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DRAFT POLICY FOR NEW CONNECTIONS TO AND MODIFICATIONS TO EXISTING CONNECTIONS TO THE MUNICIPAL SEWER AND DRAIN SYSTEM, STORMWATER MANAGEMENT, AND INFILTRATION / INFLOW MITIGATION

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The following summarizes, clarifies and updates the City of Somerville's policies for new connections to and modifications of existing connections to the municipal sewer and drain system, stormwater management, and infiltration / inflow mitigation.

Purpose and Background

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. From the connection points to the MWRA, combined flows are conveyed through MWRA pipes, pump stations and other facilities for treatment and ultimate discharge at the Deer Island Wastewater Treatment Facility. Particularly during intense rain events, the Somerville combined sewer and drain system has insufficient capacity to accommodate the flows, thereby creating flooding and surcharges that can cause backups, particularly into below-grade plumbing fixtures. Somerville's connections to the MWRA system, and the MWRA system itself are similarly capacity-limited, and intense rain events can cause Combined Sewer Overflows (CSOs) that discharge pollutants including disease-causing bacteria to local surface waters including the Alewife Brook, Mystic River and Charles River.

To mitigate both the local and regional impacts, long-standing policies of the City of Somerville administered by the Engineering Department have regulated and limited connections to the sewer and drain system from private properties. The policies are consistent with and informed by the City of Somerville Code of Ordinances, City of Somerville Zoning Ordinances, permits issued to the City of Somerville by the MWRA, the United States Environmental Protection Agency (EPA), and the Massachusetts Department of Environmental Protection (MassDEP), and applicable federal and state regulations, including but not limited to:

- Somerville Code of Ordinances, Chapter 11 – Public Works
- Somerville Code of Ordinances, Chapter 12 – Streets, Sidewalks and other Public Places
- NPDES Permit No. MA0101982 issued to Somerville for two CSO discharges
- NPDES Permit No. MA0103284 issued to MWRA for CSO discharges
- MWRA Municipal discharge permit # 30101396 issued to Somerville
- NPDES Phase II Small MS4 Permit No. MAR041082

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- 314 CMR 12.00: Operation, Maintenance and Pretreatment Standards for Wastewater Treatment Works and Indirect Dischargers
- MWRA Enabling Act, MGL Chapter 372 as Amended

Technical implementation of the policy is informed by those documents, by policies and guidance issued by EPA, MassDEP and MWRA, and by known area-specific limitations of the sewer and drain system.

Connections to the Municipal Sewer & Drain System

Ownership & Maintenance of Service Connections / Laterals

The City's policy since 1876 as stated on original sewer permits and as clarified in a memorandum to all interested parties by the City Engineer in May 2006 is that the service laterals connecting to the City's system are the responsibility of private property owners. Specifically "all sewer laterals from private dwellings and buildings are considered 'private' drains for the entire length of the sewer lateral, i.e. from the building itself to its connection with the public city sewer. As such, the maintenance and repair of these 'private' drains shall be the responsibility of the owner or owners of the property being serviced."

All work to service laterals and connections to the City's sewer and drain system must be approved by the City Engineer, performed by a licensed drain layer meeting the requirements of the Somerville Code of Ordinances Chapter 2, Article II, and conducted in accordance with a Street Opening Permit issued by the Department of Engineering. Lists of active drain layers and information street opening and occupancy can be obtained through the Engineering Department and the City's web site.

If in the course of investigations into issues with the City's infrastructure (e.g. sink holes, introduction of groundwater to the sewer), the cause of such issues are found to be the result of a defective service lateral, the City Engineer and Sewer Department may require the private owner to make repairs to the lateral even if the location of the defect is in the public way.

When a private property is undergoing renovations or development, it is the policy of the City Engineer and the Sewer Department that the property's service lateral will be replaced unless sufficient and compelling evidence can be presented demonstrating the long-term integrity of the full length of that service connection. Demolition permits will be conditioned to have existing service laterals cut and capped at the main. Building permit applications must include site plans depicting the size, location and details of new service laterals. Record drawings documenting the final as-built conditions of those connections must be submitted to the Engineering Department following completion of the work, and a Certificate of Occupancy will not be issued until that receipt is recorded.

