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March 8, 2010

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

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

**February 2010**

Dear Frank,

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

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 Operator

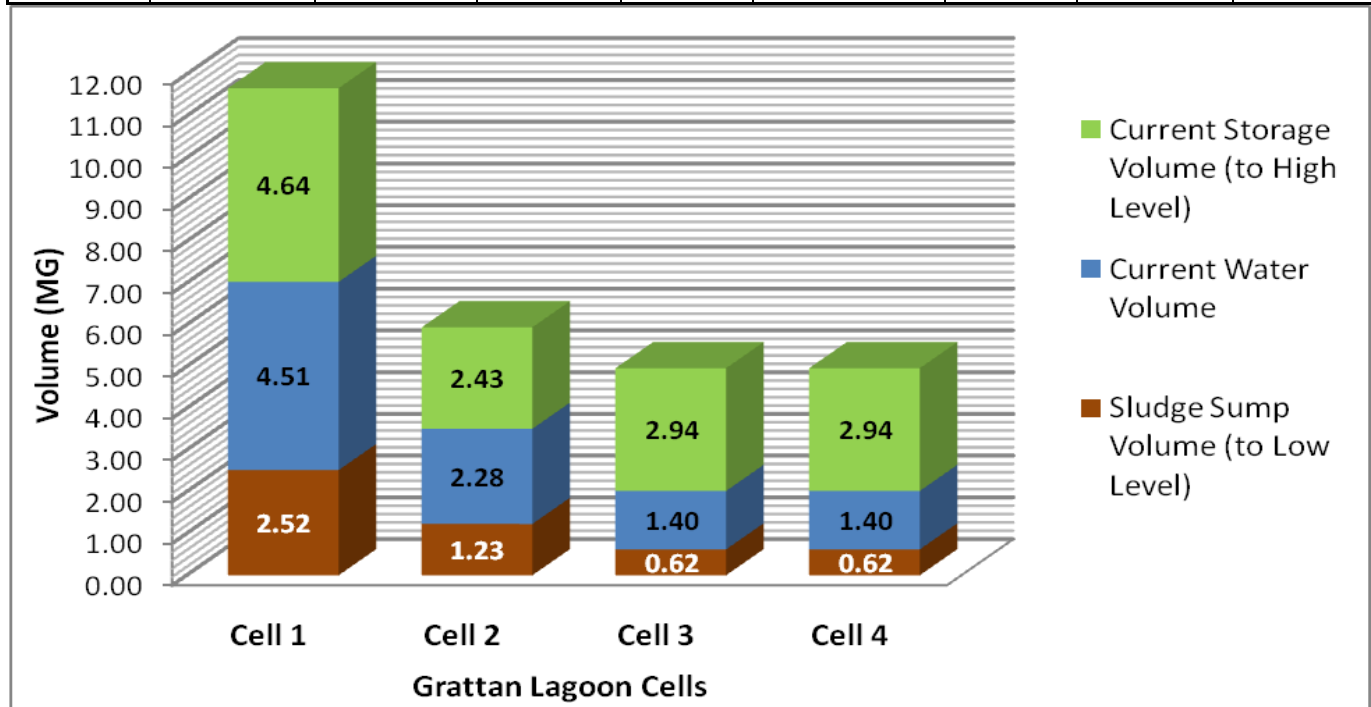
Attachments: February 2010 Preventative/Corrective Maintenance Report

