg	39.6						35.2 - 44.2	yes
Control Sample	6646377	Nov 01, 2024	Silver	mg/kg	19.8						18 - 22	yes
Control Sample	6646377	Nov 01, 2024	Thallium	mg/kg	9.87						8.87 - 11.03	yes
Control Sample	6646377	Nov 01, 2024	Tin	mg/kg	206						183.1 - 223.3	yes
Control Sample	6646377	Nov 01, 2024	Uranium	mg/kg	100						86 - 116	yes
Control Sample	6646377	Nov 01, 2024	Vanadium	mg/kg	19.7						18 - 21.6	yes
Control Sample	6646377	Nov 01, 2024	Zinc	mg/kg	198						186 - 212	yes
Control Sample	6646379	Nov 01, 2024	Antimony	mg/kg	1.1						0.7 - 1.5	yes
Control Sample	6646379	Nov 01, 2024	Arsenic	mg/kg	11.7						9 - 15	yes
Control Sample	6646379	Nov 01, 2024	Barium	mg/kg	111						86 - 143	yes
Control Sample	6646379	Nov 01, 2024	Beryllium	mg/kg	1.6						1.1 - 1.7	yes
Control Sample	6646379	Nov 01, 2024	Cadmium	mg/kg	0.41						0.3 - 0.49	yes
Control Sample	6646379	Nov 01, 2024	Chromium	mg/kg	5.4						4.2 - 7	yes
Control Sample	6646379	Nov 01, 2024	Cobalt	mg/kg	1.8						1.5 - 2.3	yes
Control Sample	6646379	Nov 01, 2024	Copper	mg/kg	21						18 - 29	yes
Control Sample	6646379	Nov 01, 2024	Lead	mg/kg	76.0						56.7 - 94.5	yes
Control Sample	6646379	Nov 01, 2024	Mercury	mg/kg	<0.05						0.04 - 0.06	yes
Control Sample	6646379	Nov 01, 2024	Molybdenum	mg/kg	3.8						2.9 - 4.7	yes
Control Sample	6646379	Nov 01, 2024	Nickel	mg/kg	5.9						4.7 - 7.8	yes
Control Sample	6646379	Nov 01, 2024	Selenium	mg/kg	<0.3						0 - 0.6	yes

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Lot ID: **1773458**
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Date Received: Oct 31, 2024
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Sample Type	Sample ID	Analysis Date	Analyte	Units	Result	RDL	SPK Value	Ref Value	%REC	RPD	Limits	Passed
Metals Strong Acid Digestion - Continued												
Control Sample	6646379	Nov 01, 2024	Silver	mg/kg	0.2						0.1 - 0.2	yes
Control Sample	6646379	Nov 01, 2024	Thallium	mg/kg	0.28						0.21 - 0.36	yes
Control Sample	6646379	Nov 01, 2024	Tin	mg/kg	24.1						17 - 28.4	yes
Control Sample	6646379	Nov 01, 2024	Uranium	mg/kg	12.1						8.8 - 14.8	yes
Control Sample	6646379	Nov 01, 2024	Vanadium	mg/kg	3.0						2.3 - 3.8	yes
Control Sample	6646379	Nov 01, 2024	Zinc	mg/kg	135						108 - 177	yes
Replicate	6646376	Nov 01, 2024	Antimony	mg/kg	<0.2			<0.2		0.61	30 % or 0.44 Abs	yes
Replicate	6646376	Nov 01, 2024	Arsenic	mg/kg	5.0			5.1		3	30 % or 0.44 Abs	yes
Replicate	6646376	Nov 01, 2024	Barium	mg/kg	160			158		0.94	30 % or 2.2 Abs	yes
Replicate	6646376	Nov 01, 2024	Beryllium	mg/kg	0.6			0.6		6.5	30 % or 0.22 Abs	yes
Replicate	6646376	Nov 01, 2024	Cadmium	mg/kg	0.25			0.26		4.37	30 % or 0.022 Abs	yes
Replicate	6646376	Nov 01, 2024	Chromium	mg/kg	13.7			14.2		3.27	30 % or 1.1 Abs	yes
Replicate	6646376	Nov 01, 2024	Cobalt	mg/kg	6.6			6.6		0.11	30 % or 0.22 Abs	yes
Replicate	6646376	Nov 01, 2024	Copper	mg/kg	17			16		8.9	30 % or 2.2 Abs	yes
Replicate	6646376	Nov 01, 2024	Lead	mg/kg	8.6			8.2		5.12	30 % or 0.22 Abs	yes
Replicate	6646376	Nov 01, 2024	Mercury	mg/kg	<0.05			<0.05		0.61	30 % or 0.05 Abs	yes
Replicate	6646376	Nov 01, 2024	Molybdenum	mg/kg	<1.0			<1.0		0.61	30 % or 2.2 Abs	yes
Replicate	6646376	Nov 01, 2024	Nickel	mg/kg	16.6			16.7		0.91	30 % or 1.1 Abs	yes
Replicate	6646376	Nov 01, 2024	Selenium	mg/kg	0.6			0.7		8.82	30 % or 0.66 Abs	yes
Replicate	6646376	Nov 01, 2024	Silver	mg/kg	0.2			0.2		3.98	30 % or 0.22 Abs	yes
Replicate	6646376	Nov 01, 2024	Thallium	mg/kg	0.10			0.10		3.62	30 % or 0.11 Abs	yes
Replicate	6646376	Nov 01, 2024	Tin	mg/kg	<1.0			<1.0		0.61	30 % or 2.2 Abs	yes
Replicate	6646376	Nov 01, 2024	Uranium	mg/kg	2.6			2.3		10.58	30 % or 1.1 Abs	yes
Replicate	6646376	Nov 01, 2024	Vanadium	mg/kg	23.5			23.9		2.06	30 % or 0.22 Abs	yes
Replicate	6646376	Nov 01, 2024	Zinc	mg/kg	62			63		2.73	30 % or 2.2 Abs	yes

SPK Value = Spike Value
Ref Value = Reference Value
%REC = Percent Recovery
RPD = Relative Percent Difference
Abs = Absolute Difference

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Methodology and Notes

Bill To:	Tetra Tech EBA Inc 14940 - 123 Avenue Edmonton, AB, Canada T5V 1B4	Project ID:	ENW.BIOS03089-02	Lot ID:	**1773458**
Attn:	Accounts Payable	Project Name:	OLSTAD_EPCOR BIOSOLIDS	Control Number:	
Sampled By:	ALEX COPAN	Project Location:		Date Received:	Oct 31, 2024
Company:	TETRA TECH CANADA INC.	LSD:	SW-23-55-23-W4	Date Reported:	Nov 6, 2024
		P.O.:		Report Number:	3071282
		Proj. Acct. code:		Report Type:	Final Report

Method of Analysis

Method Name	Reference		Method	Date Analysis Started	Location
Boron in general soil	BCELM	*	Hot Water Soluble Boron, HWS-Boron	Oct 31, 2024	Element Edmonton - Roper Road
Metals ICP (Hot Block) in soil	EPA	*	Sample Preparation Procedure for Spectrochemical Determination of Total Recoverable Elements, October 1999, 200.2	Nov 01, 2024	Element Edmonton - Roper Road
Metals ICP (Hot Block) in soil	US EPA	*	Determination of Trace Elements in Waters and Wastes by ICP-MS, 200.8	Nov 01, 2024	Element Edmonton - Roper Road

** Reference Method Modified*

References

BCELM	B.C. Environmental Laboratory Manual
EPA	Environmental Protection Agency Test Methods - US
US EPA	US Environmental Protection Agency Test Methods

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Report Transmission Cover Page

Bill To: Tetra Tech EBA Inc
14940 - 123 Avenue
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Attn: Accounts Payable
Sampled By: ALEX COPAN
Company: TETRA TECH CANADA INC.

Project ID: ENW.BIOS03089-02
Project Name: OLSTAD_EPCOR BIOSOLIDS
Project Location:
LSD: SE-07-54-21-W4
P.O.:
Proj. Acct. code:

Lot ID: **1773459**
Control Number:
Date Received: Oct 31, 2024
Date Reported: Nov 6, 2024
Report Number: 3071283
Report Type: Final Report

Contact	Company	Address
Accounts Payable	**Tetra Tech EBA Inc**	14940 - 123 Avenue Edmonton, AB T5V 1B4 Phone: (780) 451-2121 Fax: (780) 454-5688 Email: EBA.accounts.Payable@tetratech.com

Delivery	Format	Deliverables
Email - Merge	PDF	COC / Invoice

Contact	Company	Address
Edmonton Data Management	**Tetra Tech EBA Inc**	100, 140 Quarry Park Blvd SE Calgary, AB T2C 3G3 Phone: (403) 203-3355 Fax: Email: eba.labdata@tetratech.com,ets.svc.eba_esdat@tetratech.com

Delivery	Format	Deliverables
Email	PDF	COA / COC
Email	PDF	COC / Test Report
Email	Standard Crosstab With Tabs	Test Report
Email	Standard Reverse Crosstab With Tabs	Test Report
Email - Zip	EBA ESDAT Chemistry File	Test Report
Email - Zip	EBA ESDAT Sample File	Test Report
Email - Zip	Generic ESDAT Header	Test Report

Contact	Company	Address
Mark Fawcett	**Tetra Tech EBA Inc**	14940 - 123 Avenue Edmonton, AB T5V 1B4 Phone: (780) 451-2130 Fax: (780) 454-5688 Email: mark.fawcett@tetratech.com

Delivery	Format	Deliverables
Email	AB Tier 1 Custom Excel	Test Report
Email	PDF	COA / COC
Email	PDF	COC / Test Report
Email	Standard Crosstab With Tabs	Test Report
Email	Standard Reverse Crosstab With Tabs	Test Report
Email - Merge	PDF	COA / COC
Email - Zip	EBA ESDAT Chemistry File	Test Report
Email - Zip	EBA ESDAT Sample File	Test Report
Email - Zip	Generic ESDAT Header	Test Report

Notes To Clients:

- All wet soil samples received in a soil bag will be disposed 30 days after receipt on 2024-11-30.

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Analytical Report

Bill To: Tetra Tech EBA Inc
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Attn: Accounts Payable
Sampled By: ALEX COPAN
Company: TETRA TECH CANADA INC.

Project ID: ENW.BIOS03089-02
Project Name: OLSTAD_EPCOR BIOSOLIDS
Project Location:
LSD: SE-07-54-21-W4
P.O.:
Proj. Acct. code:

Lot ID: **1773459**
Control Number:
Date Received: Oct 31, 2024
Date Reported: Nov 6, 2024
Report Number: 3071283
Report Type: Final Report

		Reference Number	1773459-1	1773459-2	1773459-3	
		Sample Date				
		Sample Time				
		Sample Location				
		Sample Description	SE-07-01-0-15	SE-07-01-15-30	SE-07-02-0-15	
		Matrix	Soil	Soil	Soil	
Analyte		**Units**	**Results**	**Results**	**Results**	Nominal Detection Limit
Hot Water Soluble						
Boron	Hot Water Soluble	mg/kg	0.87	1.3	0.80	0.2
Metals Strong Acid Digestion						
Antimony	Strong Acid Extractable	mg/kg	0.2	0.2	0.2	0.2
Arsenic	Strong Acid Extractable	mg/kg	5.4	5.7	5.0	0.2
Barium	Strong Acid Extractable	mg/kg	173	192	160	1
Beryllium	Strong Acid Extractable	mg/kg	0.6	0.7	0.6	0.1
Cadmium	Strong Acid Extractable	mg/kg	0.31	0.28	0.27	0.01
Chromium	Strong Acid Extractable	mg/kg	15.3	17.0	13.5	0.5
Cobalt	Strong Acid Extractable	mg/kg	7.2	7.4	6.8	0.1
Copper	Strong Acid Extractable	mg/kg	19	18	15	1
Lead	Strong Acid Extractable	mg/kg	9.7	10.3	8.3	0.1
Mercury	Strong Acid Extractable	mg/kg	<0.05	<0.05	<0.05	0.05
Molybdenum	Strong Acid Extractable	mg/kg	<1.0	<1.0	<1.0	1.0
Nickel	Strong Acid Extractable	mg/kg	18.5	20.0	17.3	0.5
Selenium	Strong Acid Extractable	mg/kg	0.7	0.9	0.4	0.3
Silver	Strong Acid Extractable	mg/kg	0.1	0.1	0.1	0.1
Thallium	Strong Acid Extractable	mg/kg	0.13	0.15	0.11	0.05
Tin	Strong Acid Extractable	mg/kg	<1.0	<1.0	<1.0	1.0
Uranium	Strong Acid Extractable	mg/kg	1.1	1.1	1.1	0.5
Vanadium	Strong Acid Extractable	mg/kg	27.4	30.1	22.9	0.1
Zinc	Strong Acid Extractable	mg/kg	72	78	55	1

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Analytical Report

Bill To: Tetra Tech EBA Inc
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Attn: Accounts Payable
Sampled By: ALEX COPAN
Company: TETRA TECH CANADA INC.

Project ID: ENW.BIOS03089-02
Project Name: OLSTAD_EPCOR BIOSOLIDS
Project Location:
LSD: SE-07-54-21-W4
P.O.:
Proj. Acct. code:

Lot ID: **1773459**
Control Number:
Date Received: Oct 31, 2024
Date Reported: Nov 6, 2024
Report Number: 3071283
Report Type: Final Report

		Reference Number	1773459-4	1773459-5	1773459-6	
		Sample Date				
		Sample Time				
		Sample Location				
		Sample Description	SE-07-02-15-30	SE-07-03-0-15	SE-07-03-15-30	
		Matrix	Soil	Soil	Soil	
Analyte		**Units**	**Results**	**Results**	**Results**	Nominal Detection Limit
Hot Water Soluble						
Boron	Hot Water Soluble	mg/kg	0.94	0.93	1.1	0.2
Metals Strong Acid Digestion						
Antimony	Strong Acid Extractable	mg/kg	<0.2	0.2	0.2	0.2
Arsenic	Strong Acid Extractable	mg/kg	5.2	5.7	5.8	0.2
Barium	Strong Acid Extractable	mg/kg	152	153	134	1
Beryllium	Strong Acid Extractable	mg/kg	0.5	0.6	0.5	0.1
Cadmium	Strong Acid Extractable	mg/kg	0.17	0.24	0.17	0.01
Chromium	Strong Acid Extractable	mg/kg	13.5	13.9	14.3	0.5
Cobalt	Strong Acid Extractable	mg/kg	7.2	7.3	6.7	0.1
Copper	Strong Acid Extractable	mg/kg	13	18	13	1
Lead	Strong Acid Extractable	mg/kg	7.8	11.3	7.9	0.1
Mercury	Strong Acid Extractable	mg/kg	<0.05	<0.05	<0.05	0.05
Molybdenum	Strong Acid Extractable	mg/kg	<1.0	<1.0	<1.0	1.0
Nickel	Strong Acid Extractable	mg/kg	17.1	17.5	17.6	0.5
Selenium	Strong Acid Extractable	mg/kg	0.4	0.5	0.5	0.3
Silver	Strong Acid Extractable	mg/kg	0.1	<0.1	<0.1	0.1
Thallium	Strong Acid Extractable	mg/kg	0.12	0.13	0.11	0.05
Tin	Strong Acid Extractable	mg/kg	<1.0	<1.0	<1.0	1.0
Uranium	Strong Acid Extractable	mg/kg	0.9	1.1	0.8	0.5
Vanadium	Strong Acid Extractable	mg/kg	23.4	24.6	20.7	0.1
Zinc	Strong Acid Extractable	mg/kg	54	60	52	1

Approved by:

Anthony Neumann, MSc
General Manager

Data have been validated by Analytical Quality Control and Element's Integrated Data Validation System (IDVS).
Generation and distribution of the report, and approval by the digitized signature above, are performed through a secure and controlled automatic process.

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Quality Control

Bill To: Tetra Tech EBA Inc
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Attn: Accounts Payable
Sampled By: ALEX COPAN
Company: TETRA TECH CANADA INC.

Project ID: ENW.BIOS03089-02
Project Name: OLSTAD_EPCOR BIOSOLIDS
Project Location:
LSD: SE-07-54-21-W4
P.O.:
Proj. Acct. code:

Lot ID: **1773459**
Control Number:
Date Received: Oct 31, 2024
Date Reported: Nov 6, 2024
Report Number: 3071283
Report Type: Final Report

Sample Type	Sample ID	Analysis Date	Analyte	Units	Result	RDL	SPK Value	Ref Value	%REC	RPD	Limits	Passed
Hot Water Soluble												
Batch: 2516083 - Boron in general soil												
Control Sample	6646106	Oct 31, 2024	Boron	mg/kg	0.44						0.37 - 0.65	yes
Control Sample	6646107	Oct 31, 2024	Boron	mg/kg	<0.1						-0.2 - 0.2	yes
Control Sample	6646109	Oct 31, 2024	Boron	mg/kg	0.10						0.09 - 0.11	yes
Replicate	6646105	Oct 31, 2024	Boron	mg/kg	1.4			1.4		2.57	10 % or 0.1 Abs	yes
Metals Strong Acid Digestion												
Batch: 2516170 - Metals ICP (Hot Block) in soil												
Blank	6646378	Nov 01, 2024	Antimony	µg/L	<0.2	0.2	0.0				0.2	yes
Blank	6646378	Nov 01, 2024	Arsenic	µg/L	<0.2	0.2	0.0				0.2	yes
Blank	6646378	Nov 01, 2024	Barium	µg/L	<1	1	0.0				1	yes
Blank	6646378	Nov 01, 2024	Beryllium	µg/L	<0.1	0.1	0.0				0.1	yes
Blank	6646378	Nov 01, 2024	Cadmium	µg/L	<0.01	0.01	0.0				0.01	yes
Blank	6646378	Nov 01, 2024	Chromium	µg/L	<0.5	0.5	0.0				0.5	yes
Blank	6646378	Nov 01, 2024	Cobalt	µg/L	<0.1	0.1	0.0				0.1	yes
Blank	6646378	Nov 01, 2024	Copper	µg/L	<1	1	0.0				1	yes
Blank	6646378	Nov 01, 2024	Lead	µg/L	<0.1	0.1	0.0				0.1	yes
Blank	6646378	Nov 01, 2024	Mercury	µg/L	<0.05	0.05					0.05	yes
Blank	6646378	Nov 01, 2024	Molybdenum	µg/L	<1.0	1.0	0.0				1	yes
Blank	6646378	Nov 01, 2024	Nickel	µg/L	<0.5	0.5	0.0				0.5	yes
Blank	6646378	Nov 01, 2024	Selenium	µg/L	<0.3	0.3	0.0				0.3	yes
Blank	6646378	Nov 01, 2024	Silver	µg/L	<0.1	0.1	0.0				0.1	yes
Blank	6646378	Nov 01, 2024	Thallium	µg/L	<0.05	0.05					1	yes
Blank	6646378	Nov 01, 2024	Tin	µg/L	<1.0	1.0					0.5	yes
Blank	6646378	Nov 01, 2024	Uranium	µg/L	<0.5	0.5					0.5	yes
Blank	6646378	Nov 01, 2024	Vanadium	µg/L	<0.1	0.1					0.1	yes
Blank	6646378	Nov 01, 2024	Zinc	µg/L	<1	1					1	yes
Control Sample	6646377	Nov 01, 2024	Antimony	mg/kg	40.3						36.1 - 43.9	yes
Control Sample	6646377	Nov 01, 2024	Arsenic	mg/kg	39.5						36.3 - 43.9	yes

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Quality Control

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Sampled By: ALEX COPAN
Company: TETRA TECH CANADA INC.

Project ID: ENW.BIOS03089-02
Project Name: OLSTAD_EPCOR BIOSOLIDS
Project Location:
LSD: SE-07-54-21-W4
P.O.:
Proj. Acct. code:

Lot ID: **1773459**
Control Number:
Date Received: Oct 31, 2024
Date Reported: Nov 6, 2024
Report Number: 3071283
Report Type: Final Report

Sample Type	Sample ID	Analysis Date	Analyte	Units	Result	RDL	SPK Value	Ref Value	%REC	RPD	Limits	Passed
Metals Strong Acid Digestion - Continued												
Control Sample	6646377	Nov 01, 2024	Barium	mg/kg	200						181 - 220	yes
Control Sample	6646377	Nov 01, 2024	Beryllium	mg/kg	20.0						17.4 - 22.2	yes
Control Sample	6646377	Nov 01, 2024	Cadmium	mg/kg	2.10						1.88 - 2.28	yes
Control Sample	6646377	Nov 01, 2024	Chromium	mg/kg	101						93.2 - 107	yes
Control Sample	6646377	Nov 01, 2024	Cobalt	mg/kg	19.5						18.3 - 21.5	yes
Control Sample	6646377	Nov 01, 2024	Copper	mg/kg	198						184 - 214	yes
Control Sample	6646377	Nov 01, 2024	Lead	mg/kg	19.8						18.3 - 21.3	yes
Control Sample	6646377	Nov 01, 2024	Mercury	mg/kg	3.02						2.64 - 3.36	yes
Control Sample	6646377	Nov 01, 2024	Molybdenum	mg/kg	202						182.8 - 223.6	yes
Control Sample	6646377	Nov 01, 2024	Nickel	mg/kg	99.9						92.4 - 106.2	yes
Control Sample	6646377	Nov 01, 2024	Selenium	mg/kg	39.6						35.2 - 44.2	yes
Control Sample	6646377	Nov 01, 2024	Silver	mg/kg	19.8						18 - 22	yes
Control Sample	6646377	Nov 01, 2024	Thallium	mg/kg	9.87						8.87 - 11.03	yes
Control Sample	6646377	Nov 01, 2024	Tin	mg/kg	206						183.1 - 223.3	yes
Control Sample	6646377	Nov 01, 2024	Uranium	mg/kg	100						86 - 116	yes
Control Sample	6646377	Nov 01, 2024	Vanadium	mg/kg	19.7						18 - 21.6	yes
Control Sample	6646377	Nov 01, 2024	Zinc	mg/kg	198						186 - 212	yes
Control Sample	6646379	Nov 01, 2024	Antimony	mg/kg	1.1						0.7 - 1.5	yes
Control Sample	6646379	Nov 01, 2024	Arsenic	mg/kg	11.7						9 - 15	yes
Control Sample	6646379	Nov 01, 2024	Barium	mg/kg	111						86 - 143	yes
Control Sample	6646379	Nov 01, 2024	Beryllium	mg/kg	1.6						1.1 - 1.7	yes
Control Sample	6646379	Nov 01, 2024	Cadmium	mg/kg	0.41						0.3 - 0.49	yes
Control Sample	6646379	Nov 01, 2024	Chromium	mg/kg	5.4						4.2 - 7	yes
Control Sample	6646379	Nov 01, 2024	Cobalt	mg/kg	1.8						1.5 - 2.3	yes
Control Sample	6646379	Nov 01, 2024	Copper	mg/kg	21						18 - 29	yes
Control Sample	6646379	Nov 01, 2024	Lead	mg/kg	76.0						56.7 - 94.5	yes
Control Sample	6646379	Nov 01, 2024	Mercury	mg/kg	<0.05						0.04 - 0.06	yes
Control Sample	6646379	Nov 01, 2024	Molybdenum	mg/kg	3.8						2.9 - 4.7	yes
Control Sample	6646379	Nov 01, 2024	Nickel	mg/kg	5.9						4.7 - 7.8	yes
Control Sample	6646379	Nov 01, 2024	Selenium	mg/kg	<0.3						0 - 0.6	yes

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Quality Control

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Sampled By: ALEX COPAN
Company: TETRA TECH CANADA INC.

Project ID: ENW.BIOS03089-02
Project Name: OLSTAD_EPCOR BIOSOLIDS
Project Location:
LSD: SE-07-54-21-W4
P.O.:
Proj. Acct. code:

Lot ID: **1773459**
Control Number:
Date Received: Oct 31, 2024
Date Reported: Nov 6, 2024
Report Number: 3071283
Report Type: Final Report

Sample Type	Sample ID	Analysis Date	Analyte	Units	Result	RDL	SPK Value	Ref Value	%REC	RPD	Limits	Passed
Metals Strong Acid Digestion - Continued												
Control Sample	6646379	Nov 01, 2024	Silver	mg/kg	0.2						0.1 - 0.2	yes
Control Sample	6646379	Nov 01, 2024	Thallium	mg/kg	0.28						0.21 - 0.36	yes
Control Sample	6646379	Nov 01, 2024	Tin	mg/kg	24.1						17 - 28.4	yes
Control Sample	6646379	Nov 01, 2024	Uranium	mg/kg	12.1						8.8 - 14.8	yes
Control Sample	6646379	Nov 01, 2024	Vanadium	mg/kg	3.0						2.3 - 3.8	yes
Control Sample	6646379	Nov 01, 2024	Zinc	mg/kg	135						108 - 177	yes
Replicate	6646376	Nov 01, 2024	Antimony	mg/kg	<0.2			<0.2		0.61	30 % or 0.44 Abs	yes
Replicate	6646376	Nov 01, 2024	Arsenic	mg/kg	5.0			5.1		3	30 % or 0.44 Abs	yes
Replicate	6646376	Nov 01, 2024	Barium	mg/kg	160			158		0.94	30 % or 2.2 Abs	yes
Replicate	6646376	Nov 01, 2024	Beryllium	mg/kg	0.6			0.6		6.5	30 % or 0.22 Abs	yes
Replicate	6646376	Nov 01, 2024	Cadmium	mg/kg	0.25			0.26		4.37	30 % or 0.022 Abs	yes
Replicate	6646376	Nov 01, 2024	Chromium	mg/kg	13.7			14.2		3.27	30 % or 1.1 Abs	yes
Replicate	6646376	Nov 01, 2024	Cobalt	mg/kg	6.6			6.6		0.11	30 % or 0.22 Abs	yes
Replicate	6646376	Nov 01, 2024	Copper	mg/kg	17			16		8.9	30 % or 2.2 Abs	yes
Replicate	6646376	Nov 01, 2024	Lead	mg/kg	8.6			8.2		5.12	30 % or 0.22 Abs	yes
Replicate	6646376	Nov 01, 2024	Mercury	mg/kg	<0.05			<0.05		0.61	30 % or 0.05 Abs	yes
Replicate	6646376	Nov 01, 2024	Molybdenum	mg/kg	<1.0			<1.0		0.61	30 % or 2.2 Abs	yes
Replicate	6646376	Nov 01, 2024	Nickel	mg/kg	16.6			16.7		0.91	30 % or 1.1 Abs	yes
Replicate	6646376	Nov 01, 2024	Selenium	mg/kg	0.6			0.7		8.82	30 % or 0.66 Abs	yes
Replicate	6646376	Nov 01, 2024	Silver	mg/kg	0.2			0.2		3.98	30 % or 0.22 Abs	yes
Replicate	6646376	Nov 01, 2024	Thallium	mg/kg	0.10			0.10		3.62	30 % or 0.11 Abs	yes
Replicate	6646376	Nov 01, 2024	Tin	mg/kg	<1.0			<1.0		0.61	30 % or 2.2 Abs	yes
Replicate	6646376	Nov 01, 2024	Uranium	mg/kg	2.6			2.3		10.58	30 % or 1.1 Abs	yes
Replicate	6646376	Nov 01, 2024	Vanadium	mg/kg	23.5			23.9		2.06	30 % or 0.22 Abs	yes
Replicate	6646376	Nov 01, 2024	Zinc	mg/kg	62			63		2.73	30 % or 2.2 Abs	yes

SPK Value = Spike Value
Ref Value = Reference Value
%REC = Percent Recovery
RPD = Relative Percent Difference
Abs = Absolute Difference

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Methodology and Notes

Bill To:	Tetra Tech EBA Inc 14940 - 123 Avenue Edmonton, AB, Canada T5V 1B4	Project ID:	ENW.BIOS03089-02	Lot ID:	**1773459**
Attn:	Accounts Payable	Project Name:	OLSTAD_EPCOR BIOSOLIDS	Control Number:	
Sampled By:	ALEX COPAN	Project Location:		Date Received:	Oct 31, 2024
Company:	TETRA TECH CANADA INC.	LSD:	SE-07-54-21-W4	Date Reported:	Nov 6, 2024
		P.O.:		Report Number:	3071283
		Proj. Acct. code:		Report Type:	Final Report

Method of Analysis

Method Name	Reference		Method	Date Analysis Started	Location
Boron in general soil	BCELM	*	Hot Water Soluble Boron, HWS-Boron	Oct 31, 2024	Element Edmonton - Roper Road
Metals ICP (Hot Block) in soil	EPA	*	Sample Preparation Procedure for Spectrochemical Determination of Total Recoverable Elements, October 1999, 200.2	Nov 01, 2024	Element Edmonton - Roper Road
Metals ICP (Hot Block) in soil	US EPA	*	Determination of Trace Elements in Waters and Wastes by ICP-MS, 200.8	Nov 01, 2024	Element Edmonton - Roper Road

** Reference Method Modified*

References

BCELM	B.C. Environmental Laboratory Manual
EPA	Environmental Protection Agency Test Methods - US
US EPA	US Environmental Protection Agency Test Methods

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Report Transmission Cover Page

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Edmonton, AB, Canada
T5V 1B4
Attn: Accounts Payable
Sampled By: ALEX COPAN
Company: TETRA TECH CANADA INC.

Project ID: ENW.BIOS03089-02
Project Name: OLSTAD_EPCOR BIOSOLIDS
Project Location:
LSD: SW-07-54-21-W4
P.O.:
Proj. Acct. code:

Lot ID: **1773460**
Control Number:
Date Received: Oct 31, 2024
Date Reported: Nov 6, 2024
Report Number: 3071284
Report Type: Final Report

Contact	Company	Address
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Delivery	Format	Deliverables
Email - Merge	PDF	COC / Invoice

Contact	Company	Address
Edmonton Data Management	**Tetra Tech EBA Inc**	100, 140 Quarry Park Blvd SE Calgary, AB T2C 3G3 Phone: (403) 203-3355 Fax: Email: eba.labdata@tetratech.com,ets.svc.eba_esdat@tetratech.com

Delivery	Format	Deliverables
Email	PDF	COA / COC
Email	PDF	COC / Test Report
Email	Standard Crosstab With Tabs	Test Report
Email	Standard Reverse Crosstab With Tabs	Test Report
Email - Zip	EBA ESDAT Chemistry File	Test Report
Email - Zip	EBA ESDAT Sample File	Test Report
Email - Zip	Generic ESDAT Header	Test Report

Contact	Company	Address
Mark Fawcett	**Tetra Tech EBA Inc**	14940 - 123 Avenue Edmonton, AB T5V 1B4 Phone: (780) 451-2130 Fax: (780) 454-5688 Email: mark.fawcett@tetratech.com

Delivery	Format	Deliverables
Email	AB Tier 1 Custom Excel	Test Report
Email	PDF	COA / COC
Email	PDF	COC / Test Report
Email	Standard Crosstab With Tabs	Test Report
Email	Standard Reverse Crosstab With Tabs	Test Report
Email - Merge	PDF	COA / COC
Email - Zip	EBA ESDAT Chemistry File	Test Report
Email - Zip	EBA ESDAT Sample File	Test Report
Email - Zip	Generic ESDAT Header	Test Report

Notes To Clients:

- All wet soil samples received in a soil bag will be disposed 30 days after receipt on 2024-11-30.

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Analytical Report

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LSD: SW-07-54-21-W4
P.O.:
Proj. Acct. code:

Lot ID: **1773460**
Control Number:
Date Received: Oct 31, 2024
Date Reported: Nov 6, 2024
Report Number: 3071284
Report Type: Final Report

Reference Number	1773460-1	1773460-2
Sample Date	Oct 31, 2024	Oct 31, 2024
Sample Time	NA	NA
Sample Location		
Sample Description	SW-07-02-0-15	SW-07-02-15-30
Matrix	Soil	Soil

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Hot Water Soluble						
Boron	Hot Water Soluble	mg/kg	2.70	3.98		0.2
Metals Strong Acid Digestion						
Antimony	Strong Acid Extractable	mg/kg	0.3	0.2		0.2
Arsenic	Strong Acid Extractable	mg/kg	5.4	5.5		0.2
Barium	Strong Acid Extractable	mg/kg	139	130		1
Beryllium	Strong Acid Extractable	mg/kg	0.5	0.5		0.1
Cadmium	Strong Acid Extractable	mg/kg	0.29	0.27		0.01
Chromium	Strong Acid Extractable	mg/kg	15.5	14.9		0.5
Cobalt	Strong Acid Extractable	mg/kg	7.6	8.1		0.1
Copper	Strong Acid Extractable	mg/kg	20	17		1
Lead	Strong Acid Extractable	mg/kg	8.7	8.3		0.1
Mercury	Strong Acid Extractable	mg/kg	<0.05	<0.05		0.05
Molybdenum	Strong Acid Extractable	mg/kg	<1.0	<1.0		1.0
Nickel	Strong Acid Extractable	mg/kg	20.1	20.4		0.5
Selenium	Strong Acid Extractable	mg/kg	0.6	0.6		0.3
Silver	Strong Acid Extractable	mg/kg	0.1	0.1		0.1
Thallium	Strong Acid Extractable	mg/kg	0.15	0.14		0.05
Tin	Strong Acid Extractable	mg/kg	<1.0	<1.0		1.0
Uranium	Strong Acid Extractable	mg/kg	2.4	2.6		0.5
Vanadium	Strong Acid Extractable	mg/kg	25.3	23.9		0.1
Zinc	Strong Acid Extractable	mg/kg	71	67		1

Approved by:

Anthony Neumann, MSc
General Manager

Data have been validated by Analytical Quality Control and Element's Integrated Data Validation System (IDVS).
Generation and distribution of the report, and approval by the digitized signature above, are performed through a secure and controlled automatic process.

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Company: TETRA TECH CANADA INC.

