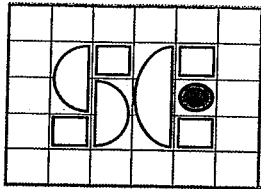


**EASTON AREA JOINT SEWER AUTHORITY**  
**RESOLUTION NO. 2020-05-20**

**RESOLVED**, that the Easton Area Joint Sewer Authority hereby approves a new high strength waste surcharge fee, effective July 1, 2020, as follows:

The high strength waste surcharge fee shall be determined, where appropriate, by using the attached Table I – 2018 Allocation of Operation and Maintenance and Capital Costs and the attached Table II - Surcharge Program Cost Update Based on 2018 Data which includes the updated surcharge formula.



**MEMORANDUM – Item No. 05-01**

DATE: May 12, 2020  
TO: Easton Area Joint Sewer Authority  
FROM: Jeffrey J. Morgan, P.E.  
SUBJECT: Updated High Strength Waste Surcharge Formula

We have enclosed the updated high strength waste surcharge (surcharge) formula calculation sheets for your review. Table No. I provides a derivation of the treatment costs for the surchargeable parameters Biochemical Oxygen Demand (BOD<sub>5</sub>), Total Suspended Solids (TSS) and Ammonia-Nitrogen (NH<sub>3</sub>-N). Table No. II provides a summary of the treatment costs per thousand pounds for these parameters and the updated surcharge formula.

The method used to develop the Authority's updated surcharge rates consists of a combination of capital basis treatment cost allocations and functional treatment cost allocations. This method is based on guidance found in the USEPA's Manual for POTW Pretreatment Program Development (1983), the Water Environment Federation's Manual of Practice No. 27 – Financing and Charges for Wastewater Systems (2004) and standard wastewater engineering practices. This method was originally implemented by Acer Engineers & Consultants, Inc. and has been used in prior years.

The data used to update the formula is from the Authority's 2018 Audit, Chapter 94 Report and additional cost data provided by the City of Easton related to the Sewage Treatment Expense line item in the Authority's budget. In this year's update, costs from financed capital projects completed in 2018 were added and a 20-year financing rate of two and one half percent was utilized. The overall capital and operational costs for 2018 only varied slightly as compared to 2017. When comparing annual plant influent loadings for 2018 to 2017, the BOD<sub>5</sub> influent loading was slightly higher, the TSS influent loading was lower and NH<sub>3</sub>-N influent loading was about the same. In turn, these factors generated the following changes to the Authority's surcharge rates:

<b>Surcharge Rates</b>	<b>BOD<sub>5</sub> (\$/1,000 lbs)</b>	<b>TSS (\$/1,000 lbs)</b>	<b>NH<sub>3</sub>-N (\$/1,000 lbs)</b>
<i>Existing Based on 2017 Data</i>	366.63	579.65	3,004.21
<i>Updated Based on 2018 Data</i>	351.70	689.35	3,062.33

The Authority should adopt the attached updated high strength waste surcharge formula through a resolution.

Should you have any question on this matter, please do not hesitate to contact us.

TABLE I  
 EASTON AREA JOINT SEWER AUTHORITY - SURCHARGE PROGRAM COSTS FOR YEAR 2018  
 ALLOCATION OF OPERATION & MAINTENANCE (O & M) AND CAPITAL COSTS

