2023 Annual Report
National Pollutant Discharge Elimination System

For The
City of Cambridge, Massachusetts
Combined Sewer Overflow Permit
#MA0101974

Submitted to
U.S. Environmental Protection Agency
Water Technical Unit

MA Department of Environmental Protection
Bureau of Resource Protection

Submitted by

City of Cambridge
Department of Public Works

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature of Authorized Official: Yi-An Huang
City Manager, City of Cambridge

4/12/24
Date

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1. Purpose of Report

This report has been prepared in accordance with Part I, Section D of Permit No. MA0101974, issued to the City of Cambridge Department of Public Works (DPW) on September 30, 2009. The permit authorizes the City of Cambridge (City) to discharge flow from twelve (12) Combined Sewer Overflows (CSO) located in eleven (11) regulator structures to the receiving water bodies named in the permit.

The City of Cambridge is additionally required to provide a comparison between the precipitation for the year and the precipitation of the typical year under future planned conditions in the MWRA Final CSO Facilities Plan "Notice of Project Change for the Long Term CSO Control Plan for Alewife Brook" document. Also required for each CSO is a comparison between the activation volume and frequency for the year and the volume and frequency during a typical year under future planned conditions.

Finally, an evaluation was performed of whether the CSO activation volumes and frequencies for 2023 are in accordance with the estimate in the MWRA Final CSO Facilities Plan, or the report entitled "Notice of Project Change for the Long Term CSO Control Plan for Alewife Brook", given the precipitation which occurred during the year, and the CSO abatement activities which have been implemented. Where CSO discharges are determined to be greater than the activation frequency or volume in either document, an assessment of the results was completed and documented.

Per the 2019 Variance for Combined Sewer Overflow Discharges to the Alewife Brook / Upper Mystic River Basin and Charles River Basin issued by the Massachusetts Department of Environmental Protection, the City is required to complete an Updated CSO Control Plan for City-owned outfalls. The recommendations in this Report will be used to support creation of that Control Plan.

2. Hydraulic Model Updates

In 2023, no significant modifications were made to the existing conditions hydraulic model by the City of Cambridge.

In the previous year, 2022, the City had integrated its model into a Unified Hydraulic Model (The Model). This model is a collaborative effort between the City of Cambridge, City of Somerville, and the Massachusetts Water Resources Authority (MWRA), who are each developing individual Updated CSO Control Plans to build upon the current MWRA CSO Long-Term Control Plan (LTCP). The model results discussed in this report were derived from this Unified Model.

As a part of continuous improvements to this model by all three agencies, updates received from both the MWRA, and the City of Somerville were incorporated into the model in 2023. A significant update was to the MWRA's collection system in the City of Boston, which could potentially impact modeled performance of the Prison Point CSO facility. It is important to note that the operation of this facility influences the City of Cambridge's collection system at the CAM 017 regulator.

3. Combined Sewer Overflow Metering Plan

As part of the 2023 Annual CSO reporting process, a review of the available meter data for 2023 was performed. This data review identified periods with good-quality meter data that could be used for calculating CSO statistics and comparison to model simulation results. CSO activations and volumes presented in this report are based on calculations from flow monitoring data, except where stated otherwise. This section provides an overview of the City's CSO metering program, the modeled CSO simulations, and the correlation between the two at each CSO regulator.

3.1 Existing CSO Metering Methodology

3.1.1 Existing CSO Structures

In accordance with the City's current CSO permit, the City has a total of twelve combined sewer outfalls that receive overflows from eleven regulator structures, listed in **Table 1** and shown in **Figure 1**. Five outfalls are located on the Charles River and seven outfalls are located on Alewife Brook.

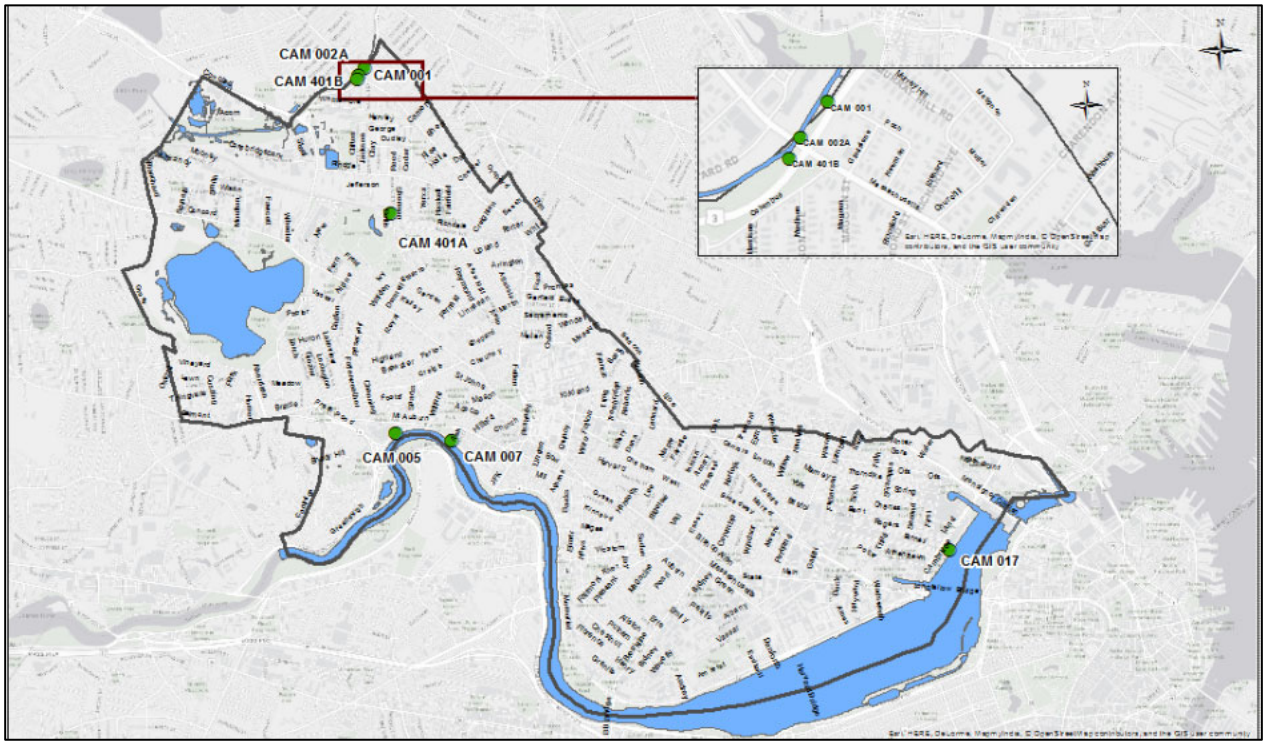
Seven of the twelve existing CSOs are currently open: four located on the Alewife Brook and three on the Charles River. On Alewife Brook, the CAM 004 and CAM 400 regulators were permanently closed and CAM 002B regulator is temporarily closed. On the Charles River, both CAM 009 and CAM 011 are temporarily closed.

Table 1 – Summary of Combined Sewer Regulator Structures

Regulator	Location	Status	Waterbody
CAM 001	Alewife Brook Parkway @ Foch St.	Open	Alewife Brook
CAM 002	2A-Massachusetts Ave. at Alewife Brook Parkway	Open	Alewife Brook
	2B-Massachusetts Ave. at Alewife Brook Parkway	Closed[1]	Alewife Brook
CAM 004	Fresh Pond Rotary	Closed[2]	Alewife Brook
CAM 400	Alewife Brook Parkway and Harrison Avenue	Closed[3]	Alewife Brook
CAM 401A	Sherman Street at railroad crossing	Open	Alewife Brook
CAM 401B	Massachusetts Ave. at Alewife Brook Parkway	Open	Alewife Brook
CAM 005	Mount Auburn Street @ Lowell Street	Open	Charles River
CAM 007	Memorial Drive at Hawthorne Street	Open	Charles River
CAM 009	Memorial Dr. at Old Murray Rd.	Closed[4]	Charles River
CAM 011	Plympton St. @ Memorial Dr.	Closed[4]	Charles River
CAM 017	Binney Street at Land Blvd.	Open	Charles River

[1]Temporarily closed, City retains the right to re-open, will be reevaluated as part of the Updated CSO Control Plan
[2]Permanently closed on December 27, 2015
[3]Permanently closed on March 31, 2011
[4]Temporarily closed, City retains the right to re-open, will be reevaluated as part of the Updated CSO Control Plan

Figure 1 – Active Cambridge CSO Regulator Locations



3.1.2 CSO Metering and Recommendations

This section provides a comprehensive overview of the flow monitoring setup and methodology employed for CSO identification at each regulator. It also addresses specific metering challenges that were encountered at various monitoring sites.

