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May 10, 2010

Township Supervisor
Attn: Frank Force
12050 Old Belding Road
Belding, MI 48809-9318

Grattan Township and Grattan/Vergennes Sewer Systems **April 2010 Monthly Operations Report**

Dear Frank,

Attached please find the Grattan Township Wastewater Utilities Report and the Preventative/Corrective Maintenance Report for April 2010.

We are in need of vactoring BPI-PS #2, BPI-PS #3, BPI-PS #4, ML-PS #8A, and ML-PS #9 as part of routine maintenance to ensure proper float actuation to operate the pumps and establish alarm notification. The cost has been estimated by Plummer's Environmental to be approximately \$2,500.

As you are already aware, the old green generator had failed while providing power to a pump station while a contractor was replacing the power meter for Consumers Energy. The age of this generator, its inability to purchase replacement components, its inability to provide power to BCL-PS #1 or BPI-PS #1, and unsafe wiring (energizing both the 240VAC and 480VAC leads) has resulted in our recommendation for replacement.

We will have an operator trained in determining accurate sludge estimates on-site the week of May 17 – 21 to work with Robert Carlstrom in measuring the sludge levels in both lagoons. Following the accumulation of this data, an accurate estimate of sludge quantities, removal and disposal costs would be determined by our engineering department.

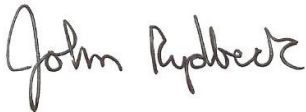
The Grattan Township Lagoon Storage study has been completed to be submitted to the DNRE. Following the DNRE's temporary approval to increase the irrigation for the 2009 season, there was a request to complete a storage study to deem the need to look for lagoon expansion and/or infiltration and inflow analysis of the collections system. The attached report summarized the findings and provides our professional conclusion.

Finally, we are requesting some action by the board in regards to the long-term operations of these wastewater systems. IAI has been deferring equipment purchases in consideration of the 6-month probationary period stipulated in our contract. This probationary period was extended for an additional 6-months, but the need for dedicated equipment for the project is increasing and would affect the long-term sustainability of properly maintaining both collection systems. Our "temporary" equipment needs to be returned to their respective projects, therefore, the purchasing of this equipment is necessary in the near future. These total and annual equipment cost estimates are available in our original proposal.

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We were pleased with the turn-out for the April 27 tour of the facilities and looking forward to offering another shortly. The provision of an on-site visual helps to eliminate the need to illuminate the various obstacles and accomplishments within lengthy reports (present report excluded of course :)

As always I would be happy to elaborate on any of the submitted information or provide any additional information that would assist the township board. If there are any questions or concerns please do not hesitate in contacting me.

Sincerely,



John Rydbeck
(616) 890-5768
Infrastructure Alternatives - Grattan Township Sewer System Operations Manger

Attachments: April 2010 Preventative/Corrective Maintenance Report
April 3, 2010 Power Outage Report
May 2009 – April 2010 Power Outage Report
Grattan Township WWTF Lagoon Storage Study