ITEM	Actual 2018		Hydraulic Loading		BOD		Suspended Solids		NH3-N		
	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	
<b>ANNUAL O &amp; M COST ALLOCATION</b>											
<b>Directly Allocable Costs</b>											
Salaries/Wages	\$1,356,907.62	30.0	\$407,072	25.0	\$339,227	25.0	\$339,227	25.0	\$339,227	20.0	\$271,382
Health, Disability, Workers Comp, Other Benefits	\$435,619.95	30.0	\$130,686	25.0	\$108,905	25.0	\$108,905	25.0	\$108,905	20.0	\$87,124
Social Security	\$102,956.38	30.0	\$30,887	25.0	\$25,739	25.0	\$25,739	25.0	\$25,739	20.0	\$20,591
Pension Contributions	\$297,926.07	30.0	\$89,378	25.0	\$74,482	25.0	\$74,482	25.0	\$74,482	20.0	\$59,585
Training and Dues	\$4,828.22	30.0	\$1,448	25.0	\$1,207	25.0	\$1,207	25.0	\$1,207	20.0	\$966
Office and Safety Supplies	\$8,851.80	30.0	\$2,656	25.0	\$2,213	25.0	\$2,213	25.0	\$2,213	20.0	\$1,770
Laboratory and Other Supplies	\$2,966.22	30.0	\$890	25.0	\$742	25.0	\$742	25.0	\$742	20.0	\$593
Heating Fuel	\$27,017.75	30.0	\$8,105	25.0	\$6,754	25.0	\$6,754	25.0	\$6,754	20.0	\$5,404
Vehicle Fuel and Maintenance	\$6,998.49	30.0	\$2,100	25.0	\$1,750	25.0	\$1,750	25.0	\$1,750	20.0	\$1,400
Clothing and Uniforms	\$9,932.53	30.0	\$2,980	25.0	\$2,483	25.0	\$2,483	25.0	\$2,483	20.0	\$1,987
Auditing Services	\$8,800.00	30.0	\$2,640	25.0	\$2,200	25.0	\$2,200	25.0	\$2,200	20.0	\$1,760
Computer and Data Contracted Services	\$15,390.22	30.0	\$4,617	25.0	\$3,848	25.0	\$3,848	25.0	\$3,848	20.0	\$3,078
Telephone	\$37,396.70	30.0	\$11,219	25.0	\$9,349	25.0	\$9,349	25.0	\$9,349	20.0	\$7,479
Joint Use Costs	\$36,132.73	30.0	\$10,840	25.0	\$9,033	25.0	\$9,033	25.0	\$9,033	20.0	\$7,227
Engineering Services - Contract Lab	\$188,473.69	30.0	\$56,542	25.0	\$47,118	25.0	\$47,118	25.0	\$47,118	20.0	\$37,695
Indirect Costs	\$487,793.01	30.0	\$146,338	25.0	\$121,948	25.0	\$121,948	25.0	\$121,948	20.0	\$97,559
Repairs and Maintenance	\$353,510.65	30.0	\$106,053	25.0	\$88,378	25.0	\$88,378	25.0	\$88,378	20.0	\$70,702
Machinery Costs	\$25,023.17	30.0	\$7,507	25.0	\$6,256	25.0	\$6,256	25.0	\$6,256	20.0	\$5,005
Insurances - Property, Casualty	\$204,000.00	30.0	\$61,200	25.0	\$51,000	25.0	\$51,000	25.0	\$51,000	20.0	\$40,800
Electricity	\$558,931.05	40.0	\$223,572	25.0	\$139,733	15.0	\$83,840	15.0	\$83,840	20.0	\$111,786
Water	\$48,545.77	30.0	\$14,564	25.0	\$12,136	25.0	\$12,136	25.0	\$12,136	20.0	\$9,709
Solid Waste	\$365,627.80	15.0	\$54,844	30.0	\$109,688	50.0	\$182,814	50.0	\$182,814	5.0	\$18,281
Chemicals	\$877,771.31	40.0	\$351,109	0.0	\$0	40.0	\$351,109	40.0	\$351,109	20.0	\$175,554
Subtotal - Directly Allocable Costs	\$5,461,401.13	31.6	\$1,727,246.41	21.3	\$1,164,188.85	28.1	\$1,532,529.82	19.0	\$1,037,436.06		

TABLE I  
 EASTON AREA JOINT SEWER AUTHORITY - SURCHARGE PROGRAM COSTS FOR YEAR 2018  
 ALLOCATION OF OPERATION & MAINTENANCE (O & M) AND CAPITAL COSTS (Continued)

