

Lynn Township Sewer Authority

Corrective Action Plan

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Corrective Action Plan

1.0 Background

In accordance with the Pennsylvania Department of Environmental Protection (PaDEP) Chapter 94 Municipal Wasteload Management Rules and Regulations, Subpart 94.21, the Lynn Township Sewer Authority has identified an existing hydraulic overload of the sewage system and hereby implements the following Correction Action Plan (CAP). This CAP sets forth the actions to be taken by the Authority to reduce the overload condition.

2.0 Treatment Plant Description and Collection System

The existing plant has a hydraulic capacity of 80,000 gpd and a rerated organic capacity of 162 pounds of BOD₅ per day. The facilities include raw sewage grinding and pumping, two activated sludge extended aeration tanks, one chlorine contact tank, an ultrasonic flow meter and recorder, aerobic digestion, a Control Building with Laboratory and Blower Room, chlorination facilities, and four reed-type sludge drying beds. On February 17, 2000, the PaDEP issued a Water Quality Management Part II Permit for the construction of a new 20-foot diameter final clarifier. The clarifier was installed to replace the existing final clarifiers. The existing final clarifiers were converted into additional aerobic digesters. On November 4, 2004, the PaDEP issued a Water Quality Management Part II Permit to rerate the organic capacity to 162 lbs/day.

The average daily flow through the treatment plant during 2006 was 79,800 gallons per day. The average daily flow through the treatment plant during 2006 for the months that the Northwestern Lehigh School was open was 83,844 gallons per day.

3.0 Discussion of Hydraulic Loading Projections

As part of the annual Chapter 94 Report, future flow projections were developed. The future five-year hydraulic loading projection was based on population projections developed using flow and connection data. As commercial discharges are insignificant and there are no industrial discharges to the system, the projections reflect only residential populations. Hydraulic loading data were computed from the plant operator's daily records.

The hydraulic loading for the past five years has been plotted. The average daily flow for each month and the maximum three consecutive month average daily flow are shown for each year from January 2002 through December 2006. The average per capita hydraulic contribution for the past five years was approximately 54.28 gallons per day. This value multiplied by the projected population was used to determine the projected annual average daily flows. The highest average daily flows for three consecutive months for each of the past five years were averaged to determine the maximum three-month average daily flow for each year. The ratio of maximum three-month average daily flow to annual average daily flow during the months that school was in session was determined for each year. This formula is used because the flow from the Northwestern Lehigh School is such a significant percentage of the plant influent flow. The ratios for the last five years ranged from 1.06 to 1.21. The average ratio of 1.128 was used to project the maximum three-month average daily flow. The data indicates that the treatment plant is currently experiencing a hydraulic overload condition. The Authority anticipates the expansion of the wastewater treatment plant to 160,000 gpd by mid 2009. The Township Engineer prepared an Act 537 Plan and submitted it to the PaDEP for review in October 2005. The plan was returned to the Township and is currently being revised for resubmission.

4.0 Corrective Action Tasks

The following are the tasks/measures the Authority will complete to identify and rehabilitate sources of inflow/infiltration within the system and reduce the hydraulic overload condition.

1. Complete planning; then proceed to design wastewater treatment plant expansion from 80,000 to 160,000. It is estimated that the Act 537 Plan is 90% complete, with an anticipated submission to PaDEP in mid-2007.
2. Authority personnel will perform system-wide manhole inspection program. The system consists of approximately 41,000 L.F. of sewer main (PVC and DIP) and approximately 186 manholes (March-May 2007).
 - Identify manholes requiring manhole inserts and/or chimney seals to reduce inflow.
 - Identify possible infiltration/inflow sources during manhole inspections. Develop prioritized list of repairs to eliminate infiltration/inflow sources. Based on eliminating the most infiltration/inflow for the least cost, first complete rehabilitation work in accordance with prioritized report.

- Proceed with manhole repairs to eliminate infiltration/inflow (May-July 2007).
3. Perform flow monitoring of sub-drainage areas using portable weirs. Repeat flow monitoring under high and low groundwater conditions and during rainfall events to determine ranking order of sub areas based on infiltration/inflow severity.

- The following manholes are identified as monitoring manholes:

Manhole Nos. 1, 18, 23, 29, 34, 50, and 76.

- These key monitoring manholes define nine sub-drainage areas. Refer to attached plan.
 - Perform internal inspection of sub-basins indicating excessive infiltration/inflow (May-July 2007 if groundwater conditions are adequate).
4. The Authority will contract with a flow meter service to install temporary flow meters into the following key monitoring manholes for a 60-day wet weather period to identify the problem subbasins (April-June 2007):

Manhole Nos. 2, 18, 29, and 50. (The Authority intends to request that PaDEP consider Manhole Nos. 2, 18, and 29 as “key manholes”.)

5. Upon completion of Items 3 and 4, develop report of prioritized rehabilitation (within a month after problems are identified). Based on eliminating the most infiltration/inflow for the least cost, first complete rehabilitation work in accordance with prioritized report.
6. Coordinate with Northwestern Lehigh School District to implement action plan provided by the District (refer to letters attached).
7. Develop system-wide mailer to customers identifying high flow issues and effect of sump pumps and roof drains/area drains on system. If illegal connections are identified, the Authority will offer assistance to remedy them (May 2007). If necessary, additional enforcement will be coordinated with the Township.

8. In addition, the Authority will provide quarterly reports to update PaDEP on the Authority's progress to reduce both the hydraulic and organic loadings at the wastewater treatment plant as well as the planning, permitting, financing, and construction of the wastewater treatment plant expansion and upgrade (starting in June 2007).

5.0 Corrective Action Plan Schedule

Please refer to the Schedule within the Appendix.

6.0 Expected Flow Reduction from Proposed Corrective Work

The Authority is committed to reducing inflow and infiltration within their sanitary sewer system. It is anticipated that completion of these tasks/measures to identify and rehabilitate sources of inflow and infiltration within this system will result in a reduction of the maximum monthly average flow by 25 percent. In addition, upon completion of the planning phase (i.e., Act 537 Plan Update) for the proposed wastewater treatment plant expansion, the Authority will proceed to the design, financing, construction, and operation of the expanded wastewater treatment facilities.

7.0 Plan for Ultimate Compliance

The Authority recognizes its responsibility toward the proper operation of their sanitary sewer facilities. The Authority will rigorously administer and enforce all elements of this schedule. The Authority will clearly communicate its progress to the Township as well as PaDEP through the quarterly reports. The Authority will continue its efforts in future years to identify and rehabilitate sources of inflow/infiltration within their system.

This Corrective Action Plan will be included with the subsequent submission of the Act 537 Plan Update for the proposed wastewater treatment plant expansion. The measures outlined in this Corrective Action Plan, in conjunction with the planning, design, permitting, financing, construction, and operation of the expanded wastewater treatment facilities from 80,000 gpd to 160,000 gpd, will result in the elimination of the hydraulically overloaded condition.

Appendix
