VANASTRA WASTEWATER TREATMENT PLANT

Works # 110003013

2024 ANNUAL REPORT

OF OPERATIONS

Managed, Operated and Maintained by:

Jacobs

March 4, 2025

Ontario Ministry of Environment, Conservation and Parks
101 17th St. East,
Owen Sound, Ontario
N4K 0A5

MECP District Manager,

On behalf of the Corporation of the Municipality of Huron East, OMI (Jacobs) is pleased to submit to you the annual compliance report for the Vanastra Wastewater Treatment Plant. Please feel free to contact the undersigned if you have any questions regarding this report.

Respectfully Submitted,

Christopher Toulouse

Jacobs **- Project Manager**

cc: Barry Mills, Director of Public Works, Municipality of Huron East

Shawn Bromley, Operations Manager, Municipality of Huron East

Joe Bloomfield, Area Manager, Jacobs

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Introduction:

The Vanastra Wastewater Treatment Plant (WWTP) was constructed in the early 1940's to support the Royal Air Force. It is classified as a Level 3 Treatment plant and Level 1 Collection system.

OMI (Jacobs) is the Operating Authority for the treatment plant and pump station on behalf of The Corporation of the Municipality of Huron East. The Municipality operates the remainder of the collections system.

The plant has a design capacity of 1,405 m^3/day. The total annual effluent flow for 2024 was 193,192m^3, with an average daily flow of 527.85 m^3/day or 37.57% of capacity.

The treatment plant operates under ECA # 0024-6JWL2R issued December 21, 2005.

The current WWTP is an extended aeration activated sludge plant which consists of an onsite pump station, bar screen, primary clarification, coarse bubble aeration, secondary clarification, and chlorine disinfection. The works also consists of an equalization tank and an anaerobic biosolids holding tank.

The WWTP has an on-site back-up power generator that operates the plant during an emergency power outage.

SECTION A

A summary and interpretation of all monitoring data and a comparison to the effluent limits outlined in Condition 6, including an overview of the success and adequacy of the Works.

The Treated Effluent is discharged to the Grant Creek. The Effluent sampling point is located downstream of the chlorine disinfection system and the effluent Parshall flume.

In accordance with Section 5 and 6, a 24-hour composite sample of the Final Effluent is collected weekly/monthly and analyzed by SGS Laboratories for the parameters: BOD_5, TSS, Total Phosphorous, TAN. A weekly grab sample is also collected and analyzed for E-coli by SGS Laboratories. The onsite operator completes analysis of pH, temperature, reactive phosphorous, chlorine residual and dissolved oxygen.

The monthly Lab Data Sheets for the reporting year can be found in Appendix A.

Figure 1: Effluent Objectives and Limits

Effluent Parameter	Effluent Design Objective	Effluent Concentration Limits
BOD5	15 mg/L	25 mg/L
Total Suspended Solids	15 mg/L	25 mg/L
Total Phosphorous	1.0 mg/L	1.0 mg/L
Total Ammonia Nitrogen		
E-coli		200 organisms per 100 mL
pH	6.0 – 8.0 inclusive	6.0 – 9.5 inclusive

Figure 2: Effluent Monthly/Yearly Concentrations

2024 MONTHLY/YEARLY AVERAGE RESULTS

Vanastra W.W.T.P.
Operations Number: 110003013 **YEAR: 2024**
Operating Authority: Jacobs
Municipality of Huron East

	Raw Influent				Final Effluent						
	BOD5 mg/L	T.S.S. mg/L	TKN mg/L	Total P mg/L	BOD5 mg/L	T.S.S. mg/L	Total P mg/L	Ammonia NH3 mg/L	E-Coli Per 100 mL	pH	D.O.
January	74	77	22.9	1.81	4.0	9.0	0.15	0.10	28	7.26	9.89
February	54	94	13.9	1.13	4.0	15.0	0.22	0.10	14	7.31	11.08
March	82	82	18.0	1.38	2.0	7.0	0.30	0.10	35	7.31	8.22
April	40	26	16.6	1.26	4.0	11.0	0.26	0.10	7	7.34	9.09
May	123	95	19.8	2.34	4.0	5.0	0.23	0.10	7	7.39	9.12
June	70	78	22.6	1.72	4.0	3.0	0.23	0.10	20	7.53	6.60
July	170	148	54.1	4.77	4.0	5.0	0.19	0.10	11	7.52	6.83
August	95	106	33.4	3.35	4.0	3.0	0.23	0.10	12	7.48	7.46
September	131	92	26.2	2.46	4.0	7.0	0.17	0.10	53	7.37	7.16
October	162	213	44.1	4.24	4.0	4.0	0.20	0.10	56	7.62	6.50
November	220	193	34.5	4.37	4.0	8.6	0.08	0.10	55	7.48	8.94
December	109	127	34.5	3.39	4.0	3.0	0.15	0.10	222	7.62	8.38
Min	40.0	26.0	13.9	1.1	2.0	3.0	0.08	0.10	7	7.26	6.50
Max	220.0	213.0	54.1	4.8	4.0	15.0	0.30	0.10	222	7.62	11.08
Yearly Average	**110.8**	**110.9**	**28.4**	**2.7**	**3.8**	**6.7**	**0.20**	**0.10**	**43**	**7.43**	**8.27**

Figure 3: Effluent Flow Tabulation

JACOBS OMI

Vanastra WWTP

2024 EFFLUENT FLOW REPORTS

DATE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
1	946	1560	531	577	546	382	210	560	211	232	224	271	m^3/d
2	846	1268	557	616	448	461	252	413	190	181	215	245	m^3/d
3	778	1035	571	662	604	363	234	294	180	177	254	208	m^3/d
4	913	950	515	588	526	297	215	255	175	200	251	282	m^3/d
5	640	832	501	624	487	388	161	292	189	144	240	297	m^3/d
6	616	1083	573	534	419	368	195	330	231	228	247	264	m^3/d
7	932	1511	455	479	418	343	182	246	339	192	228	324	m^3/d
8	590	1568	466	505	539	407	175	282	273	197	238	510	m^3/d
9	944	1443	1270	526	442	483	215	240	245	206	213	931	m^3/d
10	1954	813	1163	447	369	358	1,036	283	171	175	400	978	m^3/d
11	1415	719	1041	757	592	276	806	271	212	243	357	836	m^3/d
12	1212	603	970	1774	728	262	428	208	167	145	258	658	m^3/d
13	1896	622	787	1768	557	279	316	203	164	202	256	489	m^3/d
14	1433	838	1071	1493	582	640	322	190	165	228	269	473	m^3/d
15	1011	564	1717	1066	461	339	392	194	177	188	264	487	m^3/d
16	911	515	1236	841	453	328	576	353	168	182	233	822	m^3/d
17	776	469	997	1080	557	273	440	327	161	173	275	1199	m^3/d
18	719	497	906	1118	423	290	324	374	152	157	235	1087	m^3/d
19	613	460	1025	998	366	287	272	311	164	160	241	840	m^3/d
20	539	390	881	897	380	237	261	262	181	185	395	702	m^3/d
21	565	533	690	759	367	246	261	245	142	173	474	565	m^3/d
22	555	568	659	638	324	242	216	204	208	186	342	509	m^3/d
23	575	600	625	912	305	370	206	194	232	211	375	519	m^3/d
24	776	537	612	1013	282	230	278	195	236	160	382	551	m^3/d
25	1403	565	733	882	318	316	215	184	279	215	319	1891	m^3/d
26	2033	467	1098	596	304	262	192	188	207	202	551	833	m^3/d
27	1805	529	1106	572	816	220	180	293	195	194	319	479	m^3/d
28	1737	684	883	511	701	248	164	211	206	197	278	994	m^3/d
29	1466	557	762	693	492	283	489	244	224	375	273	1149	m^3/d
30	1288		722	707	397	264	909	258	193	250	256	1450	m^3/d
31	1352		685		316		601	217		239		1488	m^3/d
TOTAL	**33,239**	**22,780**	**25,808**	**24,633**	**14,519**	**9,742**	**10,723**	**8,321**	**6,037**	**6,197**	**8,862**	**22,331**	m^3/d
MIN.	**539**	**390**	**455**	**447**	**282**	**220**	**161**	**184**	**142**	**144**	**213**	**208**	m^3/d
MAX.	**2033**	**1568**	**1717**	**1774**	**816**	**640**	**1036**	**560**	**339**	**375**	**551**	**1891**	m^3/d
AVG.	**1072.23**	**785.52**	**832.52**	**821.10**	**468.35**	**324.73**	**345.90**	**268.42**	**201.23**	**199.90**	**295.40**	**720.35**	m^3/d

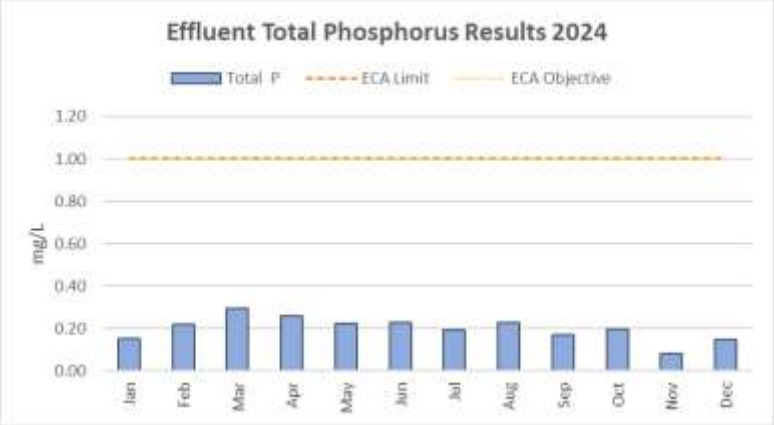
% Cap	**76.32%**	**55.91%**	**59.25%**	**58.44%**	**33.33%**	**23.11%**	**24.62%**	**19.10%**	**14.32%**	**14.23%**	**21.02%**	**51.27%**	

Yearly Average: **527.85** m^3/d **Yearly Total:** **193,192** m^3

Design Capacity: **1,405** m^3/d

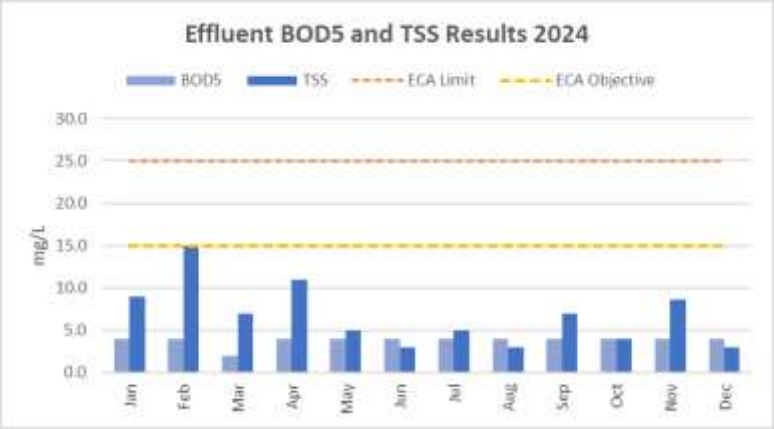
% of Design Capacity: **37.57%**

Figure 4: Effluent TP Comparison to Objective/Limit



The Vanastra WWTP was successful over all with its Phosphorus removal with all months remaining well below the Limits and Objectives of the ECA.

Figure 5: Effluent BOD5 and TSS Comparison to Objective/Limit



The Vanastra WWTP was successful over all with its BOD and TSS removal except for February, which the monthly ECA objectives for TSS were not met. Refer to Section G of this report for further explanation.

Figure 6: Effluent T.S.S and T.P. Removal Efficiency

Removal Efficiency					
Influent T.S.S. mg/L	Final T.S.S. mg/L	Removal Efficiency %	Influent Total P mg/L	Final Total P mg/L	Removal Efficiency %
77	9.00	88.31	1.81	0.15	91.60
94	15.00	84.04	1.13	0.22	80.53
82	7.00	91.46	1.38	0.30	78.62
26	11.00	57.69	1.26	0.26	79.37
95	5.00	94.74	2.34	0.23	90.38
78	3.00	96.15	1.72	0.23	86.63
148	5.00	96.62	4.77	0.19	95.97
106	3.00	97.17	3.35	0.23	93.21
92	7.00	92.39	2.46	0.17	92.99
213	4.00	98.12	4.24	0.20	95.33
193	8.60	95.54	4.37	0.08	98.17
127	3.00	97.64	3.39	0.15	95.58
	Min	57.69		Min	78.62
	Max	98.12		Max	98.17
	Average	90.82		Average	89.87

SECTION B

A summary and interpretation of all raw sewage flow monitoring data, assessment of quantity of infiltration/inflow occurring during recorded rainfall events and its impact of the performance of the Works and occurrence of bypass event.

The Vanastra Wastewater Treatment Plant currently measures inflow flow rates and collects rainfall data daily in accordance with Section 8 of the ECA.

A grab sample of the Influent sewage is collected once per month and analyzed by SGS Laboratories for the parameters: BOD_5, TSS, TKN and TP in accordance with Section 8 of the ECA. The onsite operators routinely collect a grab sample monitoring for pH and temperature.