Item	Actual 2018	Hydraulic Loading		BOD		Suspended Solids		NH3-N	
		%	Amount	%	Amount	%	Amount	%	Amount
<b>Indirectly Allocable Costs</b>									
Solicitor Services/Outside Legal	\$14,169.00	31.6	\$4,481	21.3	\$3,020	28.1	\$3,976	19.0	\$2,692
Board/Officer Compensation	\$11,100.00	31.6	\$3,511	21.3	\$2,366	28.1	\$3,115	19.0	\$2,109
Administrative/Recording Secretary	\$23,525.00	31.6	\$7,440	21.3	\$5,015	28.1	\$6,601	19.0	\$4,469
Auditor / CPA	\$14,000.00	31.6	\$4,428	21.3	\$2,984	28.1	\$3,929	19.0	\$2,659
Accountant	\$20,318.00	31.6	\$6,426	21.3	\$4,331	28.1	\$5,701	19.0	\$3,860
Administrative, Meeting, Office	\$32,258.00	31.6	\$10,202	21.3	\$6,876	28.1	\$9,052	19.0	\$6,128
Fringe Benefits	\$3,302.00	31.6	\$1,044	21.3	\$704	28.1	\$927	19.0	\$627
Consulting Engineer- General Services	\$66,025.00	31.6	\$20,881	21.3	\$14,074	28.1	\$18,527	19.0	\$12,542
Consulting Engineer- Pretreatment Services	\$20,780.00	31.6	\$6,572	21.3	\$4,430	28.1	\$5,831	19.0	\$3,947
Vehicle Expense	\$4,422.00	31.6	\$1,399	21.3	\$943	28.1	\$1,241	19.0	\$840
Pretreatment Coordinator	\$0.00	31.6	\$0	21.3	\$0	28.1	\$0	19.0	\$0
Contract Lab Services	\$71,547.00	31.6	\$22,628	21.3	\$15,251	28.1	\$20,077	19.0	\$13,591
Liability Insurance	\$14,890.00	31.6	\$4,709	21.3	\$3,174	28.1	\$4,178	19.0	\$2,828
Debt Service - Bonds	\$1,857,062.00	31.6	\$587,322	21.3	\$395,864	28.1	\$521,112	19.0	\$352,764
Contingencies	\$9,850.00	31.6	\$3,115	21.3	\$2,100	28.1	\$2,764	19.0	\$1,871
Capital Costs	\$252,851.00	31.6	\$79,968	21.3	\$53,899	28.1	\$70,953	19.0	\$48,031
Permits and Licensing	\$2,563.00	31.6	\$811	21.3	\$546	28.1	\$719	19.0	\$487
Subtotal - Indirectly Allocable Costs	\$2,418,662.00	31.6	\$764,936.53	21.3	\$515,578.19	28.1	\$678,703.42	19.0	\$459,443.85

**TABLE I  
EASTON AREA JOINT SEWER AUTHORITY - SURCHARGE PROGRAM COSTS FOR YEAR 2018  
ALLOCATION OF OPERATION & MAINTENANCE (O & M) AND CAPITAL COSTS (Continued)**