The data analysis carried out on both the metered and modeled CSO simulations helped identify actions that the City will undertake for CSO metering in 2024. These actions primarily encompass ongoing routine maintenance and calibration of sensors installed in regulators. This ensures the availability of high-quality data that assists accurate reporting and supports refinement and calibration efforts to improve model simulation results.

CAM 001 Metering

The CAM 001 regulator is monitored by an area-velocity sensor in the outfall pipe and a level sensor in the regulator manhole. The level sensor in the regulator is programmed with an offset such that a reading of 0 is equal to the overflow threshold. In 2023, there were instances where the level data was observed to exceed zero following a rainfall event, indicating a potential spill. However, velocity readings in the outfall pipe and Alewife Brook level data indicate these instances were the result of backwater from Alewife Brook rather than overflow from the sewer network.

The City will continue to check the monitoring data at CAM 001 and recalibrate the sensors as needed.

CAM 002 Metering

The CAM 002 regulator is monitored by a level sensor located inside the regulator structure and a flow meter located in the CAM 002A outfall pipe. The spill threshold for the level inside the regulator is programmed at 9.78 feet.

The metering at CAM002 appears to be operating properly and no actions are recommended for the site other than continued cleaning and calibration of the level sensor, if needed.

CAM 004 Metering

The CAM 004 outfall was permanently closed on December 27th, 2015, in accordance with the MWRA's LTCP for the Alewife Brook.

CAM 400 Metering

The CAM 400 CSO regulator was permanently closed in March 2011 in accordance with the MWRA's LTCP for the Alewife Brook.

CAM 401A Metering

The CAM 401A regulator structure includes a floatables control brush screen mounted on a static weir structure, with flap gates located just downstream from the weir. There is no underflow connection to the MWRA network at CAM 401A, only an overflow weir; all dry-weather and low wet-weather flows are conveyed through the City's combined sewer network to the MWRA-owned MWR003 regulator, on Alewife Brook at the MBTA Alewife Station.

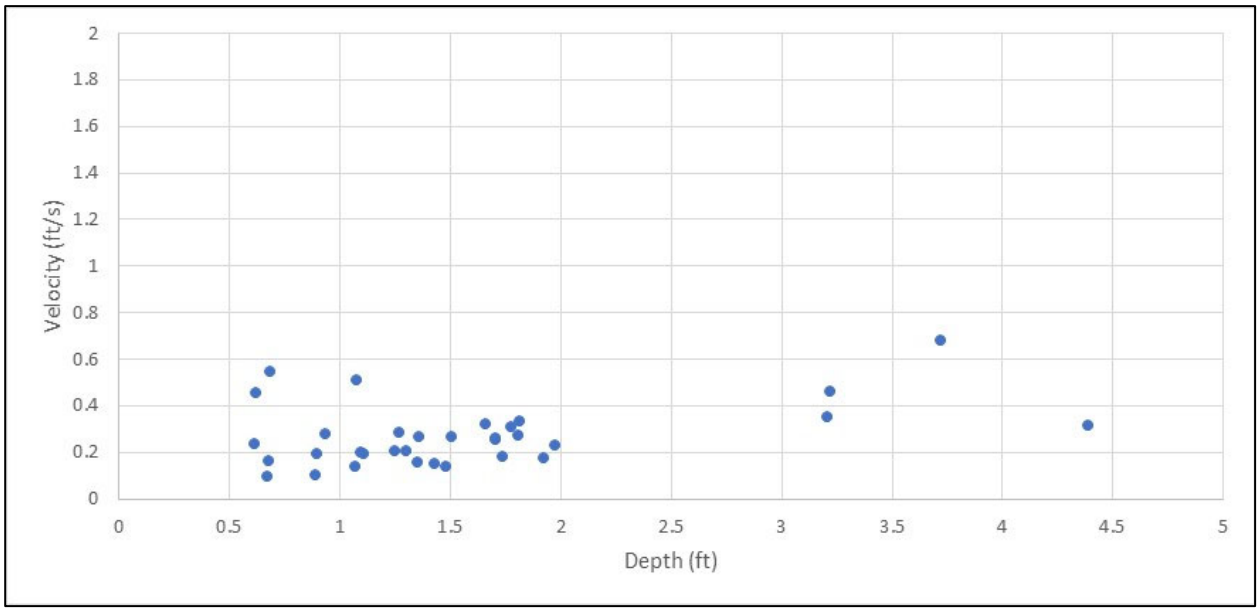
The City employs level monitors in the regulator and a Smart Cover level sensor situated in the manhole between the combined sewer and the weir. The spill thresholds for the regulator and Smart Cover level sensors are programmed at 0 and 2.17 feet, respectively. In 2023, inconsistencies were observed in the data from the Smart Cover during several storm events. Specifically, there were instances of missing data, typically at the peak of an event, which rendered the data unsuitable for estimating the spill volume for that particular event. Furthermore, the Smartcover level data sometimes showed negative levels during an ongoing spill, likely indicating an 'error' stage. For events where such inconsistencies were observed, data from the Smartcover was excluded in estimation of CSO spill duration and volumes.

Another flow meter downstream from the overflow weir is intended to validate spills by providing positive depth and velocity readings. However, in 2023, data from this meter consistently reported a value of zero or marginally above zero, including during large storm events where other flow monitoring data indicated a CSO spill. This likely indicates an error state in the data stream from this flow meter.

Level data from the flow monitors at CAM 401A is used to estimate spill volume assuming a free discharge condition over the weir. However, during larger storm events, the outfall pipe downstream of the weir may become surcharged with stormwater, leading to occasional backflow conditions in the regulator. This results in complex flow conditions at the weir within the regulator and can lead to inaccuracies in the estimation of spill volumes for such events.

Figure 2 presents a chart of observed velocity versus depth in CAM401A. This chart plots measured depths that exceeded 0.5 feet over the weir elevation on the x-axis, and corresponding velocities on the y-axis. Under typical hydraulic conditions, a rise in depth would lead to a proportional increase in velocity. However, data from the regulator indicates that corresponding velocities remain relatively constant, even with an over fourfold increase in depth. This is characteristic of possible backwater conditions occurring in the outlet of the regulator, particularly during the larger storms in 2023. These backwater conditions may be occurring due to high rates of stormwater entering the outlet pipe downstream from the regulator and/or elevated levels in Alewife Brook limiting discharge from the outlet pipe to the Brook.

Figure 2 - Velocity vs Depth Relationship, CAM 401A



In an average precipitation year in Cambridge, such events are rare, and the inaccuracy arising from this approach to estimate spill volumes is negligible in comparison to the overall annual spill volume. However, 2023 was marked by an unusual increase in the frequency and intensity of impactful storms, as will be elaborated on in subsequent sections. This led to a greater number of events that could potentially introduce inaccuracies in the calculation of spill volumes. Therefore, for events where flow monitoring data indicated such backwater conditions, model simulation results were utilized in place of meter data to report spill volumes. This approach helped ensure a more accurate representation of spill volumes during such events.