Stormwater Management and Stormwater Discharges to the Combined System

Somerville Code of Ordinances Chapter 11, Article VII, Section 11-165 expressly prohibits the direct or indirect discharge of any water other than sewage to the City's combined system unless in special cases when good cause is shown. Direct connections are subsurface pipe connections from a property to the City's combined system. Therefore, service laterals to the combined system must not contain roof

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drainage, surface runoff, sump pump discharges, or other stormwater. No new connections containing such stormwater should be permitted, and following a process, any existing connection must be eliminated at the expense of the owner. Indirect connections result from surface runoff flow across land, sidewalks and roadways to catch basins that connect to the combined system. Furthermore, Somerville Code of Ordinances Chapter 12, Article I, Section 12-2 expressly prohibits the shedding of water runoff from a building onto any sidewalk or street that may cause injury or inconvenience to travelers. Therefore, roof drainage, surface runoff and/or sump pump discharges are not permitted to run across City sidewalks or streets and enter the City's combined system. The Somerville Zoning Ordinance and Massachusetts laws also prohibit development from creating adverse impacts to adjoining properties, including increasing rates and volumes of runoff. Therefore, any changes to a property must maximize stormwater retention, detention and groundwater recharge.

When a private property is undergoing renovations or development, the applicant must provide a site plan and drainage narrative to the Engineering Department for review. For minor renovations with no increase to total impervious area, if there are no direct or indirect connections of stormwater to the City's combined system, and the rate and volume of runoff from the site will be obviously reduced, the Engineering Department may determine a *de minimis* impact and approve the project. If those conditions are not met, the Engineering Department will require site plans and a full drainage report prepared and stamped by a Massachusetts Professional Engineer. Site plans must demonstrate that stormwater is being managed on-site to the maximum extent technically feasible. The report must contain pre- and post-development discharges at all boundaries for the 1-year, 6-hour storm, the 1-year, 24-hour storm, the 2-year, 24-hour storm, the 5-year, 24-hour storm, the 10-year, 24-hour storm, the 25-year, 24 hour storm, and the 100-year, 24-hour storm. When groundwater infiltration is proposed, information regarding site soils and estimated high groundwater must be provided by a Soil Evaluator or Professional Engineer licensed in Massachusetts.

The Engineering Department recognizes that the urban environment and underlying hydrogeological conditions in Somerville may in some rare cases render on-site management of high-intensity storms technically infeasible and therefore strict adherence to the Ordinance impossible. Further, the Engineering Department recognizes that subsurface, piped connections of the excess stormwater may in special cases alleviate public health hazards such as flow across sidewalks that could freeze or surface ponding on adjacent properties. In such cases and if sufficiently convincing documentation is submitted to the Engineering Department, the exemption allowed under Section 11-165 of the Ordinance for special cases for good cause may be exercised. However, in such cases, the volume of stormwater permitted to enter the combined system will be subject to the provisions of the City's Infiltration/Inflow (I/I) Ordinance and policy.

Below Grade Plumbing

The City's combined sewer system subject to surcharge (i.e. water levels higher than the pipe elevation) during large storms. For that reason, the Engineering Department discourages below-grade plumbing, and encourages use of backflow preventers on any plumbing fixtures that are below ground elevation. It is important to note that backflow preventers are not placed on the sewer lateral. Backflow preventers must be placed on the internal plumbing branch to which any below grade plumbing fixtures connect. This is

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an unavoidable limitation for combined sewer communities such as Somerville, Cambridge and Boston. Cities with these systems cannot accept responsibility for damage resulting from below grade plumbing. It is the responsibility of the property owner to have properly located and functioning backflow prevention devices.

Infiltration and Inflow Mitigation

Infiltration, generally groundwater, is water other than sanitary wastewater that enters the system through cracks and structural defects in the system. Inflow, generally stormwater, is water other than sanitary wastewater that enters the system through roof leaders, sump pumps, cellar drains, cooling towers, yard drains, catch basins, and other storm drain connections. Infiltration and Inflow (I/I) causes a range of problems including reducing the ability of wastewater treatment facilities to adequately cleanse sanitary flows, increasing operations and maintenance costs for sanitary pumping equipment, limiting capacity for sanitary flows, and creating both Sanitary System Overflows (SSOs) and Combined System Overflows (CSOs).

