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April 9, 2010

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

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

Dear Frank,

Attached please find the Grattan Township Wastewater Utilities Report and the Preventative/Corrective Maintenance Report for March 2010. Also attached are the letters summarizing the power outage/surge events on March 31, 2010 and then again on April 3, 2010. The following mechanical and electrical repairs/upgrades have been deemed urgent due to their failures compounding the recent power outage/surge alarm events.

Issues with the roto-phase motor and controls at ML-PS #8 before, during, and after the recent power outage required the replacement of the panel's controls on April 6, 2010. The total estimated cost for (2) VFD units, (1) MPC digital unit and pressure transducer for pump controls, (2) Diversified ISR units for back-up controls, wiring, and all of the appropriate wiring schematics is \$4,500. This eliminates both the faulty roto-phase motor, original Warrick ISR's, and floats while providing new wiring within the panel.

The estimated cost to complete the installation of the (2) VFD units, (2) Diversified ISR units for back-up controls, wiring, and amending the wiring schematic is \$2,250 for ML-PS #4. This will complete the rehabilitation of this panel following the most recent controls upgrade to the MPC and pressure transducer.

The inefficient pump #2 (Hydromatic) at BPI-PS #4 was assessed for repair at a cost that would make the purchase of a new pump more logical. Electrical issues with the existing pump (Pump #1) during Saturday's power outage, has expedited the need for a decision. The cost for a new ABS 3HP Pirhana Grinder will be \$3,950. This cost includes tax, delivery, pump adapters for the station, and an ABS "seal minder module.

Pump #2 at ML-PS #6 was found to be immediately tripping overloads after Wednesday's power surge/outage. FixAll had originally assessed this pump in February 2010 and just the worn impeller was in need of replacement (rebuilt impeller was purchased from Maintech). The pump was assessed by FixAll on Monday April 12, 2010 and found to have blown motor windings (stator). The extent of the failure seems to be the result of a power surge, however a conclusive professional opinion is still pending additional investigation. Although a final estimate for repair(s) is not yet available, due to the pump's age, inability to obtain spare parts, and lack of meeting station design capacity even after being rebuilt (96 gpm current vs. 175 gpm design) we would recommend purchasing a new pump. Based on the pump station design, a new ABS pump can be purchased for \$6,060 (delivered + tax) or an equal specification

Flygt pump for \$6,142 (delivered + tax) from Grandtech. We would recommend the Flygt pump because of its almost identical price and its ability to be adapted to the existing ABS base mount while allowing for its ability to revert to the Flygt mount when the station improvements are completed. The opposite is not true with an ABS pump. Pricing is inventory dependent for the Flygt pump.

Finally, we believe we have found a common problem causing poor pump draw-down data and the results of the Confined Space Entry Inspection of the stations with the worst pump base-mounts in the Grattan/Vergennes System (BCL-PS #1 and ML-PS #6) and the Grattan Township System (BPI-PS #1 and BPI-PS #5). The common variable only applies to both Pump Station #1 and is the result of a “venturi” type meter body producing excessive head pressure on the pumps. The flow meter has not been functional for quite some time, but requires to be removed and replaced with a spool piece of pipe. The pipe will be cut to allow for the installation of a mag-meter (if desired) in the future. The cost for this removal and spool-piece replacement will be \$1,750 per station (or a total of \$3,500). We will believe this will both increase pumping capacity and decrease on the amount of pump mount blow-by by decreasing the head pressure the pumps are experiencing.

The table below summarizes the requested projects and costs:

Location	Project	Cost
ML-PS #8	Elimination of Roto-Phase Motor with VFD’s, MPC w/ Pressure Transducer; Back-Up Controls on Diversified ISR’s	\$4,500
ML-PS #4	Elimination of Roto-Phase Motor with VFD’s; Back-UP Controls on Diversified ISR’s	\$2,250
BPI-PS #4; Pump #2	New 3HP ABS Piranha Grinder Pump	\$3,950 (-tax)
ML-PS #6; Pump #2	New 10HP Flygt Pump	\$6,142 (-tax)
BCL-PS #1	Removal of “venturi” meter body	\$1,750
BPI-PS #1	Removal of “venturi” meter body	\$1,750
TOTAL		\$20,342

