

Bayshore Village Sewage Works

Annual Wastewater Performance Report

Prepared For: The Township of Ramara

Reporting Period of January 1st – December 31st, 2022

Issued: March 31, 2023

Revision: 1

Operating Authority:



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Background:

The Ontario Clean Water Agency (OCWA) operates and maintains the Bayshore Village Sewage Works behalf of the Township of Ramara. During the reporting period January 1st, 2022-December 31st, 2022 the Ontario Clean Water Agency was the operating authority.

The facility is a Class 1 Wastewater Treatment Plant.

The facility's average daily flow is 399m³/day. The average daily raw flow for the year 2022 was 250.62 m³/day.

The Bayshore Village Sewage Works complies with all requirements of the regulating authorities and operates under:

- Certificate of Approval (C of A) No. 3-1337-81-968 issued July 17, 1996

Certificate of Approval (C of A) No. 3-1337-81-968 issued July 17, 1996 Section 4(2) requires the Performance Report to contain the following:

- a) A summary of all monitoring data, including an overview of the success and adequacy of the sewage treatment program;*
- b) a tabulation of all monitoring and analytical results obtained during the reporting period, including sampling/monitoring location and date;*
- c) a record of the operation of the spray irrigation system, including dates and hours of operation, irrigation system, including dates and hours of operations, irrigation areas utilized, rates of effluent application, and volumes of effluent applied;*
- d) an account of any environmental and operating problems encountered at the site and the mitigative measures taken during the reporting period.*

Bayshore Sewage Works consists of two irrigation spray fields where the effluent from the lagoons is sprayed at a maximum rate of 55 m³/ha/day from May 18 to September 28 for each calendar year. The timeframe of the spray irrigation may be extended each year upon written request until October 28th. Relief was granted for Conditions 1.2 and 1.3 of the Certificate of Approval (C of A) No. 3-1337-81-968 for the 2022 spray irrigation season by the Ministry of the Environment Conservation and Parks as per the letter from the Environmental Permissions Branch sent on April 19, 2022. Within the relief, the spray season was extended until October 28, 2022. See Appendix I: EPB Letter for Bayshore Village Sewage Works.

This report will show that the Ontario Clean Water Agency has made every attempt to achieve its goals through its operational performance. This performance was enhanced through the use of an electronic process data collection database, an electronic maintenance and work order database, an electronic operational excellence database, a training program focused on providing the right skills to staff - also captured and tracked by the use of an electronic database and a multi-skilled, flexible workforce.

This report will show that the requirements of the facility C of A were consistently met including monitoring and recording requirements.

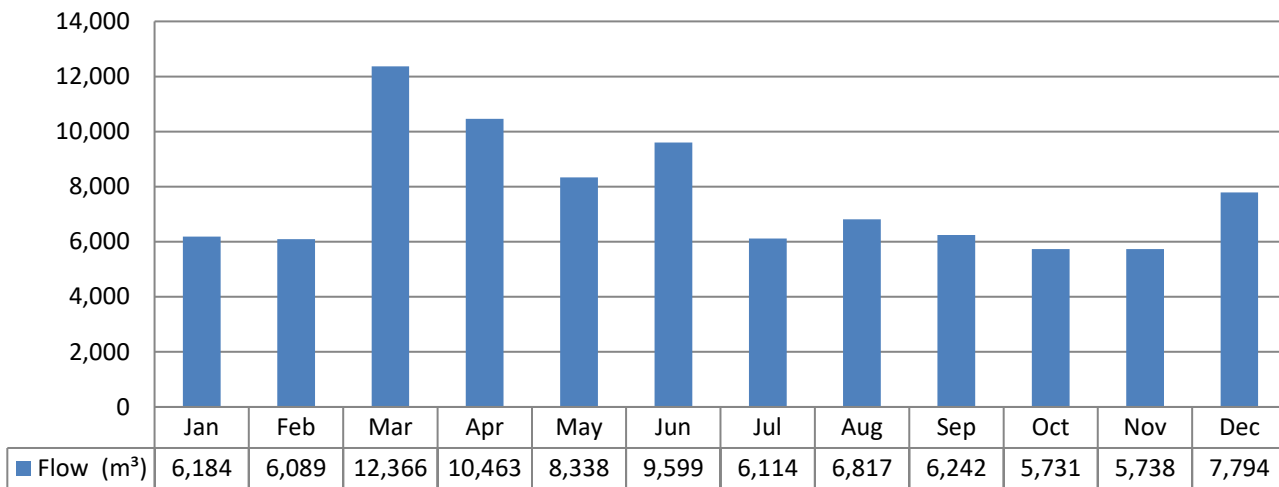
Summary of Influent Flow Data

Condition 1.1 of the (C of A) No. 3-1337-81-968 indicates "The Owner Shall ensure that the flow of sewage into the sewage treatment plant does not exceed the average daily flow of 399 m³/day for any part of time greater than one (1) calendar year." The annual average daily influent flow was 250.62 m³/day or 62.8 % of the rated capacity in 2022.

The total Influent flow in 2022 was 91,474.80 m³

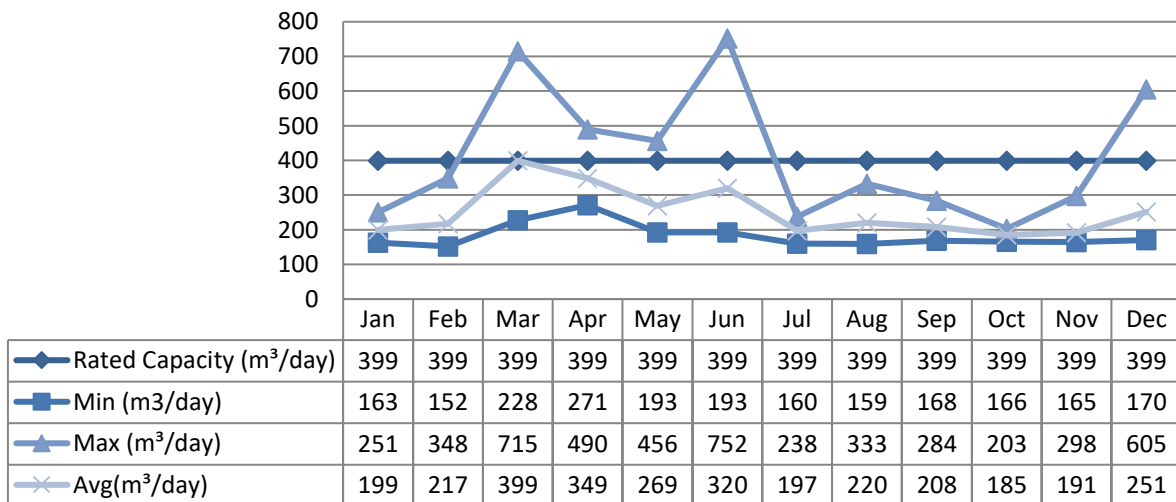
The extended spray season was part of the relief granted by the Ministry of the Environment Conservation and Parks. During the month of June, the weather conditions were consistently poor for spray irrigation to be carried out. Due to the factor mentioned above, the spray season was extended to bring down the level in the lagoons to accommodate the flows expected in the winter months.