Item	Actual 2018	Hydraulic Loading		BOD		Suspended Solids		NH3-N	
		%	Amount	%	Amount	%	Amount	%	Amount
<b>CAPITAL COST ALLOCATION</b>									
<b>1988 Directly Allocable Costs</b>									
Aerobic Digester I	\$483,471.50	0.0	\$0	30.0	\$145,041	40.0	\$193,389	30.0	\$145,041
Blower Building	\$279,473.00	0.0	\$0	30.0	\$83,842	40.0	\$111,789	30.0	\$83,842
Secondary Clarifiers 5, 6 & 7	\$974,725.70	25.0	\$243,681	25.0	\$243,681	25.0	\$243,681	25.0	\$243,681
Flow Division Box 2 & 3	\$225,039.25	20.0	\$45,008	30.0	\$67,512	20.0	\$45,008	30.0	\$67,512
Secondary Sludge Wet Well	\$74,239.05	10.0	\$7,424	30.0	\$22,272	20.0	\$14,848	40.0	\$29,696
Chlorine Building	\$107,190.25	90.0	\$96,471	5.0	\$5,360	0.0	\$0	5.0	\$5,360
Sludge Dewatering	\$1,141,852.00	0.0	\$0	0.0	\$0	100.0	\$1,141,852	0.0	\$0
Oxidation Ditch I	\$3,216,284.95	10.0	\$321,628	30.0	\$964,885	10.0	\$321,628	50.0	\$1,608,142
Sludge Pump House	\$201,838.00	10.0	\$20,184	30.0	\$60,551	20.0	\$40,368	40.0	\$80,735
Sludge Sump and Valve Pits	\$63,595.35	0.0	\$0	0.0	\$0	100.0	\$63,595	0.0	\$0
<b>1998 &amp; 2002 thru 2018 Directly Allocable Costs</b>									
Influent Screen Building	\$410,800.00	30.0	\$123,240	30.0	\$123,240	40.0	\$164,320	0.0	\$0
Upgrade Digester No. 1	\$37,539.41	0.0	\$0	30.0	\$11,262	40.0	\$15,016	30.0	\$11,262
Primary Sludge Pump Station	\$242,714.56	25.0	\$60,679	25.0	\$60,679	25.0	\$60,679	25.0	\$60,679
Upgrade Digester No. 2	\$345,357.00	20.0	\$69,071	30.0	\$103,607	20.0	\$69,071	30.0	\$103,607
Digester Boiler Building	\$422,321.16	0.0	\$0	0.0	\$0	80.0	\$337,857	20.0	\$84,464
Secondary Sludge Dewatering	\$110,484.00	10.0	\$11,048	30.0	\$33,145	20.0	\$22,097	40.0	\$44,194
SCADA System	\$904,996.00	25.0	\$226,249	25.0	\$226,249	25.0	\$226,249	25.0	\$226,249
Grit System	\$749,418.00	0.0	\$0	10.0	\$74,942	90.0	\$674,476	0.0	\$0
Sludge Conveyor System	\$148,850.00	0.0	\$0	0.0	\$0	75.0	\$111,638	25.0	\$37,213
Aerobic Digester No. 1 Rehab	\$906,473.70	0.0	\$0	0.0	\$0	75.0	\$679,855	25.0	\$226,618
Primary Clarifier Project	\$1,098,727.09	0.0	\$0	15.0	\$164,809	85.0	\$933,918	0.0	\$0
Chlorine Contact Tank Project	\$218,000.00	100.0	\$0	0.0	\$0	0.0	\$0	0.0	\$0
Digester Gas System Upgrades	\$671,768.50	0.0	\$0	10.0	\$67,177	80.0	\$537,415	10.0	\$67,177
Centrifuge System	\$1,851,912.95	0.0	\$0	0.0	\$0	100.0	\$1,851,913	0.0	\$0
Oxidation Ditch Improvements	\$653,386.00	50.0	\$326,693	25.0	\$163,347	0.0	\$0	25.0	\$163,347
Digester No. 2 and Return Lift Station	\$818,648.67	40.0	\$327,459	10.0	\$81,865	40.0	\$327,459	10.0	\$81,865
WWTP Equipment Upgrade Project	\$1,212,941.32	60.0	\$727,765	10.0	\$121,294	20.0	\$242,588	10.0	\$121,294
Subtotal - Directly Allocable Costs	\$17,572,047.41	14.8	\$2,606,601	16.1	\$2,824,760	48.0	\$8,430,709	19.9	\$3,491,977

