

# ALLENSTOWN SEWER COMMISSION

## SEWER SYSTEM ACCESSIBILITY/DEVELOPMENT FEE SCHEDULE

2018

*Prepared by*

**Hoyle, Tanner**  
& Associates, Inc.

## Table of Contents

Executive Summary.....	3
Schedule of Sewer Systems accessibility/development fees.....	3
Methodology and Components .....	4
Sewer Usage and Demand .....	4
Table 1: AVERAGE DAILY FLOW AND 90 DAY HI FLOW.....	5
Treatment .....	5
Table 2: Sewer Treatment - Plant Capacity Component.....	6
Sewer Collection System Component.....	6
Table 3: Collection System Buy In .....	6
Concrete Tanks.....	7
Support Facilities.....	8
Sewer Support Facilities Component.....	9
Table 4: Engineer Estimate of Value .....	9
System accessibility/development fee study.....	9
Table 5: Sewer system accessibility/development fee study .....	10
Sewer System accessibility/development fee .....	10
Table 6: Contains a Schedule of the Sewer Systems Accessibility/development Fees.....	10
Sample Calculation based of NHDES Table 1008-1.....	10

## Executive Summary

The Allenstown Sewer Commission (ASC) has contracted with Hoyle, Tanner & Associate to update its sewer systems accessibility/development fees for future hookups or change of use for existing services. Systems accessibility/development fees are one-time charges levied for a proportionate usage or increase change of usage of the ASC's sewer system capacity. As documented in this report, these fees will be used to fund capital improvements that will substantially benefit new capacity. There are three basic methods used to calculate the various components of the ASC's sewer systems accessibility/development fees. The methodologies can be classified as looking at the past, present, and future capacities of the ASC's infrastructure. In instances where infrastructure is built in advance of new capacity and will have excess capacity, the **buy-in methodology** is utilized. Under this methodology, new capacities are anticipated to repay for the excess capacity via the system accessibility/development fee. The **incremental expansion methodology** is used when a community plans to provide new capacity for the same level-of-service (LOS) that is currently being provided to existing capacity. The third methodology is called the **plan-based methodology** which is based on existing, adopted plans. Under the plan-based methodology, there are two approaches considered the average approach and the marginal approach. The *average approach* is used for planned projects that are the result of *both new and existing capacity*. The planned costs are allocated to both new and existing sewer capacity, which ensure that new growth only pays its share of the costs. The *marginal approach* is used for planned projects that are the result of *only new growth*. The planned costs are allocated to the net increase in new capacity. Project improvements normally required as part of the System Accessibility/development Fee approval process are not eligible for credits against systems accessibility/development fees. Specific policies and procedures related to site-specific credits for system improvements are addressed in the ordinance that establishes the systems accessibility/development fees. However, the general concept is that developers may be eligible for site-specific credits or reimbursements only if they provide system improvements that have been included in the system accessibility/development fee calculation schedule. Table 6 provides a schedule of the sewer systems accessibility/development fees for the ASC. All types of connections will pay the fees according to the estimated flows needed to serve the new added capacity. The ASC may adopt fees that are less than the amounts shown. However, a reduction in system accessibility/development fee revenues will necessitate an increase in other revenues, a decrease in planned capital expenditures and/or a decrease in level-of-service standards.

## Schedule of Sewer Systems accessibility/development fees

All costs in the system accessibility/development fee calculations are given in current dollars with no assumed inflation rate over time. If cost estimates change significantly, the fees should be recalculated. A note on rounding: Calculations throughout this report are based on analysis conducted using Excel software. Results are discussed in the report using one-and two-digit places (in most cases), which represent rounded figures. However, the analysis itself uses figures carried to their ultimate decimal places; therefore, the sums and products generated in the analysis may not equal the sum or

product if the reader replicates the calculation with the factors shown in the report (due to the rounding of figures shown, not due to rounding in the analysis).

## **Methodology and Components**

All three calculation methodologies are used to calculate the various component of the system accessibility/development fee. A combination of the buy-in and plan-based methodologies is used for the treatment component as the ASC is in the process of completing the advance biological treatment and increased capacity of the system. The buy-in methodology is used for pieces of infrastructure that were oversized in advance of new capacity. The Allenstown's sewer system components are calculated using this methodology. The incremental expansion methodology is used for calculating the component support facilities and support vehicles and equipment.