Graph 1: 2022 Influent Flow Monthly Totals



Note: The above flows are calculated based upon manual flow meter readings and was averaged.

Graph 2: 2022 Influent Daily Minimum, Maximum and Average Flows



Note: Seasonally a significant fluctuation in flow trends shows higher sewage flows which indicates there is ongoing infiltration into the sewer systems. The Ontario Clean Water Agency has maintenance schedules/programs to inspect service laterals, new connections and manholes.

Bayshore Village Sewage Works Historical Flows

Historical sewage flows and sewage generation rates for Bayshore Village Sewage Works are summarized in Table 1.

Table 1: Historical Sewage Flows and Generation Rates

Year	Number of Connections	Average Daily Flow (m ³ /day)	Sewage Generation Rate (L/cap/day)
2012	318	259	313
2013	319	315	379
2014	319	334	402
2015	320	338	406
2016	322	358	428
2017	328	387	454
2018	335	365	419
2019	340	374	423
2020	342	401	451
2021	342	370	416
2022	342	251	282
3 Year Average		341	383

*Based on 2.6 people per dwelling

Note: This calculation was completed based on current connections in the system, growth within the collection system has not been considered.

System Reserve Capacity

In accordance with the MECP Procedure D-5-1, the hydraulic reserve capacity is calculated by the following formula:

Hydraulic Reserve Capacity= Design Flow- Committed Flow

The design flow is equal to the maximum permissible flow approved by the Certificate of Approval. (C of A) No. 3-1337-81-968 maximum permissible flow is: 399 m³/day. The committed flow is equal to the total expected flow by the existing and proposed connections based on the previous 3-year average daily flow.

The built-out service area of the Bayshore Village Sewage Works has a total of 382 units. The three-year (2020-2022) average sewage generation rate is: 383 L/cap/day. With the committed population of 993 there is a projection of 380 m³/day of sewage at full build out.

As a result, the reserve capacity at this system is 19 m³/day.

Effluent Spray Irrigation

Effluent spray irrigation was carried out between May 18 and October 28, 2022. Each day while utilizing the spray irrigation system logs were kept for: weather conditions, which field was being utilized and the volume of effluent that was applied each day.

During the spray irrigation season, approximately 14 ha from the South fields were utilized from May 18-June 22 and approximately 26 ha from the North and South fields were utilized over the remainder of the spray season 58 days for a total of 68 days. From May 18-June 22 the effluent volume of 7, 143 m³ was applied to the South fields (14 ha). From June 23-October 28 the effluent volume of 130, 182 m³ was applied to both the North and South fields (26 ha).

A total effluent volume of 137,325 m³ was applied to the spray fields. The average effluent application rate for the reporting period was:

- 51.02 m³/ha/day on the 14 ha utilized for 10 days
- 86.32 m³/ha/day on 26 ha utilized for 58 days*
- 77.67 m³/ha/day on 26 ha utilized for the total 68 days*

*These values exceed the Certificate of Approval limit of 55 m³/ha/day, although relief was given from Conditions 1.2 and 1.3 during the 2022 spray season. See Appendix I: EPB Letter for Bayshore Village Sewage Works.

The average effluent application rate has been calculated as per the definition in the (C of A) No. 3-1337-81-968: *“Average Effluent Application rate” means the total volume of effluent applied to a spray irrigation field during a particular spray irrigation season divided by the number of days within that season during which effluent was actually applied to that field.*

Granted relief from Conditions 1.2 and 1.3 in (C of A) No. 3-1337-81-968 until October 28, 2022 were subject to the following conditions:

- The relief is only applicable during the 2022 spray season;
- Spray can only occur when wind speeds are less than 15 km/hour;
- The Township shall submit a progress report to the MECP on or before January 9, 2023, updating the following:
 - Efforts made to reduce inflow and infiltrations in the collection system;
 - Monitoring records documenting enhanced spray practices (e.g. shorter periods of spraying and longer drying periods);
 - Efforts and plans undertaken by Council to develop a permanent long term solution needed to prevent future exceedances of the spray application rate.

The Township of Ramara sent the progress report with the above information to the MECP on January 9, 2023, see Appendix II: Progress Report from EPB Letter.

The operation of the spray irrigation system consists of the following seasonally:

- Seasonal spray irrigation piping and spray nozzles are installed and pressure tested prior to the beginning of the spray season.
- The spray irrigation fields are inspected daily along with weather conditions (i.e. no rain and wind velocity less than 15 km/hr) to determine if conditions are favourable for spray irrigation.
- If spray irrigation is favourable, the operator starts the effluent pump. The operator verifies the sprinkler heads are operational. If issues arise such as broken pipes, clogged sprinkler heads, surface ponding and aerosol drift, then the spray operation is modified, discontinued or repaired as required.
- Operations staff maintains daily logs during the spray irrigation operation.

Summary of Sampling Frequency

(C of A) No. 3-1337-81-968 Condition 2.1 (b) describes the requirement for sample collection at the following locations, frequencies and by means of the specified sample type and analyzed for each parameter listed and all results recorded:

Table 2: Minimum Raw Sewage Sampling Requirements

Influent Sampling Point		
Parameters	Sample Type	Frequency
BOD5	Grab	Monthly
Total Suspended Solids	Grab	Monthly
Total Phosphorus	Grab	Monthly
Total Kjeldahl Nitrogen	Grab	Monthly

Table 3: Minimum Lagoon Effluent Sampling Requirements

Influent Sampling Point		
Parameters	Sample Type	Frequency
BOD5	Grab	Annually
Total Suspended Solids	Grab	Annually
Total Phosphorus	Grab	Annually
Total Kjeldahl Nitrogen	Grab	Annually
(Ammonia + Ammonium) Nitrogen	Grab	Annually

Note: The annual sampling of the lagoons effluent shall take place at the beginning of each spray irrigation season.