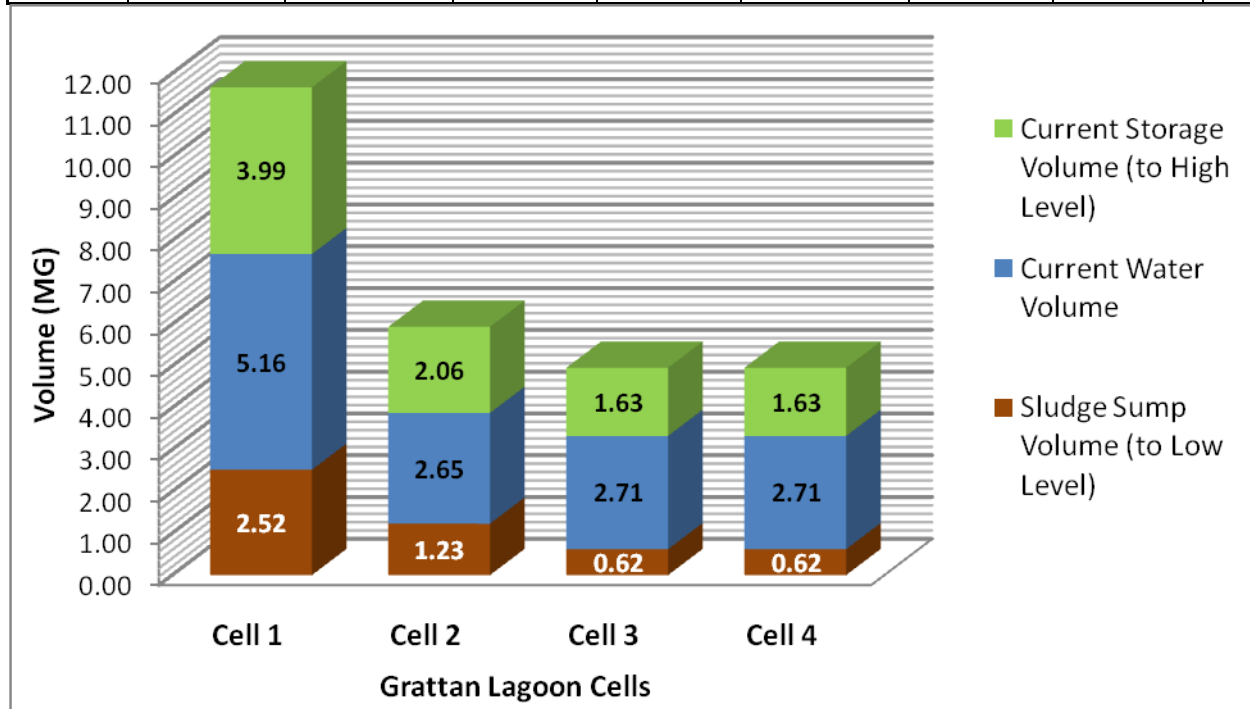
Grattan Township Sewer System

Executive Summary:

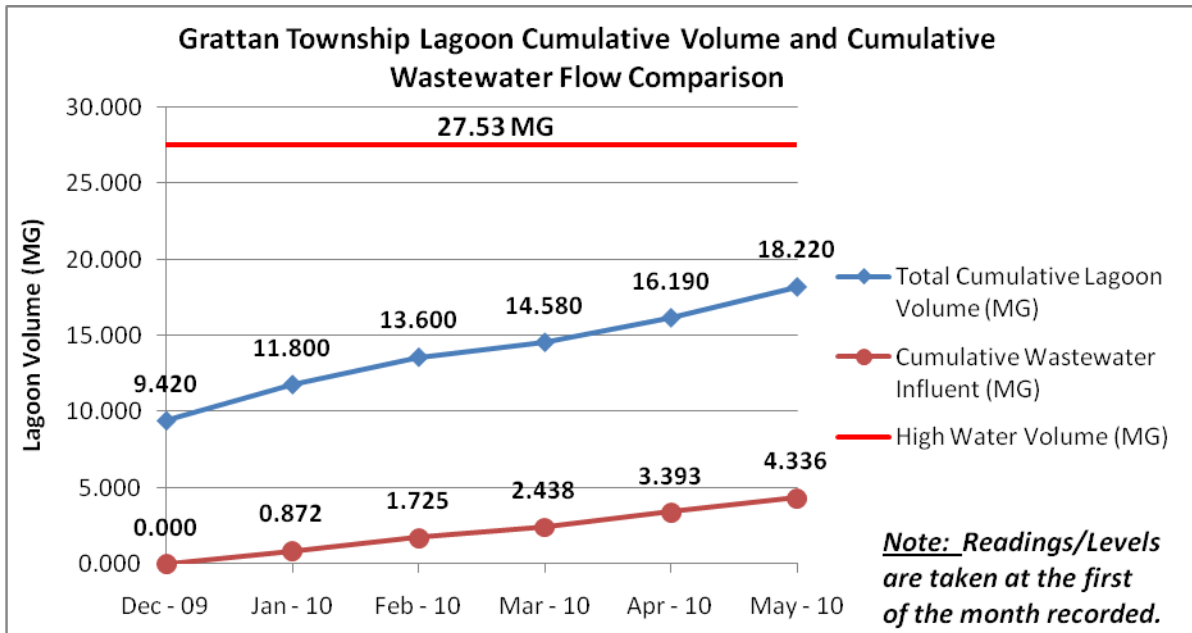
A snapshot of the individual and total lagoon volume and storage capacity (as of May 1, 2010) is shown below. The last graph will show the monthly total lagoons' volume with monthly wastewater flow totals. More detailed weekly data can be made available upon request.