## Grattan Township Sewer System

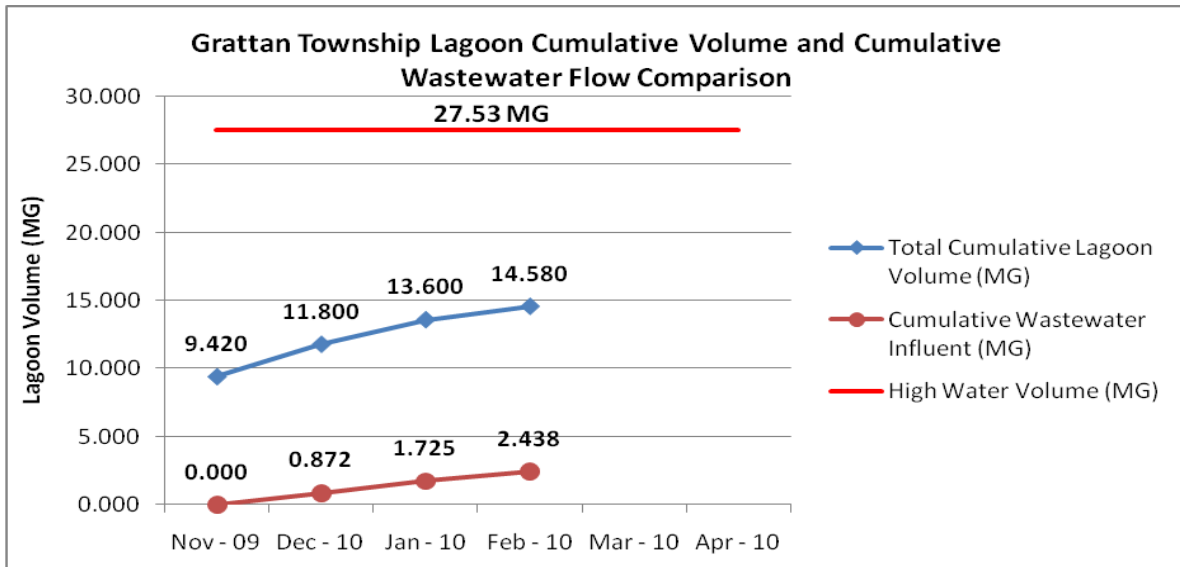
### Executive Summary:

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

March 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	5.71 ft	899.79 ft	7.03 MG	2.52 MG	4.51 MG	4.64 MG	14.58 MG	12.95 MG
Cell 2	5.69 ft	899.81 ft	3.51 MG	1.23 MG	2.28 MG	2.43 MG		
Cell 3	9.75 ft	895.75 ft	2.02 MG	0.62 MG	1.40 MG	2.94 MG		
Cell 4	9.75 ft	895.75 ft	2.02 MG	0.62 MG	1.40 MG	2.94 MG		



\*Data obtained from Prein&Newhof Lagoon Volume Calculator.



There was only a 0.267 MG difference from the total wastewater flow to the lagoons and the increase in lagoon volume. This would be from precipitation and snow/ice melt throughout the month.

**Emergency Call-Outs:**

- Friday February 26, 2010 @ 12:15 a.m. – 1:45 a.m. BPI-PS #2 HIGH LEVEL ALARM: High Level Alarm Call out from Big Pine Island Lake Pump Station #2 Sensaphone Dialer. Arrived on-site to find Pump #2 Motor Overload Breaker tripped from high amperage. Suspected rags in pump to be the culprit. Placed the pump in alternate bypass mode to keep Pump #1 in lead operation. The pump will be pulled later today to removed the rags.
- Saturday February 27, 2010 @ 12:00 p.m. – 4:00 p.m. BPI-PS #3; BPI-PS #4 POWER OUTAGE: IAI staff received power outage alarm phone call and arrived on-site to provide portable power to the pump stations to prevent any sewer back-ups and any interruptions in sewer service.

**General Operation Information / Housekeeping:**

- None

**Preventative Maintenance:**

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

**Corrective Action / Significant Tasks Completed:**

- Friday February 26, 2010 BPI-PS #2 Pump #2: Pump #2 from Big Pine Island Pump Station #2 was pulled and found to be plugged with rags, causing the pump to overload on amperage. The rags were removed and the pump was placed back in service. This pump has new cutters, so replacing the cutters would not have prevented this call-out and repair.

**Pending Projects:**

- Begin correspondence with the DNRE for determining requirements for permanent use of the Old Orchard Irrigation System.
- High Level (2ft. freeboard) markings will be installed in all of the lagoon transfer structures.