Table 4: Minimum Surface Water Parameter Sampling Requirements

Final Effluent Sampling Point		
Parameters	Sample Type	Frequency
BOD5	Grab	3 per season
Total Suspended Solids	Grab	3 per season
Total Phosphorus	Grab	3 per season
Total Kjeldahl Nitrogen	Grab	3 per season
(Ammonia + Ammonium) Nitrogen	Grab	3 per season
Nitrates	Grab	3 per season
Nitrites	Grab	3 per season
pH	Grab	3 per season
Temperature	Grab	3 per season

Note: The surface water sampling shall take place prior to, in the middle, and after each spray irrigation season, provided that there is flow in the stream.

Table 5: Minimum Soil Parameter Sampling Requirements

Final Effluent Sampling Point		
Parameters	Sample Type	Frequency
Total Organic Carbon	Core	Annually
Total Phosphorus	Core	Annually
Total Kjeldahl Nitrogen	Core	Annually
(Ammonia + Ammonium) Nitrogen	Core	Annually
Nitrite and Nitrate Nitrogen	Core	Annually
Chlorides	Core	Annually
Sodium	Core	Annually
Conductivity	Core	Annually
pH	Core	Annually

Note: The annual soil sampling shall take place prior to each spray irrigation season.

Sewage and Effluent Quality

Raw Sewage Characteristics

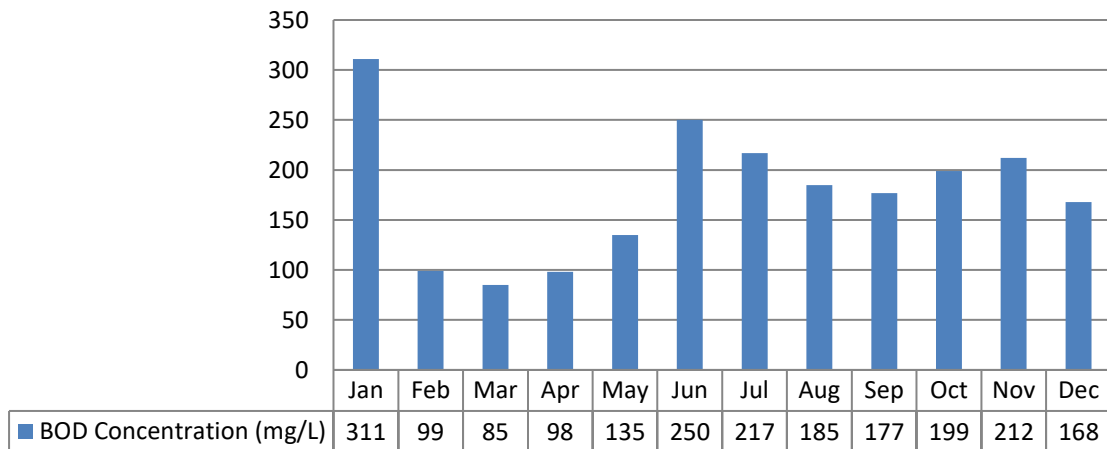
Detailed below are raw sewage characteristics for the 2022 reporting period.

A summary of the 2022 Raw Sewage monitoring data is contained in Appendix III of this report.

Biochemical Oxygen Demand (BOD5)

BOD5 Monthly Average Concentration

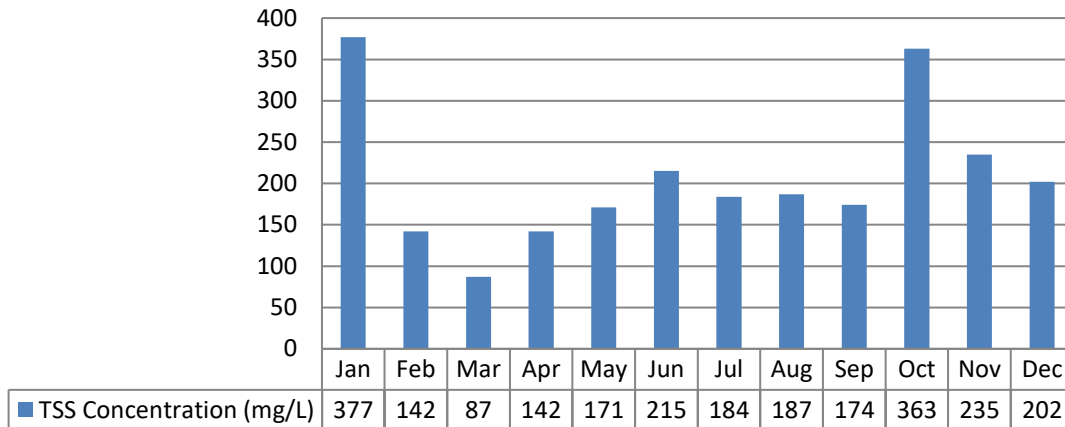
Graph 3: 2022 Monthly BOD5 Raw Sewage Concentration



Total Suspended Solids (TSS)

Total Suspended Solids Monthly Average Concentration

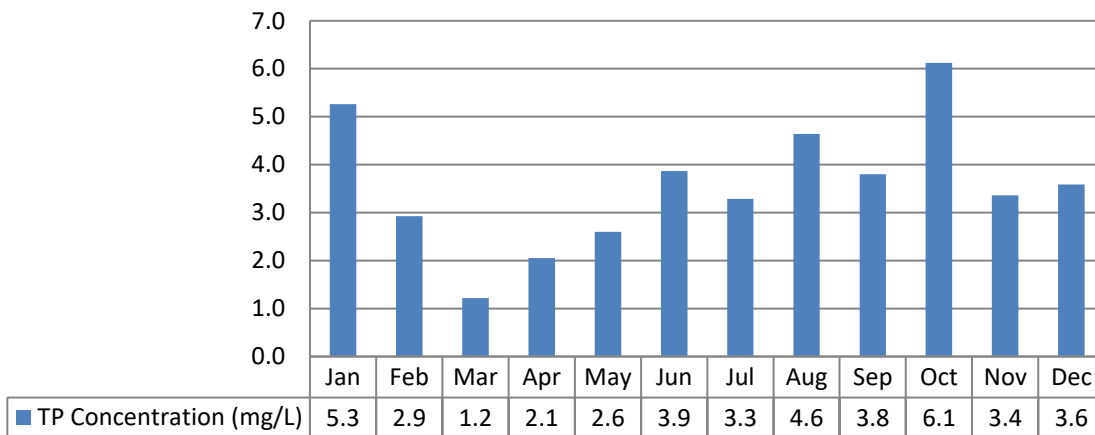
Graph 4: 2022 Monthly TSS Raw Sewage Concentration