Historically the influent flow rates increase during storms/heavy rain events and during the spring snow melting/run-off. The Operating Authority and the Municipality of Huron-East continue to work together to identify areas of concern as it relates to infiltration/inflow to the sanitary collection system. In the reporting year, the system was flushed, and CCTV inspections occurred in range with the allowable budget set out by the Municipality.

For the reporting year, effluent flow vs precipitation amount comparisons were graphed to visually show infiltration/inflow indicators. These graphs can be found in Appendix B of this report.

Figure 7: Historical Influent Flow Averages

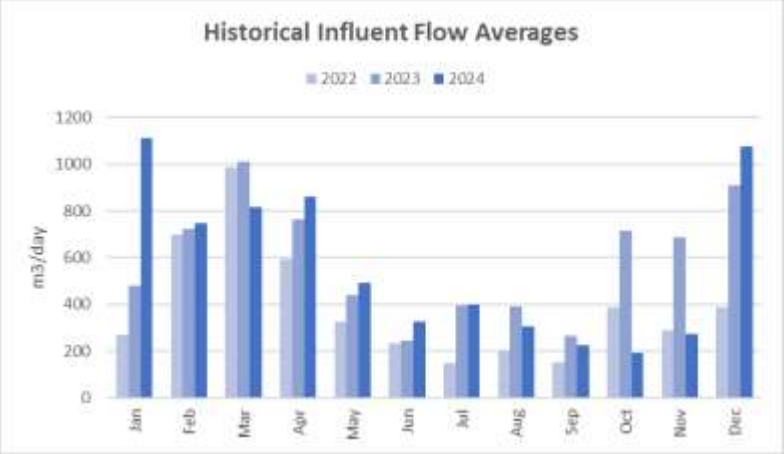


Figure 8: Influent Flow Tabulation

JACOBS OMI Vanastra WWTP 2024 INFLUENT FLOW REPORTS													
DATE	**JAN**	**FEB**	**MAR**	**APR**	**MAY**	**JUN**	**JUL**	**AUG**	**SEP**	**OCT**	**NOV**	**DEC**	
1	773	1821	498	569	548	352	249	962	228	211	270	230	**m^3/d**
2	694	1143	504	553	479	513	246	586	223	203	270	217	**m^3/d**
3	633	928	511	600	533	400	225	351	233	190	281	235	**m^3/d**
4	766	815	480	556	510	336	214	310	216	187	270	261	**m^3/d**
5	538	714	456	527	497	359	210	321	216	182	270	2683	**m^3/d**
6	520	1036	534	503	442	369	215	327	219	217	270	295	**m^3/d**
7	776	1725	522	492	423	332	214	293	317	187	226	317	**m^3/d**
8	497	1649	777	472	502	367	206	280	293	203	188	511	**m^3/d**
9	976	1484	1343	496	413	431	213	283	262	196	181	1478	**m^3/d**
10	2661	712	1060	457	388	353	1,242	282	236	190	335	1128	**m^3/d**
11	1255	623	988	666	522	313	797	277	227	243	298	818	**m^3/d**
12	1033	557	897	2537	703	310	444	249	222	107	212	616	**m^3/d**
13	2525	526	772	2779	538	319	366	241	212	188	207	470	**m^3/d**
14	1314	772	1189	1956	564	597	340	238	205	207	216	433	**m^3/d**
15	937	496	2386	1059	479	359	384	234	219	179	216	433	**m^3/d**
16	782	445	1129	830	531	343	542	317	223	170	194	1349	**m^3/d**
17	701	419	884	1025	635	308	438	312	206	187	226	2799	**m^3/d**
18	636	434	792	1035	585	295	343	348	197	177	220	2574	**m^3/d**
19	591	412	904	934	558	280	314	301	197	179	191	836	**m^3/d**
20	559	442	764	804	568	249	299	279	203	201	372	664	**m^3/d**
21	541	467	630	717	437	239	298	269	192	191	405	523	**m^3/d**
22	503	529	595	619	357	238	265	242	210	184	279	479	**m^3/d**
23	503	521	602	851	356	325	246	239	236	182	315	461	**m^3/d**
24	696	488	611	939	305	265	267	242	224	167	332	519	**m^3/d**
25	1365	485	684	837	315	281	243	243	254	181	266	1741	**m^3/d**
26	2696	443	1007	563	312	258	240	232	219	180	767	711	**m^3/d**
27	2799	483	983	539	770	252	232	278	203	187	277	443	**m^3/d**
28	2250	594	823	512	656	227	257	282	211	180	240	1959	**m^3/d**
29	1458	497	707	688	500	264	605	249	228	331	238	2799	**m^3/d**
30	1164		649	683	427	241	1,251	249	205	223	221	2799	**m^3/d**
31	1345		627		377		976	245		228		2560	**m^3/d**
TOTAL	**34,487**	**21,660**	**25,308**	**25,798**	**15,230**	**9,775**	**12,381**	**9,561**	**6,736**	**6,038**	**8,253**	**33,341**	**m^3/d**
MIN.	**497**	**412**	**456**	**457**	**305**	**227**	**206**	**232**	**192**	**107**	**181**	**217**	**m^3/d**
MAX.	**2799**	**1821**	**2386**	**2779**	**770**	**597**	**1251**	**962**	**317**	**331**	**767**	**2799**	**m^3/d**
AVG.	**1112.48**	**746.90**	**816.39**	**859.93**	**491.29**	**325.83**	**399.39**	**308.42**	**224.53**	**194.77**	**275.10**	**1075.52**	**m^3/d**

Yearly Average: **569.86** **m^3/d** **Yearly Total:** **208,568** **m^3**

Figure 9: Annual Rainfall Data Tabulation

JACOBS OMI
Vanastra WWTP
2024 Precipitations

DATE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
1	0.0	0.4	1.2	0.2	0.0	0.0	0.0	5.6	0.0	3.2	2.0	0.0	mm
2	0.0	0.0	0.0	3.6	0.0	7.6	0.0	0.0	0.0	0.2	0.2	0.0	mm
3	0.0	0.0	0.0	1.8	7.4	0.0	0.0	0.0	0.0	0.0	0.0	0.6	mm
4	0.0	0.0	0.0	1.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	mm
5	0.0	0.0	0.0	0.2	0.0	5.8	0.0	0.0	0.0	0.0	0.2	0.0	mm
6	0.6	0.0	0.2	0.0	0.0	0.2	0.0	4.0	2.4	0.6	2.4	0.0	mm
7	0.0	0.0	0.0	0.0	8.0	1.4	0.0	0.0	13.2	0.8	0.2	0.0	mm
8	1.2	1.4	7.8	0.0	0.0	8.4	0.0	0.0	1.0	0.0	0.0	21.4	mm
9	14.4	0.0	16.0	0.8	0.0	0.6	2.0	0.0	0.0	0.0	0.0	1.6	mm
10	0.0	0.0	0.2	0.0	0.0	0.2	**47.4**	0.0	0.0	0.0	13.0	0.0	mm
11	2.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	0.0	mm
12	5.6	0.0	0.0	**26.6**	2.8	0.0	0.0	0.0	0.0	0.0	0.0	0.2	mm
13	5.4	0.0	0.0	0.4	1.2	21.4	0.0	0.0	0.0	0.0	0.0	0.0	mm
14	0.0	0.0	23.8	5.2	5.0	0.4	0.0	0.0	0.0	2.0	3.8	0.0	mm
15	0.0	0.0	0.0	0.0	0.0	0.0	5.4	0.0	0.0	1.4	0.2	1.2	mm
16	0.0	0.0	1.2	0.0	0.0	0.0	11.2	1.4	0.0	0.0	0.0	3.8	mm
17	0.0	0.0	0.4	14.4	8.8	0.0	0.2	12.0	0.0	0.0	1.0	0.0	mm
18	0.2	0.0	0.2	0.4	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	mm
19	0.0	1.4	0.6	4.2	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.0	mm
20	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	18.6	0.0	mm
21	0.0	0.0	0.0	0.0	1.6	0.0	0.0	0.0	1.2	0.0	0.8	0.0	mm
22	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	0.0	0.8	0.0	mm
23	0.4	0.0	2.6	2.0	0.0	6.4	0.0	0.0	4.4	0.0	4.6	0.0	mm
24	18.2	0.0	0.0	0.2	0.0	0.0	0.8	0.0	2.0	0.0	0.4	2.4	mm
25	0.2	0.0	0.0	0.0	0.6	2.8	0.0	0.0	2.8	0.0	0.6	0.0	mm
26	18.4	0.0	8.6	0.0	3.8	0.4	0.0	0.0	0.0	0.0	3.4	0.0	mm
27	0.0	0.0	2.6	6.4	**26.6**	0.0	0.0	12.8	0.0	0.4	0.0	1.2	mm
28	0.0	7.2	0.0	1.0	3.2	0.0	0.0	0.2	0.0	0.0	0.0	1.6	mm
29	0.0	0.0	0.0	3.8	0.0	3.4	**25.4**	0.0	0.0	16.2	0.0	16.2	mm
30	2.4		2.2	0.0	0.0	0.8	20.2	3.8	0.0	0.0	0.0	14.8	mm
31	1.2		0.0		0.0		0.0	0.0		0.0		0.8	mm
Total	**70.6**	**10.4**	**67.6**	**72.4**	**69.2**	**60.0**	**112.6**	**41.8**	**28.4**	**24.8**	**54.8**	**65.8**	mm
Max	18.4	7.2	23.8	26.6	26.6	21.4	47.4	12.8	13.2	16.2	18.6	21.4	mm

Yearly Total:	**678.4**	**mm**

SECTION C

A summary of all operating issues encountered, and corrective actions taken.

The Vanastra WWTP did experience 19 days in which the effluent flows were above the Design Capacity as outlined in the ECA due to above average snow melt, rainfalls and severe storms. Operations staff was able to minimize the number of bypasses by manually operating and monitoring the facility. No noticeable impact had occurred to the Effluent quality during these times.

SECTION D

A summary of all maintenance carried out on any major structure, equipment, apparatus, mechanism or thing forming part of the Works.

Jacobs utilizes a computerized maintenance management system (CMMS) to track preventative and corrective maintenance activities. Preventative maintenance activities are carried out on a regular basis predetermined by the allocation and issuance of work orders including but not limited to equipment greasing, oil changes, and equipment inspections. The predetermined activities help to ensure optimal performance of the Works equipment and ensure the availability of equipment in emergency situations.

SECTION E

A summary of any effluent quality assurance or control measures undertaken.

The final effluent quality determines the efficiency of the treatment facility and if the standards set out in Section 5, 6, 7, and 8 of the ECA are being met. The effluent quality is monitored on a regular basis by the Operating Authority for both legal and operational requirements. Proper sampling techniques and analysis are utilized to ensure that the Vanastra WWTP is operating efficiently and without impact to the environment. All records of process data are kept onsite at the Vanastra WWTP, and electronic copies made available in the case of an emergency. The Operating Authority continues to improve upon the Standard Operating Procedures set out to ensure the integrity of the facility is maintained.

SECTION F

A summary of the calibration and maintenance carried out on all effluent monitoring equipment.

The annual flow meter calibrations were completed on July 18th and 19th, 2024, by Pierce Services and Solutions Inc. All calibration sheets are kept at the Vanastra WWTP, and electronic copies kept as a backup. A copy of the reporting years calibration sheets can be found in Appendix C of this report.

The pH meter and probe used at the Vanastra WWTP undergoes a regular calibration and calibration verification as per manufacturer specifications. All data is recorded and kept onsite.

SECTION G

A summary of efforts made, and results achieved in meeting the Effluent Objectives of Condition 5.

In February, the Design Objective for Total Suspended Solids was not hit and not achieved. The monthly single sample average was 15.0 mg/L, while the objective is 15.0 mg/L. Due to seasonal temperature changes and prolonged period of higher-than-normal flows, solids removal efficiencies dropped slightly. Staffed remained diligent during the period of high flows, making small adjustments daily to keep control of the processes.

In December, the Design Objective and the Desing Limit for E. coli were not met. The monthly geomean average was 222 organisms per 100mL while the limit is 200. Due to unknown reasons, sample collections at the start of the month were recorded to be high in bacteria. Staff made some adjustments to the chlorine disinfection system to regain control. The District Manage was notified of the Monthly Limit Exceedance on January 16th, 2025.

SECTION H

A tabulation of the volume of sludge generated, an outline of anticipated volumes to be generated in the next reporting period and a summary of the locations to where the sludge was disposed.

Waste activated sludge (WAS) is stored in a single stage anaerobic digester with a total volume of 514 m3. The digester is pumped out and land applied as per NASM Plan# 20219.

A total of 380 m3 of waste material was hauled offsite September 17th by Ontario Greenways Inc. OGI. For the year 2025, it is anticipated that the volume of sludge and concentrations produced will remain the same as previous years with little new development occurring.

SECTION I

A summary of any complaints received, and any steps taken to address the complaints.

No complaints were received regarding the Vanastra WWTP for the 2024 reporting year and no sanitary backups were reported to the Municipality or Operating Authority.