The City will check the operation, calibration, and data streams for all sensors at CAM401A. This should include validating the meter offset depths that determine spill thresholds. In 2024, MWRA and the City will be completing additional flow monitoring in the CAM401A service area and will be revisiting the calibration of the hydraulic model in the area.

CAM 401B Metering

At CAM 401B, the City has a level sensor and area-velocity sensors installed in the regulator structure and outfall pipe respectively. The spill threshold for level inside the regulator is programmed to be 5.47 feet.

Analysis of the 2023 data from the outfall pipe showed the sensor failing on multiple occasions, where the data was observed to return to a default, 'error' state. These occurrences did not correlate with rainfall data and, therefore, were not the result of a wet-weather response. The City will check the flow-monitoring setup and related data processing for the sensors in the CAM 401B outfall pipe in 2024.

CAM 005 Metering

The CAM 005 regulator is a multi-chamber structure that is metered with a depth and velocity sensor mounted on the upstream side of the overflow weir. The spill threshold for the level sensor is programmed to be 0. Additionally, a Smartcover level sensor is installed, for meter and model validation, in MH D32CMH0215, which is immediately upstream from the south side of the regulating structure.

The 2023-meter data suggested that post-spill, the level in the regulator remains slightly above the weir elevation for an approximate duration of 24 hours, before returning to the level typical of dry weather conditions. This consistent pattern is assumed to be a result of an inconsistency in the data logging process, rather than a true prolonged breach of the weir elevation, as evidenced by the uniform duration observed after each spill. The City will check the monitoring setup and related data processing for the flow monitors at CAM 005 in 2024.

CAM 007 Metering

The CAM 007 regulator has a level and velocity sensor mounted on the overflow weir in the regulator chamber. The spill threshold for the level sensor is programmed to be 0.

Water levels in the CAM 007 regulator are significantly influenced by levels in the MWRA's interceptor sewer and the manual operations at the Cottage Farm CSO facility. This is particularly notable during larger storm events when the MWRA's operations at the Cottage Farm Facility are altered for system-wide capacity management in anticipation of flooding concerns from impactful events.

The metering at CAM007 appears to be operating properly and no actions are recommended for the site other than continued cleaning and calibration of the sensors.

CAM017 Metering

The CAM 017 regulator has flow meters installed on the incoming 72-inch diameter combined sewer on Binney Street, and on one of the static weir crests. Additionally, an inclinometer is mounted on the counterweight pulley of the largest bending weir in the regulator for validation of spills. The level sensor data is utilized for CSO spill detection, with 0 level as the spill threshold. It is important to note that the calculation of CSO volume from flow monitoring data at CAM 017 relies on model-simulated flow split between the static and bending weirs, as determined by previous modeling results.

In 2023, the flow monitors at the CAM 017 regulator failed to record any data from August 3 to September 11, due to a reported battery failure. As a result, no data was captured during the significant wet-weather event that occurred on August 8, 2023. The City will be utilizing model simulation results for reporting CSO spills and volumes during this period. Other than the battery failure, the monitors at CAM017 appear to be operating properly and no actions are recommended for the site other than continued cleaning and calibration of the sensors.

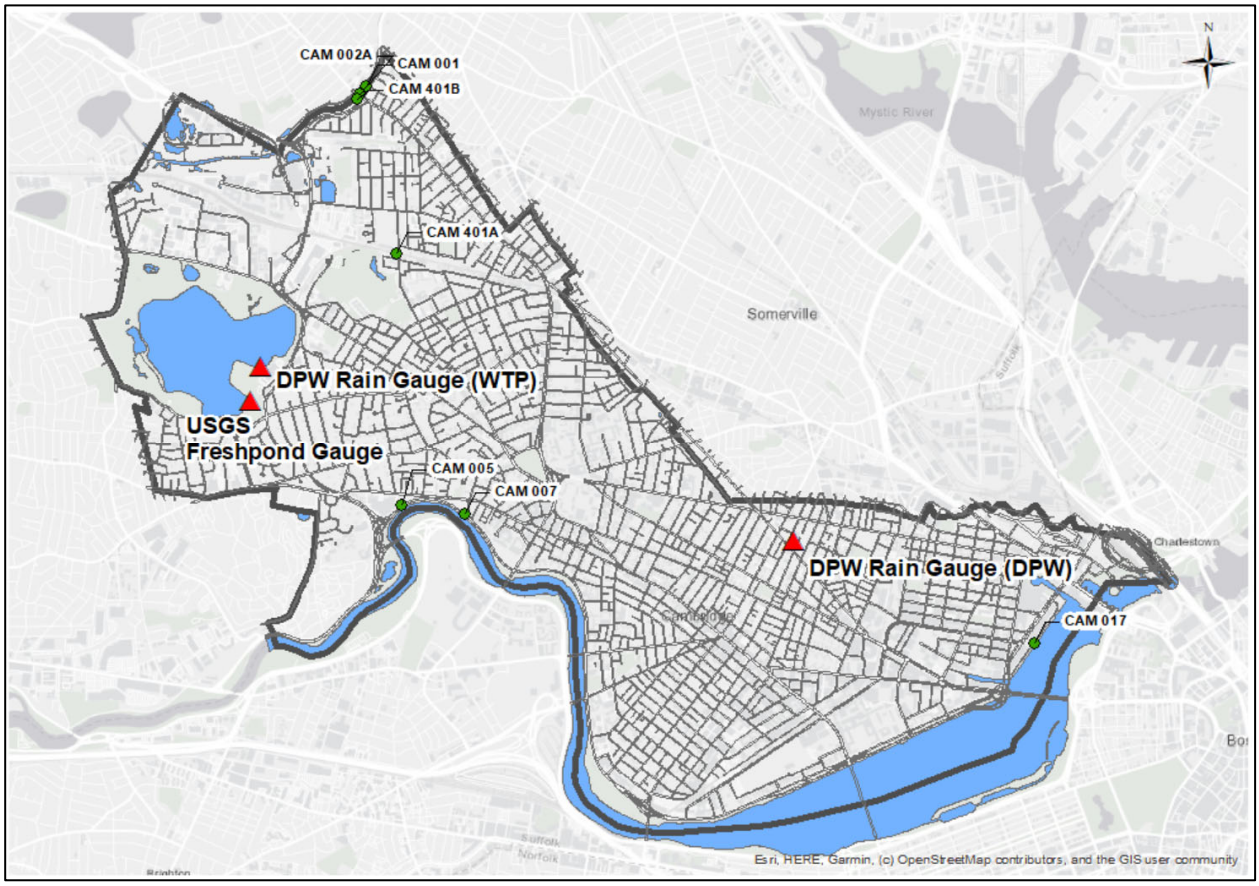
The water levels at the CAM 017 regulator are influenced by the operation of the Prison Point CSO Facility. Similar to the Cottage Farm facility, Prison Point is also manually operated by the MWRA in response to flooding concerns anticipated from impactful storm events. The CSO performance at CAM 017 is, therefore, subject to external influences from the MWRA's larger system wide operations in addition to the City's collection system.

3.2 Rainfall Characteristics

In compliance with the City's National Pollutant Discharge Elimination System (NPDES) Permit MA0101974, the CSO Annual Report is required to incorporate an analysis of the 2023 precipitation data and compare it with the MWRA Typical Year rainfall record.

The City of Cambridge maintains rain gauges at two locations: the Cambridge DPW building and the Water Department near Fresh Pond. In 2023, these gauges were upgraded to heated versions, enabling year-round operation. The gauge at the Water Department building (hereafter referred to as 'WTP') served as the source of precipitation data for all regulators due to it being in closer proximity to almost all CSO regulators in both the Alewife and Charles River watersheds. Starting in 2024, rain data for CAM017 will use the rain gauge at the City's DPW building due to it being in closer proximity to the regulator. In previous years, City rain gauge data was limited to the summer months, necessitating the creation of a 'Hybrid' rainfall series supplemented with data from an alternate source, typically the USGS gauge at Freshpond. However, the 2023 rainfall analysis did not require such a Hybrid dataset due to the year-round operation of the City's gauges. **Figure 3** illustrates the location of the rain gauges analyzed for the 2023 reporting year.