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: March 2010 Preventative/Corrective Maintenance Report
March 31, 2010 Power Outage/Surge Report
April 3, 2010 Power Outage/Surge Report

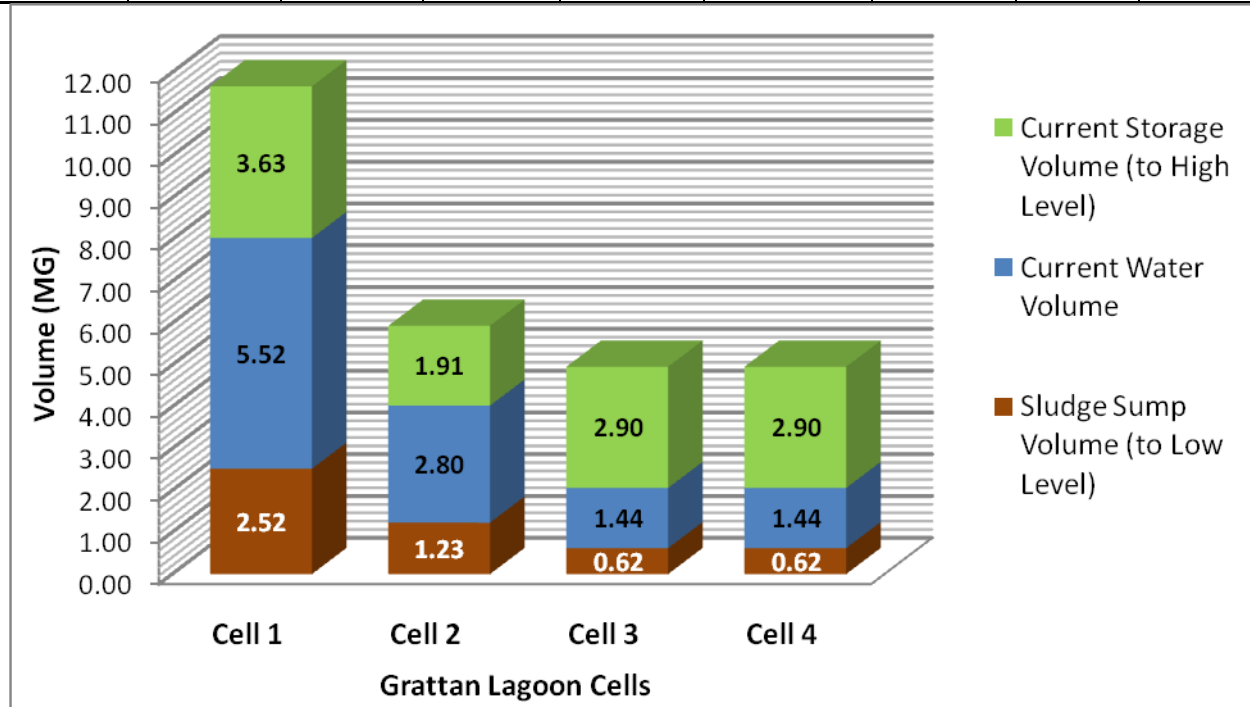
Grattan Township Sewer System

Executive Summary:

