CITY OF SOMERVILLE, MASSACHUSETTS
MAYOR KATJANA BALLANTYNE
DEPARTMENT of INFRASTRUCTURE & ASSET MANAGEMENT
ENGINEERING DIVISION

RICHARD E. RAICHE, PE, PMP, MCPPO
DIRECTOR OF INFRASTRUCTURE & ASSET MANAGEMENT

BRIAN C. POSTLEWAITE, PE
DIRECTOR OF ENGINEERING

INFILTRATION/INFLOW FEE ANALYSIS

Date: 4 June 2025

To: Somerville City Council

From: Brian C. Postlewaite

CC: Mayor Ballantyne, Lammis Vargas, Neha Singh, Rich Raiche, Ed Bean, Michael Richards, Kevin Roche, Jonathan Smith

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The sanitary sewer system in the City of Somerville is a *combined system* whereby wastewater and stormwater are conveyed in shared pipes and discharged to the Massachusetts Water Resources Authority (MWRA) system. Somerville's connections to the MWRA system, and the MWRA system itself are capacity-limited, and intense rain events cause Combined Sewer Overflows (CSOs) that discharge pollutants to local surface waters including the Alewife Brook, Mystic River and Charles River. To mitigate both the local and regional CSO impacts the MWRA and MassDEP requires the reduction of Infiltration and Inflow (I/I) into the sewer system to offset new wastewater flows (typically from private development projects) added to the sewer system at a ratio of 4:1, respectively.

In 2018 the City updated our Municipal Sewer Policy[1] and Code of Municipal Ordinances to meet these I/I requirements. The Ordinance and Policy requires projects to pay an I/I fee based on gallons-per-day (GPD) for wastewater added to the City sewer system. These funds help support the City's sewer rehabilitation and separation projects that reduce Infiltration and Inflow into the sewer system, thus reducing the severity of our CSOs.

The I/I fee of $14.35/GPD was determined[2] in 2014 based on assumed construction costs and assumed effectiveness of sewer rehabilitation and sewer separation projects to remove stormwater from the system. Those costs and fee are now out of date based on construction escalation, financial inflation and data regarding project effectiveness. The Engineering Division re-analyzed the I/I fee based on two methods: by recent construction escalation data and our past six years of construction projects executed in the City under our direction. Pursuant to the Somerville Municipal Ordinance (Sect. 11-172) we have developed

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[1] Policy for New Connections to and Modifications to Existing Connections to the Municipal Sewer and Drain System, Stormwater Management, and Infiltration / Inflow Mitigation, Updated: 14 May 2018, https://s3.amazonaws.com/somervillema-live/s3fs-public/sewer-drain-infiltration-inflow-policy.pdf

[2] Infiltration and Inflow Mitigation Fee Development, Wright-Pierce, 3 December 2014.

the following methodology for calculating I/I fees and concluded the new fee will be $32.00/GPD, effective 1 July 2025.

General Construction Escalation

Over the past ten years since the current fee was determined construction costs have increased. We have analyzed cost escalation based on three reference points, Table 1.

Table 1: Construction Costs Escalation

	Turner Construction Cost Index[3]	Mortenson Construction Cost Index[4]	US BLS PPI Final Demand for Construction[5]
10-year Escalation	58%	68%	58%
Average Annual Escalation	4.7%	5.3%	4.7%
2014/Current I/I Fee	$14.35	$14.35	$14.35
Escalated I/I Fee	$22.67	$24.11	$22.67

Based on these industry-wide escalation rates a more current fee would be approximately $23.00/GPD if previous assumptions regarding I/I removal rates from projects were held constant.

Construction Costs and Project Effectiveness

The 2014 fee analysis was based on typical construction costs and assumed I/I removal rates. Currently we have six years of projects experience with more accurate construction costs and I/I removal rates, Table 2.

Based on these construction costs and I/I removal rates we developed I/I removal costs. Since the MWRA/MassDEP I/I requires the removal of 4 GPD of I/I for every 1 GPD of increased flow, our fee needs to be four times the I/I removal cost. The 4:1 cost is shown.

City sewer projects include a mixture of rehabilitation projects that typically remove infiltration and sewer separation projects that typically remove inflow from the sewer system. Both types of projects are important to meet our sewer maintenance and CSO removal goals. As we finish repairing the sewer

[3] Turner Construction Cost Index, https://www.turnerconstruction.com/cost-index
[4] Mortenson Construction Cost Index, https://www.mortenson.com/cost-index
[5] Producer Price Index Detail Report, U.S. Bureau of Labor Statistics, https://www.bls.gov/ppi/detailed-report/

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segments in the worst condition, sewer separation projects will be a more substantial portion of our I/I removal projects. It is in the City's interest to ensure that new development projects pay fees that can support the increasingly more common sewer separation projects. This full analysis includes both construction cost escalation and I/I removal rate experience in Somerville recommends a fee of $32/GPD.

Table 2: Construction Costs and I/I Removal

Project	Bid Year	Construction Cost (2024 $)	I/I Removed (GPD)	Cost per I/I Removed ($/GPD)	4:1 I/I Fee ($/GPD)
Sewer Capital Improvement Plan (CIP) #1	2019	$1.1 million	185,000 GPD		
Sewer Capital Improvement Plan (CIP) #2	2019	$2.2 million	72,000 GPD		
Ward 2 Sewer Rehabilitation	2022	$1 million	8,000 GPD		
Marginal Sewer Rehabilitation	2022	$3.7 million	800,000 GPD		
East Somerville / Winter Hill Sewer Rehabilitation	2023	$5.2 million	945,000 GPD		
West Somerville Sewer Rehabilitation	2024	$2.3 million	310,000 GPD		
Annual Rehabilitation Projects		**$15.5 million**	**2,320,000 GPD**	**$6.70/GPD**	**$26.80/GPD**
Somerville Avenue Sewer Separation (SAUSI)	2021	$10.2 million	400,000 GPD		
Spring Hill Sewer Separation	2022	$14.2 million	2,530,000 GPD		
Sewer Separation Projects		**$24.4 million**	**2,930,000 GPD**	**$8.30/GPD**	**$33.20/GPD**
ALL PROJECTS		***$40.0 million***	***5,250,000 GPD***	***$7.60/GPD***	***$30.40/GPD***

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