Figure 3 – Rain Gauge Locations



Comparative analysis was also made with the MWRA Typical Year rainfall to assess any similarities or differences in the rainfall distribution and patterns. The findings from these analyses are presented further in this section.

Figure 4 shows the cumulative rainfall for 2023 measured at the rain gauges analyzed, alongside the Typical Year rainfall. As indicated in the graphic, there was more precipitation in the second half of 2023 than in the Typical Year.

Figure 4 – Cumulative rainfall: 2023 vs 1992 Typical Year

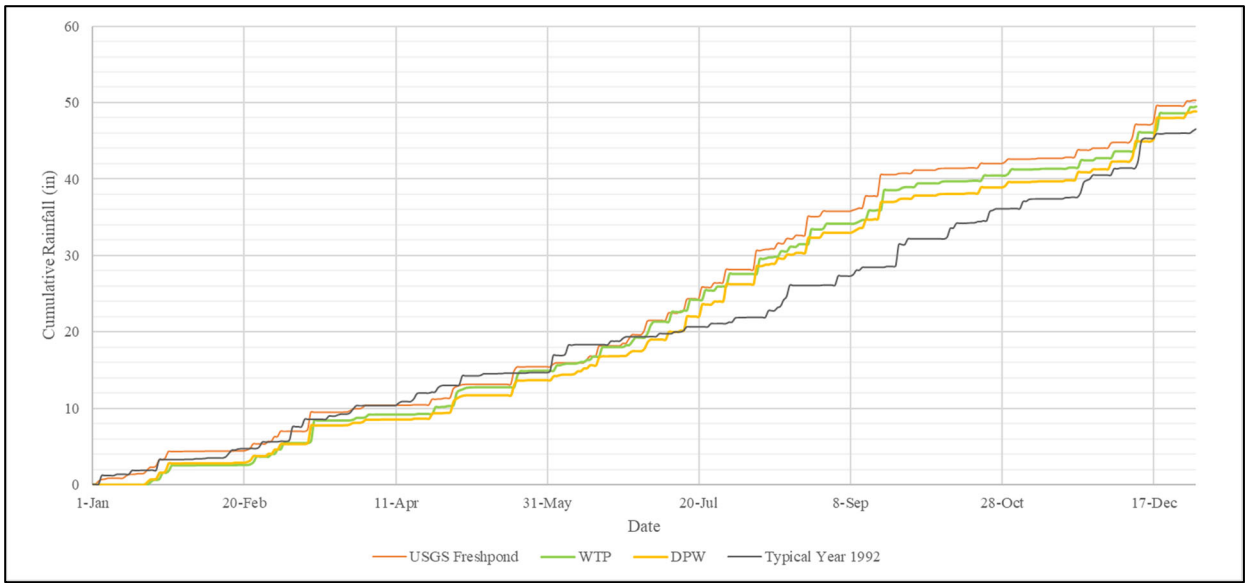


Table 2 and **Table 3** provide a comparison of storm frequency and rainfall amounts within various ranges for 2023, alongside the MWRA Typical Year data. The rain gauges within Cambridge recorded a total annual rainfall depth that was between 2.0 and 3.7 inches more than the Typical Year. The storm count was determined with an inter-event time of twelve hours or more. In 2023, a total of 90 storms were recorded, slightly fewer than the 94 storms in the Typical Year. However, the storms in 2023 generally had higher rainfall depths than Typical Year storms.

Table 2 – Frequency of Rainfall Events per Storm Depth Range

Rainfall Series	Total Rainfall (inches)	Total Number of Storms	Number of Storms by Depth				
			Depth <0.25 inches	Depth 0.25 to 0.50 inches	Depth 0.5 to 1.0 inches	Depth 1.0 to 2.0 inches	Depth >=2.0 inches
Typical Year	46.83	94	49	15	16	9	5
WTP[1]	49.47	90	45	13	17	9	6
DPW[2]	48.83	86	42	13	15	10	6
USGS Fresh Pond	50.22	81	35	10	21	8	7

1. City operated gauge installed at the Water Department near Freshpond
2. City operated gauge installed at the DPW Building

Table 3 – Annual Rainfall Depth Distribution per Storm Depth Range

Rainfall Series	Total Rainfall (inches)	Total Number of Storms	Total Rainfall Amount for Depth Range				
			Depth <0.25 inches	Depth 0.25 to 0.50 inches	Depth 0.5 to 1.0 inches	Depth 1.0 to 2.0 inches	Depth >=2.0 inches
Typical Year	46.83	94	3.45	5.86	11.43	12.22	13.87
WTP[1]	49.47	90	3.67	4.88	12.95	13.34	14.63
DPW[2]	48.83	86	3.70	4.73	10.75	14.73	14.92
USGS Fresh Pond	50.22	81	3.29	3.59	14.04	12.04	17.26

1. City operated gauge installed at the Water Department near Freshpond
2. City operated gauge installed at the DPW Building

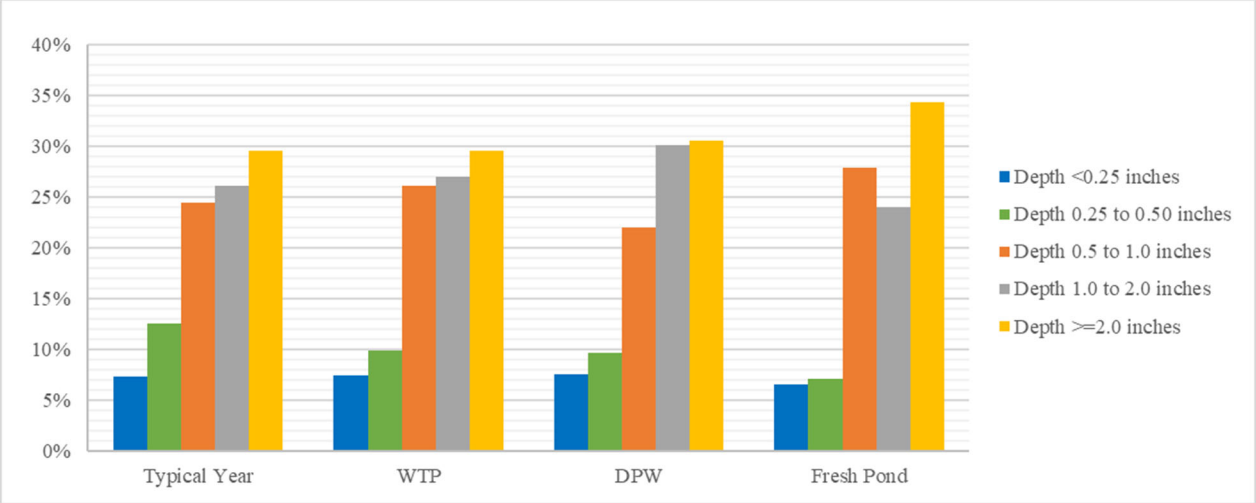
Table 4 and **Figure 5** present the distribution of the total depth of storms by percentage.

Table 4 – Percent of Annual Rainfall Depth per Storm Depth Range

Rainfall Series	Total Rainfall (inches)	Total Number of Storms	Depth of Storms by Percentage				
			Depth <0.25 inches	Depth 0.25 to 0.50 inches	Depth 0.5 to 1.0 inches	Depth 1.0 to 2.0 inches	Depth >=2.0 inches
Typical Year	46.83	94	7.37%	12.51%	24.41%	26.09%	29.62%
WTP[1]	49.47	90	7.42%	9.86%	26.18%	26.97%	29.57%
DPW[2]	48.83	86	7.58%	9.69%	22.02%	30.17%	30.55%
USGS Fresh Pond	50.22	81	6.55%	7.15%	27.96%	23.97%	34.37%

1. City operated gauge installed at the Water Department near Freshpond
2. City operated gauge installed at the DPW Building

Figure 5 – Frequency Comparison of Total Rainfall Depth Distribution by Percentage



When comparing the rainfall distribution by depth, i.e., number of storms and total depth of rainfall for the storm depth ranges analyzed, the distribution of the 2023 WTP rainfall series was observed to have slightly higher percentages of rain events with depths of 0.5 to 2.0 inches compared to the Typical Year.