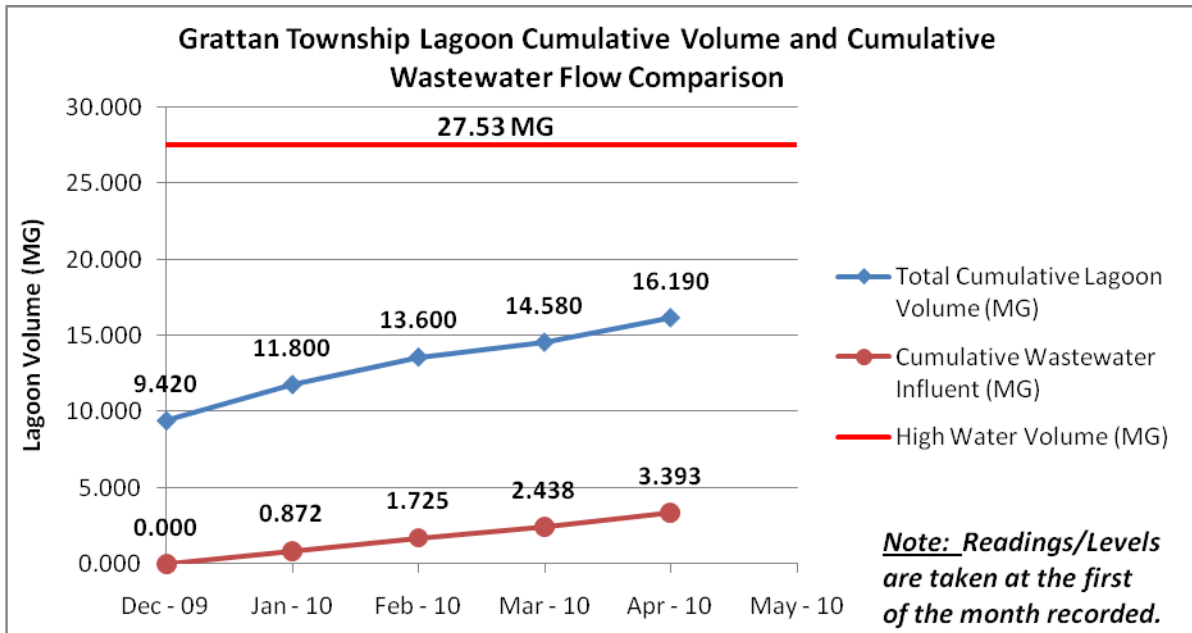
The 1st Quarter Compliance Monitoring Report was completed and submitted to the DNRE by the April 15, 2010 deadline. This report only included the groundwater sampling results (collected from the monitoring wells) due to no irrigation. A copy of the report can be made available upon request.

A snapshot of the individual and total lagoon volume and storage capacity (as of March 31, 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.

March 31, 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	5.00 ft	900.50 ft	8.04 MG	2.52 MG	5.52 MG	3.63 MG	16.19 MG	11.34 MG
Cell 2	5.00 ft	900.50 ft	4.03 MG	1.23 MG	2.80 MG	1.91 MG		
Cell 3	9.60 ft	895.90 ft	2.06 MG	0.62 MG	1.44 MG	2.90 MG		
Cell 4	9.60 ft	895.90 ft	2.06 MG	0.62 MG	1.44 MG	2.90 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:

- Sunday March 13, 2010 @ 7:00 p.m. – 10:00 p.m. BPI-PS #3 HIGH LEVEL: Received phone call from Mission Dialer with High Level alarm. Arrived on-site to find the motor starter overloads for Pump #2 tripped off. The overloads were unable to be reset. The pump was pulled the next day to find that a bad pump motor was likely the culprit. Repair estimates to follow next month.
- Monday March 15, 2010 @ 6:30 p.m. – 9:00 p.m. RESIDENTIAL ALARM CALL: Received phone call from a resident suspecting a sewer leak at 7640 Dream Isle. Arrived on-site and verified proper operation of the gravity sewer and nearby lift station force-main. The leak was located to coincide with the resident’s sewer lateral which is the responsibility of the resident. Discussions with the local residents revealed previous problems in the past. No additional action by IAI was taken.
- Saturday March 20, 2010 6:30 p.m. – 7:30 p.m. GRATTAN WWTF POWER OUTAGE CALL: Received a phone call from Consumer’s Energy (via Emergency Call Service) regarding power loss at the Grattan Township WWTP. Since the plant is not discharging, the temporary loss of power from a short-to-ground in the buried cable would not affect the plant. The other Big Pine Island stations were checked remotely to verify they had power and operating normally.
- Wednesday March 24, 2010 @ 12:00 a.m. – 7:00 a.m. BPI-PS #1; BPI-PS #5, BPI-PS #6 POWER OUTAGE: Received phone call from dialers and arrived on-site to find the listed stations without line power. A Portable generator was affixed to BPI-PS #1 with the other portable generator being used to periodically pump-down BPI-PS #5 and BPI-PS #6. The power was restored the following morning and the generators were re-fueled and placed back into the garage. No sewer overflows or back-ups were experienced during this power outage event.
- Wednesay March 31, 2010 @ 6:30 p.m. – 11:45 p.m. BPI-PS #2; BPI-PS #3; BPI-PS #3A; BPI-PS #4 POWER OUTAGE: IAI on-call operator, Robert Carlstrom, began receiving the power

