

NEWBURGH WASTEWATER TREATMENT FACILITIES 2008 ACCOMPLISHMENTS

The Town of Newburgh originally completed their Capacity, Management, Operation and Maintenance (CMOM) program in October of 2002. The document was reviewed by the US EPA during the negotiations associated with a federal Consent Decree. As a direct result of this review/negotiation, the CMOM document was revised on July 29, 2005 and the Town agreed to conduct annual audits of the program during the effective term of the Consent Decree. The Decree required not only a general program audit, but also an annual report on sewer system overflow (SSO) events and a progress report on system deficiency corrections.

It is the intent of this letter report to provide the above-referenced information. Specifically, information will be provided on:

- 1) The Utilities accomplishments during 2008
- 2) A listing of SSO events during the year
- 3) Delineation of future projects designed to correct system deficiencies
- 4) Listing of anticipated projects to meet system needs as identified through master planning activities

It is imperative that we differentiate between items 3) and 4) above. For purposes of this report and satisfying the terms of the Consent Decree, we have defined system deficiencies as follows:

“A deficiency is a mechanical and/or structural limitation in the Utility's infrastructure that results in a lack of hydraulic sanitary sewer capacity leading to an SSO event. In Newburgh's case, this would be generally associated with wet weather conditions. Sufficiency of the wet weather, hydraulic capacity shall be based upon a calibrated XP-SWMM model with an upper limit flow rate based upon a single event (i.e. no rainfall in the previous 48 hours) 5 year, 2 hour theoretical precipitation event. The 5 year, 2 hour theoretical event shall be established by utilizing the Huff 1st quartile intensity distribution for the City of Evansville, Indiana as found in the Stormwater Drainage Manual (HERPICC). The Town completed the installation of a weather station at their wastewater treatment plant capable of recording precipitation data on 10-minute intervals. Therefore, rainfall data now come directly from the wastewater treatment plant site. If an SSO event occurs, the precipitation data for the period surrounding the SSO event will be reviewed, and the recurrence interval and duration of the storm(s) will be calculated.

- If the storm is a single event (i.e. no rainfall in the previous 48 hours) and has a recurrence interval or rainfall depth greater than a 5 year, 2 hour event, the event shall be considered a Force Majeure occurrence. Table 1 shows this delineation for various storm events.
- If multiple concurrent storms (i.e. a 6 month, 2-hour storm followed by a 1 yr, 1 hour storm) cause a SSO event, it shall be presumed that the combined effect of these multiple concurrent storms exceeds the effect of a single event 5 year, 2 hour storm and shall be considered a Force Majeure occurrence.”

Table 1: Delineation of Force Majeure Occurrences for Newburgh, IN¹

Duration	Recurrence Interval									
	2-Month	3-Month	4-Month	6-Month	9-Month	1-Year	2-Year	5-Year	10-Year	25-Year
10-day	2.50"	2.73"	2.90"	3.17"	3.46"	3.68"	4.28"	5.22"	6.07"	7.40"
5-day	2.20"	2.40"	2.55"	2.79"	3.04"	3.24"	3.76"	4.59"	5.33"	6.50"
72-hr	2.00"	2.18"	2.32"	2.53"	2.77"	2.94"	3.42"	4.17"	4.85"	5.91"
48-hr	1.85"	2.02"	2.15"	2.35"	2.56"	2.73"	3.17"	3.86"	4.49"	5.48"
24-hr	1.62"	1.77"	1.88"	2.05"	2.24"	2.39"	2.77"	3.38"	3.93"	4.79"
18-hr	1.53"	1.67"	1.78"	1.94"	2.12"	2.26"	2.62"	3.20"	3.71"	4.53"
12-hr	1.41"	1.54"	1.64"	1.79"	1.95"	2.08"	2.42"	2.95"	3.42"	4.18"
6-hr	1.22"	1.33"	1.41"	1.54"	1.69"	1.79"	2.08"	2.54"	2.95"	3.60"
3-hr	1.03"	1.13"	1.20"	1.31"	1.43"	1.52"	1.77"	2.15"	2.50"	3.05"
2-hr	0.92"	1.01"	1.07"	1.17"	1.28"	1.36"	1.58"	1.93"	2.24"	2.73"
1-hr	0.72"	0.77"	0.81"	0.87"	0.93"	0.98"	1.11"	1.30"	1.47"	1.72"
30-min	0.69"	0.74"	0.78"	0.83"	0.90"	0.94"	1.06"	1.25"	1.41"	1.65"
15-min	0.55"	0.59"	0.62"	0.66"	0.71"	0.75"	0.84"	0.99"	1.12"	1.31"
10-min	0.44"	0.47"	0.50"	0.53"	0.57"	0.60"	0.68"	0.80"	0.90"	1.05"
5-min	0.27"	0.29"	0.31"	0.33"	0.35"	0.37"	0.42"	0.49"	0.55"	0.65"

¹ Based on HERPICC Stormwater Drainage Manual, July 1995.