Table 5 provides a comparison for storms exceeding 1 inch in depth. In 2023, fifteen such events were observed, compared to the fourteen events recorded in the Typical Year.

Table 5 – Comparison of Storms with More Than 1 inch of Rainfall, Typical Year vs 2023

Rainfall Series	No. of Storms	Date	Duration (hrs.)	Total Rainfall (in)	Peak Intensity (in/hr.)
Typical Year	14	12/11/1992	49.50	3.89	0.25
		8/15/1992	70.75	2.91	0.80
		9/22/1992	22.00	2.79	0.65
		5/31/1992	29.25	2.24	0.48
		10/9/1992	64.25	2.04	0.72
		11/21/1992	44.25	1.93	0.36
		3/6/1992	34.00	1.89	0.22
		1/23/1992	26.00	1.38	0.40
		6/5/1992	17.25	1.34	1.00
		9/3/1992	12.25	1.19	0.68
		10/23/1992	3.00	1.18	1.08
		1/4/1992	20.75	1.15	0.48
		5/2/1992	5.50	1.14	1.32
		4/16/1992	30.00	1.02	0.28
WTP	15	3/13/2023	25.00	2.93	0.32
		9/18/2023	18.00	2.59	0.72
		12/17/2023	22.00	2.50	1.00
		12/10/2023	19.00	2.46	0.96
		5/20/2023	14.75	2.10	1.04
		4/29/2023	30.25	2.05	0.52
		8/8/2023	6.50	1.95	2.52
		8/25/2023	15.50	1.92	0.68
		7/29/2023	8.25	1.60	1.36
		7/2/2023	20.50	1.59	1.32
		7/16/2023	13.75	1.36	0.60
		7/10/2023	21.50	1.27	1.12
		7/21/2023	3.00	1.24	2.28
		6/17/2023	26.00	1.23	0.84
		9/13/2023	13.75	1.18	1.20

In addition to rainfall depth, CSO performance is also a function of storm intensity. **Table 6** presents the distribution of storms by peak intensity for 2023 and for the MWRA Typical Year. Most notably in 2023, there were more storms with peak intensities greater than 0.25 inches per hour and more than double the number of storms with intensities greater than 1.0 inches per hour than in the Typical Year.

Table 6 – Number of Storm Events at Selected Ranges of Peak Intensity

Rainfall Series	No. of Storms	Total Rainfall	Number of Storms by Peak Intensity				
			0.01 to 0.10 in/hr.	0.10 to 0.25 in/hr.	0.25 to 0.50 in/hr.	0.50 to 1.0 in/hr.	> 1.0 in/hr.
Typical Year	94	46.83	42	26	12	9	5
WTP[1]	90	49.47	32	22	13	11	12
DPW[2]	86	48.83	24	29	16	9	8
USGS Fresh Pond	81	50.22	24	26	13	8	10

1. City operated gauge installed at the Water Department near Freshpond
2. City operated gauge installed at the DPW Building

Table 7 presents a comparison of storm events exhibiting peak intensity greater than 0.5 inches per hour in 2023 and the Typical year. Recurrence interval for the events are based on a comparison to the values listed in NOAA Atlas 14 Point Precipitation Frequency Estimates. These are events that are most likely to result in CSO spills. The Typical Year has fourteen events in this category compared to twenty-three events in 2023. Of particular note is the comparison of events with a peak intensity surpassing 1.0 in/hr. In this category, 2023 recorded twelve events, which is more than double the five events observed in the Typical Year, suggesting a higher likelihood of larger CSO spills that tend to occur in response to such high intensity events.

Table 7 – Comparison of Storms with Peak Intensities Greater than 0.50 in/hr.

Rainfall Series	No. of Storms	Date	Duration (hrs.)	Peak Intensity (in/hr.)	Total Rainfall (in)	60-min. Recurrence Interval
Typical Year	14	9/9/1992	0.50	1.72	0.57	10-25y
		5/2/1992	5.50	1.32	1.14	2-5y
		8/11/1992	10.50	1.24	0.87	2-5y
		10/23/1992	3.00	1.08	1.18	2y
		6/5/1992	17.25	1.00	1.34	1-2y
		7/11/1992	0.50	0.84	0.22	1y
		8/15/1992	70.75	0.80	2.91	6m-1y
		10/9/1992	64.25	0.72	2.04	6m-1y
		9/3/1992	12.25	0.68	1.19	6m-1y
		7/31/1992	18.75	0.68	0.59	6m-1y
		9/22/1992	22.00	0.65	2.79	6m
		7/29/1992	0.50	0.64	0.20	6m
		6/20/1992	12.75	0.56	0.45	3-6m
		1/14/1992	9.50	0.52	0.49	3-6m
WTP	23	8/8/2023	6.50	2.52	1.95	50-100y
		7/21/2023	3.00	2.28	1.24	25-50y
		7/25/2023	4.75	1.52	0.49	5-10y
		7/29/2023	8.25	1.36	1.60	5-10y
		7/2/2023	20.50	1.32	1.59	2-5y
		9/13/2023	13.75	1.20	1.18	2-5y
		6/28/2023	1.75	1.16	0.32	2-5y
		7/10/2023	21.50	1.12	1.27	2-5y
		8/18/2023	16.25	1.12	0.60	2-5y
		5/20/2023	14.75	1.04	2.10	1-2y
		6/14/2023	1.25	1.04	0.42	1-2y
		12/17/2023	22.00	1.00	2.50	1-2y
		12/10/2023	19.00	0.96	2.46	1-2y
		6/17/2023	26.00	0.84	1.23	1y
		6/27/2023	3.50	0.84	0.50	1y
		9/18/2023	18.00	0.72	2.59	6m-1y
		8/25/2023	15.50	0.68	1.92	6m-1y
		8/21/2023	2.50	0.68	0.34	6m-1y
		7/16/2023	13.75	0.60	1.36	6m
		6/25/2023	1.25	0.56	0.23	3-6m
		4/29/2023	30.25	0.52	2.05	3-6m
		8/29/2023	15.50	0.52	0.75	3-6m
		6/12/2023	7.50	0.52	0.28	3-6m

2023 Rainfall Summary

2023 was characterized by approximately 50 inches of rainfall, with a notable increase in the number of high-intensity events compared to average precipitation years. The National Weather Service (NWS) has reported that the summer months (July through September) of 2023 were the second wettest on record in the Boston region since recordkeeping began in 1872. The precipitation during this period was about 200% of the average summer precipitation, representing a deviation of approximately 13 inches, as shown in **Figure 6** and **Figure 7.** It is important to note that several of the larger, high-intensity events typically occur during these summer months. These events are impactful as they tend to contribute to a majority of the CSOs observed throughout the year.

