

**HANOVER ENGINEERING ASSOCIATES, INC.**

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July 26, 2006

Mr. John Pennebaker, Chairman  
Municipal Authority  
20 West Market Street  
PO Box 3  
Campbelltown, PA 17010-9999

RE: Sanitary Sewer Rate Feasibility Study  
HEA Project SLTMA06-16

Dear John:

The Authority requested that we investigate the advantages and disadvantages of utilizing a Consumption Rate billing system for customers, rather than the Flat Rate system currently used.

Please find enclosed one (1) copy of our report on this matter entitled Sanitary Sewer Rate Feasibility Study dated July 26, 2006.

This Feasibility Study provides an outline of concepts and costs but does not provide a detailed evaluation of actual costs to the Authority or any specific suggestions with regard to rates.

We would ask that the Authority review the issues presented in this report prior to Hanover Engineering undertaking any other research on this matter.

Based on our evaluation, to date, it is our opinion that it would be difficult and costly for Authority to implement a Consumption Rate System.

It also appears that the benefits to individual property owners would be extremely small because of the high ratio of fixed cost of debt and operations as compared to the relatively small incremental cost of treating a slight increase in gallons per day of flow.

If you would want us to continue to explore the Consumption Rate alternatives we will further investigate the cost and opportunities associated with working with Pennsylvania American Water Company for data transfer and for billing and will provide a separate report on those opportunities and costs.

Please let me know if you have any questions with regard to this report.

Respectfully,

HANOVER ENGINEERING ASSOCIATES, INC.

James B. Birdsall, PE  
Authority Engineer

JBB:hmc\caf

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Enclosures

Cc: Mr. Scott Galbraith, Public Works Director  
Thomas Long, Esquire

# Sanitary Sewer Rate Feasibility Study South Londonderry Township Municipal Authority

## Concept Issues

### 1. Billing Method

- a. Flat Rate: The present billing is based on a Fee Schedule, charging a flat rate per quarter for service, depending upon classification of residential and non-residential property uses.
  - i. Each residential unit is charged a fixed rate based on the concept of uniform cost sharing and the general availability of the service being provided, regardless of actual occupancy of any given residential unit.
  - ii. Commercial units are classified relative to the expected volume and organic strength of flow typically generated by similar occupancies, with increments of fixed rates based on measurable parameters that are directly related to the amount of flow generated by the occupancy, such as number of seats in a beauty shop or number of washing machines in a laundromat.
- b. Consumption Rate - The alternate billing method to be considered involves a "usage-based" system, utilizing water meter readings as a basis for computing quarterly sewer charges.

### 2. Administrative

The Authority's sewer customer base can be divided into two groups according to water service status. The first group is those sewer customers currently connected to the public water system operated by PA American Water Company. The second group is sewer customers served by private wells. If the Authority were to begin to use water meter readings for sewage billing, methods of obtaining quarterly metered water consumption data for all sewer customers must be established.

- a. "Existing" Metered Customers
  - i. Number of Customers  
Of the Authority's 1538 existing EDU's, 1,216.5 or approximately 79% are served by PA American Water Company, and are presumably metered.

- ii. Coordination with PA American Water Co.  
A system of retrieving water meter data from PA American would need to be developed. PA American might provide this information either on paper or electronically. There may be an initial cost to develop the system for PA American to extract and forward this data to the Authority, and there could be a quarterly administrative charge. If the data is provided on paper, the Authority would incur significant time for data entry and run the risk of introducing errors into the data. If the information is provided electronically, additional software may be needed to integrate the water company's data into the Authority's sewer billing program.
- iii. Verification of readings and accounts  
Time would need to be provided in order for a staff member to review the information provided by PA American and sort out any inaccuracies and missing data. The Authority may encounter discrepancies between the data provided and Authority's account records. For example, customer names and/or addresses for billing may be different. These discrepancies will need to be resolved by the administrative staff.
- iv. Billing
  1. Converting water company meter readings for use with system - An interface would have to be established to accommodate any differences between PA American's and the Authority's database systems.
  2. Preparing bills -  
Additional time may be needed to import the water company data into the Authority's billing system. Whereas quarterly billings are presently somewhat "standard" for each customer, bills issued under the new system will each be custom generated and in potentially varying amounts from quarter to quarter.
- v. Customer Changes -  
Each time a property is sold or a tenant moves there is a need to prorate bills between the old and new customer. This proration is done on a flat rate basis at this time. The conversion to a consumption base billing system would require interim meter readings at the time of customer change. The staff would have to obtain the PA American interim meter reading, or in the case of other customers, would have to send a staff person to take an interim meter reading.

- b. "New" Metered Customers
  - i. Number of Customers  
Of the Authority's 1538 existing EDU's, 320.5 or approximately 21% are served by wells.
  - ii. Installing Water Meters  
Sewer customers with private wells will need to have a water meter, mounting yoke and the associated radio transmitter installed on their well water line inside their residence or commercial building. This will require coordination with 320 +/- EDU's.
  - iii. Reading Meters  
The logistics of performing quarterly readings of all the new meters would have to be determined. A member of the staff would need to drive through all areas of metered private wells to obtain the readings every quarter. The readings must be done in time to meet the quarterly billing needs and should be performed to coincide as nearly as possible with the PA American meter reading schedule.
  - iv. Download of Quarterly Meter Readings  
Once the data has been read, the information must be downloaded to a database for account organization and billing purposes. This will take administrative office staff time to ensure that all the information is accurately downloaded and to verify that readings were obtained for all accounts. The system of data formatting may be different than the system used by PA American.
  - v. Verify Readings  
Once downloaded, time would need to be provided in order for a staff member to review the readings and sort out any inaccuracies or missing data. Missing data would require follow-up by the meter reading personnel or estimating of customers' quarterly consumption.
  - vi. Bill Preparation  
There will be initial setup and training required to create a new billing system and data base for metered billing (or to install a modular add-on to the Authority's existing billing program). The new system will need to be compatible with the PA American data to avoid conflicts in account management.
- c. Rate Schedule  
A schedule of rates must be prepared to accommodate the new approach to billing for sanitary sewer service. There will need to be an evaluation to determine whether nonresidential customers are to be charged different rates from domestic customers because of sewage strength, peak loads or other differences.