## **Sewer Usage and Demand**

### **CURRENT ESTIMATES**

Based on the ASC's flow records, the treatment plant has received an average day flow of 0.631 over the last 7 years with a 90 day hi average flow of 0.835 see Table 1. The treatment plant capacity is 1.5 MGD. The future capacity using conservative numbers would be based on using the 90-day high flow from the 80% of the 1.5 MGD, which would give the plant future capacity 0.365 MGD

**Table 1: AVERAGE DAILY FLOW AND 90 DAY HI FLOW**

Average Daily Flows for the past 7 years		MGD	90 Day HI
Data taken from the DMR	FY 2011	0.810	1.100
	FY 2012	0.607	0.725
	FY 2013	0.583	0.714
	FY 2014	0.615	0.844
	FY 2015	0.539	0.682
	FY 2016	0.501	0.657
	FY 2017	0.588	0.835
Five Year Average		0.631	
			Design G/D
Allenstown Capacity	1,381		817500
Pembroke Capacity	2,076		682500
Total number of units	3,457		
			1500000
100 Percent allocation to Allenstown based on payment of upgrade.			

**AVERAGE DAILY DEMAND (GALLONS) FROM NEW SEWER UNITS**

Allenstown

**Treatment**

The Commission have designed and built additional treatment capacity of the sewer system. The treatment component of the Sewer System accessibility/development fee is subdivided into two categories: plant capacity and plant upgrades. The plant capacity projects are those which increase the number of gallons of wastewater that can be processed. The plant upgrades improve the performance of the treatment plant. A combination of the buy-in methodology and plan-based methodology is used to calculate the plant capacity portion of the treatment component. The ASC has recently completed a capacity expansion of the existing treatment plant which will have capacity available for new capacity to utilize. The ASC has provided a hydraulic flow evaluation report to the NHDES demonstrating the new capacity based on the upgrades and modifications. The Treatment Facility new capacity will be increased by 450,000 gallons per day (GPD). The upgrade of the facility includes the following; BioMag treatment process, upgrade of the biological process to include nutrient removal, instrumentation,

engineering cost for design inspection and new permitting and the addition of the third Huber press to handle additional solids. Because of the permit requirements only 80 percent of the additional flow can be used without a restriction

**Table 2: Sewer Treatment - Plant Capacity Component**

Description		ARRA Funding	Allenstown	Pembroke
All Engineering cost	\$375,320.00	\$187,660.00	\$187,660.00	\$187,660.00
Construction of BioMag	\$1,609,788.00	\$804,894.00	\$804,894.00	\$804,894.00
Construction of MLE	\$150,000.00		\$150,000.00	
Construction of 3rd Press	\$300,000.00		\$300,000.00	
Process Water System	\$169,000.00		\$169,000.00	
Technology Assessment Reports	\$10,000.00		\$10,000.00	\$10,000.00
Development of connection fee				
Administration Expenses	\$14,500.00		\$14,500.00	
<b>Total</b>	<b>\$2,628,608.00</b>	<b>\$992,554.00</b>	<b>\$1,636,054.00</b>	<b>\$1,002,554.00</b>
The treatment plants increase capacity is 450,000 gals per day but only 80% is allowed by permit				
	360,000	\$4.54		\$2.78

Allenstown Sewer Commission

**Sewer Collection System Component**

**Lines**

The ASC has about 8.4 miles of sewer lines and 240 manholes, which collectively have capacity to serve both existing and limited new capacity, with the elimination of Inflow/Infiltration. Note: these lines are part of the larger network of sewer lines and not specific lines which are owned and the responsibility of the Pembroke.

**Table 3: Collection System Buy In**

New Value of sewer collection	Infiltration and Inflow Report		
Piping consist of 6.6 miles	Pipe Upgrade		\$3,500,000.00
	Manhole Rehab		\$400,000.00
Manholes throughout the system	Repair House/Building Laterals		\$260,000.00
			\$4,160,000.00
	Collection system maintenance and upgrade		
	Buy in value	Budget	\$4,160,000.00
		cost per gal	\$5.09

*Information in calculating the Buy In cost from report done by Hoyle, Tanner in 2009.*  
**Infiltration and Inflow Information Allenstown Wastewater Collection System**

**Concrete Tanks**

This component of the Sewer System accessibility/development fee is considered a “non-capacity” component because it does not add gallons of capacity to the system. However, additional sewer units and need for additional sewer infrastructure does impact these concrete tanks and thus are appropriate to include in the system

Concrete tanks	Length	Depth	Width	MG
Aeration Basin 1	120.00	11.00	19.00	0.19
Aeration Basin 2	120.00	11.00	19.00	0.19
Aeration Basin 3	120.00	11.00	19.00	0.19
Total Million Gallons				0.56
Concrete value	\$ 2.50	gallon		\$ 1,406,988.00
Mixers	6.00		\$ 5,000.00	\$ 30,000.00
Aeration Pipe	3.00		\$ 8,000.00	\$ 24,000.00
			Total	\$ 1,460,988.00
Estimated Value				\$ 1,460,988.00
Estimated value per gal				0.97