Not considered Force Majeure single event (i.e. no rainfall in the previous 48 hours) occurrence.

Considered Force Majeure (i.e. no rainfall in the previous 48 hours) occurrence.

Contrasted to this are the planned improvement projects designed to meet the increased demands being placed on the system due to growth. Although growth can ultimately result in a system deficiency due to overloading, the distinction being made above is that a deficiency is a condition that has already manifested itself into an SSO event.

The Town of Newburgh recognizes that it must remain proactive in its approach to collection system maintenance and capacity management. To that end, the following list is provided as an update of 2007 accomplishments:

1. 2008 Accomplishments:

- Blue Lake LS Force Main Upgrade - Constructed

In the 2007 Sanitary Sewer Flow Modeling Report, this project was identified as high priority because of its status as a sanitary sewer overflow. The existing 6 inch force main was replaced with an 8 inch diameter force main. The net cross sectional area of the 8 inch pipe was increased 1.8 times over that of a 6 inch pipe. This improvement did not require upgrades to the pumps in the station although improvements were completed for the interior of the wetwell. The redirected flows from the lift station now discharge into the Victoria National Lift Station which was underutilized.

- SR 66 Phase II Sanitary Sewer Relocation- Constructed

This project was necessary because the Indiana Department of Transportation widened SR 66. There were several sanitary sewers crossing the roadway that needed to be relocated because of conflicts with the new design of the roadway. The Town did increase the size of sanitary sewer mains in areas where the sanitary sewer flow model indicated that capacity might be an issue. This project was 100% complete in the fall of 2008.

- Lincoln Avenue Widening Sewer Relocation – Constructed

This project too was the result of a road widening project that required the relocation of existing sanitary sewers. This stretch of roadway improvements from I-164 at the Warrick Vanderburgh County line to Grimm Road was funded by Warrick County. The cost to relocate the sewer was funded by the Town. The last section of pipe was installed in March of 2009. The sewer main replacements were in kind. All relocated facilities are currently operational.

- Meadowbrook Sewer Reconstruction – Constructed

A sanitary sewer main in the Meadowbrook neighborhood has been reconstructed. The original sewer main was constructed with subpar materials several years ago and was collapsing. Workers excavated the old main and installed new mains and lateral taps to the line.

- Jason Joice Sewer Extension – Constructed

The certificate of substantial completion for this project was issued in January 2007. The Owner did not complete the punch list and the letter of credit posted as surety for the project was pulled by the Department. A Contractor was hired by the Town to complete the punch list items. After passing inspection and testing of the punch list items, the system was accepted for maintenance by the Town.

- During 2008, the Collection System Maintenance Staff has completed the following tasks:
 - i) Cleaned a total of 172,346 feet of sanitary sewer mains via high pressure jetting (see **Attachment 1 & 2**). Of this total, 78,505 feet was associated with general line cleaning and 93,841 was associated with preventative maintenance on problematic sewer reaches. In most instances, the lines cleaned for preventative maintenance purposes relate back to a citizen complaint and are cleaned every 3 or 4 months. This log is kept current and a copy for 2008 has been included as **Attachment 3**.
 - ii) TV inspected 58,028 feet of sanitary sewer mains (see **Attachment 4**).
 - iii) Performed 129 sanitary sewer point repairs at a cost of \$350,496 (see **Attachments 5 and 6**) for an average cost of \$2,717 each.
 - iv) Inspected 95 new lateral service connections for compliance with the Town's construction standards (see **Attachment 7**).
- The Town developed and prioritized a list of point repairs that need to be completed and pipe reaches that should be considered for slip lining (see **Attachments 8 & 9**). **Attachment 8** contains a listing of approximately 161 repairs, most of which are point repairs. Contractor bids have been received and approved for 15 of these repairs at a cost of \$45,962. In addition, contractor quotes have been received on 50 of the remaining repairs totaling about \$255,674 with an average correction cost of \$2,749 each. Approximately 96 more point repairs have been identified, but not quoted. Utilizing the average cost developed above, this will likely equate to an additional \$263,921 taking the total estimated repair cost to \$519,595. Virtually all of these defects have been around for many years and, as such, are not considered to represent an imminent threat to the integrity of the system and hence, will be repaired as funds become available. Any emergency repairs are handled immediately and any repair requiring long term planning is placed on the preventative maintenance list. As previously described, the Town spent \$350,496 and approved an additional \$137,459 for point repairs in 2008. The 2009 budget for point repairs is \$400,000. **Attachment 9** delineates some areas under consideration for future slip lining.