Total Phosphorus (TP)

Total Phosphorus Monthly Average Concentration

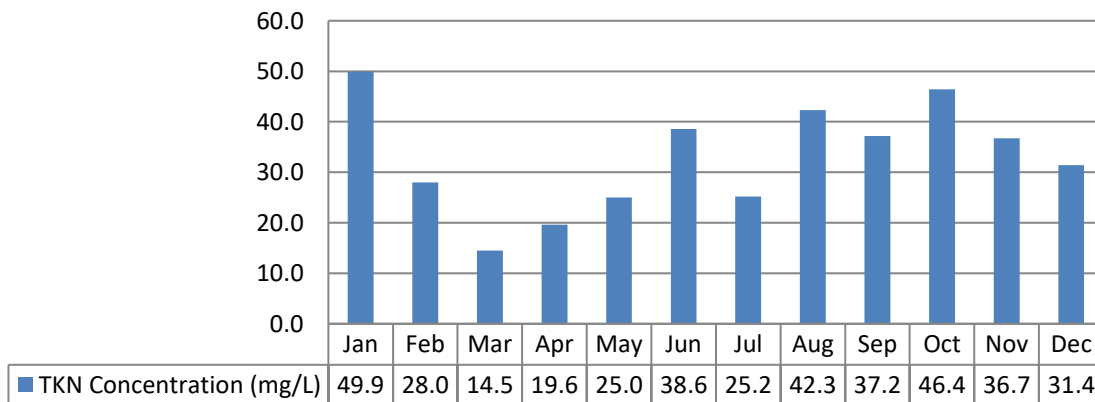
Graph 5: 2022 Monthly Total Phosphorus Raw Sewage Concentration



Total Kjeldahl Nitrogen TKN (mg/L)

Total Kjeldahl Nitrogen (TKN) Monthly Raw Average Concentration

Graph 6: 2022 Monthly Total Kjeldahl Nitrogen (TKN) Monthly Raw Sewage Concentration Comparison



Effluent Quality

Grab samples were collected from each lagoon prior to the start of the spray irrigation season on May 03, 2022. The samples were collected as per the Certificate of Approval No. 3-1337-81-968 Condition 2.1 (b). The laboratory results are summarized in Table 6.

There are no effluent limits or objectives in the Certificate of Approval.

Table 6: Lagoon Content Characteristics

Parameter	May		
	<i>Large Lagoon (Cell A- West Location)</i>	<i>Large Lagoon (Cell A- Dock Location)</i>	<i>Small Lagoon (Cell B)</i>
BOD5 (mg/L)	10	6	17
Total Suspended Solids (mg/L)	7	7	30
Total Phosphorus (mg/L)	0.60	0.62	2.87
TKN (mg/L)	4.1	4.2	21.7
TAN (mg/L)	2.5	2.4	19.3

Effluent Spray Irrigation

Groundwater Monitoring

Groundwater samples were collected in May, August and November for groundwater monitoring in six boreholes in and around the North and South spray irrigation fields. The results for the ground water monitoring samples are summarized below in Tables 7-12. The results were compared with the Ontario Drinking Water Standards, Objectives and Guidelines (ODWS). Chloride concentrations ranged from 12 mg/L to 190 mg/L, which is slightly higher compared to levels measured in 2021. Nitrate levels were low, comparable to samples collected in 2021. Most other parameters measured (nitrogen, TKN and TAN) were undetectable. The results received indicate the low impact the spray irrigation fields are having on the groundwater.

Table 7: Groundwater Monitoring - 1-1 (East South Field)

Parameter	Location	03-May	16-Aug	08-Nov
Diss. Organic Carbon (mg/L)	1-1 (East South Field)	2	2	2
Nitrite (mg/L)	1-1 (East South Field)	<0.03	<0.03	<0.03
Nitrate (mg/L)	1-1 (East South Field)	<0.06	<0.06	<0.06
Chloride (mg/L)	1-1 (East South Field)	160	150	94
TKN (mg/L)	1-1 (East South Field)	<0.5	0.8	<0.5
TAN (mg/L)	1-1 (East South Field)	<0.1	<0.1	<0.1
Total Phosphorus (mg/L)	1-1 (East South Field)	<0.03	<0.03	<0.03

Table 8: Groundwater Monitoring - 1-3 (South Field)

Parameter	Location	03-May	16-Aug	08-Nov
Diss. Organic Carbon (mg/L)	1-3 (South Field)	2	12	6
Nitrite (mg/L)	1-3 (South Field)	<0.03	<0.03	<0.03
Nitrate (mg/L)	1-3 (South Field)	<0.06	<0.06	<0.06
Chloride (mg/L)	1-3 (South Field)	130	190	160
TKN (mg/L)	1-3 (South Field)	<0.5	1.4	<0.5
TAN (mg/L)	1-3 (South Field)	<0.1	<0.1	0.2
Total Phosphorus (mg/L)	1-3 (South Field)	0.15	0.22	0.23

Table 9: Groundwater Monitoring - 1-4 (North Field)

Parameter	Location	03-May	16-Aug	08-Nov
Diss. Organic Carbon (mg/L)	1-4 (North Field)	2	2	2
Nitrite (mg/L)	1-4 (North Field)	<0.03	<0.03	<0.03
Nitrate (mg/L)	1-4 (North Field)	<0.06	<0.06	<0.06
Chloride (mg/L)	1-4 (North Field)	35	38	50
TKN (mg/L)	1-4 (North Field)	<0.5	0.7	<0.5
TAN (mg/L)	1-4 (North Field)	<0.1	<0.1	<0.1
Total Phosphorus (mg/L)	1-4 (North Field)	<0.03	0.05	<0.03

Table 10: Groundwater Monitoring - 1-5 (North Field)

Parameter	Location	03-May	16-Aug	08-Nov
Diss. Organic Carbon (mg/L)	1-5 (North Field)	2	2	2
Nitrite (mg/L)	1-5 (North Field)	<0.03	<0.03	<0.03
Nitrate (mg/L)	1-5 (North Field)	<0.06	0.67	<0.06
Chloride (mg/L)	1-5 (North Field)	13	12	14
TKN (mg/L)	1-5 (North Field)	<0.05	0.6	<0.5
TAN (mg/L)	1-5 (North Field)	<0.1	<0.1	<0.1
Total Phosphorus (mg/L)	1-5 (North Field)	<0.03	0.05	<0.03