**TABLE I  
EASTON AREA JOINT SEWER AUTHORITY - SURCHARGE PROGRAM COSTS FOR YEAR 2018  
ALLOCATION OF OPERATION & MAINTENANCE (O & M) AND CAPITAL COSTS (Continued)**

Item	Actual 2018	Hydraulic Loading		BOD		Suspended Solids		NH3-N	
		%	Amount	%	Amount	%	Amount	%	Amount
<u>1988 Indirectly Allocable Costs</u>									
Mobilization	\$63,013.40	14.8	\$9,347	16.1	\$10,130	48.0	\$30,233	19.9	\$12,522
Sitework	\$919,584.85	14.8	\$136,409	16.1	\$147,826	48.0	\$441,198	19.9	\$182,743
Control Building & Lab Addition	\$231,488.25	14.8	\$34,338	16.1	\$37,212	48.0	\$111,063	19.9	\$46,002
Retaining Wall	\$64,630.25	14.8	\$9,587	16.1	\$10,390	48.0	\$31,008	19.9	\$12,844
New Garage	\$249,331.50	14.8	\$36,985	16.1	\$40,081	48.0	\$119,624	19.9	\$49,548
Underground Piping	\$1,039,060.00	14.8	\$154,132	16.1	\$167,032	48.0	\$498,520	19.9	\$206,486
Electrical Contract 5	\$562,491.70	14.8	\$83,439	16.1	\$90,422	48.0	\$269,872	19.9	\$111,780
Plumbing Contract 6	\$91,030.00	14.8	\$13,503	16.1	\$14,633	48.0	\$43,674	19.9	\$18,090
HVAC Contract 7	\$130,830.00	14.8	\$19,407	16.1	\$21,031	48.0	\$62,770	19.9	\$25,999
Administrative Costs	\$1,898,505.00	14.8	\$281,620	16.1	\$305,190	48.0	\$910,864	19.9	\$377,277
<u>1998 &amp; 2002 thru 2018 Indirectly Allocable Costs</u>									
Mobilization	\$68,207.00	14.8	\$10,118	16.1	\$10,964	48.0	\$32,724	19.9	\$13,554
Sitework	\$97,000.00	14.8	\$14,389	16.1	\$15,593	48.0	\$46,539	19.9	\$19,276
Underground Piping	\$95,700.00	14.8	\$14,196	16.1	\$15,384	48.0	\$45,915	19.9	\$19,018
Electrical Contract	\$1,460,935.52	14.8	\$216,712	16.1	\$234,850	48.0	\$700,927	19.9	\$290,322
HVAC Contract	\$61,294.00	14.8	\$9,092	16.1	\$9,853	48.0	\$29,408	19.9	\$12,181
Sludge Cover	\$74,400.00	0.0	\$0	0.0	\$0	80.0	\$59,520	20.0	\$14,880
Digester Stairs	\$9,675.00	0.0	\$0	0.0	\$0	80.0	\$7,740	20.0	\$1,935
Maintenance Shop	\$61,200.00	25.0	\$15,300	25.0	\$15,300	25.0	\$15,300	25.0	\$15,300
Aeration Basin Coating	\$106,908.00	0.0	\$0	0.0	\$0	80.0	\$85,526	20.0	\$21,382
Grit System	\$121,965.00	0.0	\$0	10.0	\$12,197	90.0	\$109,769	0.0	\$0
Conveyor System	\$7,230.00	0.0	\$0	0.0	\$0	75.0	\$5,423	25.0	\$1,808
Aerobic Digester No. 1 Rehab	\$115,708.00	0.0	\$0	0.0	\$0	75.0	\$86,781	25.0	\$28,927
Administrative Cost	\$1,286,722.00	14.8	\$190,870	16.1	\$206,844	48.0	\$617,343	19.9	\$255,702
Subtotal - Indirectly Allocable Costs	\$8,816,909.47	14.8	\$1,249,445.51	16.1	\$1,364,933.22	48.0	\$4,361,739.73	19.9	\$1,737,574.72
<u>Annual O &amp; M Costs</u>									
Directly Allocable Costs	\$5,461,401.13		\$1,727,246.41		\$1,164,188.85		\$1,532,529.82		\$1,037,436.06
Indirectly Allocable Costs	\$2,418,662.00		\$764,937		\$515,578		\$678,703		\$459,444
<u>Total Annual O &amp; M Costs</u>	\$7,880,063		\$2,492,183		\$1,679,767		\$2,211,233		\$1,496,880
<u>Capital Costs</u>									
Directly Allocable Costs	\$17,572,047.41		\$2,606,601		\$2,824,760		\$8,430,709		\$3,491,977
Indirectly Allocable Costs	\$8,816,909.47		\$1,249,446		\$1,364,933		\$4,361,740		\$1,737,575
<u>Total Capital Costs</u>	\$26,388,956.88		\$3,856,047		\$4,189,693		\$12,792,449		\$5,229,552