- i. **Base Charge**  
The base charge per customer would need to cover the fixed costs of the Authority's Debt Service, Deferred Maintenance, administration and operation of the collection and treatment facilities, regardless of flow. The base charge could include an allowance for a customer's initial increment of usage, such as the average flow expected from one full-time resident over 91 days (one quarter).
  - ii. **Additional Charge Based On Water Consumption**  
The consumption-based rate per thousand gallons of metered water would need to be established to account for costs of operation which might vary depending upon the amount of flow generated for conveyance and treatment. In theory, this would result in a lower billing for a single person than for a family of four, assuming the dwelling, occupied by one person, uses less water. However, since flow-based variable costs are likely to represent a small portion of the Authority's total budget, the cost differential between these two hypothetical customer's total quarterly sewer bills might be relatively small (i.e., the total bill would not be directly proportional to their water consumption).
  - iii. **The Authority must consider many factors and outside influences when establishing the "base" and "consumption" rates.** Since a large portion of the Authority's cost of operation is fixed (i.e., loan payments) or not highly variable (i.e., personnel, electricity, chemicals, etc.) the base service charge may need to be set to cover a fairly large portion of the annual budget. Since inflow and infiltration are the result of un-metered water entering the sewer system, the base charge must account for the cost of handling these flows. Customers using large volumes of water for gardening, car washing or pool filling may complain that they are being charged for sewer service that they are not really using since those flows do not return to the sewer system. Drought conditions may result in water conservation, which would reduce Authority income without reducing costs. Even in "normal" conditions, water consumption varies at different times of the year. This variation would result in variations in flow and billing will result in customer questions and complaints. These questions and complaints will take staff time for responses and unpredictable cash flow for the Authority.
3. **Operational**
    - a. **Meters**
      - i. **New Water Meters**  
Approximately 321 EDU's that are served by private wells would need to have water meters installed and maintained for successful implementation of a modified sewer billing system. Meters tend to wear over time, and after years of service will generally under-register metered flows. Per PA DEP guidelines, meters used for billing

purposes should be rebuilt on a cycle of approximately every twenty (20) years.

- ii. Existing Meters  
The existing meters should be maintained by PA American. The maintenance and replacement schedule of the PA American would not be in the Authority's ability to regulate.

### Cost Issues

- 1. Computer
  - a. Software
    - i. Module Upgrade  
The current billing software would need to be upgraded to accept the PA American database information. The software as currently installed does not have the sufficient programming to accept this data. If PA American does not offer electronic information, the module may not be necessary; however, this would require additional administrative time for the manual entry of the data into the system each quarter. The software would also need to be compatible with the data acquired from the Authority's readings of water used by the well-service customers.
    - ii. Interface with PA American  
An interface between the data management programs of the Authority and PA American would need to either be purchased or scripted. If PA American does not offer electronic data, this would not be necessary.
    - iii. Ongoing maintenance of software
      - 1. Annual upgrades etc.  
As with any program, there will be a cost associated with periodic upgrades and maintenance of the software. An annual service fee may be applicable as well as training of the operator for any major upgrades.
  - b. Hardware  
This includes any foreseeable computer hardware upgrades, including storage capacity or memory.
- 2. New Water Meters  
Each meter would include: the meter, a mounting yoke and a radio transmitter. The cost of these components is estimated to be approximately \$250.00; installation costs are estimated at \$250.00; for a total initial cost of \$500.00 each or more.
  - a. Distribution of costs  
The Authority must determine who will bear the cost of the new meters (321 x \$500 = \$160,500). At the extremes, they can either be paid for solely by

the customer installing the meter, or the cost could be distributed over then entire customer base as an Authority capital expense.

- b. Replacement Costs  
The installed meters will need to be rebuilt or replaced after about 20 years of service. This cost will need to be distributed either to the individual customers or to the entire customer base via the Authority budget.
- c. Ownership  
To ensure proper operation and maintenance of the meters, it is generally recommended that the meter be owned (and thus, paid for) by the public utility.

3. Staff

- a. Administrative  
There will be a need for more administrative time to coordinate all the Authority and PA American data as well as verification of meter readings, for quarterly billing and interim billing for customer changes.
- b. Field  
Additional time will be needed from the field staff to read the meters.

4. Equipment

- a. Data Collector  
A radio frequency data collection device will need to be purchased for the reading of the meters.
- b. Data Storage Device  
This may be a proprietary storage device that is included with the data collector, or it may be necessary to purchase a separate storage device, such as a laptop computer.
- c. Vehicle  
An Authority vehicle will need to be used to travel through the area with meters to be read by the Authority. Fuel and wear on the vehicle are currently estimated at \$0.40 per mile.