Table 11: Groundwater Monitoring - 1-7 (North Field)

Parameter	Location	03-May	16-Aug	08-Nov
Diss. Organic Carbon (mg/L)	1-7 (North Field)	8	9	16
Nitrite (mg/L)	1-7 (North Field)	0.06	<0.03	0.1
Nitrate (mg/L)	1-7 (North Field)	0.36	<0.06	0.55
Chloride (mg/L)	1-7 (North Field)	81	84	72
TKN (mg/L)	1-7 (North Field)	2.3	3.6	2.8
TAN (mg/L)	1-7 (North Field)	2.1	2.9	2.3
Total Phosphorus (mg/L)	1-7 (North Field)	0.27	0.44	0.93

Table 12: Groundwater Monitoring - 1-1 (West North Field)

Parameter	Location	03-May	16-Aug	08-Nov
Diss. Organic Carbon (mg/L)	1-1 (West North Field)	2	2	2
Nitrite (mg/L)	1-1 (West North Field)	<0.03	<0.03	<0.03
Nitrate (mg/L)	1-1 (West North Field)	0.06	<0.06	<0.06
Chloride (mg/L)	1-1 (West North Field)	41	64	54
TKN (mg/L)	1-1 (West North Field)	<0.5	0.5	<0.5
TAN (mg/L)	1-1 (West North Field)	<0.1	<0.1	<0.1
Total Phosphorus (mg/L)	1-1 (West North Field)	<0.03	0.05	0.06

Surface Water Monitoring

The surface water monitoring takes place at Wainman Creek, upstream and downstream of the spray fields. Samples were taken in May, August and November of 2022. All samples were taken as per (C of A) No. 3-1337-81-968 Condition 2.1 (b).

The sample results from Wainman’s Creek are shown in Tables 13 and 14. The upstream and downstream sample location results in 2022 show water quality is consistent, signifying little to no impact from the spray irrigation process.

Table 13: Surface Water Monitoring- Wainman’s Creek (Upstream)

Parameter	Location	May 03 & May 04	August 16	November 08
BOD5 (mg/L)	Wainman’s Creek (Upstream)	<4	<4	<4
Total Suspended Solids (mg/L)	Wainman’s Creek (Upstream)	3	3	13
pH	Wainman’s Creek (Upstream)	7.89	8.24	7.75
Temperature (°C)	Wainman’s Creek (Upstream)	19.3	15.0	9.0
Total Kjeldahl Nitrogen (as N mg/L)	Wainman’s Creek (Upstream)	0.6	0.8	1.0
Ammonia+Ammonium (N) (as N mg/L)	Wainman’s Creek (Upstream)	<0.1	<0.1	0.2
Nitrite (mg/L)	Wainman’s Creek (Upstream)	<0.03	<0.03	<0.3
Nitrate (mg/L)	Wainman’s Creek (Upstream)	0.78	0.11	0.65
Nitrite + Nitrate (mg/L)	Wainman’s Creek (Upstream)	0.78	0.11	0.65
Phosphorus (total) (mg/L)	Wainman’s Creek (Upstream)	0.023	0.056	0.038
E.coli (cfu/100mL)	Wainman’s Creek (Upstream)	104	60	42
Total Coliforms (cfu/100mL)	Wainman’s Creek (Upstream)	3600	520	1600

Table 14: Surface Water Monitoring- Wainman's Creek (Downstream)

Parameter	Location	May 03 & May 04	August 16	November 08
BOD5 (mg/L)	Wainman's Creek (Downstream)	<4	<4	<4
Total Suspended Solids (mg/L)	Wainman's Creek (Downstream)	5	5	9
pH	Wainman's Creek (Downstream)	7.89	8.36	7.71
Temperature (°C)	Wainman's Creek (Downstream)	19.2	15	9.0
Total Kjeldahl Nitrogen (as N mg/L)	Wainman's Creek (Downstream)	0.7	1.2	1.0
Ammonia+Ammonium (N) (as N mg/L)	Wainman's Creek (Downstream)	<0.1	0.1	0.1
Nitrite (mg/L)	Wainman's Creek (Downstream)	<0.03	<0.03	<0.03
Nitrate (mg/L)	Wainman's Creek (Downstream)	0.07	0.07	0.66
Nitrite + Nitrate (mg/L)	Wainman's Creek (Downstream)	0.07	0.07	0.66
Phosphorus (total) (mg/L)	Wainman's Creek (Downstream)	0.047	0.333	0.041
E.coli (cfu/100mL)	Wainman's Creek (Downstream)	104	22	40
Total Coliforms (cfu/100mL)	Wainman's Creek (Downstream)	2400	1860	2300

Soil Core Monitoring

The soil core monitoring samples are taken in the North and South spray fields. All samples were taken as per (C of A) No. 3-1337-81-968 Condition 2.1 (b) during the 2022 reporting period.

Table 15: Soil Core Monitoring- North Field Upper

Parameter	Location	May 03
pH	North Field Upper	6.50
Conductivity (µS/cm)	North Field Upper	103
Chloride (µg/g)	North Field Upper	33
Nitrate + Nitrite as N (µg/g)	North Field Upper	<2
TKN (µg/g)	North Field Upper	0.14
TAN (µg/g)	North Field Upper	<0.01
Total Organic Carbon (µg/g)	North Field Upper	2.6
Phosphorus (µg/g)	North Field Upper	600
Sodium (µg/g)	North Field Upper	500

Table 16: Soil Core Monitoring-- North Field Lower

Parameter	Location	May 03
pH	North Field Lower	7.05
Conductivity ($\mu\text{S}/\text{cm}$)	North Field Lower	208
Chloride ($\mu\text{g}/\text{g}$)	North Field Lower	4.6
Nitrate + Nitrite as N ($\mu\text{g}/\text{g}$)	North Field Lower	3.8
TKN ($\mu\text{g}/\text{g}$)	North Field Lower	0.24
TAN ($\mu\text{g}/\text{g}$)	North Field Lower	<0.01
Total Organic Carbon ($\mu\text{g}/\text{g}$)	North Field Lower	2.2
Phosphorus ($\mu\text{g}/\text{g}$)	North Field Lower	840
Sodium ($\mu\text{g}/\text{g}$)	North Field Lower	590