SECTION J

A summary of all Bypass, spill or abnormal discharge events.

There were 2 Bypass / Spills reported during the 2024 reporting year.

On January 26th, 2024, the Vanastra WWTP experienced an abnormally high flow event caused by rain and snow melt. The plant treated 2033m^3 for the day and had a bypass volume of 6m^3 over a 1.42-hour period. The Event was sampled upon alarm notification and samples sent to SGS for analysis. All applicable parties were notified of the event, with a reference number of 1-4M789C.

On December 17th, 2024, the Vanastra WWTP experienced higher-than-normal flows. A bypass volume of 0.09m^3 was reported on the following days data printout. Upon investigation it was determined that some sewage had seeped through the edges of the Equalization Stop Gate and had trickled into the effluent stream over 59-minutes. The Event was not sampled due to no alarm notification and only its identification on the data printout. All applicable parties were notified of the event with a reference number 1-EYQVQG.

2024

Bypass Events

Vanastra S.T.P.
Operating Number 110003013
Operating Authority: Jacobs
Municipality of Huron East

YEAR 2024

ANALYST SGS

Date	Time/Volume of Event				Notification		Sampled		Results of Analyst					
Day Month	Start	Finish	Duration Hrs	Volume M3	Yes	No	Yes	No	CBOD5 mg/L	S. S. mg/L	Total P mg/L	Total Ammonia mg/L	E-Coli Per 100ml	pH
1	26-Jan 4:00	26-Jan 5:15	1 Hr 25 Mins	6	X		X		12.0	21.0	0.38	1.00	1000	1.00
2	17-Dec 0:01	17-Dec 1:00	59min	0.09	X			X						

SECTION K

Any other information the District Manager requires from time to time.

Figure X: Annual Chlorine Residual Tabulation

JACOBS OMI

Vanastra WWTP

2024 Effluent Chlorine Residuals

DATE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
1			0.59		0.47			0.26	0.42	0.24	0.10		mg/L
2	0.21	0.34		0.32	0.11		0.39	0.15		0.10		0.53	mg/L
3	0.29			0.76	0.21	0.54	0.19	0.28		0.32		0.14	mg/L
4	0.23		0.34	0.40		0.60	0.18		0.43	0.16	0.53	0.51	mg/L
5	0.30	0.19	0.66	0.43		0.31	0.15		0.36		0.26	0.20	mg/L
6		0.22	0.33		0.26	0.12			0.20		0.13	0.15	mg/L
7		0.07	0.12		0.21	0.33		0.76	0.47	0.21			mg/L
8	0.40	0.22	0.32	0.42	0.23		0.29			0.17	0.29		mg/L
9	0.25	0.23		0.29	0.49			0.26		0.63		0.29	mg/L
10	0.19			0.17	0.26	0.12	0.19	0.17	0.20	0.23		0.33	mg/L
11	0.33		0.18	0.40		0.18	0.54		0.51	0.43		0.38	mg/L
12	0.28	0.47	0.26	0.16		0.23	0.34		0.31		0.40	0.10	mg/L
13		0.28	0.48	0.44	0.17	0.71		0.20	0.28		0.12	0.33	mg/L
14		0.26	0.40		0.51	0.40		0.36	0.47	0.13	0.10		mg/L
15	0.27	0.29	0.23	0.30	0.51		0.44	0.21		0.33	0.16		mg/L
16	0.18	0.33		0.40	0.60		0.25	0.22	0.20	0.48	0.26	0.18	mg/L
17	0.21			0.30	0.38	0.47	0.24	0.16	0.14	0.20		0.17	mg/L
18	0.34		0.52	0.51		0.56	0.16		1.19	0.19	0.24	0.20	mg/L
19	0.28	0.40	0.87	0.56		0.19	0.10		1.19		0.46	0.44	mg/L
20		0.16	0.68			0.11		0.18	0.23		0.16	0.24	mg/L
21		0.32	0.40		0.30	0.26		0.41		0.39	0.07		mg/L
22	0.35	0.41	0.64	0.41	0.29		0.43	0.20		0.30	0.07		mg/L
23	0.33	0.35		0.58	0.24		0.40	0.19	0.31	0.17		0.47	mg/L
24	0.32			0.45	0.22	0.39	0.02	0.11	0.28	0.19		0.11	mg/L
25	0.28		0.51	0.75		0.58	0.14		0.40	0.21	0.19		mg/L
26	0.39	0.18	0.53	0.33		0.21	0.33		0.21		0.24		mg/L
27		0.24	0.67		0.54	0.33		0.29	0.23		0.14	0.27	mg/L
28		0.29	0.51		0.23	0.11		0.37		0.15	0.20		mg/L
29	0.45	0.25		0.26	0.55		0.24	0.26		0.31	0.13	0.32	mg/L
30	0.34			0.29	0.43		0.55	0.18	0.33	0.24		0.32	mg/L
31	0.31		0.42		0.42		0.26	0.42				0.36	mg/L
Min	**0.18**	**0.07**	**0.12**	**0.16**	**0.11**	**0.11**	**0.02**	**0.11**	**0.14**	**0.10**	**0.07**	**0.10**	**mg/L**
Max	**0.45**	**0.47**	**0.87**	**0.76**	**0.60**	**0.71**	**0.55**	**0.76**	**1.19**	**0.63**	**0.53**	**0.53**	**mg/L**
Avg	**0.30**	**0.28**	**0.46**	**0.41**	**0.35**	**0.34**	**0.28**	**0.27**	**0.40**	**0.26**	**0.21**	**0.29**	**mg/L**

APPENDIX A

2024 WEEKLY ANALYTICAL and MONTHLY AVERAGE RESULTS

MONTH: January

Vanastra W.W.T.P.
Operations Number: 110003013
Operating Authority: Jacobs
Municipality of Huron East

YEAR: 2024

Analyst : SGS

	MLSS		RAW INFLUENT				FINAL EFFLUENT							Lab Report Received	
Test # Date	North Aeration mg/L	South Aeratoion mg/L	BOD5 mg/L	T.S.S. mg/L	TKN mg/L	Total P mg/L	BOD5 mg/L	T.S.S. mg/L	Total P mg/L	Ammonia NH3 mg/L	E-Coli Per 100 mL	pH	D.O.	Date	Initial
1 2-Jan	3147	3085							0.12		10	7.33	10.09		
2 9-Jan	3080	3700	74	77	22.9	1.81	4.0	9.0	0.21	0.10	70	7.27	10.28		
3 16-Jan	4156	4025							0.23		60	7.30	10.25		
4 23-Jan	4094	4093							0.15		20	7.17	9.80		
5 30-Jan	4443	4448							0.05		20	7.22	9.05		
ECA Objectives							**15**	**15**	**1.0**			**6.0-8.5**			
ECA Limits							**25**	**25**	**1.0**		**200-Geo**	**6.0-9.5**			
Number of Tests			**1**	**1**	**1**	**1**	**1**	**1**	**5**	**1**	**1**	**5**	**5**		
Monthly Average mg/L			**74**	**77**	**22.9**	**1.81**	**4.0**	**9.0**	**0.15**	**0.10**	**27.9**	**7.26**	**9.89**		

2024 WEEKLY ANALYTICAL and MONTHLY AVERAGE RESULTS

MONTH: February

Vanastra W.W.T.P.
Operations Number: 110003013
Operating Authority: Jacobs
Municipality of Huron East

YEAR: 2024

Analyst : SGS

	MLSS		RAW INFLUENT				FINAL EFFLUENT							Lab Report Received	
Test # Date	North Aeration mg/L	South Aeratoion mg/L	BOD5 mg/L	T.S.S. mg/L	TKN mg/L	Total P mg/L	BOD5 mg/L	T.S.S. mg/L	Total P mg/L	Ammonia NH3 mg/L	E-Coli Per 100 mL	pH	D.O.	Date	Initial
1 6-Feb	4775	4710	54	94	13.9	1.13	4.0	15.0	0.30	0.10	8	7.20	10.50		
2 13-Feb	4357	4252							0.23	.	16	7.62	11.25		
3 20-Feb	4533	4475							0.17		10	7.14	12.05		
4 27-Feb	4483	4390							0.18		30	7.26	10.50		
5															
ECA Objectives							**15**	**15**	**1.0**			**6.0-8.5**			
ECA Limits							**25**	**25**	**1.0**		**200-Geo**	**6.0-9.5**			
Number of Tests			**1**	**1**	**1**	**1**	**1**	**1**	**5**	**1**	**1**	**5**	**5**		
Monthly Average mg/L			**54**	**94**	**13.9**	**1.13**	**4.0**	**15.0**	**0.22**	**0.10**	**14.0**	**7.31**	**11.08**		

2024 WEEKLY ANALYTICAL and MONTHLY AVERAGE RESULTS

MONTH: March

Vanastra W.W.T.P.
Operations Number: 110003013
Operating Authority: Jacobs
Municipality of Huron East

YEAR: 2024

Analyst : SGS

	MLSS		RAW INFLUENT				FINAL EFFLUENT							Lab Report Received	
Test # Date	North Aeration mg/L	South Aeratoion mg/L	BOD5 mg/L	T.S.S. mg/L	TKN mg/L	Total P mg/L	BOD5 mg/L	T.S.S. mg/L	Total P mg/L	Ammonia NH3 mg/L	E-Coli Per 100 mL	pH	D.O.	Date	Initial
1 5-Mar	4657	4351	82	82	18.0	1.38	2.0	7.0	0.25	0.10	960	7.15	6.95		
2 12-Mar	3905	3996							0.31		22	7.19	8.15		
3 19-Mar	4040	4057							0.28		6	7.49	8.43		
4 26-Mar	4765	4587							0.34		12	7.39	9.35		
5															
ECA Objectives							15	15	1.0			6.0-8.5			
ECA Limits							25	25	1.0		200-Geo	6.0-9.5			
Number of Tests			1	1	1	1	1	1	5	1	1	5	5		
Monthly Average mg/L			**82**	**82**	**18.0**	**1.38**	**2.0**	**7.0**	**0.30**	**0.10**	**35.1**	**7.31**	**8.22**		

2024 WEEKLY ANALYTICAL and MONTHLY AVERAGE RESULTS

MONTH: April

Vanastra W.W.T.P.
Operations Number: 110003013
Operating Authority: Jacobs
Municipality of Huron East

YEAR: 2024

Analyst : SGS

	MLSS		RAW INFLUENT				FINAL EFFLUENT							Lab Report Received	
Test # Date	North Aeration mg/L	South Aeratoion mg/L	BOD5 mg/L	T.S.S. mg/L	TKN mg/L	Total P mg/L	BOD5 mg/L	T.S.S. mg/L	Total P mg/L	Ammonia NH3 mg/L	E-Coli Per 100 mL	pH	D.O.	Date	Initial
1 2-Apr	4819	4812	40	26	16.6	1.26	4.0	11.0	0.23	0.10	16	7.40	9.94		
2 9-Apr	4207	4334							0.31		14	7.24	7.80		
3 16-Apr	3872	4740							0.27		2	7.25	10.41		
4 23-Apr	4020	4001							0.23		4	7.46	8.22		
5															
ECA Objectives							15	15	1.0			6.0-8.5			
ECA Limits							25	25	1.0		200-Geo	6.0-9.5			
Number of Tests			1	1	1	1	1	1	5	1	1	5	5		
Monthly Average mg/L			**40**	**26**	**16.6**	**1.26**	**4.0**	**11.0**	**0.26**	**0.10**	**6.5**	**7.34**	**9.09**		

2024 WEEKLY ANALYTICAL and MONTHLY AVERAGE RESULTS

MONTH: May

Vanastra W.W.T.P.
Operations Number: 110003013
Operating Authority: Jacobs
Municipality of Huron East

YEAR: 2024

Analyst : SGS

	MLSS		RAW INFLUENT				FINAL EFFLUENT							Lab Report Received	
Test # Date	North Aeration mg/L	South Aeratoion mg/L	BOD5 mg/L	T.S.S. mg/L	TKN mg/L	Total P mg/L	BOD5 mg/L	T.S.S. mg/L	Total P mg/L	Ammonia NH3 mg/L	E-Coli Per 100 mL	pH	D.O.	Date	Initial
1 7-May	3729	3868	123	95	19.8	2.34	4.0	5.0	0.21	0.10	8	7.17	9.52		
2 ######									0.23		2	7.26	8.70		
3 ######									0.24		2	7.96	9.96		
4 ######									0.22		56	7.15	8.29		
5															
ECA Objectives							15	15	1.0			6.0-8.5			
ECA Limits							25	25	1.0		200-Geo	6.0-9.5			
Number of Tests			1	1	1	1	1	1	5	1	1	5	5		
Monthly Average mg/L			**123**	**95**	**19.8**	**2.34**	**4.0**	**5.0**	**0.23**	**0.10**	**6.5**	**7.39**	**9.12**		

2024 WEEKLY ANALYTICAL and MONTHLY AVERAGE RESULTS

MONTH: June

Vanastra W.W.T.P.
Operations Number: 110003013
Operating Authority: Jacobs
Municipality of Huron East

