Manitouwadge Public Works
Presents:

Wastewater Collection System Class II

And

Wastewater Treatment Plant Class I

2013

ANNUAL REPORT

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Township of Manitouwadge
Public Works Department
Wastewater Collection System Class II
And
Wastewater Treatment Plant Class I

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Township of Manitouwadge
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1.0 INTRODUCTION

The Township of Manitouwadge, Public Works Department operates Manitouwadge Wastewater Collection System and Manitouwadge Wastewater Treatment System under a Certificate of Approval # 0031-86NKKA issued by the Ministry of the Environment on October 15, 2010.

As a condition of this Certificate of Approval, we are required to produce an Annual Compliance and Performance report for the benefit of the Ministry of the Environment and the residents of Manitouwadge within ninety days of the end of the calendar year.

Contained in this report you will find the information that we are required to keep in accordance with our Certificate of Approval from January 1, 2013 to December 31, 2013. As well, we include our accomplishments during the year.

Appendices in this report summarizes laboratory analysis test results for those parameters mandated by our Certificate of Approval as well as summarizes the annual daily flows, maximum daily flows, and minimum daily flow events for the year.

Currently the Manitouwadge Wastewater Collection System is classified as a Class II facility, and the Manitouwadge Wastewater Treatment System is classified as a Class I facility by the Ontario Environmental Training Consortium.

Kirk Tourout is fully licensed under Ontario Regulation 435/93 Utility Operator Licensing Program to operate these facilities. He is also designated by By-Law as the Operator in Overall Responsible Charge. He is assisted by Paul Richard who holds both Class I for Wastewater Treatment and a Class II for Wastewater Collections.

Our laboratory analysis for our Certificate of Approval sampling requirements are performed by Thunder Bay Analytical a division of the ALS Laboratories who are accredited by the Ministry of the Environment.

For the purposes of this report these facilities provide collection and treatment for a population of 2106. Approximately 1292 households are connected to the collection system. Households are deemed to include residential, institutional, multiple unit residential and industrial locations. Please note that the households located on Station Road, Sault Road and Black Road are not connected to our facilities.

2.0 MANITOUWADGE WASTEWATER COLLECTION & TREATMENT SYSTEM

2.1 HISTORY

The Manitouwadge Wastewater Collection System is a gravity flow network of underground sewer mains that connect the households of three Residential Areas, a Commercial Area and an Industrial Area to a sewage Lift Station located adjacent to Manitouwadge Lake beside a pedestrian way that links Ohsweken Road with Mississauga Drive.

Due to the lack of a comprehensive storm sewer infrastructure our collection system is deemed to be a combined system. Simply put, this means that the majority of the service connections to the sanitary sewer system are also connected to the weeping tile systems of the households. Hence, not only the sewage from the households but the groundwater from the households is directed to the wastewater collection system.

The piping material used in our system ranges from vitreous clay, concrete, cement asbestos (transite) to P.V.C. pipe. The vitreous clay and concrete piping was laid in 2.5 foot lengths and the joints sealed with oakum and mortar. The transite pipe was laid in 6.5 foot to 13 foot lengths with ringtite joints. P.V.C. piping was laid in 20 foot lengths with ringtite joints.

Manitouwadge area soil composition consists of bedrock, sand, clay and muskeg. This creates real problems with the vitreous clay and concrete pipe because of their short lengths and numerous joints when the ground moves during our freeze and thaw cycles. This leads to infiltration of groundwater during our summer months and possible exfiltration of raw sewage during freeze up.

Prior to 1986 the sewage collection at the Lift Station was pumped via a 12" inch cement asbestos force main to a sedimentation tank located approximately 3 km distant at Rudder Lake.

The sedimentation tank was pumped semi-annually into a drying bed. After leaching off the water the accumulated sludge was bulldozed and allowed to decompose naturally.

With the Hemlo Gold field discovery the townships ability to handle the expansion of the residential areas was brought into question. The existing Lift Station was aging and subject to frequent failures. Hence, in 1986 the Township undertook a Sewage Works Upgrading with the provision of a new Lift Station, a new 400 mm force main and a new two celled aerated sewage lagoon.

The sewage Lift Station features a single chamber wet well with an operating volume of 24 cubic meters with two 100 horsepower submersible pumps each capable of pumping 151 liters per second. As a backup to the Lift Station there is an overflow bypass tank

with an operating volume of 114 cubic meters with an 88 horsepower submersible pump capable of pumping 101 liters per second.

Two Milltronics Enviroranger flow monitors one dedicated to the wet well and the other dedicated to the overflow bypass tank measure the flows leaving the Lift Station.

A 200 KW generator set provides emergency power for the Lift Station and one sewage pump during a power outage. Due to Catastrophic failure of the 200 KW generator that supplied emergency power from well 3 & 4 pump house to the Sewage Lift Station it is no longer in use. This failure caused the Township of Manitouwadge to purchase a new 300 KW emergency generator. This generator is going to be housed at the Lift Station and now feed power to well 3, 4 and well pump house 5 as well as supply emergency power to the sewage Lift Station.

The Lift Station is connected to the aerated sewage lagoons by a 400 mm diameter force main approximately 3.2 km in length. The force main route parallels the area 1D trunk sewer from the Lift Station to Matachewan Road, along Matachewan Road extending cross country to the Caramat Road. It then follows the Caramat Road to the intersection with the Rudder Lake Lagoon Access Road. These locations represent the low points in the profile of the force main. The vacuum/air release chambers representing the high points in the force main profile are located at the end of Matachewan Road and on the east side of the Caramat Road adjacent to the Cemetery.

The sewage then enters the inlet/outlet works where it enters the primary cell of a two cell aerated facultative lagoon with an operating volume of approximately 61,500 cubic meters. At its rated capacity of 4,100 average cubic meters per day and at its normal operating depth of 4 meters this allows for a minimum retention time in excess of 12 days.

Following the primary cell the sewage then enters the second or polishing cell of these lagoons returning to the inlet/outlet works where it outfalls to a clay lined outfall ditch to Rudder Lake. Please note that water from Rudder Lake enters the Pic River watershed. This is worthy of note inasmuch as the Township water supply is drawn from an aquifer that is drained by the Black River watershed.

At the lagoon site there is a building that houses two 50 horsepower positive displacement blowers that supply the air for the treatment process maintaining a minimum dissolved oxygen level of 2.0 mg/L in the lagoon wastewater.

The flows entering the lagoons are measured by a modified Parshall Flume complete with a Milltronics OCM III flow monitor.

The Corporation of the Township of Manitouwadge is in the process of constructing a drying bed having a treatment surface area of 10,450 m^2. The location of the drying bed is at the Northwestern end of Cell #1 and Cell #2. Once the drying bed construction is completed the sludge will be directly pumped into the drying bed with the excess water flowing back into to Cell #1 and Cell #2 via gravity feed. The water will have to pass

through many layers filtering out the water before entering the lagoons to insure that only the water and not the sludge is being reintroduced to the treatment Cells. Left behind will be a layer of sludge which will be left in the drying bed until it is dehydrated and then it will be shipped to the landfill site for disposal. Sludge removal will not only increase the life of the lagoons but will also increase the airflow supplied to the lagoons by the two blowers.

Surrounding the drying bed are four (4) monitoring wells which are being sampled by KGS to develop a history before the completion of the drying bed. Therefore the historical data will allow us to see any possible impacts of leachate entering the ground water surrounding the drying bed and ponds.

3.0 THE TREATMENT PROCESS

Our sewage is treated by the AIR-AQUA aeration system.

The primary purpose of the aeration system is to replace the dissolved oxygen in facultative lagoons where both aerobic and anaerobic digestion of the sewage has depleted the oxygen content. This is accomplished by generating millions of small air bubbles at the bottom of the lagoons and allowing them to flow slowly upward. The upward flowing of mixed air and water replenishes the dissolved oxygen and circulates the entire liquid mass.

The AIR-AQUA aeration system provides a quiet and efficient source of dissolved oxygen to the liquid content of the lagoon to meet the Biochemical Oxygen Demand (BOD) of the sewage digestion process by the aerobic bacteria. The gentle action of the system gives complete dispersion of the dissolved oxygen in the water and allows a large proportion of the solids to settle to the bottom for eventual anaerobic digestion. The process is relatively odorless.

The air bubbles for the treatment process are produced by a patented designed polyethylene tubing which has precisely formed check valves on the top centerline for careful metering of the air. This provides small bubbles of the proper size, which in turn produce a low velocity upward flow of mixed air, water and very fine suspended solids. The tubing laid on the bottom of the lagoon features a lead keel.

The aeration tubing arranged in a carefully engineered pattern is to provide optimum oxidation of the sewage liquid. The tubing is closer at the influent end of the lagoon to meet the greater demand for oxygen required by the raw sewage. The liquid volume on each side of the aeration tubing axis operates as a dynamic treatment cell. Thus the lagoon has a series of individual sewage treatment cells which extend through its length.

The objectives for the effluent entering Rudder Lake are Suspended Solids (SS) 25mg/L, BOD_5 20mg/L at a pH within the range of 6 to 9. The effluent limits must not exceed 30 mg/L for Suspended Solids (SS) and 25 mg/L for BOD_5 at a pH within the range of 6.0 to 9.5 at all times.

4.0 SOME WASTEWATER FACTS

4.1 DATA

During the period January1, 2013 to December 31, 2013 we pumped and treated 539,606,700 liters of wastewater.

Appendix A-2 gives the reader a Summary of the Monthly Sewage Flows highlighting the Month Flows, Average, Maximum and Minimum Daily Flows.

Appendix A-3 shows the reader a Monthly Summary of the Maximum and Minimum Daily Flow Events juxtaposed with the day that they occurred.

On a per capita daily basis the Annual Flow translates to a figure of 702 liters of wastewater generated per person per day based on the 2012 figure of 606 liters per person per day this represents a 15.8 % increase in wastewater production. After review of the water report we showed that we had a 7.4% increase. The increase in sewage flows can be attributed to the 7.4% increase in water as well unmetered water losses (i.e. watering lawns, water breaks, fire hydrant usage) as well as contributing I/I caused from rain events.