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Project Name: OLSTAD_EPCOR BIOSOLIDS
Project Location:
LSD: SW-07-54-21-W4
P.O.:
Proj. Acct. code:

Lot ID: **1773460**
Control Number:
Date Received: Oct 31, 2024
Date Reported: Nov 6, 2024
Report Number: 3071284
Report Type: Final Report

Sample Type	Sample ID	Analysis Date	Analyte	Units	Result	RDL	SPK Value	Ref Value	%REC	RPD	Limits	Passed
Hot Water Soluble												
Batch: 2516083 - Boron in general soil												
Control Sample	6646106	Oct 31, 2024	Boron	mg/kg	0.44						0.37 - 0.65	yes
Control Sample	6646107	Oct 31, 2024	Boron	mg/kg	<0.1						-0.2 - 0.2	yes
Control Sample	6646109	Oct 31, 2024	Boron	mg/kg	0.10						0.09 - 0.11	yes
Replicate	6646108	Oct 31, 2024	Boron	mg/kg	0.89			0.94		5.67	10 % or 0.1 Abs	yes
Metals Strong Acid Digestion												
Batch: 2517062 - Metals ICP (Hot Block) in soil												
Blank	6649031	Nov 04, 2024	Antimony	µg/L	<0.2	0.2	0.0				0.2	yes
Blank	6649031	Nov 04, 2024	Arsenic	µg/L	<0.2	0.2	0.0				0.2	yes
Blank	6649031	Nov 04, 2024	Barium	µg/L	<1	1	0.0				1	yes
Blank	6649031	Nov 04, 2024	Beryllium	µg/L	<0.1	0.1	0.0				0.1	yes
Blank	6649031	Nov 04, 2024	Cadmium	µg/L	<0.01	0.01	0.0				0.01	yes
Blank	6649031	Nov 04, 2024	Chromium	µg/L	<0.5	0.5	0.0				0.5	yes
Blank	6649031	Nov 04, 2024	Cobalt	µg/L	<0.1	0.1	0.0				0.1	yes
Blank	6649031	Nov 04, 2024	Copper	µg/L	<1	1	0.0				1	yes
Blank	6649031	Nov 04, 2024	Lead	µg/L	<0.1	0.1	0.0				0.1	yes
Blank	6649031	Nov 04, 2024	Mercury	µg/L	<0.05	0.05					0.05	yes
Blank	6649031	Nov 04, 2024	Molybdenum	µg/L	<1.0	1.0	0.0				1	yes
Blank	6649031	Nov 04, 2024	Nickel	µg/L	<0.5	0.5	0.0				0.5	yes
Blank	6649031	Nov 04, 2024	Selenium	µg/L	<0.3	0.3	0.0				0.3	yes
Blank	6649031	Nov 04, 2024	Silver	µg/L	<0.1	0.1	0.0				0.1	yes
Blank	6649031	Nov 04, 2024	Thallium	µg/L	<0.05	0.05					1	yes
Blank	6649031	Nov 04, 2024	Tin	µg/L	<1.0	1.0					0.5	yes
Blank	6649031	Nov 04, 2024	Uranium	µg/L	<0.5	0.5					0.5	yes
Blank	6649031	Nov 04, 2024	Vanadium	µg/L	<0.1	0.1					0.1	yes
Blank	6649031	Nov 04, 2024	Zinc	µg/L	<1	1					1	yes
Control Sample	6649030	Nov 04, 2024	Antimony	mg/kg	40.1						36.1 - 43.9	yes
Control Sample	6649030	Nov 04, 2024	Arsenic	mg/kg	40.3						36.3 - 43.9	yes

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Sampled By: ALEX COPAN
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Project ID: ENW.BIOS03089-02
Project Name: OLSTAD_EPCOR BIOSOLIDS
Project Location:
LSD: SW-07-54-21-W4
P.O.:
Proj. Acct. code:

Lot ID: **1773460**
Control Number:
Date Received: Oct 31, 2024
Date Reported: Nov 6, 2024
Report Number: 3071284
Report Type: Final Report

Sample Type	Sample ID	Analysis Date	Analyte	Units	Result	RDL	SPK Value	Ref Value	%REC	RPD	Limits	Passed
Metals Strong Acid Digestion - Continued												
Control Sample	6649030	Nov 04, 2024	Barium	mg/kg	201						181 - 220	yes
Control Sample	6649030	Nov 04, 2024	Beryllium	mg/kg	19.5						17.4 - 22.2	yes
Control Sample	6649030	Nov 04, 2024	Cadmium	mg/kg	2.08						1.88 - 2.28	yes
Control Sample	6649030	Nov 04, 2024	Chromium	mg/kg	102						93.2 - 107	yes
Control Sample	6649030	Nov 04, 2024	Cobalt	mg/kg	20.7						18.3 - 21.5	yes
Control Sample	6649030	Nov 04, 2024	Copper	mg/kg	193						184 - 214	yes
Control Sample	6649030	Nov 04, 2024	Lead	mg/kg	20.2						18.3 - 21.3	yes
Control Sample	6649030	Nov 04, 2024	Mercury	mg/kg	2.98						2.64 - 3.36	yes
Control Sample	6649030	Nov 04, 2024	Molybdenum	mg/kg	199						182.8 - 223.6	yes
Control Sample	6649030	Nov 04, 2024	Nickel	mg/kg	103						92.4 - 106.2	yes
Control Sample	6649030	Nov 04, 2024	Selenium	mg/kg	41.4						35.2 - 44.2	yes
Control Sample	6649030	Nov 04, 2024	Silver	mg/kg	20.9						18 - 22	yes
Control Sample	6649030	Nov 04, 2024	Thallium	mg/kg	10.3						8.87 - 11.03	yes
Control Sample	6649030	Nov 04, 2024	Tin	mg/kg	196						183.1 - 223.3	yes
Control Sample	6649030	Nov 04, 2024	Uranium	mg/kg	101						86 - 116	yes
Control Sample	6649030	Nov 04, 2024	Vanadium	mg/kg	20.1						18 - 21.6	yes
Control Sample	6649030	Nov 04, 2024	Zinc	mg/kg	199						186 - 212	yes
Control Sample	6649032	Nov 04, 2024	Antimony	mg/kg	1.2						0.7 - 1.5	yes
Control Sample	6649032	Nov 04, 2024	Arsenic	mg/kg	12.7						9 - 15	yes
Control Sample	6649032	Nov 04, 2024	Barium	mg/kg	116						86 - 143	yes
Control Sample	6649032	Nov 04, 2024	Cadmium	mg/kg	0.41						0.3 - 0.49	yes
Control Sample	6649032	Nov 04, 2024	Chromium	mg/kg	5.6						4.2 - 7	yes
Control Sample	6649032	Nov 04, 2024	Cobalt	mg/kg	2.1						1.5 - 2.3	yes
Control Sample	6649032	Nov 04, 2024	Copper	mg/kg	24						18 - 29	yes
Control Sample	6649032	Nov 04, 2024	Lead	mg/kg	78.7						56.7 - 94.5	yes
Control Sample	6649032	Nov 04, 2024	Mercury	mg/kg	<0.05						0.04 - 0.06	yes
Control Sample	6649032	Nov 04, 2024	Molybdenum	mg/kg	4.2						2.9 - 4.7	yes
Control Sample	6649032	Nov 04, 2024	Nickel	mg/kg	6.6						4.7 - 7.8	yes
Control Sample	6649032	Nov 04, 2024	Selenium	mg/kg	0.4						0 - 0.6	yes
Control Sample	6649032	Nov 04, 2024	Silver	mg/kg	0.2						0.1 - 0.2	yes

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LSD: SW-07-54-21-W4
P.O.:
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Date Received: Oct 31, 2024
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Sample Type	Sample ID	Analysis Date	Analyte	Units	Result	RDL	SPK Value	Ref Value	%REC	RPD	Limits	Passed
Metals Strong Acid Digestion - Continued												
Control Sample	6649032	Nov 04, 2024	Thallium	mg/kg	0.31						0.21 - 0.36	yes
Control Sample	6649032	Nov 04, 2024	Tin	mg/kg	23.3						17 - 28.4	yes
Control Sample	6649032	Nov 04, 2024	Uranium	mg/kg	12.6						8.8 - 14.8	yes
Control Sample	6649032	Nov 04, 2024	Vanadium	mg/kg	3.1						2.3 - 3.8	yes
Control Sample	6649032	Nov 04, 2024	Zinc	mg/kg	155						108 - 177	yes
Replicate	6649034	Nov 04, 2024	Antimony	mg/kg	0.4			0.5		7.3	30 % or 0.44 Abs	yes
Replicate	6649034	Nov 04, 2024	Arsenic	mg/kg	8.3			8.3		1.16	30 % or 0.44 Abs	yes
Replicate	6649034	Nov 04, 2024	Barium	mg/kg	427			420		1.75	30 % or 2.2 Abs	yes
Replicate	6649034	Nov 04, 2024	Beryllium	mg/kg	1.0			1.1		8.19	30 % or 0.22 Abs	yes
Replicate	6649034	Nov 04, 2024	Cadmium	mg/kg	0.29			0.31		7.29	30 % or 0.022 Abs	yes
Replicate	6649034	Nov 04, 2024	Chromium	mg/kg	19.8			20.8		4.98	30 % or 1.1 Abs	yes
Replicate	6649034	Nov 04, 2024	Cobalt	mg/kg	10.4			10.6		1.32	30 % or 0.22 Abs	yes
Replicate	6649034	Nov 04, 2024	Copper	mg/kg	23			24		2.75	30 % or 2.2 Abs	yes
Replicate	6649034	Nov 04, 2024	Lead	mg/kg	14.8			15.1		2.46	30 % or 0.22 Abs	yes
Replicate	6649034	Nov 04, 2024	Mercury	mg/kg	<0.05			<0.05		0.69	30 % or 0.05 Abs	yes
Replicate	6649034	Nov 04, 2024	Molybdenum	mg/kg	<1.0			<1.0		0.69	30 % or 2.2 Abs	yes
Replicate	6649034	Nov 04, 2024	Nickel	mg/kg	24.4			25.2		3.22	30 % or 1.1 Abs	yes
Replicate	6649034	Nov 04, 2024	Selenium	mg/kg	<0.3			<0.3		0.69	30 % or 0.66 Abs	yes
Replicate	6649034	Nov 04, 2024	Silver	mg/kg	<0.1			0.1		4.62	30 % or 0.22 Abs	yes
Replicate	6649034	Nov 04, 2024	Thallium	mg/kg	0.22			0.23		3.78	30 % or 0.11 Abs	yes
Replicate	6649034	Nov 04, 2024	Tin	mg/kg	<1.0			<1.0		0.69	30 % or 2.2 Abs	yes
Replicate	6649034	Nov 04, 2024	Uranium	mg/kg	0.9			1.0		3.17	30 % or 1.1 Abs	yes
Replicate	6649034	Nov 04, 2024	Vanadium	mg/kg	27.6			28.0		1.23	30 % or 0.22 Abs	yes
Replicate	6649034	Nov 04, 2024	Zinc	mg/kg	87			88		2	30 % or 2.2 Abs	yes

SPK Value = Spike Value
Ref Value = Reference Value
%REC = Percent Recovery
RPD = Relative Percent Difference
Abs = Absolute Difference

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Methodology and Notes

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Report Type: Final Report

Method of Analysis

Method Name	Reference		Method	Date Analysis Started	Location
Boron in general soil	BCELM	*	Hot Water Soluble Boron, HWS-Boron	Oct 31, 2024	Element Edmonton - Roper Road
Metals ICP (Hot Block) in soil	EPA	*	Sample Preparation Procedure for Spectrochemical Determination of Total Recoverable Elements, October 1999, 200.2	Nov 04, 2024	Element Edmonton - Roper Road
Metals ICP (Hot Block) in soil	US EPA	*	Determination of Trace Elements in Waters and Wastes by ICP-MS, 200.8	Nov 04, 2024	Element Edmonton - Roper Road

** Reference Method Modified*

References

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EPA	Environmental Protection Agency Test Methods - US
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Part II: Wastewater Collection System Report

EPCOR Water Services

Edmonton, Alberta

2024

Annual Wastewater Collection System Report

Submitted to:

The Province of Alberta

Alberta Environment and Protected Areas (AEPA)

As per requirements of:

Approval to Operate No. 639-03-07

February 2025

EPCOR Water Services
Edmonton, Alberta

2024
Annual Wastewater Collection System Report

SUBMITTED TO:

The Province of Alberta

Alberta Environment and Protected Areas (AEPA)

As per requirements of:

APPROVAL NO. 639-03-07

February – 2025

TABLE OF CONTENTS

2024 Overview

EPCOR Water Services (EWS) provides wastewater collection (WWC) and stormwater conveyance services to City of Edmonton (the 'City') residents through the planning, construction, operating and maintenance of the pipes, tunnels, pump stations, and stormwater management facilities that make up the wastewater collection network. In 2025, EWS is realigning some of the previously established accountabilities to a functional organizational design by integrating teams to improve the experience for our employees and customers. Construction, operation and maintenance of the wastewater collection linear assets (including pipes, pump stations, lift stations, stormwater management facilities) will be supported by four functional groups:

- Linear Asset Operations: responsible for the central management and operation of the wastewater collection systems.
- Linear Asset Maintenance: responsible for maintenance and inspection activities for wastewater collection linear assets, from lift stations to stormwater facilities.
- Linear Asset Construction: execute construction activities for linear assets, including sewer repairs.
- Linear Asset Services: provide developer services, public and private inspections.

The organizational changes will be reflected in the 2025 reporting. For the 2024 report, the organizational naming reflects the previous organization structure as detailed below:

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.

WWC Construction 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 wastewater collection system require ongoing maintenance. WWC Operations — which includes pipeline maintenance, flow-control facilities, monitoring and compliance, and operations engineering — inspect and monitor the wastewater collection 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.

Operations 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 wastewater collection system which consists of sanitary and stormwater collection infrastructure.

The sanitary collection infrastructure includes more than 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 Arrow Utilities (formerly Alberta Capital Region Wastewater Commission). The Arrow Utilities 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 3,300 km of storm sewer, 62,000 catch basins, and 12,800 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 258 outfalls. Strategically placed within the stormwater collection system are 310 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 95 pumpstations which ensure proper servicing to EPCOR's customers in Edmonton.

EWS is fully committed to the protection of the environment and the health and safety of its employees, customers and neighbors. 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 HSE performance, EWS operates with an integrated HSE management system that operates according to the ISO14001:2015 standard for Environment Management Systems and the ISO 45001:2014 standard for Safety Management Systems. Successful re-registration of the Integrated Management System was maintained following a re-registration audit in 2024.

As required by Approval #639-03-07, EWS is submitting the 2024 Annual Wastewater Collection System Report.

This Annual Wastewater Collection System Report submission includes: 2024 EWS Wastewater Collection system Capital Program summary, Interconnection Control Strategy Annual Report, Environmental Monitoring results, Chemical usage, and Collection System Operational details.

TABLE 1: Summary of 2024 Completed Projects and Planned Major Rehabilitation Projects

Project / Program	Completion
Drainage System Expansion	
2022 Safety Program	Feb-24
CB Relocation on YHT 107 St to Fort Rd	Oct-24
SESS SA10A CP-002993-01	Oct-24
Freeway Relocates (YHT)	Jul-25
2024-2025 SWMF Safety Enhancements	Aug-25
2025-2026 SWMF Safety Enhancements	May-27
Environmental Quality Enhancement	
Pump Station Optimization	Mar-24
2023 Access Manholes	Mar-24
Sanitary CB Lead Removal	Jul-24
2022 Drop Structure Mod	Jul-24
2022-2023 Low Impact Development - Commercial	Jul-24
2023 Drop Structure Modifications	Jul-24
2024 Environmental Enhancements	Oct-24
2021 Pump Station Enhancements	May-25
2023 Pump Station Enhancements	May-25
2024 Drop Structure Modifications	May-25
2024 Environmental Monitoring	Jun-25
2024 Access Manholes	Jun-25
Duggan Tunnel Replacement	Aug-25
2024 Commercial Low Impact Development	Aug-25
2025 Commercial Low Impact Development	Sep-25
2025-2027 Access Manholes	Dec-27
2025-2027 Pump Station Enhancements	Dec-27
2025-2027 Environmental Monitoring	Dec-27
2025-2027 Environmental Enhancements	Dec-27
Flood Mitigation	
2022-2023 Proactive MH Seal	Feb-24
2022-2023 Proactive Pipe Reline	Apr-24
Gateway BLVD Geyser	Jan-24
2023 Proactive Pipe Relining - Sanitary & Combined	Aug-24
2024 Overland Drainage	Sep-24
2024 Proactive Manhole Sealing	Dec-24

2024 Proactive Pipe Relining-Sanitary and Combined	Mar-25
2021 Outfalls and Auto Gates	Jul-25
2023 Overland Drainage	Jul-25
Parkdale Dry Pond	Aug-25
King Edward Park Odour Control Facility Reuse	Aug-25
Replace PW168 WIth A Gravity Sewer	Sep-25
Ottewell Dry Pond	Sep-27
Cloverdale Dry Pond	Jun-26
Kenilworth Dry Pond	Sep-26
Forest Heights Dry Pond	Feb-27
Kensington Dry Pond & Sewer Separation	May-27
2023 Rossdale SWMF & Storm Improvements	May-27
2025-2027 Proactive Pipe Relining-Sanitary and Com	Dec-27
2025-2027 Proactive Manhole Sealing	Dec-27
Lauderdale Dry Pond	Dec-27
Newton Dry Pond	Jun-28
Alberta Ave SWMF	Dec-28
Drainage System Rehabilitation	
2023 Local Sewer Rehab	Apr-24
Huff Bremnew ESt NBHD	May-24
Prince Rupert NBHD Renewal	May-24
2022 2023 Arteria and Collector Renewal	Jun-24
2022 Storm Trunk 85547 Rehabilitation	Jun-24
2022 Drill Drop Manholes Rehab	Jul-24
New Buena Vista PS OP-002062-01	Jul-24
2019-2020 Outfall Rehab	Sep-24
2023 Relining Local Renewal	Sep-24
Trestle #5	Oct-24
2024 Open Cut Local Renewal	Nov-24
Capital Line LRT	Nov-24
North Griesbach Pump Station	Nov-24
2024 Local Sewer Rehab	Dec-24
2024 Service Relining	Dec-24
Clover Bar Area High Priority Manhole/Pipe Replacement Project	Dec-24
Void Rehabilitation Near 122 Street & 51 Avenue	Jan-25
2024 Arterial and Collector Renewal Coordination	Mar-25
2024 Relining Local Renewal	Mar-25
Whitemud Dr &106 St	Mar-25

151S/99A SanTrunk OP-001940-01	Apr-25
2021 Drill Drop Manholes Rehab	Apr-25
86 Street & 127 Avenue Subsidence Emergency	Apr-25
2021 Outfall Rehab	Jun-25
2022-2024 Small Trunk Rehabilitation	Jun-25
2024 Drill Drop Manholes Rehabilitation	Jun-25
Glastonbury Sewer Subsidence Rehabilitation	Jun-25
2021 Pump Station Rehab	Jul-25
2022 Outfall Rehabilitation	Jul-25
2023 Pump Station Rehabilitation Rundle Heights	Jul-25
2023 San 11 Double Barrel Rehabilitation 3	Jul-25
Terwilleger Sanitary Trunk 29 Rehabilitation	Aug-25
2023 Drill Drop Manhole Rehabilitation	Sep-25
2023 Pump Station Replacement Eastgate	Sep-25
MacKinnon Ravine Trunk Rehabilitation	Sep-25
Walterdale PS 171	Oct-25
151 South Large Trunk Rehab	Dec-25
2025 Outfall Rehabilitation	Dec-25
Oxford 1 SWMF Retaining Walls and Landscape Rehab	Dec-25
2025-2026 Small Trunk Rehabilitation	May-26
Small Trunk Program - NE Syphon Rehabilitation	Jun-26
2023 Outfall Rehabilitation	Jul-26
Mill Creek CombTrunk Rehab	Aug-26
2023 Pump Station Rehabilitation Quesnell	Oct-26
Mill Creek High Priority Sewer Rehab	Oct-26
Beaumaris Sanitary Sewer Installation	Oct-27
Combined Trunk 94 Replacement	Oct-27
West Valley Line LRT Sewer Relocation	Oct-27
2025-2027 Arterial and Collector Renewal Coordination	Dec-27
2025-2027 Drill Drop Manholes Rehabilitation	Dec-27
2025-2027 Large Trunk Rehabilitation	Dec-27
2025-2027 Local Sewer Rehabilitation	Dec-27
2025 Pump Station Rehabilitation	Feb-28

Interconnection Control Strategy

SUMMARY

In response to a requirement in the 1995 Approval to Operate (No. 95-MUN-117), EWS 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 (639-03-07), issued in 2021, 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 2024 monitoring program; and status of the Interconnection Rectification Assessment project.

Interconnection Status

During 2024, 7 interconnections were discovered, and none were closed. The I/C count for December 31, 2024 stands at 124 open I/Cs and 289 corrected sites (total 413).

Interconnection Monitoring

As of December 31, 2024, 113 of the 124 open I/Cs had monitoring devices. Three dry weather overflows (DWO) were discovered in 2024.

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. New focused, detailed assessment projects are ongoing as rectification projects are defined.

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 (639-03-07) issued in 2021, 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 documents the I/C status for 2024.

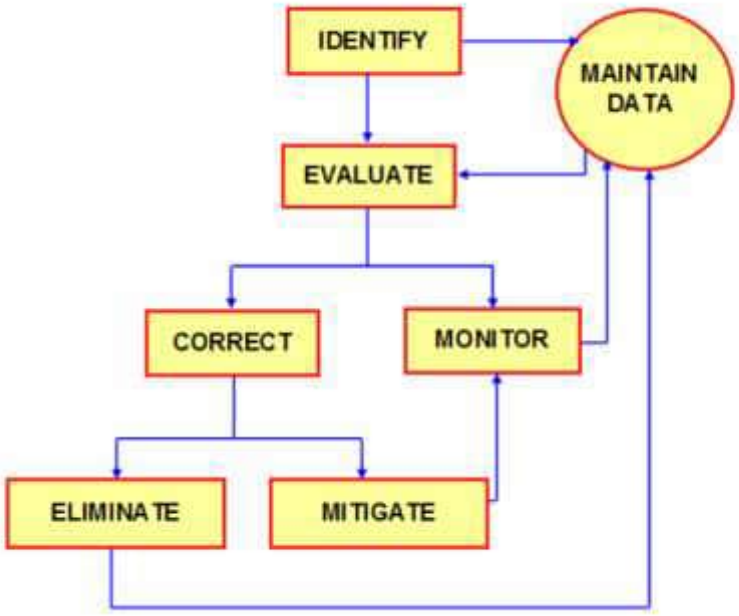

Figure 1 Interconnection Control Strategy Perpetual Monitoring and Assessment

2.0 MITIGATION MEASURES

On December 31, 2024 there were a total of 413 I/Cs. This consisted of 124 open I/Cs and 289 corrected (closed) I/Cs. In 2024, 2 previously closed interconnections were found open and 7 new interconnections were discovered. No I/Cs were closed.

The enclosed plan “2024 Status and DWO Locations” shows the locations of all of the open I/Cs in the city. A database of I/C sites is also included. Figure 2 shows the cumulative number of I/Cs over time.

Figure 2 Cumulative Number of Interconnections

2.1 CONSTRUCTION

The mitigation measures undertaken in 2024 include:

- Completion of the Queen Mary Park, Oliver, and Ritchie Neighborhood interconnection project, which investigated the potential closure of I/Cs in the area. Work started on the I/Cs that were recommended to be closed.

3.0 MONITORING AND ASSESSMENT RESULTS

In 2024, a capital project was created to purchase and install new loggers. Prior to 2024, a third-party contractor was responsible for data acquisition. This became EPCOR's responsibility when the new loggers were installed.

Benefits to upgrading the loggers include;

- Increased battery life which reduces the number of field visits
- Data goes directly into the EPCOR system which allows for improved control and monitoring of the data acquisition process
- Logger status (such as battery and signal strength) is monitored remotely and regularly checked, which allows issues to be identified earlier and improves asset management
- The site visits that were completed as a result of this effort helped improve knowledge regarding the I/Cs and expand the information in the database
- The same capital project was also used to purchase sensors for the newly discovered I/Cs as well as replacement of malfunctioning sensors.

A new protocol was developed and implemented where an automated message is sent when an I/C records wet (indicating a potential overflow). This triggers a manual review process which includes checking rainfall as well as previous work requests and history of false alarms. Through the investigation process, all information is recorded in a database, which helps to build a well-defined history for each location. The rectification studies in the past can also provide crucial insight and information regarding an I/C location. Both of these data sources can be used to inform future management and operational decisions.

This additional information as well as the logger data provides a clear picture on the status of the I/C station that can be used to quickly diagnose and fix issues.

3.1 DRY WEATHER OVERFLOWS (DWOS)

In 2024, 63 investigations of possibly overflowing sites were made with 3 Dry Weather Overflows discovered. These were reported to AEPA upon discovery.

3.2 INTERCONNECTION SITE ACTIVITY CHARACTERISTICS SUMMARY

As shown in Table 1 below, about 3% of the sites were found to have dry weather overflows each year during monitoring from 1997 to 2021, with an average of 1% over the past 5 years. These events are critical to the environment. Although only 1% of the sites experience dry weather overflow in a given year, overflows occur at different sites each year.

Table A: 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	110	2	---	---	---
2021	117	110	1	---	---	---
2022	115	106	0	---	---	---
2023	115	106	1	---	---	---
2024	124	113	3	---	---	---
Average	**142**	**128**	**3**	**37**	**82**	**26**
Proportion of Monitored Sites			**2.6%**	**29%**	**64%**	**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 neighborhoods 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 neighborhood rehab and the Stormwater Integrated Resource Plan (SIRP).

Interconnection Database
December 31, 2024

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 DR	30	71	30	49	HIGH PIPE		FALSE	RIVER	LEFT	1650	Crestwood	**1**
14	96-041	315813	313224	803		W142	S. SUMMIT DR	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	SVICTORIA DR	123	43					FALSE					**5**
18	96-085	255955	343203	813	435	134	ST GEORGE	124	64	29	64	HIGH PIPE		FALSE	CREEK	LEFT	200	Glenora	**6**
19	96-084	255954	343203	812	404	133	ST GEORGE	126	55	55	55	OVERFLOW		FALSE	CREEK	LEFT	200	Glenora	**7**
20	96-086	316420	343203	826		132	TWEEDSMUIR	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**
53	96-090	266055	343625			110 ST	N111 AVE	54	55					FALSE				Prince Rupert	**30**
60	97-129	272723	373220		401	W120	129	31	55	55	55	OVERFLOW		FALSE	RIVER	LEFT	2400	Calder	**31**
75	97-099	263753	343622		416	W87	114	56	56	56	13	OVERFLOW		FALSE				Parkdale	**32**
76	97-098	263758	343622		422	W86	114	56	56	56	13	OVERFLOW		FALSE				Parkdale	**33**
78	97-096	263708	343621		401	W83	114	56	56	56	13	OVERFLOW		FALSE				Parkdale	**34**
79	97-095	263716	343621		406	W82	114	56	56	56	13	OVERFLOW		FALSE				Parkdale	**35**
80	97-080	261662	343621		423	W80	113	56	56	56	13	OVERFLOW		FALSE				Cromdale	**36**
81	97-078	261672	343621		430	W79	113	56	56	56	13	OVERFLOW		FALSE				Cromdale	**37**
83	97-081	261660	343621		422	W80	114	56	56	56	13	OVERFLOW		FALSE				Edmonton Northlands	**38**

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	39
95	96-010	227234	283615		420	111	S61	22	54	54	54	OVERFLOW		FALSE	RIVER	RIGHT	1500	Pleasantview	40
106		224867	283221		445	112	N76	22	54	47	54	OVERFLOW		FALSE	RIVER	RIGHT	1500	Parkallen	41
107	96-007	224927	283221	813	448	112	N75	22	86	48	54	LOW PIPE		FALSE	RIVER	RIGHT	1500	McKernan	42
110	97-021	242851	313212	009	471	SASK DR	89	23D	53	48	50	LOW PIPE/WEIR		FALSE	RIVER	RIGHT	375	Windsor Park	43
111	97-022	242711	313212	008	443	W120	89	23D	53	49	50	LOW PIPE		FALSE	RIVER	RIGHT	375	Windsor Park	44
113	97-029	228112	283625		429	109	73	22	54	14	54	OVERFLOW		FALSE	RIVER	RIGHT	1500	McKernan	45
114	96-018	227757	283616	842		109	67	22	51	46	51	OVERFLOW		FALSE	RIVER	RIGHT	1500	Parkallen	46
116	96-009	227604	283615		406	109	65	22	54	49	54	OVERFLOW		FALSE	RIVER	RIGHT	1500	Parkallen	47
119	96-013	227636	283615		431	109	62	22	54	49	54	OVERFLOW		FALSE	RIVER	RIGHT	1500	Parkallen	48
120	97-045	227702	283615	842		109	61	22	54	54	54	DUAL		FALSE	RIVER	RIGHT	1500	Pleasantview	49
134	97-195	229993	313601	861	473	89	S77	44	55	49	55	LOW PIPE		FALSE	RIVER	RIGHT	3800	King Edward Park	50
135	96-059	246571	313601	859	471	91	S77	44	55	28	55	LOW PIPE/WEIR		FALSE	RIVER	RIGHT	3800	King Edward Park	51
139	96-053	229990	313601	828	435	91	S80	44	55	28	55	LOW PIPE/WEIR		FALSE	RIVER	RIGHT	3800	King Edward Park	52
143	96-064	243161	313610	859		93	S83	116	55	39	55	OVERFLOW/WEIR		FALSE	CREEK	RIGHT	750	Bonnie Doon	53
147	96-066	243180	313610	867	437	87	S83	116	50	50	50	LOW PIPE/WEIR		FALSE	CREEK	RIGHT	750	Bonnie Doon	54
149	96-051	243858	313601	802	403	89	82	254	52	50	52	LOW PIPE		FALSE	CREEK	RIGHT	1050	Bonnie Doon	55
151	97-004	246539	313601	820		89	S81	44	55	46	55	LOW PIPE		FALSE	RIVER	RIGHT	3800	King Edward Park	56
153	97-003	246506	313601		460	89	S78	44	55	28	55	LOW PIPE		FALSE	RIVER	RIGHT	3800	King Edward Park	57
154	96-025	229777	283621	804	436	87	76	44	55	49	54	LOW PIPE/WEIR		FALSE	RIVER	RIGHT	3800	King Edward Park	58
155	96-060	246574	313601	864	477	87	S77	44	55	49	55	LOW PIPE/WEIR		FALSE	RIVER	RIGHT	3800	King Edward Park	59
156	96-058	246570	313601	857		87	77	44	55	49	55	LOW PIPE/WEIR		FALSE	RIVER	RIGHT	3800	King Edward Park	60
159	97-211	251618	314005		423	85	S80	44	55	55	49	OVERFLOW		FALSE				King Edward Park	61
161	97-210	251792	314005		432	85	S79	44	55	55	49	OVERFLOW		FALSE				King Edward Park	62
162	97-209	251797	314005		437	85	S78	44	55	55	49	OVERFLOW		FALSE				King Edward Park	63
164 (n/m, 2024)	97-205	251779	314005	804	408	83	S82	44	55	49	55	OVERFLOW/WEIR		FALSE	RIVER	RIGHT	3800	King Edward Park	64
176	97-001	244348	313621	811	409	87	98	52	52	52	52	OVERFLOW		FALSE	RIVER	RIGHT	900	River Valley Riverside	65
177	97-218	244318	313621	809	406	88	98	52	52	52	52	HIGH PIPE		FALSE	RIVER	RIGHT	900	River Valley Riverside	66
178	97-217	244347	313621	804	401	92	98	256	52	52	52	OVERFLOW		FALSE	RIVER	RIGHT	500	Cloverdale	67
179	97-214	244406	313622	807	420	97	N97	50	69	68	69	OVERFLOW		FALSE	RIVER	RIGHT	1500	Cloverdale	68
180 (n/m)	97-161	244671	313617	808	418	103	97	46	50	5	50	LOW PIPE		FALSE	RIVER	LEFT	1275	Rossdale	69
181	97-159	245429	313624	869	447	104	S98	46	41	7	41	LOW PIPE		FALSE	RIVER	LEFT	1275	Rossdale	70
182 (n/m)	97-158	245174	313617	807	416	104	97	46	50	5	50	LOW PIPE		FALSE	RIVER	LEFT	1275	Downtown	71
183 (n/m)	97-157	245040	313617	805		105	97	46	50					FALSE				Rossdale	72
184 (n/m, 2024)	97-156	245170	313617	806		106	97	46	70					FALSE				Rossdale	73
185	97-138	262096	343603	913	442	99	101	243	50	8		LOW PIPE		FALSE	RIVER	LEFT	1980	Downtown	74
191	97-002	246377	313613	813		100	SASK DR	188	52	12	52	CHAMBER		FALSE	RIVER	RIGHT	1200	Strathcona	75
193	97-014	246787	313608	848	405	102	85	37	79	13	79	HIGH PIPE		FALSE	RIVER	RIGHT	900	Strathcona	76
194	97-013	246808	313608	863	406	102	83	37	79	35	79	HIGH PIPE		FALSE	RIVER	RIGHT	900	Strathcona	77
195	97-012	246799	313608	876	407	102	84	37	79	35	79	HIGH PIPE		FALSE	RIVER	RIGHT	900	Strathcona	78

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	**79**
199	97-151	245068	313617	818	502	105	96	47	52	23	52	LOW PIPE		FALSE	RIVER	LEFT	1050	Rossdale	**80**
200	97-146	245204	313613	821	443	101	94	188	52	11	52	LOW PIPE		FALSE	RIVER	RIGHT	1200	Rossdale	**81**
201 (n/m, 2024)	97-148	245013	313613	802	416	101	S94	145	52	11	52	OVERFLOW/WEIR		FALSE	RIVER	LEFT	300	Rossdale	**82**
202 (n/m, 2024)	97-163	245209	313618	805		100A	97	46	50					FALSE				Rossdale	**83**
204	97-221	245216				E101	96	45	57					FALSE				Rossdale	**84**
220	96-006	242107	313201	807	438	113	L. N. 79	22	54	47	54	LOW PIPE		FALSE	RIVER	RIGHT	1500	Parkallen	**85**
221		227702	283615			109	61	22	54	54	54	OVERFLOW/WEIR		FALSE	RIVER	RIGHT		Pleasantview	**86**
224		243209				89	83	116	56			LOW PIPE		FALSE				Bonnie Doon	**87**
226		245511	313625	801		111	97	46	50	5	50	HIGH PIPE		FALSE	RIVER	LEFT	1275	Oliver	**88**
234		246738	313614			102 (Tommy Ban	Saskatchewan D	37	71					FALSE				Strathcona	**89**
235		262142	343603			100	S. Jasper AVE	47	26					FALSE				Downtown	**90**
238		246111	313608			101	81	37	79					FALSE				Ritchie	**91**
240 (mon in 2024)		255527				119	S102	46	71					FALSE				Oliver	**92**
244 (mon in 2024)		263246				102	110	54	68					FALSE				Central McDougall	**93**
245 (mon in 2024)		263247				102	110	54	68					FALSE				Central McDougall	**94**
249 (n/m, 2024)		242945	313218			Hawrelak Park		27	66					FALSE				Hawrelak Park	**95**
250 (mon in 2024)		255647				W114	N101	46	88					FALSE				Oliver	**96**
254 (mon in 2024)		245584				112	98	46	50					FALSE				Oliver	**97**
255 (03)		245344				104	98	46	50					FALSE				Downtown	**98**
258 (03)		247763	313614			103	Sask. Dr	37	71					FALSE				River Valley Walterda	**99**
265 (06, n/m)		240896				137	82	21	65			DUAL		FALSE				Laurier Heights	**100**
266 (08)		244346	313621	814	401	92	S98	256	46	46	46	LOW PIPE		FALSE	RIVER	RIGHT	500	Cloverdale	**101**
267 (09)		243667				92	98	256						FALSE	RIVER	RIGHT		Cloverdale	**102**
268 (09)		244163				Mill Creek		44						FALSE				Mill Creek Ravine Nor	**103**
269 (13, n/m)		261579				78	111	203				LOW PIPE		FALSE				River Valley Kinnaird (	**104**
273		330340				122	39A	2				DUAL		FALSE	Whitemud	RIGHT		Aspen Gardens	**105**
274		258480				123	112	31				LOW PIPE		FALSE				Inglewood	**106**
275		282732				37	122	88				LOW PIPE		FALSE				Beacon Heights/Bergr	**107**
276 (19)		243786	9343602			96A	98	51				TRANSVERSE WEIR		FALSE				Cloverdale	**108**
277 (19)		231393				111A	50	2				Dual MH with WEIR		FALSE	Whitemud	RIGHT		Malmo Plains	**109**
278 (19)		287019				W71	130	74				LOW PIPE		FALSE	RIVER	LEFT		Balwin	**110**
279 (19)		287020				W70	130	74				LOW PIPE		FALSE	RIVER	LEFT		Balwin	**111**
280 (19)		287021				W69	130	74				LOW PIPE		FALSE	RIVER	LEFT		Balwin	**112**
281 (19)		286503				W70	129	74				LOW PIPE		FALSE	RIVER	LEFT		Balwin	**113**
282 (19)		286554				W69	129	74				LOW PIPE		FALSE	RIVER	LEFT		Balwin	**114**
283 (19)		286508				70	N127	74				LOW PIPE		FALSE	RIVER	LEFT		Balwin	**115**
82 (closed in 03, found open in 24)	97-079	261664	343621		429	W79	114		56	56	13	OVERFLOW		FALSE					**116**
56 (03, found open in 24)	97-133	272607	373219		433	W123A	129	31	55	55	55	OVERFLOW		FALSE	RIVER	LEFT	2400	Calder	**117**
285 (found open in 24)		266714				35	102	71	59	59		DUAL		FALSE	RIVER			River Valley Rundle	**118**
286 (found open in 24)		266708					102 and 103	71				DUAL		FALSE	RIVER			River Valley Rundle	**119**
287 (found open in 24)		270908				29	102	71				DUAL		FALSE	RIVER			River Valley Rundle	**120**
289 (found open in 24)		230911				97	56	9				DUAL		FALSE	RIVER			Coronet Industrial	**121**
290 (found open in 24)		212422				101	40	9				DUAL		FALSE	RIVER			Strathcona Industrial	**122**
292 (found open in 24)		212349				101	39	9				DUAL		FALSE	RIVER			Strathcona Industrial	**123**
293 (found open in 24)		230841				98	60	9				DUAL		FALSE	RIVER			Coronet Industrial	**124**

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	1-Feb-97	TRUE	RIVER	LEFT	1200	Rundle Heights	3
			344020		411	37	103	71	66	66	66	COMMON	1-Feb-97	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	16-Dec-97	TRUE	CREEK	LEFT	1350	Bergman	6
			374414	PW		HOOKE RD	HERMITAGE	74	64	64	64	PUMPWELL		TRUE	RIVER	LEFT	7620	Canon Ridge	7
			344023	869		55	S ADA BLVD	62	65	65	65	OVERFLOW	1-Feb-97	TRUE	RIVER	LEFT	1200	River Valley Highlands	8
			343621		417	W81	114		56	56	13	OVERFLOW		TRUE					9
			343602	832		94	CAMERON	148	51	51	51	DUAL	1-Feb-97	TRUE	RIVER	LEFT	450	Riverdale	10
			343602	831		W94	CAMERON	148	51	51	51	DUAL	1-Feb-97	TRUE	RIVER	LEFT	450	Riverdale	11
			343602	830		E95	CAMERON	148	51	51	51	DUAL	1-Feb-97	TRUE	RIVER	LEFT	450	Riverdale	12
			343602	829		E95	CAMERON	148	51	51	51	DUAL	1-Feb-97	TRUE	RIVER	LEFT	450	Riverdale	13
			343610	804	404	88	102	53	52	50	52	LOW PIPE	1-Feb-97	TRUE	RIVER	LEFT	675	Riverdale	14
			343610	810	405	87	102	53	67	52	67	LOW PIPE	1-Feb-97	TRUE	RIVER	LEFT	675	Riverdale	15
			343609	868	411	89	ROWLAND RD	152	43	11	42	LOW PIPE	1-Feb-97	TRUE	RIVER	LEFT	450	Riverdale	16
			343609	874		88	104	155B	24	10	24	LOW PIPE	1-Feb-97	TRUE	RIVER	LEFT	600	Riverdale	17
			343609	873		88	104	155A	24	10	24	HIGH PIPE	1-Feb-97	TRUE	RIVER	LEFT	600	Riverdale	18
			343602	858	435	94	ROWLAND RD	148	42	11	42	LOW PIPE	1-Feb-97	TRUE	RIVER	LEFT	450	River Valley Kinnaird	19
			373602	835	411	89	117	56	14	14	14	CHAMBER	1-Feb-97	TRUE	RIVER	LEFT	1950	Parkdale	20
			373601		429	N RACE TRK	NORTHLANDS	56	64	64	64	OVERFLOW	1-Feb-97	TRUE	RIVER	LEFT	1950	Edmonton Northlands	21
			373601		411	E80	S116	56	57	57	57	OVERFLOW CH	1-Feb-97	TRUE	RIVER	LEFT	1950	Edmonton Northlands	22
			373619	802		86	127	74	58	58	58	DROP MANHOLI	1-Feb-97	TRUE	RIVER	LEFT	7620	Killarney	23
			373919	410		90	127	74	58	58	58	LOW PIPE TEE	1-Feb-97	TRUE	RIVER	LEFT	7620		24
			373601	870	411	E80	116	56	57	57	57	CHAMBER	1-Feb-97	TRUE	RIVER	LEFT	1950	Parkdale	25
			343617	835		105	KINGSWAY	54	68	68			1-Feb-97	TRUE	RIVER	LEFT	3000	Central McDougall	26
			343211		418	116	107	54	72	72	72	MEMBRANE HO	1-Feb-97	TRUE	RIVER	LEFT	3000	Queen Mary Park	27
			343605	811		113	102	46	50	30	50	OVERFLOW	12-Dec-96	TRUE	RIVER	LEFT	1275	Oliver	28
			343201	874	441	W115	102	46	50	8	50	LOW PIPE	12-Dec-96	TRUE	RIVER	LEFT	1275	Oliver	29
			343605	001	T1	114	N103	46	64	64	50	LOW PIPE TEE	1-Feb-97	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 YELLOWHD	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 Industri	33
			373215	801		149	SYELLOW HD	31	63	63	63	COMMON		TRUE	RIVER	LEFT	2400	Brown Industrial	34
			373219		427	W124	129	31	55	55	55	OVERFLOW	31-May-97	TRUE	RIVER	LEFT	2400	Calder	35
			373219		417	W126	129	31	55	55	55	OVERFLOW	31-May-97	TRUE	RIVER	LEFT	2400	Calder	36
			433202	PW		E DUNLUCE	161	75	78	78	78	PUMPWELL	1-Feb-97	TRUE	RIVER	LEFT	2250	Calder	37
			343603	854	417	100	101	48	26	5	26	LOW PIPE	1-Feb-97	TRUE	RIVER	LEFT	1500	Downtown	38
			343602	049		96	GRIERSON	49	62	62	62	OVERFLOW CH	1-Feb-97	TRUE	RIVER	LEFT	1200	Downtown	39