Figure 6 – Percent of Normal Precipitation in Massachusetts (July-Sept 2023)

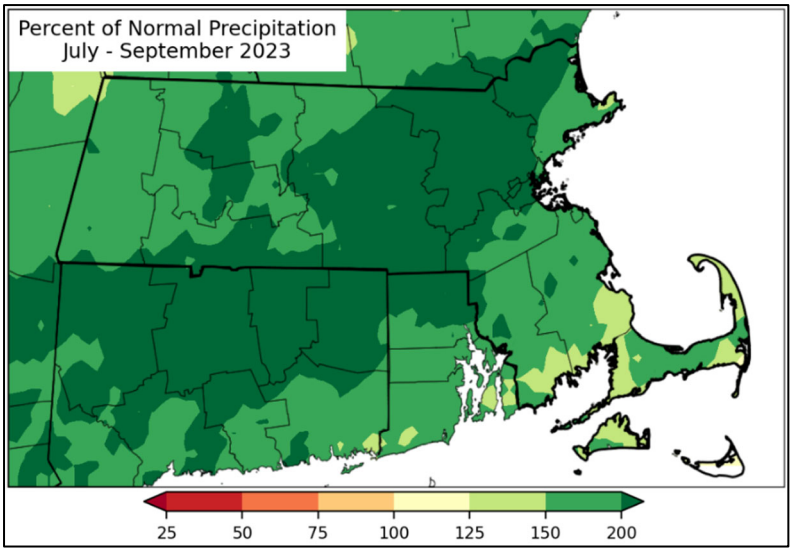
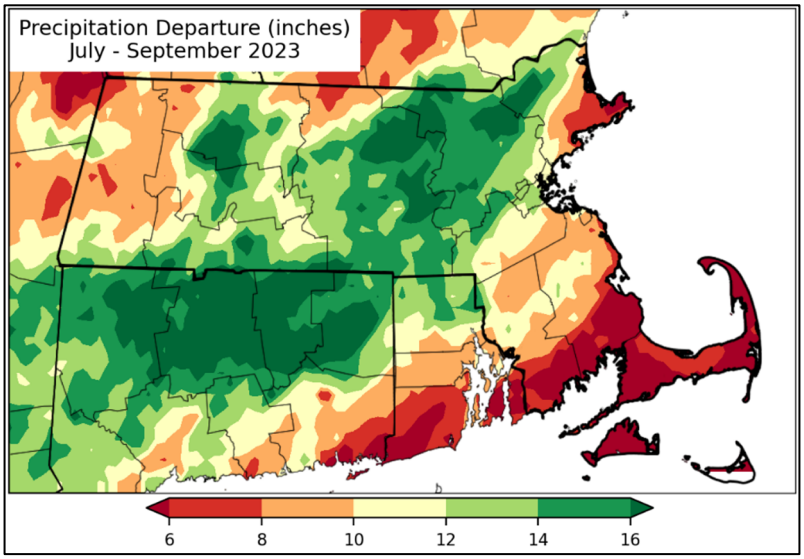


Figure 7 - Three-Month Rainfall Departure from Normal (July-Sept 2023)



Source: Northeast Regional Climate Center (https://nrcc.cornell.edu)

Figure 8 presents a comparison of the cumulative rainfall from July to September 2023 with the same period in the Typical Year. In 2023, the total recorded rainfall during these months was 19.22 inches, which is approximately 8 inches higher than that in the Typical Year. This increase in cumulative rainfall suggests a higher likelihood of CSO occurrences during the summer months of 2023 compared to the Typical Year.

However, this comparison alone does not provide a comprehensive understanding of the CSO characteristics. Historically, CSO occurrences in the City have shown a higher correlation with the peak intensity of events rather than the depth of rainfall. Therefore, it is essential to analyze the peak intensity of the storms in addition to the depth to gain a more comprehensive understanding of storm characteristics and their correlation with spill volumes.

Figure 8 – Cumulative Rainfall, July-September 2023

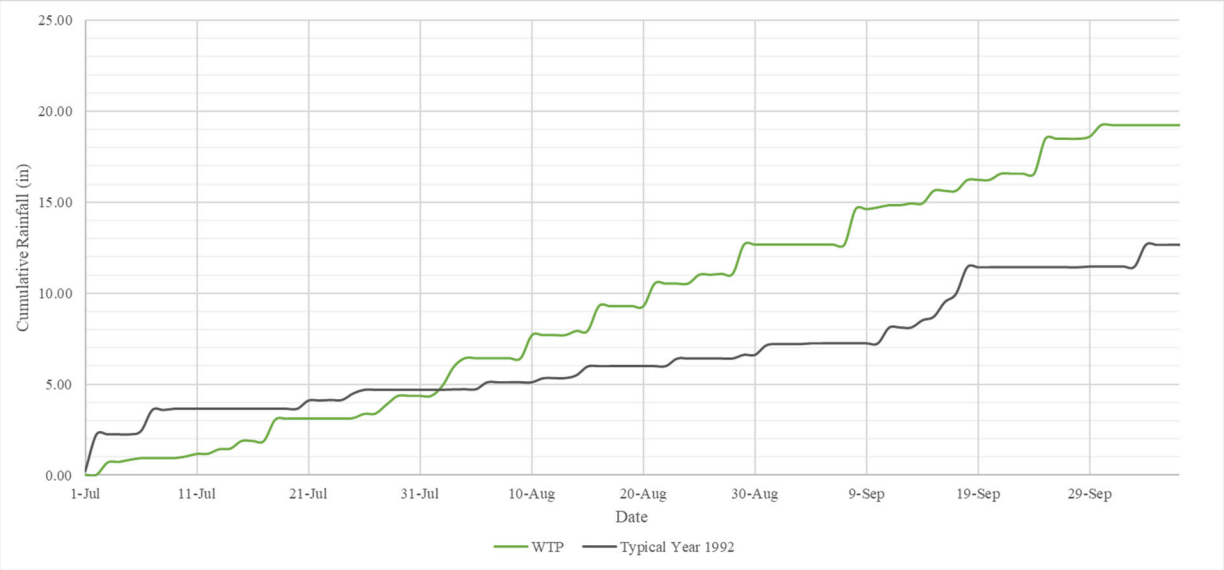
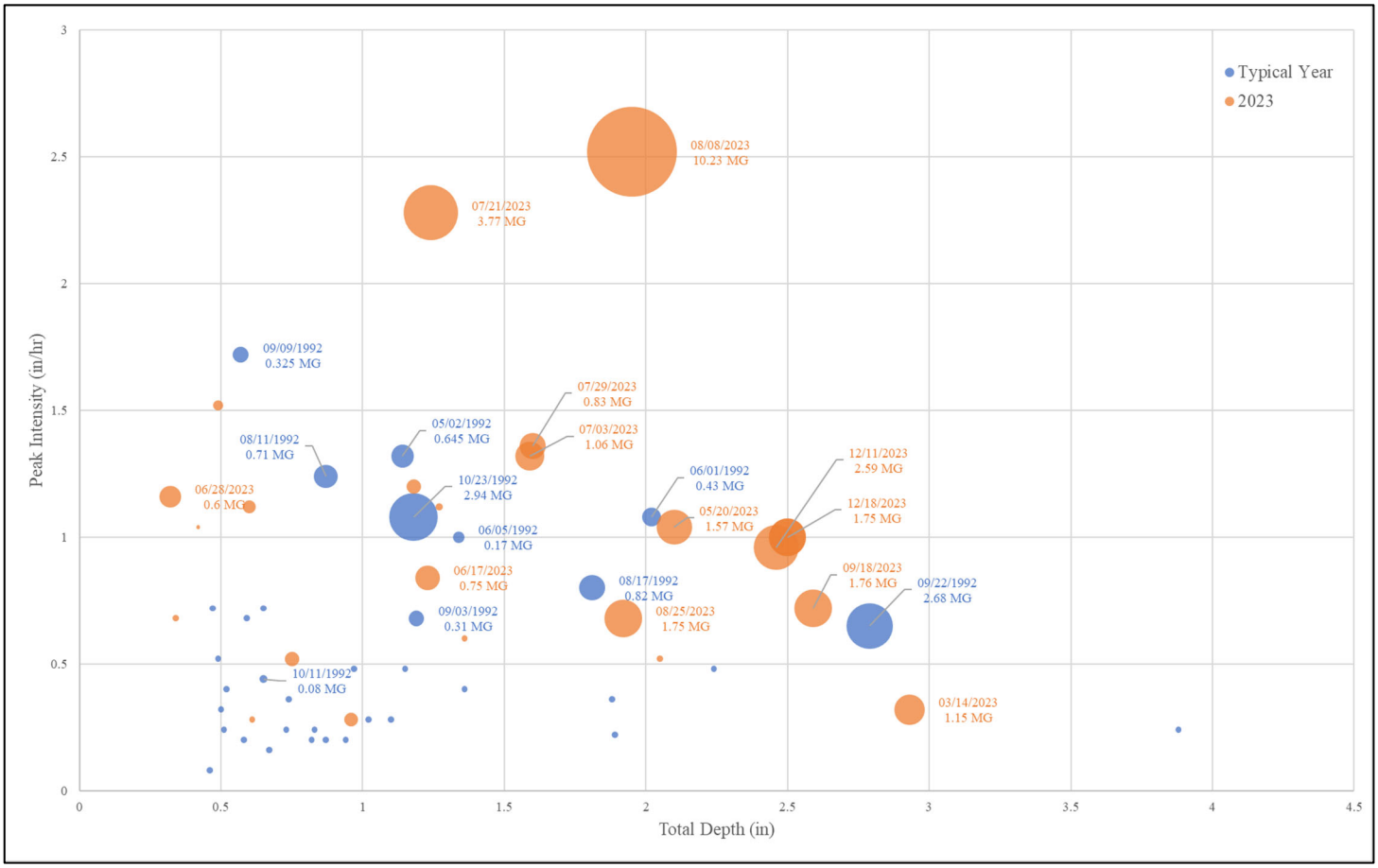