YEAR: 2024

Analyst : SGS

	MLSS		RAW INFLUENT				FINAL EFFLUENT							Lab Report Received	
Test # Date	North Aeration mg/L	South Aeratoion mg/L	BOD5 mg/L	T.S.S. mg/L	TKN mg/L	Total P mg/L	BOD5 mg/L	T.S.S. mg/L	Total P mg/L	Ammonia NH3 mg/L	E-Coli Per 100 mL	pH	D.O.	Date	Initial
1 4-Jun	4075	4090	70	78	22.6	1.72	4.0	3.0	0.22	0.10	24	7.22	7.81		
2 11-Jun	4367	4327							0.25		10	7.38	6.75		
3 18-Jun	3466	3373							0.20		14	7.70	5.05		
4 25-Jun	3083	3224							0.25		46	7.80	6.78		
5															
ECA Objectives							15	15	1.0			6.0-8.5			
ECA Limits							25	25	1.0		200-Geo	6.0-9.5			
Number of Tests			1	1	1	1	1	1	5	1	1	5	5		
Monthly Average mg/L			**70**	**78**	**22.6**	**1.72**	**4.0**	**3.0**	**0.23**	**0.10**	**19.8**	**7.53**	**6.60**		

2024 WEEKLY ANALYTICAL and MONTHLY AVERAGE RESULTS

MONTH: July

Vanastra W.W.T.P.
Operations Number: 110003013
Operating Authority: Jacobs
Municipality of Huron East

YEAR: 2024

Analyst : SGS

	MLSS		RAW INFLUENT				FINAL EFFLUENT							Lab Report Received	
Test # Date	North Aeration mg/L	South Aeratoion mg/L	BOD5 mg/L	T.S.S. mg/L	TKN mg/L	Total P mg/L	BOD5 mg/L	T.S.S. mg/L	Total P mg/L	Ammonia NH3 mg/L	E-Coli Per 100 mL	pH	D.O.	Date	Initial
1 2-Jul	3521	3090							0.21		2	7.20	7.26		
2 8-Jul	3173	3279	170	148	54.1	4.77	4.0	5.0	0.16	0.10	6	7.80	8.55		
3 16-Jul	3452	3310							0.19		84	7.80	6.13		
4 23-Jul	3637	3903							0.22		2	7.70	7.60		
5 30-Jul	3672	3401							0.18		74	7.11	4.60		
ECA Objectives							15	15	1.0			6.0-8.5			
ECA Limits							25	25	1.0		200-Geo	6.0-9.5			
Number of Tests			1	1	1	1	1	1	5	1	1	5	5		
Monthly Average mg/L			**170**	**148**	**54.1**	**4.77**	**4.0**	**5.0**	**0.19**	**0.10**	**10.8**	**7.52**	**6.83**		

2024 WEEKLY ANALYTICAL and MONTHLY AVERAGE RESULTS

MONTH: August

Vanastra W.W.T.P.
Operations Number: 110003013
Operating Authority: Jacobs
Municipality of Huron East

YEAR: 2024

Analyst : SGS

	MLSS		RAW INFLUENT				FINAL EFFLUENT							Lab Report Received	
Test # Date	North Aeration mg/L	South Aeratoion mg/L	BOD5 mg/L	T.S.S. mg/L	TKN mg/L	Total P mg/L	BOD5 mg/L	T.S.S. mg/L	Total P mg/L	Ammonia NH3 mg/L	E-Coli Per 100 mL	pH	D.O.	Date	Initial
1 6-Aug	3712	3391							0.22		4	7.80	7.70		
2 13-Aug	5647	4112	95	106	33.4	3.35	4.0	3.0	0.27	0.10	18	7.50	6.99		
3 20-Aug	3556	4435							0.24		20	7.70	8.02		
4 27-Aug	3177	3161							0.18		14	6.93	7.11		
5															
ECA Objectives							15	15	1.0			6.0-8.5			
ECA Limits							25	25	1.0		200-Geo	6.0-9.5			
Number of Tests			1	1	1	1	1	1	5	1	1	5	5		
Monthly Average mg/L			**95**	**106**	**33.4**	**3.35**	**4.0**	**3.0**	**0.23**	**0.10**	**11.9**	**7.48**	**7.46**		

2024 WEEKLY ANALYTICAL and MONTHLY AVERAGE RESULTS

MONTH: September

Vanastra W.W.T.P.
Operations Number: 110003013
Operating Authority: Jacobs
Municipality of Huron East

YEAR: 2024

Analyst : SGS

	MLSS		RAW INFLUENT				FINAL EFFLUENT							Lab Report Received	
Test # Date	North Aeration mg/L	South Aeratoion mg/L	BOD5 mg/L	T.S.S. mg/L	TKN mg/L	Total P mg/L	BOD5 mg/L	T.S.S. mg/L	Total P mg/L	Ammonia NH3 mg/L	E-Coli Per 100 mL	pH	D.O.	Date	Initial
1 3-Sep	3304	3627							0.18		26	7.19	7.32		
2 10-Sep	3368	3233	131	92	26.2	2.46	4.0	7.0	0.30	0.10	12	7.50	7.82		
3 17-Sep	2550	2606							0.12		408	7.41	6.88		
4 24-Sep	2415	2549							0.09		60	7.37	6.60		
5															
ECA Objectives							**15**	**15**	**1.0**			**6.0-8.5**			
ECA Limits							**25**	**25**	**1.0**		**200-Geo**	**6.0-9.5**			
Number of Tests			**1**	**1**	**1**	**1**	**1**	**1**	**5**	**1**	**1**	**5**	**5**		
Monthly Average mg/L			**131**	**92**	**26.2**	**2.46**	**4.0**	**7.0**	**0.17**	**0.10**	**52.6**	**7.37**	**7.16**		

2024 WEEKLY ANALYTICAL and MONTHLY AVERAGE RESULTS

MONTH: October

Vanastra W.W.T.P.
Operations Number: 110003013
Operating Authority: Jacobs
Municipality of Huron East

YEAR: 2024

Analyst : SGS

	MLSS		RAW INFLUENT				FINAL EFFLUENT							Lab Report Received	
Test # Date	North Aeration mg/L	South Aeratoion mg/L	BOD5 mg/L	T.S.S. mg/L	TKN mg/L	Total P mg/L	BOD5 mg/L	T.S.S. mg/L	Total P mg/L	Ammonia NH3 mg/L	E-Coli Per 100 mL	pH	D.O.	Date	Initial
1 1-Oct	2362	2534	162	213	44.1	4.24	4.0	4.0	0.12	0.10	34	7.60	6.42		
2 8-Oct	3191	3065							0.17		262	7.50	6.53		
3 15-Oct	3129	3061							0.27		16	7.70	6.61		
4 22-Oct	2925	2798							0.28		42	7.70	6.27		
5 29-Oct	3305	3395							0.15		94	7.60	6.68		
ECA Objectives							**15**	**15**	**1.0**			**6.0-8.5**			
ECA Limits							**25**	**25**	**1.0**		**200-Geo**	**6.0-9.5**			
Number of Tests			**1**	**1**	**1**	**1**	**1**	**1**	**5**	**1**	**1**	**5**	**5**		
Monthly Average mg/L			**162**	**213**	**44.1**	**4.24**	**4.0**	**4.0**	**0.20**	**0.10**	**56.2**	**7.62**	**6.50**		

2024 WEEKLY ANALYTICAL and MONTHLY AVERAGE RESULTS

MONTH: November

Vanastra W.W.T.P.
Operations Number: 110003013
Operating Authority: Jacobs
Municipality of Huron East

YEAR: 2024

Analyst : SGS

	MLSS		RAW INFLUENT				FINAL EFFLUENT							Lab Report Received	
Test # Date	North Aeration mg/L	South Aeratoion mg/L	BOD5 mg/L	T.S.S. mg/L	TKN mg/L	Total P mg/L	BOD5 mg/L	T.S.S. mg/L	Total P mg/L	Ammonia NH3 mg/L	E-Coli Per 100 mL	pH	D.O.	Date	Initial
1 5-Nov	1553	1360	220	193	34.5	4.37	4.0	33.0	0.13	0.10	264	7.80	6.56		
2 12-Nov	4377	3455							0.08		26	7.20	11.82		
18-Nov **3** 19-Nov	2422	2514						2.0 2.0	0.04		44.00	7.70	9.33		
25-Nov **4** 26-Nov	2316	2036						2.0 4.0	0.07		30.00	7.20	8.03		
5															
ECA Objectives							15	15	1.0			6.0-8.5			
ECA Limits							25	25	1.0		200-Geo	6.0-9.5			
Number of Tests			1	1	1	1	1	1	5	1	1	5	5		
Monthly Average mg/L			**220**	**193**	**34.5**	**4.37**	**4.0**	**8.6**	**0.08**	**0.10**	**54.9**	**7.48**	**8.94**		

2024 WEEKLY ANALYTICAL and MONTHLY AVERAGE RESULTS

MONTH: December

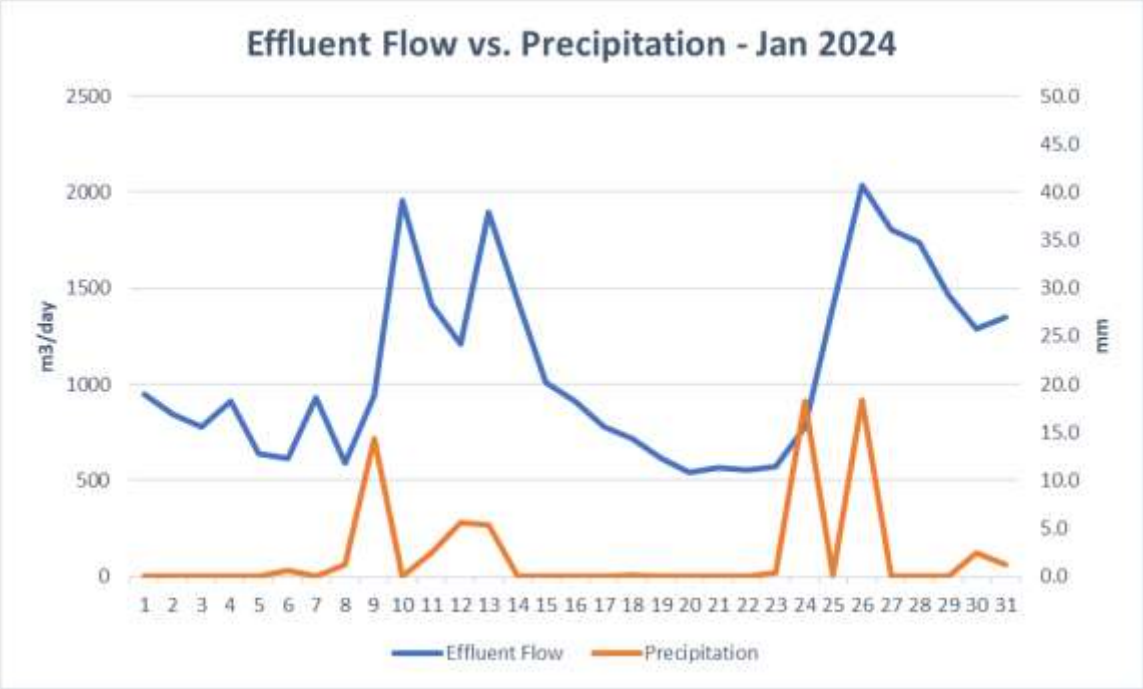
Vanastra W.W.T.P.
Operations Number: 110003013
Operating Authority: Jacobs
Municipality of Huron East