The irrigation system has been de-winterized and will begin irrigation on May 3, 2010. We are looking to bring the levels of the lagoons to a level to visually inspect (and document) the sludge levels as was done at the Grattan/Vergennes WWTF.

May 1, 2010 Lagoon Levels	Feet Below Transfer / Pumping Structure Grating	Water Elevation (Top Structure Grating= 905.5')	Current Total Volume	Low Water Volume (Sludge Sump)	Current Water Volume (Current Volume Minus Sump Volume)	Current Storage Volume (To High Water Level)	Total WWTF Current Volume	Total WWTF Storage Volume (to High Water Level)
Cell 1	5.25 ft	900.25 ft	7.68 MG	2.52 MG	5.16 MG	3.99 MG	18.22 MG	9.31 MG
Cell 2	5.20 ft	900.30 ft	3.88 MG	1.23 MG	2.65 MG	2.06 MG		
Cell 3	6.70 ft	898.80 ft	3.33 MG	0.62 MG	2.71 MG	1.63 MG		
Cell 4	6.70 ft	898.80 ft	3.33 MG	0.62 MG	2.71 MG	1.63 MG		



*Data obtained from Prein&Newhof Lagoon Volume Calculator.



There was an additional 0.655 MG to the total wastewater flow to the lagoons to equal the increase to the total lagoon volume over the same time period.

Emergency Call-Outs:

- Saturday April 3, 2010 @ 2:30 p.m. – 10:00 p.m. BPI-PS #2; BPI-PS #3; BPI-PS #3A POWER OUTAGE:** IAI on-call operator, Robert Carlstrom, once again began receiving the power failure calls from the alarm telemetry systems starting at 2:30 p.m. It soon became apparent from the large volume of phone calls that the power outage was, once again, widespread. Additional IAI personnel (Operator - Ryan Moseley) was contacted and arrived on-site at 3:15 p.m. to begin delegation of tasks. Every station was, once again, checked for proper operation and two crucial pump controls issues surfaced that required additional electrical controls troubleshooting and oversight. IAI personnel Operations Manager (John Rydbeck), Master Mechanic (Bob Stephens), and Grandtech Master Electrician (JC VanHarn) arrived on-site at 4:30 p.m. Due to the large scope of issues and widespread power loss, Russ Johnson of IAI arrived on-site at 6:30 p.m. to assist in grinder station inspections. Power was fully restored in both systems by 7:30 p.m., however the controls repairs and additional grinder station inspections in both systems lasted until 10:00 p.m. It is unknown as to what exactly caused this second power surge and corresponding outage. It was noted that no Consumer’s Energy transformers were blown, along with no downed power lines observed. The power surge (according to Grandtech) seemed to have been a high voltage-high power (amperage) surge based on the damage it caused. In the end, Infrastructure Alternatives was able to respond promptly to provide stand-by power, troubleshooting, and repair in order to prevent any sewer back-ups and overflows in to the lake during and after the power outage. See attached report for additional details.
- Thursday April 8, 2010 @ 4:00 a.m. – 6:30 a.m. BPI-PS #3 PHASE LOSS:** Received a phone call from the Sensaphone dialer regarding a phase loss at the station. IAI arrived on-site with a portable generator until stable 480VAC 3-Phase power was restored to the station. The station did not even experience a High Level from the quick response.