Concrete tanks	Diameter	Depth	PI	MG
Clarifier 1	80.00	10.00	3.14	0.38
Clarifier 2	80.00	10.00	3.14	0.38
Splitter Tank	19.00	5.00	8.00	0.01
Total Million Gallons				0.76
Concrete value	\$ 2.50	gallon		\$ 1,893,188.00
Collectors	2.00		\$ 150,000.00	\$ 300,000.00
	0.00		\$ -	\$ -
			Total	\$ 2,193,188.00
Estimated Value				\$ 2,193,188.00
Estimated value per gal				1.46

Total for Concrete Tanks \$ 2.44

## Support Facilities

This component of the Sewer System accessibility/development fee is considered a “non-capacity” component because it does not add gallons of capacity to the system. However, additional sewer units and need for additional sewer infrastructure does impact these support facilities and thus are appropriate to include in the system accessibility/development fee. Since this component does not add gallons of capacity to the system, assessing it on a per gallon basis does not accurately depict the impact of new capacity on these support facilities. This component is assessed on a per customer basis. The ASC has 10,291 square feet of facilities supporting the sewer system. The ASC plans to maintain the current Level of Service (LOS), thus the incremental expansion methodology is used to calculate this component of the Sewer System accessibility/development fee. These facilities serve the current base of 3,150 units, which yields a current LOS of 3.27 square feet per customer (10,291 square feet/3150 units = 3.27 square feet per customer). The Sewer Commission estimates the current replication value of these support facilities to be \$203 per square foot. This results in a cost per customer of \$663.00 (3.27 square feet x \$203 per square foot = \$663.00). In instances where infrastructure is built in advance of new capacity and will have excess capacity, the **buy-in methodology** is utilized. Under this methodology, new capacities are anticipated to repay for the excess capacity via the system accessibility/development fee.



## Sewer Support Facilities Component

**Table 4: Engineer Estimate of Value**

Building Space	Length	Width	# of floors	Sq ft
Dewatering Building	53	27	2	2862
Maintenance Building	35	60	2	4200
Administration & Lab	58	52	1	3016
Blower Building	53	48	1	2544
Storage Building	35	47	1	1645
Pump Building	42	31	2	2604
Effluent Building	14	10	1	140
Total sq ft of building				17011
Sq ft per unit				4.92
Avg value/sqft current value		\$203.00		
Building Estimated Value				\$3,453,233.00
Estimated value per gal				\$2.30

### System accessibility/development fee study

The ASC should update its systems accessibility/development fees every three years to ensure the methodologies, assumptions, and cost factors used in the calculations are still valid and accurate. Hoyle, Tanner and Associates have included the cost of preparing the current Sewer System accessibility/development fee in the fee calculations in order to create a source of funding to conduct this regular update. This cost (\$10,500) is allocated to the projected increase in sewer demand over the next three years. This results in a system accessibility/development fee study cost of \$0.01 per gallon.

**Table 5: Sewer system accessibility/development fee study**

Update of the sewer connection fee within the next five years	
estimated cost	\$10,500.00
cost per gal	\$0.01

**Sewer System accessibility/development fee**

Table 6 provides a summary of the factors used to calculate the sewer systems accessibility/development fees. All capacity will be assessed these fees. As shown at the bottom of Table 6, the accessibility/development costs per demand unit are \$14.38 per gallon for Allenstown customer.

**Table 6: Contains a Schedule of the Sewer Systems Accessibility/development Fees**

	Cost/gal	
	Allenstown	Pembroke
Construction Cost for increase permit capacity	\$4.54	\$2.78
Collection System Buy-In	\$5.09	\$0.00
Outside Services	\$0.01	\$0.01
Concrete Tanks	\$2.44	\$0.00
Sewer Support Building Facilities Cost	\$2.30	\$0.00
	\$14.38	\$2.80

Factors: **Cost Summary** Gallons per Day per Connection

**Sample Calculation based of NHDES Table 1008-1**

**Residence Single Family 3 bedrooms 450 gpd x \$14.38 = \$6471.00**

**Food Service Cafeteria or Eat in plus toilet seats for 110 and 6 employees**

**110 seats X 40 gpd plus 6 employee X 20 gpd = 4520 gpd X \$14.38 = \$64997.60**

**Studio apartment 225 gpd X 14.38 = \$3235.50**

**Pembroke purchase 50,000 gpd X \$2.80 = \$140,000**