Table 17: Soil Core Monitoring- South Field

Parameter	Location	May 03
pH	South Field	6.69
Conductivity ($\mu\text{S}/\text{cm}$)	South Field	114
Chloride ($\mu\text{g}/\text{g}$)	South Field	7.4
Nitrate + Nitrite as N ($\mu\text{g}/\text{g}$)	South Field	6.3
TKN ($\mu\text{g}/\text{g}$)	South Field	0.38
TAN ($\mu\text{g}/\text{g}$)	South Field	<0.01
Total Organic Carbon ($\mu\text{g}/\text{g}$)	South Field	5.9
Phosphorus ($\mu\text{g}/\text{g}$)	South Field	1300
Sodium ($\mu\text{g}/\text{g}$)	South Field	190

Description of Operating Problems

The following details describe all operating problems encountered during the reporting period and the corrective actions taken:

Table 18: Bayshore Village Sewer Works Operational Challenges

Month	Challenges	Corrective Actions
February	Loss of communication at the Lagoons.	Phone line provider and alarm company contacted to repair lines to restore communication.
April/May	Issues with miltronics sensor at the West Pumping Station.	Object was stuck on miltronics, causing false readings. Object removed, miltronics reading correctly.
May	Crane availability challenging for installing equipment for beginning of spray season.	Crane booked later in the May 2022.
June	Weather was not ideal during spray irrigation season, ongoing challenge.	Monitor weather, utilize good weather conditions days. Relief for longer spray irrigation season.
October	Flow meter failed at Lagoons. Flows estimated during this time.	Parts ordered, flow meter replaced in January 2023.
December	Loss of communication at the Lagoons.	Phone line provider contacted to repair line. Line repaired, communication restored.

Summary of Maintenance

Routine maintenance and operation of the Bayshore Village Sewer Works and Sewage Pumping Stations in 2022 consisted of the following:

- Attended Hydro failures
- Collected samples as per the C of A
- Installed seasonal piping
- Effluent pump at the lagoons due for capital refurbishment
- Berm installed in the spring
- inflow & infiltration investigations
- East pumping station cleaned
- Exercised generator
- Monitored levels in lagoons
- Monitored weather conditions
- Performed routine maintenance and repair of pumps

Summary of Effluent Quality Assurance or Control Measures Undertaken

All final effluent samples collected during the reporting period to meet C of A sampling requirements were submitted to SGS Lakefield Research Ltd. laboratory for analysis. SGS Lakefield Research has been deemed accredited by the Canadian Association for Laboratory Accreditation (CALA), meeting strict provincial guidelines including an extensive quality assurance/quality control program. By choosing this laboratory, the Ontario Clean Water Agency is ensuring appropriate control measures are undertaken during sample analysis.

Effluent quality assurance is maintained in several ways. Laboratory samples are sent to an accredited laboratory (SGS Canada Inc. - Lakefield) for analysis of all effluent parameters. Sampling calendars issued to the operator which denote frequency of sampling. Calendars are used as a tracking mechanism throughout the month to ensure all required samples are collected. These calendars are submitted to the Process Compliance Technician at the end of each month for review. Raw and effluent samples are collected as per the Amended C of A and the results are reviewed on a regular basis to ensure compliance.

Work orders illustrating all scheduled and preventative maintenance to be completed are issued to the operator and/or mechanic. OCWA conducts internal audits of the facility and develops Action Plans to ensure deficiencies are identified.

Summary of Calibration and Maintenance

Calibrations on effluent monitoring equipment were performed by Flowmetrix Technical Services Inc. on June 09, 2022 for equipment located at the Bayshore Village Sewage Works. Please see Appendix IV: Calibration Reports.

Table 19: Calibration and Maintenance Dates on the Influent/Effluent Monitoring Equipment

Table 19: Bayshore Village Sewer Works – Summary of Raw and Final Effluent Monitoring Equipment – 2022	
Influent Monitoring Equipment	Date of Completion
Influent Flow Meter	June 09, 2022
Final Effluent Monitoring Equipment	Date of completion
Final Effluent Spray Fields Flow Meter	June 09, 2022

Sludge Accumulation

Sludge measurements were completed on the small and large lagoons through a biosolids volume modeling and distribution survey in April 2022. The average depth of biosolids sludge throughout the Ramara biosolids Cell #1 in April 2022 was approximately 6.2 inches. The average depth of biosolids sludge throughout the Ramara biosolids Cell #2 in April 2022 was approximately 5.9 inches. A few locations within the Cells were a bit higher, there was no recommendation for required cleaning during the time of this survey.

Community Complaints

Table 20: Community Complaints Summary

Date	Issue	Actions Taken
November 16, 2022	Sewage Ponding on Property	Resident lives beside the spray fields, which the resident stated doesn't work and hasn't worked for 30 years. The resident's father sold part of their property for the spray fields. It floods onto their property. It used to flood worse but has been diverted. The complaint was recorded as per the resident's request.

Summary of Bypass, Spills or Abnormal Discharge Events

During the 2022 reporting period there was no Bypasses, spills and abnormal discharge events.

Appendix I

EPB Letter for Bayshore Village Sewage Works

**Ministry of the Environment,
Conservation and Parks**

**Ministère de l'Environnement,
de la Protection de la nature
et des Parcs**

Environmental Permissions
Branch

Direction des permissions
environnementales

1st Floor
135 St. Clair Avenue W
Toronto ON M4V 1P5
Tel.: 416 314-8001
Fax.: 416 314-8452

Rez-de-chaussée
135, avenue St. Clair Ouest
Toronto ON M4V 1P5
Tél. : 416 314-8001
Télééc. : 416 314-8452

April 19, 2022

Township of Ramara
2297 Highway 12
PO Box 130
Brechin, Ontario
L0K 1B0

Dear Mr Kavanagh,

RE: Bayshore Village Sewage Works – Township of Ramara C of A #3-1337-81-968

We are in receipt of your request for relief from Conditions 1.2 and 1.3 of the above-mentioned Certificate of Approval dated July 17, 1996. The conditions limit the application spray rate to 55 m³/ha/day during frost free period ending September 28th, at wind speeds of less than 15 km/hour.