- Thursday April 15, 2010 @ 5:45 p.m. – 10:45 p.m. BPI-PS #2; BPI-PS #3; BPI-PS #3A; BPI-PS #4 POWER OUTAGE: IAI on-call operator, Robert Carlstrom, once again began receiving the power failure calls from the alarm telemetry systems starting at 5:30 p.m. It soon became apparent from the large volume of phone calls that the power outage was, once again, widespread. Additional IAI personnel (Operator - Ryan Moseley and Division Manager- Kent Triewailer) was contacted and arrived on-site at 3:15 p.m. to begin delegation of tasks. Every station was, once again, checked for proper operation and two crucial pump controls issues surfaced that required additional electrical controls troubleshooting and oversight. IAI personnel Operations Managers (John Rydbeck and Russ Johnson) as well as Operator, Josh Mannard, arrived on-site by 6:30 p.m. to assist in the project of station inspection and stand-by power prioritization. The High Level ISR at BPI-PS #3A was blown and replaced with a Diversified ISR. Power was fully restored in both systems by 8:30 p.m., however the controls repairs and additional grinder station inspections in both systems lasted until 10:00 p.m. It is unknown as to what exactly caused this second power surge and corresponding outage. It was noted that no Consumer's Energy transformers were blown, along with no downed power lines observed. In the end, Infrastructure Alternatives was able to respond promptly to provide stand-by power, troubleshooting, and repair in order to prevent any sewer back-ups and overflows in to the lake during and after the power outage. This pattern of extensive power outages/surges is a growing concern for long-term operations and cost.

General Operation Information / Housekeeping:

- The irrigation system was de-winterized and all of the guns were checked for proper operation in preparation for beginning irrigation on May 3, 2010.

Preventative Maintenance:

- The preventative maintenance tasks have been completed for April 2010 and summarized in the attached report.

Corrective Action / Significant Tasks Completed:

- Consumer's Energy has been replacing the analog electrical meters on the stations with digital displays. IAI has been providing stand-by power during the time that the meter is replaced on the Consumer's Energy power line.
- The final Grattan Township Lagoons Storage Study was completed to be submitted to the DNRE. The report is attached.
- Wednesday April 21, 2010 BPI-PS #4; Pump #2: A new ABS 3HP Piranha grinder pump was installed as rebuilding the existing 3HP Hydromatic grinder was the more expensive option. The pumping capacity of the pump increased from 41 gpm to 61 gpm (station design of 62 gpm).

Pending Projects:

- Removal of the "venture-style" flow-meters at BPI-PS #1 to decrease the head pressure acting on the pumps during operation to increase pumping capacity and decrease pump blow-by.
- Install (and/or wire) Phase Monitors in each of the 480VAC 3-Phase stations to prevent a pump from "single-phasing" or attempting to run with insufficient power which could damage the motor.

Grattan/Vergennes Township Wastewater System

Executive Summary:

The WWTF continued to store wastewater for the Spring 2010 discharge. Williams & Works is currently preparing specifications for replacement of the irrigation system as required by the DNRE.

Emergency Call-Outs:

- Saturday April 3, 2010 @ 2:30 p.m. – 10:00 p.m. BCL-PS #1; 5MILE-PS #2; 5MILE-PS #3; ML-PS #4; ML-PS #5; ML-PS #6; ML-PS #7; ML-PS #8; ML-PS #8A; ML-PS #9; ML-PS #10; ML-PS #11; ML-PS #12; ML-PS #13; ML-PS #14; BCL-PS #17 POWER OUTAGE: IAI on-call operator, Robert Carlstrom, once again began receiving the power failure calls from the alarm telemetry systems starting at 2:30 p.m. It soon became apparent from the large volume of phone calls that the power outage was, once again, widespread. Additional IAI personnel (Operator - Ryan Moseley) was contacted and arrived on-site at 3:15 p.m. to begin delegation of tasks. Every station was, once again, checked for proper operation and two crucial pump controls issues surfaced that required additional electrical controls troubleshooting and oversight. IAI personnel Operations Manager (John Rydbeck), Master Mechanic (Bob Stephens), and Grandtech Master Electrician (JC VanHarn) arrived on-site at 4:30 p.m. Due to the large scope of issues and widespread power loss, Russ Johnson of IAI arrived on-site at 6:30 p.m. to assist in grinder station inspections. Power was fully restored in both systems by 7:30 p.m., however the controls repairs and additional grinder station inspections in both systems lasted until 10:00 p.m. It is unknown as to what exactly caused this second power surge and corresponding outage. It was noted that no Consumer's Energy transformers were blown, along with no downed power lines observed. The power surge (according to Grandtech) seemed to have been a high voltage-high power (amperage) surge based on the damage it caused. In the end, Infrastructure Alternatives was able to respond promptly to provide stand-by power, troubleshooting, and repair in order to prevent any sewer back-ups and overflows in to the lake during and after the power outage. See attached report.
- Saturday April 3, 2010 @ 11:30 p.m. – 2:00 a.m. ML-PS #8 HIGH LEVEL ALARM: IAI received the alarm phone call from Sensaphone dialer and arrived on-site to find that the circuit breaker providing power to the Rotophase motor was tripped. The green generator was brought on-site to provide standby 3-phase 240VAC power in the event that the problem could not be rectified. The breaker was reset and the system was evaluated to determine the cause. No cause could be found and the station was monitored and seemed to operate normally. The replacement of this pump station controls and 3-phase power generation with a VFD is currently being scheduled and was completed on Tuesday April 6, 2010.
- Sunday April 4, 2010 @ 4:45 a.m. – 7:45 a.m. ML-PS #4 HIGH LEVEL ALARM: IAI arrived on-site after receiving the Sensaphone alarm to find that the normally closed contact on the redundant controls ISR was malfunctioning. The primary controls for the panel had still be operating normally and there was no actual high level alarm in the station. The ISRs used for the redundant controls were the existing controls and utilized to save costs. The ISRs will be replaced, along with some re-wiring, by Grandtech on Wednesday April 7, 2010.
- Tuesday April 6, 2010 @ 7:00 a.m. – 9:00 a.m. ML-PS #8 HIGH LEVEL: Arrived on-site to find that the overloads were tripped for Pump #2 with a likely plug in the pump. The station's controls were modified to only run with Pump #1 until Pump #2 could be pulled for inspection and repaired as necessary. The pump was pulled on Thursday April 8 and found to be plugged.