On a household basis this figure becomes 1,144.25 liters per household per day of wastewater generation. Based on the 2012 figure of 989 liters per household per day this represents a 15.7 % increase in wastewater production. After review of the water report we showed that we had a 7.4 % increase. The increase in sewage flows can be attributed to the 7.4% increase in water as well unmetered water losses (i.e. watering lawns, water breaks, fire hydrant usage) as well as contributing I/I caused from rain events.

During the period of January 1, 2013 to December 31, 2013 the Manitouwadge Water Treatment Plant Delivered 325,271,000 liters of potable water to its consumers. Relevant per capita water consumption generates figures of 423 liters per person per day and 690 liters per household per day.

It is a commonly held industry theory that a figure of 90 to 95 percent recovery of drinking water pumped returns to the Wastewater Collection and Treatment Systems.

5.0 COMPLIANCE ISSUES

5.1 FLOW METERING

Our Certificate of Approval mandates that our raw sewage and final effluent meters must be within plus or minus 15 percent of each other. On October 31, 2013 Rob Kincaid a Milltronics trained technician of Trans-West, out of Thunder Bay calibrated the flow meters at the Lift Station including the overflow and the lagoons. During the flow meter calibration Rob Kincaid confirmed that the flow meters were within 8.64 percent of each

other for the Lift Station wet well pump #1 and #2. Also, during this timeframe the overflow pump was also calibrated which yielded a 0.61 percent difference of each other.

It is important to note that the Milltronics Enviro-Ranger ERS 500 uses a mathematical algorithm to calculate flows based upon the fill time and pump time of the vessel being measured. Because the Overflow Tank is used infrequently its measured volumes are questionable. However, when the tank is put into regular service its accuracy will mirror the volumes measured by the OCM III at the lagoons.

5.2 LABORATORY ANALYSIS

Our Certificate of Approval mandates that we sample Raw Sewage and Final Effluent on a bi-monthly basis.

Raw Sewage samples are analyzed for the following parameters; Total Phosphorous (P), Biochemical Oxygen Demand, Total Suspended Solids, E-Coli, and pH. The results of our C of A Raw sewage sampling program are contained in Appendix B-1.

Final Effluent samples are analyzed for the following parameters; Ammonia (N), Ammonia Un-Ionized (N), Total Phosphorous (P), Biochemical Oxygen Demand (BOD), Carbonaceous Biochemical Oxygen Demand (CBOD), Total Suspended Solids, E-Coli, pH and pH @ 15C, WSER. The results of our C of A Final Effluent sampling program are contained in Appendix B-2. During the 2013 timeframe there was no exceedence of the C of A during our bi weekly sample program.

Our C of A mandates that a Target Objective of 20 mg/L for Biochemical Oxygen Demand be maintained with a Maximum Allowable Concentration of 25 mg/L. For Total Suspended Solids a Target Objective of 25 mg/L is to be maintained with a Maximum Allowable Concentration of 30 mg/L.

To show the effectiveness of our Treatment Process we have appendices with the percentage reduction for the following parameters: Total Phosphorous (P) as Appendix B-3, B.O.D as Appendix B-4, T.S.S as Appendix B-5, and E-Coli as Appendix B-6. On an Annual basis the reductions were as follows:

a)	Total Phosphorous (P)	35.0 %
b)	Biochemical Oxygen Demand	90.7 %
c)	Total Suspended Solids	93.7 %
d)	E-Coli	99.9 %

5.3 MAXIMUM AVERAGE DAILY FLOW EXCEEDENCES

Our Certificate of Approval allows an Average Daily Maximum Flow of 4,100 m^3 per day with a minimum retention time of twelve (12) days or 5,125 m^3 per day.

For 2013 there were a total of twelve (12) exceedences of the C of A requirement of 4,100 m^3 per day. These exceedences occurred due to the drastic combination of snow melt and spring rain fall for the first eight exceedences. The last four of the twelve exceedences occurred due to the heavy amount of rain fall received. Details of the events are contained in Appendix C together with the laboratory analysis results collected during these events.

5.4 FINAL EFFLUENT DISSOLVED OXYGEN

As part of our C of A for the sewage lagoons we are required to monitor the Final Effluent for Dissolved Oxygen levels. Listed below is a table that was developed to show the data collected for the 2013 period. Readings were collected at the discharge from the lagoons system before exiting over the effluent weir plate. See Figure 1 below for data and Figure 2 below for graphical analysis of the data collected.

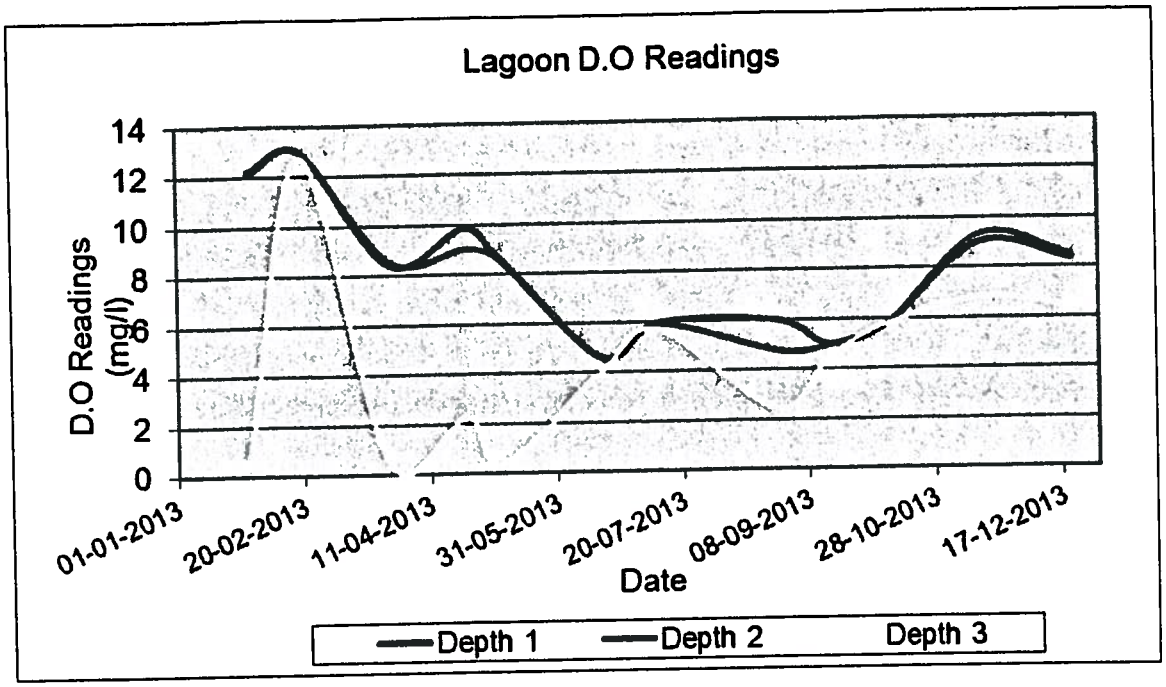
Lagoon D.O. Readings
2013

Figure 1

Sample	Out Fall	Out Fall	Out Fall
	Depth 1	Depth 2	Depth 3
Date	mg/L	mg/L	mg/L
29-01-2013	12.12	12.24	0.37
19-02-2013	12.93	12.94	12.75
26-03-2013	8.39	8.53	0.39
25-04-2013	9.87	9.01	2.27
09-05-2013	8.53	8.51	0.33
17-06-2013	4.62	4.56	3.97
10-07-2013	5.97	5.87	5.7
26-08-2013	5.98	4.74	2.42
16-09-2013	5.01	4.96	4.52
09-10-2013	5.84	5.82	5.81
14-11-2013	9.02	9.32	6.8
20-12-2013	8.33	8.46	6.45
Min	**4.62**	**4.56**	**0.33**
Max	**12.93**	**12.94**	**12.75**
Average	**8.05**	**7.91**	**4.32**

**Depth 1 is approx. 25% depth from surface
**Depth 2 is approx. 50 % of the depth from surface
**Depth three is approx. 75% of the depth from surface

Figure 2



5.5 CONSUMER COMPLAINTS

Jan 11, 2013
- Sewer main inspection on Heron Drive

Jan 12, 2013
- 30 Heron Drive sewer lateral camera
- Flush main on Heron Drive

Jan 20, 2013
- Inspect 44 Flicker Avenue sewer lateral

Jan 20, 2013
- Snake sewer lateral to remove blockage
- Camera 44 Flicker Avenue sewer lateral

Feb 03, 2013
- Snake Redwing Avenue sewer main at bottom of Partridge Avenue

Feb 04, 2013
- Inspect Sewer main on Ohsweken Road

Feb 11, 2013
- Sewer Lateral at 26 Heron Drive plugged
- Advised to call a plumber

Mar 17, 2013
- Snake sewer at 3 Partridge Avenue

Mar 22, 2013
- Repair sewer main at 14 Partridge Avenue
- Main was damaged while completing a water main repair

Mar 25, 2013
- Inspect sewer main at 14 Partridge Avenue to insure repair was successful

Apr 19, 2013
- Inspect Capri sewer manhole in back lane
- Recommended to call a plumber as the sewer main was clear of obstruction

Apr 21, 2013
- Blockage on Wenonah Drive
- Snake sewer main

Apr 22, 2013
- Inspect 16 Swallow Drive sewer lateral
- Upon arrival home owner unplugged later

Apr 27, 2013
- Inspect sewer main in laneway of Manitou Road no surcharge

May 24, 2013
- Inspect sewer main at 18 and 22 Warbler Drive

May 29, 2013
- Sewer main inspected at 17 Lynx Avenue

Jun 5, 2013
- 8 Partridge Avenue inspected
- Flush and clean sewer main

Jul 05, 2013
- Inspect sewer main on Adjala Avenue
- Repair beach pavilion sewer later

Jul 07, 2013
- Inspect sewer main on Neebig Avenue
- Inspect sewer main on Beaver Drive
- Snake sewer main from Beaver Avenue toward Otter Avenue

Jul 09, 2013
- Inspect sewer main in back lane of Adjala Avenue and Shingwauk Drive
- Flush sewer main to clean

Jul 31, 2013
- Camera Sewer lateral at 22 Warbler Drive

Sept 21, 2013
- Shingwauk Drive backed up sewer main
- Sewer main plugged with grease and wet wipes
- Snaked sewer main to remove blockage

Dec 12, 2013
- Golf Hut manhole pump frozen

Dec 26, 2013
- 56 Neebig Avenue dislodge blockage at the end of the lateral
- 3 foot slug of rags and wet wipes removed from end of house lateral

Dec 31, 2013
- Inspect sewer main down by 57 Redwing Avenue

6.0 ACCOMPLISHMENTS

In the 2013 period the Township of Manitouwadge removed one of the 100 horsepower submersible pumps from the main wet well, cleaned it and shipped it out to be rebuilt by a company called Process Flow which is a Flygt representative and supplier. The Sewage Lift Station also had a replacement of the two soft starts that control the pumps in the wet well. The replacement was required as both of the previous soft starts had failed and could not be rebuilt. The Township of Manitouwadge purchased them from Automation Now and installed by Tony Price an electrician out of Marathon.