Figure 9 presents storm events from the Typical Year and 2023, represented on an intensity-depth scatter chart. The chart includes events that resulted in an overflow, along with storms that exceeded 0.5 inches in depth. The size of the bubbles for individual events are scaled to the total CSO spill volume. Storm events with a CSO occurrence are labelled with the date and the corresponding CSO spill volume across all regulators in the system- both in the Charles River and the Alewife Brook. For 2023, only storms with overflow volumes greater than 0.5 MG are labeled. This approach provides a more detailed perspective on the storm events and their impact on CSO volumes.

Figure 9 – Intensity Versus Depth Scatter Chart- Typical Year and 2023 Storm Events



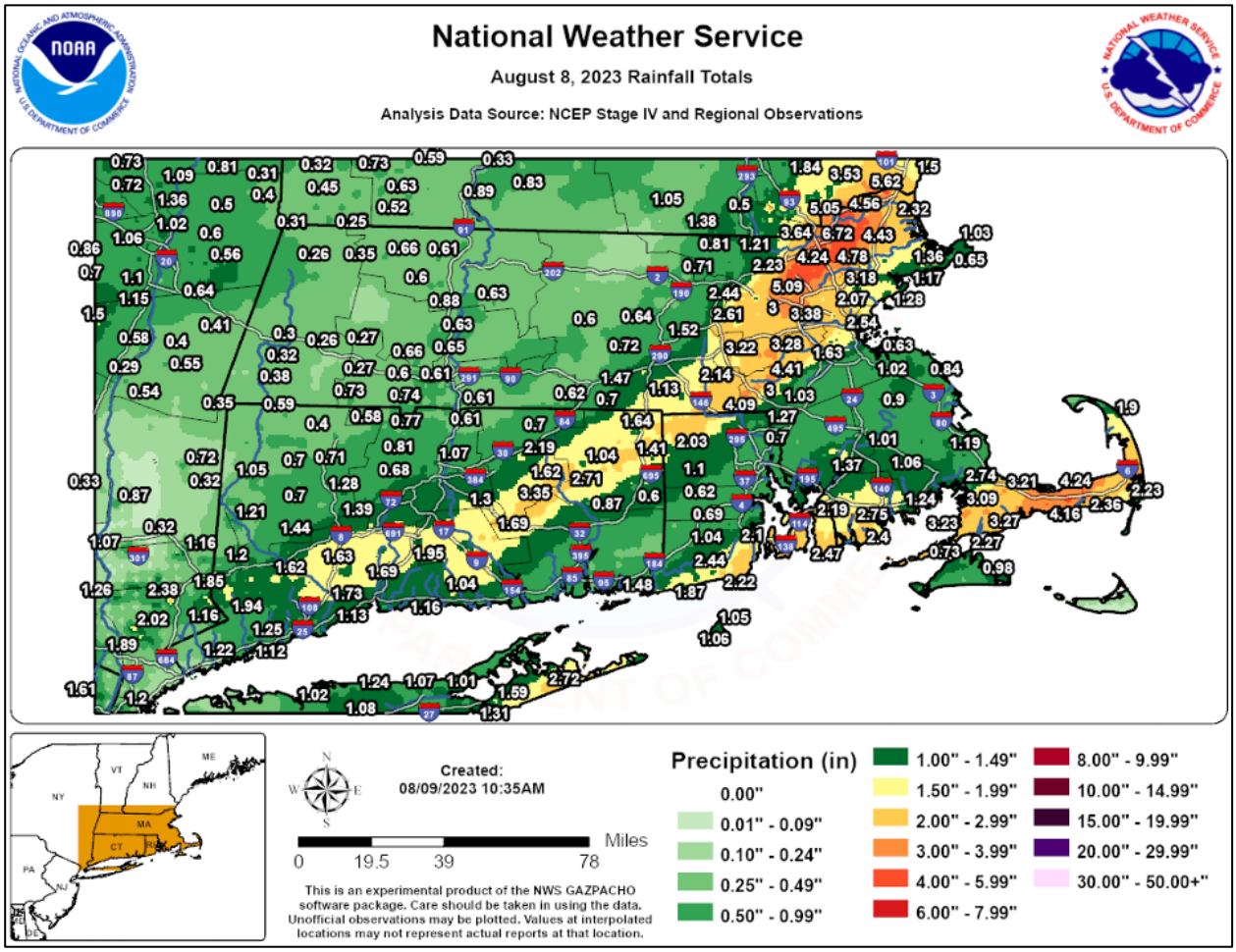
Note: Rain data shown for 2023 is from the City's WTP rain gauge

The scatter chart distinctly identifies the events of July 21 and August 8, 2023, as outliers, with peak intensities of 2.28 in/hr. and 2.52 in/hr. respectively, significantly surpassing the Typical Year maximum of 1.72 in/hr. These two events alone contributed to over 40% of the total annual spill volume in 2023.

Historically, the Cambridge system typically experiences capacity constraints leading to CSO spills during storms exceeding 1 inch and/or peak intensities greater than 1 in/hr. In 2023, nine such events were observed, a threefold increase from the Typical Year. Occasionally, lesser rainfall amounts can trigger CSO spills when snowmelt occurs or when multiple events occur in a short period of time, resulting in saturated ground with little or no infiltration capacity remaining.

The event on August 8, 2023, which resulted in the largest spill of the year, had total rainfall and peak intensity that were 50% and 125% higher respectively, compared to the event that caused the largest spill in a Typical Year. This event resulted from a storm system that led to extensive flooding, including on major highways across several towns in eastern Massachusetts. Rainfall totals during this event were observed to vary significantly over short distances. As shown in **Figure 10**, the National Weather Service reported significant spatial variation for the August 8, 2023 event, with multiple inches of difference in rainfall throughout the greater Boston area.

Figure 10 - August 8, 2023 Storm: Observed Rainfall Totals



Source: National Weather Service

Similar patterns were observed in other large events, particularly those with high peak intensities and variations in total rainfall, akin to the August 8, 2023, storm. Such events pose a significant challenge for replication in model simulations, as the City's model currently employs a uniform rainfall time series across the entire service area. This approach yields a balance of computational efficiency and accuracy of CSO statistics for planning and reporting purposes during most reporting years.

These analyses underscore the substantial divergence in storm characteristics between the observed rainfall in 2023 and the Typical Year. Consequently, a notable increase in both the annual CSO spill count and total volume is anticipated when compared to the Typical Year CSO statistics.