failure calls from the alarm telemetry systems at 6:30 p.m. It soon became apparent from the large volume of phone calls that the power outage was widespread. Additional IAI personnel (Operator - Ryan Moseley and Master Mechanic - Bob Stephens) arrived on-site starting at 7:00 p.m. to begin delegation of tasks. Every station was checked for proper operation and pumped down as necessary. Control fuses and an ISR were found to be blown in a few stations which substantiated the power surge. Power was fully restored in both systems by 8:00 p.m., and the last repair at BPI-PS #2 was completed at 11:45 p.m. The following day all twenty-eight grinder pump stations were checked in both systems to ensure proper control and alarm operation due to the blown control and transformer fuses encountered in the larger stations.

General Operation Information / Housekeeping:

- High Water Markers (Blue Polycarbonate Strips) were affixed to the outside of all of the transfer structures for quick reference of current lagoon levels. The lagoons that do not come in contact with a transfer structures will be kept in equalization with another lagoon that does have contact during the storage season (i.e. Lagoon Cells #3 and #4).
- US Environmental and Synagrow sampled the sludge in Cell #1 to determine current capacity and estimated date for removal. Synagrow also collected composite samples to test for the bio-solids' ability to be land applied.

Preventative Maintenance:

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

Corrective Action / Significant Tasks Completed:

- Monday March 1, 2010 BPI-PS #3 Pump #1: Pulled pump to verify proper operation due to high amperage observed from the motor starter. Found failed overload in the controls and replaced from the spare parts inventory at the Grattan/Vergennes WWTP. Pump was checked visually and ran fine. Replacement overloads are not available and will require replacement of the entire motor starter/overload (matching pair) in the future. In addition, the 3-Phase Power Monitor should be wired to prevent the pumps from running during a phase loss to eliminate single-phasing and burning-out the pump motors. Currently the monitor is just wired to send an alarm to the dialer.
- Wednesday March 31, 2010 BPI-PS #3: During and following the power outage, the station continued to blow control fuses. Electrical troubleshooting revealed a blown ISR for the redundant controls. By utilizing the primary controls for the station, the ISR was disconnected to allow for the pumps to be automatically controlled. The ISR was replaced the next day in addition to wiring the 3-Phase Monitor to disable the pumps in the event of a future phase loss. No sewer back-ups or overflows were experienced during the power outage and following repairs.

Pending Projects:

- Finalize correspondence with the DNRE to determine the requirements for permanent use of the Old Orchard Irrigation System.

Grattan/Vergennes Township Wastewater System

Executive Summary:

The 1st Quarter Compliance Monitoring Report was completed and submitted to the DNRE by the April 15, 2010 deadline. This report only included the groundwater sampling results (collected from the monitoring wells) due to no irrigation. A copy of the report can be made available upon request.

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

Emergency Call-Outs:

- Friday March 12, 2010 @ 3:00 p.m. ML-GPS #17 HIGH LEVEL ALARM LIGHT: Resident called sewer emergency line to report the High Level light-on at ML-GPS #17. IAI on-call operator, Bob Stephens, arrived on-site to find the grinder pump not working properly. The pump was replaced with a spare grinder pump from the G/V WWTF garage and worked properly. There were no sewer overflows or back-ups experienced before or during the repair.
- Tuesday March 16, 2010 @ 4:00 a.m. – 7:00 p.m. ML-PS #12 LAG PUMP ON/HIGH LEVEL ALARM: Arrived on-site to find the station in normal operating level. Suspected a slug flow briefly causing the lag pump to turn on which triggered the high level alarm. The controls were checked and found to be working properly. The current alarm recognition time for the lag pump/high level alarm was 3 seconds, and was increased 3 minutes to prevent a false alarm in the future. No sewer overflows or back-ups were experienced.
- Thursday March 18, 2010 @ 5:00 p.m. – 6:15 p.m ML-PS #9 HIGH LEVEL ALARM: Received a phone call from Sensaphone dialer regarding a High Level alarm at ML-PS #9. IAI on-call operator, Bob Stephens, arrived on-site to find the station in normal operating level. Suspected a slug flow briefly causing the lag pump-on float (which also is the high level float) to activate. Both the pumps and controls were checked and found to be in good operation.
- Friday March 26, 2010 @ 8:15 a.m. – 10:00 a.m. RL-PS #16 LOW LEVEL ALARM: Received Mission dialer alarm from RL-PS #16 regarding a Low Level Alarm. IAI on-call operator, Bob Stephens, arrived on-site to find the pump-off float hung-up on a pump cord. Pump cord was repositioned to prevent the issue from re-occurring.
- Wednesay March 31, 2010 @ 6:30 p.m. – 11:45 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 #12; ML-PS #13; ML-PS #14; ML-PS #15; RL-PS #17 POWER OUTAGE: IAI on-call operator, Robert Carlstrom, began receiving the power failure calls from the alarm telemetry systems at 6:30 p.m. It soon became apparent from the large volume of phone calls that the power outage was widespread. Additional IAI personnel (Operator - Ryan Moseley and Master Mechanic - Bob Stephens) arrived on-site starting at 7:00 p.m. to begin delegation of tasks. Every station was checked for proper operation and pumped down as necessary. Some stations had blown control fuses which substantiated the power surge. Power was fully restored in both systems by 8:00 p.m., and the last repair at BPI-PS #2 was completed at 11:45 p.m. The following day all twenty-eight grinder pump stations were checked in both systems to ensure proper control and alarm operation due to the blown control and transformer fuses encountered in the larger stations.