We are granted relief from Conditions 1.2 and 1.3 until October 28th subject to the following conditions:

- 1) The relief is only applicable during the 2022 spray season;
- 2) Spraying can only occur when wind speeds are less than 15 km/hour.
- 3) The Township shall submit a progress report to the MECP on or before January 9, 2023, updating the following;
 - Efforts made to reduce inflow and infiltrations in the collection system;
 - Monitoring records documenting enhanced spray practices (e.g. shorter periods of spraying and longer drying periods);
 - Efforts and plans undertaken by Council to develop a permanent long term solution needed to prevent future exceedances of the spray application rate.

We trust this relief will be sufficient for your purposes.

Sincerely,

A handwritten signature in black ink that reads "A. Ahmed". The signature is written in a cursive style and is underlined with a single horizontal line.

Aziz Ahmed, P.Eng.

Director, appointed for the purposes of Part II.1 of the EPA

cc: Sheri Broeckel , DWECD – Barrie District Office

Appendix II

Progress Report from EPB Letter



2297 Highway 12,
PO Box 130
Brechin, Ontario L0K 1B0
p.705-484-5374
f. 705-484-0441

January 9, 2023

Aziz Ahmed, P. Eng.
Director
Part V, Safe Drinking Water Act, 2002
Ministry of the Environment, Conservation and Parks
1st Floor, 135 St. Clair Avenue W
Toronto ON M4V 1P5

RE: Bayshore Village Sewage Works – Township of Ramara C of A #3-1337-81-968

In response to your letter dated April 19, 2022 which grants relief from Conditions 1.2 and 1.3 of the above-mentioned Certificate of Approval, we are hereby submitting a progress report, as required, to update the MECP on the following:

- Efforts made to reduce inflow and infiltration in the collection system;
- Monitoring records documenting enhanced spray practices (e.g. shorter periods of spraying and longer drying periods);
- Efforts and plans undertaken by Council to develop a permanent long term solution needed to prevent future exceedances of the spray application rate.

The Township of Ramara retained the Ontario Clean Water Agency to develop and implement a program to reduce inflow and infiltration in the Bayshore Village sewage collection system. Council approved the Reduction Program in March. Prior to spring melt, a weather station and permanent flow meter was purchased and installed. CCTV inspections, property inspections and maintenance hole inspections were completed between May and September. Analysis of data and recommendations for repairs and rehabilitation needs is expected by March, 2023. There is an approved budget for I&I work and investigations to continue in 2023.

Effluent spray irrigation was carried out between May 18 and October 28, 2022. The Ontario Clean Water Agency has made every attempt to achieve compliance through its operational performance. Logs were kept for weather conditions, which field was being utilized and the volume of effluent that was applied each day. Enhanced practices for the 2022 season included spraying 7 days a week, when weather permitted. A major limiting factor during the 2022 spray season was wind velocity. A complete 2022 Performance Report will be submitted to the MECP by March 31.

The Township of Ramara initiated a Class Environmental Assessment in 2010 to consider expansion of the spray field operation. Following consultation with the public, the project evolved and more alternatives were added. The Township published a Notice of Completion of

the EA Study in 2017, however it was not accepted by the MECP as further work is needed in order for the study to be considered complete. Township Council has approved \$120,000 in the 2023 budget to update the 2017 EA report including required studies before we can implement a permanent solution. The Township has also obtained an appraisal for lands that could be used as spray fields and conversation around purchasing the land has begun with the property owner (this is discussed in Closed Council meetings in accordance with the Municipal Act). Council has made a commitment to making a decision on a permanent solution this year, with implementation beginning in 2024.

We trust this information is satisfactory, but we are more than happy to provide additional information to satisfy your needs. We thank you for your continued support with this project and we look forward to completing required work in 2023 to finish the EA process in order to implement a permanent long term solution to our effluent disposal needs in Bayshore Village.

Yours truly
Township of Ramara



Josh Kavanagh
Director of Infrastructure

cc: Sheri Broeckel, DWECD – Barrie District Office
Zach Drinkwalter, CAO – Township of Ramara
Nick Leroux, Senior Operations Manager, OCWA Kawartha Lakes West Cluster

Appendix III

Performance Assessment Report

1616 BAYSHORE VILLAGE LAGOONS 120002264

	1 / 2022	2 / 2022	3 / 2022	4 / 2022	5 / 2022	6 / 2022	7 / 2022	8 / 2022	9 / 2022	10 / 2022	11 / 2022	12 / 2022	Total	Avg	Max
Flows															
Raw Flow: Total - Raw Sewage m ³ /d	6,183.90	6,088.90	12,365.70	10,463.10	8,338.20	9,598.70	6,114.30	6,817.30	6,241.90	5,730.90	5,738.30	7,793.60	91,474.80		
Raw Flow: Avg - Raw Sewage m ³ /d	199.48	217.46	398.89	348.77	268.97	319.96	197.24	219.91	208.06	184.87	191.28	251.41		250.62	
Raw Flow: Max - Raw Sewage m ³ /d	250.90	348.00	714.90	489.50	456.00	752.00	237.50	333.00	284.00	202.70	298.00	605.30			752.00
Raw Flow: Count - Raw Sewage m ³ /d	31.00	28.00	31.00	30.00	31.00	30.00	31.00	31.00	30.00	31.00	30.00	31.00	365.00		
Eff. Flow: Total - Final Effluent m ³ /d	0.00	0.00	0.00	0.00	5,103.00	8,863.00	27,288.00	28,275.00	40,169.00	27,627.00	0.00	0.00	137,325.00		
Eff. Flow: Avg - Final Effluent m ³ /d	0.00	0.00	0.00	0.00	850.50	1,107.88	1,819.20	2,175.00	2,869.21	2,302.25	0.00	0.00		1,009.74	
Eff. Flow: Max - Final Effluent m ³ /d	0.00	0.00	0.00	0.00	1,436.00	2,587.00	3,034.00	3,321.00	4,039.00	3,112.00	0.00	0.00			4,039.00
Biochemical Oxygen Demand: BOD5															
Raw: Avg BOD5 - Raw Sewage mg/L	311.00	99.00	85.00	98.00	135.00	250.00	217.00	185.00	177.00	199.00	212.00	168.00		178.00	311.00
Raw: # of samples of BOD5 - Raw Sewage	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	12.00		
Total Suspended Solids: TSS															
Raw: Avg TSS - Raw Sewage mg/L	377.00	142.00	87.00	142.00	171.00	215.00	184.00	187.00	174.00	363.00	235.00	202.00		206.58	377.00
Raw: # of samples of TSS - Raw Sewage	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	12.00		
Total Phosphorus: TP															
Raw: Avg TP - Raw Sewage mg/L	5.26	2.93	1.22	2.05	2.60	3.87	3.29	4.64	3.80	6.12	3.36	3.59		3.56	6.12
Raw: # of samples of TP - Raw Sewage	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	12.00		
Nitrogen Series															
Raw: Avg TKN - Raw Sewage mg/L	49.90	28.00	14.50	19.60	25.00	38.60	25.20	42.30	37.20	46.40	36.70	31.40		32.90	49.90
Raw: # of samples of TKN - Raw Sewage	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	12.00		