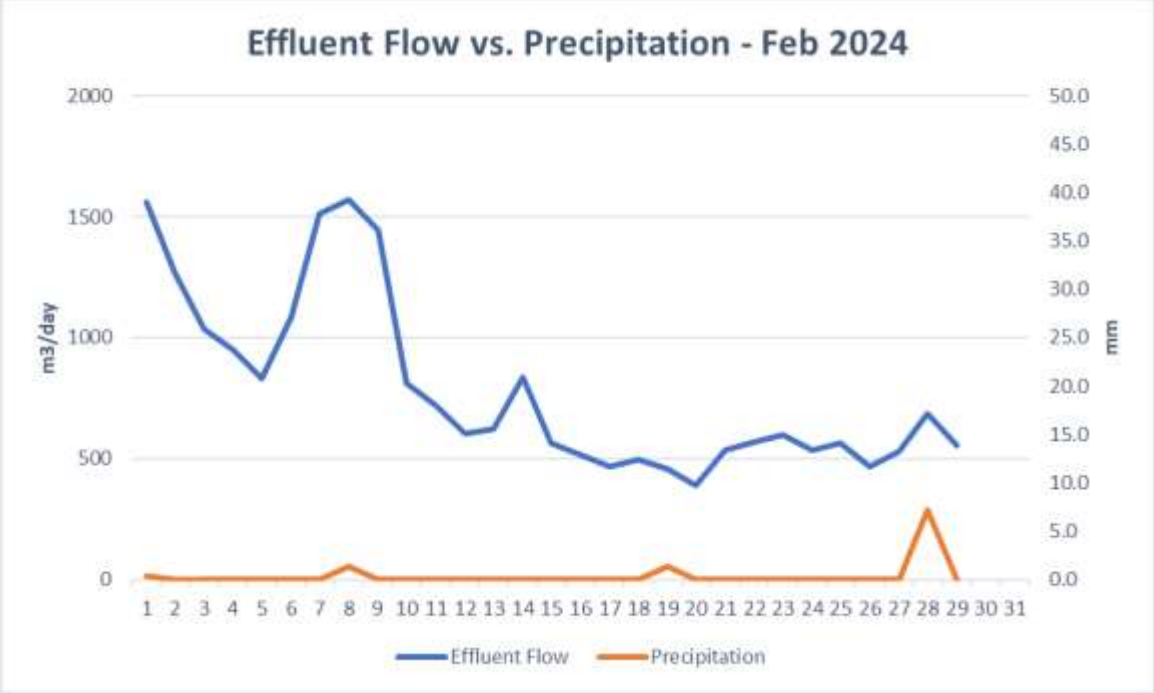
YEAR: 2024

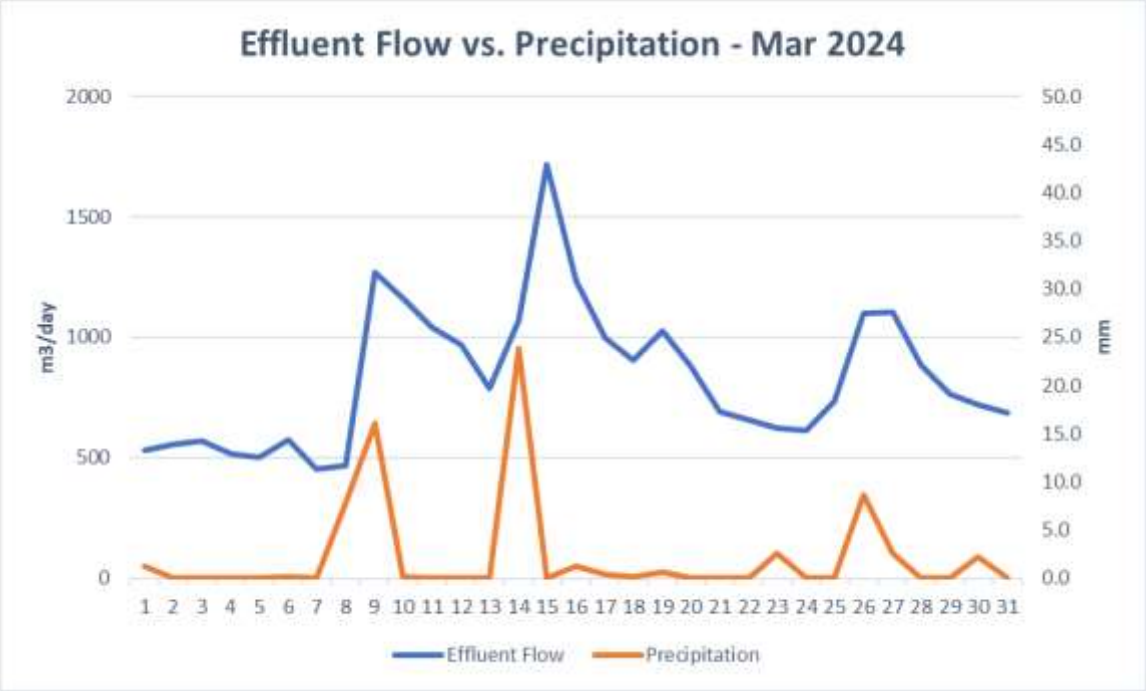
Analyst : SGS

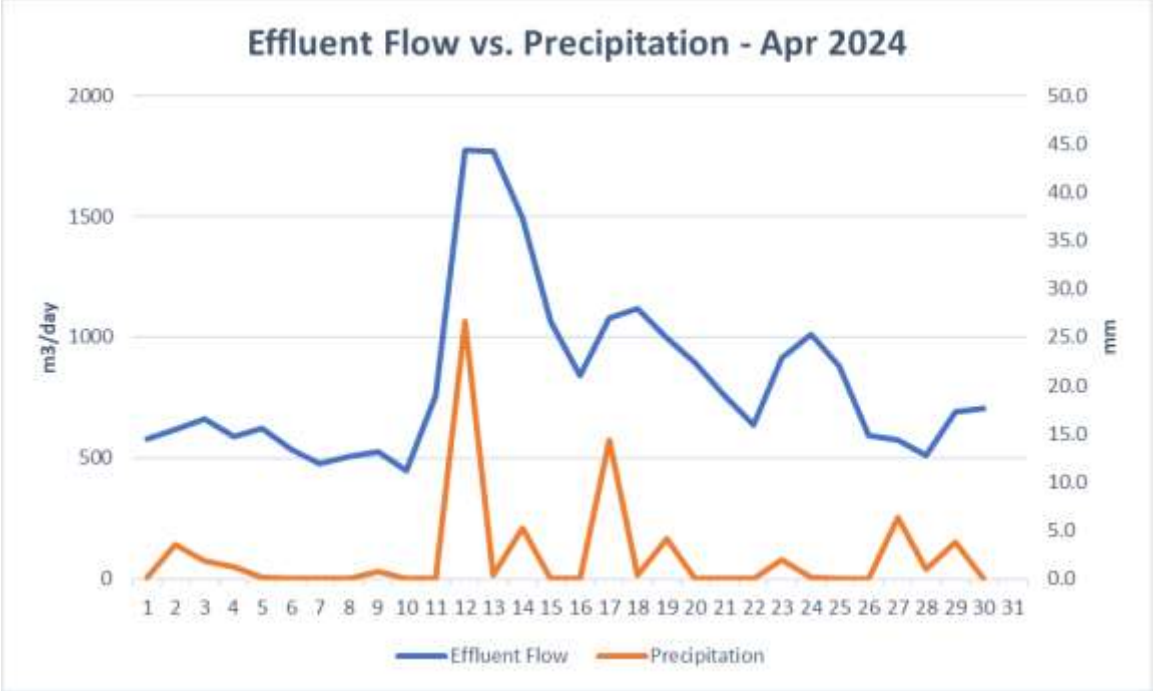
	MLSS		RAW INFLUENT				FINAL EFFLUENT							Lab Report Received	
Test # Date	North Aeration mg/L	South Aeratoion mg/L	BOD5 mg/L	T.S.S. mg/L	TKN mg/L	Total P mg/L	BOD5 mg/L	T.S.S. mg/L	Total P mg/L	Ammonia NH3 mg/L	E-Coli Per 100 mL	pH	D.O.	Date	Initial
1 3-Dec	2250	2936	109	127	34.5	3.39	4.0	3.0	0.04	0.10	1320	7.80	7.96		
10-Dec **2** 13-Dec	709	841							0.04		6500 30	7.60	7.44		
3 17-Dec	2085	2175							0.24		68	7.60	8.71		
4 24-Dec	3197	2748							0.27		114	7.20	9.51		
5 30-Dec	3400	3436							0.16		60	7.90	8.27		
ECA Objectives							15	15	1.0			6.0-8.5			
ECA Limits							25	25	1.0		200-Geo	6.0-9.5			
Number of Tests			1	1	1	1	1	1	5	1	1	5	5		
Monthly Average mg/L			**109**	**127**	**34.5**	**3.39**	**4.0**	**3.0**	**0.15**	**0.10**	**222.0**	**7.62**	**8.38**		

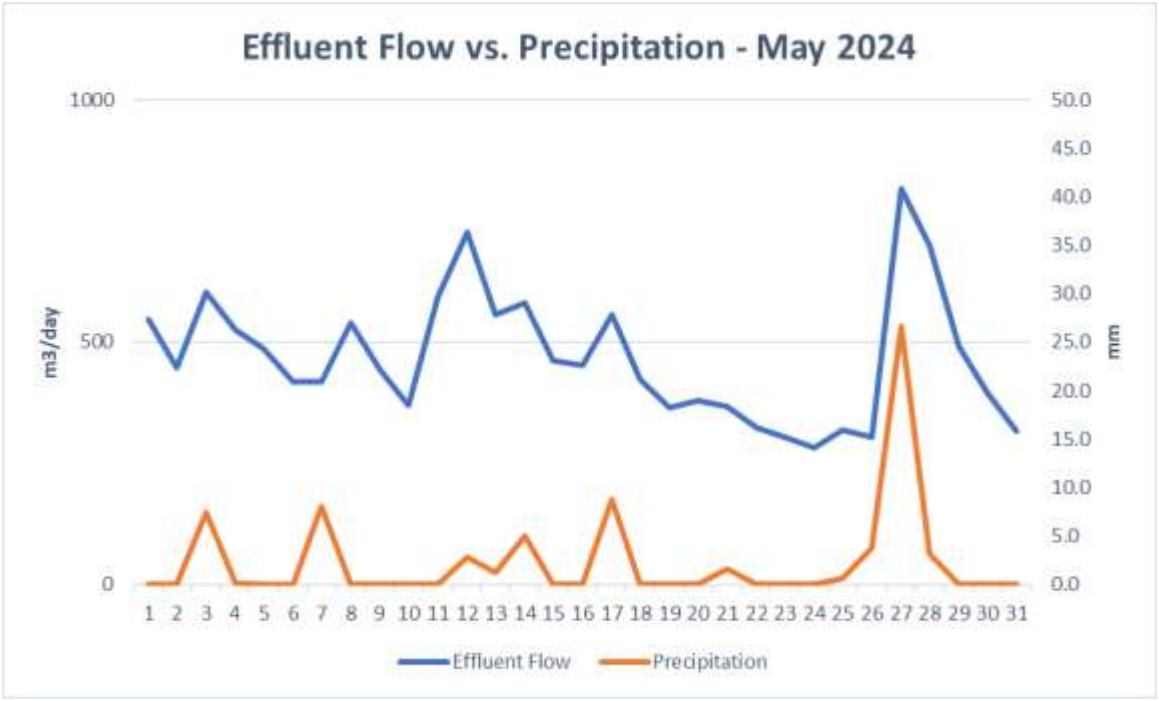
APPENDIX B

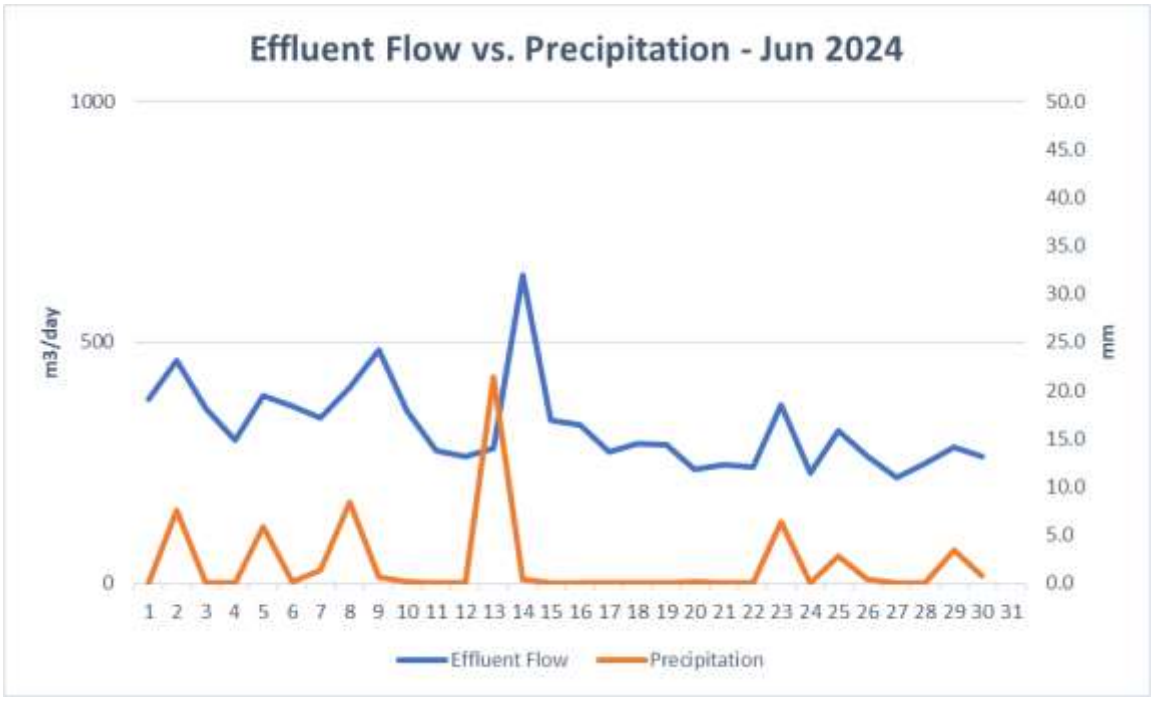

Effluent Flow vs. Precipitation - Jan 2024
m3/day
mm
2500
2000
1500
1000
500
0
50.0
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Effluent Flow
Precipitation