- The Town provided the required training to C.S. O&M personnel (**Attachment 10**).

2. 2008 SSO Event Listing:

The summary of the overflow incident logs for 2008 is included as **Attachment 11**. A total of 15 events occurred, of which 7 were rainfall related and 8 were associated with equipment failure and line clogs. The total SSO volume was estimated to be 220,440 gallons for the entire year. However, about 193,000 gallons of that total were associated with one massive rain event on March 18, 2008 during which over 6.5" of precipitation fell.

3. Delineation of system deficiency projects:

The following projects have been identified as system deficiency projects that appear to have contributed to SSO events. A more detailed description and current status of these projects follows:

- Powers Place Lift Station Replacement

The lift station reconstruction project will eliminate an aging station on the southwest side of the system. The new site is north of the current lift station site and an easement has been obtained. Final design of the station is complete and the project was bid. The Town rejected the bids because the price for the project far exceeded the engineers estimate. The Town also wanted to bid this project along with another lift station construction project in anticipation that combined projects would result in better bid prices. The new Powers Place Lift Station Replacement project has a design flow capability of 570 GPM. Anticipated completion bid date is April 21, 2009 with an estimated completion date of November 2009.

- Lift Station No. 1 and No. 2 Upgrades

The design for the Lift Station No. 1 (Old Lock and Dam LS) project is focused primarily on the need to increase the size of the lift station to accommodate increased flows from Old Plant Lift Station. The pump capacity will be increased to accommodate a maximum flow of 4500 GPM. The construction will include a permanently installed high capacity pump to be used as backup to a newly installed dedicated storm pump. The project has been bid and awarded to a Contractor. In the interim, the Utility has dedicated a portable pump to be operated during periods of high flow.

The Lift Station No. 2 (River Ridge LS) project was found necessary because of aging equipment and the need to increase the capacity of the lift station. The increased flow from Lift Station No. 1 along with facilitating I/I from the collection system necessitated the improvements in the system. The project will focus on upgrading pumps, system controls and variable frequency drives. The maximum capacity of the station will be increased to 5800 GPM. A backup pump is dedicated to assist pumping operation during high flow events. The construction contract has been

awarded with a scheduled completion date of January 2010. In the interim, the Utility has dedicated a portable pump to be operated during periods of high flow. The construction will include a permanently installed high capacity pump to be used as backup to a newly installed dedicated storm pump.

The final design plans for Lift Station No. 1 and 2 includes dedicated relief sewer force mains. The relief sewer main is to pump from Lift Station No. 1 through and 18 inch diameter force main and discharge directly to Lift Station No. 2. A second dedicated relief sewer force main will then convey high flows via a 24 inch force main from Lift Station No. 2. The second main will discharge effluent directly to the headworks at the WWTP. A total of eighty easements are necessary before construction on the force main can begin. Easement negotiating is ongoing and construction bids for this improvement are not expected until the Summer/Fall of 2009.

- Triple Crown/Green Spring Valley Sewer Rehab Project

The 2007 Sanitary Sewer Flow Modeling Report identified deficiencies in the sewers in the vicinity of this study area. The flow model indicated that there was the potential for sanitary sewer overflows. The Department observed the flows in this system during storm events and found that the sanitary sewer flow model correctly predicted sanitary sewer overflows. The Utility moved this project from the watch list to the priority list after learning the sewer had insufficient hydraulic capacity. The project is currently under design with an anticipated bid date of August 2009.

4. Delineation of master planning improvement projects:

The list of projects delineated below includes a compilation of various projects the Town has in the works. This is a comprehensive list of all projects. The three previously described projects need to be completed to correct system deficiencies. The remainders of the projects listed are for the purpose of accommodating growth in the system. Once again, this planning effort demonstrates the proactive nature of the Town in planning for their future needs. These master planning improvement projects are listed below.

- WWTP Improvements – Bidding Phase
- Colonial Hills Interceptor Improvements – Bidding Phase
- Lincolnwood Lift Station Improvements – Easement Negotiation Phase
- Birch Drive Sewer Relocation – Construction Phase
- Install Remote Telemetry in L.S. 1, 2, 5 and 8 – Included in projects under Construction
- Annual Sewer Maintenance and Equipment
 - Jet/Vacuum Truck – Purchased
 - Sewer Camera and Truck – Future Purchase
- Old Town Sewer Improvements – Planning Phase
- West Side Sanitary Sewer Expansion (Lynch Road) – PER Completed and Under Review at the IDEM
- Slip Lining Project – Planning Phase