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			343603	862		100	101	48	70	66	50	OVERFLOW	1-Feb-97	TRUE	RIVER	LEFT	1500	Downtown	40
			313613	PW		101	S94	145	52	11	52	PUMPWELL	1-Feb-97	TRUE	RIVER	LEFT	300	Rossdale	41
			313618	821	443	101	94	145	52	11	52	LOW PIPE	1-Feb-97	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	1-Feb-97	TRUE	RIVER	LEFT	600	Downtown	44
			313617	504		103	96	47	52	33	52	OVERFLOW	1-Feb-97	TRUE	RIVER	LEFT	1050	Rossdale	45
			313616	803	402	110	97	46	50	15	50	LOW PIPE	1-Feb-97	TRUE	RIVER	LEFT	1275	Oliver	46
			313617	805	414	106	97	46	50	5	50	LOW PIPE	1-Feb-97	TRUE	RIVER	LEFT	1275	Downtown	47
			313617	806	415	105	97	46	50	5	50	LOW PIPE	1-Feb-97	TRUE	RIVER	LEFT	1275	Downtown	48
			313624	905	417	BELLAMY H	N97	46	50	50	50	LOW PIPE	1-Feb-97	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	1-Feb-97	TRUE	RIVER	LEFT	1275	Rossdale	51
			313618	805	405	100A	97	46	50	5	50	LOW PIPE	1-Feb-97	TRUE	RIVER	LEFT	1275	Rossdale	52
			313618	806	OF	100	97	45	50	5	50	OVERFLOW/WE	19-Jun-97	TRUE	RIVER	LEFT	600	Rossdale	53
			313625	843		112	98	46	50	5	50	LOW PIPE TEE	1-Feb-97	TRUE	RIVER	LEFT	1275	Downtown	54
			313623	827		W100	99	109	7	5	7	LOW PIPE TEE	24-Jun-97	TRUE	RIVER	RIGHT	500	Rossdale	55
			313623	828	511	100	99	109	7	5	7	LOW PIPE	19-Jun-97	TRUE	RIVER	RIGHT	500	Rossdale	56
			313623	828	511	100	99	109	7	7	7	LOW PIPE	1-Feb-97	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	1-Feb-97	TRUE	RIVER	LEFT	1275	Rossdale	59
			313623	819	497	E100	MCDONALD	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	1-Feb-97	TRUE					68
			313224	811		W139	RAVINE DR	30	61	55	61	OVERFLOW		TRUE	RIVER	LEFT	1650	River Valley Capitol H	69
			313223	PW		ST GEORGE	VICTORIA C	123	64	29	55	PUMPWELL	1-Feb-97	TRUE	CREEK	LEFT	200	Glenora	70
			343203	SOF		W132	TWEEDSMUIR	135	50	50	50	OUTFALL		TRUE	CREEK	LEFT	100	Glenora	71
			343203	839		E132	S103	125	54	54		DUAL	1-Feb-97	TRUE	CREEK	LEFT	200	Glenora	72
			343204	841		139	101		65	65	51		12-Dec-96	TRUE					73
			342823	PW		163	116	18	75	74	75	PUMPWELL	1-Feb-97	TRUE	RIVER	LEFT	2400	Norwester Industrial	74
			372810	PW		154	123	18	80	80	80	PUMPWELL	1-Feb-97	TRUE	RIVER	LEFT	2400	Mitchell Industrial	75
			342807	014		170	105	18	75	75	75	OVERFLOW	1-Feb-97	TRUE	RIVER	LEFT	2400	McNamara Industrial	76
			312820	PW		151	N94	29	58			PUMPWELL	1-Feb-97	TRUE	RIVER	LEFT	1650	Sherwood	77
			282819	PW		WOLF WIL R	WOLF WIL C	13	75	75	75	PUMPWELL	1-Feb-97	TRUE	RIVER	LEFT	1950	Westridge	78
			252420	PW		E WEDGEWOO	WEAVER DR	257	88			PUMPWELL	1-Feb-97	TRUE	CREEK	LEFT	900	Wedgewood Heights	79
			313204	075		BV RD	81	21	59	57	58	LOW PIPE TEE	1-Feb-97	TRUE	RIVER	LEFT	1350	Laurier Heights	80
			313204	PW		BV RD	VAL VIEW C	21	58	57	58	PUMPWELL	1-Feb-97	TRUE	RIVER	LEFT	1350	Parkview	81

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			313204	803		N BV RD	VAL VIEW C	21	60	60	60	COMMON	17-Jun-97	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 C	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 MANHOLI	1-Feb-97	TRUE	RIVER	RIGHT	1350	Fulton Place	93
			344007	467		E CAPILANO	106	58	59	59	59	CHAMBER	1-Feb-97	TRUE	RIVER	RIGHT	1350	Capilano	94
			313601	858		85	82	254	52	49	52		1-Feb-97	TRUE	CREEK	RIGHT	1050	Bonnie Doon	95
			313622	819	408	96A	98	51	60	26	60	OVERFLOW/WE	1-Feb-97	TRUE	RIVER	RIGHT	600	Cloverdale	96
			313621	802	401	92	98	256	59	46	59	LOW PIPE	25-Jun-97	TRUE	RIVER	RIGHT	500	Cloverdale	97
			313602	848		W94	S81	254	83	58	83	DROP MANHOLI	1-Feb-97	TRUE	CREEK	RIGHT	1050	Mill Creek Ravine	98
			283620		436	91	70	92B	54		61	OUTFALL - NEVER WAS IC		TRUE	CREEK	RIGHT	750	Mill Creek Ravine	99
			283620		457	90	70	192	54			OUTFALL - NEVER WAS IC		TRUE	CREEK	RIGHT	300	Mill Creek Ravine	100
			283621		415	91	72	191	54		54	OUTFALL - NEVER WAS IC		TRUE	CREEK	RIGHT	525	Mill Creek Ravine	101
		229761?	283621		450	W87	73	93	56		56	OUTFALL - NEVER WAS IC		TRUE	CREEK	RIGHT	675	Mill Creek Ravine	102
			283620		420	91	66	91	54	54	54	OUTFALL - NEVER WAS IC		TRUE	CREEK	RIGHT	750	Mill Creek Ravine	103
			283611		419	92	63	194	54	54		OUTFALL - NEVER WAS IC		TRUE	CREEK	RIGHT	750	Mill Creek Ravine	104
			283611		423	91	63	193	61		54	OUTFALL - NEVER WAS IC		TRUE	CREEK	RIGHT	300	Mill Creek Ravine	105
		229112?	283611		416	90	65	91B	54	54		OUTFALL - NEVER WAS IC		TRUE	CREEK	RIGHT	600	Mill Creek Ravine	106
		229130?	283611		433	90	65	91A	54	54	54	OUTFALL - NEVER WAS IC		TRUE	CREEK	RIGHT	900	Mill Creek Ravine	107
			283621		413	W93	67	195	54			OUTFALL - NEVER WAS IC		TRUE	CREEK	RIGHT	750	Mill Creek Ravine	108
			283610	004	403	92	60	90	68	68	68	LOW PIPE	1-Feb-97	TRUE	CREEK	RIGHT	750	Coronet Industrial	109
			283610		403	92	60	90	68	68	68	LOW PIPE	1-Feb-97	TRUE	CREEK	RIGHT	750	Coronet Industrial	110
			313609	867	TUN	92	84	116	55	30	55	OUTFALL	1-Feb-97	TRUE	CREEK	RIGHT	750	Mill Creek Ravine	111
			313614	835	463	N QE RD		39	55	55	55	LOW PIPE	1-Feb-97	TRUE	RIVER	RIGHT	600	River Valley Walterda	112
			313614	PW		E104	N SASK DR	37	56	56	51	PUMPWELL	1-Feb-97	TRUE	RIVER	RIGHT	900	River Valley Walterda	113
			313614	PW		E104	N SASK DR	37	56	56	51	PUMPWELL	1-Feb-97	TRUE	RIVER	RIGHT	900	River Valley Walterda	114
			313614	003		102	SASK RIVER	38	56	56	56	CHECK VALVE	1-Feb-97	TRUE	RIVER	RIGHT	750	River Valley Walterda	115
			313613	424		LAVIGNE RD	91	188	88	90				TRUE	RIVER	RIGHT	1200	River Valley Walterda	116
			313219	PW		118	SASK DR	32	53	53	53	PUMPWELL	1-Feb-97	TRUE	RIVER	RIGHT	1200	Windsor Park	117
			313219		446	116	N SASK DR	32	55	40	55	LOW PIPE TEE	12-Jun-97	TRUE	RIVER	RIGHT	1200	Windsor Park	118
			283619	803	403	97	S71	92B	60	50	60	LOW PIPE	1-Feb-97	TRUE	CREEK	RIGHT	750	Hazeldean	119
			283625	840	428	E111	73	22	54	48	54	LOW PIPE/WEIR	10-Jun-97	TRUE	RIVER	RIGHT	1500	McKernan	120
			283221	818		112	74	22	54	49	54	OVERFLOW	1-Feb-97	TRUE	RIVER	RIGHT	1500	McKernan	121
			283221	808		112	N76	22	47	47	47	OVERFLOW	10-Jun-97	TRUE	RIVER	RIGHT	1500	McKernan	122
			283219	801		BELGRAVIA	N68	22	59	59	59	COMMON	10-Jun-97	TRUE	RIVER	RIGHT	1500	Lendrum Place	123

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			253221	038		113A	46	2	63	63	63	COMMON	12-Dec-96	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	1-Feb-97	TRUE	CREEK	RIGHT	2100	Malmo Plains	130
			253221	807		W111A	48	2	63	63	63	COMMON	1-Feb-97	TRUE	CREEK	RIGHT	2100	Malmo Plains	131
			253221	808		W111A	48	2	63	63	63	COMMON	1-Feb-97	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	12-Jun-97	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 DR	1	62	62	62	COMMON		TRUE	CREEK	RIGHT	900	Westbrook Estate	163
			253208	012		WESTBRK	W FAIRWAY	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 FAIRWAY	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	MARLBORO	1	64	64	61	HIGH PIPE	1-Feb-97	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	17-Jun-97	TRUE	RIVER	RIGHT	750	River Valley Whitemu	173
			282811	011	405	FORT EDM		14	70	70	70	PUMPWELL	1-Feb-97	TRUE	RIVER	RIGHT	1050	River Valley Whitemu	174
			252819	PW		RODNEY CR		101	80			PUMPWELL	1-Feb-97	TRUE	RIVER	RIGHT	1500	Rhatigan Ridge	175
			253613	801		101	N39	9	75	75	66	COMMON	1-Feb-97	TRUE	RIVER	RIGHT	5100	Strathcona Industrial I	176
			253618	801		101	S41	9	66	66	66	COMMON	1-Feb-97	TRUE	RIVER	RIGHT	5100	Strathcona Industrial I	177
			253602	012		W97	30	9	75	75	75	MEMBRANE HO	1-Feb-97	TRUE	RIVER	RIGHT	5100	Parsons Industrial	178
			253602	013		97	30	9	75	75	75	MEMBRANE HO	1-Feb-97	TRUE	RIVER	RIGHT	5100	Parsons Industrial	179
			253602	014		E97	30	9	75	75	75	MEMBRANE HO	1-Feb-97	TRUE	RIVER	RIGHT	5100	Parsons Industrial	180
			253603		445		30	9	71			MEMBRANE HO	1-Feb-97	TRUE	RIVER	RIGHT	5100	Parsons Industrial	181
			253203		412	E125	29A	9	78	78	78		1-Feb-97	TRUE	RIVER	RIGHT	5100	Blue Quill Estates	182
						E101	96		57				7/2/1997	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 Plain R	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 Walterda	203
112 (02)	97-024	242968	313219	006		118	EDINBORO R	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 DR	38	56	56	51	DUAL		TRUE	RIVER	RIGHT	750	River Valley Walterda	214
10 (03)	97-179	240041	313207	013		142	BUENA VIST	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
58 (03)	97-131	272633	373219		449	W122	129	31	55	55	55	OVERFLOW		TRUE	RIVER	LEFT	2400	Calder	118
77 (03)	97-097	263772	343622		433	W84	114		56	56	13	OVERFLOW		TRUE					119
91 (03)	97-194	268186	344011	801	412	43	106B	105	58	58	58	LOW PIPE/WEIR		TRUE	RIVER	RIGHT	1500	Gold Bar	120
92 (03)	97-193	268200	344011	802		E42	106B	105	58	58	58	DUAL		TRUE	RIVER	RIGHT	1500	Gold Bar	121
93 (03)	97-069	231340	253624	005	405	106	N47	2	63	61	63	LOW PIPE		TRUE	CREEK	RIGHT	2100	Empire Park	122
40 (03)	97-143	239392	313625	816	402	114	100	46	50	7	50	LOW PIPE		TRUE	RIVER	LEFT	1275	Oliver	123
229 (03)		270363	344005				n. Borden Park		56					TRUE					124
257 (03)		245306				100	McDonald		57					TRUE				Downtown	125
260 (03)		240920				Buena Vista Rd	81		58					TRUE					126
84 (05)	97-225	270533		207533		W72	113		57					TRUE					127
96 (05)	97-030	227748	283616		425	110	N66	22	54	50	54	OVERFLOW/WEIR		TRUE	RIVER	RIGHT	1500	Parkallen	128
97 (05)	96-015	227670	283616		415	111	L. S. 67	22	54	50	54	OVERFLOW		TRUE	RIVER	RIGHT	1500	Parkallen	129
100 (05)	96-034	228096	283625		415	111	72	22	54	47	54	OVERFLOW		TRUE	RIVER	RIGHT	1500	McKernan	130
101 (05)	96-036	228103	283625		421	111	73	22	54	48	54	OVERFLOW		TRUE	RIVER	RIGHT	1500	McKernan	131
102 (05)	97-033	228099	283625		420	111	74	22	54	48	54	OVERFLOW		TRUE	RIVER	RIGHT	1500	McKernan	132
103 (05)	97-034	228154	283625		407	111	75	22	54	48	54	OVERFLOW		TRUE	RIVER	RIGHT	1500	McKernan	133
104 (05)	97-035	228082	283625		426	111	76	22	54	47	54	OVERFLOW		TRUE	RIVER	RIGHT	1500	McKernan	134
261 (05)		238144				151	95		58					TRUE					135
130 (07)	96-029	229891	283622	829	470	95	73	100	55	47	55	OVERFLOW/WEIR		TRUE	CREEK	RIGHT	300	Ritchie	136
166 (07)	97-199	251790	314005	817	430	81	S80	44	55	49	55	OVERFLOW/WEIR		TRUE	RIVER	RIGHT	3800	King Edward Park	137
105 (07)	96-038	228152	283625	802	401	111	N76	22	54	47	54	LOW PIPE		TRUE	RIVER	RIGHT	1500	McKernan	138
108 (07)	96-004	224871	283221		451	112	N73	22	54	47	54	OVERFLOW		TRUE	RIVER	RIGHT	1500	McKernan	139
109 (07)	96-005	224875	283221		454	112	N72	22	54	49	54	OVERFLOW		TRUE	RIVER	RIGHT	1500	McKernan	140
236 (07)		242092	313201			112	S78		86			OVERFLOW		TRUE				Parkallen	141
263 (07)		278090				105	130		59					TRUE				Lauderdale	142
121 (07)	96-019	229419	283618	816		99	70	92B	61	50	61	DUAL		TRUE	CREEK	RIGHT	750	Hazeldean	143
54 (07)	97-180	254704	342821	025	410	156	116	18	75	58	75	LOW PIPE/WEIR		TRUE	RIVER	LEFT	2400	Alberta Park Industria	144
264 (05, n/m)		278091				105	130		59					TRUE				Lauderdale	145
206 (09)	97-213	243177	313610	866		W87	S83		49			LOW PIPE		TRUE				Bonnie Doon	146
168 (03)	97-197	252003	314005	828	438	81	S78	44	55	49	55	OVERFLOW/WEIR		TRUE	RIVER	RIGHT	3800	King Edward Park	147
174 (03)	97-203	251466	314004	816	412	77	S81	44	56	50	56	OVERFLOW		TRUE	RIVER	RIGHT	3800	King Edward Park	148
158 (10)	97-212	251782	314005		416	85	S81		55	55	49	OVERFLOW		TRUE					149
47 (10)	97-144	239410	313221	815		115	100	46	54	30	54	OVERFLOW		TRUE	RIVER	LEFT	1275	Oliver	150
122 (10)	97-027	229960	283623	833		98	S72	92B	61	49	61	OVERFLOW		TRUE	CREEK	RIGHT	750	Hazeldean	151
125 (10)	96-023	229520	283619	806	402	96	S71	92B	60	50	60	LOW PIPE		TRUE	CREEK	RIGHT	750	Hazeldean	152
131 (10)	96-028	229883	283622	821	426	95	74	100	55	14	55	OVERFLOW/WEIR		TRUE	CREEK	RIGHT	300	Ritchie	153
132 (10)	96-027	229875	283622	812	420	95	75	100	55	14	55	OVERFLOW/WEIR		TRUE	CREEK	RIGHT	300	Ritchie	154

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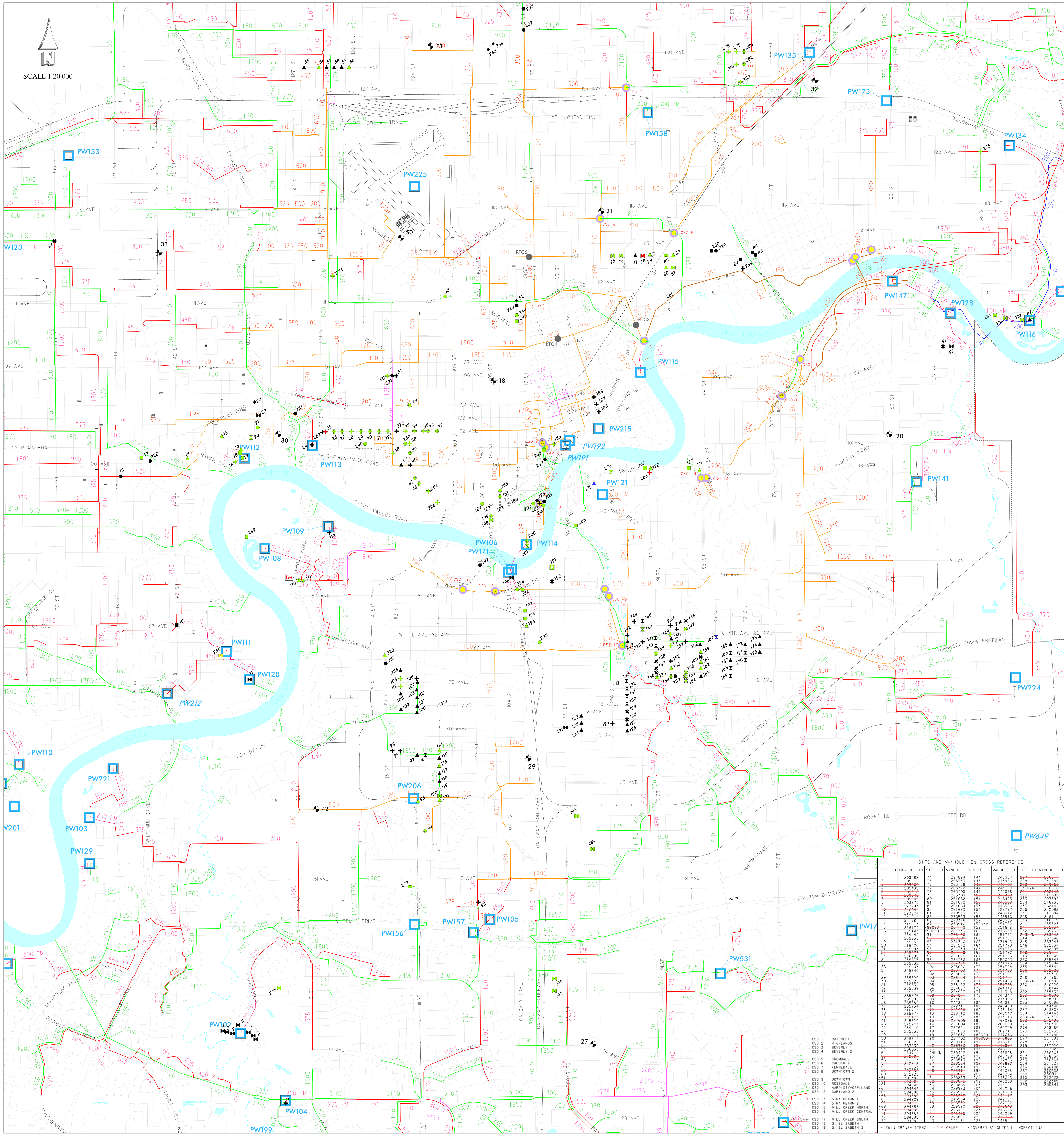
124 (n/m) (10)	97-028	229422	283618	819		98	S70	92B	61	50	61	OVERFLOW		TRUE	CREEK	RIGHT	750	Hazeldean	155
165 (11)	97-200	251786	314005	813	459	81	S81	44	55	50	55	OVERFLOW		TRUE	RIVER	RIGHT	3800	King Edward Park	156
171 (11)	96-075	251791	314005	818	431	79	S80	44	56	50	56	OVERFLOW/WEIR		TRUE	RIVER	RIGHT	3800	King Edward Park	157
172 (11)	97-201	251787	314005	813	422	79	S81	44	56	50	56	OVERFLOW		TRUE	RIVER	RIGHT	3800	King Edward Park	158
230 (n/m) (12)		270510	344005				n. Borden Park		56					TRUE				Edmonton Northlands	159
243 (n/m) (12)		263242				102	111		68					TRUE				Central McDougall	160
167 (12)	97-198	251795	314005	824	435	81	S79	44	55	49	55	OVERFLOW		TRUE	RIVER	RIGHT	3800	King Edward Park	161
169 (12)	97-196	231975	314005	832	443	81	S77	44	55	52	55	OVERFLOW/WEIR		TRUE	RIVER	RIGHT	3800	King Edward Park	162
170 (12)	96-078	251796	314005	826	436	79	S79	44	56	49	56	OVERFLOW/WEIR		TRUE	RIVER	RIGHT	3800	King Edward Park	163
173 (12)	97-204	251711	314004	808	404	77	S82	44	56	50	56	OVERFLOW		TRUE	RIVER	RIGHT	3800	King Edward Park	164
175 (12)	97-202	251758	314004	826	415	77	S80	44	56	50	56	OVERFLOW		TRUE	RIVER	RIGHT	3800	King Edward Park	165
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	166
272 (14) RPN 0016		255496				W115	102							TRUE				Oliver	167
157	96-045	246533	313601	815	421	87	81	44	55	49	55	LOW PIPE		TRUE	RIVER	RIGHT	3800	King Edward Park	168
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	169
262 (05, closed '16)		255832				W123	102	46	47					TRUE				Oliver	170
259 (03, closed '16)		270391				73	N112	56	56					TRUE				Virginia Park	171
57 (18)	97-132	272618	373219		440	W123	129	31	55	55	55	OVERFLOW		TRUE	RIVER	LEFT	2400	Calder	172
59 (18)	97-130	272636	373219		452	W121	129	31	55	55	55	OVERFLOW		TRUE	RIVER	LEFT	2400	Calder	173
136 (18)	96-057	229992	313601	856	464	91	77	44	55	28	55	LOW PIPE/WEIR		TRUE	RIVER	RIGHT	3800	King Edward Park	174
141 (18)	97-005	246486	313601	806	415	91	S82	44	55	31	55	OVERFLOW/WEIR		TRUE	RIVER	RIGHT	3800	King Edward Park	175
150 (18)	96-044	246489	313601	809		89	S82	44	55	46	55	LOW PIPE		TRUE	RIVER	RIGHT	3800	King Edward Park	176
98 (19)	96-002	224786	283220	807	418	112A	67	22	54	54	54	LOW PIPE		TRUE	RIVER	RIGHT	1500	Parkallen	177
99 (19)	96-001	224790	283220	811	421	112	67	22	51	51	51	LOW PIPE		TRUE	RIVER	RIGHT	1500	Parkallen	178
117 (19)	96-011	227631	283615		428	109	64	22	54	50	54	OVERFLOW		TRUE	RIVER	RIGHT	1500	Parkallen	179
118 (19)	96-012	227633	283615		429	109	63	22	54	49	54	OVERFLOW		TRUE	RIVER	RIGHT	1500	Parkallen	180
144 (19)	96-062	243904	313609	869	870	W93	L. S. 84	116	55	30	55	LOW PIPE		TRUE	CREEK	RIGHT	750	Bonnie Doon	181
163 (19)	97-208	231913	314005		442	85	S77	44	55	55	49	OVERFLOW		TRUE				King Edward Park	182
223		246523	313601	814		93	81	22	55			LOW PIPE		TRUE				Bonnie Doon	183
52 (22)	97-107	263239	343617	857		102	111	54	68	14	68	FLOW SPLIT		TRUE	RIVER	LEFT	3000	Spruce Avenue	184
51 (22)	97-108	256922	343210	846	412	W115	106	54	83	64	83	LOW PIPE		TRUE	RIVER	LEFT	3000	Queen Mary Park	185
284 (22)		221327				172A	76							TRUE				Callingwood	186

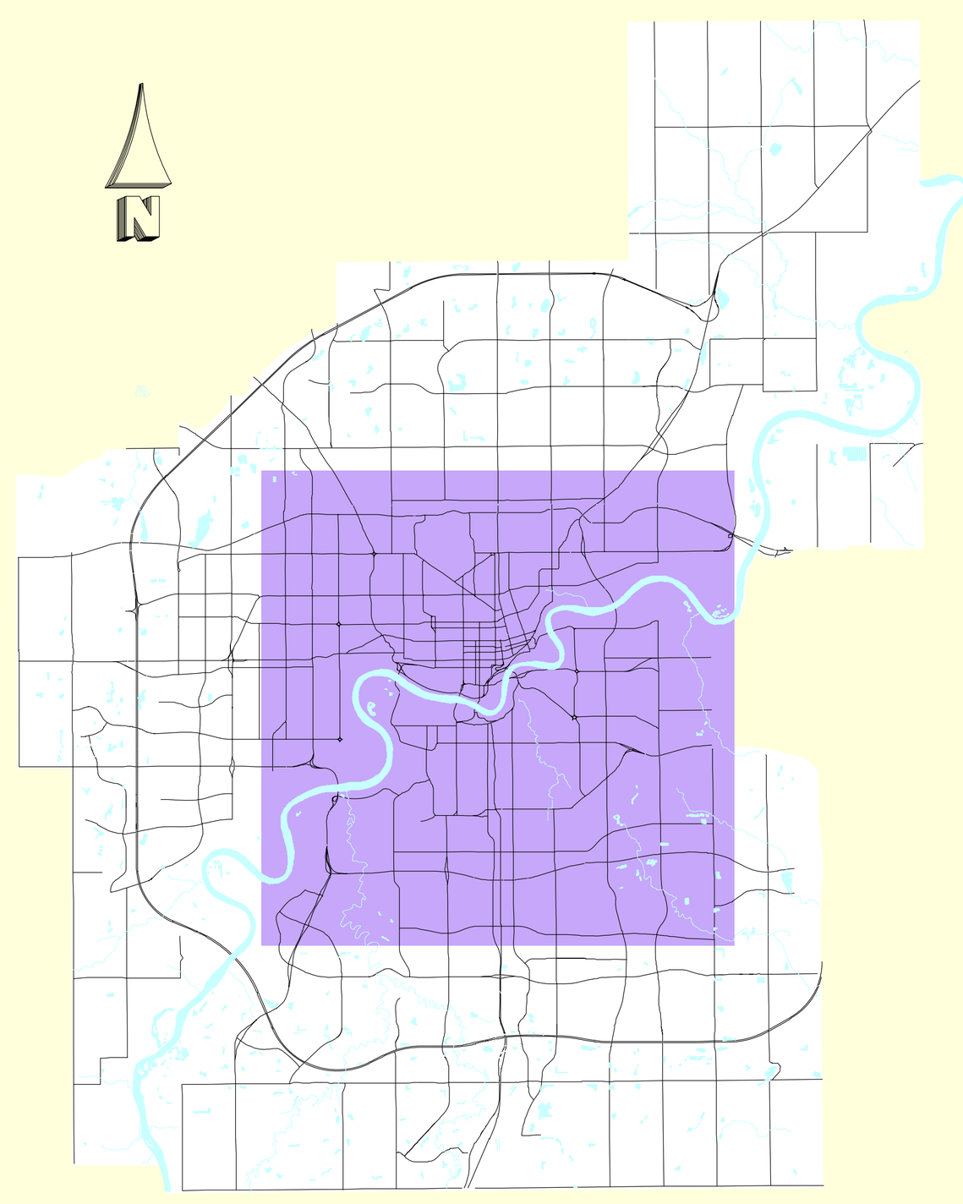
IC Site#	Plan	IC MH#	CADAS-TRAL	SAN_MH	STRM_MH	STREET	AVENUE	OF_ NUM	IC_ AGE	SAN_ AGE	STRM_ AGE	ICTYPE	Delete date	COR-RECTED	OF_ LOC1	OF_ LOC2	OF_ DIA	NHOOD	COUNT
Removed from database (emergency pump overflow)																			
1 (02)	97-070	208392	253203	007	412	125	29A	1	76			LOW PIPE			CREEK	RIGHT	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 DR	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)



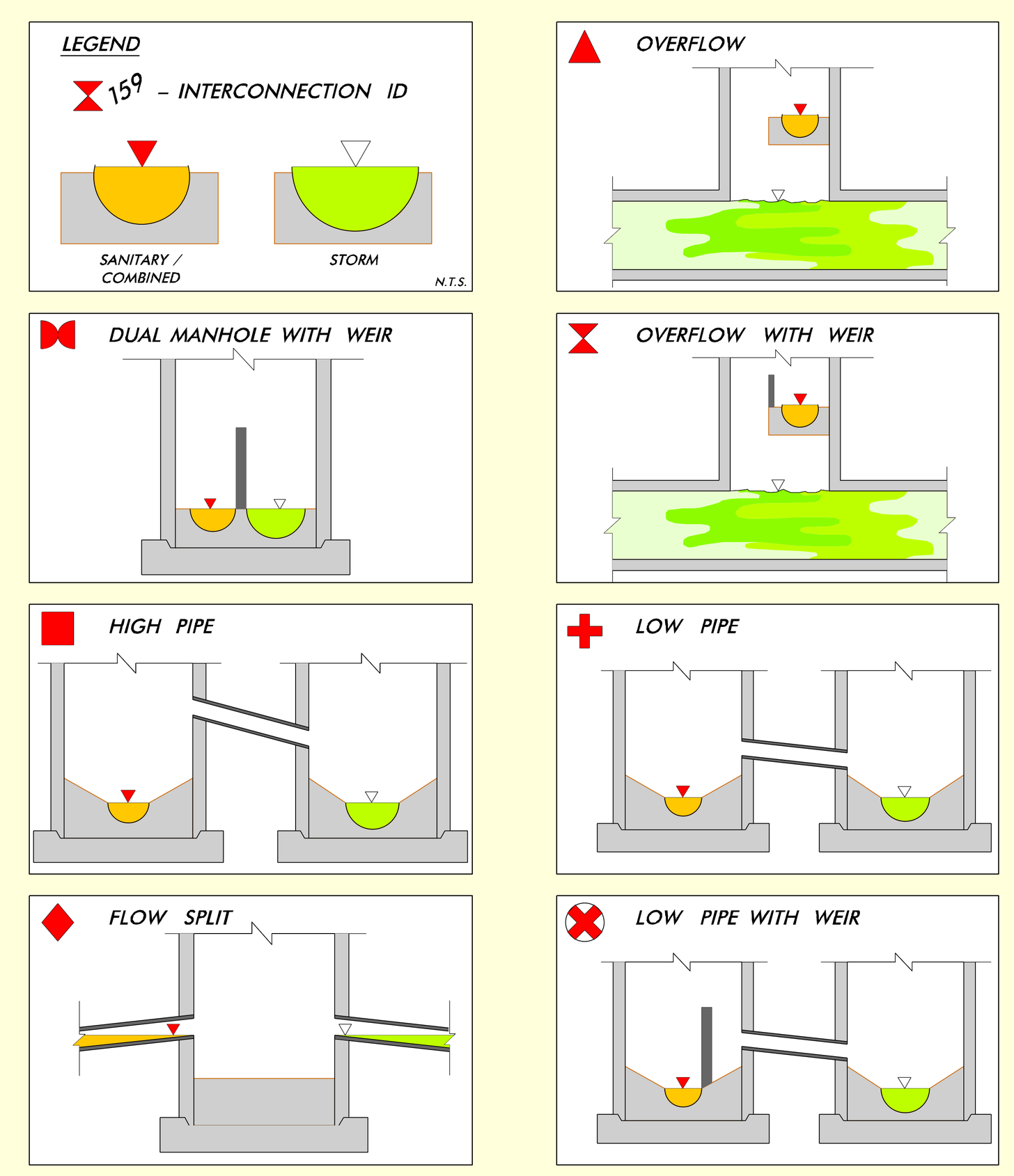
INTERCONNECTION CONTROL STRATEGY

2024 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
- 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 : IC21SUM.DGN FEB. 2024

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, 2024. The monthly volumes discharged to the North Saskatchewan River (NSR) are indicated in Figures 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. Monitored CSO volumes are indicated on Figure 4. A tabular summary of the flow volumes and estimations of total monthly volumes discharged is also included (Table 2). Of the sites reported, the storm and combined system contributed 99.9% and 0.1% of the volume, respectively.

The total (measured and estimated) flow volume discharged from the storm sewer system to the NSR and tributaries in 2024 was 125.8 million m^3, a 20.3% decrease compared to the 2023 volume of 151.3 million m^3. This decrease is due to 2024 being a drier year compared to 2023. The 2024 flow volumes from the 30th Avenue, Groat Road, Quesnell, and Kennedale storm outfalls were 5.8, 2.9, 13.1, and 7.6 million m^3, respectively. The volume of flows from Mill Creek was 15.2 million m^3.

For the combined sewer system, the total CSO flow volume discharged to the NSR in 2024 was 223,833 m^3, a 279 % decrease compared to the 2023 volume of 608,473 m^3. This large decrease is due to 2024 being a drier year than 2023. The 2023 flow volumes from the Rat Creek, Highlands, Capilano, Cromdale, and Strathearn CSOs, were 95,060; 52,932; 12,545; 70; and 4 m^3, respectively.

Water quality samples were obtained for the majority of the significant discharge events during the year. As well, a total of 90 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 sum of storm and CSO loading to the NSR consists of about 10,054 tonnes of total suspended solids (TSS), 1,353 tonnes of biochemical oxygen demand (BOD), 55 tonnes of total phosphorous (TP), 119 tonnes of nitrite and nitrate ($NO_2 + NO_3$), 56 tonnes of ammonia (NH_3), 238 tonnes of total Kjeldahl nitrogen (TKN), 19,777 tonnes of chloride and 10,085 x 10^{12} MPN of *E. coli*. Summaries of the Rat Creek CSO concentration statistics are shown in Table 5.