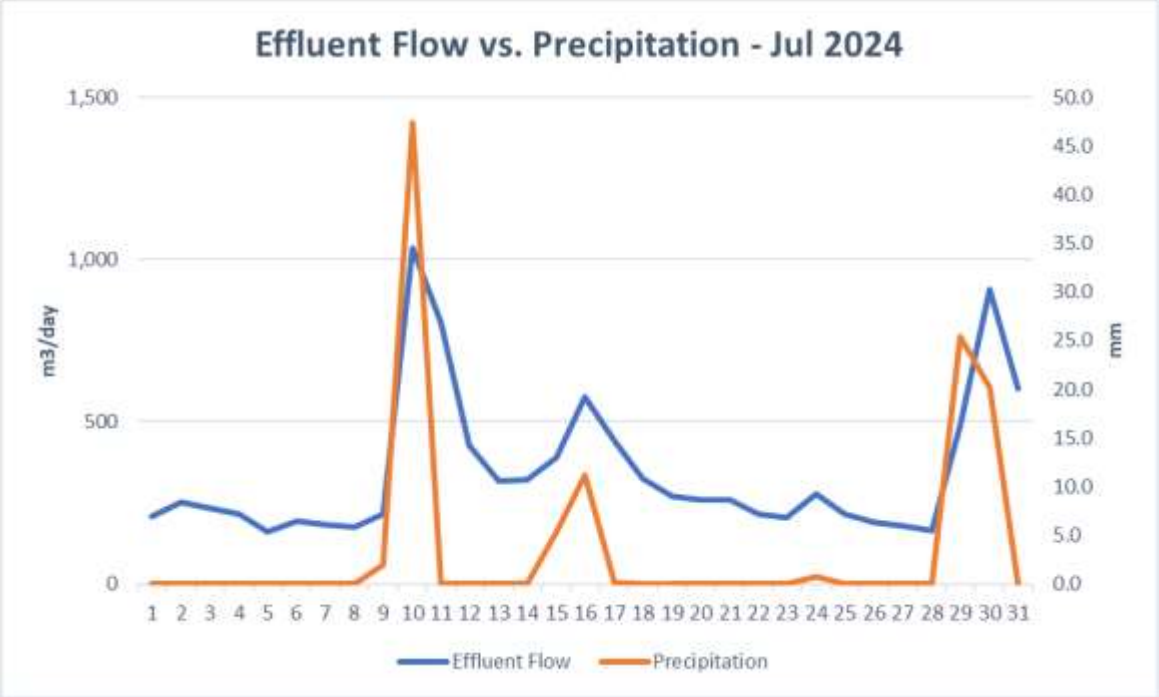

Effluent Flow vs. Precipitation - Feb 2024
m3/day
mm
2000
1500
1000
500
0
50.0
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Effluent Flow
Precipitation

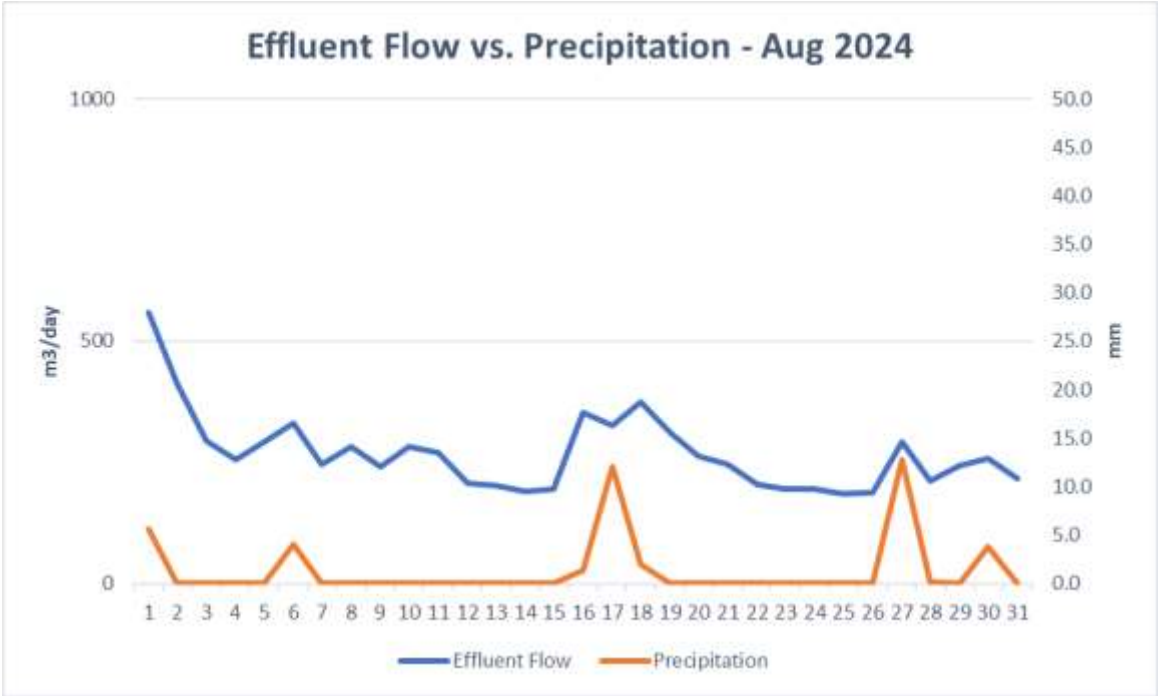

Effluent Flow vs. Precipitation - Mar 2024
2000
1500
1000
500
0
m3/day
50.0
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
mm
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Effluent Flow
Precipitation

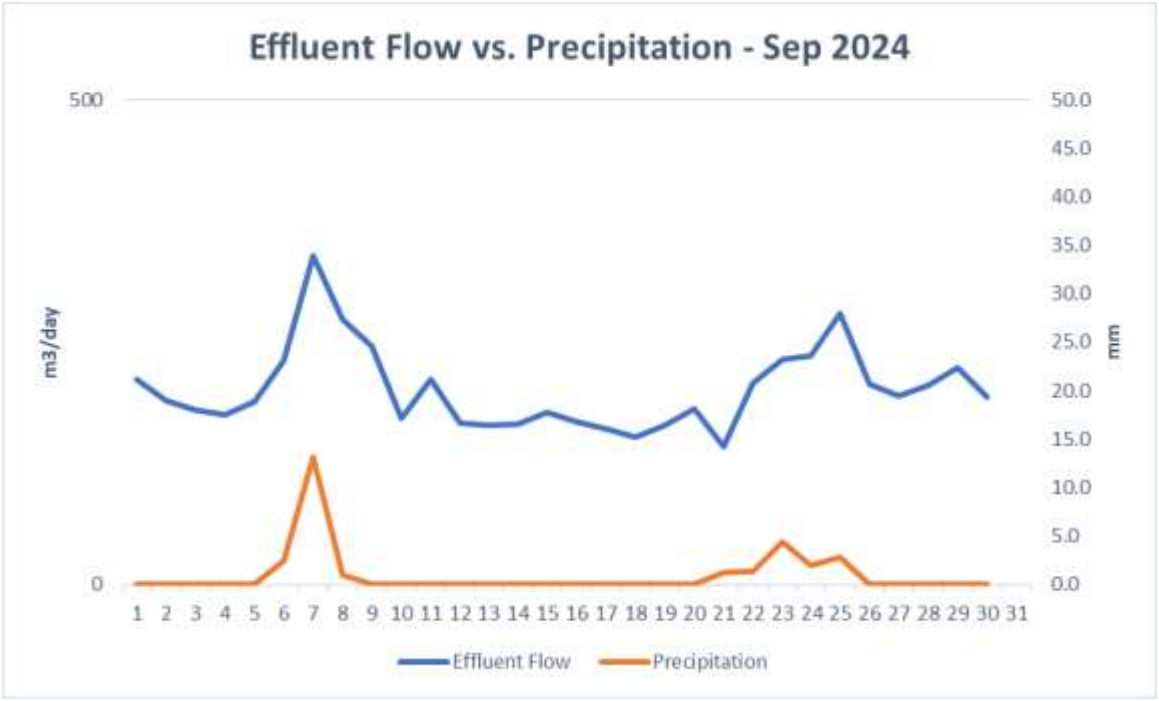

Effluent Flow vs. Precipitation - Apr 2024
2000
1500
1000
500
0
m3/day
50.0
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
mm
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Effluent Flow
Precipitation

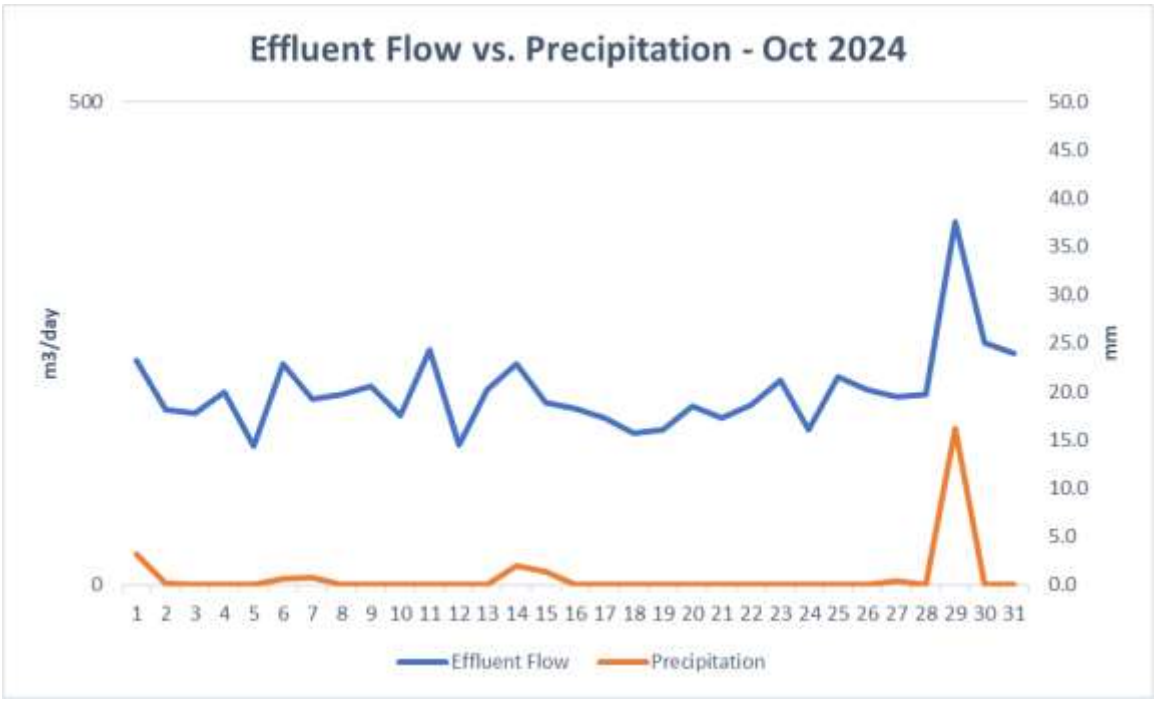

Effluent Flow vs. Precipitation - May 2024
1000
500
0
m3/day
50.0
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
mm
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Effluent Flow
Precipitation

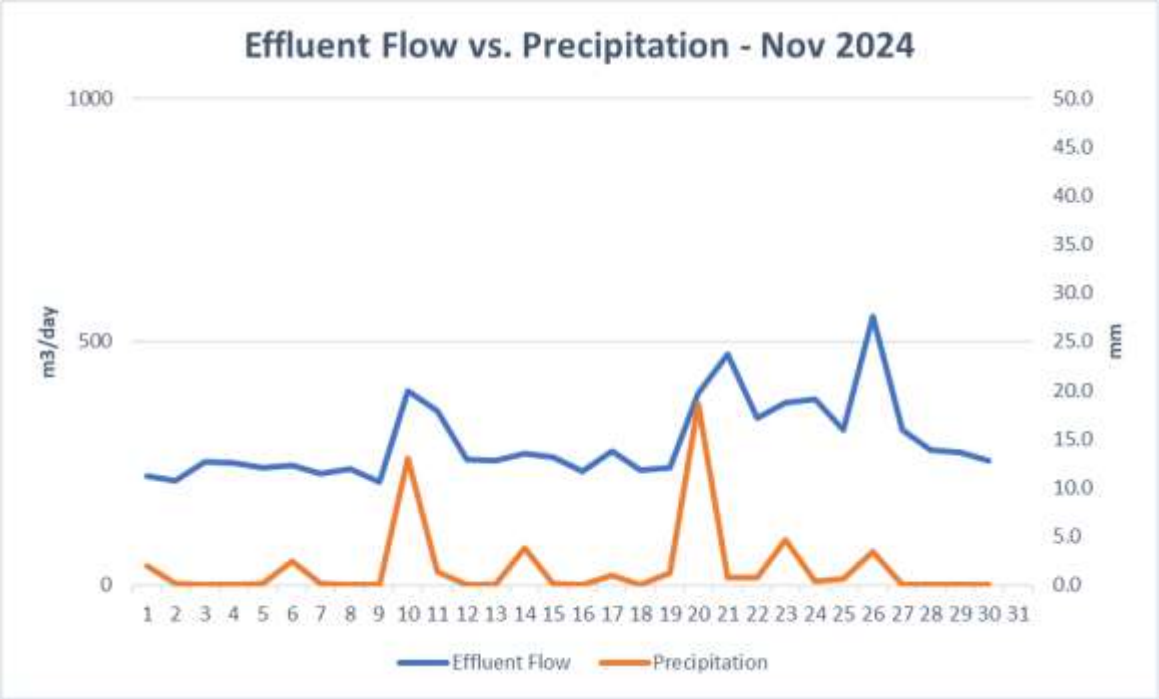

Effluent Flow vs. Precipitation - Jun 2024
1000
500
0
m3/day
50.0
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
mm
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Effluent Flow
Precipitation