The Township of Manitouwadge endured a catastrophic failure of the 200 KW generator that supplied emergency power from well 3 & 4 pump house to the Sewage Lift Station it is no longer in use. This failure caused the Township of Manitouwadge to purchase a new 300 KW emergency generator from Gal Power. This generator is going to be housed at the Lift Station and now feed power to well 3, 4 and 5 pump houses, as well as supply emergency power to the Sewage Lift Station.

In addition to the above stated, Nelson Environmental Inc. came to the Township of Manitouwadge to conduct a series of inspections and repairs on the Aeration system at the sewage lagoons. These issues include repairs of diffusers and connections as well as roller flexing of all the ADS lines.

The Township of Maintouwadge spent a total of 87.5 hours of regular time and 19.5 hours of overtime completing tasks related to sewer mains.

The Township of Manitouwadge operators utilized 29 regular hours and 11 overtime hours inspecting, snaking, and repairing and camera sewer lateral.

7.0 CONCLUSION

2013 was a busy year for the Manitouwadge Wastewater Collection and Treatment System. There was a plethora of consumer complaints which mainly consisted of backed up sewers. All consumer complaints were dealt with in a timely fashion to insure consumer's satisfaction. The summary of these complaints are listed above in section 5.5 Consumer Complaints.

The equipment failures that occurred during the 2013 time frame were unwanted and unexpected but having operators that were capable of following procedure and a Superintendent (Omer Collin) who does an exceptional job at expediting the process of procuring the replacement equipment needed.

8.0 RECOMENDATIONS

From the operation stand point there are a few recommendations for the 2013 time frame. These recommendations are listed below.

1. The first would be the completion of the drying bed out at the lagoons.

2. The second would be the replacement of the intrinsically safe heater in the hoist room of the Lift Station.

3. Repair of air relief valve in air relief chamber located at the end of Matachewan.

4. Possibly remove second pump for rebuild.

5. Set up a flushing program for sewer main preventative maintenance.

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DAILY SEWAGE FLOW

Appendix A-1

	January			February			March			April			May			June			July			August			September			October			November			December
1	Tue	816.71	1	Fri	817.05	1	Fri	912.67	1	Mon	939.29	1	Wed	4314.80	1	Sat	2523.75	1	Mon	1404.58	1	Thu	2923.48	1	Sun	2303.15	1	Tue	1056.78	1	Fri	1563.46	1	Sun	1163.75
2	Wed	767.42	2	Sat	912.52	2	Sat	920.02	2	Tue	882.94	2	Thu	2773.11	2	Sun	2385.03	2	Tue	1356.36	2	Fri	2653.81	2	Mon	2061.19	2	Wed	972.23	2	Sat	1424.08	2	Mon	1163.49
3	Thu	784.11	3	Sun	929.93	3	Sun	915.97	3	Wed	940.32	3	Fri	2314.32	3	Mon	2155.64	3	Wed	1369.95	3	Sat	2505.23	3	Tue	1748.78	3	Thu	949.58	3	Sun	1439.98	3	Tue	1071.82
4	Fri	774.79	4	Mon	866.97	4	Mon	835.32	4	Thu	893.28	4	Sat	2576.74	4	Tue	2043.28	4	Thu	1255.98	4	Sun	2332.05	4	Wed	1661.38	4	Fri	903.04	4	Mon	1386.51	4	Wed	1126.20
5	Sat	854.97	5	Tue	862.19	5	Tue	857.89	5	Fri	884.43	5	Sun	5211.38	5	Wed	1983.22	5	Fri	1182.66	5	Mon	2211.86	5	Thu	1639.16	5	Sat	930.28	5	Tue	1400.79	5	Thu	1097.33
6	Sun	851.09	6	Wed	859.64	6	Wed	841.96	6	Sat	925.57	6	Mon	4656.40	6	Thu	1924.56	6	Sat	1338.33	6	Tue	1985.02	6	Fri	1597.22	6	Sun	1081.41	6	Wed	1300.95	6	Fri	1046.21
7	Mon	771.93	7	Thu	899.56	7	Thu	807.43	7	Sun	961.77	7	Tue	4196.31	7	Fri	1884.76	7	Sun	1362.56	7	Wed	1880.05	7	Sat	1581.45	7	Mon	965.58	7	Thu	1282.79	7	Sat	1304.59
8	Tue	782.03	8	Fri	849.02	8	Fri	801.28	8	Mon	951.42	8	Wed	3855.31	8	Sat	1733.79	8	Mon	1362.58	8	Thu	1764.79	8	Sun	1547.86	8	Tue	968.53	8	Fri	1224.80	8	Sun	1056.61
9	Wed	747.32	9	Sat	921.88	9	Sat	828.42	9	Tue	894.81	9	Thu	3559.39	9	Sun	1706.35	9	Tue	1388.21	9	Fri	1892.53	9	Mon	1525.43	9	Wed	1104.72	9	Sat	1285.56	9	Mon	993.88
10	Thu	760.78	10	Sun	916.94	10	Sun	846.00	10	Wed	952.81	10	Fri	2952.53	10	Mon	1639.61	10	Wed	1445.33	10	Sat	1802.80	10	Tue	1628.00	10	Thu	1134.79	10	Sun	1271.00	10	Tue	953.37
11	Fri	846.45	11	Mon	865.83	11	Mon	821.64	11	Thu	862.50	11	Sat	3042.03	11	Tue	1706.81	11	Thu	1345.33	11	Sun	1859.56	11	Wed	1596.84	11	Fri	1143.65	11	Mon	1227.37	11	Wed	928.63
12	Sat	1448.38	12	Tue	871.13	12	Tue	798.53	12	Fri	870.73	12	Sun	3203.24	12	Wed	1684.07	12	Fri	1277.51	12	Mon	1963.80	12	Thu	1580.09	12	Sat	1461.46	12	Tue	1163.92	12	Thu	915.56
13	Sun	1011.34	13	Wed	860.95	13	Wed	806.19	13	Sat	943.13	13	Mon	2520.41	13	Thu	1578.93	13	Sat	1346.76	13	Tue	1881.97	13	Fri	1437.02	13	Sun	1366.21	13	Wed	1143.77	13	Fri	930.58
14	Mon	932.94	14	Thu	892.97	14	Thu	817.55	14	Sun	978.67	14	Tue	2558.45	14	Fri	1484.27	14	Sun	1363.24	14	Wed	1838.20	14	Sat	1485.96	14	Mon	1341.40	14	Thu	1123.80	14	Sat	956.19
15	Tue	889.24	15	Fri	816.80	15	Fri	789.81	15	Mon	939.36	15	Wed	2382.79	15	Sat	1534.07	15	Mon	1264.15	15	Thu	1758.26	15	Sun	1440.32	15	Tue	1355.69	15	Fri	1042.52	15	Sun	1127.25
16	Wed	872.01	16	Sat	945.57	16	Sat	880.02	16	Tue	1147.31	16	Thu	2272.07	16	Sun	1451.99	16	Tue	1401.25	16	Fri	1684.20	16	Mon	1443.45	16	Wed	1357.65	16	Sat	1315.37	16	Mon	968.72
17	Thu	887.17	17	Sun	890.16	17	Sun	917.18	17	Wed	849.54	17	Fri	2387.01	17	Mon	1567.30	17	Wed	1260.84	17	Sat	1730.02	17	Tue	1335.78	17	Thu	1316.22	17	Sun	1511.40	17	Tue	879.43
18	Fri	879.32	18	Mon	920.10	18	Mon	826.30	18	Thu	1206.41	18	Sat	2255.75	18	Tue	1377.28	18	Thu	1330.46	18	Sun	2229.90	18	Wed	1285.63	19	Fri	1359.12	18	Mon	1422.71	18	Wed	979.15
19	Sat	975.65	19	Tue	858.30	19	Tue	839.12	19	Fri	1110.67	19	Sun	2461.05	19	Wed	1340.53	19	Fri	1434.47	19	Mon	1566.34	19	Thu	1474.00	19	Sat	1398.27	19	Tue	1389.56	19	Thu	1151.66
20	Sun	920.78	20	Wed	845.97	20	Wed	848.67	20	Sat	926.91	20	Mon	2899.76	20	Thu	1281.10	20	Sat	1287.03	20	Tue	1525.82	20	Fri	1729.83	20	Sun	1366.76	20	Wed	1386.63	20	Fri	857.36
21	Mon	865.47	21	Thu	879.82	21	Thu	884.18	21	Sun	1001.87	21	Tue	4035.97	21	Fri	1360.42	21	Sun	1219.30	21	Wed	1513.53	21	Sat	1547.71	21	Mon	1533.65	21	Thu	1497.10	21	Sat	892.11
22	Tue	851.03	22	Fri	821.58	22	Fri	863.60	22	Mon	1410.92	22	Wed	3898.94	22	Sat	1384.60	22	Mon	1340.67	22	Thu	1393.96	22	Sun	1568.04	22	Tue	1602.95	22	Fri	1473.37	22	Sun	931.93
23	Wed	839.89	23	Sat	924.52	23	Sat	880.39	23	Tue	1037.70	23	Thu	4076.32	23	Sun	1229.09	23	Tue	1197.21	23	Fri	1410.83	23	Mon	1463.93	23	Wed	1540.56	23	Sat	1428.84	23	Mon	944.52
24	Thu	805.30	24	Sun	1041.54	24	Sun	934.53	24	Wed	1356.20	24	Fri	2709.35	24	Mon	1274.27	24	Wed	1256.08	24	Sat	1467.06	24	Tue	1384.83	24	Thu	1514.85	24	Sun	1460.93	24	Tue	911.05
25	Fri	825.43	25	Mon	884.31	25	Mon	861.38	25	Thu	1630.38	25	Sat	2514.79	25	Tue	1224.99	25	Thu	1919.26	25	Sun	1549.45	25	Wed	1328.36	25	Fri	1576.07	25	Mon	1282.23	25	Wed	1285.81
26	Sat	856.04	26	Tue	850.40	26	Tue	995.63	26	Fri	2031.37	26	Sun	2511.66	26	Wed	1941.33	26	Fri	3316.35	26	Mon	1437.71	26	Thu	1256.18	26	Sat	1786.52	26	Tue	1214.92	26	Thu	1071.65
27	Sun	868.39	27	Wed	893.65	27	Wed	1046.44	27	Sat	4265.79	27	Mon	2213.55	27	Thu	2052.80	27	Sat	3447.35	27	Tue	1399.21	27	Fri	1195.76	27	Sun	1778.05	27	Wed	1183.04	27	Fri	848.93
28	Mon	781.55	28	Thu	883.72	28	Thu	1055.98	28	Sun	6734.62	28	Tue	2033.82	28	Fri	1773.17	28	Sun	5400.36	28	Wed	1346.88	28	Sat	1273.57	28	Mon	1629.33	28	Thu	1186.73	28	Sat	912.69
29	Tue	837.8711	29	Fri	708.5104	29	Fri	1325.46	29	Mon	5222.25	29	Wed	1934.68	29	Sat	1657.44	29	Mon	3717.48	29	Thu	1324.27	29	Sun	1198.97	29	Tue	1537.15	29	Fri	1152.52	29	Sun	941.31
30	Wed	854.3881				30	Sat	1214.66	30	Tue	7078.45	30	Thu	2360.31	30	Sun	1522.35	30	Tue	2984.88	30	Fri	1298.45	30	Mon	1175.32	30	Wed	1563.83	30	Sat	1166.00	30	Mon	836.79
31	Thu	833.2085				31	Sun	1029.90				31	Fri	2627.20				31	Wed	3105.00	31	Sat	1462.06				31	Thu	2021.10				31	Tue	887.36
		26812.98			25491.74			28004.29			50811.4			93309.44			50406.81			55681.3			55813.09			45475.18			41615.44			39354.68			31137.932
	AVE	864.93		AVE	879.03		AVE	903.36		AVE	1693.71		AVE	3009.98		AVE	1680.23		AVE	1796.17		AVE	1793.97		AVE	1515.84		AVE	1342.43		AVE	1311.82		AVE	1004.45
	MAX	1448.38		MAX	1041.54		MAX	1325.46		MAX	7078.45		MAX	5211.38		MAX	2523.75		MAX	5400.36		MAX	2923.48		MAX	2303.15		MAX	2021.10		MAX	1563.46		MAX	1304.59
	MIN	747.32		MIN	708.51		MIN	789.81		MIN	849.54		MIN	1934.68		MIN	1224.99		MIN	1182.66		MIN	1298.45		MIN	1175.32		MIN	903.04		MIN	1042.52		MIN	836.79