Reducing I/I is a requirement of the permits issued to Somerville as well as policies and regulations enforced by EPA, MassDEP and MWRA to which Somerville is subject. In 2014, MassDEP revised 314 CMR 12.00, and in 2017 issued revised policies and guidance for I/I removal, including requirements for communities with combined sewer systems that any new sanitary sewer flows be offset by I/I removal. Consequently, the City's stormwater and I/I management policies that have been employed since the 1990s are now subject to state review and enforcement.

Calculation of Wastewater Flow

In the case that a development is taking place on a vacant property, the wastewater flow to be mitigated is equal to the wastewater generated by the proposed development. In the case of a building renovation or demolition and redevelopment, the wastewater flow to be mitigated is the wastewater generated by the proposed development minus the wastewater generated by the existing building(s). The simple equation is provided below, and rates must be expressed in gallons per day (gpd).

$$WW_{flow} = WW_{proposed} - WW_{existing}$$

In accordance with MassDEP policy for the calculation of wastewater flows for I/I offsets, all daily wastewater generation volumes must utilize the rates in Section 15.203 of Massachusetts "Title 5" (310 CMR 15) for the design of septic systems. MassDEP has historically considered the factor of safety included in those generation rates consistent with the goals of the I/I program. For cases in which the existing or proposed building usage does not match the categories in Title 5, the applicant must propose a similar use for review and concurrence by the Engineering Department. The guiding question for that evaluation is: "with no physical alterations to the building, what Title 5 building use could be supported." That same guiding question can apply to vacant buildings. If a building is vacant, but could be occupied without requiring planning or zoning approval, the "existing" wastewater generation can be taken to be the flow generated by the existing building.

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Calculation of Stormwater Flow

As discussed above, in some extenuating circumstances, a connection of stormwater to the City's combined system may be allowed. In those cases, the stormwater contributions to the City's system must also be mitigated. The amount of mitigation will consider two rates. One, the total increase in volume resulting from the 100-year, 24-hour storm expressed in gpd. Two, the increase in peak rate of discharge for the peak hour resulting from the 5-year, 24-hour storm, also expressed in gpd. Whichever is greater is the stormwater flow to be mitigated.

$$SW_{flow} = SW_{100\text{-year total volume}} \textit{ or } SW_{5\text{-year peak hour}}$$

Exemptions to I/I Policy

Any renovation or development project that increases the volume of wastewater or stormwater entering the City's system is potentially subject to the I/I Policy. However, minor renovations and alterations that add less than 330 gpd shall be considered *de minimis* and will not require review by the Engineering Department. Examples of *de minimis* projects include: addition of three or fewer bedrooms to residential buildings, alteration of less than 4,400 square feet to office buildings, addition of fewer than 10 seats to restaurants, or other similar sized projects.

I/I Offset Requirement

MassDEP requires a minimum of a 4 to 1 (4:1) I/I offset for any new flows to combined systems. Following review of Somerville's specific I/I plan, that offset ratio may be increased. Until that time, Somerville will require four times the I/I mitigation flow for the additional new flows to the system.

$$I/I_{mitigation} = 4x(WW_{flow} + SW_{flow})$$

Achieving I/I Mitigation

The Engineering Department is administering the I/I removal program, including system rehabilitation and sewer separation projects. Renovation and development project applicants subject to the I/I Policy may elect to pay a fee based on the project's I/I mitigation requirement that will be deposited into a dedicated account that funds those projects. The per-gallon fee is established annually based on the program costs to remove I/I. The CY2018 I/I mitigation fee is $14.35.

If mutually agreeable, development project applicants may directly fund and construct City-identified stormwater management, system rehabilitation or sewer separation projects on the City's behalf.

Alternatively, development project applicants may elect to complete stormwater mitigation, system rehabilitation or sewer separation projects of their own design. In such cases, the proponent must submit project plans and I/I removal calculations based on MassDEP methodology for review and approval by the Engineering Department.

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