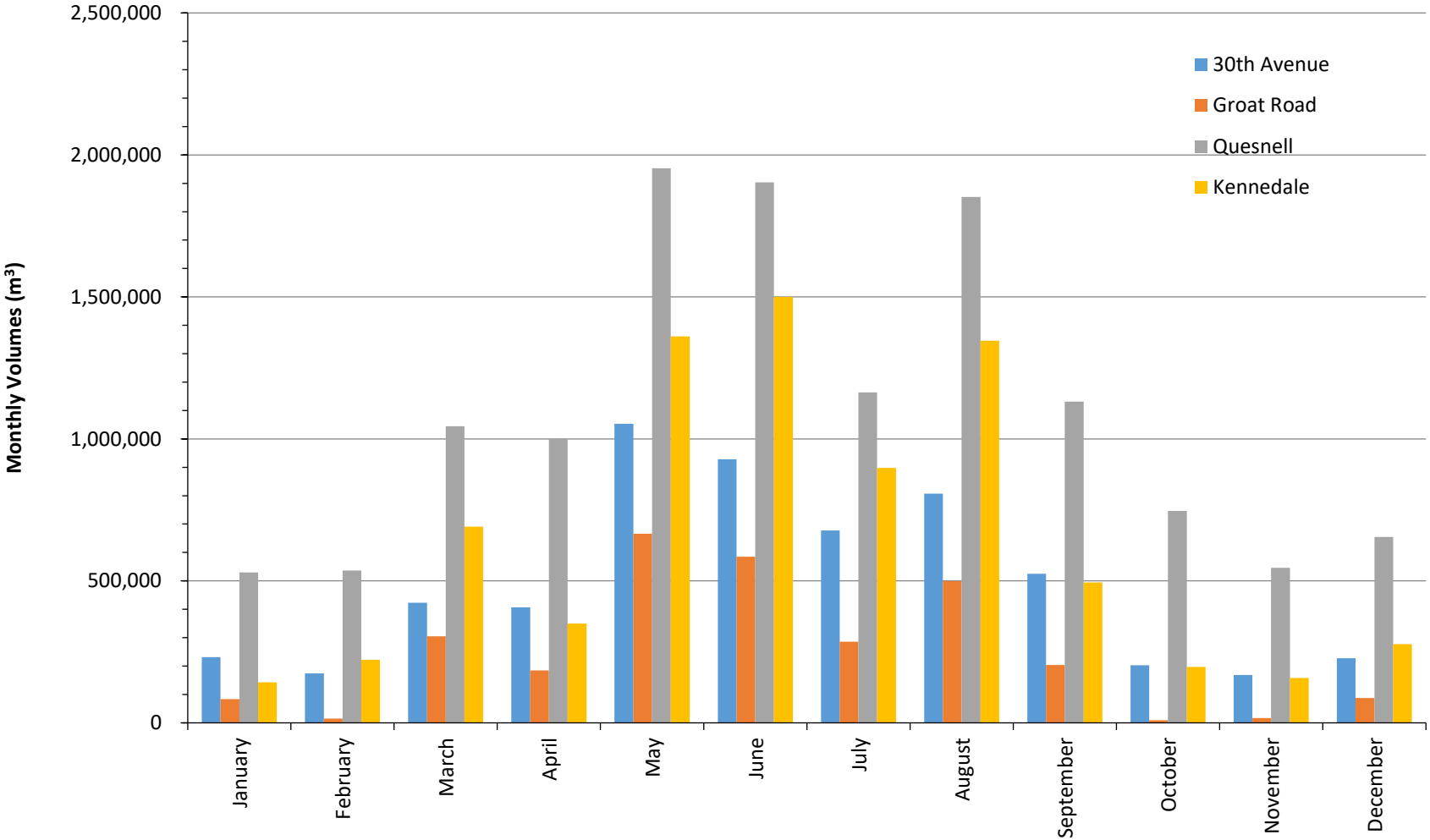


Figure 1: Measured + Estimated Storm Volume in 2024

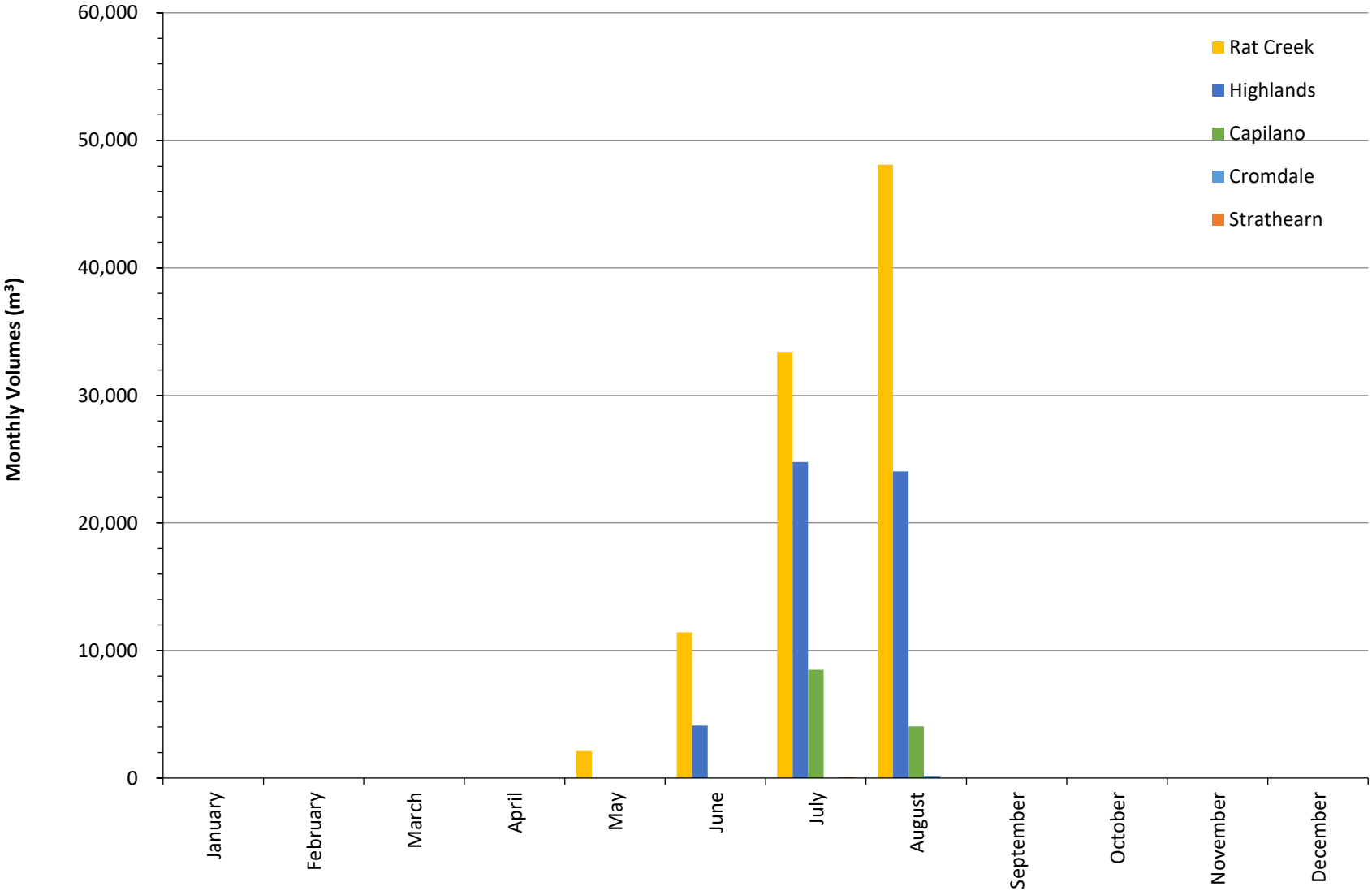


Figure 2: Measured CSO Volumes in 2024

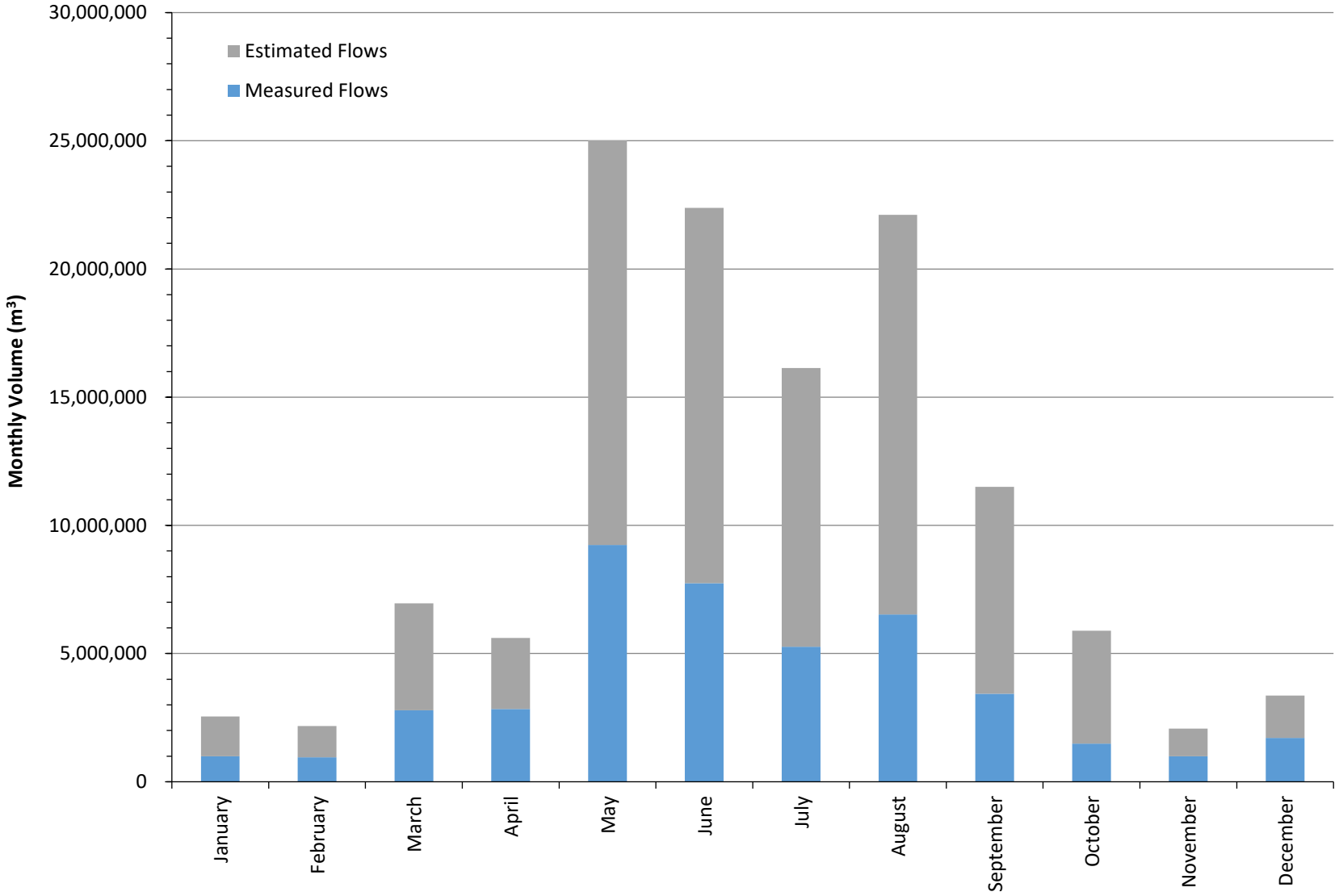


Figure 3: Total Storm (Measured + Unmonitored) Volumes in 2024 (All Storm Outfalls to NSR and Creeks)

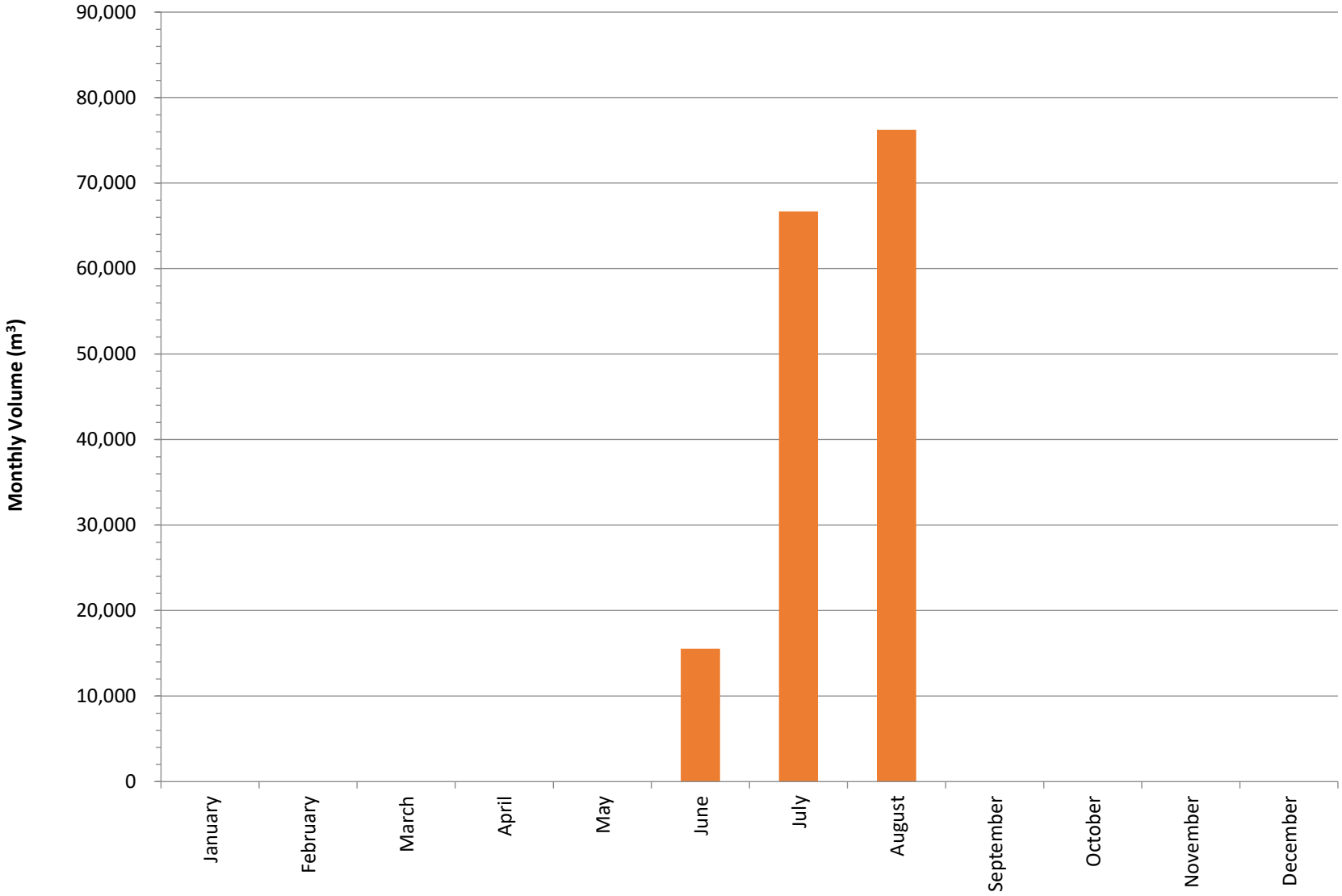


Figure 4: Monitored CSO Volume in 2024

Table 2: 2024 Annual Discharge Volumes (in Cubic Meters)

	Storm Outfalls				CSO Outfalls				
Month	**30th Avenue**	**Groat Road**	**Quesnell**	**Kennedale**	**Rat Creek**	**Highlands**	**Capilano**	**Cromdale**	**Strathearn**
January	231,445	83,186	529,356	142,404	0	0	0	0	0
February	174,176	15,331	536,584	221,883	0	0	0	0	0
March	423,044	304,486	1,044,439	690,890	0	0	0	0	0
April	406,546	185,152	1,000,818	349,623	0	0	0	0	0
May	1,052,978	666,531	1,953,171	1,360,783	2,115	0	0	0	0
June	928,234	584,916	1,903,431	1,499,967	11,428	4,116	0	0	0
July	677,363	285,293	1,163,600	897,978	33,423	24,775	8,502	0	4
August	807,526	499,576	1,851,821	1,346,091	48,094	24,041	4,043	70	0
September	525,130	203,977	1,131,541	494,388	0	0	0	0	0
October	203,098	9,750	745,922	197,525	0	0	0	0	0
November	168,425	16,641	546,401	158,378	0	0	0	0	0
December	227,238	87,928	655,119	277,643	0	0	0	0	0
Total	**5,825,204**	**2,942,767**	**13,062,203**	**7,637,552**	**95,060**	**52,932**	**12,545**	**70**	**4**

	Measured Flows		[3]Unmonitored Flows		Total Flow	
Month	**[1]Storm Outfalls**	**[2]CSO Outfalls**	**Storm Outfalls**	**CSO Outfalls**	**Storm Outfalls**	**CSO Outfalls**
January	997,214	0	1,545,609	0	2,542,824	0
February	950,305	0	1,227,785	0	2,178,090	0
March	2,784,684	0	4,173,516	0	6,958,200	0
April	2,839,992	0	2,770,153	0	5,610,145	0
May	9,231,936	0	15,782,771	2115	25,014,707	2,115
June	7,747,450	15,544	14,635,527	0	22,382,977	15,544
July	5,262,414	66,704	10,877,973	0	16,140,387	66,704
August	6,521,912	76,248	15,587,636	0	22,109,548	76,248
September	3,429,724	0	8,069,667	0	11,499,391	0
October	1,489,628	0	4,396,538	0	5,886,166	0
November	996,560	0	1,076,504	0	2,073,064	0
December	1,709,794	0	1,653,759	0	3,363,553	0
Total	**43,961,614**	**158,496**	**81,797,438**	**2,115**	**125,759,051**	**160,611**

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.

[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 2024

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	111	533	75	8	-	-	-	11	0
February	38	11	9	8	-	-	-	10	0
March	96	232	71	28	-	-	-	31	0
April	120	346	111	63	-	-	-	16	0
May	124	169	103	49	1,000	-	-	46	0
June	83	167	81	82	1,116	1,377	-	36	2
July	45	109	49	28	332	332	332	34	1
August	43	148	51	28	248	248	248	49	1
September	80	114	39	25	-	-	-	21	0
October	46	52	4	9	-	-	-	11	0
November	44	275	31	13	-	-	-	10	0
December	181	178	86	26	-	-	-	13	0
Mean Annual FWC =	**85**	**183**	**66**	**42**	**399**	**375**	**305**	**288**	**4**

Mean Annual FWC for all Storm = **75**

Mean Annual FWC for all CSO = **384**

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	20	51	11	5	-	-	-	11	0
February	9	3	4	4	-	-	-	10	0
March	13	26	13	12	-	-	-	31	0
April	11	16	16	10	-	-	-	15	0
May	6	12	8	9	179	-	-	47	0
June	11	17	7	9	204	260	-	36	2
July	13	52	11	7	110	110	110	32	1
August	16	14	6	7	94	94	94	49	1
September	11	14	5	6	-	-	-	21	0
October	22	10	14	5	-	-	-	11	0
November	18	37	6	9	-	-	-	10	0
December	42	27	9	7	-	-	-	13	0
Mean Annual FWC =	**13**	**21**	**9**	**8**	**115**	**114**	**105**	**286**	**4**

Mean Annual FWC for all Storm = **11**

Mean Annual FWC for all CSO = **114**

Table 3: Calculated Flow-Weighted Mean Monthly and Annual Constituent Concentrations for 2024 (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	0.7	1.2	0.5	0.4	-	-	-	12	0
February	0.6	0.1	0.3	0.4	-	-	-	10	0
March	0.7	1.2	0.4	0.8	-	-	-	33	0
April	0.4	0.9	0.4	0.3	-	-	-	16	0
May	0.3	0.4	0.9	0.2	2.7	-	-	47	0
June	0.3	0.5	0.3	0.3	2.7	2.7	-	35	0
July	0.3	0.7	0.3	0.2	2.7	2.7	2.7	36	1
August	0.6	0.4	0.3	0.2	7.8	7.8	7.8	51	4
September	0.4	0.6	0.3	0.3	-	-	-	26	0
October	0.5	1.2	0.3	0.5	-	-	-	11	0
November	0.6	1.9	0.4	0.4	-	-	-	11	0
December	1.3	1.8	0.4	0.3	-	-	-	14	0
Mean Annual FWC =	**0.5**	**0.7**	**0.4**	**0.3**	**5.3**	**5.0**	**4.3**	**302**	**5**

Mean Annual FWC for all Storm = **0.4**

Mean Annual FWC for all CSO = **5.1**

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	3.5	1.3	1.5	2.5	-	-	-	12	0
February	2.8	0.9	1.3	1.4	-	-	-	10	0
March	1.1	0.5	0.7	0.6	-	-	-	33	0
April	1.3	0.6	0.7	0.7	-	-	-	16	0
May	0.8	0.6	0.7	0.5	0.2	-	-	47	0
June	1.2	0.5	0.8	0.8	0.2	0.2	-	35	0
July	1.6	0.5	1.1	0.7	0.2	0.2	0.2	36	1
August	0.8	0.6	0.8	0.7	0.0	0.1	0.1	47	4
September	1.0	0.8	1.0	0.9	-	-	-	26	0
October	2.0	1.1	1.0	1.1	-	-	-	11	0
November	3.3	1.1	1.1	1.7	-	-	-	11	0
December	1.6	1.3	0.8	1.3	-	-	-	14	0
Mean Annual FWC =	**1.4**	**0.6**	**0.9**	**0.8**	**0.1**	**0.1**	**0.1**	**298**	**5**

Mean Annual FWC for all Storm = **0.9**

Mean Annual FWC for all CSO = **0.1**

Table 3: Calculated Flow-Weighted Mean Monthly and Annual Constituent Concentrations for 2024 (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	1.3	1.6	0.7	1.1	-	-	-	12	0
February	1.5	1.1	0.7	2.1	-	-	-	10	0
March	0.8	0.9	0.7	1.4	-	-	-	33	0
April	0.6	0.6	0.7	0.6	-	-	-	16	0
May	0.3	0.5	0.3	0.2	3.4	-	-	47	0
June	0.3	0.3	0.2	0.2	3.4	3.4	-	35	0
July	0.3	0.5	0.3	0.3	3.4	3.4	3.4	36	1
August	1.4	0.5	0.3	0.3	5.2	5.2	5.2	51	4
September	0.6	0.7	0.3	0.5	-	-	-	26	0
October	1.2	0.4	0.3	1.3	-	-	-	11	0
November	1.0	1.5	0.6	1.4	-	-	-	11	0
December	0.8	1.4	0.7	0.9	-	-	-	14	0
Mean Annual FWC =	**0.7**	**0.6**	**0.4**	**0.5**	**4.3**	**4.2**	**3.9**	**302**	**5**

Mean Annual FWC for all Storm = **0.5**

Mean Annual FWC for all CSO = **4.2**

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	3.1	5.7	1.9	2.8	-	-	-	12	0
February	2.7	1.6	1.3	3.0	-	-	-	10	0
March	3.0	3.9	2.1	3.6	-	-	-	33	0
April	2.3	3.5	2.0	1.7	-	-	-	16	0
May	1.4	2.2	1.4	1.5	15.2	-	-	47	0
June	1.7	2.0	1.3	1.7	15.2	15.2	-	35	0
July	1.5	3.4	1.6	1.5	15.2	15.2	15.2	36	1
August	3.9	2.5	1.4	1.6	46.1	46.1	46.1	46	4
September	2.6	3.6	1.4	2.0	-	-	-	26	0
October	2.7	2.7	1.3	3.1	-	-	-	11	0
November	2.3	8.5	1.6	2.6	-	-	-	11	0
December	4.1	5.6	2.0	2.1	-	-	-	14	0
Mean Annual FWC =	**2.4**	**2.9**	**1.6**	**1.9**	**30.8**	**29.2**	**25.2**	**297**	**5**

Mean Annual FWC for all Storm = **2.0**

Mean Annual FWC for all CSO = **29.9**

Table 3: Calculated Flow-Weighted Mean Monthly and Annual Constituent Concentrations for 2024 (Cont.)

Chloride (mg/L)

	Storm Outfalls				CSO Outfalls			No. of Samples	
Month	**30th Ave**	**Groat Road**	**Quesnell**	**Kennedale**	**Rat Creek**	**Highlands**	**Capilano**	**Storm**	**CSO**
January	638	1283	269	425	-	-	-	12	0
February	611	576	228	515	-	-	-	10	0
March	635	651	347	625	-	-	-	33	0
April	334	283	411	368	-	-	-	16	0
May	79	62	125	141	25	-	-	47	0
June	70	46	92	105	25	25	-	35	0
July	100	54	106	99	25	25	25	36	1
August	65	46	71	88	31	31	31	47	4
September	61	78	86	100	-	-	-	26	0
October	142	120	95	142	-	-	-	11	0
November	219	834	101	211	-	-	-	11	0
December	764	1257	474	691	-	-	-	14	0
Mean Annual FWC =	**206**	**209**	**172**	**209**	**28**	**28**	**27**	**298**	**5**

Mean Annual FWC for all Storm = **191.9** Mean Annual FWC for all CSO = **27.7**

E. coli (MPN/100 mL)

	Storm Outfalls				CSO Outfalls			No. of Samples	
Month	**30th Ave**	**Groat Road**	**Quesnell**	**Kennedale**	**Rat Creek**	**Highlands**	**Capilano**	**Storm**	**CSO**
January	37,669	23,798	5,718	1,128	-	-	-	12	0
February	22,266	2,868	5,474	869	-	-	-	10	0
March	18,815	16,161	9,606	9,803	-	-	-	33	0
April	17,311	22,193	13,042	1,965	-	-	-	16	0
May	13,380	9,431	9,206	4,005	2,330,000	-	-	48	1
June	15,839	9,251	12,467	3,202	1,504,382	1,064,820	-	37	2
July	16,625	10,433	11,340	3,887	1,599,990	1,600,000	1,600,000	38	1
August	174,697	19,538	15,405	6,834	1,573,423	1,570,000	1,570,000	57	4
September	33,223	24,664	8,751	4,312	-	-	-	28	0
October	19,303	3,596	10,275	527	-	-	-	11	0
November	7,717	148,140	5,572	75	-	-	-	11	0
December	34,157	49,631	23,042	1,893	-	-	-	14	0
Mean Annual FWC =	41,054	16,101	11,345	4,390	1,591,297	1,544,759	1,590,332	**315**	**8**

Mean Annual FWC for all Storm = **15,890** Mean Annual FWC for all CSO = **1,575,877**

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 2024

Total Suspended Solids (kg)

	Storm Outfalls					Creeks							CSO Outfalls				
Month	30th Ave Storm	Groat Rd. Storm	Quesnell Storm	Kennedale Storm	Unmonitored Storm	Blackmud Creek	Gold Bar Creek	Horsehills Creek	Mill Creek	Wedgewood Creek	Whitemud Creek	**Total Storm**	Rat Creek CSO	Highlands CSO	Capilano CSO	Remaining CSO	**Total CSO**
January	25,599	44,379	39,743	1,177	113,613	44,996	7,654	18,445	25,439	5,659	39,597	**366,301**	0	0	0	0	**0**
February	6,595	172	4,908	1,702	9,120	3,605	613	1,475	1,806	453	3,167	**33,615**	0	0	0	0	**0**
March	40,419	70,625	74,348	19,058	189,492	74,949	12,750	30,724	60,631	9,425	65,956	**648,378**	0	0	0	0	**0**
April	48,914	64,043	110,948	22,054	216,731	85,755	14,588	35,154	98,222	10,784	75,466	**782,660**	0	0	0	0	**0**
May	130,111	112,650	201,386	66,719	876,463	420,797	53,870	129,812	464,192	45,875	370,309	**2,872,183**	2,115	0	0	715	**2,830**
June	76,774	97,901	153,360	123,371	759,460	238,074	61,794	148,908	219,597	26,577	209,510	**2,115,325**	12,755	5,668	0	7,249	**25,673**
July	30,534	31,113	57,233	25,331	284,451	112,476	20,627	49,706	87,134	11,647	98,981	**809,231**	11,096	8,225	2,823	10,013	**32,157**
August	34,495	73,833	93,539	37,576	503,963	159,904	28,845	69,510	95,213	24,262	140,718	**1,261,858**	11,927	5,962	1,003	6,546	**25,439**
September	41,915	23,246	44,508	12,503	183,991	78,288	12,402	29,885	51,803	9,539	68,895	**556,973**	0	0	0	70	**70**
October	9,261	505	3,327	1,836	25,662	12,064	1,697	4,090	36	1,270	10,617	**70,365**	0	0	0	0	**0**
November	7,442	4,585	17,144	2,004	24,038	9,515	1,619	3,900	3,654	1,197	8,373	**83,471**	0	0	0	0	**0**
December	41,026	15,658	56,039	7,093	98,268	38,922	6,621	15,956	48,398	4,895	34,253	**367,128**	0	0	0	0	**0**
Total	**493,084**	**538,711**	**856,482**	**320,423**	**3,285,250**	**1,279,344**	**223,081**	**537,564**	**1,156,125**	**151,581**	**1,125,843**	**9,967,488**	**37,893**	**19,856**	**3,825**	**24,593**	**86,168**

Total Load From Storm and CSO = 10,053,655

Biochemical Oxygen Demand (kg)

	Storm Outfalls					Creeks							CSO Outfalls				
Month	30th Ave Storm	Groat Rd. Storm	Quesnell Storm	Kennedale Storm	Unmonitored Storm	Blackmud Creek	Gold Bar Creek	Horsehills Creek	Mill Creek	Wedgewood Creek	Whitemud Creek	**Total Storm**	Rat Creek CSO	Highlands CSO	Capilano CSO	Remaining CSO	**Total CSO**
January	4,736	4,281	5,924	742	14,787	5,854	996	2,400	3,285	736	5,152	**48,891**	0	0	0	0	**0**
February	1,531	47	1,965	826	2,740	1,083	184	443	531	136	951	**10,438**	0	0	0	0	**0**
March	5,691	7,870	13,846	8,249	28,994	11,460	1,949	4,698	11,649	1,441	10,085	**105,930**	0	0	0	0	**0**
April	4,579	2,920	15,583	3,465	20,240	8,000	1,361	3,280	12,015	1,006	7,040	**79,488**	0	0	0	0	**0**
May	6,839	7,725	15,691	12,906	65,520	28,752	4,321	10,412	33,969	3,164	25,302	**214,601**	379	0	0	128	**507**
June	10,288	10,165	13,206	14,080	77,833	25,295	6,055	14,590	24,510	2,896	22,260	**221,176**	2,332	1,072	0	1,353	**4,757**
July	9,097	14,796	12,814	6,398	85,655	31,519	6,493	15,645	21,666	3,674	27,738	**235,496**	3,676	2,725	935	3,318	**10,654**
August	12,563	6,748	11,039	9,457	63,031	20,614	3,729	8,986	13,637	2,870	18,140	**170,815**	4,521	2,260	380	2,481	**9,642**
September	5,627	2,911	5,587	2,985	25,029	11,129	1,626	3,917	7,296	1,305	9,794	**77,206**	0	0	0	26	**26**
October	4,378	93	10,808	998	31,777	14,520	2,121	5,112	42	1,578	12,778	**84,205**	0	0	0	0	**0**
November	3,005	609	3,495	1,474	5,440	2,153	366	883	1,086	271	1,895	**20,676**	0	0	0	0	**0**
December	9,517	2,361	6,135	1,998	15,305	6,062	1,031	2,485	7,862	762	5,334	**58,852**	0	0	0	0	**0**
Total	**77,851**	**60,526**	**116,091**	**63,578**	**436,350**	**166,441**	**30,232**	**72,850**	**137,547**	**19,839**	**146,469**	**1,327,775**	**10,908**	**6,057**	**1,315**	**7,306**	**25,586**

Total Load From Storm and CSO = 1,353,361

Total Phophorus (kg)

	Storm Outfalls					Creeks							CSO Outfalls				
Month	30th Ave Storm	Groat Rd. Storm	Quesnell Storm	Kennedale Storm	Unmonitored Storm	Blackmud Creek	Gold Bar Creek	Horsehills Creek	Mill Creek	Wedgewood Creek	Whitemud Creek	**Total Storm**	Rat Creek CSO	Highlands CSO	Capilano CSO	Remaining CSO	**Total CSO**
January	170	102	240	64	457	181	31	74	101	23	159	**1,601**	0	0	0	0	**0**
February	98	2	147	82	191	76	13	31	36	9	66	**752**	0	0	0	0	**0**
March	311	352	455	552	1,282	507	86	208	481	64	446	**4,744**	0	0	0	0	**0**
April	173	173	407	97	680	269	46	110	366	34	237	**2,591**	0	0	0	0	**0**
May	323	295	1,733	305	4,604	1,970	301	725	2,653	230	1,734	**14,874**	6	0	0	2	**8**
June	317	273	546	385	2,564	838	201	485	872	93	738	**7,313**	31	11	0	16	**57**
July	176	208	390	221	1,966	744	155	374	654	79	655	**5,622**	90	67	23	81	**262**
August	446	222	515	322	2,618	896	159	383	600	123	789	**7,074**	375	187	31	205	**798**
September	220	131	323	168	1,311	555	85	205	357	69	489	**3,913**	0	0	0	2	**2**
October	98	12	194	99	660	295	44	107	1	33	260	**1,802**	0	0	0	0	**0**
November	97	32	225	56	267	106	18	43	50	13	93	**1,000**	0	0	0	0	**0**
December	303	159	267	79	615	244	41	100	317	31	214	**2,370**	0	0	0	0	**0**
Total	**2,732**	**1,960**	**5,441**	**2,430**	**17,216**	**6,681**	**1,181**	**2,846**	**6,488**	**800**	**5,879**	**53,654**	**502**	**265**	**54**	**306**	**1,127**

Total Load From Storm and CSO = 54,781

Table 4: Constituent Loads for 2024 (Cont.)

Nitrite + Nitrate (kg)

	Storm Outfalls					Creeks							CSO Outfalls				
Month	30th Ave Storm	Groat Rd. Storm	Quesnell Storm	Kennedale Storm	Unmonitored Storm	Blackmud Creek	Gold Bar Creek	Horsehills Creek	Mill Creek	Wedgewood Creek	Whitemud Creek	**Total Storm**	Rat Creek CSO	Highlands CSO	Capilano CSO	Remaining CSO	**Total CSO**
January	803	108	774	359	1,335	527	90	216	294	66	464	**5,037**	0	0	0	0	**0**
February	490	13	679	317	900	356	61	145	167	45	312	**3,484**	0	0	0	0	**0**
March	460	140	715	435	1,256	496	84	203	606	62	437	**4,895**	0	0	0	0	**0**
April	539	116	676	234	1,080	427	73	175	767	54	376	**4,515**	0	0	0	0	**0**
May	859	416	1,346	745	5,637	2,404	372	897	3,122	269	2,116	**18,183**	0	0	0	0	**0**
June	1,107	276	1,457	1,186	7,107	2,344	566	1,365	2,803	254	2,063	**20,529**	2	1	0	1	**4**
July	1,103	134	1,270	611	6,796	2,610	561	1,352	3,089	255	2,297	**20,077**	6	4	1	5	**17**
August	660	296	1,459	941	6,603	2,339	426	1,027	1,621	318	2,059	**17,748**	2	1	0	1	**5**
September	520	155	1,151	457	4,030	1,637	265	638	1,072	210	1,441	**11,576**	0	0	0	0	**0**
October	408	11	710	216	2,418	1,073	163	394	3	121	944	**6,461**	0	0	0	0	**0**
November	555	18	588	262	836	331	56	136	183	42	291	**3,298**	0	0	0	0	**0**
December	375	112	538	367	886	351	60	144	482	44	309	**3,666**	0	0	0	0	**0**
Total	**7,878**	**1,796**	**11,363**	**6,129**	**38,883**	**14,896**	**2,777**	**6,691**	**14,209**	**1,739**	**13,108**	**119,470**	**11**	**6**	**2**	**8**	**26**

Total Load From Storm and CSO = 119,496

Ammonia Nitrogen (kg)

	Storm Outfalls					Creeks							CSO Outfalls				
Month	30th Ave Storm	Groat Rd. Storm	Quesnell Storm	Kennedale Storm	Unmonitored Storm	Blackmud Creek	Gold Bar Creek	Horsehills Creek	Mill Creek	Wedgewood Creek	Whitemud Creek	**Total Storm**	Rat Creek CSO	Highlands CSO	Capilano CSO	Remaining CSO	**Total CSO**
January	310	137	350	160	720	285	48	117	162	36	251	**2,575**	0	0	0	0	**0**
February	255	17	383	458	534	211	36	86	95	26	185	**2,286**	0	0	0	0	**0**
March	318	289	692	935	1,436	568	97	233	615	71	499	**5,754**	0	0	0	0	**0**
April	244	109	659	198	818	323	55	133	579	41	285	**3,443**	0	0	0	0	**0**
May	352	352	639	305	2,736	1,173	177	427	1,413	130	1,032	**8,735**	7	0	0	2	**9**
June	279	155	462	316	2,088	693	165	398	764	75	610	**6,006**	38	14	0	19	**71**
July	181	130	382	249	1,983	715	164	394	623	82	629	**5,530**	112	83	28	101	**325**
August	1,157	229	517	430	2,977	983	182	438	629	143	865	**8,549**	248	124	21	147	**540**
September	334	146	353	243	1,541	661	99	238	409	82	582	**4,687**	0	0	0	4	**4**
October	247	4	259	259	1,154	504	78	189	2	58	444	**3,198**	0	0	0	0	**0**
November	162	26	321	217	394	156	27	64	71	20	137	**1,594**	0	0	0	0	**0**
December	191	119	472	237	669	265	45	109	366	33	233	**2,740**	0	0	0	0	**0**
Total	**4,030**	**1,712**	**5,488**	**4,007**	**17,051**	**6,536**	**1,172**	**2,825**	**5,728**	**797**	**5,751**	**55,097**	**406**	**221**	**49**	**273**	**949**

Total Load From Storm and CSO = 56,047

Total Kjeldahl Nitrogen (kg)

	Storm Outfalls					Creeks							CSO Outfalls				
Month	30th Ave Storm	Groat Rd. Storm	Quesnell Storm	Kennedale Storm	Unmonitored Storm	Blackmud Creek	Gold Bar Creek	Horsehills Creek	Mill Creek	Wedgewood Creek	Whitemud Creek	**Total Storm**	Rat Creek CSO	Highlands CSO	Capilano CSO	Remaining CSO	**Total CSO**
January	728	478	1,006	396	2,075	821	140	337	463	103	723	**7,270**	0	0	0	0	**0**
February	466	25	694	663	957	378	64	155	174	47	332	**3,956**	0	0	0	0	**0**
March	1,261	1,196	2,174	2,469	5,189	2,051	349	841	2,064	258	1,805	**19,658**	0	0	0	0	**0**
April	930	651	2,025	585	3,053	1,207	205	495	1,880	152	1,062	**12,244**	0	0	0	0	**0**
May	1,466	1,438	2,791	2,009	12,033	5,396	769	1,853	6,488	594	4,748	**39,584**	32	0	0	11	**43**
June	1,616	1,156	2,538	2,610	13,049	4,210	1,042	2,510	4,428	467	3,705	**37,332**	174	63	0	87	**324**
July	1,004	976	1,838	1,305	9,861	3,652	781	1,881	3,134	404	3,214	**28,050**	508	377	129	458	**1,473**
August	3,143	1,271	2,574	2,165	14,420	4,886	864	2,083	3,215	675	4,300	**39,596**	2,216	1,108	186	1,208	**4,719**
September	1,378	727	1,621	970	6,805	2,946	440	1,061	1,889	358	2,593	**20,788**	0	0	0	13	**13**
October	549	26	933	613	3,346	1,511	225	542	4	167	1,330	**9,246**	0	0	0	0	**0**
November	386	142	852	406	1,072	424	72	174	201	53	373	**4,156**	0	0	0	0	**0**
December	924	493	1,327	571	2,386	945	161	387	1,233	119	832	**9,378**	0	0	0	0	**0**
Total	**13,852**	**8,578**	**20,375**	**14,762**	**74,246**	**28,428**	**5,112**	**12,318**	**25,174**	**3,399**	**25,016**	**231,259**	**2,931**	**1,547**	**316**	**1,777**	**6,571**

Total Load From Storm and CSO = 237,830

Table 4: Constituent Loads for 2024 (Cont.)