## Grattan/Vergennes Township Wastewater System

### Executive Summary:

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:

- Sunday February 14, 2010 ML-PS #8 High Level Alarm 1:00 p.m. – 5:30 p.m.: Received a high level alarm call out from Murray Lake PS #8 Sensaphone dialer. Arrived on-site to find that the roto-phase motor was not running. IAI staff connected the 240VAC 3Phase generator directly to the motor starter to energize the pumps (thus bypassing the rotophase motor). Once the station was pumped-down, troubleshooting revealed another tripped circuit breaker for the rotophase motor. The breaker was reset and the rotophase motor started up. However, during the automatic cycling of the station, the pumps shut-off prematurely and then turned back on. This signifies at least two controls and/or mechanical problems within the control panel. Specifications are being gathered to replace the rotophase motor with a Variable Frequency Drive (VFD) for each pump and controls with a Motor Pump Controller (MPC) on a pressure transducer.

### General Operation Information / Housekeeping:

- None

### Preventative Maintenance:

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

### Corrective Action / Significant Tasks Completed:

- Friday February 5, 2010 ML-PS #6 Pump #2: Installed a spare 10HP ABS pump for Pump #2 at the Murray Lake Pump Station #6 (previous pump being overhauled by FixAll Electric). After adjusting tolerances and verifying rotation, the pump failed to displace any water in the lift station. Additional troubleshooting revealed that the check valve arm was not functional, and therefore may be causing the issues. Scheduled for further investigation next week.
- Tuesday February 9, 2010 RL-PS #15 Pump #1: Installed upsized impeller (impeller for 5HP pump) on Ratigan Lake Pump Station #15. The pump increased its capacity from 27gpm to 43gpm. This is a positive sign that the force-main is in good structural condition (i.e. not crushed, split, etc.). This increased pumping velocity may begin to scour the force-main and increase the pumping capacity for the Pump #2.
- Thursday February 11, 2010 ML-PS #4 Pump #1: Installed the re-built pump #1 from Fixall Electric into ML-PS #4. The pump's discharge capacity increased from 88 gpm to 167 gpm!
- Friday February 12, 2010 ML-PS #6 Pump #2 Checkvalve: Pumped down valve chamber and disassembled the checkvalve for Pump #2. The forcemain was found to be under high air pressure due to rags keeping the checkvalve from opening and closing. The check valve was re-assembled and a key-way was installed on the shaft to keep the arm properly actuating. The steel eye-bolts for the re-coil spring was replaced with stainless steel on both check valves. However, pump #2 still failed to pump any contents from the pump station. Additional troubleshooting to follow.

- Tuesday February 16, 2010 ML-PS #6: Pumped down the valve chamber and entered the station to install a pressure gauge on checkvalve for Pump #2. Static pressure in the forcemain was recorded at 25 psi, and dynamic pressure from the pump at 24 psi. This demonstrated that the pump was only able to generate enough head pressure to open the checkvalve, but not displace any wastewater from the pump station to the downstream manhole. Dynamic pressure readings from Pump #1 showed the pump was generating ~27 psi (as measured from the check valve on pump #2 due to the inability to remove the test plug from pump #1 checkvalve).
- Wednesday February 24, 2010 ML-PS #6 Pump #2: Re-built pump picked up from FixAll electric with a re-built wear plate purchased from Al Evink of Maintech. The impeller is no longer being supplied by the manufacturer. The pump was installed and the drawdown increased from 87 gpm to 96 gpm, with the rated design of the station at 175gpm. Given the fact that the pump manufacturer no longer supplies the wearing parts of the pump, it will therefore be necessary to purchase a new pump once the capacity is less than 50%.

**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.
- Specifications are being written to obtain bids to replace the rotophase motor and the Warrick ISR's/relays with Variable Frequency Drives and a Motor Pump Controller.
- High Level (2ft. freeboard) markings will be installed in the lagoon transfer structures.