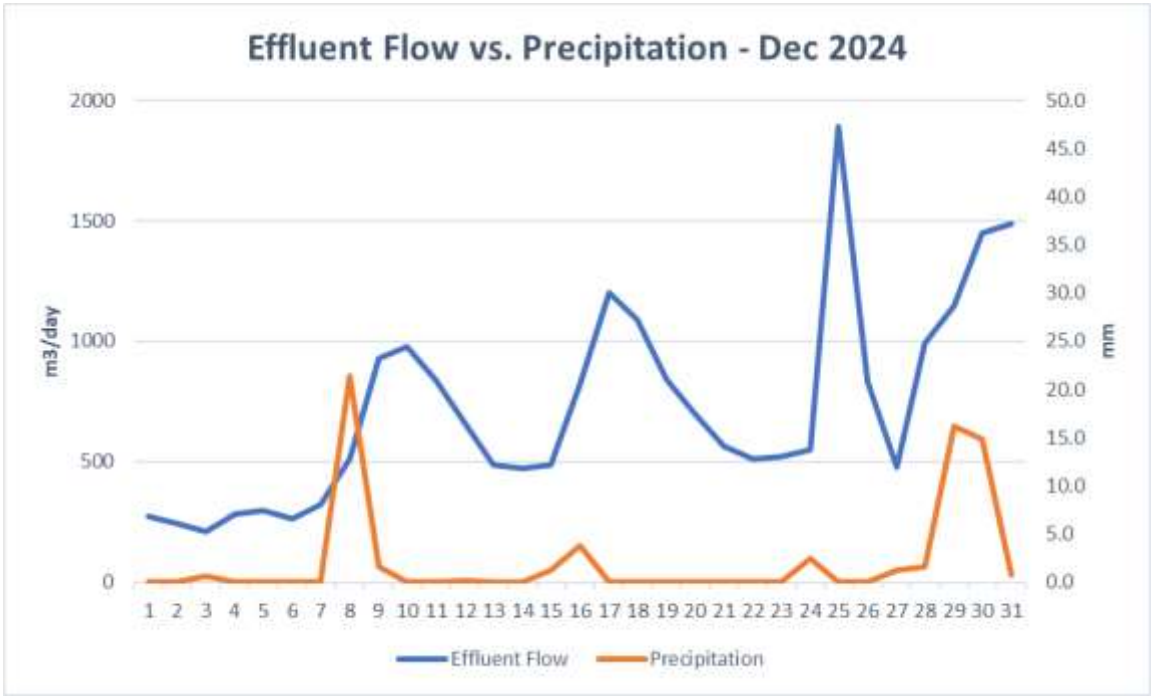

Effluent Flow vs. Precipitation - Jul 2024
1,500
1,000
500
0
m3/day
50.0
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
mm
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Effluent Flow
Precipitation


Effluent Flow vs. Precipitation - Aug 2024
1000
500
0
m3/day
50.0
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
mm
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Effluent Flow
Precipitation


Effluent Flow vs. Precipitation - Sep 2024
500
0
m3/day
50.0
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
mm
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Effluent Flow
Precipitation


Effluent Flow vs. Precipitation - Oct 2024
500
0
m3/day
50.0
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
mm
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Effluent Flow
Precipitation


Effluent Flow vs. Precipitation - Nov 2024
1000
500
0
m3/day
50.0
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
mm
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Effluent Flow
Precipitation


Effluent Flow vs. Precipitation - Dec 2024
2000
1500
1000
500
0
m3/day
50.0
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
mm
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Effluent Flow
Precipitation

APPENDIX C

Pierce Services & Solutions Inc.
45 Wilton Road
Guelph, ON N1E 7L6
Phone: 519.820.4853
Fax: 519.824.9402

Flowmeter Report

Verification:	X	Calibration:	
Client:	Jacobs	Location:	Vanastra WPCP
Description:	Parshall Flume	Date:	25-Jul-23
Manufacturer:	Pulsar	Checked By:	Greg Pierce
Model:	Ultra 3	Serial No.:	

Tag No.: LIT 006 Range: 420.9 m3/hr

Input %	Theoretical	As Found	As Left	P/F
0%	0.00 m3/hr	0.00 m3/hr	0.00 m3/hr	Pass
25%	50.49 m3/hr	50.84 m3/hr	50.84 m3/hr	Pass
50%	145.8 m3/hr	146.1 m3/hr	146.1 m3/hr	Pass
75%	271.55 m3/hr	272.64 m3/hr	272.64 m3/hr	Pass
100%	420.9 m3/hr	420.9 m3/hr	420.9 m3/hr	Pass

Confirmed Run Mode: X Returned to service: X

Service Comments:

Flowmeter Information

Assigned Number:	LIT 006 Effluent
Flow Unit:	m3/d
Meter Size:	
Pipe Material:	
Flume/Weir Type:	Parshall
Flume/Weir Size:	8"
Range:	0 - 2750 m3/d


Comments:

mA	4.8
Level	1.393
Flow	328.41m3/d
Echo	100

Signature:
Greg Pierce, CCST

FC_Vanastra_250723_LIT 006 A_2023

Pierce Services
& Solutions Inc.

45 Wilton Road
Guelph, ON N1E 7L6

Phone: 519.820.4853
Fax: 519.824.9402

Flowmeter Report

Verification: X Calibration:

Client: Jacobs
Description: V notch Weir
Manufacturer: Pulsar
Model: Ultra 3

Location: Vanastra WPCP
Date: 18-Jul-24
Checked By: Greg Pierce
Serial No.:

Tag No.: LIT 002 Range: 416.59 m3/hr

Input %	Theoretical	As Found	As Left	P/F
0%	0.00 m3/hr	0.00 m3/hr	0.00 m3/hr	Pass
25%	13.04 m3/hr	13.02 m3/hr	13.02 m3/hr	Pass
50%	73.64 m3/hr	73.61 m3/hr	73.61 m3/hr	Pass
75%	202.48 m3/hr	201.94 m3/hr	201.94 m3/hr	Pass
100%	416.59 m3/hr	416.24 m3/hr	416.24 m3/hr	Pass

Confirmed Run Mode: X Returned to service: X

Service Comments:

Flowmeter Information

Assigned Number: LIT 002 Influent
Flow Unit: m3/d
Meter Size:
Pipe Material:
Flume/Weir Type: V Notch
Flume/Weir Size: 90
Range: 0 - 9999 m3/d

Comments:
Changed to .673 Feb16/23

mA	6
Level	0.573
Flow	364.77
Echo	100

Signature:
Greg Pierce, CCST

FC_Vanastra_250723_LIT 002 A_2023

Pierce Services & Solutions Inc.

Alphabetical Parameter Listing Multiranger Plus

Tag # LIT 004 Bypass Flow
Date: 18-Jul-24

#	Parameter	Value	#	Parameter	Value
P-0	Security	1954	P-50	OCM mA output	2
P-1	Units	2	P-51	OCM simulation	0.000
P-2	Mode of Measurement	5	P-52	Totalizer display factor	0
P-3	Empty Distance	121.4	P-53	Totalizer decimal point	0
P-4	Span	28.04	P-54	Low total	5005
P-5	Blanking	30.48	P-55	High total	0001
P-6	Analog Output	2	P-56	Remote totalizer contact	0
P-7	Decimal Point	2	P-57	Flow sampler control	0
P-8	Relay 1, Function	dE:8	P-58	Flow sampler control	1.000
P-9	Relay 1, Setpoint On	1.27	P-59	Time sampler control	--
P-10	Relay 1, Setpoint Off	0.254	P-60	Full Calibration	--
P-11	Relay 2, Function	dE:8	P-61	Empty Calibration	--
P-12	Relay 2, Setpoint On	1.27	P-62	Measurement Offset	0.000
P-13	Relay 2, Setpoint Off	0.254	P-63	Sound Velocity at 20° C	344.1
P-14	Relay 3, Function	0	P-64	Velocity at P-65	346.9
P-15	Relay 3, Setpoint On	--	P-65	Air temperature	25 C
P-16	Relay 3, Setpoint Off	--	P-66	Maximum air temperature	29C
P-17	Relay 4, Function	0	P-67	Minimum air temperature	5 C
P-18	Relay 4, Setpoint On	--	P-68	Fill damping	1000
P-19	Relay 4, Setpoint Off	--	P-69	Empty damping	1000
P-20	Relay 5, Function	0	P-70	Process rate display	0
P-21	Relay 5, Setpoint On	--	P-71	Process rate filter	1
P-22	Relay 5, Setpoint Off	--	P-72	Fuzz filter	1
P-23	Transducer, Submersible	--	P-73	Agitator discrimination	1
P-24	Pump 1, hours	1097	P-74	Fail-safe mode	3
P-25	Pump 2, hours	5725	P-75	Fail-safe timer	15.00
P-26	Pump 3, hours	0.000	P-76	Reading	-2.70
P-27	Pump 4, hours	0.000	P-77	Material level	-2.70
P-28	Pump 5, hours	0.000	P-78	Space or distance	124.1
P-29	Pump, run on, interval	0.000	P-79	Scope displays	____
P-30	Pump, run off, duration	0	P-80	Echo confidence	0:42
P-31	Transducer	112	P-81	Confidence threshold long	10
P-32	DLD milliamp output	2	P-82	Confidence threshold long	5
P-33	Inflow/discharge totaling	1	P-83	Echo strength	83
P-34	Tank Shape	0	P-84	Noise	-1.15
P-35	Tank dimension A	0.000	P-85	Algorithms	1
P-36	Tank dimension L	0.000	P-86	TVT curve	1
P-37	Convert display	1.000	P-87	Range extension	1
P-38	Display offset	0.000	P-88	Number of transmit pulses	20
P-39	Display reading options	0	P-89	Software version	4
P-40	Primary measuring device	1	P-90	Memory test	1.22
P-41	Flow rate time units	4	P-91	LCD,LED and relay test	PASS
P-42	OCM exponent	2.500	P-92	mA output test	4.000
P-43	Flume Dimensions	0.000	P-93	Temperature sensor test	166.0
P-45	Maximum head	28.04	P-94	Transmitter test	PASS
P-46	Maximum flow rate	5000	P-95	Programmer test	PASS
P-47	Auto zero	--	P-96	Watchdog reset test	PASS
P-48	OCM low head cutoff	0.030	P-97	Trim for 4 mA	218
P-49	OCM decimal point	3	P-98	Trim for 20 mA	3484
			P-99	Master reset	

Site Location: Vanastra WPCP
FC_Vanastra_LIT 004 1_18-Jul-24

Pierce Services
& Solutions Inc.