Chloride (kg)

	Storm Outfalls					Creeks							CSO Outfalls				
Month	30th Ave	Groat Rd.	Quesnell	Kennedale	Unmonitored	Blackmud	Gold Bar	Horsehills	Mill	Wedgewood	Whitemud	**Total Storm**	Rat Creek	Highlands	Capilano	Remaining	**Total**
January	147,688	106,764	142,454	60,553	386,439	152,958	26,020	62,702	86,481	19,236	134,606	**1,325,901**	0	0	0	0	**0**
February	106,454	8,827	122,603	114,227	189,338	74,849	12,733	30,577	31,900	9,380	65,641	**766,531**	0	0	0	0	**0**
March	268,761	198,179	362,745	432,048	907,285	358,743	61,027	147,060	365,119	45,115	315,701	**3,461,783**	0	0	0	0	**0**
April	135,693	52,433	411,802	128,805	463,822	183,184	31,162	75,093	355,036	23,037	161,206	**2,021,273**	0	0	0	0	**0**
May	83,414	41,502	243,552	192,491	870,589	363,261	57,463	138,472	531,778	41,962	319,677	**2,884,161**	52	0	0	18	**70**
June	65,171	26,852	174,574	157,004	669,230	223,452	52,261	125,934	274,673	24,393	196,642	**1,990,187**	281	101	0	141	**524**
July	67,991	15,486	123,641	89,236	572,091	217,930	47,283	113,940	246,143	21,693	191,782	**1,707,215**	822	609	209	742	**2,383**
August	52,808	22,759	131,493	118,083	592,361	210,510	38,442	92,636	150,992	28,011	185,253	**1,623,347**	1,497	748	126	855	**3,226**
September	31,970	15,835	96,792	49,192	330,902	132,721	21,754	52,422	86,404	17,245	116,797	**952,034**	0	0	0	15	**15**
October	28,934	1,165	70,561	27,966	220,965	98,003	14,949	36,024	286	11,068	86,245	**596,166**	0	0	0	0	**0**
November	36,851	13,872	55,107	33,398	80,932	32,037	5,450	13,133	15,974	4,029	28,193	**318,976**	0	0	0	0	**0**
December	173,716	110,506	310,320	191,885	536,534	212,495	36,149	87,108	250,549	26,723	187,000	**2,122,984**	0	0	0	0	**0**
Total	**1,199,452**	**614,180**	**2,245,644**	**1,594,887**	**5,820,488**	**2,260,143**	**404,695**	**975,102**	**2,395,334**	**271,891**	**1,988,743**	**19,770,558**	**2,653**	**1,458**	**335**	**1,771**	**6,217**

Total Load From Storm and CSO = 19,776,776

E. coli (MPN x 10^{12})

	Storm Outfalls					Creeks							CSO Outfalls				
Month	30th Ave Storm	Groat Rd. Storm	Quesnell Storm	Kennedale Storm	Unmonitored Storm	Blackmud Creek	Gold Bar Creek	Horsehills Creek	Mill Creek	Wedgewood Creek	Whitemud Creek	**Total Storm**	Rat Creek CSO	Highlands CSO	Capilano CSO	Remaining CSO	**Total CSO**
January	87	20	30	2	117	46	8	19	27	6	41	**402**	0	0	0	0	**0**
February	39	0	29	2	35	14	2	6	9	2	12	**150**	0	0	0	0	**0**
March	80	49	100	68	266	105	18	43	104	13	93	**939**	0	0	0	0	**0**
April	70	41	131	7	202	80	14	33	119	10	70	**778**	0	0	0	0	**0**
May	141	63	180	54	822	360	54	129	451	40	317	**2,610**	49	0	0	17	**66**
June	147	54	237	48	980	320	78	187	355	35	281	**2,723**	172	44	0	72	**288**
July	113	30	132	35	653	245	51	122	235	27	216	**1,858**	535	396	136	483	**1,550**
August	1,411	98	285	92	1,367	478	85	206	315	65	421	**4,822**	757	377	63	433	**1,631**
September	174	50	99	21	526	232	34	83	148	27	205	**1,601**	0	0	0	15	**15**
October	39	0	77	1	227	110	15	36	0	11	97	**613**	0	0	0	0	**0**
November	13	25	30	0	53	21	4	9	9	3	19	**185**	0	0	0	0	**0**
December	78	44	151	5	233	92	16	38	106	12	81	**856**	0	0	0	0	**0**
Total	**2,391**	**474**	**1,482**	**335**	**5,482**	**2,103**	**377**	**909**	**1,880**	**251**	**1,851**	**17,535**	**1,513**	**818**	**200**	**1,020**	**3,549**

Total Load From Storm and CSO = 21,085

Table 5: 2024 Rat Creek CSO Concentration Statistics

Month	Days with CSO Flows	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* Geo Mean (MPN/100 mL)	*E. coli* Maximum (MPN/100 mL)	*E. coli* Minimum (MPN/100 mL)
January	0	-	-	-	-	-	-	-	-	-	-	-	-
February	0	-	-	-	-	-	-	-	-	-	-	-	-
March	0	-	-	-	-	-	-	-	-	-	-	-	-
April	0	-	-	-	-	-	-	-	-	-	-	-	-
May	1	1000.0	1000.0	1000.0	179.0	179.0	179.0	2.7	2.7	2.7	2,330,000	2,330,000	2,330,000
June	2	1190.0	1380.0	1000.0	220.0	261.0	179.0	2.7	2.7	2.7	1,342,386	1,700,000	1,060,000
July	2	290.0	332.0	248.0	102.0	110.0	94.0	5.2	7.8	2.7	1,584,929	1,600,000	1,570,000
August	5	248.0	248.0	248.0	94.0	94.0	94.0	7.6	8.5	6.2	2,763,871	5,310,000	1,570,000
September	0	-	-	-	-	-	-	-	-	-	-	-	-
October	0	-	-	-	-	-	-	-	-	-	-	-	-
November	0	-	-	-	-	-	-	-	-	-	-	-	-
December	0	-	-	-	-	-	-	-	-	-	-	-	-

Month	Days with CSO Flows	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)	Chloride Mean (mg/L)	Chloride Maximum (mg/L)	Chloride Minimum (mg/L)
January	0	-	-	-	-	-	-	-	-	-	-	-	-
February	0	-	-	-	-	-	-	-	-	-	-	-	-
March	0	-	-	-	-	-	-	-	-	-	-	-	-
April	0	-	-	-	-	-	-	-	-	-	-	-	-
May	1	3.4	3.4	3.4	0.2	0.2	0.2	15.2	15.2	15.2	24.6	24.6	24.6
June	2	3.4	3.4	3.4	0.2	0.2	0.2	15.2	15.2	15.2	24.6	24.6	24.6
July	2	4.3	5.2	3.4	0.1	0.2	0.1	30.7	46.1	15.2	27.85	31.1	24.6
August	5	11.6	20.2	5.2	0.0	0.1	0.0	41.6	46.1	33.5	46.88	79.6	31.1
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 Wastewater Collection System Operators

Certified Wastewater Collection System Operators per Level of WWC Certification:

(1) Operators Level IV WWC Certified
(9) Operators Level III WWC Certified
(49) Operators Level II WWC Certified
(49) Operators Level I WWC Certified

Name	Title	WWC Certification Level
Fechner, Frank	Operations Engineer	IV
Bertin, Wendy	Engineering Technologist	III
Charrupi, Carlos	Maintenance Repairman I	III
Gunderson, John	Engineering Technologist	III
Hao, Yufu (Owen)	Industrial Wastewater Inspection Coordinator	III
L'Heureux, Robin	Engineering Technologist	III
Lukenbill, Durward (Dylan)	Tradesman (Millwright 2)	III
McConnell, Peter	Drainage System Network Operator	III
Murphy, Steven	Drainage System Combo Operator	III
Powell, Ryan	Tradesman (Millwright 2)	III
Ambrosio, Jeffrey	Sewer Substructure Inspector	II
Aniskou, Evgeni	Engineering Technologist	II
Bishop, Shawn	Labour Foreman 3	II
Bourgeois, Marshall	Tradesman (Millwright)	II
Bronca, Robert	Labour Foreman 3	II
Brownoff, Nicholas	Tradesman (Millwright 2)	II
Coburn, Arthur	Drainage System Troubleman	II
Cuglietta, Carmine	Labour Foreman 3	II
Dowds, Alexander	Drainage System Combo Operator	II
Ewing, Nicole	Engineering Technologist	II
Fehr, Brittany	Engineering Technologist	II
Ferenac, Nikola	Labour Foreman 3	II
Fraser, Gordon	Labourer 2	II
Gawreletz, Kevin	Drainage System Troubleman	II
Goodine, John	Tradesman (Millwright 2)	II
Goonewardane, Anton	Equipment Operator 3	II
Guidoccio, Natalino	Drainage System Serviceman	II
Guidoccio, Nicholas	Labourer 3	II
Hammond, Richard	Drainage System Combo Operator	II
Hogan, Alex	Industrial Wastewater Technologist	II
Lahaie, Ryan	Tradesman (Millwright)	II

Lawson, Linsey	Engineering Technologist	II
Ledl, Ryan	Industrial Wastewater Investigator	II
Lirazan, Warren	Drainage System Combo Operator	II
Macrury, Robert	Drainage System Troubleman	II
Manao, Manuel	Sewer Substructure Inspector	II
McKay, Brandy	Engineering Technologist	II
Miller, Wade	Tradesman (Millwright 2)	II
Montague, Thomas (Ian)	Labour Foreman 3	II
Nelson, Tim	Manager, Environmental Investigators	II
Osuch, Oskar	Maintenance Repairman I	II
Persaud, Shawna	Equipment Operator 3	II
Pinder, Cristan	Industrial Wastewater Investigator	II
Purcell, Graham	Drainage System MTV Operator	II
Rivard, Shaune	Drainage System Troubleman	II
Samarasinghe, Kalutota	Labourer 2	II
Santrau, Alex	Tradesman (Millwright)	II
Schlacht, Shawn	Labour Foreman 3	II
Sedurante, Benjamin	Drainage System Troubleman	II
Sigstad, Sheridan Lane	Tradesman (Millwright 2)	II
Shang, Michael	Drainage System Serviceman	II
Slonetzky, Tyler	Sewer Substructure Inspector	II
Soni, Rohit	Planner (FCF Maintenance)	II
Sorenson, Melvin	Labour Foreman 1	II
To, Alan	Labourer 2	II
Trahan, Tessa	Environmental Specialist	II
Underhay, Dominic	Drainage System Combo Operator	II
Webster, Kenneth	Labour Foreman 3	II
Yang, Guang	Drainage System Combo Operator	II
Aspden, Kate	Engineering Technologist	I
Bandaralage, Upul Pe	Drainage System Combo Operator	I
Banister, Daniel	Industrial Wastewater Investigator	I
Barthel, Scott	Labourer 3	I
Bennet, Jay	Drainage System Serviceman	I
Bolz, Melissa	Labourer 2	I
Bracha, Terra	Maintenance Repairman I	I
Braunig, Alex	Drainage System MTV Operator	I

Buck, Kerri	Engineering Technologist	I
Burk, Bradley	Labourer 3	I
Burns, Russel	Drainage System Combo Operator	I
Buhay, Christopher	Labourer 2	I
Byrd, Jeff	Labourer 3	I
Byrne, Philip	Maintenance Repairman I	I
Campbell, Brent	Labour Foreman 1	I
Casella, Carmen	Labour Foreman 3	I
Dilts, Scott	Drainage System Combo Operator	I
Divino, Patrick	Drainage System Serviceman	I
Draghici, Courtney	Drainage System Combo Operator	I
Girhiny, Leah	Engineering Technologist	I
Hay, Luke	Labourer 3	I
Hyshka, Anthony	Drainage System Combo Operator	I
Khan, Murtaza	Engineering Technologist	I
Knapton, Dayna	Drainage System MTV Operator	I
Liao, Leslie	Tradesman (Millwright)	I
Lynch, Jacob	Sewer Substructure Inspector	I
Manuel, Jose	Sewer Substructure Inspector	I
Masson, Sheldon	Drainage System Combo Operator	I
McCulloch, Mitch	Labourer 3	I
McHale, Ken	Drainage System Combo Operator	I
Nakpangi, Valene	Engineering Technologist	I
Nikapitiyawithana, Amith	Labourer 3	I
Pawelec, Michal	Labourer 2	I
Rahal, Osman	Engineering Technologist	I
Rathwell, Bradley	Industrial Wastewater Investigator	I
Rosell, Brandon	Maintenance Repairman 1	I
Runco, Frank	Drainage System Combo Operator	I
Ryley, Paul	Maintenance Repairman 1	I
Sandhu, Sangram	Labourer 3	I
Sheppard, Cody	Tradesman (Millwright)	I
Silva, Daniel	Labourer 3	I
Smith, Derek	Labourer 3	I
Sterparn, Andrew	Labour Foreman 1	I
Teslak, Leanne	Industrial Wastewater Investigator	I

Trudel, Tyler	Labourer 2	I
Valentini, Marco	Maintenance Repairman 1	I
Weiss, Dallas	Labourer 3	I
Wildeboar, Christopher	Labourer 3	I
Wolfe, Brent	Drainage System Combo Operator	I

Note: The above table is the list of certified wastewater collection system operators as of December 31, 2024.

TABLE 7: 2024 Annual Product Usage at Pump Stations

The Biomaxx Canada OXYN8 solution is used for odor control at sanitary pump stations.

Pump Station	Month	Product	Total Addition (L)
PW227 Chappelle Garden	January	Biomaxx Canada OXYN8	3411
PW233 Edgemont II	January	Biomaxx Canada OXYN8	2965
PW227 Chappelle Garden	February	Biomaxx Canada OXYN8	3649
PW233 Edgemont II	February	Biomaxx Canada OXYN8	1373
PW227 Chappelle Garden	March	Biomaxx Canada OXYN8	4944
PW233 Edgemont II	March	Biomaxx Canada OXYN8	2158
PW233 Edgemont II	April	Biomaxx Canada OXYN8	2032

Total Usage - 2024 (L): 20,530

TABLE 8: 2024 Annual Usage of Reward® Herbicide

Date of Application	Stormwater Management Facility	Quantity Used (L)
28-May-24	Ambleside # 4 (3604 Allan Drive SW)	11
11-Jun-24	Paisley # 1 (3040 Paisley Green SW)	26
20-Jun-24	Blackmud Creek # 1 (9101 Blackmud Creek Crescent SW)	8
28-Jun-24	Uplands # 2 (27 Ave and 199 St NW)	8
09-Jul-24	Ambleside # 5 (1264 AINSLIE WAY SW)	15
15-Jul-24	Andorra # 1 (16922 93 St NW)	15
17-Jul-24	Belle River # 1 (8728 160 Ave NE)	8
2-Aug-24	Windermere # 11 (738 Windermere Wynd NW)	15

Total Number of Applications: 8
Total Usage (L): 106

TABLE 9: 2024 Usage of Bright Dye

The use of Bright Dye in the **Field Operations** section is related to the identification of cross-connections in the collection system. The **Monitoring & Compliance** usage supports enforcement activities associated with Drainage By-law 19627 (EPCOR) and Drainage By-Law 18093 (City of Edmonton) and investigations of industrial and commercial customers.

Date Tested	Location of Test	Department / Section	Tests per Location	Bright Dye Usage (ml)
04-Jan-24	15202-77 Avenue NW	Monitoring & Compliance	1	75
04-Jan-24	10982-141 Street NW	Monitoring & Compliance	1	25
04-Jan-24	10977-139 Street NW	Monitoring & Compliance	1	50
04-Jan-24	10990-138 Street NW	Monitoring & Compliance	1	50
04-Jan-24	10986-138 Street NW	Monitoring & Compliance	1	50
04-Jan-24	10833-140 Street NW	Monitoring & Compliance	1	75
04-Jan-24	10837-140 Street NW	Monitoring & Compliance	1	75
05-Jan-24	13904-110 Avenue NW	Monitoring & Compliance	1	50
05-Jan-24	10912-141 Street NW	Monitoring & Compliance	1	25
05-Jan-24	10907-141 Street NW	Monitoring & Compliance	1	25
05-Jan-24	10911-141 Street NW	Monitoring & Compliance	1	50
05-Jan-24	10916-141 Street NW	Monitoring & Compliance	1	50
05-Jan-24	10915-141 Street NW	Monitoring & Compliance	1	50
05-Jan-24	10904-141 Street NW	Monitoring & Compliance	1	50
05-Jan-24	10924-141 Street NW	Monitoring & Compliance	1	25
05-Jan-24	10932-141 Street NW	Monitoring & Compliance	1	25
18-Jan-24	16136-110A Avenue NW	Monitoring & Compliance	1	50
18-Jan-24	16132-110A Avenue NW	Monitoring & Compliance	1	50
19-Jan-24	16142-110A Avenue NW	Monitoring & Compliance	1	50
19-Jan-24	16121-110A Avenue NW	Monitoring & Compliance	1	50
19-Jan-24	16125-110A Avenue NW	Monitoring & Compliance	1	50
22-Jan-24	13932-109 Avenue NW	Monitoring & Compliance	1	50
22-Jan-24	10832-140 Street NW	Monitoring & Compliance	1	50
22-Jan-24	13924-109 Avenue NW	Monitoring & Compliance	1	50
22-Jan-24	10840-140 Street NW	Monitoring & Compliance	1	75
22-Jan-24	13859-110A Avenue NW	Monitoring & Compliance	1	50
22-Jan-24	10839-140 Street NW	Monitoring & Compliance	1	75
23-Jan-24	16146-110A Avenue NW	Monitoring & Compliance	1	50
23-Jan-24	16131-110A Avenue NW	Monitoring & Compliance	1	50
23-Jan-24	13924-110 Avenue NW	Monitoring & Compliance	1	50
23-Jan-24	10981-139 Street NW	Monitoring & Compliance	1	50
23-Jan-24	13908-110 Avenue NW	Monitoring & Compliance	1	50
23-Jan-24	13907-110 Avenue NW	Monitoring & Compliance	1	50
23-Jan-24	13912-110 Avenue NW	Monitoring & Compliance	1	50
23-Jan-24	13915-110 Avenue NW	Monitoring & Compliance	1	50

23-Jan-24	13911-110 Avenue NW	Monitoring & Compliance	1	50
23-Jan-24	13932-110 Avenue NW	Monitoring & Compliance	1	50
24-Jan-24	13920-110 Avenue NW	Monitoring & Compliance	1	50
24-Jan-24	69-Westbrook Drive NW	Monitoring & Compliance	1	50
24-Jan-24	73-Westbrook Drive NW	Monitoring & Compliance	1	75
25-Jan-24	6719-39 Avenue NW	Monitoring & Compliance	1	50
25-Jan-24	6724-39 Avenue NW	Monitoring & Compliance	1	50
25-Jan-24	12163-68 Street NW	Monitoring & Compliance	1	50
25-Jan-24	10835-140 Street NW	Monitoring & Compliance	1	75
29-Jan-24	13916-110 Avenue NW	Monitoring & Compliance	1	25
29-Jan-24	13928-110 Avenue NW	Monitoring & Compliance	1	25
30-Jan-24	3908-67 Street NW	Monitoring & Compliance	1	50
30-Jan-24	6727-39 Avenue NW	Monitoring & Compliance	1	50
06-Feb-24	4505-137 Avenue NW	Monitoring & Compliance	1	25
09-Feb-24	1520-161 Street SW	Monitoring & Compliance	1	50
09-Feb-24	1511-161 Street SW	Monitoring & Compliance	1	25
09-Feb-24	60-Westbrook Drive NW	Monitoring & Compliance	1	50
09-Feb-24	71-Westbrook Drive NW	Monitoring & Compliance	1	25
09-Feb-24	1519-161 Street SW	Monitoring & Compliance	1	50
09-Feb-24	1523 -161 Street SW	Monitoring & Compliance	1	25
11-Feb-24	4217-135 Avenue NW	Monitoring & Compliance	5	250
12-Feb-24	6707-39 Avenue NW	Monitoring & Compliance	1	50
12-Feb-24	6712-39 Avenue NW	Monitoring & Compliance	1	50
12-Feb-24	6715-39 Avenue NW	Monitoring & Compliance	1	75
14-Feb-24	6720-39 Avenue NW	Monitoring & Compliance	1	50
14-Feb-24	6723-39 Avenue NW	Monitoring & Compliance	1	50
20-Feb-24	17335-105 Street NW	Monitoring & Compliance	1	50
20-Feb-24	17315-105 Street NW	Monitoring & Compliance	1	50
20-Feb-24	17308-105 Street NW	Monitoring & Compliance	1	50
23-Feb-24	4217-135 Avenue NW	Monitoring & Compliance	6	325
24-Feb-24	6711-39 Avenue NW	Monitoring & Compliance	1	50
24-Feb-24	6716-39 Avenue NW	Monitoring & Compliance	1	50
08-Mar-24	10985-138 Street NW	Monitoring & Compliance	1	25
11-Mar-24	4305-134 Avenue NW	Monitoring & Compliance	1	120
20-Mar-24	10044-90 Avenue NW	Monitoring & Compliance	1	75
20-Mar-24	10046-90 Avenue NW	Monitoring & Compliance	1	50
20-Mar-24	10058-90 Avenue NW	Monitoring & Compliance	1	50
20-Mar-24	10062-90 Avenue NW	Monitoring & Compliance	1	50
20-Mar-24	10066-90 Avenue NW	Monitoring & Compliance	1	50
20-Mar-24	10059-90 Avenue NW	Monitoring & Compliance	1	50
20-Mar-24	10065-90 Avenue NW	Monitoring & Compliance	1	50

25-Mar-24	10965-138 Street NW	Monitoring & Compliance	1	25
26-Mar-24	4106-134A Avenue NW	Monitoring & Compliance	1	30
26-Mar-24	13416-41 Street NW	Monitoring & Compliance	1	25
26-Mar-24	4110-134A Avenue NW	Monitoring & Compliance	1	75
26-Mar-24	4114-134A Avenue NW	Monitoring & Compliance	1	25
26-Mar-24	13431-41 Street NW	Monitoring & Compliance	1	75
26-Mar-24	4117-134A Avenue NW	Monitoring & Compliance	1	50
26-Mar-24	4113-134A Avenue NW	Monitoring & Compliance	1	50
02-Apr-24	1060-James Crescent NW	Monitoring & Compliance	1	50
04-Apr-24	10981-138 Street NW	Monitoring & Compliance	1	50
04-Apr-24	10966-138 Street NW	Monitoring & Compliance	1	50
04-Apr-24	10969-138 Street NW	Monitoring & Compliance	1	25
10-Apr-24	10970-138 Street NW	Monitoring & Compliance	1	50
10-Apr-24	13880-110A Avenue NW	Monitoring & Compliance	1	50
11-Apr-24	10973-138 Street NW	Monitoring & Compliance	1	50
12-Apr-24	10978-138 Street NW	Monitoring & Compliance	1	50
12-Apr-24	10982-138 Street NW	Monitoring & Compliance	1	25
12-Apr-24	10977-138 Street NW	Monitoring & Compliance	1	50
23-Apr-24	15202-77 Avenue NW	Monitoring & Compliance	1	25
26-Apr-24	10056-90 Avenue NW	Monitoring & Compliance	1	125
03-May-24	7310-154A Street NW	Monitoring & Compliance	1	25
14-May-24	10966-138 Street NW	Monitoring & Compliance	1	25
14-May-24	12408-40 Avenue NW	Monitoring & Compliance	1	50
14-May-24	10056-39 Avenue NW	Monitoring & Compliance	1	50
23-May-24	3812-Aspen Drive West NW	Monitoring & Compliance	1	50
23-May-24	37-Marlboro Road NW	Monitoring & Compliance	1	50
24-May-24	1519-161 Street NW	Monitoring & Compliance	1	50
30-May-24	3211-104 Avenue NW	Monitoring & Compliance	1	25
30-May-24	13880-110A Avenue NW	Monitoring & Compliance	1	25
31-May-24	10839-140 Street NW	Monitoring & Compliance	1	25
05-Jun-24	10044-90 Avenue NW	Monitoring & Compliance	1	50
05-Jun-24	14724-65 Street NW	Monitoring & Compliance	1	25
14-Jun-24	3303-104 Avenue NW	Monitoring & Compliance	1	25
18-Jun-24	14724-65 Street NW	Monitoring & Compliance	1	25
19-Jun-24	3315-104 Avenue NW	Monitoring & Compliance	1	40
21-Jun-24	16132-110A Avenue NW	Monitoring & Compliance	1	50
24-Jun-24	14366-Park Drive NW	Monitoring & Compliance	1	75
26-Jul-24	4708-Malmo Road NW	Monitoring & Compliance	1	50
29-Jul-24	5908-149 Avenue NW	Monitoring & Compliance	1	50
01-Aug-24	10907-141 Street NW	Monitoring & Compliance	1	25
21-Aug-24	11551-160 Street NW	Monitoring & Compliance	1	25

21-Aug-24	11535-160 Street NW	Monitoring & Compliance	1	50
21-Aug-24	11555-160 Street NW	Monitoring & Compliance	1	50
21-Aug-24	11563-160 Street NW	Monitoring & Compliance	1	50
06-Sep-24	15312-Rio Terrace Drive NW	Monitoring & Compliance	1	50
06-Sep-24	9325-51 Avenue NW	Monitoring & Compliance	1	50
12-Sep-24	4251-78 Avenue NW	Monitoring & Compliance	1	25
13-Sep-24	4715-111A Street NW	Monitoring & Compliance	1	50
13-Sep-24	4711-111A Street NW	Monitoring & Compliance	1	50
13-Sep-24	4707-111A Street NW	Monitoring & Compliance	1	50
13-Sep-24	4712-111A Street NW	Monitoring & Compliance	1	50
16-Sep-24	2815-109A Street NW	Monitoring & Compliance	1	100
19-Sep-24	2815-109A Street NW	Monitoring & Compliance	1	25
10-Oct-24	14724-65 Street NW	Monitoring & Compliance	1	25
10-Oct-24	32-Riverside Crescent NW	Monitoring & Compliance	1	75
10-Oct-24	26-Riverside Crescent NW	Monitoring & Compliance	1	75
10-Oct-24	28-Riverside Crescent NW	Monitoring & Compliance	1	50
10-Oct-24	36-Riverside Crescent NW	Monitoring & Compliance	1	50
24-Oct-24	4719-111A Street NW	Monitoring & Compliance	1	75
25-Oct-24	4807-111A Street NW	Monitoring & Compliance	1	25
28-Oct-24	8017A-161 Street NW	Monitoring & Compliance	1	50
28-Oct-24	8017B-161 Street NW	Monitoring & Compliance	1	50
29-Oct-24	15-Riverside Crescent NW	Monitoring & Compliance	1	75
29-Oct-24	34-Riverside Crescent NW	Monitoring & Compliance	1	75
1-Nov-24	13 Riverside Crescent NW	Monitoring & Compliance	1	25
1-Nov-24	30 Riverside Crescent NW	Monitoring & Compliance	1	75
1-Nov-24	3304 - 104 Avenue NW	Monitoring & Compliance	1	75
7-Nov-24	62 Street & Fulton Road NW	Monitoring & Compliance	1	25
18-Nov-24	5908 - 149 Avenue NW	Monitoring & Compliance	1	50
16-Dec-24	1058 James Crescent NW	Monitoring & Compliance	1	25
16-Dec-24	1062 James Crescent NW	Monitoring & Compliance	1	75
16-Dec-24	1064 James Crescent NW	Monitoring & Compliance	1	75

Total Number of Tests: 157
Total Usage – 2024 (mL): 7,690

TABLE 10: 2024 Usage of De-Icing Product (Ice Shield)				
Date	**Outfall Number**	**Directly Affected Watercourse**	**Number of Applications**	**Total Amount of De-Icing Product Applied (Kg)**
05-Jan-24	30	North Sask. River	2	40
05-Jan-24	47	North Sask. River	1	30
05-Jan-24	132	Ramsay Ravine	1	20
05-Jan-24	31	North Sask. River	1	30
08-Jan-24	123	Ramsay Ravine	1	20
08-Jan-24	124	Ramsay Ravine	1	30
08-Jan-24	125	Ramsay Ravine	1	20
08-Jan-24	29	North Sask. River	1	20
09-Jan-24	182	North Sask. River	1	20
09-Jan-24	183	North Sask. River	1	20
09-Jan-24	15	North Sask. River	1	20
15-Jan-24	90	Big Lake	1	40
15-Jan-24	312	North Sask. River	1	20
15-Jan-24	298	North Sask. River	1	30
15-Jan-24	118	North Sask. River	1	40
15-Jan-24	257	Wedgewood Creek	1	40
17-Jan-24	58	North Sask. River	1	40
17-Jan-24	57	North Sask. River	1	40
18-Jan-24	156	Fulton Creek	1	40
18-Jan-24	78	Goldbar Creek	1	40
22-Jan-24	92B	Mill Creek South	1	20
22-Jan-24	249	Mill Creek South	1	40
22-Jan-24	191	Mill Creek South	1	20
22-Jan-24	192	Mill Creek South	1	20
22-Jan-24	91	Mill Creek South	1	40
22-Jan-24	195	Mill Creek South	1	20
24-Jan-24	3	Whitemud Creek	1	40
25-Jan-24	265	Whitemud Creek	1	40
25-Jan-24	263	Blackmud Creek	1	20
25-Jan-24	4	Whitemud Creek	1	120
31-Jan-24	123A	Ramsay Ravine	1	20
01-Feb-24	183	North Sask. River	1	70
02-Feb-24	123A	Ramsay Ravine	1	60

02-Feb-24	124	Ramsay Ravine	1	60
02-Feb-24	123	Ramsay Ravine	1	60
02-Feb-24	31	North Sask. River	1	70
05-Feb-24	29	North Sask. River	1	40
05-Feb-24	30	North Sask. River	1	60
05-Feb-24	182	North Sask. River	1	60
06-Feb-24	118	North Sask. River	1	100
06-Feb-24	298	North Sask. River	1	60
07-Feb-24	119	North Sask. River	1	60
07-Feb-24	21	North Sask. River	1	50
07-Feb-24	15	North Sask. River	1	60
08-Feb-24	257	North Sask. River	1	60
09-Feb-24	77	Goldbar Creek	1	20
13-Feb-24	57	North Sask. River	1	150
16-Feb-24	195	Mill Creek South	1	60
16-Feb-24	191	Mill Creek South	1	60
27-Feb-24	263	Blackmud Creek	1	60
27-Feb-24	265	Blackmud Creek	1	20
28-Feb-24	207	Blackmud Creek	1	20
28-Feb-24	277	Blackmud Creek	1	20
28-Feb-24	313	Blackmud Creek	1	20
01-Mar-24	21	North Sask. River	1	80
01-Mar-24	15	North Sask. River	1	70
04-Mar-24	312	Blackmud Creek	1	80
04-Mar-24	90	North Sask. River	1	60
05-Mar-24	119	North Sask. River	1	60
05-Mar-24	21	North Sask. River	1	80
05-Mar-24	257	North Sask. River	1	60
05-Mar-24	118	North Sask. River	1	80
05-Mar-24	298	North Sask. River	1	60
06-Mar-24	154	Goldbar Creek	1	20
06-Mar-24	65	North Sask. River	1	40
07-Mar-24	21	North Sask. River	1	80
07-Mar-24	126	Ramsay Ravine	1	60
07-Mar-24	138	Ramsay Ravine	1	60
08-Mar-24	123A	Ramsay Ravine	1	60
08-Mar-24	24	Ramsay Ravine	1	100
08-Mar-24	29	North Sask. River	1	40
08-Mar-24	30	North Sask. River	1	40

08-Mar-24	182	North Sask. River	1	60
08-Mar-24	183	North Sask. River	1	60
08-Mar-24	124	Ramsay Ravine	1	60
08-Mar-24	125	Ramsay Ravine	1	60
08-Mar-24	139	Ramsay Ravine	1	60
08-Mar-24	123	Ramsay Ravine	1	40
08-Mar-24	31	North Sask. River	1	60
08-Mar-24	132	Ramsay Ravine	1	60
08-Mar-24	136	Ramsay Ravine	1	50
11-Mar-24	108	North Sask. River	1	40
11-Mar-24	47	North Sask. River	1	80
11-Mar-24	148	North Sask. River	1	100
11-Mar-24	87	North Sask. River	1	40
11-Mar-24	268	North Sask. River	1	80
12-Mar-24	313	Whitemud Creek	1	40
12-Mar-24	46	North Sask. River	1	60
12-Mar-24	109	North Sask. River	1	80
13-Mar-24	207	Blackmud Creek	1	80
13-Mar-24	4	Whitemud Creek	1	80
13-Mar-24	264	Blackmud Creek	1	20
26-Mar-24	52	Mill Creek	1	60
26-Mar-24	153	Goldbar Creek	1	40
26-Mar-24	78	Goldbar Creek	1	60
26-Mar-24	77	Goldbar Creek	1	80
26-Mar-24	156	Fulton Creek	1	80
28-Mar-24	5	Blackmud Creek	1	80
28-Mar-24	4	Whitemud Creek	1	80
28-Mar-24	57	North Sask. River	1	100
28-Mar-24	58	North Sask. River	1	100

Total Number of Applications: 102
Total Usage – 2024 (Kg): 5,320

TABLE 11: 2024 Operational Issues – Wastewater Collection

Date of Occurrence	Location	Incident Description	Type	AEPA Reference Number
04-Jan-2024	12421-48 Street NW	Untreated wastewater (approx. 1 m3) was released into a storm catch basin (MH580700) from a private RV located at (12421-48 Street NW). EPCOR equipment was mobilized to the site to remove contaminants from the catch basin. The City of Edmonton coordinated the removal of frozen sewage from around the catch basin and nearby alleyway. EPCOR Industrial Wastewater Investigators confirmed that the untreated wastewater was contained within the catch basin and there was no release into the storm collection system. This release was reported to AEPA (Ref# 424222) by the City of Edmonton. A written report was not requested by AEPA.	Reportable-3rd Party Release	424222
07-Jan-2024	9961-170 Street NW	Untreated wastewater (approx. 7000 L) was released into the storm collection system from a private sanitary line surcharge located at a business complex (9961-170 Street NW). EPCOR equipment was mobilized to the site to clear the blockage in the sanitary line. The property manager contacted a 3rd party vacuum truck to remove contaminants from the impacted storm catch basin and surrounding area. This release was reported to AEPA (Ref# 423628) by the property manager. A written report was issued to AEPA on January 12, 2024.	Reportable-3rd Party Release	423628
09-Jan-2024	10820-140 Street NW	Sample results of the wastewater from a storm manhole (MH257508) located near 10820-140 Street NW were received and reviewed by EPCOR Monitoring & Compliance. The results exceeded Bylaw 18100 Appendix C and Bylaw 18093 Schedule B "Restricted Wastes Applicable to Storm Sewers and Watercourses" for E. coli at 1,900,000 CFU/100 mL. The original sample was collected on January 4, 2024 by EPCOR Industrial Wastewater Investigators. EPCOR will initiate further investigations into this event to determine the source of the cross-connection at this location. A "Notice to Comply" will be issued to the owners of any properties that have been confirmed to have a cross-connection. The Notices will require that the owners redirect their sanitary wastewater discharge from the storm sewer to the sanitary sewer system. This release was reported to AEPA (Ref# 423666). A written report was issued to AEPA on January 16, 2024	Reportable-3rd Party Release	423666
09-Jan-2024	1066-James Crescent NW	Sample results of the wastewater from a storm manhole (MH314580) located near 1066-James Crescent NW were received and reviewed by EPCOR Monitoring & Compliance. The results exceeded Bylaw 18100 Appendix C and Bylaw 18093 Schedule B "Restricted Wastes applicable to Storm Sewers and Watercourses" for E. coli at 210,000 CFU/100 mL. The original sample was collected on January 3, 2024 by EPCOR Industrial Wastewater Investigators. EPCOR will initiate further investigations into this event to determine the source of the cross-connection at this location. A "Notice to Comply" will be issued to the owners of any properties that have been confirmed to have a cross-connection. The Notices will require that the owners redirect their sanitary wastewater discharge from the storm sewer to the sanitary sewer system. This release was reported to AEPA (Ref#423654). A written report was issued to AEPA on January 16, 2024.	Reportable-3rd Party Release	423654
11-Jan-2024	134-Avenue & 41-Street NW	Sample results of the wastewater from a storm manhole (MH299386) located near 134-Avenue & 41-Street NW were received and reviewed by EPCOR Monitoring & Compliance. The results exceeded Bylaw 18100 Appendix C and Bylaw 18093 Schedule B "Restricted Wastes Applicable to Storm Sewers and Watercourses" for E. coli at 2,200,000 CFU/100 mL. The original sample was collected on January 8, 2024 by EPCOR Industrial Wastewater Investigators. EPCOR will initiate further investigations into this event to determine the source of the cross-connection at this location. A "Notice to Comply" will be issued to the owners of any properties that have been confirmed to have a cross-connection. The Notices will require that the owners redirect their sanitary wastewater discharge from the storm sewer to the sanitary sewer system. This release was reported to AEPA (Ref# 423728). A written report was issued to AEPA on January 18, 2024.	Reportable-3rd Party Release	423728
12-Jan-2024	2404-51 Avenue NW	Hydraulic fluid (approx. 500 L) was released into the sanitary collection system located at DFI Piling (2404-51 Avenue NW). Absorbent material was used by the company to remove hydraulic fluid from around the floor drain where the hydraulic fluid entered the sanitary system. A 3rd party vacuum truck was called to the site to remove hydraulic fluid from the facilities oil / water interceptor. A "Notice to Comply" was issued to the company to discontinue the release of prohibited waste into the sewerage system. This release was reported to AEPA (Ref# 423767) by the company. A written report was issued to AEPA on January 18, 2024.	Reportable-3rd Party Release	423767