**TABLE II  
EASTON AREA JOINT SEWER AUTHORITY  
SURCHARGE PROGRAM COST UPDATE BASED ON 2018 DATA**

EXPENDITURE <sup>(1)</sup>	BOD-5	TSS	NH3-N
- Annual Operational Cost	\$1,679,767	\$2,211,233	\$1,496,880
- Capital Amortization <sup>(2)</sup>	268,757	820,599	335,461
<b>TOTAL</b>	<b>\$1,948,524</b>	<b>\$3,031,832</b>	<b>\$1,832,341</b>

**2018 AVERAGE DAILY VALUES FOR:**

Plant Flow	=	5.60 MGD
BOD-5 Influent	=	325 mg/l
TSS Influent	=	258 mg/l
NH3-N Influent	=	35.1 mg/l

**2018 ANNUAL PLANT LOADINGS FOR:**

BOD-5	=	325 mg/l	x 8.34 x 5.60 x 365	=	5,540	x 10x3 lbs./year
TSS	=	258 mg/l	x 8.34 x 5.60 x 365	=	4,398	x 10x3 lbs./year
NH3-N	=	35.1 mg/l	x 8.34 x 5.60 x 365	=	598	x 10x3 lbs./year

**2018 TREATMENT COSTS FOR:**

BOD-5	=	\$1,948,524	/	5,540	10x3 lbs./year	=	\$351.70	/10x3 lbs.
TSS	=	\$3,031,832	/	4,398	10x3 lbs./year	=	\$689.35	/10x3 lbs.
NH3-N	=	\$1,832,341	/	598	10x3 lbs./year	=	\$3,062.33	/10x3 lbs.

**UPDATED SURCHARGE FORMULA (SF) <sup>(3)</sup>**

$$= 0.00834 \times Q1 \times [(BOD-5 - 250) \times \$351.70 + (TSS - 250) \times \$689.35 + (NH3-N - 25) \times \$3,062.33]$$

**WHERE:**

- SF is the surcharge amount when concentrations for BOD-5, TSS and NH3-N exceed normal domestic levels listed below.
- The factor "0.00834" is a constant to convert concentration expressed as mg/l to 10x3 pounds per million gallons.
- Q1 is the industrial user's wastewater volume for the time period, expressed in million gallons.
- BOD-5, TSS and NH3-N represent respectively, five-day biological oxygen demand, total suspended solids and ammonia-nitrogen with all concentrations expressed in mg/l.
- The values 250, 250 and 25 are constants which express the waste load concentration of BOD-5, TSS and NH3-N, respectively, determined to be normal values for domestic sewage.

(1) See Table I for the development of the cost factors for the three conventional pollutants.

(2) This cost represents the amount necessary to recover the total capital cost allocation over a twenty-year period at two and a half percent interest per year.

(3) If BOD-5 values are less than 250 mg/l, TSS values are less than 250 mg/l or NH3-N values are less than 25 mg/l, any negative values calculated are set equal to zero and not considered as part of this equation.