- Thursday April 15, 2010 @ 5:45 p.m. – 10:45 p.m. BCL-PS #1; 5MILE-PS #2; 5MILE-PS #3; ML-PS #4; ML-PS #5; ML-PS #6; ML-PS #7; ML-PS #8; ML-PS #8A; ML-PS #9; ML-PS #11; ML-PS #12; ML-PS #13; ML-PS #14; RL-PS #15; BCL-PS #17 POWER OUTAGE: IAI on-call operator, Robert Carlstrom, once again began receiving the power failure calls from the alarm telemetry systems starting at 5:30 p.m. It soon became apparent from the large volume of phone calls that the power outage was, once again, widespread. Additional IAI personnel (Operator - Ryan Moseley and Division Manager- Kent Trieweiler) was contacted and arrived on-site at 3:15 p.m. to begin delegation of tasks. Every station was, once again, checked for proper operation and two crucial pump controls issues surfaced that required additional electrical controls troubleshooting and oversight. IAI personnel Operations Managers (John Rydbeck and Russ Johnson) as well as Operator, Josh Mannard, arrived on-site by 6:30 p.m to assist in the project of station inspection and stand-by power prioritization. The High Level ISR at BPI-PS #3A was blown and replaced with a Diversified ISR. Power was fully restored in both systems by 8:30 p.m., however the controls repairs and additional grinder station inspections in both systems lasted until 10:00 p.m. It is unknown as to what exactly caused this second power surge and corresponding outage. It was noted that no Consumer’s Energy transformers were blown, along with no downed power lines observed. In the end, Infrastructure Alternatives was able to respond promptly to provide stand-by power, troubleshooting, and repair in order to prevent any sewer back-ups and overflows in to the lake during and after the power outage. This pattern of extensive power outages/surges is a growing concern for long-term operations and cost.
- Friday April 16, 2010 @ 11:00 p.m. – 11:30 p.m. ML-PS #11 POWER OUTAGE: Received a power outage and remotely monitored the station through the Mission dialers. Received a “Power Restored” acknowledgement within 30 minutes which verified that the station was normal.
- Wednesday April 21, 2010 @ 4:00 p.m. – 5:30 p.m. ML-PS #6 LOW LEVEL ALARM: Received alarm phone call from Sensaphone dialer and arrived on-site to find the station at normal level, however the High Level float for the redundant controls was malfunctioning. This produced a false “pump-on” which kept the pumps running longer than they should have. The float was replaced on Thursday.
- Friday April 23, 2010 @ 11:17 p.m. – 12:17 p.m. ML-PS #11 POWER OUTAGE: Received the power outage alarm from the Mission dialer and remotely monitored the station through the Mission software. Received a “Power Restored” acknowledgement within 30 minutes which verified that the station was operating properly.
- Saturday April 24, 2010 @ 7:50 a.m. – 11:15 a.m. ML-PS #11 POWER OUTAGE: Received the alarm message from the Mission dialer with no verification that power was restored. Arrived on-site with a portable generator to provide stand-by power while Consumer’s Energy was notified of the situation. They arrived and found three bad areas in the insulation on the underground line providing power to the station. The areas were excavated and repaired with splice kits. A request was formally made to replace the entire line to prevent a re-occurrence.
- Tuesday April 27, 2010 @ 12:00 a.m. – 1:30 a.m. ML-PS #11 POWER OUTAGE: Received phone call from Mission dialer regarding the power outage. Arrived on-site to find only the station without power. A portable generator was connected and Consumer’s Energy was again notified to fix the problem. Consumer’s Energy arrived on Wednesday April 28, 2010 to replace the underground line providing power to the station.
- Friday April 30, 2010 @ 8:00 p.m. – 9:45 p.m. ML-PS #6 HIGH LEVEL ALARM: Arrived on-site after receiving alarm call from Sensaphone dialer to find the station at normal level. The