13-Jan-2024	11120-170 Street NW	Untreated wastewater (unknown volume) was released into the storm collection system from a private sanitary line surcharge located at a Tim Hortons restaurant (11120-170 Street NW). EPCOR equipment was mobilized to the site to clear the blockage in the sanitary line. EPCOR crews were not able to clean the impacted storm collection system at the time of this release. An MTV inspection confirmed a partial collapse of the sanitary line. A construction dig-up work order was created as a high priority repair. EPCOR will complete inspections of upstream businesses to ensure pre-treatment systems are in proper working order and are adequately maintained. EPCOR may engage in compliance activity under the authority of Bylaw 19627 based on inspection findings to prevent a reoccurrence. This release was reported to AEPA (Ref# 423822). A written report was issued to AEPA on January 19, 2024.	Reportable-3rd Party Release	423822
25-Jan-2024	3211-104 Avenue NW	Sample results of the wastewater from a storm manhole (MH270975) located near 3211-104 Avenue NW were received and reviewed by EPCOR Monitoring & Compliance. The results exceeded Bylaw 18100 Appendix C and Bylaw 18093 Schedule B "Restricted Wastes Applicable to Storm Sewers and Watercourses" for E. coli at 8,200,000 CFU/100 mL. The original sample was collected on January 23, 2024 by EPCOR Industrial Wastewater Investigators. EPCOR will initiate further investigations into this event to determine the source of the cross-connection at this location. Notice to Comply will be issued to the owners of any properties that have been confirmed to have a cross-connection. The Notices will require that the owners redirect their sanitary wastewater discharge from the storm sewer to the sanitary sewer system. This release was reported to AEPA (Ref# 424282). A written report was issued to AEPA on February 1, 2024.	Reportable-3rd Party Release	424282
29-Jan-2024	2804-Calgary Trail NW	Untreated wastewater (unknown volume) was released into the storm collection system from a private sanitary line surcharge located at a business complex (2804-Calgary Trail NW). EPCOR equipment was mobilized to the site to clear the blockage in the sanitary line and clean the impacted storm collection system (PIP78230). EPCOR Industrial Wastewater Investigators will issue a Notice to Comply to the property owner for the release. This release was reported to AEPA (Ref# 424460). A written report was issued to AEPA on February 5, 2024.	Reportable-3rd Party Release	424460
30-Jan-2024	12421-48 Street NW	An unknown hydrocarbon (approx. 2L) were released into the storm collection system (MH580700) at a residential alleyway located at 12421-48 Street NW. EPCOR Industrial Wastewater Investigators could not determine the source of the release. The investigators used absorbent pads to remove contaminants from the spill site. This release was reported to AEPA (Ref# 424503). A written report was not requested by AEPA.	Reportable-3rd Party Release	424503
31-Jan-2024	582-Evergreen Avenue NW	Untreated wastewater (approx. 100L) was released from a private sanitary manhole surcharge located at the Evergreen Trailer Park (582-Evergreen Avenue NW). EPCOR Industrial Wastewater Investigators confirmed that the release was contained on the ground and had been cleaned-up by a private contractor. There was no release of untreated wastewater into the storm collection system. This release was reported to AEPA (Ref# 424541) by the property manager. A written report was issued to AEPA on January 31, 2024.	Reportable-3rd Party Release	424541
09-Feb-2024	19803-96A Street NW	Sample results of the wastewater from a private storm manhole located near a condominium complex (19803-96A Street NW) were received and reviewed by EPCOR Monitoring & Compliance. The results exceeded Bylaw 18100 Appendix C and Bylaw 18093 Schedule B "Restricted Wastes Applicable to Storm Sewers and Watercourses" for E. coli at 7,700,000 CFU/100 mL. The original sample was collected on February 6, 2024 by EPCOR Industrial Wastewater Investigators. A Notice to Comply was issued to the condominium association to locate and repair the cross-connection. This release was reported to AEPA (Ref# 424823). A written report was issued to AEPA on February 15, 2024.	Reportable-3rd Party Release	424823
23-Feb-2024	4504-53 Avenue NW	Sample results of the wastewater from a private sanitary manhole located at Aurora Machine (4504-53 Avenue NW) were received and reviewed by EPCOR Monitoring & Compliance. The results exceeded Bylaw 18100 Appendix A and Bylaw 18093 Schedule A "Prohibited Wastes" for Nickel at 9.75 mg/L. The original sample was collected on February 16, 2024 by EPCOR Industrial Wastewater Investigators. A Notice to Comply was issued to the business to discontinue the release of restricted / hazardous waste into the sewerage system. This release was reported to AEPA (Ref# 425356). A written report was issued to AEPA on March 5, 2024.	Reportable-3rd Party Release	425356
23-Feb-2024	7614-95 Avenue NW	Diesel fuel (approx. 25L) was released into the combined sewer system (MH250229) from a vehicle fuel theft at a residence located at 7614-95 Avenue NW. Absorbent booms were used to remove contaminants from inside the combined manhole. A City of Edmonton street sweeper was called in to remove contaminants from the area surrounding the spill site. This release was reported to AEPA (Ref# 425260) by City of Edmonton – Fire Services. A written report was not requested by AEPA.	Reportable-3rd Party Release	425260
26-Feb-2024	109-Street & Princess Elizabeth Avenue NW	Hydraulic fluid (approx. 25L) was released from a City of Edmonton snow plow located near 109-Street & Princess Elizabeth Avenue NW. The hydraulic fluid was slowly released onto the roadway as the plow travelled down 97-Street to the City of Edmonton – Central Yard (10517-95 Street NW).This release was reported to AEPA (Ref# 425400) by the City of Edmonton. A written report was issued to AEPA on March 1, 2024.	Reportable-3rd Party Release	425400

27-Feb-2024	12139-160 Street NW	A 12% Acetic Acid solution (approx. 3000L) was released into the storm collection system at Bimbo Canada (12139-160 Street NW). A 3rd party vacuum truck was called-in to remove contaminants from the private storm collection system. The storm wastewater from this facility would release into the North Saskatchewan River thru storm Outfall #18 (OF223752). This release was reported to AEPA (Ref# 425409) by the company. A written report was issued to AEPA on March 4, 2024.	Reportable-3rd Party Release	425409
05-Mar-2024	9608-25 Avenue NW	Boiler blowdown chemical (approx. 350L) was released into the storm collection system by a private company (BioNeutra North America Inc.) located at 9608-25 Avenue NW. EPCOR Industrial Wastewater Investigators arrived on site and directed the manager of the company to stop the discharge of boiler wastewater into their private storm catch basin. A Notice to Comply was issued to the company to discontinue the release of restricted waste into the sewerage system. A second Notice to Comply was issued that required the company to remove the wastewater (boiler chemical) from their private catch basin. This release was reported to AEPA (Ref# 425622) by the company. A written report was issued to AEPA on March 8, 2024.	Reportable-3rd Party Release	425622
10-Mar-2024	8501-70 Avenue NW	EPCOR Industrial Wastewater Investigators responded to a public complaint of hydrocarbon odours near the Mill Creek Oil Separator (8501-70 Avenue NW). The investigators checked the storm collection system and Mill Creek near the separator, but did not observe any visual evidence of a release to the environment. As a precaution the investigators placed a boom across Mill Creek to contain and absorb any trace hydrocarbons at this location. EPCOR will periodically re-inspect and replace the booms as required. No further investigation of the upstream storm system is planned at this time as no release to the storm collection system has been identified. This release was reported to AEPA (Ref# DINC0005460). A written report was issued to AEPA on March 18, 2024.	Reportable-3rd Party Release	0005460
11-Mar-2024	Whitemud Drive & Rainbow Valley Bridge NW	Sediment (unknown volume) was released into Whitemud Creek by a City of Edmonton Contractor (Graham Infrastructure LP) at the Terwillegar Drive Stage 2 Project worksite (Whitemud Drive & Rainbow Valley Bridge NW). Increased water levels during spring melt / runoff rose above the silt fence surrounding a previously isolated excavation near the creek. Immediately following the release, the contractor removed debris from the flooded area. To prevent a reoccurrence, Graham Construction will re-establish silt fencing and sandbags, complete a fish rescue, dewater the flooded area and place clay material along the bank to form a berm. This release was reported to AEPA (Ref# 425790) by the City of Edmonton. A written report was issued to AEPA on March 18, 2024.	Reportable-3rd Party Release	425790
16-Mar-2024	116-Avenue & 133-Street NW	Diesel fuel (approx. 1L) was released into the storm collection system (CB261162) from a private vehicle near the intersection of 116-Avenue & 133-Street NW. The unidentified vehicle damaged a fire hydrant and then left the scene of the accident. EPCOR Industrial Wastewater Investigators used absorbent pads to remove contaminants from the impacted storm collection system. EPCOR Water Services completed repairs to the damaged fire hydrant. This release was reported to AEPA (Ref# 426023). A written report was issued to AEPA on March 22, 2024.	Reportable-3rd Party Release	426023
20-Mar-2024	10044-90 Avenue NW	Sample results of the wastewater from a storm manhole (MH315915) near a private residence (10044-90 Avenue NW) were received and reviewed by EPCOR Monitoring & Compliance. The results exceeded Bylaw 18100 Appendix C and Bylaw 18093 Schedule B "Restricted Wastes Applicable to Storm Sewers and Watercourses" for E. coli at 3000 CFU/100 mL. The original sample was collected on March 18, 2024 by EPCOR Industrial Wastewater Investigators. EPCOR Industrial Wastewater Investigators have issued a Notice to Comply to the homeowner to locate and repair the cross-connection. This release was reported to AEPA (Ref# 426177). A written report was issued to AEPA on March 27, 2024.	Reportable-3rd Party Release	426177
27-Mar-2024	10204-119 Street NW	Untreated wastewater (unknown volume) was released thru an interconnection (PIP49190) located at 10204-119 Street NW. A blockage occurred in a combined line sewer pipe, which then released untreated wastewater thru the interconnection into the nearby storm manhole (MH255520). A 3rd party company has been identified as releasing concrete waste into the combined line resulting in the blockage. It has been confirmed that during dry weather flow, the storm line at this location flows into the combined sewer system and on to the Gold Bar Wastewater Treatment Plant for treatment. EPCOR equipment was mobilized to the site and cleared the downstream obstruction restoring normal flow. EPCOR also initiated an emergency repair in the downstream system to remove any remaining concrete which would interfere with the operation of the system. Compliance activity has been initiated against the third party and the interconnection continues to be monitored through remote sensor. This release was reported to AEPA (Ref# 426376). A written report was issued to AEPA on April 4, 2024.	Reportable-3rd Party Release	426376

31-Mar-2024	17404-90 Avenue	Glycol (approx. 0.5L) was released into a storm catch basin (CB236026) by a City of Edmonton – Transit bus located at 17404-90 Avenue NW. EPCOR Industrial Wastewater Investigators confirmed that the release was contained with the catch basin sump and there was no release of glycol to the storm collection system. An EPCOR vactor truck was mobilized to the spill site to remove contaminants from the impacted catch basin and surrounding area. This release was reported to AEPA (Ref# 426417) by the City of Edmonton. A written report was issued to AEPA on April 4, 2024.	Reportable-3rd Party Release	426417
01-Apr-2024	18204-93 Avenue NW	Wastewater (unknown volume) was released from a private waste collection vehicle garbage fire (18204-93 Avenue NW). A fire broke out in the back of a private waste collection vehicle and City of Edmonton – Fire Services was called-in to extinguish the fire. Water that was used to put out the fire entered a nearby storm catch basin (MH234253). No debris or contaminants were observed in the downstream storm collection system. This release was reported to AEPA (Ref# 426439). A written report was issued to AEPA on April 5, 2024.	Reportable-3rd Party Release	426439
02-Apr-2024	425-Abbotsfield Road NW	Sample results of the wastewater from a private storm manhole near a private residence (425-Abbotsfield Road NW) were received and reviewed by EPCOR Monitoring & Compliance. The results exceeded Bylaw 19627 Appendix C and Bylaw 18093 Schedule B "Restricted Wastes Applicable to Storm Sewers and Watercourses" for E. coli at 1,500,000 CFU/100 mL. The original sample was collected on March 27, 2024 by EPCOR Industrial Wastewater Investigators. EPCOR Industrial Wastewater Investigators have issued a Notice to Comply to the property owner to locate and repair the cross-connection. This release was reported to AEPA (Ref# 426450). A written report was issued to AEPA on April 4, 2024.	Reportable-3rd Party Release	426450
02-Apr-2024	804-181 Street SW	Sample results of the wastewater from a drainage ditch near a private residence (804-181 Street SW) were received and reviewed by EPCOR Monitoring & Compliance. The results exceeded Bylaw 19627 Appendix C and Bylaw 18093 Schedule B "Restricted Wastes Applicable to Storm Sewers and Watercourses" for E. coli at 2,800 CFU/100 mL. The original sample was collected on March 21, 2024 by EPCOR Industrial Wastewater Investigators. EPCOR Industrial Wastewater Investigators have identified that the septic mound on the property is not functioning as intended and discharges of untreated wastewater are occurring infrequently from the property. EPCOR has issued a Notice to Comply to the property owner to discontinue the release of restricted waste into the sewerage system. This release was reported to AEPA (Ref# 426470). A written report was issued to AEPA on April 8, 2024.	Reportable-3rd Party Release	426470
04-Apr-2024	12038-107 Avenue	Glycol (approx. 5L) was released into a storm catch basin (CB260036) by a City of Edmonton – Transit bus located at 12038-107 Avenue NW. EPCOR Industrial Wastewater Investigators confirmed that the release was contained with the catch basin sump and there was no release of glycol to the storm collection system. An EPCOR vactor truck was mobilized to the spill site to remove contaminants from the impacted catch basin and surrounding area. This release was reported to AEPA (Ref# 426534) by the City of Edmonton. A written report was not requested by AEPA.	Reportable-3rd Party Release	426534
06-Apr-2024	8560-112 Street NW	Propylene glycol (approx. 4500L) was released into the combined sewer system from the University of Alberta – Li Ka Shing Centre (8560-112 Street NW). The Manager of Environment & Support Services with the University of Alberta (UofA) reported that the release was a result of work with the buildings HVAC system. EPCOR was notified of the release on April 8, 2024. A second release of propylene glycol (approx. 4500L) occurred from the HVAC system at the Li Ka Shing Centre for Health Research Innovation on April 8, 2024. EPCOR was notified of this release on April 9, 2024. The Goldbar treatment plant was notified of both spills and no anomalies had been observed at the time of the releases. EPCOR has issued a Notice to Comply to the University of Alberta to discontinue the release of prohibited waste (propylene glycol) into the sewerage system. Both releases were reported to AEPA (Ref# 426635) by the University of Alberta. A written report was issued to AEPA on April 12, 2024.	Reportable-3rd Party Release	426635
13-Apr-2024	12403-Fort Road NW	Diesel fuel (approx. 2L) was released into a sanitary floor drain at the City of Edmonton – Kathleen Andrews Transit Garage (12403-Fort Road NW). EPCOR Industrial Wastewater Investigators confirmed that the floor drains inside the building are connected to a downstream interceptor that contained the diesel fuel contaminants. This release was reported to AEPA (Ref# 426837) by the City of Edmonton. A written report was not requested by AEPA.	Reportable-3rd Party Release	426837
15-Apr-2024	10517-95 Street NW	Potable water (approx. 15L) was released from a fire hydrant into a nearby storm catch basin (CB264696) at the City of Edmonton – Central District Yard (10517-95 Street NW). The catch basin at this location releases into the combined sewer system. This release was reported to AEPA (Ref# 426913) by the City of Edmonton. A written report was issued to AEPA on April 17, 2024.	Reportable-3rd Party Release	426913

18-Apr-2024	13020-56 Street NW	Paint (approx. 5L) was released into a floor sump at the City of Edmonton – Kennedale Traffic Operations building (13020-56 Street NW). The paint was fully contained within the sump. A private vacuum truck (NorAlta) was called-in to remove the contaminants from the sump. This release was reported to AEPA (Ref# 427074) by the City of Edmonton. A written report was not requested by AEPA.	Reportable-3rd Party Release	427074
19-Apr-2024	13650-50 Street NW	Untreated wastewater (unknown volume) was released into the storm collection system from a private sanitary line surcharge located at COSTCO Wholesale (13650-50 Street NW). A 3rd party company was called to the site to clear the blockage in the sanitary line. EPCOR equipment was mobilized to clean the impacted storm collection system and surrounding area. This release was reported to AEPA (Ref# 427098). A written report was issued to AEPA on April 26, 2024.	Reportable-3rd Party Release	427098
23-Apr-2024	11760-109 Street NW	Contaminated wastewater (unknown volume) was released by City of Edmonton – Fire Services at the Blatchford Hanger 11 (11760-109 Street NW) fire. Water that was used to put out the fire was released into the combined collection system. This release was reported to AEPA (Ref# 427196) by City of Edmonton – Fire Services. A written report was not requested by AEPA.	Reportable-3rd Party Release	427196
24-Apr-2024	1851-111 Street NW	Diesel fuel (approx. 1L) was released into a storm catch basin at the EPCOR Kaskitayo Reservoir filling station (1851-111 Street NW). EPCOR Industrial Wastewater Investigators placed absorbent material into the catch basin to absorb fuel residue. The investigators inspected the downstream storm outfall (OF327183) located at Blackmud Creek and no hydrocarbon contaminants were observed. This release was reported to AEPA (Ref# 427272). A written report was issued to AEPA on May 1, 2024.	Reportable-3rd Party Release	427272
30-Apr-2024	13650-50 Street NW	Hydraulic fluid (approx. 20L) was released from a trash compactor into the storm collection system at COSCO Wholesale (13650-50 Street NW). EPCOR Industrial Wastewater Investigators confirmed that the contaminants were removed from the storm collection system and surrounding area by a 3rd party vacuum truck (Supreme Vac). This release was reported to AEPA (Ref# 427488) by the company. A written report was issued to AEPA on May 6, 2024.	Reportable-3rd Party Release	427488
01-May-2024	1718-Rabbit Hill Road NW	Glycol (approx. 0.5L) was released into the storm collection system (CB383009) by a City of Edmonton – Transit bus located at 1718-Rabbit Hill Road NW. EPCOR Industrial Wastewater Investigators confirmed that the stormwater from CB383009 would release into the Hodgson SWMF (SWM372285). A 3rd party (NorAlta) vactor truck was mobilized to the spill site to remove contaminants from the impacted catch basin and surrounding area. This release was reported to AEPA (Ref# 427499) by the City of Edmonton. A written report was issued to AEPA on May 2, 2024.	Reportable-3rd Party Release	427499
01-May-2024	14019-90 Avenue NW	Pool water (approx. 4000L) was released into the storm collection system (CB240081) by a private resident located at 14019-90 Avenue NW. EPCOR Industrial Wastewater Investigators arrived on site and educated the homeowner on the importance of dechlorinating pool water before releasing it to the nearby storm catch basin. The resident was also informed of the requirement to contact EPCOR when a large volume release is occurring. This release was reported to AEPA (Ref# 427614) by the homeowner. A written report was not requested by AEPA.	Reportable-3rd Party Release	427614
05-May-2024	5404-59 Avenue NW	Sample results of the stormwater discharge from the City of Edmonton SE District Yard (5404-59 Avenue NW) were received and reviewed by City of Edmonton Environment and Climate Resilience (COEECR). The results of the sample exceeded Bylaw 19627 Appendix C and Bylaw 18093 Schedule B Restricted Wastes Applicable to Storm Sewers and Watercourses for Chemical Oxygen Demand at 814 mg/L and Total Cadmium at 0.0008 mg/L. The original sample from the SE District Yard was collected on April 17, 2024 by COEECR. This release was reported to AEPA (Ref# 427576) by the City of Edmonton. A written report was issued to AEPA on May 16, 2024.	Reportable-3rd Party Release	427576
05-May-2024	14402-114 Avenue NW	Sample results of the stormwater discharge from the City of Edmonton NW District Yard (14402-114 Avenue NW) were received and reviewed by City of Edmonton Environment and Climate Resilience (COEECR). The results of the sample exceeded Bylaw 19627 Appendix C and Bylaw 18093 Schedule B Restricted Wastes Applicable to Storm Sewers and Watercourses for Chemical Oxygen Demand at 593 mg/L, Total Phosphorous at 1.59 mg/L, E.coli at 330 CFU/100 mL, Total Cadmium at 0.0010 mg/L, Total Lead at 0.072 mg/L, Oil & Grease at 18 mg/L and Total Zinc at 0.971 mg/L. The original sample from the NW District Yard was collected on April 17, 2024 by COEECR. This release was reported to AEPA (Ref# 427578) by the City of Edmonton. A written report was issued to AEPA on May 16, 2024.	Reportable-3rd Party Release	427578
05-May-2024	13003-56 Street NW	Sample results of the stormwater discharge from the City of Edmonton NE District Yard (13003-56 Street NW) were received and reviewed by City of Edmonton Environment and Climate Resilience (COEECR). The results of the sample exceeded Bylaw 19627 Appendix C and Bylaw 18093 Schedule B Restricted Wastes Applicable to Storm Sewers and Watercourses for Chemical Oxygen Demand at 1040 mg/L, Total Phosphorous at 2.37 mg/L, Total Cadmium at 0.002 mg/L, Total Lead at 0.049 mg/L, Total Nickel at 0.087 mg/L, Oil & Grease at 18 mg/L and Total Zinc at 1.03 mg/L. The original sample from the NE District Yard was collected on April 17, 2024 by COEECR. This release was reported to AEPA (Ref# 427577) by the City of Edmonton. A written report was issued to AEPA on May 16, 2024.	Reportable-3rd Party Release	427577

05-May-2024	9204-213 Street NW	Glycol (approx. 1L) was released into the floor interceptor at the City of Edmonton – Fire Station #29 located at 9204-213 Street NW. EPCOR Industrial Wastewater Investigators confirmed that the spill was cleaned up by COE – Fire Services using absorbent material from a spill kit. There was no release of glycol into the storm / sanitary collection system. This release was reported to AEPA (Ref# 427626) by the City of Edmonton. A written report was issued to AEPA on May 9, 2024.	Reportable-3rd Party Release	427626
05-May-2024	4510-68 Avenue NW	Sample results of the stormwater discharge from Maple Leaf Metals (4510-68 Avenue NW) were received and reviewed by EPCOR Monitoring & Compliance. The results of the sample exceeded Bylaw 19627 Appendix C and Bylaw 18093 Schedule B Restricted Wastes Applicable to Storm Sewers and Watercourses for Cadmium at 0.0005 mg/L, Chromium at 0.089 mg/L, Copper at 0.160 mg/L, Lead at 0.020 mg/L, Nickel at 0.080 mg/L, and Zinc at 0.30 mg/L. The original sample from the company was collected on May 1, 2024 by EPCOR Industrial Wastewater Investigators. EPCOR Industrial Wastewater Investigators have issued a Notice to Comply to the company to discontinue the release of restricted wastes into the storm sewer system. This release was reported to AEPA (Ref# 427728) by the company. A written report was issued to AEPA on May 15, 2024.	Reportable-3rd Party Release	427728
08-May-2024	11211-142 Street NW	Glycol (approx. 190L) was released into a floor drain at the TELUS World of Science facility (11211-142 Street NW). EPCOR Industrial Wastewater Investigators confirmed that the release from the boiler system at the facility entered the sanitary sewer system. Absorbent pads from a spill kit were used to clean-up contaminants around the floor drain. There was no release of glycol into the storm collection system. This release was reported to AEPA (Ref# 427714) by the City of Edmonton. A written report was issued to AEPA on May 10, 2024.	Reportable-3rd Party Release	427714
13-May-2024	12824-48 Street NW	Gasoline (approx. 100L) was released into the storm collection system (MH283449) from a vehicle fuel theft at Enterprise Rent-A-Car Canada located at 12824-48 Street NW. A 3rd party vacuum truck (Clean Harbors) was called to the site to clean-up the impacted storm collection system and surrounding area. EPCOR has issued a Notice to Comply to the company to discontinue the release of prohibited waste (gasoline) into the sewerage system. This release was reported to AEPA (Ref# 428023). A written report was issued to AEPA on May 15, 2024.	Reportable-3rd Party Release	428023
16-May-2024	12512-Landsdowne Drive NW	Wastewater (approx. 334 cubic meters) was released into the storm collection system by Graham Infrastructure located at 12512-Landsdowne Drive NW. The contractor had an EPCOR permit (PR24-506536473) to release wastewater generated from hydro demolition activities into the sanitary sewer system. EPCOR Industrial Wastewater Investigators confirmed that the contractor had been releasing the wastewater into a nearby storm manhole (MH303887). The contractor was instructed by the investigators to move the wastewater discharge hose from the storm to the sanitary manhole (MH211008). This release was reported to AEPA (Ref# 428117) by the contractor. A written report was issued to AEPA on May 23, 2024.	Reportable-3rd Party Release	428117
16-May-2024	13027-83 Street NW	Hydraulic fluid (approx. 4L) was released into the storm collection system (MH277657) from a City of Edmonton waste collection truck located at 13027-83 Street NW. EPCOR Industrial Wastewater Investigators confirmed that recent rainfall had released hydraulic fluid into the storm collection system. Absorbent pads were used to remove contaminants from the spill site. This release was reported to AEPA (Ref# 428116) by the City of Edmonton. A written report was issued to AEPA on May 22, 2024.	Reportable-3rd Party Release	428116
17-May-2024	102-Avenue & 176-Street NW	Glycol (approx. 0.5L) was released from a City of Edmonton – Transit bus located at 102-Avenue & 176-Street NW. EPCOR Industrial Wastewater Investigators confirmed that there was no release of glycol into the storm / sanitary collection system. The City of Edmonton mobilized a sweeper truck to remove contaminants from the spill site. This release was reported to AEPA (Ref# 428139) by the City of Edmonton. A written report was not requested by AEPA.	Reportable-3rd Party Release	428139
21-May-2024	114-Avenue & 144-Street NW	DEF fuel additive (approx. 2L) was released into a private storm catch basin at the City of Edmonton – fueling station located at 114-Avenue & 144-Street NW. EPCOR Industrial Wastewater Investigators confirmed that the release had been contained within the private storm sewer system at this location. The City of Edmonton called-in a 3rd party vacuum truck to clean out the impacted private catch basin and surrounding area. This release was reported to AEPA (Ref# 428217) by the City of Edmonton. A written report was issued to AEPA on May 28, 2024.	Reportable-3rd Party Release	428217
21-May-2024	6609-Gateway Boulevard NW	Calcium chloride / rain water mixture (approx. 3700L) was released into a private storm catch basin at the City of Edmonton – Southwest District Yard (6609-Gateway Boulevard NW). EPCOR Industrial Wastewater Investigators confirmed that the release from this location would have entered the combined sewer system. The City of Edmonton called-in a 3rd party vacuum truck to clean out the impacted private catch basin and surrounding area.This release was reported to AEPA (Ref# 428256) by the City of Edmonton. A written report was issued to AEPA on May 28, 2024.	Reportable-3rd Party Release	428256

22-May-2024	14402-114 Avenue NW	Sample results of the stormwater discharge from the City of Edmonton NW District Yard (14402-114 Avenue NW) were received and reviewed by City of Edmonton Environment and Climate Resilience (COEECR). The results of the sample exceeded Bylaw 19627 Appendix C and Bylaw 18093 Schedule B Restricted Wastes Applicable to Storm Sewers and Watercourses for E. coli at 4300 CFU/100 mL and Phenols at 0.009 mg/L. The original sample from the NW District Yard was collected on May 7, 2024 by COEECR. This release was reported to AEPA (Ref# 428246) by the City of Edmonton. A written report was issued to AEPA on May 24, 2024.	Reportable-3rd Party Release	428246
22-May-2024	13003-56 Street NW	Sample results of the stormwater discharge from the City of Edmonton NE District Yard (13003-56 Street NW) were received and reviewed by City of Edmonton Environment and Climate Resilience (COEECR). The results of the sample exceeded Bylaw 19627 Appendix C and Bylaw 18093 Schedule B Restricted Wastes Applicable to Storm Sewers and Watercourses for Chemical Oxygen Demand at 204 mg/L and E.coli at 1000 CFU/100 mL. The original sample from the NE District Yard was collected on May 7, 2024 by COEECR. This release was reported to AEPA (Ref# 428245) by the City of Edmonton. A written report was issued to AEPA on May 24, 2024.	Reportable-3rd Party Release	428245
22-May-2024	5404-59 Avenue NW	Sample results of the stormwater discharge from the City of Edmonton SE District Yard (5404-59 Avenue NW) were received and reviewed by City of Edmonton Environment and Climate Resilience (COEECR). The results of the sample exceeded Bylaw 19627 Appendix C and Bylaw 18093 Schedule B Restricted Wastes Applicable to Storm Sewers and Watercourses for Chemical Oxygen Demand at 148 mg/L and Total Cadmium at 0.0027 mg/L. The original sample from the SE District Yard was collected on May 7, 2024 by COEECR. This release was reported to AEPA (Ref# 428244) by the City of Edmonton. A written report was issued to AEPA on May 24, 2024.	Reportable-3rd Party Release	428244
22-May-2024	129-Avenue & 127-Street NW	Hydraulic fluid (approx. 0.5L) was released from a City of Edmonton – garbage truck located at 129-Avenue & 127-Street NW. EPCOR Industrial Wastewater Investigators confirmed that there was no release of hydraulic fluid into the storm / sanitary collection system. The City of Edmonton mobilized a sweeper truck to remove contaminants from the spill site. This release was reported to AEPA (Ref# 428291) by the City of Edmonton. A written report was issued to AEPA on May 28, 2024.	Reportable-3rd Party Release	428291
22-May-2024	17616-111 Avenue NW	Gasoline (approx. 80L) was released from a damaged vehicle into the storm collection system at the Tesla Service Center located at 17616-111 Avenue NW. EPCOR Industrial Wastewater Investigators confirmed that a 3rd party vacuum truck was called to the site to clean contaminants from the impacted private storm sewer system and surrounding area. This release was reported to AEPA (Ref# 428294) by the company. A written report was not requested by AEPA.	Reportable-3rd Party Release	428294
24-May-2024	105-Avenue & 135-Street NW	Diesel fuel (approx. 125L) was released from a vehicle leak into the storm collection system (CB345657) from the Marigold Infrastructure Partners worksite located at 105-Avenue & 135-Street NW. A 3rd party vacuum truck was called to the site to clean contaminants from the impacted storm collection system and surrounding area. This release was reported to AEPA (Ref# 428360) by the company. A written report was issued to AEPA on May 26, 2024.	Reportable-3rd Party Release	428360
24-May-2024	8611-44 Avenue NW	Motor oil (approx. 5L) was released from an unknown source into the storm collection system (CB557833) located in a residential neighborhood at 8611-44 Avenue NW. A 3rd party vacuum truck (GFL Environmental) was called to the site to clean contaminants from the impacted storm collection system and surrounding area. EPCOR Industrial Wastewater Investigators will issue letters to nearby residential property owners providing educational material regarding Drainage Bylaw 19627, stormwater discharges and environmental impacts. This release was reported to AEPA (Ref# 428358). A written report was issued to AEPA on May 29, 2024.	Reportable-3rd Party Release	428358
29-May-2024	5929-86 Street NW	Treated grease trap wastewater (unknown volume) was released into the storm collection system from Suck-U-Sump located at 5929-86 Street NW. The grease trap waste had been treated with a hydrated lime polymer to flocculate the oil & grease prior to discharging the wastewater to a nearby private storm catch basin. The business owner has been directed by EPCOR Industrial Wastewater Investigators to complete a clean-up of the impacted private storm collection system and the surrounding site. EPCOR Investigators have directed the business owner to discontinue the release of wastewater to the storm collection system. This release was reported to AEPA (Ref# 428540) by the company. A written report was issued to AEPA on June 5, 2024.	Reportable-3rd Party Release	428540
03-Jun-2024	18603-106A Avenue NW	Fuel / firefighting chemicals (approx. 30L) were released into the storm collection system (MH251952) at the City of Edmonton – Fire Services Training Center (18603-106A Avenue NW). EPCOR Industrial Wastewater Investigators confirmed that recent rainfall had overflowed an open pan used for firefighting training and released contaminants into a nearby storm manhole. A 3rd party vactor truck was mobilized to the spill site to remove contaminants from the impacted catch basin and surrounding area. This release was reported to AEPA (Ref# 428726) by City of Edmonton – Fire Services. A written report was issued to AEPA on June 10, 2024.	Reportable-3rd Party Release	428726

05-Jun- 2024	14724-65 Street NW	Sample results of the wastewater from a storm manhole (MH298741) located at 14724-65 Street NW were received and reviewed by EPCOR Monitoring & Compliance. The results exceeded Bylaw 19627 Appendix C and Bylaw 18093 Schedule B "Restricted Wastes Applicable to Storm Sewers and Watercourses" for E. coli at 25,000 CFU/100 mL. EPCOR Industrial Wastewater Investigators conducted a dye test and confirmed the presence of a cross-connection at this location. A Notice to Comply was issued to the property owner to have their sanitary wastewater redirected from the storm sewer into the sanitary sewer system. Once the repairs are completed, EPCOR will collect a sample to ensure compliance. This release was reported to AEPA (Ref# 428829). A written report was issued to AEPA on June 12, 2024.	Reportable- 3rd Party Release	428829
06-Jun-2024	5134 Mullen Road NW	Firefighting water (unknown volume) was released into the storm collection system from a commercial vehicle fire (Collective Waste Solutions) located at 5134 Mullen Road NW. A representative from the company stated to EPCOR Industrial Wastewater Investigators there was no fuel/oils released from the vehicle. This release was reported to AEPA (Ref# 428871) by the complainant. A written report was issued to AEPA on June 11, 2024.	Reportable- 3rd Party Release	428871
07-Jun-2024	14339-50 Street NW	Untreated wastewater (unknown volume) was released into the storm collection system from a sanitary line surcharge located near 14339-50 Street NW. EPCOR Industrial Wastewater Investigators observed wastewater surcharging from a sanitary manhole (MH298552) and releasing into nearby storm catch basins (CB487957 & CB484643). EPCOR equipment was mobilized to release the sanitary line blockage (grease) and clean the impacted storm collection system. EPCOR will conduct further investigations of upstream businesses to ensure compliance with Drainage Bylaw 19627, including adequate pretreatment systems and maintenance. This release was reported to AEPA (Ref# 428934). A written report was issued to AEPA on June 13, 2024.	Reportable- 3rd Party Release	428934
11-Jun-2024	12010-River Valley Road NW	A 50% propylene glycol solution (approx. 70L) was released into a floor drain at the City of Edmonton – Victoria Park Pavilion (12010-River Valley Road NW). EPCOR Industrial Wastewater Investigators confirmed that the floor drain is connected to a holding tank and there was no release of glycol to the storm / sanitary collection system. The COE will ensure that wastewater from the holding tank will be hauled away to an acceptable disposal facility. This release was reported to AEPA (Ref# 429046) by the City of Edmonton. A written report was not requested by AEPA.	Reportable- 3rd Party Release	429046
11-Jun-2024	8620-58 Avenue NW	Diesel fuel (approx. 20L) was released into a floor sump at the City of Edmonton – Thomas Ferrier Garage (8620-58 Avenue NW). EPCOR Industrial Wastewater Investigators confirmed that the diesel fuel was contained within the sump and there was no release to the storm / sanitary collection system. A 3rd party vactor truck was called-in to remove contaminants from the sump. This release was reported to AEPA (Ref# 429058) by the City of Edmonton. A written report was not requested by AEPA.	Reportable- 3rd Party Release	429058
13-Jun-2024	4710-Gateway Boulevard NW	Potable water (approx. 15,000 cubic meters) was released into the storm collection system at the Ever Square Professional Building (4710-Gateway Boulevard NW). EPCOR Industrial Wastewater Investigators confirmed that a broken water valve had flooded the building parkade. EPCOR Water D&T was mobilized to the site and closed off the water to the damaged line. The building contractor called-in a 3rd party company to pump the water from the parkade into the storm collection system. When EPCOR Investigators arrived on site they placed dechlorination pucks into the storm collection system (MH304003) to remove chlorine residue from the potable water. An unknown volume of dechlorinated and partially dechlorinated water entered the storm collection system and would have been released downstream thru storm Outfall #9 (OF207873). This release was reported to AEPA (Ref# 429122) by the contractor. A written report was issued to AEPA on June 26, 2024.	Reportable- 3rd Party Release	429122
14-Jun-2024	2815-Anton Wynd SW	Diesel fuel (approx. 200L) was released into the storm collection system (CB528994) from a school bus fire at 2815-Anton Wynd SW. EPCOR Industrial Wastewater Investigators called in a 3rd party vacuum truck (GFL Environmental) to remove contaminants from the impacted storm collection system and surrounding area. This release was reported to AEPA (Ref# 429181) by City of Edmonton – Fire Services. A written report was not requested by AEPA.	Reportable- 3rd Party Release	429181
14-Jun-2024	11411-51 Avenue NW	Hydrocarbons (approx. 5L) were released into the storm collection system (CB226883) by a resident located at 11411-51 Avenue NW. EPCOR Industrial Wastewater Investigators placed absorbent booms in the impacted storm collection system and the surrounding area. A heavy rainfall during the investigation prevented any further clean-up activities. A Notice to Comply was issued to the property owner to discontinue the release of restricted waste into the sewerage system. This release was reported to AEPA (Ref# 429192). A written report was issued to AEPA on June 21, 2024.	Reportable- 3rd Party Release	429192