ANNUAL REPORT
2013
SUMMARY OF SEWAGE MONTHLY FLOWS

Appendix A-2

Month	Total Flow	Daily Flows		
		m3/day		
	(m3)	Average	Maximum	Minimum
January	26,812.98	864.93	1,448.36	729.25
February	24,783.23	885.12	1,041.54	816.80
March	28,004.29	903.36	1,325.46	789.81
April	50,811.40	1,693.71	7,078.45	849.54
May	93,309.44	3,009.98	5,211.38	1,934.68
June	50,406.81	1,680.23	2,523.75	1,224.99
July	55,681.30	1,796.17	5,400.36	1,182.66
August	55,613.09	1,793.97	2,923.48	1,298.45
September	45,475.18	1,515.84	2,303.15	1,175.32
October	41,615.44	1,342.43	2,021.10	903.04
November	39,354.68	1,311.82	1,563.46	1,042.52
December	27,738.88	993.47	1,304.59	836.79
ANNUAL	**539,606.70**	**1,482.59**	**7,078.45**	**729.25**

ANNUAL REPORT
2013
Summary of Monthly Maximum and Minimum Daily Flow Events

Appendix A-3

Day	Date	Maximum Daily Flow	Month	Mimimum Daily Flow	Day	Date
		m3		m3		
Saturday	12th	1,448.36	**January**	747.32	Wednesday	9th
Sunday	24th	1,041.54	**February**	816.80	Friday	15th
Friday	29th	1,325.46	**March**	789.81	Friday	15th
Tuesday	30th	7,078.45	**April**	849.54	Wednesday	17th
Sunday	5th	5,211.38	**May**	1,934.68	Wednesday	29th
Saturday	1st	2,523.75	**June**	1,224.99	Tuesday	25th
Sunday	28th	5,400.36	**July**	1,182.66	Friday	5th
Thursday	1st	2,923.48	**August**	1,298.45	Friday	30th
Sunday	1st	2,303.15	**September**	1,175.32	Monday	30th
Thursday	31st	2,021.10	**October**	903.04	Friday	4th
Friday	1st	1,563.46	**November**	1,042.52	Friday	15th
Saturday	7th	1,304.59	**December**	836.79	Monday	30th
		7,078.45	**ANNUAL**	**747.32**		

ANNUAL SEWAGE REPORT
2013
Summary of Raw Sewage Laboratory Sampling Results

Appendix B-1

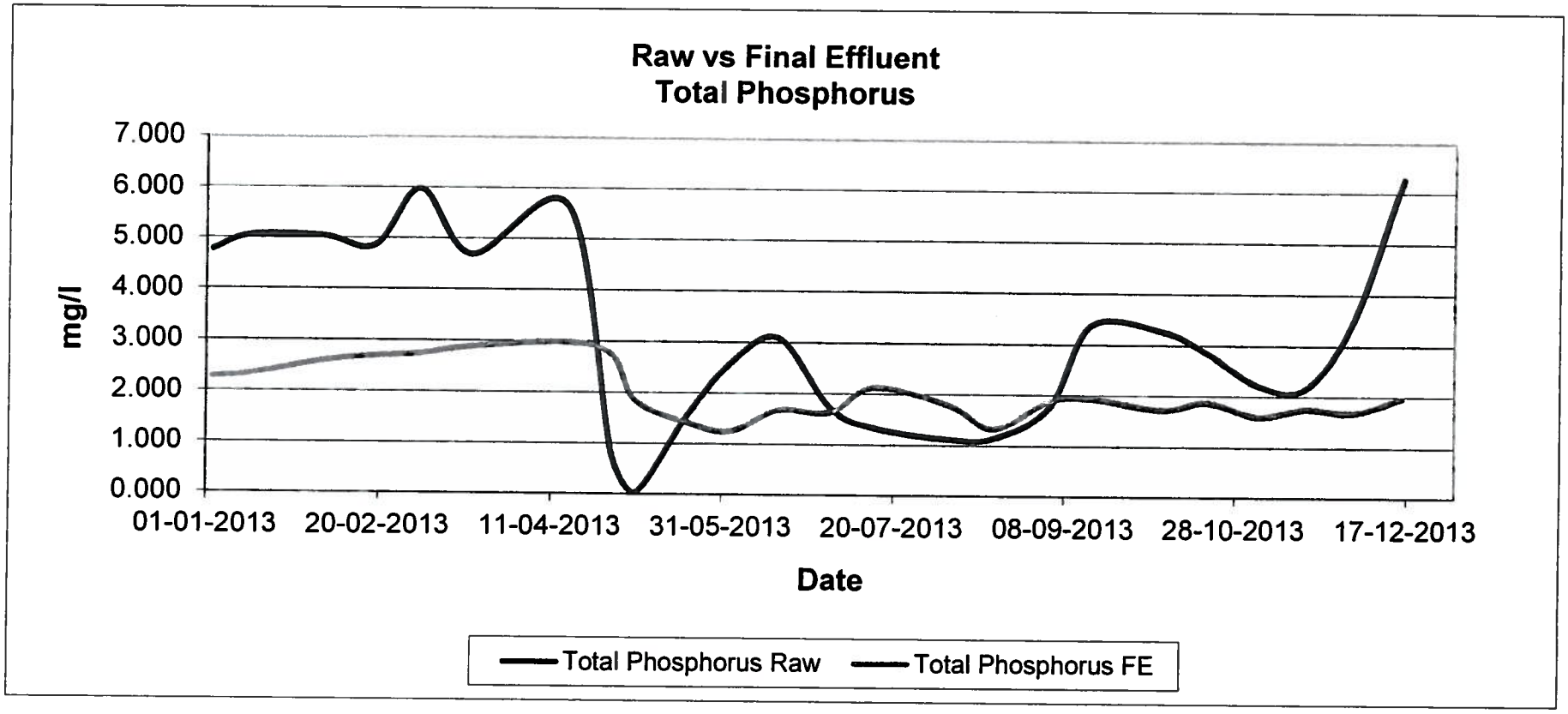
Laboratory Results							
Raw Sewage		Total Phosphorus (TP)	Biochemical Oxygen Demand	Total Suspended Solids	Temperature	E-Coli	pH
Month	Date	(mg/L)			°C	C.F.U./100ml	
January	03-01-2013	4.770	101	91.6	9.8	3,400,000	8.18
	14-01-2013	5.050	131	164	7.5	3,900,000	8.16
February	04-02-2013	5.040	137	152	6.7	4,100,000	8.05
	19-02-2013	4.860	104	131	7.9	3,900,000	8.15
March	04-03-2013	5.980	129	192	4.3	2,100,000	8.39
	19-03-2013	4.690	147	182	6.9	4,600,000	7.89
April	16-04-2013	5.650	109	146	7.1	4,600,000	8.33
	29-04-2013	0.791	18	30.4	5.8	1,200,000	7.50
May	06-05-2013	0.033	60	209	6.6	4,400,000	7.69
	21-05-2013	1.540	42.1	55.7	7.5	540,000	7.83
June	03-06-2013	2.600	81	123	9.1	5,200,000	7.60
	17-06-2013	3.080	66	93	10.2	2,600,000	8.01
July	02-07-2013	1.720	34	45.7	10	2,000,000	7.66
	15-07-2013	1.330	27.2	33.6	12.7	820,000	7.74
August	06-08-2013	1.120	34	38.3	12.8	980,000	7.99
	19-08-2013	1.150	18	26.9	13.4	870,000	7.86
September	04-09-2013	1.760	33.9	60.1	13.2	490,000	7.70
	16-09-2013	3.370	72	110	12.5	2,420,000	7.98
October	07-10-2013	3.260	69	158	11.7	3,100,000	7.72
	20-10-2013	2.850	60	77.5	10.7	2,700,000	7.82
November	04-11-2013	2.220	50	65.8	9.2	24,000,000	7.82
	18-11-2013	2.170	60	102	9.1	2,420,000	7.81
December	02-12-2013	3.530	134	361	8.1	24,200,000	7.93
	16-12-2013	6.280	27.9	186	8.8	5,200,000	8.11
Annual	Average	3.12	72.71	118.11	9.23	4,572,500	7.91