General Operation Information / Housekeeping:

- High Water Markers (Blue Polycarbonate Strips) were affixed to the outside of all of the transfer structures for quick reference of current lagoon levels. The lagoons that do not come in contact with a transfer structures will be kept in equalization with another lagoon that does have contact during the storage season (i.e. Lagoon Cells #3 and #4).
- US Environmental and Synagrow sampled the sludge in Cell #1 to determine current capacity and estimated date for removal. Synagrow also collected composite samples to test for the bio-solids' ability to be land applied.

Preventative Maintenance:

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

Corrective Action / Significant Tasks Completed:

- Monday March 1, 2010 BCL-PS #1 Pump #1: Pump was pulled due to tripping the motor starter overloads. Pump overload was reset and the pump ran fine. Additional troubleshooting of the controls revealed a faulty pump-off float which was replaced. The chattering of the large pump intermittently turning on and off would easily trip the overloads. Pictures were taken of the excessively worn face plate of the pump mount and e-mailed to Kennedy Industries and Grandtech. The synopsis was of high head generated from the existing Venturi flow meters in the discharge forcemain allowing the pump to push away from the base mount and erode the plate. The Venturi flow meters will be removed and replaced with a spool piece of pipe this spring.
- Sunday March 6, 2010 ML-PS #8A High Level Float: High level float was found to be faulty during routine checks of the lift stations. The float was replaced and checked to verify operation.
- Tuesday March 9, 2010 ML-PS #2 Dialer: The Sensaphone dialer was found to be faulty during routine checks of the station. The dialer was replaced with a spare dialer. The dialer removed from the station will be rebuilt and tested by Sensaphone to be kept as a spare for the future.
- Tuesday March 9, 2010 ML-PS #6 Dialer: The Sensaphone dialer was found to be faulty during routine checks of the station. The dialer was replaced with a spare dialer. The dialer removed from the station will be rebuilt and tested by Sensaphone to be kept as a spare for the future.
- Wednesday March 24, 2010 5MILE-PS #2: The incoming feed from the AT&T phone line for the station was not properly connecting to the Sensaphone dialer to obtain a status update. The outgoing portion of the line, however, was working properly as had been tested during the high level alarm verifications. The line was replaced by AT&T at no charge.
- Wednesday March 31, 2010 ML-PS #6 Pump #2: Following the power surge, the pump's motor starter overloads were found to be tripped and immediately tripping upon being reset. The pump will be pulled and inspected by FixAll Electric to determine the problem and if it could have been caused by the power surge.
- Wednesday March 31, 2010 BCL-PS #17 Pump #1: Following the power surge, the pump's motor starter overloads were found to be tripped and immediately tripping upon being reset. The pump was pulled on April 5, 2010 to find rags in the cutters. The rag were removed and new cutters have been ordered to replace in the event that the pump is plugged again.

Pending Projects:

- The unreliable controls in ML-PS #6 will be replaced with a Motor Pump Controller operating from a pressure transducer with float switches for redundancy in both alarms and controls.