17-Jun-2024	8604-10 Avenue NW	A concrete slurry (approx. 5L) was released into the storm collection system (CB202562) by a City of Edmonton contractor located at 8604-10 Avenue NW. A 3rd party vacuum truck (GFL Environmental) was called to the site to remove contaminants from the impacted storm collection system and surrounding area. This release was reported to AEPA (Ref# 429281) by the City of Edmonton. A written report was issued to AEPA on June 24, 2024.	Reportable-3rd Party Release	429281
18-Jun-2024	4211-106 Street NW	Antifreeze (approx. 1L) was released into a storm catch basin (CB447109) from a City of Edmonton bus located at 4211-106 Street NW. EPCOR Industrial Wastewater Investigators confirmed that the release was contained within the catch basin sump. A 3rd party vacuum truck (GFL Environmental) was called to the site to remove contaminants from the catch basin and surrounding area. This release was reported to AEPA (Ref# 429278) by the City of Edmonton. A written report was issued to AEPA on June 24, 2024.	Reportable-3rd Party Release	429278
19-Jun-2024	9626-96A Street NW	Glycol (approx. 1L) was released into the combined sewer system at the City of Edmonton – Muttart Conservatory (9626-96A Street NW). EPCOR Industrial Wastewater Investigators confirmed that the release from a leaking coolant pipe entered a nearby floor drain and there was no release to the storm collection system. This release was reported to AEPA (Ref# 429312) by the City of Edmonton. A written report was issued to AEPA on June 24, 2024.	Reportable-3rd Party Release	429312
19-Jun-2024	18562-104 Avenue NW	Gasoline (approx. 1L) was released into the storm collection system (MH404386) from a vehicle fuel theft at the Sunwapta Business Centre located at 18562-104 Avenue NW. A 3rd party vacuum truck (Suck-U-Sump Services) was called to the site to clean-up the impacted storm collection system and surrounding area. This release was reported to AEPA (Ref# 429330) by the property manager. A written report was issued to AEPA on June 20, 2024.	Reportable-3rd Party Release	429330
19-Jun-2024	16110-116 Avenue NW	Diesel fuel (approx. 400L) was released into the storm collection system (MH254752) from a vehicle accident at Saputo Dairy Products located at 16110-116 Avenue NW. EPCOR Industrial Wastewater Investigators placed absorbent booms in EPCOR storm manholes to absorb and contain any contaminants in the storm collection system. A 3rd party vacuum truck (GFL Environmental) was called to the site to clean-up the impacted storm collection system and surrounding area. This release was reported to AEPA (Ref# 429364) by the company. A written report was issued to AEPA on June 20, 2024	Reportable-3rd Party Release	429364
21-Jun-2024	9704-182 Street NW	Untreated wastewater (unknown volume) was released into the storm collection system from a private sanitary line surcharge located at the La Perle Shopping Centre (9704-182 Street NW). EPCOR Industrial Wastewater Investigators observed wastewater surcharging from a private sanitary manhole and releasing into a nearby storm catch basin. A 3rd party vacuum truck (Renew Services Inc.) was called to the site to release the sanitary line blockage and clean-up the impacted storm collection system and surrounding area. A Notice to Comply was issued to the property owner to discontinue the release of restricted waste into the sewerage system. To prevent a reoccurrence of this incident, inspections of upstream businesses were performed to ensure that pre-treatment systems are in working order and are adequately maintained. Notices to Comply were issued to three additional businesses in the complex. This release was reported to AEPA (Ref# 429576) by EPCOR Monitoring & Compliance. A written report was issued to AEPA on June 26, 2024.	Reportable-3rd Party Release	429576
24-Jun-2024	7381-May Common NW	Motor oil (approx. 1L) was released from an ambulance located at 7381-May Common NW. A City of Edmonton street sweeper was called to the site to remove contaminants from the roadway. EPCOR Industrial Wastewater Investigators confirmed that there was no release of oil to the storm / sanitary collection system. This release was reported to AEPA (Ref# 429544) by the City of Edmonton. A written report was not requested by AEPA.	Reportable-3rd Party Release	429544
24-Jun-2024	111-Avenue & Anthony Henday Drive NW	Diesel fuel (approx. 50L) was released from a vehicle collision located at 111-Avenue & Anthony Henday Drive NW. A City of Edmonton street sweeper was called to the site to remove contaminants from the roadway. EPCOR Industrial Wastewater Investigators confirmed that there was no release of fuel to the storm / sanitary collection system. This release was reported to AEPA (Ref# 429484) by City of Edmonton – Fire Services. A written report was not requested by AEPA	Reportable-3rd Party Release	429484
26-Jun-2024	6415-75 Street NW	Contaminants (unknown volume) from firefighting activities were released into the storm collection system from a commercial building fire at 6415-75 Street NW. EPCOR Industrial Wastewater Investigators observed that water used to fight a garbage fire at this facility had entered nearby storm catch basins. The storm collection system at this location releases into Mill Creek thru the Mill Creek Oil Separator (OF385992).This release was reported to AEPA (Ref# 429620) by City of Edmonton – Fire Services. A written report was not requested by AEPA.	Reportable-3rd Party Release	429620

28-Jun-2024	13500-156 Street NW	Sample results of the stormwater discharge from the Price Steel Ltd (13500-156 Street NW) were received and reviewed by City of EPCOR Monitoring & Compliance. The results of the sample exceeded Bylaw 19627 Appendix C and Bylaw 18093 Schedule B Restricted Wastes Applicable to Storm Sewers and Watercourses for BOD at 408 mg/L, COD at 1830 mg/L, Copper at 0.213 mg/L, E. coli at 2700 CFU/100 mL, Lead at 0.135, Total Phosphorus at 1.06 mg/L and Zinc at 0.845 mg/L. The original sample from the company was collected on June 13, 2024 by EPCOR Industrial Wastewater Investigators. A 3rd party vacuum truck (North Star Hydrovac) was called to the site to clean-up the impacted storm collection system and surrounding area. EPCOR has issued a Notice to Comply to the company to discontinue the release of restricted waste into the storm sewerage system. This release was reported to AEPA (Ref# 429763) by the company. A written report was issued to AEPA on July 2, 2024.	Reportable-3rd Party Release	429763
28-Jun-2024	1718-Rabbit Hill Road NW	Gasoline (approx. 20L) was released from a damaged vehicle located at 1718-Rabbit Hill Road NW. EPCOR Industrial Wastewater Investigators confirmed that there was no release of gasoline into the storm / sanitary collection system. This release was reported to AEPA (Ref# 429705) by City of Edmonton – Fire Services. A written report was not requested by AEPA.	Reportable-3rd Party Release	429705
03-Jul-2024	8-Steele Crescent NW	Untreated wastewater (unknown volume) was released into the storm collection system from a private residence located at 8-Steele Crescent NW. EPCOR Industrial Wastewater Investigators observed that the homeowner was pumping untreated wastewater out of their basement and onto the nearby street. The untreated wastewater ran down the street approximately 100 meters and entered a storm catch basin (CB296732). EPCOR equipment was mobilized to the site and removed the blockage in the sanitary system stopping the flow of untreated wastewater into the residential home. On-site remediation of this release was not possible at the time of response due to concurrent heavy rainfall events which transported the untreated wastewater down the street and into the storm collection system. This release was reported to AEPA (Ref# 429815). A written report was issued to AEPA on July 9, 2024.	Reportable-3rd Party Release	429815
05-Jul-2024	111-Street & Cavanagh Drive SW	Asphalt cuttings (approx. 1L) was released into the storm collection system (CB543142) by a private contractor (Highline Electrical Constructors Ltd) located at 111-Street & Cavanagh Drive SW. EPCOR Industrial Wastewater Investigators observed silt residue along the roadway leading to the impacted catch basin. This release was reported to AEPA (Ref# 430313) by the contractor. A written report was issued to AEPA on July 23, 2024.	Reportable-3rd Party Release	430313
09-Jul-2024	19107-22 Avenue NW	Hydraulic fluid (approx. 2L) was released into the sanitary sewer system (MH579259) from a landscaping truck accident at 19107-22 Avenue NW. A City of Edmonton sweeper was called to the site to remove contaminants from along the roadway. EPCOR Industrial Wastewater Investigators confirmed that there was no release of hydraulic fluid to the storm collection system. This release was reported to AEPA (Ref# 430114) by the landscaping company. A written report was not requested by AEPA.	Reportable-3rd Party Release	430114
11-Jul-2024	14402-114 Avenue NW	Sample results of the stormwater discharge from the City of Edmonton NW District Yard (14402-114 Avenue NW) were received and reviewed by City of Edmonton Environment and Climate Resilience (COEECR). The results of the sample exceeded Bylaw 19627 Appendix C and Bylaw 18093 Schedule B Restricted Wastes Applicable to Storm Sewers and Watercourses for Biochemical Oxygen Demand at 56 mg/L, Chemical Oxygen Demand at 3630 mg/L, Total Cadmium at 0.0029 mg/L, Hexavalent Chromium at 0.0178 mg/L, Total Lead at 0.048 mg/L and Phenols at 0.021 mg/L. The original sample from the NW District Yard was collected on June 27, 2024 by COEECR. This release was reported to AEPA (Ref# 430257) by the City of Edmonton. A written report was issued to AEPA on July 16, 2024.	Reportable-3rd Party Release	430257
11-Jul-2024	13003-56 Street NW	Sample results of the stormwater discharge from the City of Edmonton NE District Yard (13003-56 Street NW) were received and reviewed by City of Edmonton Environment and Climate Resilience (COEECR). The results of the sample exceeded Bylaw 19627 Appendix C and Bylaw 18093 Schedule B Restricted Wastes Applicable to Storm Sewers and Watercourses for Chemical Oxygen Demand at 216 mg/L and E.coli at 1000 CFU/100 mL. The original sample from the NE District Yard was collected on June 27, 2024 by COEECR. This release was reported to AEPA (Ref# 430255) by the City of Edmonton. A written report was issued to AEPA on July 16, 2024.	Reportable-3rd Party Release	430255
11-Jul-2024	5404-59 Avenue NW	Sample results of the stormwater discharge from the City of Edmonton SE District Yard (5404-59 Avenue NW) were received and reviewed by City of Edmonton Environment and Climate Resilience (COEECR). The results of the sample exceeded Bylaw 19627 Appendix C and Bylaw 18093 Schedule B Restricted Wastes Applicable to Storm Sewers and Watercourses for E.coli at 480 CFU/100 mL. The original sample from the SE District Yard was collected on June 27, 2024 by COEECR. This release was reported to AEPA (Ref# 430253) by the City of Edmonton. A written report was issued to AEPA on July 16, 2024.	Reportable-3rd Party Release	430253

13-Jul-2024	757-Lee Ridge Road NW	Untreated wastewater / cleaning chemicals (approx. 200L) was released into the storm collection system (CB218342) from a homeowner located at 757-Lee Ridge Road NW. EPCOR Industrial Wastewater Investigators determined that the homeowner had used a solution of bleach / Mr. Clean to clean-out the holding tanks of his RV unit. A 3rd party (GFL Environmental) vactor truck was mobilized to the spill site to remove contaminants from the impacted catch basin and surrounding area. This release was reported to AEPA (Ref# 430354) by the resident. A written report was issued to AEPA on July 15, 2024.	Reportable-3rd Party Release	430354
16-Jul-2024	149-Avenue & 59-Street NW	Sample results of the wastewater from a storm manhole (MH297519) located at 149-Avenue & 59-Street NW were received and reviewed by EPCOR Monitoring & Compliance. The results exceeded Bylaw 19627 Appendix C and Bylaw 18093 Schedule B "Restricted Wastes Applicable to Storm Sewers and Watercourses" for E. coli at 1,100,000 CFU/100 mL. The original sample from this location was collected on July 8, 2024 by EPCOR Industrial Wastewater Investigators. EPCOR will initiate further investigations into this event to determine the source of the cross-connection at this location. EPCOR will work with impacted properties to identify and correct sanitary cross-connections to the storm collection system. This release was reported to AEPA (Ref# 430482). A written report was issued to AEPA on July 23, 2024.	Reportable-3rd Party Release	430482
16-Jul-2024	13025-56 Street NW	Diesel fuel (approx. 100L) was released from a damaged street sweeper at the City of Edmonton – NE District Yard (13025-56 Street NW). EPCOR Industrial Wastewater Investigators confirmed that the diesel fuel was contained within the sump of a private storm catch basin and there was no release to the storm collection system. A 3rd party vactor truck (Noralta Environmental Services Ltd.) was called-in to remove contaminants from the impacted catch basin and surrounding area. This release was reported to AEPA (Ref# 430451) by City of Edmonton – Fire Services. A written report was not requested by AEPA.	Reportable-3rd Party Release	430451
16-Jul-2024	6150-Davies Road NW	Diesel fuel (approx. 100L) was released from a damaged commercial vehicle (TST-CF Express) located at 6150-Davies Road NW. EPCOR Industrial Wastewater Investigators confirmed that the diesel fuel was contained on the road surface and there was no release to the storm collection system. A 3rd party environmental company (Rapid Response Industrial Group Ltd.) was called-in to remove contaminants from the roadway. This release was reported to AEPA (Ref# 430455) by the company. A written report was issued to AEPA on July 23, 2024.	Reportable-3rd Party Release	430455
17-Jul-2024	372-Lessard Drive NW	Concrete slurry (approx. 100L) was released into the storm collection system (CB221765) from a private company (Bigfoot Concrete Services Inc.) located at 372-Lessard Drive NW. EPCOR Industrial Wastewater Investigators confirmed that the company removed the contaminants from the impacted storm catch basin and surrounding area. A Notice to Comply was issued to the company to discontinue the release of restricted waste into the storm sewer system. This release was reported to AEPA (Ref# 430528) by the company. A written report was not requested by AEPA.	Reportable-3rd Party Release	430528
22-Jul-2024	29592-Parsons Road NW.	Soybean oil (approx. 2000L) was released into the sanitary collection system from a private company (Ventura Foods) located at 29592-Parsons Road NW. During filling operations at the facility, a soybean oil holding tank overflowed into a nearby floor drain. The company used absorbent material from a spill kit to remove soybean oil contaminants from the floor. A Notice to Comply was issued to the company to discontinue the release of prohibited waste into the sewerage system. This release was reported to AEPA (Ref# 430759) by the company. A written report was issued to AEPA on July 30, 2024.	Reportable-3rd Party Release	430759
22-Jul-2024	10810-186 Street NW	Diluted flocculent (approx. 11,000L) was released into the sanitary sewer system at the EPCOR Poundmaker Transfer Station (10810-186 Street NW). EPCOR Industrial Wastewater Investigators confirmed that a hauler (Hennig Septic Services) had discharged the substance into the oil/water separator at the facility. EPCOR contracted a 3rd party company (Secure Energy) to clean, haul and dispose of the contaminants to an authorized treatment facility. There was no release of flocculent to the storm collection system. This release was reported to AEPA (Ref# 430789). A written report was issued to AEPA on July 29, 2024.	Reportable-3rd Party Release	430789
25-Jul-2024	6950-113 Street NW	Hydraulic fluid (approx. 5L) was released into the sanitary collection system from an elevator system leak at the Alberta Infrastructure building (6950-113 Street NW). There was no release of hydraulic fluid to the storm collection system. This release was reported to AEPA (Ref# 430982) by the facility management company. A written report was not requested by AEPA.	Reportable-3rd Party Release	430982
25-Jul-2024	12621-156 Street NW	A phenol formaldehyde resin (approx. 200L) was released at the Hexion Canada facility (12621-156 Street NW). A 3rd party vacuum truck (GFL Environmental) was called-in to remove contaminants from the spill site. There was no release of resin to the storm / sanitary collection system. This release was reported to AEPA (Ref# 430953) by the company. A written report was issued to AEPA on July 31, 2024.	Reportable-3rd Party Release	430953

30-Jul-2024	3341-34 Street NW	Gasoline (approx. 5L) was released into the private storm collection system at the Esso gas bar located at 3341-34 Street NW. A 3rd party company (QM Environmental) was called-in to remove contaminants from the spill site. The release was contained within the private storm system at this facility and there was no release of gasoline to the EPCOR storm collection system. This release was reported to AEPA (Ref# 431143) by City of Edmonton – Fire Services. A written report was not requested by AEPA.	Reportable-3rd Party Release	431143
07-Aug-2024	5607-12 Avenue SW	Animal waste contaminants (unknown volume) were released into the storm collection system (CB471408) from a private residence located at 5607-12 Avenue SW. EPCOR Industrial Wastewater Investigators confirmed that a public complaint had been received about the resident pressure washing animal skulls on their driveway. A Notice to Comply was issued to the homeowner to discontinue the release of restricted wastes into the sewerage system. This release was reported to AEPA (Ref# 431851). A written report was issued to AEPA on August 23, 2024.	Reportable-3rd Party Release	431851
08-Aug-2024	18562-104 Avenue NW	Gasoline (< 200L) was released into the storm collection system (MH404386) from a vehicle fuel theft at Key Food Equipment Services located at 18562-104 Avenue NW. A 3rd party vacuum truck (GFL Environmental) was called to the site to clean-up the impacted storm collection system and surrounding area. A Notice to Comply was issued to the company to discontinue the release of restricted wastes into the sewerage system. This release was reported to AEPA (Ref# 431492) by the company. A written report was issued to AEPA on August 15, 2024.	Reportable-3rd Party Release	431492
08-Aug-2024	5425-38A Avenue NW	Gasoline (approx. 200L) was released into the storm collection system from two vehicle theft incidents located at 5425-38A Avenue NW. As a precaution, EPCOR Industrial Wastewater Investigators deployed absorbent booms at the downstream Outfall #99 (OF217503). There was no visual indicators of hydrocarbons present at the outfall at the time of inspection. A 3rd party environmental company (GFL Environmental) was called-in to remove contaminants from impacted storm collection system and surrounding area. This release was reported to AEPA (Ref# 431494) by City of Edmonton – Fire Services. A written report was issued to AEPA on August 15, 2024.	Reportable-3rd Party Release	431494
11-Aug-2024	17127-80 Avenue NW	Motor oil (approx. 1L) was released into the storm collection system (CB222254) from a private vehicle located at 17127-80 Avenue NW. EPCOR Industrial Wastewater Investigators confirmed that the motor oil had been pressure washed by a nearby resident into the storm catch basin. A 3rd party environmental company (GFL Environmental) was called-in to remove contaminants from the impacted storm collection system and surrounding area. A Notice to Comply was issued to the vehicle owner to discontinue the release of restricted waste into the sewerage system. This release was reported to AEPA (Ref# 431633) by the City of Edmonton. A written report was issued to AEPA on August 19, 2024.	Reportable-3rd Party Release	431633
14-Aug-2024	2040-Ware Road NW	Hydraulic fluid (approx. 1L) was released into the storm collection system (CB496892) from a Collective Waste Solutions garbage truck located at 2040-Ware Road NW. EPCOR Industrial Wastewater Investigators confirmed that hydraulic fluid contaminants had not reached the downstream Windermere #11 SWMF (SWM516571). A 3rd party vactor truck (GFL Environmental) was called-in to remove contaminants from the impacted catch basin and surrounding area. A Notice to Comply was issued to the company to discontinue the release of restricted waste into the sewerage system. This release was reported to AEPA (Ref# 431781) by the company. A written report was issued to AEPA on August 20, 2024.	Reportable-3rd Party Release	431781
19-Aug-2024	64-Avenue & 109-Street NW	Coolant (approx. 5L) was released into the storm collection system (CB228621) from a damaged City of Edmonton bus located at 64-Avenue & 109-Street NW. EPCOR equipment was mobilized to the site to remove contaminants from the impacted catch basin and surrounding area. This release was reported to AEPA (Ref# 431953) by the City of Edmonton. A written report was not requested by AEPA.	Reportable-3rd Party Release	431953
20-Aug-2024	1080-Wanyandi Way NW	A concrete slurry (unknown volume) was released into the storm collection system (CB419725) from a private company (Master Concrete Corp.) located at 1080-Wanyandi Way NW. A 3rd party vactor truck (First Call Energy) was called-in to remove contaminants from the impacted catch basin and surrounding area. A Notice to Comply was issued to the company to discontinue the release of prohibited waste into the sewerage system. This release was reported to AEPA (Ref# 432236) by the company. A written report was requested by AEPA.	Reportable-3rd Party Release	432236
21-Aug-2024	12621-156 Street NW	Potable water (approx. 180L) was released into the storm collection system (CB419725) from a private company (Hexion Canada) located at 12621-156 Street NW. The company had been cleaning some of their outside tanks using potable water and the pump used for the flushing of these tanks was leaking. A 3rd party vactor truck was called-in to remove contaminants from the impacted catch basin and surrounding area. A Notice to Comply was issued to the company to discontinue the release of restricted waste (Ammonia-Nitrogen at 12.7 mg/L, Chlorinated Water and E. coli at 380 CFU/100ml) into the sewerage system. This release was reported to AEPA (Ref# 432071 / 432352) by the company. A written report was issued to AEPA on August 28, 2024.	Reportable-3rd Party Release	432071 / 432352

22-Aug-2024	2832-126 Street NW	Sample results of the wastewater from the 30th Avenue storm trunkline (MH208496) located NW of 29-Avenue & 126-Street NW were received and reviewed by EPCOR Monitoring & Compliance. The results exceeded Bylaw 19627 Appendix C and Bylaw 18093 Schedule B "Restricted Wastes Applicable to Storm Sewers and Watercourses" for E. coli at 1,730,000 MPN/100 mL. The 1264 hectare 30th Avenue storm basin was sampled under a requirement of EPCOR AEPA Approval to Operate 639-03-07. This storm line discharges to the North Saskatchewan River at storm Outfall #9 (OF207873) located approximately 150m North of 729-Riddle Street NW. The original sample from this location was collected on August 21, 2024. On August 24th an obstructed sanitary main line at the intersection of 19-Avenue & 48-Street NW was identified as surcharging into the storm collection system. This surcharge was identified as the cause of the elevated E.coli levels in the storm collection system. EPCOR equipment was mobilized to the site and removed the obstruction, restoring flow to the downstream sanitary system and stopping the release of untreated wastewater into the storm collection system. EPCOR will continue to monitor the 30th Avenue storm sewer basin, and work is ongoing to complete additional repairs to the storm and sanitary collection system. This release was reported to AEPA (Ref# 432141). A written report was issued to AEPA on August 30, 2024.	Reportable-Internal	432141
23-Aug-2024	75-Street & Whitemud Drive NW	Gasoline (approx. 50L) was released into the storm collection system (CB233394) from a damaged commercial vehicle (Englobe Corp.) located at 75-Street & Whitemud Drive NW. Due to a recent rainfall, EPCOR Industrial Wastewater Investigators did not observe any contaminants in the storm catch basins near the spill site. The investigators traced the storm line to Mill Creek Outfall# 196 (OF385992) and did not detect any fuel residue at the outfall. As a precaution, the investigators placed absorbent booms downstream of the outfall. This release was reported to AEPA by EPCOR (Ref# 432171) and by the company (Ref# 432179). A written report was requested by AEPA. This report will be issued to AEPA by the company	Reportable-3rd Party Release	432171
23-Aug-2024	9502-86 Street NW	Styrofoam pellets (unknown volume) were released into a catch basin (CB581401) by a private contractor (Wilkinson Lucas Ltd.) located at 9502-86 Street NW. EPCOR Industrial Wastewater Investigators confirmed that the catch basin at this location releases downstream into the combined sewer system. A 3rd party vactor truck was called-in to remove contaminants from the impacted catch basin and surrounding area. A Notice to Comply was issued to the contractor to discontinue the release of prohibited waste (Styrofoam) into the sewerage system. This release was reported to AEPA (Ref# 432167) by the City of Edmonton. A written report was issued to AEPA on August 27, 2024.	Reportable-3rd Party Release	432167
25-Aug-2024	3611-145 Avenue NW	Gasoline (approx. 50L) was released into a private storm catch basin from a private vehicle fuel theft incident at 3611-145 Avenue NW. A 3rd party vacuum truck (GFL Environmental) was called-in to remove contaminants from the impacted storm collection system (MH299742) and surrounding area. This release was reported to AEPA (Ref# 432196) by City of Edmonton – Fire Services. A written report was not requested by AEPA.	Reportable-3rd Party Release	432196
03-Sep-2024	2815-109A Street NW	Sample results of the wastewater from a private storm manhole located at a residential condominium complex (2815-109A Street NW) were received and reviewed by EPCOR Monitoring & Compliance. The result exceeded Bylaw 19627 Appendix C and Bylaw 18093 Schedule B "Restricted Wastes Applicable to Storm Sewers and Watercourses" for E. coli at 54,000 CFU/100 mL. The original sample from this location was collected on August 27, 2024 by EPCOR Industrial Wastewater Investigators. A Notice to Comply was issued to the property management company to identify and repair the cross-connection. This release was reported to AEPA (Ref# 432520). A written report was issued to AEPA on September 10, 2024.	Reportable-3rd Party Release	432520
03-Sep-2024	4950-101 Avenue NW	Untreated wastewater (unknown volume) was released into the storm collection system from a sanitary line surcharge at a business complex (4950-101 Avenue NW). The property manager for the complex confirmed that the surcharge was first noticed on August 29, 2024. EPCOR Industrial Wastewater Investigators observed untreated wastewater surcharging from a private sanitary manhole and releasing into a nearby private storm catch basin. The property management company called-in a 3rd party vacuum truck to release the sanitary line blockage (grease) and clean the surrounding area. The untreated wastewater that entered the storm collection system would have discharged thru storm Outfall# 105 (OF268790). A Notice to Comply was issued to the property management company to discontinue the release of prohibited waste to the sewerage system. This release was reported to AEPA (Ref# 432536) by the property management company. A written report was issued to AEPA on September 3, 2024.	Reportable-3rd Party Release	432536

04-Sep-2024	95-Avenue & Riverside Crescent NW	Sample results of the wastewater from a storm manhole (MH240560) located at 95-Avenue & Riverside Crescent NW were received and reviewed by EPCOR Monitoring & Compliance. The results exceeded Bylaw 19627 Appendix C and Bylaw 18093 Schedule B "Restricted Wastes Applicable to Storm Sewers and Watercourses" for E. coli at 330,000 CFU/100 mL. The original sample from this location was collected on August 27, 2024 by EPCOR Industrial Wastewater Investigators. EPCOR will initiate further investigations into this event to determine the source of the cross-connection at this location. EPCOR will work with impacted properties to identify and correct sanitary cross-connections to the storm collection system. The release was reported to AEPA (Ref# 432581). A written report was issued to AEPA on September 11, 2024.	Reportable-Internal	432581
04-Sep-2024	5611-128 Avenue NW	Diesel exhaust fluid (approx. 5L) was released from a leaking fill hose at the Kennedale fuel station (5611-128 Avenue NW). The release was cleaned-up by an EPCOR Wastewater Collection crew using absorbent material from a spill kit. There was no release of diesel exhaust fluid to the storm / sanitary collection system. The release was reported to AEPA (Ref# 432685) by the City of Edmonton. A written report was issued to AEPA on September 12, 2024.	Reportable-3rd Party Release	432685
04-Sep-2024	1516-Blackmore Way SW	EPCOR contractor (PME Inc.) notified EPCOR about a turbidity exceedance at Outfall# 270 (OF376819) located NE of 1516-Blackmore Way SW. This exceedance was caused by turbid water making its way under the turbidity isolation curtain during excavation activity along the bank of Blackmud Creek near the construction site. Construction activity was stopped immediately and the isolation curtain was sealed and water pumping began within the isolation. After 2 hours, the turbidity had returned below the allowable threshold limits and contractor was able to proceed with work. This release was reported to AEPA (Ref# 432600) by the contractor. A written report was issued to AEPA on September 11, 2024.	Reportable-3rd Party Release	432600
05-Sep-2024	186-Street & Stony Plain Road NW	Coolant (approx. 1L) was released from a vehicle accident at 186-Street & Stony Plain Road NW. The release was cleaned-up by City of Edmonton – Fire Services using absorbent material from a spill kit. EPCOR Industrial Wastewater Investigators confirmed that there was no release of coolant to the storm / sanitary collection system. The release was reported to AEPA (Ref# 432603) by City of Edmonton – Fire Services. A written report was issued to AEPA on September 11, 2024.	Reportable-3rd Party Release	432603
07-Sep-2024	17-Street & Ellerslie Road SW	EPCOR Industrial Wastewater Investigators responded to a report of a vehicle accident at a natural pond located near 17-Street & Ellerslie Road SW. The investigators confirmed that the vehicle had been removed from the accident site and no sheen / odours were observed in the pond. This pond is not connected to the EPCOR storm collection system. This event was reported to AEPA (Ref# 432716). A written report was not requested by AEPA.	Reportable-3rd Party Release	432716
08-Sep-2024	7055-Argyll Road NW	Untreated wastewater (unknown volume) was released into the storm collection system (CB232199) from a sanitary line surcharge at the Pure Casino facility (7055-Argyll Road NW). EPCOR Wastewater Collection equipment was mobilized to the site and released the sanitary line blockage (grease) and cleaned the impacted storm collection system. This release was reported to AEPA (Ref# 432778) by the facility. A written report was issued to AEPA on September 8, 2024.	Reportable-3rd Party Release	432778
09-Sep-2024	9759-92 Street NW	Untreated wastewater (unknown volume) was released thru an interconnection (IC-266) located at 9759-92 Street NW. EPCOR staff responded to an alarm signal at the interconnection and confirmed that a blockage (a build-up of sanitary solids) had occurred in the downstream combined sewer pipe (PIP6606). This blockage released a mixture of untreated wastewater / stormwater thru the interconnection into the nearby storm collection system. EPCOR Wastewater Collection equipment was mobilized to the site and released the blockage. The untreated wastewater from the interconnection would have released thru storm Outfall# 256 (OF244320).This release was reported to AEPA (Ref# 432847). A written report was issued to AEPA on September 17, 2024.	Reportable-Internal	432847
13-Sep-2024	85-Street & Conners Road NW	Coolant (approx. 10L) was released from a City of Edmonton bus accident at 85-Street & Conners Road NW. The release was cleaned-up by the City of Edmonton using absorbent material from a spill kit. EPCOR Industrial Wastewater Investigators confirmed that the release at this location would have entered the combined sewer system. This release was reported to AEPA (Ref# 432998) by the City of Edmonton. A written report was issued to AEPA on September 18, 2024.	Reportable-3rd Party Release	432998
16-Sep-2024	2707-Mill Woods Road NW	Glycol (approx. 10L) was released into the sanitary sewer system from the mechanical room at the J. Percy Page School (2707-Mill Woods Road NW). EPCOR Industrial Wastewater Investigators confirmed that there was no release of glycol to the storm collection system. This release was reported to AEPA (Ref# 433074) by the City of Edmonton. A written report was not requested by AEPA.	Reportable-3rd Party Release	433074

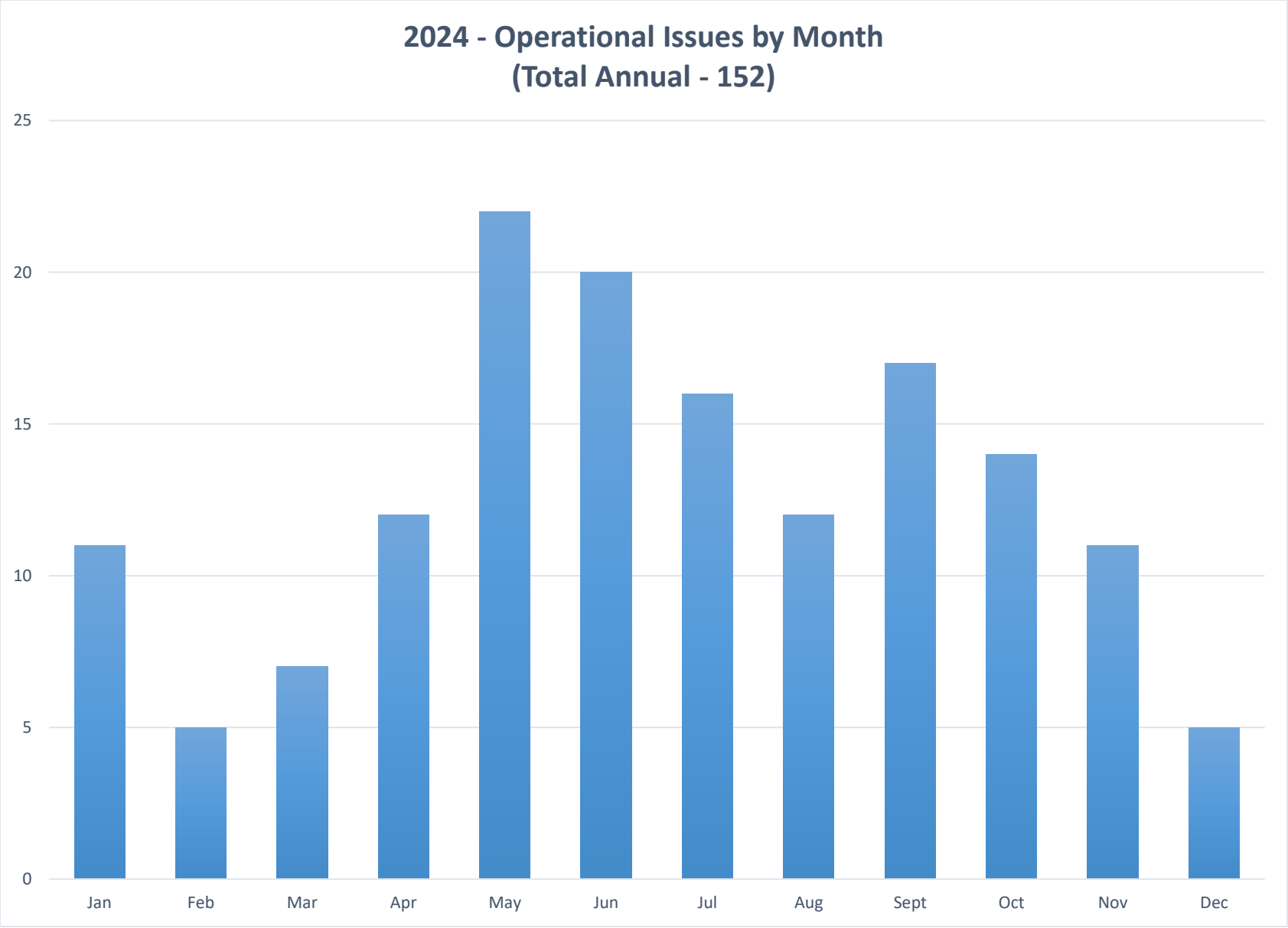
18-Sep-2024	209-Desrochers Boulevard SW	Potable water / charred solids (unknown volume) was released into the storm collection system from firefighting activities at 209-Desrochers Boulevard SW. EPCOR Industrial Wastewater Investigators tested the Total Chlorine levels at a downstream storm manhole (MH426622) and the chlorine levels were measured at 0.34 ppm. The Investigators placed dechlorination pucks in the manhole to remove chlorine residue. The investigators confirmed that there was no impact to the downstream Desrochers #1 SWMF (SWM524349). This release was reported to AEPA (Ref# 433141) by City of Edmonton – Fire Services. A written report was not requested by AEPA.	Reportable-3rd Party Release	433141
18-Sep-2024	20512-58 Avenue NW	A concrete slurry (unknown volume) was released into a storm catch basin (CB411216) by Concept Concrete located at 20512-58 Avenue NW. The original release occurred around August 18, 2024 and EPCOR Industrial Wastewater Investigators were notified on September 18, 2024. Due to the time delay, the investigators did not observe any evidence of contaminants inside the catch basin. A Notice to Comply was issued to the concrete company to discontinue the release of prohibited waste to the sewerage system. This release was reported to AEPA (Ref# 433200) by the City of Edmonton. A written report was issued to AEPA on October 1, 2024.	Reportable-3rd Party Release	433200
20-Sep-2024	12407-106 Avenue NW	Potable water (approx. 0.5 cubic meters) was released into the storm collection system (CB259843) by a TC Infrastructure Services hydro vac located at 12407-106 Avenue NW. EPCOR Industrial Wastewater Investigators added dechlorination pucks to the impacted catch basin to remove any chlorine residue. A TC infrastructure representative confirmed that they will be speaking to their staff about not releasing potable water to the EPCOR storm collection system without prior approval. This release was reported to AEPA (Ref# 433295) by the company. A written report was not requested by AEPA.	Reportable-3rd Party Release	433295
23-Sep-2024	11219-58 Avenue NW	Tiling grout (unknown volume) was released onto an alleyway by a resident located at 11219-58 Avenue NW. The release was contained on the alleyway and was cleaned up by a City of Edmonton sweeper. EPCOR Industrial Wastewater Investigators confirmed that there was no release of grout to the storm / sanitary collection system. This release was reported to AEPA (Ref# 433318) by the City of Edmonton. A written report was issued to AEPA on September 23, 2024.	Reportable-3rd Party Release	433318
24-Sep-2024	9929-Jasper Avenue NW	Coolant (approx. 1L) was released into a storm catch basin (CB564178) from a City of Edmonton bus located at 9929-Jasper Avenue NW. EPCOR Industrial Wastewater Investigators confirmed that the coolant was contained within the catch basin sump. EPCOR Wastewater Collection equipment was mobilized to the site to remove contaminants from the impacted catch basin and surrounding area. There was no release of coolant to the storm collection system. This release was reported to AEPA (Ref# 433431) by the City of Edmonton. A written report was not requested by AEPA.	Reportable-3rd Party Release	433431
24-Sep-2024	6900-85 Street NW	Hydraulic fluid (approx. 30L) was released from a City of Edmonton lawnmower located near 6900-85 Street NW. EPCOR Industrial Wastewater Investigators confirmed that the hydraulic fluid was contained on an asphalt roadway. The spill site was cleaned-up by a City of Edmonton street sweeper. There was no release of hydraulic fluid to the storm / sanitary collection system. This release was reported to AEPA (Ref# 433399) by the City of Edmonton. A written report was not requested by AEPA.	Reportable-3rd Party Release	433399
01-Oct-2024	11403-84 Street NW	Untreated wastewater (unknown volume) was released thru an interconnection (IC-78) located at 11403-84 Street NW. EPCOR staff responded to an alarm signal at the interconnection and confirmed that a blockage (a build-up of sanitary solids) had occurred in the downstream combined sewer pipe (PIP31904). This blockage released a mixture of untreated wastewater / stormwater thru the interconnection into the nearby storm collection system (MH263708). EPCOR Wastewater Collection equipment was mobilized to the site and released the blockage. The untreated wastewater from the interconnection would have discharged thru storm Outfall# 56 (OF261549). This release was reported to AEPA (Ref# 433687). A written report was issued to AEPA on October 7, 2024.	Reportable-Internal	433687
06-Oct-2024	4827-17 Avenue NW	Gasoline (approx. 5L) was released into the storm collection system (CB203899) from firefighting activities at a private residence located at 4827-17 Avenue NW. EPCOR Industrial Wastewater Investigators placed an absorbent boom inside the impacted catch basin to remove any fuel residue. The wastewater from this incident would have discharged thru storm Outfall# 9 (OF207873). This release was reported to AEPA (Ref# 433921) by City of Edmonton – Fire Services. A written report was not requested by AEPA.	Reportable-3rd Party Release	433921
06-Oct-2024	6803-72 Avenue NW	A nitric acid solution (approx. 800L) was released into the storm collection system (MH231819) from a damaged tote at Reinhold Industries Ltd. (6803-72 Avenue NW). A 3rd party vacuum truck was called-in to remove acid residue from the impacted storm catch basin. EPCOR Industrial Wastewater Investigators confirmed that a rainfall event after the release would have flushed the acid solution thru the EPCOR storm collection system. The wastewater from this incident would have discharged thru storm Outfall# 196 (OF385992). A Notice to Comply was issued to the company to discontinue the prohibited or restricted waste into the sewerage system. This release was reported to AEPA (Ref# 434079) by the company. A written report was issued to AEPA on October 16, 2024.	Reportable-3rd Party Release	434079