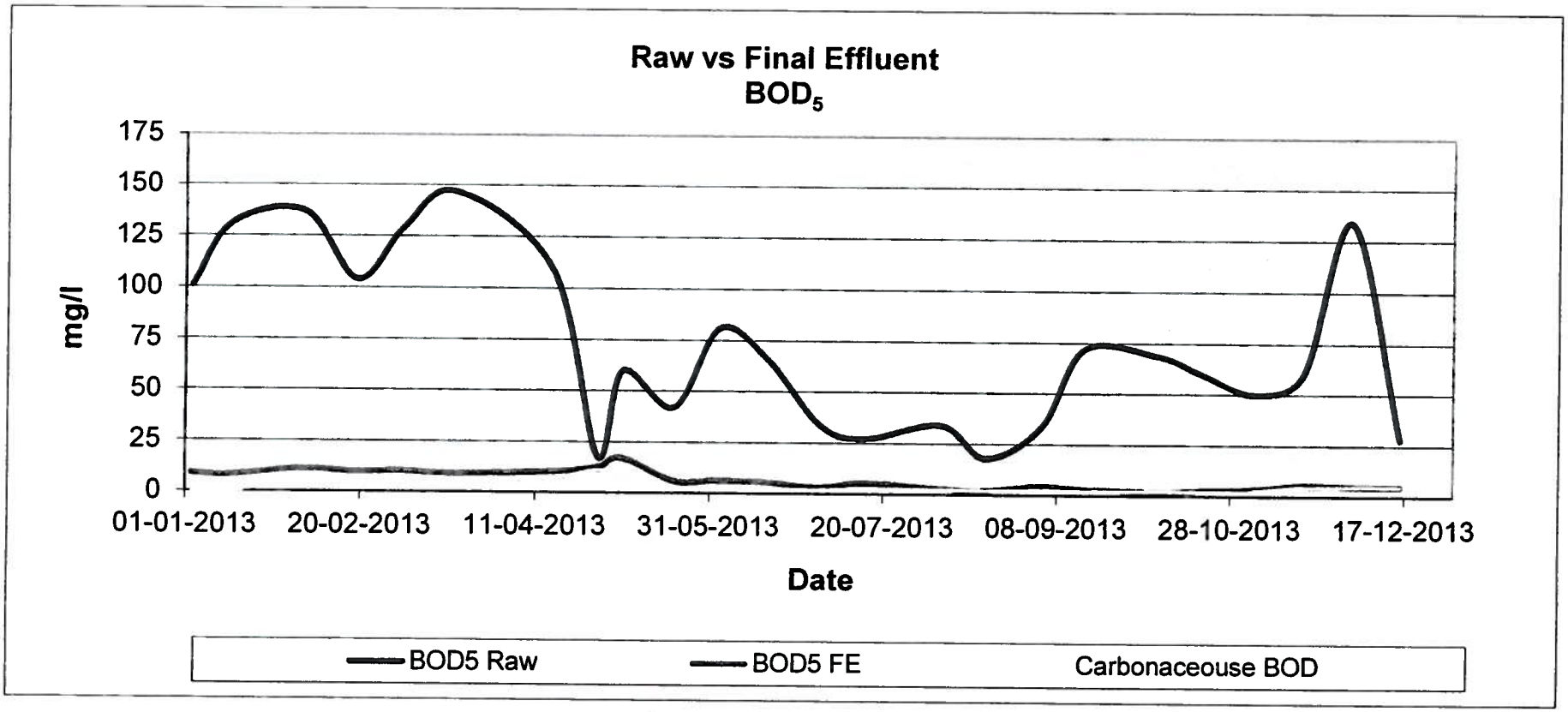
ANNUAL SEWAGE REPORT
2013
Summary of Final Effluent Laboratory Sampling Results