Appendix IV

Calibration Reports

ABB MEASUREMENT & ANALYTICS | TEST REPORT

ABB Ability

Verification for measurement devices



Verification Report for:
WaterMaster

Measurement made easy

—
Measurement & Analytics
Service

Installation Details

Meter Owner	Ramara
Machine Name	Bayshore Village PS Flow
Medium	

Operator Details

Date and Time	09-06-2022 09:46:19
Operator's Name	Admin
Operator's Signature	

Customer Details

Site Address
Telephone
Email

Sensor Information

Sensor Serial No.	1
Sensor SAP/ERP No.	3K620000157278
Sensor Type	WM Full Bore
Sensor Size	DN 150
Q3	166.685 l/s
Calibration Accuracy	OIML Class 2
Sensor Calibration Factors	136.200 %, 0.000 mm/s
Date of Manufacture	12:12:57 2014/06/26
Sensor User Span/Zero	100.000 %; 0.000 mm/s
User Flow Cutoff/Hysteresis	1.000 %; 20.000 %
Coil Current	180.000 mA
Coil Inductance	157.599 mH
Coil / Loop Resistance	35.456 Ohm

Summary Verification of the Sensor

Summary of Results

Coil Group	PASS
Electrode Group	PASS
Sensor Group	PASS
Transmitter Signal	PASS
Transmitter Driver	PASS
Configuration	PASS

Sensor Data

Coil Inductance Shift	-0.194 %
Cable Length	0 m
Electrode Backoff Voltage	0.085 V
Electrode Differential Voltage	-0.014 V

Pipe Status Full Pipe

Transmitter Information

Transmitter Serial No	47810
Transmitter SAP/ERP No.	3K620000157278
Application Version	V01.05.00 12/07/12
MSP Version	00.00.04
Date of Manufacture	03:52:15 2014/02/08
Tx Gain Adjustment	0.113 %
OIML Accuracy Alarms	OFF
Mains Freq	60.000 Hz
Qmax	166.685 l/s
Pulses/Unit	30.000
FS Freq	5.001 Hz
Pulses Limit Freq	1200.000 Hz
Meter Mode	Forward And Reverse

Summary Verification of the Transmitter

Output Group

Current Output 31/32 PASS

Applied	Measured	Result
4 mA	4.000 mA	PASS
12 mA	12.000 mA	PASS
20 mA	20.000 mA	PASS

Pulse Output 41/42 NOT EXECUTED

Applied	Measured	Result
5250 Hz		
2625 Hz		

Pulse Output 51/52 NOT EXECUTED

Applied	Measured	Result
5250 Hz		
2625 Hz		

Totalizer Information

	Start	End	Difference
Forward	1032096.592 m ³	1032096.592 m ³	0.000 m ³
Reverse	13298.020 m ³	13298.020 m ³	0.000 m ³
Net	1018804.895 m ³	1018804.895 m ³	0.000 m ³



AS FOUND CERTIFICATION

PASS

CLIENT DETAIL

CUSTOMER OCWA – Kawartha Lakes Hub
CONTACT Nick Leroux
 Senior Operations Manager
 123 East St S
 Bobcaygeon ON, K0M 1A0
 P: 705-623-7278
 E: nleroux@ocwa.com

[MUT] MANUFACTURER
MODEL
CONVERTER SERIAL NUMBER

EQUIPMENT DETAIL
 Greyline
 DFM-IV
 23437

PLANT ID Bayshore Village
METER ID Bayshore Spray Fields
FIT ID NA
CLIENT TAG NA
OTHER NA
GPS COORDINATES N 44°33.467 W 079°12.436

VER. BY - FM Travis Krayetski

Quality Management Standards Information -
 Reference equipment and instrumentation used to
 conduct this verification test is found in our AC-

VERIFICATION DATE June 9th 2022
CAL. FREQUENCY Annual
CAL. DUE DATE June 2023

Chart Recorder/Data Recorder Details

Manufacturer	Greyline	Comparative Readings Check	[Y/N]	y							
Model	DFM-IV	Display Readings Check	[Y/N]	y							
Converter S/N:	23437	Chart Readings Check	[Y/N]	y							
Channel Number used [Y or N]	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="text-align: center;">1</td> <td style="text-align: center;">2</td> <td style="text-align: center;">3</td> <td style="text-align: center;">4</td> </tr> <tr> <td style="text-align: center;">y</td> <td style="text-align: center;">n</td> <td style="text-align: center;">n</td> <td style="text-align: center;">n</td> </tr> </table>	1	2	3	4	y	n	n	n		
1	2	3	4								
y	n	n	n								

CHANNEL INFORMATION

CHANNEL INFORMATION	CHANNEL 1
Meter Input	Raw Flow
Engineering Parameter	M3/Day
Display Max. Range	19240.00
Chart Max. Range	19240.00

COMPARATIVE READINGS

COMPARATIVE READINGS	CHANNEL 1
Meter Input Reading	0.00
Chart/ Recorder Display Reading	0.00
Difference Reading	0.00
PASS/FAIL	PASS

DISPLAY READINGS			CHANNEL 1			mA OUTPUT READINGS			CHANNEL 1		
Test No.	% Max. Range		Calc.	Actual	% Error	Test No.	% Max. Range		Calc.	Actual	% Error
1	0%		0	0	n/a	1	0%		4.000	4.000	n/a
2	25%		4810.00	4810.00	0.00	2	25%		8.000	7.998	-0.02
3	50%		9620.00	9620.00	0.00	3	50%		12.000	11.997	-0.03
4	75%		14430.00	14430.00	0.00	4	75%		16.000	15.998	-0.01
5	100%		19240.00	19240.00	0.00	5	100%		20.000	19.998	-0.01
Average % Error						Average % Error					
PASS/FAIL						PASS/FAIL					

This verification sheet either identifies exact 0 - 100% signal input comparison or a comparative review between a calibrated field instrument [i.e. flow meter] readings and the chart recorder/data recorder readings.