08-Oct-2024	45-Avenue & 95-Street NW	Diesel fuel (< 40L) was released into a storm catch basin (MH211589) from a vehicle fuel theft at U-Haul Moving & Storage located at 45-Avenue & 95-Street NW. EPCOR Industrial Wastewater Investigators confirmed that the fuel was contained within the catch basin sump. A 3rd party vacuum truck (GFL Environmental) was called to the site to clean-up the impacted storm catch basin and surrounding area. This release was reported to AEPA (Ref# 433971) by the company. A written report was issued to AEPA on October 15, 2024.	Reportable-3rd Party Release	433971
08-Oct-2024	10138-123 Street NW	Untreated wastewater (unknown volume) was released into the storm collection system (CB346260) from a combined sewer line surcharge at a residential building complex located at 10138-123 Street NW. During construction at this site, a contractor (Synergy Project Ltd.) observed that untreated wastewater had entered the building sumps and elevator pit. The contractor pumped the accumulated wastewater inside the building complex into a nearby storm catch basin (CB346260). EPCOR equipment was mobilized to the site to release the blockage and flush contaminants from the storm line. The contractor called-in a 3rd party vacuum truck to remove contaminated wastewater from the building sumps and elevator pit. The untreated wastewater that entered the storm collection system would have discharged thru storm Outfall# 31 (OF379692). This release was reported to AEPA (Ref# 433999) by the contractor. A written report was issued to AEPA on October 15, 2024	Reportable-3rd Party Release	433999
13-Oct-2024	16110-116 Avenue NW.	A liquid sucrose solution (approx. 200L) was released into the storm collection system (MH254750) at Saputo Inc. located at 16110-116 Avenue NW. During a delivery of the sucrose solution, the level sensor on a storage tank malfunctioned and the solution overflowed into a nearby private storm catch basin. A 3rd party vacuum truck was called-in to remove contaminants from the impacted catch basin and surrounding area. A Notice to Comply was issued to the company to discontinue the release of restricted waste into the sewerage system. This release was reported to AEPA (Ref# 434173) by the company. A written report was issued to AEPA on October 15, 2024.	Reportable-3rd Party Release	434173
16-Oct-2024	2504-76 Avenue NW	Petroleum hydrocarbons (unknown volume) were released into Gold Bar Creek (2504-76 Avenue NW) from a City of Edmonton contractor. During excavation activity at a construction worksite, the contractor (Alberco Construction Ltd.) observed hydrocarbon contaminants coming from the soil on the south bank of the creek. The contractor removed the contaminated soil and covered over the downstream area. This release was reported to AEPA (Ref# 434496) by the City of Edmonton. A written report was issued to AEPA on October 30, 2024.	Reportable-3rd Party Release	434496
22-Oct-2024	1214-101 Street SW	Diesel fuel (approx. 50-100L) was released into the storm collection system (MH429942) from a vehicle fuel theft at Royal Pizza located at 1214-101 Street SW. A 3rd party vacuum truck (GFL Environmental) was called-in to clean-up the impacted storm collection system and surrounding area. The diesel fuel contaminants that entered the storm collection system would have discharged thru storm Outfall# 290 (OF398556). This release was reported to AEPA (Ref# 434460). A written report was issued to AEPA on October 30, 2024.	Reportable-3rd Party Release	434460
22-Oct-2024	8016-161 Street NW	Sample results of the wastewater from a storm manhole (MH238723) located at 8016-161 Street NW were received and reviewed by EPCOR Monitoring & Compliance. The results exceeded Bylaw 19627 Appendix C and Bylaw 18093 Schedule B "Restricted Wastes Applicable to Storm Sewers and Watercourses" for E. coli at 210,000 CFU/100 mL. The original sample from this location was collected on October 17, 2024 by EPCOR Industrial Wastewater Investigators. EPCOR will initiate further investigations into this event to determine the source of the cross-connection at this location. EPCOR will work with impacted properties to identify and correct sanitary cross-connections to the storm collection system. This release was reported to AEPA (Ref# 434439). A written report was issued to AEPA on October 29, 2024.	Reportable-3rd Party Release	434439
23-Oct-2024	11710-87 Avenue NW	Sample results of the wastewater from a storm manhole (MH24738) located at 11710-87 Avenue NW were received and reviewed by EPCOR Monitoring & Compliance. The results exceeded Bylaw 19627 Appendix C and Bylaw 18093 Schedule B "Restricted Wastes Applicable to Storm Sewers and Watercourses" for E. coli at 2,500,000 CFU/100 mL. The original sample from this location was collected on October 23, 2024. A Notice to Comply was issued to the property management company to discontinue the release of matter that is not permitted (untreated wastewater) into the storm sewer system. This release was reported to AEPA (Ref# 434495). A written report was issued to AEPA on October 30, 2024.	Reportable-3rd Party Release	434495
26-Oct-2024	89-Avenue & 112-Street NW	Glycol (approx. 36L) was released into the sanitary collection system from the University of Alberta – Hub Mall located at 89-Avenue & 112-Street NW. EPCOR Industrial Wastewater Investigators confirmed that the glycol was release into a floor drain from a faulty relief valve in the mechanical room at this facility. This release was reported to AEPA (Ref# 434496) by the University of Alberta. A written report was issued to AEPA on October 31, 2024.	Reportable-3rd Party Release	434496

28-Oct-2024	5545-89 Street NW	Sample results of the wastewater from a private storm manhole located at Edmonton Exchanger (5545-89 Street NW) were received and reviewed by EPCOR Monitoring & Compliance. The results exceeded Bylaw 19627 Appendix C and Bylaw 18093 Schedule B "Restricted Wastes Applicable to Storm Sewers and Watercourses" for Nickel at 0.0868 mg/L and Zinc at 0.359 mg/L. The original sample from this location was collected on October 16, 2024. A Notice to Comply was issued to the company to discontinue the release of restricted wastes into the storm sewer system. This release was reported to AEPA (Ref# 434951) by the company. A written report was issued to AEPA on November 6, 2024.	Reportable-3rd Party Release	434951
30-Oct-2024	19-Avenue & 209A-Street NW	Tack oil (approx. 5L) was released from a private contractor (Park Paving) vehicle into a private storm catch basin located at 19-Avenue & 209A-Street NW. EPCOR Industrial Wastewater Investigators confirmed that the tack oil was contained within the catch basin sump. A 3rd party vacuum truck (Canessco Services Inc.) was called to the site to clean-up the impacted catch basin and surrounding area. There was no release of tack oil to the storm collection system. This release was reported to AEPA (Ref# 434758) by the contractor. A written report was issued to AEPA on November 8, 2024.	Reportable-3rd Party Release	434758
30-Oct-2024	4950-101 Avenue NW	Untreated wastewater (unknown volume) was released into the storm collection system from a sanitary line surcharge at a business complex (4950-101 Avenue NW). The property manager for the complex confirmed that the surcharge was first noticed on October 30, 2024, but was not reported to EPCOR until November 4th. The property management company called-in a 3rd party vacuum truck to release the sanitary line blockage (grease) and clean the surrounding area. The untreated wastewater that entered the storm collection system would have discharged thru storm Outfall# 105 (OF268790). This release was reported to AEPA (Ref# 434890) by the property management company. A written report was issued to AEPA on November 4, 2024.	Reportable-3rd Party Release	434890
03-Nov-2024	2052-74 Street NW	An unknown volume of untreated wastewater was released into the storm collection system as a result of a blockage in the sanitary system located at 2052-74 Street NW. An odour compliant resulted in the location of the blockage in the sanitary system which was confirmed to be actively releasing from the double barrel into the storm system. EPCOR Wastewater Collection equipment was mobilized to the site and released the blockage discontinuing the release to the storm system. This release was reported to AEPA (Ref# 434863). A written report was issued to AEPA on November 7, 2024.	Reportable-Internal	434863
07-Nov-2024	6609 Gateway Blvd NW	Sample results obtained from a 24-hour combined sewer composite sample from City of Edmonton's SW yard located at 6609 Gateway Blvd NW were reviewed by the City of Edmonton. The results of the sample exceeded By-law 19627 Appendix B Restricted Wastes Applicable to Sanitary and Combined Sewers for Hydrocarbons at 296.2 mg/L (limit 100 mg/L) and sulphide at 12 mg/L (limit 3 mg/L). This release was reported to AEPA (Ref# 434979) by the City of Edmonton. A written report was issued to AEPA on November 7, 2024.	Reportable-3rd Party Release	434979
08-Nov-2024	9604 Jasper Avenue	Less than 5 L of antifreeze was releases into a storm catch basin CB384891 from a City of Edmonton bus located at 9604 Jasper Avenue. Edmonton Fire Department was on site and removed contaminants from the impacted catch basin and surrounding area. City of Edmonton employees was on scene and cleaned up the remainder of the spill. This release was reported to AEPA (Ref# 435009) by the City of Edmonton. A written report was issued to AEPA on November 13, 2024.	Reportable-3rd Party Release	435009
08-Nov-2024	4803 - 74 Avenue NW.	Approximately 130 L of gasoline was released into the storm collection system manholes MH233240 from a vehicle located at 4803 - 74 Avenue NW. Investigators observed a trail of absorbent leading from a truck to the private catch basin and visible product in the catch basin up to the lead. Investigators checked the downstream manhole MH233238 and observed visible product. Manhole MH233237 further downstream also contained visible product. Investigators installed a boom in downstream manhole MH233237. A sample was collected from the private catch basin for AEPA parameters, Oil and Grease, hydrocarbons and BTEX. Business was informed to call a 3rd party to clean the impacted private catch basin and the private line leading to manhole MH233240 and to report the release to AEPA. This release was reported to AEPA (Ref# 435019) by the contractor. A written report was issued to AEPA on November 8, 2024.	Reportable-3rd Party Release	435019
10-Nov-2024	3727 Cameron heights	Approximately 10 L of hydraulic oil was released into a catch basin CB468921 located at 3727 Cameron heights place in to catch basin. Contamination had not left the catch basin and was contained. A 3rd party vacuum truck was called-in to remove contaminants from the impacted catch basin and surrounding area. This release was reported to AEPA (Ref# 435077) by the City of Edmonton. A written report was not requested by AEPA.	Reportable-3rd Party Release	435077

15-Nov-2024	8552 Roper Rd NW	Approximately 30 L of gasoline was released from a damaged fuel tank located at 8552 Roper Rd NW. The fuel tank was drilled into sometime between the evening of November 14 and morning of November 15 and release was observed at 10:30 on November 15. It is estimated that 5 - 10 L of gasoline made its way into the private collection system. Investigators moved downstream to last private storm manhole before property connects to 900 mm EPCOR mainline and observed a steady flow in manhole leaving property. 900mm mainline discharges to NSR at outfall OF196. Sample was collected from private storm manhole and outfall OF196. A 3rd party vactor truck was called-in to remove contaminants from the impacted catch basin and surrounding area. This release was reported to AEPA (Ref# 435273) by the contractor. A written report was not requested by AEPA.	Reportable-3rd Party Release	435273
17-Nov-2024	30 Avenue and 116 Street NW	A member of the public notified EPCOR of sewer odour in the neighbourhood of 30 Avenue and 116 Street NW, Edmonton, AB. Inspection findings indicate there is a source of untreated waste water entering the storm system near the intersection of Westbrook Drive and 119 Street. Further bacterial sampling has been completed to narrow down the source contributing to the contamination. Once area has been narrowed down televising and dye testing of the storm lines in the area will be scheduled. This release was reported to AEPA (Ref# 435402) by EPCOR Monitoring & Compliance on November 20, 2024. A written report was issued to AEPA on November 26, 2024.	Reportable-3rd Party Release	435402
19-Nov-2024	403 McConachie Way NW	Approximately 100 L of diesel fuel was released into a private storm drainage system located at 403 McConachie Way NW and entered the EPCOR drainage system. The spill was contained and cleaned up before impacting the downstream McConachie stormwater management facility SWM444059. When EPCOR Industrial Wastewater Investigators arrived onsite the The contractor was still on site cleaning up the diesel from the private storm system. Visible evidence (globules) of diesel, and a strong odour were found at the first EPCOR manhole downstream. This release was reported to AEPA (Ref# 435373) by the contractor. A written report was not requested by AEPA.	Reportable-3rd Party Release	435373
22-Nov-2024	13003-56 Street NW	Approximately 10 L of hydraulic oil entered a sump at the City of Edmonton Kennedale Traffic Field Operations Facility located at 13003-56 Street NW. Investigators contacted the City of Edmonton and it was determined that 10L of hydraulic fluid entered the primary stage of the sump within one of the maintenance garages and no material exited the sump and the spill did not enter the drainage system. A 3rd party was called in to remove hydraulic oil. This release was reported to AEPA (Ref# 435473) by the City of Edmonton and a written report was provided by the City of Edmonton.	Reportable-3rd Party Release	435473
27-Nov-2024	11159 73 Ave NW	EPCOR Monitoring and Compliance was alerted to the possible dumping of RV waste into a manhole MH224905 located at 11159 73 Ave NW based on evidence found by and EPCOR line televising crew. Black sludge with strong odour consistent with anoixic mud or sanitary wastewater was located in the manhole. Based on a number of observations, this may be the result of someone repeatedly dumping at this location. Currently there is no indication as to who may be responsible. Sample results exceeded Bylaw 19627 Appendix C and Bylaw 18093 Schedule B "Restricted Wastes Applicable to Storm Sewers and Watercourses for ammonia, total phosphorus and E. coli - all of which are consistent with domestic wastewater. EPCOR has already flushed the impacted portion of the stormwater system. Letters are being sent out to surrounding residents to educate them, and there is the possibility of further action if the people responsible are identified. This release was reported to AEPA (Ref#435650). A written report was issued to AEPA on December 2, 2024.	Reportable-3rd Party Release	435650
30-Nov-2024	4205 76 Avenue	An unknown volume of potable water and charred solids were released into the storm collection system from firefighting activities at 4205 76 Avenue. Fire was located at an industrial site and large volume of water used. Potable water from fire fighting activities were observed in the gutter extending approximately six blocks west of site along the south gutter, north of the property, entering various catch basins. No sheen, or odour observed onsite or at the release point catch basin MH233163 by investigators. A sample was collected from manhole MH233163 as well as Mill Creek separator as water did run off into Mill Creek. The incident was also reported to Environment and Climate Change Canada (ECCC) by Edmonton Fire and Rescue Services due to runoff reaching Mill Creek. EPCOR provided updates to ECCC. This release was reported to AEPA (Ref# 435684) by the City of Edmonton. A written report was not requested by AEPA.	Reportable-3rd Party Release	435684

09-Dec-2024	8343 - 120 Street NW	A member of the public notified EPCOR of sewer odour in their garage from storm line. EPCOR personnel checked and identified unusual flow patterns and odours in the storm sewer indicating possible presence of untreated wastewater. EPCOR continued the investigation and sampled storm MH242795 for E.coli - there was insufficient flow present to sample for additional parameters. This storm MH discharges approximately 500m downstream into the North Saskatchewan River at Outfall 23C located approximately 200m west of 8327 - Saskatchewan Drive NW. As the outfall was inaccessible due to safety concerns, the first accessible upstream storm manhole, MH242245, was also sampled on December 10, 2024, for the six approval parameters. Preliminary findings indicate that one or more of the residential customers in the Windsor Park neighbourhood may have sanitary services incorrectly connected to the storm sewer collection system. Further bacteriological sampling, televising, and dye testing of the storm lines in the area are currently being scheduled to narrow down the source of the untreated wastewater. This release was reported to AEPA (Ref# 436151). A written report was issued to AEPA on December 17th, 2024.	Reportable-3rd Party Release	436151
13-Dec-2024	3486 34 St NW Edmonton	A turbidity exceedance of the provincial short-term Total Suspended Solids (TSS) guideline (i.e., instantaneous 25 mg/L increase over background) resulted during the rehabilitation of Outfall 271 located approximately at 3486 34 St NW Edmonton, when sediment-laden water overflowed the isolation after a grey water pump was shut off for the day. The exceedance occurred at approximately 17:30 and concentrations of TSS had returned to background levels by 08:00 on December 14, 2024. AEPA (Ref#436124) was notify of the exceedance. A written report was issued to AEPA on December 14th, 2024.	Reportable-Internal	436124
17-Dec-2024	13315 Buena Vista Rd	Suspected release of coolant to storm collection system at Edmonton Valley Zoo. Monitoring and Compliance called complainant back for more details. No one saw a vehicle leaking it was just their best guess due to color of the substance. Upon further investigation Edmonton Valley Zoo staff realized they had spilled beet juice when making a beet popsicle for the elephants. No EPCOR assets impacted. This release was reported to AEPA by the City of Edmonton employees. (Ref# 436194). A written report was not requested by AEPA.	Reportable-3rd Party Release	436194
18-Dec-2024	SW of 115 - Laurier Drive	An unknown volume of untreated wastewater release into the storm collection system was identified during a review of the televising footage from the inspection. Personnel sampled storm MH221403 for the 6 AEPA parameters. This storm line discharges approximately 4 km downstream into the North Saskatchewan River at Outfall 18, located 200 meters SW of 115 - Laurier Drive. Preliminary findings indicate that one or more of the residential customers in the Thorncliff neighbourhood may have sanitary services incorrectly connected to the storm sewer collection system. Further bacteriological sampling and dye testing of the storm lines in the area are currently being scheduled to narrow down the source of the untreated wastewater. This release was reported to AEPA by the Monitoring and Compliance employees. (Ref# 436215). A written report was issued to AEPA on December 23, 2024.	Reportable-3rd Party Release	436215
19-Dec-2024	2959 Parsons Road NW	Release of approximately 500kgs of mustard into sanitary sewer system. Ventura foods was processing mustard over night and at around 23:45 a pipe connecting the production line to a holding tank had a coupler come loose causing the pipe to detach and released mustard onto the floor. The pipe was releasing for approximately six minutes before the production line was shut down. The holding tank has a low level and high level alarm but there are no sensors on the pipes. Goldbar WWTP was notified of the release at 10:48 on Dec 20,2024. The operator advised that the plant did not experience any issues overnight but took note of the release. This release was reported to AEPA by the Ventura Foods employees (Ref# 436289). A written report was issued to AEPA on December 28, 2024.	Reportable-3rd Party Release	436289


2024 - Operational Issues by Month
(Total Annual - 152)
25
20
15
10
5
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sept
Oct
Nov
Dec

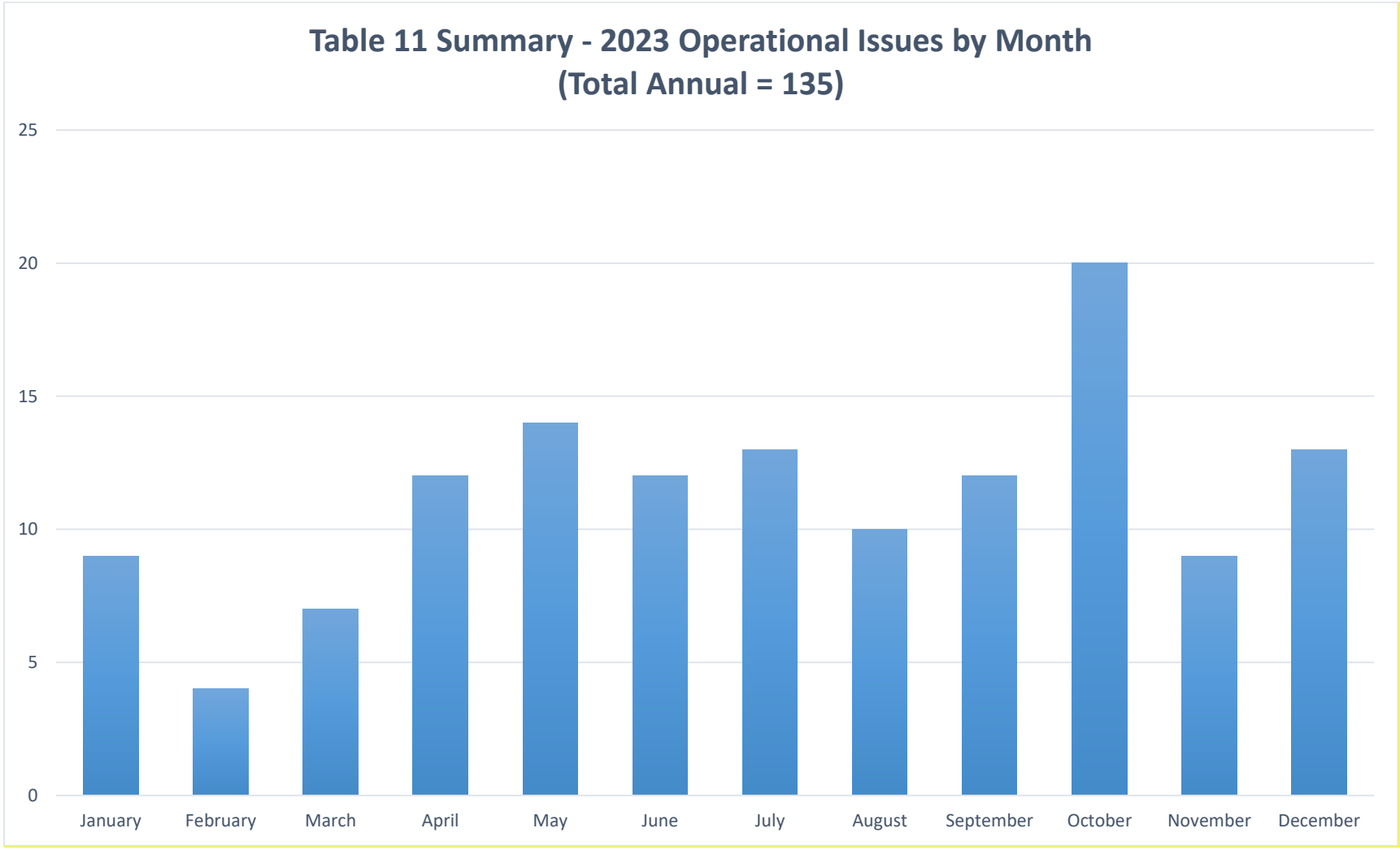


Table 11 Summary - 2023 Operational Issues by Month
(Total Annual = 135)
25
20
15
10
5
0
January
February
March
April
May
June
July
August
September
October
November
December

Addendums

2024 Annual Wastewater Treatment Plant Report

Table 1: 2024 Gold Bar WWTP Performance

TABLE 3: 2024 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	EPEPS	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													
January	Avg/Geomean	272.0	0.9	11.3	0.0	0.0	259.8	259.8	7.5	7.6	---	7.5	324	192	---	---	3.5	3.5	321	179	---	---	2.7	2.7	8.34	6.48	---	---	0.28	0.28	39.8	32.1	---	---	3.52	3.52	54.7	43.7	---	4.6	0.04	0.05	---	8.00	112	447	---	119	2.1	1.9	---	11	73.0
	Min	249.8	0.0	8.6	0.0	0.0	237.9	237.9	7.4	7.6	---	7.4	260	192	---	---	2.6	2.6	250	179	---	---	< 2	< 2	7.54	6.48	---	---	0.23	0.23	31.8	32.1	---	---	1.22	1.22	49.7	43.7	---	2.3	< 0.01	0.05	---	6.1	72.3	447	---	74.1	2.0	1.9	---	3	
	Max	347.8	28.1	12.5	0.0	0.0	308.6	308.6	7.6	7.6	---	7.7	520	192	---	---	5.5	5.5	371	179	---	---	4	4	9.42	6.48	---	---	0.34	0.34	43.1	32.1	---	---	6.69	6.69	60.0	43.7	---	6.7	< 0.15	0.05	---	11.5	322	447	---	322	2.3	1.9	---	120	
February	Avg/Geomean	273.2	0.2	10.7	0.0	0.0	262.3	262.3	7.4	7.7	---	7.5	336	92	---	---	3.5	3.5	339	267	---	---	2.7	2.7	8.31	7.52	---	---	0.32	0.32	39.2	39.9	---	---	3.94	3.94	52.6	48.7	---	5.0	< 0.01	0.02	---	7.51	110	161	---	119	1.8	3.2	---	9.6	68.6
	Min	264.2	0.0	7.0	0.0	0.0	252.9	252.9	7.3	7.7	---	7.3	110	92	---	---	2.2	2.2	284	267	---	---	< 2	< 2	6.33	7.52	---	---	0.18	0.18	34.4	39.9	---	---	2.08	2.08	46.2	48.7	---	3.2	< 0.01	0.02	---	5.59	87.0	161	---	96.0	1.8	3.1	---	5	
	Max	290.6	5.4	12.5	0.0	0.0	279.2	279.2	7.6	7.7	---	7.6	480	92	---	---	4.9	4.9	421	267	---	---	3	3	10.4	7.52	---	---	0.98	0.98	43.3	39.9	---	---	5.39	5.39	59.1	48.7	---	6.5	< 0.01	0.02	---	10.0	138	161	---	174	1.9	3.3	---	24	
March	Avg/Geomean	290.8	9.0	9.1	0.0	0.0	272.7	272.7	7.4	7.5	---	7.5	388	110	---	---	5.1	5.1	334	157	---	---	3.1	3.1	8.47	6.55	---	---	0.38	0.38	35.7	35.2	---	---	5.39	5.39	51.6	42.4	---	6.7	< 0.01	0.11	---	7.75	131	197	---	135	2.3	1.6	---	11.1	76.9
	Min	272.1	0.0	6.8	0.0	0.0	261.3	261.3	7.4	7.3	---	7.3	160	83	---	---	1.9	1.9	207	127	---	---	< 2	< 2	7.33	4.96	---	---	0.21	0.21	27.1	31.2	---	---	2.84	2.84	43.9	31.0	---	4.1	< 0.01	< 0.01	---	5.21	83.8	104	---	98	2.2	0.9	---	4	
	Max	351.9	52.5	12.2	0.0	0.0	293.1	293.1	7.5	7.7	---	7.6	516	148	---	---	10.5	10.5	446	183	---	---	5	5	9.53	8.07	---	---	0.74	0.74	42.1	40.6	---	---	9.32	9.32	59.2	48.5	---	10.6	< 0.01	0.41	---	9.94	305	458	---	267	2.4	2.3	---	32	
April	Avg/Geomean	280.9	4.7	11.2	0.0	0.0	265.0	265.0	7.4	7.5	---	7.4	384	116	---	---	6.1	6.1	349	121	---	---	3.0	3.0	8.48	7.33	---	---	0.42	0.42	42.0	40.5	---	---	3.79	3.79	54.7	45.2	---	5.0	< 0.01	0.20	---	8.65	91.4	161	---	98.8	1.4	1.0	---	8.8	72.5
	Min	264.1	0.0	10.1	0.0	0.0	253.5	253.5	7.3	7.3	---	7.3	268	82	---	---	4.1	4.1	299	110	---	---	< 2	< 2	6.00	4.94	---	---	0.32	0.32	24.5	27.2	---	---	0.80	0.80	39.3	30.4	---	2.3	< 0.01	0.02	---	6.47	74.4	81.5	---	83.6	1.3	1.0	---	3	
	Max	455.8	134.2	12.8	0.0	0.0	310.2	310.2	7.6	7.7	---	7.6	496	150	---	---	8.9	8.9	428	132	---	---	4	4	9.4	9.72	---	---	0.74	0.74	46.5	53.7	---	---	7.16	7.16	67.2	60.0	---	7.6	< 0.01	0.37	---	10.0	148	241	---	130	1.6	1.1	---	21	
May	Avg/Geomean	326.3	25.5	11.4	0.0	0.0	289.4	289.4	7.5	7.6	---	7.5	369	83	---	---	4.9	4.9	325	109	---	---	3.0	3.0	8.13	5.68	---	---	0.39	0.39	37.5	31.8	---	---	2.40	2.40	56.5	42.4	---	4.1	0.09	0.13	---	11.0	83.1	71.2	---	88	2.0	1.2	---	10.2	76.9
	Min	276.3	0.0	9.8	0.0	0.0	264.7	264.7	7.3	7.4	---	7.2	210	43	---	---	2.6	2.6	154	55	---	---	< 2	< 2	4.33	3.72	---	---	0.09	0.09	15.5	18.8	---	---	0.61	0.61	6.0	25.6	---	1.1	< 0.01	0.01	---	5.48	46.3	44.8	---	70	1.1	0.5	---	1	
	Max	723.2	376.9	12.7	1.0	0.0	344.5	344.5	7.6	7.9	---	7.8	764	112	---	---	4.7	4.7	443	190	---	---	4	4	10.2	8.80	---	---	0.99	0.99	42.8	49.9	---	---	6.33	6.33	106	72.5	---	8.1	0.39	0.24	---	14.2	97.2	109	---	98	3.8	2.3	---	42	
June	Avg/Geomean	331.2	27.4	11.9	0.0	0.0	291.9	291.9	7.6	7.6	---	7.5	376	90.5	---	---	5.3	5.3	292	161	---	---	3.2	3.2	7.50	6.04	---	---	0.40	0.40	32.5	35.4	---	---	2.91	2.91	50.8	42.4	---	4.8	< 0.01	0.14	---	10.3	83.9	78.2	---	95.2	2.7	1.2	---	12.2	76.9
	Min	282.7	0.0	10.5	0.0	0.0	265.7	265.7	7.3	7.4	---	7.4	268	44.8	---	---	2.6	2.6	179	53	---	---	2	2	5.12	3.11	---	---	0.26	0.26	15.6	20.5	---	---	0.22	0.22	31.8	24.8	---	1.5	< 0.01	0.02	---	5.73	46.2	47.4	---	60.1	2.6	0.2	---	4	
	Max	633.8	337.9	12.9	0.4	0.0	336.5	336.5	7.7	7.8	---	7.8	636	188	---	---	9.2	9.2	368	413	---	---	5	5	9.28	9.80	---	---	0.78	0.78	42.7	48.9	---	---	5.08	5.08	62.6	57.8	---	7.2	< 0.01	0.54	---	13.4	120	124	---	111	2.8	3.8	---	31	
July	Avg/Geomean	313.0	14.5	12.1	0.0	0.0	286.4	286.4	7.6	7.6	---	7.6	416	74	---	---	4.5	4.5	303	149	---	---	2.5	2.5	7.83	5.85	---	---	0.37	0.37	32.3	34.9	---	---	1.35	1.35	53.9	43.5	---	3.0	0.03	0.07	---	9.85	84.3	79.4	---	90.9	2.8	2.5	0.2	10	80.5
	Min	283.9	0.0	11.2	0.0	0.0	271.1	271.1	7.2	7.4	---	7.3	300	47	---	---	3.0	3.0	169	86	---	---	< 2	< 2	4.33	3.61	---	---	0.26	0.26	11.9	24.8	---	---	0.44	0.44	21.9	27.5	---	1.6	< 0.01	0.01	---	6.57	37.6	59.3	---	73.6	2.2	1.6	0.2	5	
	Max	691.5	348.9	13.3	0.1	0.0	331.0	331.0	7.7	7.9	---	7.8	532	112	---	---	6.6	6.6	357	318	---	---	3	3	9.28	10.9	---	---	0.67	0.67	38.4	54.2	---	---	3.57	3.57	64.5	71.1	---	5.6	0.11	0.28	---	12.2	101	105	---	101	4.3	3.6	0.2	24	
August	Avg/Geomean	316.3	19.4	12.1	0.0	0.0	284.9	284.9	7.6	7.6	---	7.5	427	82	---	---	4.7	4.7	301	134	---	---	2.7	2.7	7.75	4.97	---	---	0.36	0.36	31.3	31.9	---	---	1.14	1.14	53.8	39.1	---	2.8	< 0.01	0.09	---	11.4	83	70.3	---	89.0	5.9	2.8	0.7	11	71.1
	Min	273.4	0.0	10.2	0.0	0.0	260.5	260.5	7.4	7.3	---	7.3	326	55	---	---	3.1	3.1	181	44	---	---	< 2	< 2	4.53	0.57	---	---	0.19	0.19	13.3	11.4	---	---	0.59	0.59	25.7	3.9	---	2.2	< 0.01	0.02	---	8.3	45	32.7	---	71.0	4.3	1.0	0.7	4	
	Max	621.0	260.2	13.2	0.0	0.0	348.1	348.1	7.8	7.9	---	7.9	568	113	---	---	7.7	7.7	365	276	---	---	4	4	10.7	8.79	---	---	0.54	0.54	40.0	44.6	---	---	1.99	1.99	70.5	62.3	---	3.9	< 0.01	0.52	---	13.8	93	97.1	---	100	8.0	9.0	0.7	37	
September	Avg/Geomean	293.0	6.4	11.0	0.0	0.0	275.5	275.5	7.5	7.7	---	7.5	345	72	---	---	5.4	5.4	286	139	---	---	3.3	3.3	8.38	5.95	---	---	0.42	0.42	38.2	36.3	---	---	1.94	1.94	61.7	49.0	---	4.0	< 0.01	0.05	---	12.5	84	78	---	94	3.8	3.0	---	16	69.9
	Min	272.2	0.0	0.0	0.0	0.0	260.4	260.4	7.4	7.5	---	7.4	276	44	---	---	3.5	3.5	204	71	---	---	2	2	6.39	3.89	---	---	0.26	0.26	23.4	21.3	---	---	0.74	0.74	44.6	31.2	---	2.2	< 0.01	0.02	---	9.7	50	52	---	80	3.6	2.0	---	5	
	Max	418.9	81.7	13.3	0.0	0.0	333.2	333.2	7.7	7.8	---	7.6	552	98	---	---	7.0	7.0	344	236	---	---	4	4	9.90	7.59	---	---	1.04	1.04	44.4	42.4	---	---	5.53	5.53	73.0	58.0	---	7.5	< 0.01	0.12	---	14.2	108	94	---	102	4.0	4.8	---	170	
October	Avg/Geomean	275.1	0.4	12.5	0.0	0.0	262.2	262.2	7.6	7.7	---	7.5	354	254	---	---	4.5	4.5	330	203	---	---	3.1	3.1	8.92	7.96	---	---	0.34	0.34	36.7	43.5	---	---	2.77	2.77	61.5	61.0	---	4.7	0.01	0.01	---	10.6	80	81	---	89	3.9	6.9	---	11	71.1
	Min	268.8	0.0	10.9	0.0	0.0	255.5	255.5	7.5	7.5	---	7.4	268	164	---	---	2.6	2.6	275	162	---	---	< 2	< 2	7.29	7.67	---	---	0.26	0.26	31.5	39.1	---	---	0.84	0.84	55.3	53.7	---	2.5	< 0.01	< 0.01	---	8.2	68	80	---	80	3.8	2.6	---	3	
	Max	282.7	10.6	13.7	0.0	0.0	269.2	269.2	7.8	7.8	---	7.7	436	344	---	---	5.6	5.6	446	244	---	---	4	4	9.94	8.25	---	---	0.50	0.50	40.3	47.9	---	---	4.40	4.40	71.5	68.3	---	7.0	0.01	0.02	---	13.3	92	82	---	105	4.0	18.0	---	42	
November	Avg/Geomean	275.6	0.0	12.5	0.0	0.0	263.0	263.0	7.6	---	---	7.5	363	---	---	---	3.8	3.8	327	---	---	---	3	3	8.87	---	---	---	0.32	0.32	39.1	---	---	---	2.62	2.62	59.6	---	---	4.2	< 0.01	---	---	10.3	89.6	---	---	92.4	3.0	---	---	6	68.3
	Min	268.0	0.0	11.5	0.0	0.0	254.8	254.8	7.5	---	---	7.4	276	---	---	---	2.6	2.6	239	---	---	---	< 2	< 2	7.92	---	---	---	0.26	0.26	32.0	---	---	---	1.20	1.20	48.8	---	---	3.3	< 0.01	---	---	6.6	75.5	---	---	78.9	2.9	---	---	2	
	Max	291.6	0.0	13.8	0.0	0.0	279.3	279.3	7.8	---	---	7.6	676	---	---	---	4.8	4.8	389	---	---	---	4	4	10.3	---	---	---	0.65	0.65	44.0	---	---	---	3.67	3.67	71.3	---	---	5.2	< 0.01	---	---	12.6	107	---	---	111	3.2	---	---	12	
December	Avg/Geomean	277.8	0.9	12.7	0.0	0.0	264.2	264.2	7.5	7.5	---	7.5	326	174	---	---	3.3	3.3	321	207	---	---	2.4	2.4	8.77	5.59	---	---	0.24	0.24	39.2	34.1	---	---	1.85	1.85	56.9	49.3	---	3.2	< 0.01	0.04	---	9.86	151	401	---	157	2.6	1.5	---	6.6	64.4
	Min	250.7	0.0	11.7	0.0	0.0	238.5	238.5	7.4	7.4	---	7.3	252	144	---	---	2.4	2.4	258	178	---	---	< 2	< 2	3.93	4.61	---	---	0.18	0.18	30.5	30.3	---	---	1.17	1.17	10.0	47.0	---	2.4	< 0.01	0.02	---	7.01	91.3	367	---	93.4	2.4	0.8	---	1	
	Max	330.8	13.4	13.5	0.0	0.0	304.2	304.2	7.7	7.6	---	7.6	396	210	---	---	4.2	4.2	371	239	---	---	3	3	10.40	6.20	---	---	0.29	0.29	45.2	36.6	---	---	3.68	3.68	67.0	53.5	---	5.1	< 0.01	0.05	---	13.1	334	450	---	311	2.9	2.7	---	12	
Annual Volume (ML)		107,556	3,351	4,226	0	0	99,979	99,979																																												870.1
2024	**Avg**	294	9.1	11.5	0.00	0.00	273	273	7.5	7.6	---	7.5	367	122	---	---	4.6	4.6	319	166	---	---	2.9	2.9	8.31	6.36	---	---	0.35	0.35	37.0	36.0	---	---	2.80	2.80	55.7	46.1	---	4.3	0.02	0.08	---	9.81	99	166	---	106					
2023	**Avg**	301	24.2	11.1	0.00	0.00	271	271	7.5	7.5	---	7.5	317	101	247	---	4.0	4.0	296	123	72	---	2.5	2.5	7.40	4.42	5.83	---	0.30	0.30	33.9	26.7	10.0	---	2.02	2.02	49.0	33.4	16.0	3.5	0.03	0.34	0.69	8.93	94	144	39	102					

PBP – Plant Bypass
TBP – Total Bypass Plant (including plant and secondary)
SEC – Secondary Bypass Plant

EPE - Enhanced Primary Effluent
EPT – Enhanced Primary Treatment

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

FEC – Final Effluent, Combined
RAW – Influent
BOD$_5$ – 5-day Biological Oxygen Demand

CBOD$_5$ – 5-day Inhibited BOD

TSS – Total Suspended Solids
TP – Total Phosphorus
NH_3-N – Ammonia as nitrogen

MPW – Membrane Product Water
ns – No sample
Avg/Geomean –Geomean for E.coli; Avg for others