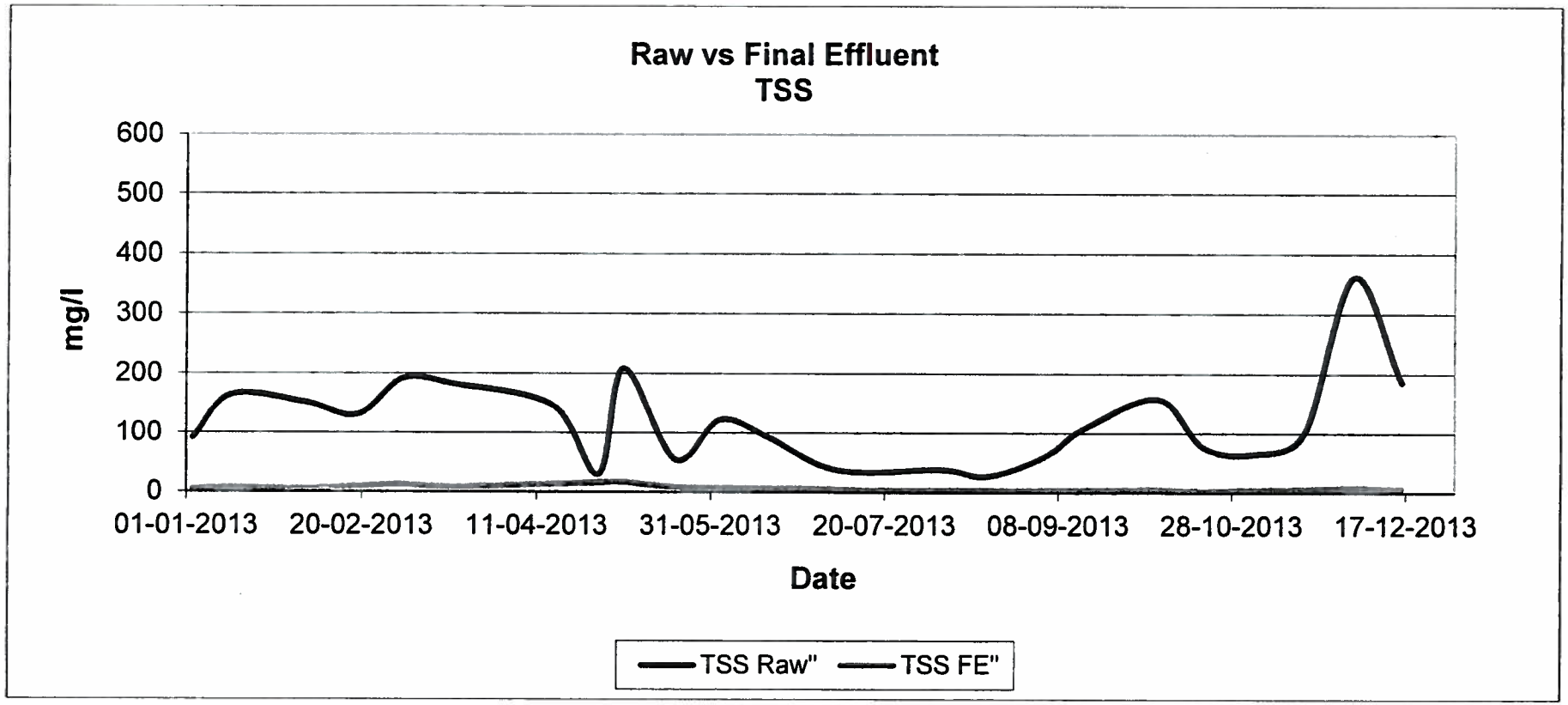
Appendix B-2

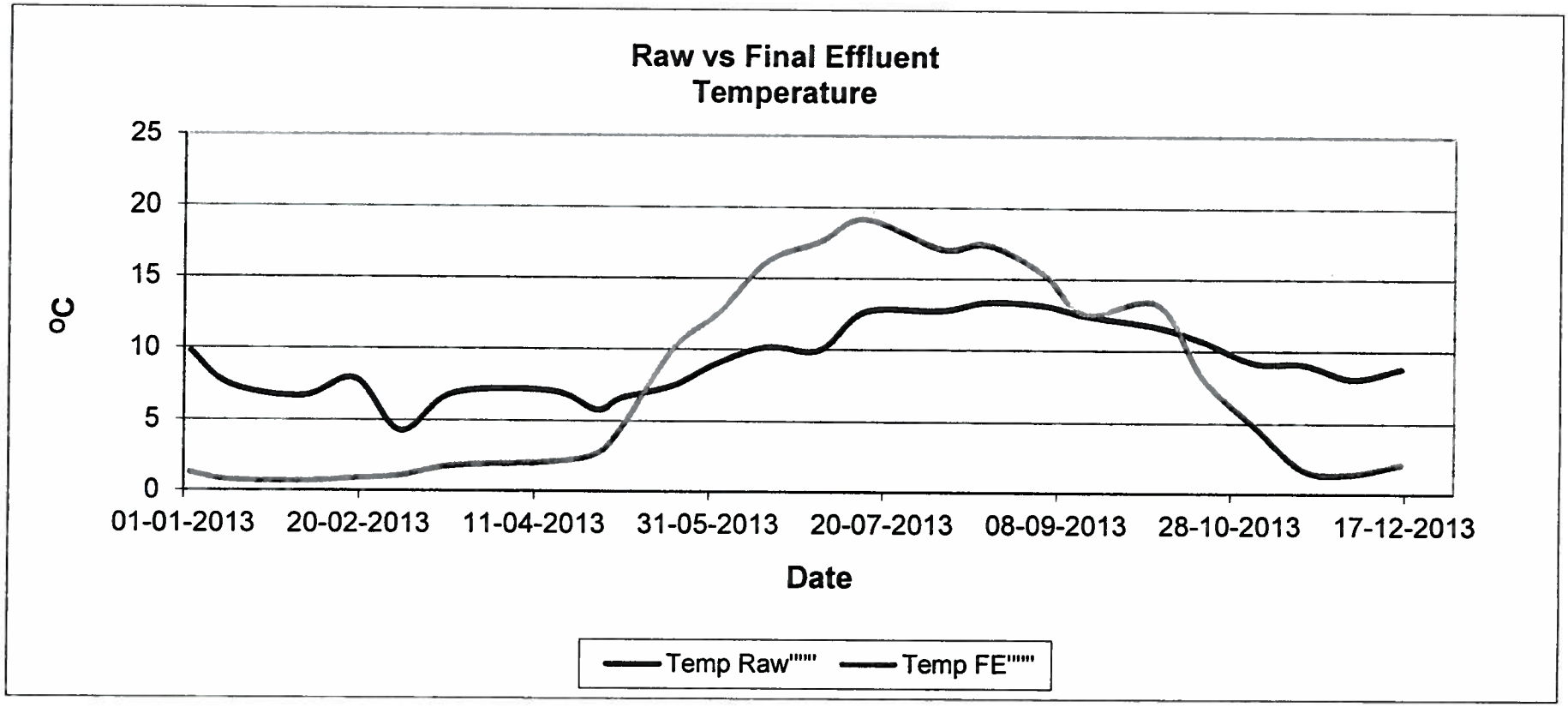
Final Effluent		Laboratory Results										
		Ammonia (N)	Ammonia Un-ionized (N)	Total Phosphorus	Biochemical Oxygen Demand	Carbonaceouse BOD	Total Suspended Solids	Temperature	E-Coli	pH @ 15C, WSER (pH)	pH	Exceedence
Month	Date	(mg/L)					(mg/L)	°C	C.F.U./100 ml			
January	03-01-2013	11.60	—	2.28	9	—	5.2	1.3	> 24,000	—	7.78	No
	14-01-2013	13.6	—	2.34	8.2	—	8.1	0.8	> 2,420	—	7.84	No
February	04-02-2013	15.90	0.41	2.59	11.3	5.8	5.9	0.7	> 24,200	—	7.70	No
	19-02-2013	17.20	0.33	2.69	9.9	6.8	9.7	0.9	4,200	—	7.77	No
March	04-03-2013	18.40	0.40	2.74	10.4	6.9	12.4	1.1	2,000	7.91	7.95	No
	19-03-2013	19.20	0.42	2.88	9.3	6.3	8.8	1.8	1,700	7.92	7.89	No
April	16-04-2013	19.60	0.32	2.98	10.4	7.1	13.5	2.1	> 2,420	7.79	7.74	No
	29-04-2013	17.10	0.23	2.74	12.5	10.9	15.8	2.7	10,000	7.70	7.69	No
May	06-05-2013	11.10	0.25	1.84	17.3	8.1	16.8	4.5	> 2,420	7.93	7.90	No
	21-05-2013	7.35	0.20	1.42	6.2	2	9	10.1	1,600	8.01	8.05	No
June	03-06-2013	4.26	0.10	1.25	6.4	2.5	7.9	12.6	220	7.94	7.94	No
	17-06-2013	4.66	0.13	1.67	5.9	2.3	7.3	16.2	23	8.02	7.92	No
July	02-07-2013	7.87	0.19	1.63	3.3	2	6.2	17.6	10	7.95	7.89	No
	15-07-2013	6.53	0.17	2.13	5.7	2.6	3.2	19.2	< 1	8.00	8.11	No
August	06-08-2013	4.07	0.11	1.78	2.9	2.4	3.1	17.1	130	8.01	8.19	No
	19-08-2013	3.02	0.08	1.33	2	2	< 3	17.4	13	8.00	8.06	No
September	04-09-2013	7.69	0.17	1.87	4.7	2.3	3.6	15.4	24	7.91	7.99	No
	16-09-2013	10.00	0.29	1.93	3.1	2	3.9	12.6	56	8.04	7.94	No
October	07-10-2013	10.10	0.33	1.72	2	2.2	5.5	13.3	330	8.09	7.91	No
	20-10-2013	11.30	0.23	1.87	2.6	2.2	2.5	8.2	93	7.89	7.90	No
November	04-11-2013	11.40	0.25	1.60	3.4	2.2	4.6	4.8	550	7.91	8.02	No
	18-11-2013	11.20	0.25	1.75	5.6	4.3	5.7	1.7	> 2,420	7.92	7.95	No
December	02-12-2013	11.80	0.28	1.68	5	4.9	8.3	1.4	> 2,420	7.95	7.91	No
	16-12-2013	13.50	0.25	1.97	4.9	4.8	7.4	2.1	> 2,420	7.84	8.04	No
Annual	Average	11.19	0.24	2.03	6.75	4.21	7.39	7.73	3486.25	7.94	7.92	No

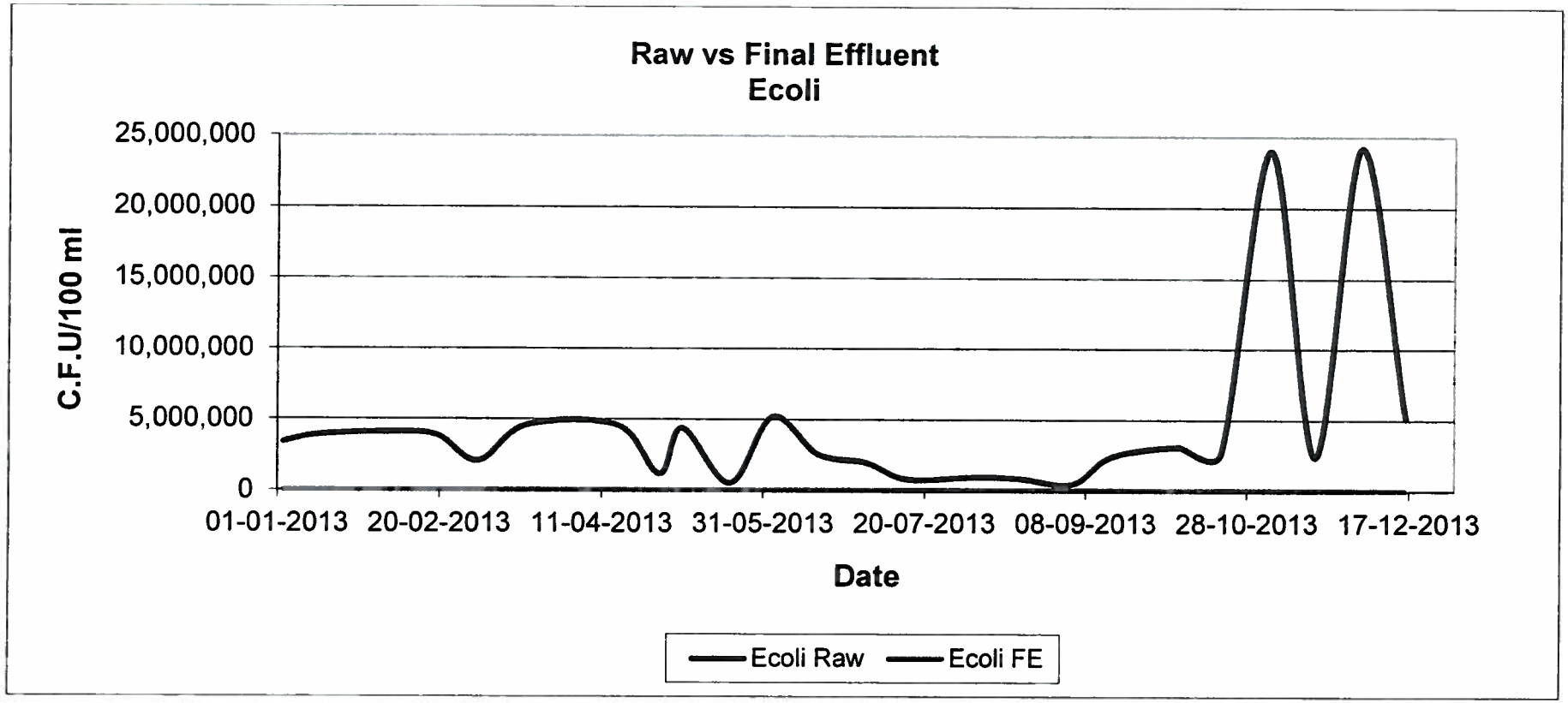
(1) The Ontario Spills Action Centre and the Ministry of Environment were notified
The final Effluent was resampled