45 Wilton Road
Guelph, ON N1E 7L6

Phone: 519.820.4853
Fax: 519.824.9402

Flowmeter Report

Verification: X Calibration:

Client: Jacobs
Description: Non Contracted Weir
Manufacturer: Milltronics
Model: Multiranger Plus

Location: Vanastra WPCP
Date: 18-Jul-24
Checked By: Greg Pierce
Serial No.:

Tag No.: LIT 104 Range: 294

Input %	Theoretical	As Found	As Left	P/F
0%	0.00 m3/d	0.00 m3/d	0.00 m3/d	Fail
25%	36.849 m3/d	6.49 m3/d	6.49 m3/d	Fail
50%	104.225 m3/d	36.54 m3/d	36.54 m3/d	Fail
75%	191.473 m3/d	101.12 m3/d	101.12 m3/d	Fail
100%	294.791 m3/d	208.19 m3/d	208.19 m3/d	Fail

Confirmed Run Mode: X Returned to service: X

Service Comments:

Flowmeter Information

Assigned Number: LIT 004
Flow Unit: m3/d
Meter Size:
Pipe Material:
Flume/Weir Type: Non Contracted Weir
Flume/Weir Size: .3 m
Range: 0 - 5000 m3/d

Comments:

Signature:
Greg Pierce, CCST

C_Vanastra_LIT 004 2_18-Jul-24

APPENDIX D

SGS Canada Inc.
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - K0L 2H0
Phone: 705-652-2000 FAX: 705-652-6365

Project : PO#145004519

23-January-2024

O.M.I. Canada Inc. (Huron East - Vanastra Wastewater)
Attn : Aaron Yungblut

Date Rec. : 16 January 2024
LR Report: CA30337-JAN24

Copy: #1

30 Welsh St.
Seaforth, ON
N0K 1W0, Canada

Phone: 519-527-1004
Fax:519-527-0090

CERTIFICATE OF ANALYSIS
Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: Vanastra Sludge
Sample Date & Time					16-Jan-24 13:00
Temperature Upon Receipt [at London Lab °C]	—	—	—	—	4.1
Temperature Upon Receipt [at Lakefield Lab °C]	—	—	—	—	4.0
E. Coli [cfu/1g dried wgt]	17-Jan-24	16:50	19-Jan-24	12:11	5556017
E.Coli [cfu/100mL]	17-Jan-24	16:50	19-Jan-24	12:11	15800000
Total Solids [mg/L]	19-Jan-24	19:41	23-Jan-24	09:59	24100
Total Suspended Solids [mg/L]	19-Jan-24	11:34	22-Jan-24	13:54	21400
Total Kjeldahl Nitrogen [as N mg/L]	18-Jan-24	09:35	22-Jan-24	13:06	553
Ammonia+Ammonium (N) [as N mg/L]	18-Jan-24	12:41	19-Jan-24	11:10	6.7
Nitrite (as N) [mg/L]	19-Jan-24	08:47	22-Jan-24	13:11	< 3
Nitrate (as N) [mg/L]	19-Jan-24	08:47	22-Jan-24	13:11	< 3
Nitrate + Nitrite (as N) [mg/L]	19-Jan-24	08:47	22-Jan-24	13:11	< 3
Aluminum [mg/L]	20-Jan-24	04:42	22-Jan-24	13:35	489
Arsenic [mg/L]	20-Jan-24	04:42	22-Jan-24	13:35	< 0.1
Cadmium [mg/L]	20-Jan-24	04:42	22-Jan-24	13:35	0.020
Calcium [mg/L]	20-Jan-24	04:42	22-Jan-24	13:35	717
Cobalt [mg/L]	20-Jan-24	04:42	22-Jan-24	13:35	0.04
Chromium [mg/L]	20-Jan-24	04:42	22-Jan-24	13:35	0.45
Copper [mg/L]	20-Jan-24	04:42	22-Jan-24	13:35	7.8
Mercury [mg/L]	20-Jan-24	04:42	22-Jan-24	13:35	0.007
Potassium [mg/L]	20-Jan-24	04:42	22-Jan-24	13:35	41
Molybdenum [mg/L]	20-Jan-24	04:42	22-Jan-24	13:35	0.09
Nickel [mg/L]	20-Jan-24	04:42	22-Jan-24	13:35	0.33
Phosphorus (Total) [mg/L]	20-Jan-24	04:42	22-Jan-24	13:35	285
Lead [mg/L]	20-Jan-24	04:42	22-Jan-24	13:35	0.5
Selenium [mg/L]	20-Jan-24	04:42	22-Jan-24	13:35	< 0.1
Zinc [mg/L]	20-Jan-24	04:42	22-Jan-24	13:35	16

Note: Metals and mercury were analyzed on the as-received sample.

Note: E.Coli analysis (cfu/100ml) was completed at the SGS Environmental Services - London Laboratory.

The E.coli value reported in CFU/1g dried weight was calculated using Total Solids and CFU/100ml.

SGS

SGS Canada Inc.
P.O. Box 4300 - 165 Concession St.
Lakefield - Ontario - K0L 2H0
Phone: 705-652-2000 FAX: 705-652-6365

Project : PO#145004519

26-April-2024

O.M.I. Canada Inc. (Huron East - Vanastra Wastewater)
Attn : Richard Marsh

Date Rec. : 16 April 2024
LR Report: CA30424-APR24

Copy: #1

30 Welsh St.
Seaforth, ON
N0K 1W0, Canada

Phone: 519-527-1004
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CERTIFICATE OF ANALYSIS

Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: Vanastra Sludge
Sample Date & Time					16-Apr-24 11:00
Temperature Upon Receipt [at London Lab °C]	—	—	—	—	7.4
Temperature Upon Receipt [at Lakefield Lab °C]	—	—	—	—	12.0
E. Coli [cfu/1g dried wgt]	17-Apr-24	16:35	19-Apr-24	12:08	971867
E.Coli [cfu/100mL]	17-Apr-24	16:35	19-Apr-24	12:08	3600000
Total Solids [mg/L]	18-Apr-24	21:36	22-Apr-24	10:15	39100
Total Suspended Solids [mg/L]	22-Apr-24	10:42	23-Apr-24	09:41	29300
Total Kjeldahl Nitrogen [as N mg/L]	18-Apr-24	15:43	23-Apr-24	12:46	1410
Ammonia+Ammonium (N) [as N mg/L]	19-Apr-24	19:02	21-Apr-24	21:54	184
Nitrite (as N) [mg/L]	18-Apr-24	14:06	19-Apr-24	20:17	< 3
Nitrate (as N) [mg/L]	18-Apr-24	14:06	19-Apr-24	20:17	< 3
Nitrate + Nitrite (as N) [mg/L]	18-Apr-24	14:06	19-Apr-24	20:17	< 3
Aluminum [mg/L]	24-Apr-24	15:51	25-Apr-24	16:50	2700
Arsenic [mg/L]	24-Apr-24	15:51	25-Apr-24	16:50	0.2
Cadmium [mg/L]	24-Apr-24	15:51	25-Apr-24	16:50	0.028
Calcium [mg/L]	24-Apr-24	15:51	25-Apr-24	16:50	1700
Cobalt [mg/L]	24-Apr-24	15:51	25-Apr-24	16:50	0.08
Chromium [mg/L]	24-Apr-24	15:51	25-Apr-24	16:50	0.78
Copper [mg/L]	24-Apr-24	15:51	25-Apr-24	16:50	14
Mercury [mg/L]	24-Apr-24	15:51	25-Apr-24	16:50	0.020
Potassium [mg/L]	24-Apr-24	15:51	25-Apr-24	16:50	60
Molybdenum [mg/L]	24-Apr-24	15:51	25-Apr-24	16:50	0.15
Nickel [mg/L]	24-Apr-24	15:51	25-Apr-24	16:50	0.60
Phosphorus (Total) [mg/L]	24-Apr-24	15:51	25-Apr-24	16:50	1000
Lead [mg/L]	24-Apr-24	15:51	25-Apr-24	16:50	0.9
Selenium [mg/L]	24-Apr-24	15:51	25-Apr-24	16:50	0.2
Zinc [mg/L]	24-Apr-24	15:51	25-Apr-24	16:50	25

Note: Metals and mercury were analyzed on the as-received sample.

Note: E.Coli analysis (cfu/100ml) was completed at the SGS Environmental Services - London Laboratory.

The E.coli value reported in CFU/1g dried weight was calculated using Total Solids and CFU/100ml.

SGS

SGS Canada Inc.
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - K0L 2H0
Phone: 705-652-2000 FAX: 705-652-6365

Project : PO#145004519

23-July-2024

O.M.I. Canada Inc. (Huron East - Vanastra Wastewater)
Attn : Cory Dulong

Date Rec. : 09 July 2024
LR Report: CA30264-JUL24

Copy: #1

30 Welsh St.
Seaforth, ON
N0K 1W0, Canada

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CERTIFICATE OF ANALYSIS

Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: Vanastra Sludge
Sample Date & Time					08-Jul-24 12:00
Temperature Upon Receipt [at London Lab °C]	—	—	—	—	8.3
Temperature Upon Receipt [at Lakefield Lab °C]	—	—	—	—	10.0
E. Coli [cfu/1g dried wgt]	10-Jul-24	11:35	11-Jul-24	12:30	323907
E.Coli [cfu/100mL]	10-Jul-24	11:35	11-Jul-24	12:30	1260000
Total Solids [mg/L]	11-Jul-24	20:04	15-Jul-24	10:10	38900
Total Suspended Solids [mg/L]	15-Jul-24	11:03	16-Jul-24	13:43	44700
Total Kjeldahl Nitrogen [as N mg/L]	11-Jul-24	14:44	15-Jul-24	11:37	1560
Ammonia+Ammonium (N) [as N mg/L]	11-Jul-24	19:16	12-Jul-24	11:40	375
Nitrite (as N) [mg/L]	12-Jul-24	06:57	15-Jul-24	20:14	< 3
Nitrate (as N) [mg/L]	12-Jul-24	06:57	15-Jul-24	20:14	< 3
Nitrate + Nitrite (as N) [mg/L]	12-Jul-24	06:57	15-Jul-24	20:14	< 3
Aluminum [mg/L]	22-Jul-24	11:35	23-Jul-24	12:55	2800
Arsenic [mg/L]	22-Jul-24	11:35	23-Jul-24	12:55	0.2
Cadmium [mg/L]	22-Jul-24	11:35	23-Jul-24	12:55	0.033
Calcium [mg/L]	22-Jul-24	11:35	23-Jul-24	12:55	1800
Cobalt [mg/L]	22-Jul-24	11:35	23-Jul-24	12:55	0.08
Chromium [mg/L]	22-Jul-24	11:35	23-Jul-24	12:55	0.77
Copper [mg/L]	22-Jul-24	11:35	23-Jul-24	12:55	15
Mercury [mg/L]	22-Jul-24	11:35	23-Jul-24	12:55	0.016
Potassium [mg/L]	22-Jul-24	11:35	23-Jul-24	12:55	72
Molybdenum [mg/L]	22-Jul-24	11:35	23-Jul-24	12:55	0.17
Nickel [mg/L]	22-Jul-24	11:35	23-Jul-24	12:55	0.64
Phosphorus (Total) [mg/L]	22-Jul-24	11:35	23-Jul-24	12:55	1200
Lead [mg/L]	22-Jul-24	11:35	23-Jul-24	12:55	0.9
Selenium [mg/L]	22-Jul-24	11:35	23-Jul-24	12:55	0.2
Zinc [mg/L]	22-Jul-24	11:35	23-Jul-24	12:55	28

Note: Metals and mercury were analyzed on the as-received sample.

Note: E.Coli analysis (cfu/100ml) was completed at the SGS Environmental Services - London Laboratory.

The E.coli value reported in CFU/1g dried weight was calculated using Total Solids and CFU/100ml.

SGS

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Project : PO#145004519

16-October-2024

O.M.I. Canada Inc. (Huron East - Vanastra Wastewater)
Attn : Cory Dulong

Date Rec. : 01 October 2024
LR Report: CA30066-OCT24

Copy: #1

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N0K 1W0, Canada

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CERTIFICATE OF ANALYSIS

Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: Vanastra Sludge
Sample Date & Time					01-Oct-24
Temperature Upon Receipt [at London Lab °C]	—	—	—	—	12.1
Temperature Upon Receipt [at Lakefield Lab °C]	—	—	—	—	10.0
Total Solids [mg/L]	03-Oct-24	21:18	07-Oct-24	09:32	40900
Total Suspended Solids [mg/L]	07-Oct-24	08:02	08-Oct-24	10:34	34800
Total Kjeldahl Nitrogen [as N mg/L]	07-Oct-24	13:08	10-Oct-24	09:58	1400
Ammonia+Ammonium (N) [as N mg/L]	04-Oct-24	08:14	07-Oct-24	13:29	80.9
Nitrite (as N) [mg/L]	05-Oct-24	07:51	08-Oct-24	16:06	< 3
Nitrate (as N) [mg/L]	05-Oct-24	07:51	08-Oct-24	16:06	< 3
Nitrate + Nitrite (as N) [mg/L]	05-Oct-24	07:51	08-Oct-24	16:06	< 3
Aluminum [mg/L]	15-Oct-24	13:33	16-Oct-24	10:37	200
Arsenic [mg/L]	15-Oct-24	13:33	16-Oct-24	10:37	0.1
Calcium [mg/L]	15-Oct-24	13:33	16-Oct-24	10:37	1200
Cadmium [mg/L]	15-Oct-24	13:33	16-Oct-24	10:37	0.030
Cobalt [mg/L]	15-Oct-24	13:33	16-Oct-24	10:37	0.07
Chromium [mg/L]	15-Oct-24	13:33	16-Oct-24	10:37	0.74
Copper [mg/L]	15-Oct-24	13:33	16-Oct-24	10:37	13
Mercury [mg/L]	15-Oct-24	13:33	16-Oct-24	10:37	0.015
Potassium [mg/L]	15-Oct-24	13:33	16-Oct-24	10:37	40
Molybdenum [mg/L]	15-Oct-24	13:33	16-Oct-24	10:37	0.25
Nickel [mg/L]	15-Oct-24	13:33	16-Oct-24	10:37	0.53
Phosphorus (Total) [mg/L]	15-Oct-24	13:33	16-Oct-24	10:37	290
Lead [mg/L]	15-Oct-24	13:33	16-Oct-24	10:37	0.8
Selenium [mg/L]	15-Oct-24	13:33	16-Oct-24	10:37	< 0.1
Zinc [mg/L]	15-Oct-24	13:33	16-Oct-24	10:37	28
E. Coli [cfu/1g dried wgt]	02-Oct-24	18:15	04-Oct-24	09:36	3276284
E.Coli [cfu/100mL]	02-Oct-24	18:15	04-Oct-24	09:36	13400000

Note: Metals and mercury were analyzed on the as-received sample.
The E.coli value reported in CFU/1g dried weight was calculated using Total Solids and CFU/100ml.
Note: E.Coli analysis was completed at the SGS London Laboratory.