



**PennState**

**Penn State Facilities Engineering Institute**  
College of Engineering  
The Pennsylvania State University  
Marion Place, Suite 414  
135 E. Nittany Avenue  
State College, PA 16801

814-865-7615  
Fax: 814-865-7835

January 25, 2017

Marcel Tassin, P.E.  
Director  
Bureau of Operations  
Department of Corrections  
1920 Technology Parkway  
Mechanicsburg, PA 17050

Subject: DOC Wastewater Facility Income and Expenses  
Report WR 16/17-5a

Dear Mr. Tassin:

In accordance with your request, the Penn State Facilities Engineering Institute (PSFEI) has completed a cursory review of wastewater system Income and Expenses for SCI Frackville, SCI Retreat and SCI Waymart. The purpose of this effort was to identify Income and Expenses for each facility relative to their respective host wastewater treatment system.

The host sewage treatment system fees, are based on three general models: 1. Volume of flow, 2. Number of equivalent dwelling units, EDUs, or 3. Proportional flow. With volume of flow, the water use or sewage generation is measured by a flowmeter, and a rate is charged per 1,000 gallons or as a percentage of total flow. These costs may range from \$2.00 to \$10.00 per 1,000 gallons. With EDU's, a building or facility is assessed based on the estimated load placed on the sewage treatment system by the sewage generator. Usually each individual residence is assessed 1 EDU and for commercial or institutional users the EDUs are per some unit of measure such as 1 EDU per 4 rooms in a hotel. The cost per EDU may vary from \$20.00 to \$50.00 per month. The third method used with major users is to calculate the total cost to operate the sewage treatment system and charge the user based on what percentage of the total flow is generated by that user and assess fees based on this percentage.

Once construction of wastewater treatment facilities is completed, system expenses can be divided into 4 general classes, two of which are generally fixed regardless of the actual flow and two that will vary with flow, though not necessarily in proportion to the change of flow. Fixed expenses include the debt load and staffing. Staffing expenses may also include professional services such as laboratory, engineering, and legal advisors. The variable costs are utilities and supplies. These will

vary in proportion with flow, but there is some base level that will be needed regardless of the actual flow.

### SCI Retreat

SCI-Retreat sewage is treated by the Shickshinny Sewage Authority (SSA). Payments to the SSA include both a capital payment based on the renovations and upgrades completed over the past two (2) years and an Operations and Maintenance portion based on the proportional flow of the Retreat flow compared to the total flow to the plant. The capital payments, which started in 2016 are **\$37,441.73** for sixty (60) months, or **\$449,300.00** annually. The current Operations and Maintenance annual fees are **\$203,900.00**, so for the next four (4) years the annual cost is **\$653,200.00**, after which it would probably reduce to the **\$200,000** level. Retreat daily average sewage flow is **186,000** gallons. Historically, this is over 60% of the total flow to the SSA plant. Reducing the flow by this amount will significantly affect the operation of the treatment plant. Where there are multiple units or tanks on line, some may have to be 'mothballed' and maintained. It may also require that some equipment, especially pumping stations, be re-resized and/or replaced in order to be effective. As far as operational and maintenance costs are concerned, not including the debt repayment expenses, approximately **65%** of the **\$280,000.00** annual expenses would still be present if the Retreat flow is removed. Of the remaining 35%, these expenses would be reduced by about 50%. Therefore SSA would have about **\$215,000.00** in annual expenses. Currently the residents of Shickshinny pay **\$240.00 /EDU/** year, if no other funding source is available to subsidize SSA operation, the estimated cost after Retreat ceased operation would be about **\$500.00 /EDU/year**. This would be a 108% increase in rates that would have to be implemented as soon as the Retreat funding ceased. For reference, current PENNVEST guidelines provide for a benchmark of **\$540.00** EDU/year for planning and funding purposes.

### SCI-Frackville

SCI-Frackville recently signed a ten (10) year agreement with the Frackville Area Municipal Authority (FAMA). Treatment costs are established at \$6.00/1,000 gallons. Based on the 2015-2016 flows, the annual estimated cost for treatment will be **\$373,400.00**. Frackville average daily sewage flow is 170,050 gallons, which represents approximately **26%** of the average total sewage flow of 663,000 gallons. At this level, the reduction of flow to FAMA should not be an operational problem for the treatment plant, and there may be a reduction in variable expenses such as electricity and sludge disposal, but the net effect would be a significant loss of income.

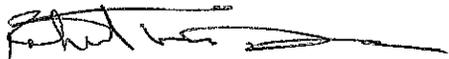
### SCI Waymart

SCI-Waymart sewage is treated by the Waymart Sewage Authority. The average daily flow during 2015-2016 was **249,200** gallons. The cost is volume based at a rate of \$3.99/1,000 gallons for an annual cost of **\$358,193.00**. Waymart Authority's average daily flow is about **700,000** gallons. FCI-Canaan contributes about **270,000** gallons and the balance of 180,000 gallons is from residential sources. Removing the Waymart flow would not disrupt the sewage plant operation, but would be a significant reduction in income. It should be noted that Waymart Authority recently completed a \$3,000,000 plant upgrade and has raised its residential rates by 15%, with a similar increase to be

passed on the SCI-Waymart. The Authority also noted that recent repairs to the SCI-Waymart storm water system had reduced the sewage flows and that the new average flow is closed to 230,000 gallons.

We appreciate the opportunity to assist the Department of Corrections on this effort. If you have any questions or require additional information, please contact our office.

Sincerely,

A handwritten signature in black ink, appearing to read "Robert M. Bruce", with a long horizontal flourish extending to the right.

Robert M. Bruce, P.E.

Cc: C. Oppman  
G. Knerr