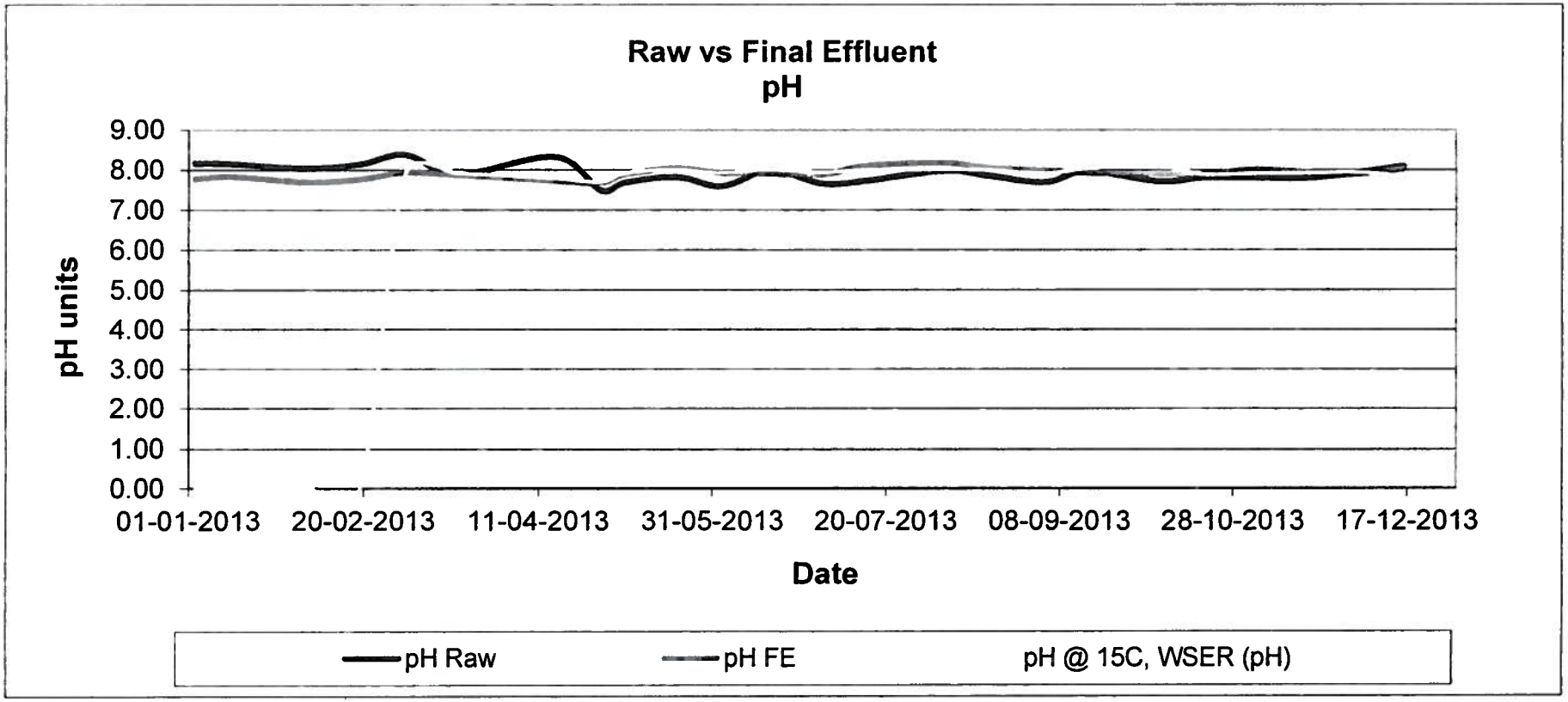

Raw vs Final Effluent
Total Phosphorus
7.000
6.000
5.000
4.000
3.000
2.000
1.000
0.000
mg/l
01-01-2013
20-02-2013
11-04-2013
31-05-2013
20-07-2013
08-09-2013
28-10-2013
17-12-2013
Date
Total Phosphorus Raw
Total Phosphorus FE

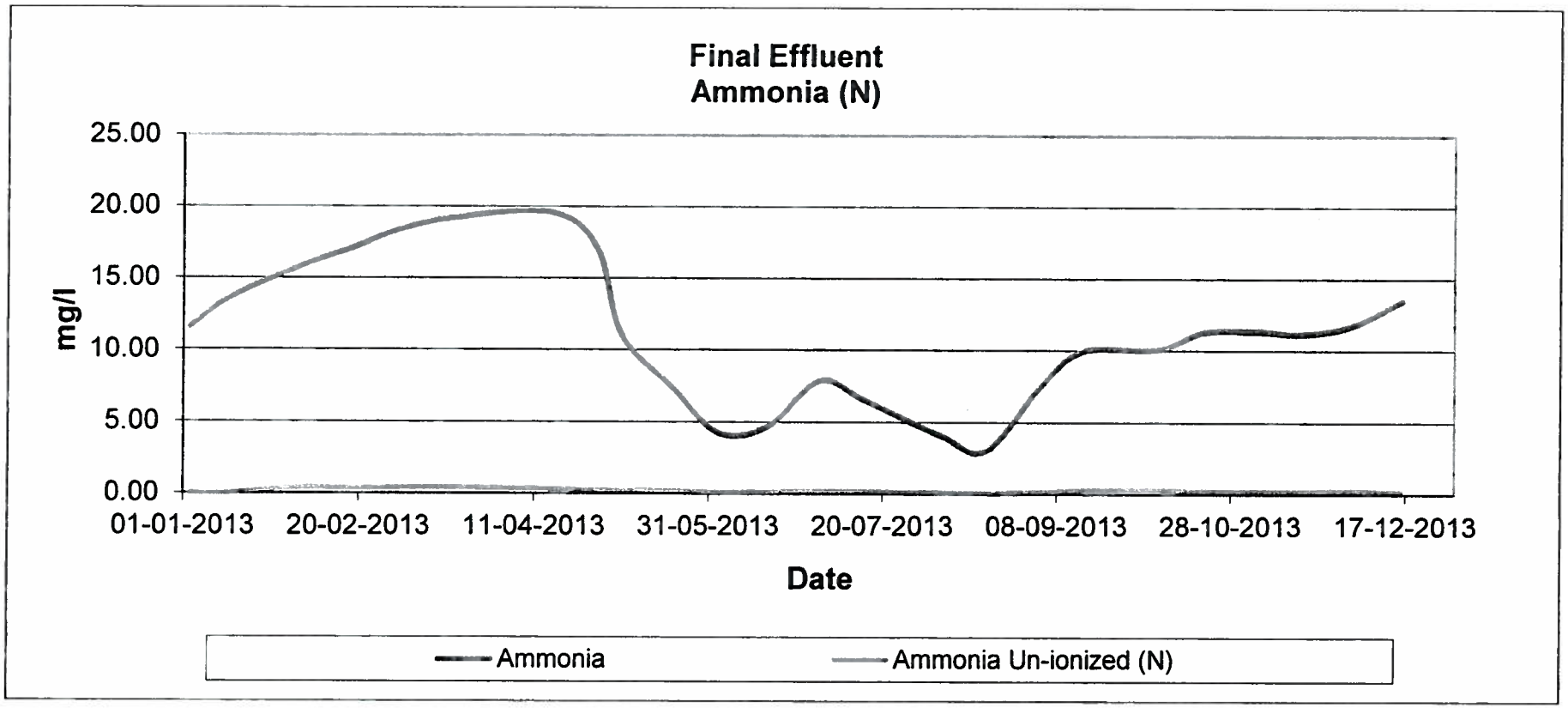

Raw vs Final Effluent
BOD5
175
150
125
100
75
50
25
0
mg/l
01-01-2013
20-02-2013
11-04-2013
31-05-2013
20-07-2013
08-09-2013
28-10-2013
17-12-2013
Date
BOD5 Raw
BOD5 FE
Carbonaceouse BOD


Raw vs Final Effluent
TSS
600
500
400
300
200
100
0
mg/l
01-01-2013
20-02-2013
11-04-2013
31-05-2013
20-07-2013
08-09-2013
28-10-2013
17-12-2013
Date
TSS Raw"
TSS FE"


Raw vs Final Effluent Temperature
25
20
15
10
5
0
°C
01-01-2013
20-02-2013
11-04-2013
31-05-2013
20-07-2013
08-09-2013
28-10-2013
17-12-2013
Date
Temp Raw""""
Temp FE""""


Raw vs Final Effluent
Ecoli
C.F.U/100 ml
25,000,000
20,000,000
15,000,000
10,000,000
5,000,000
0
01-01-2013
20-02-2013
11-04-2013
31-05-2013
20-07-2013
08-09-2013
28-10-2013
17-12-2013
Date
Ecoli Raw
Ecoli FE


Raw vs Final Effluent
pH
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
pH units
01-01-2013
20-02-2013
11-04-2013
31-05-2013
20-07-2013
08-09-2013
28-10-2013
17-12-2013
Date
pH Raw
pH FE
pH @ 15C, WSER (pH)


Final Effluent
Ammonia (N)
25.00
20.00
15.00
10.00
5.00
0.00
mg/l
01-01-2013
20-02-2013
11-04-2013
31-05-2013
20-07-2013
08-09-2013
28-10-2013
17-12-2013
Date
Ammonia
Ammonia Un-ionized (N)

ANNUAL REPORT
2013
Summary of Sewage Laboratory Sampling Results
PERCENT REDUCTION