Lag Pump On set-point and High Level Alarm set-point were the same setting, which would cause a call-out from the ML-PS #7 pumping more than ML-PS #6 could. Settings were adjusted.

General Operation Information / Housekeeping:

- To assist Maintech in the removal of Discharge Pump #1 at the Grattan/Vergennes Plant, the discharge structure was emptied. Because of the depth of the structure and the large amounts of duckweed, a vactor truck from Plummer’s Environmental was contracted. The duckweed was disposed of in the woods to prevent its re-accumulation in the lagoons and transfer structures.

Preventative Maintenance:

- The preventative maintenance tasks have been completed for the month April 2010 and summarized in the attached report.

Corrective Action / Significant Tasks Completed:

- Consumer’s Energy has been replacing the analog electrical meters on the stations with digital displays. IAI has been providing stand-by power during the time that the meter is replaced on the Consumer’s Energy power line.
- Monday April 5, 2010 ML-PS #6; Pump #2: Pump was pulled due to immediately tripping the overloads (suspected to be related to the last power surge). It was brought to FixAll Electric for evaluation and the motor failure was found to be likely due to a violent short to ground (indicative of a power surge). Given the pump’s inability to be re-built a new 10HP Flygt pump was purchased to be installed at the station. The pumping capacity was increased to 135 gpm in comparison to the previous 96 gpm. Substantial blow-by from faulty pump mounts and bases are contributing the difference from the new pump meeting the station design of 175 gpm.
- Monday April 5, 2010 ML-PS #7; Pump #1: Pump was pulled and brought to FixAll Electric after showing a seal failure on the controls. The 7.5HP Hydromatic pump was also found to have excessive wear on the impeller. The operation of the pump on its pump curve will be verified to match its TDH at the station.
- Monday April 5, 2010 ML-PS #8; Pump #1: Pump was found to have tripped the overloads. The pump was removed, disassembled, and found to have a cloth wedged between the bottom of the impeller and its rotation within the volute. The rag was removed and the pump ran fine.
- Monday April 5, 2010 BCL-PS #17; Pump #1: Pump was found to have tripped the overloads. The grinder pump was removed and found to have a rag wedged in the cutters of the pump. The pump was disassembled to remove the rag. The condition of the inner axial cutter ring and outer cutter rings were showing significant wear that would lead to its inability to properly grind the material. A new cutter assembly has been ordered for replacement.
- Thursday April 8, 2010 ML-PS #8; Pump #2: Pump was found to have tripped the overloads. The pump was removed, disassembled, and found to have a cloth wedged between the bottom of the impeller and its rotation within the volute. The rag was removed and the pump ran fine.

Pending Projects:

- Removal of the “venture-style” flow-meters at BCL-PS #1 to decrease the head pressure acting on the pumps during operation to increase pumping capacity and decrease pump blow-by.
- Install (and/or wire) Phase Monitors in each of the 480VAC 3-Phase stations to prevent a pump from “single-phasing” or attempting to run with insufficient power which could damage the motor.