Appendix B-3

Raw Sewage				Final Effluent	
Total Phosphorus				Total Phosphorus	Percentage Reduction
mg/L	Date	Month	Date	mg/L	%
4.770	03-01-2013	January	03-01-2013	2.28	52.2%
5.050	14-01-2013		14-01-2013	2.34	53.7%
5.040	04-02-2013	February	04-02-2013	2.59	48.6%
4.860	19-02-2013		19-02-2013	2.69	44.7%
5.980	04-03-2013	March	04-03-2013	2.74	54.2%
4.690	19-03-2013		19-03-2013	2.88	38.6%
5.650	16-04-2013	April	16-04-2013	2.98	47.3%
0.791	29-04-2013		29-04-2013	2.74	-246.4%
0.033	06-05-2013	May	06-05-2013	1.84	-5561.5%
1.540	21-05-2013		21-05-2013	1.42	7.8%
2.600	03-06-2013	June	03-06-2013	1.25	51.9%
3.080	17-06-2013		17-06-2013	1.67	45.8%
1.720	02-07-2013	July	02-07-2013	1.63	5.2%
1.330	15-07-2013		15-07-2013	2.13	-60.2%
1.120	06-08-2013	August	06-08-2013	1.78	-58.9%
1.150	19-08-2013		19-08-2013	1.33	-15.7%
1.760	04-09-2013	September	04-09-2013	1.87	-6.3%
3.370	16-09-2013		16-09-2013	1.93	42.7%
3.260	07-10-2013	October	07-10-2013	1.72	47.2%
2.850	20-10-2013		20-10-2013	1.87	34.4%
2.220	04-11-2013	November	04-11-2013	1.60	27.9%
2.170	18-11-2013		18-11-2013	1.75	19.4%
3.530	02-12-2013	December	02-12-2013	1.68	52.4%
6.280	16-12-2013		16-12-2013	1.97	68.6%
3.118	**Average**	**Annual**	**Average**	2.03	**35.0%**

ANNUAL REPORT
2013
Summary of Sewage Laboratory Sampling Results
PERCENT REDUCTION

Appendix B-4

Raw Sewage				Final Effluent	
Biochemical Oxygen Demand				Biochemical Oxygen Demand	Percentage Reduction
mg/L	Date	Month	Date	mg/L	%
101	03-01-2013	January	03-01-2013	9	91.1%
131	14-01-2013		14-01-2013	8.2	93.7%
137	04-02-2013	February	04-02-2013	11.3	91.8%
104	19-02-2013		19-02-2013	9.9	90.5%
129	04-03-2013	March	04-03-2013	10.4	91.9%
147	19-03-2013		19-03-2013	9.3	93.7%
109	16-04-2013	April	16-04-2013	10.4	90.5%
18	29-04-2013		29-04-2013	12.5	30.6%
60	06-05-2013	May	06-05-2013	17.3	71.2%
42.1	21-05-2013		21-05-2013	6.2	85.3%
81	03-06-2013	June	03-06-2013	6.4	92.1%
66	17-06-2013		17-06-2013	5.9	91.1%
34	02-07-2013	July	02-07-2013	3.3	90.3%
27.2	15-07-2013		15-07-2013	5.7	79.0%
34	06-08-2013	August	06-08-2013	2.9	91.5%
18	19-08-2013		19-08-2013	2	79.8%
33.9	04-09-2013	September	04-09-2013	4.7	86.1%
72	16-09-2013		16-09-2013	3.1	95.7%
69	07-10-2013	October	07-10-2013	2	97.1%
60	20-10-2013		20-10-2013	2.6	95.7%
50	04-11-2013	November	04-11-2013	3.4	93.2%
60	18-11-2013		18-11-2013	5.6	90.7%
134	02-12-2013	December	02-12-2013	5	96.3%
27.9	16-12-2013		16-12-2013	4.9	82.4%
73	**Average**	**Annual**	**Average**	7	**90.7%**

ANNUAL REPORT
2013
Summary of Sewage Laboratory Sampling Results
PERCENT REDUCTION

Appendix B-5

Raw Sewage				Final Effluent	
Total Suspended Solids				Total Suspended Solids	Percentage Reduction
mg/L	Date	Month	Date	mg/L	%
91.6	03-01-2013	January	03-01-2013	5.2	94.3%
164	14-01-2013		14-01-2013	8.1	95.1%
152	04-02-2013	February	04-02-2013	5.9	96.1%
131	19-02-2013		19-02-2013	9.7	92.6%
192	04-03-2013	March	04-03-2013	12.4	93.5%
182	19-03-2013		19-03-2013	8.8	95.2%
146	16-04-2013	April	16-04-2013	13.5	90.8%
30.4	29-04-2013		29-04-2013	15.8	48.0%
209	06-05-2013	May	06-05-2013	16.8	92.0%
55.7	21-05-2013		21-05-2013	9	83.8%
123	03-06-2013	June	03-06-2013	7.9	93.6%
93	17-06-2013		17-06-2013	7.3	92.2%
45.7	02-07-2013	July	02-07-2013	6.2	86.4%
33.6	15-07-2013		15-07-2013	3.2	90.5%
38.3	06-08-2013	August	06-08-2013	3.1	91.9%
26.9	19-08-2013		19-08-2013	3	88.8%
60.1	04-09-2013	September	04-09-2013	3.6	94.0%
110	16-09-2013		16-09-2013	3.9	96.5%
158	07-10-2013	October	07-10-2013	5.5	96.5%
77.5	20-10-2013		20-10-2013	2.5	96.8%
65.8	04-11-2013	November	04-11-2013	4.6	93.0%
102	18-11-2013		18-11-2013	5.7	94.4%
361	02-12-2013	December	02-12-2013	8.3	97.7%
186	16-12-2013		16-12-2013	7.4	96.0%
118	Average	Annual	Average	7	**93.7%**

ANNUAL REPORT
2013
Summary of Sewage Laboratory Sampling Results
PERCENT REDUCTION

Appendix B-6

Raw Sewage				Final Effluent	
E-Coli				E-Coli	Percentage Reduction
C.F.U./100 ml	Date	Month	Date	C.F.U./100 ml	%
3,400,000	03-01-2013	January	03-01-2013	> 24,000	99.3%
3,900,000	14-01-2013		14-01-2013	> 2,420	99.9%
4,100,000	04-02-2013	February	04-02-2013	> 24,200	99.4%
3,900,000	19-02-2013		19-02-2013	4,200	99.9%
2,100,000	04-03-2013	March	04-03-2013	2,000	99.9%
4,600,000	19-03-2013		19-03-2013	1,700	100.0%
4,600,000	16-04-2013	April	16-04-2013	> 2,420	99.9%
1,200,000	29-04-2013		29-04-2013	10,000	99.2%
4,400,000	06-05-2013	May	06-05-2013	> 2,420	99.9%
540,000	21-05-2013		21-05-2013	1,600	99.7%
5,200,000	03-06-2013	June	03-06-2013	220	100.0%
2,600,000	17-06-2013		17-06-2013	23	100.0%
2,000,000	02-07-2013	July	02-07-2013	10	100.0%
820,000	15-07-2013		15-07-2013	< 1	100.0%
980,000	06-08-2013	August	06-08-2013	130	100.0%
870,000	19-08-2013		19-08-2013	13	100.0%
490,000	04-09-2013	September	04-09-2013	24	100.0%
2,420,000	16-09-2013		16-09-2013	56	100.0%
3,100,000	07-10-2013	October	07-10-2013	330	100.0%
2,700,000	20-10-2013		20-10-2013	93	100.0%
24,000,000	04-11-2013	November	04-11-2013	550	100.0%
2,420,000	18-11-2013		18-11-2013	> 2,420	99.9%
24,200,000	02-12-2013	December	02-12-2013	> 2,420	100.0%
5,200,000	16-12-2013		16-12-2013	> 2,420	100.0%
4,572,500	Average	Annual	Average	3,486	**99.9%**

ANNUAL SEWAGE REPORT
2013
Summary of Exceedences of Certificate of Approval for Average Maximum Daily Flows

Appendix C

				Laboratory Results								
#	Date	Daily Flow (m^3)	Reason	Ammonia (N)	Ammonia Un-Ionized (N)	Total Phosphorus (TP)	Biochemical Oxygen Demand (BOD5)	CBOD	Total Suspended Solids (TSS)	pH @ 15°C, WSER (pH)	pH	Exceedence
				(mg/L)								
1	27-04-2013	4265.79	Snow Melt	18.30	0.34	2.78	16.0	9.3	14.7	7.84	8.05	No
2	28-04-2013	6734.62	Snow Melt	17.10	0.23	2.74	12.5	10.9	15.8	7.70	7.69	No
3	29-04-2013	5222.25	Snow Melt	16.20	0.267	2.80	10.2	10.2	16.2	7.79	7.74	No
4	30-04-2013	7078.45	Snow Melt	15.00	0.215	2.32	15.6	10.2	14.7	7.73	7.82	No
5	01-05-2013	4314.80	Snow Melt	12.90	0.228	2.04	27.7	8.7	13.4	7.82	8.10	Yes
6	05-05-2013	5211.38	Snow Melt	11.10	0.254	1.84	17.3	8.1	16.8	7.93	7.90	No
7	06-05-2013	4656.41	Snow Melt	12.20	0.237	1.84	11.4	7.9	13.3	7.86	7.92	No
8	07-05-2013	4196.31	Snow Melt	9.89	0.201	1.78	11.9	6.2	10.7	7.88	7.79	No
9	22-05-2013	4221.05	Rain	6.54	0.189	1.34	5.6	4.4	7.0	8.04	8.14	No
10	23-05-2013	4241.33	Rain	6.12	0.207	1.27	7.2	3.4	6.2	8.11	8.03	No
11	29-07-2013	5400.36	Rain	6.43	—	2.14	6.3	—	23.4	—	7.90	No
12	30-07-2013	4136.99	Rain	6.48	—	1.89	7.5	—	6.9	—	7.74	No

Sample analysis concluded an exceedence on our C of A for BOD_5. The M.A.C is 25 mg/L and the Target is 20 mg/L. Samples were also collected on the following day and results show that we were in compliance according to our C of A.