3.3 Summary of 2023 CSO Activations

This section provides an overview of the total CSO spill counts and the corresponding spill volumes for all CSO regulators in 2023. The 2023 CSO spill counts and volumes are shown in **Table 8**, with a comparison to those simulated for the MWRA Typical Year. Model simulation results are based on the Unified Model build as of February 2024. The City's Unified Model is continuously updated in coordination with the MWRA and the City of Somerville, and as such, these results are subject to change.

The CSO spill occurrences and volumes discussed in this section are derived from a detailed analysis of flow and level metering data from various sources, river stage data, and feedback from City maintenance staff regarding potential metering discrepancies. This data is further supplemented by the results of hydraulic modeling conducted post the occurrence of wet-weather events.

It's important to note that the occurrences and volumes reported in this Report may differ from those reported on the City's website and DEP website. For real-time reporting, the City's website automatically posts the 3-year average volume for a site when monitoring data indicates a spill has occurred. These figures are subsequently corrected through an analysis of monitoring data and updated on the City's and MassDEP's data portals. A comparison of the spill volumes reported on the City's website in 2023 to the volumes listed in this report can be found in Appendix IV.

The detailed writeup on CAM401A metering in Section 3.3.1 identifies discrepancies in the metering and overflow estimation at CAM401A for some events in 2023. Upon reevaluating final metering data for the entire year as a part of this Annual Report, it was identified that some overflow volumes reported to MassDEP require revision. The writeup also states that MWRA will be completing flow metering in the CAM401A service area in 2024 and that data will be evaluated to update and revalidate the modeled representation of overflows at the regulator.

Table 8 – 2023 CSO Results Summary

Outfall	2023 CSO Count	2023 CSO Volume	2023 Modeled CSO Spill Count	City Modeled Typical Year Overflows- 2023 Conditions		LTCP Requirements	
				Activation Frequency	Total Volume (MG)	Activation Frequency	Total Volume (MG)
ALEWIFE BROOK							
CAM 001	0	0.00	1	0	0.00	5	0.19
CAM 002	0	0.00	1	0	0.00	4	0.69
CAM 401A[1]	20	20.51	11	8	5.62	5	1.61
CAM 401B	7	1.00	2	1	0.02	7	2.15
Total	27	21.51	15	9	5.64	21	4.64
CHARLES RIVER							
CAM 005	9	0.87	5	3	0.22	3	0.84
CAM 007	2	1.25	2	0	0.00	1	0.03
CAM 017[2]	4	5.36	1	0	0.00	1	0.45
Total	15	7.48	8	3	0.22	5	1.32

[1]Due to inconsistencies in flow monitoring data, CSO statistics for CAM 401A are based on both metered and model simulated data.
[2] Due to non-operation of CAM 017 data between 8/3-9/11, model simulation data is used for that period.

Section 3.2 details that, while the annual rainfall amount for 2023 was similar to that of the Typical Year, a significant deviation was observed during the summer months. These months experienced an excess of about 8 inches of rainfall in 2023 compared to the Typical Year. This additional precipitation resulted from storms characterized by high peak intensities and individual event depths. As a result, a considerable deviation in the CSO spill count and volume was expected for 2023 compared to the Typical Year. It is essential to consider 2023 as an anomaly in terms of storm peak intensities when comparing CSO results to both the Typical Year and the LTCP objectives.

3.3.1 Alewife Brook CSO Results

The four active CSO outfalls along Alewife Brook spilled a total of twenty-seven times in 2023, resulting in 21.51 MG of CSO volume.

CAM 001

The City's metering data indicated no spills at CAM 001 in 2023. In 2023, the City verified that Alewife Brook can backflow into the outfall pipe, causing high levels in the outfall that are not CSO related. As such, the elevation of Alewife Brook is considered when determining if a CSO occurred.

Model results for 2023 rainfall indicated one spill at CAM 001 with a volume of 0.05 MG. The spill simulated in the model occurred on August 8, 2023. This event, in addition to being an impactful storm, was also spatially varied. As detailed in the previous section, the hydraulic model employs uniform rainfall over the entire service area, which sometimes leads to such minor discrepancies.

Model results indicate the MWRA Typical Year would generate no spills. The CSO results at CAM001 are in compliance with the LTCP threshold of 5 spills and 0.19 MG of spill volume.

CAM 002

The City's metering data indicated no CSO spills at CAM 002 in 2023.

Model results indicated one spill at CAM 002 in 2023 with a spill volume of 0.08 MG. Similar to CAM 001, this simulated spill occurred on August 8, 2023 and resulted from a uniform rainfall time series being used in the model simulation.

Model results also indicate the MWRA Typical Year would not generate any spills. The CSO results at CAM002 are in compliance with the LTCP threshold of 4 spills and 0.69 MG of spill volume.

CAM 401A

As discussed in detail previously in Section 3.1.2, analysis of 2023 flow monitoring data at CAM 401A revealed multiple inconsistencies, particularly during peaks of large, high-intensity events. Additionally, backflow from the outfall pipe was observed during these events, leading to complex flow conditions that reduced the accuracy of spill volume calculations. As a result, the reporting of overflows at CAM 401A was based on the best-available data using a combination of the DPW level data, data from the Smartcover and model simulation results.

Overall, in 2023, CAM 401A spilled 20 times, resulting in an overflow volume of 20.51 MG.

Flow monitoring data indicated twenty-two CSO spills at CAM 401A with a total discharge volume of 34.89 MG. Hydraulic model results indicated eleven spills at CAM 401A with a total spill volume of 11.42 MG.

The five largest metered spills account for roughly 60% of the discrepancy between the modeled and metered spill volumes. The event on August 8, 2023 is particularly noteworthy, as it alone represents 30% of this difference. As previously discussed, these discrepancies arise from inaccuracies in the calculation of spill volumes from metered data during larger storm events where the outfall pipeline becomes surcharged and creates a backwater condition at the overflow weir.

Flow monitoring data identified eleven overflows that were not predicted by the model, with a total spill volume of 3.4 MG.

Model results indicate the MWRA Typical Year would result in eight spills for a total volume of 5.62 MG. The CSO results at CAM401A are not in compliance with the LTCP threshold of 5 spills and 1.61 MG of spill volume.

In 2024, MWRA and the City will be completing additional flow monitoring in the CAM401A service area and will be revisiting the calibration of the hydraulic model in the area. As this is the primary regulator driving the modeled CSO volume above the current LTCP requirements for the Alewife Brook system, this effort should further improve correlation between rainfall and spill occurrences, which will benefit the development of mitigation alternatives.

CAM 401B

Metering results indicated seven spills at CAM 401B in 2023, resulting in a total spill volume of 1 MG. Hydraulic model results indicated two spills at CAM 401B in 2023 with a total volume of 0.57 MG.

The largest spill occurred on August 8, 2023. Both the model and flow meter data agreed on a spill volume of 0.54 MG for this event. During the event on May 20, 2023, the model simulated level demonstrated a strong correlation to the level sensor data, rising to within 6 inches of the weir elevation even though a spill did not occur. The five additional metered spills, not simulated by the model were all individually below 0.1 MG, with the largest being 0.08 MG.

Model results indicate the MWRA Typical Year would result in two spills for a total volume of 0.02 MG. The CSO results at CAM 401B are in compliance with the LTCP threshold of 7 spills and 2.15 MG of CSO volume for the MWRA Typical Year.

3.3.2 Charles River CSO Results

The three active CSO outfalls on the Charles River spilled a total of fifteen times in 2023, resulting in a CSO volume of 7.48 MG.

CAM 005

Metering results identified nine spills at CAM 005 in 2023 with a total discharge volume of 0.87 MG. Hydraulic model results indicated five spills at CAM 005 in 2023, with a total spill volume of 1.4 MG.

The four additional spills recorded by the meter, but not simulated by the model, each lasted less than 30 minutes and had a net spill volume of less than 0.1 MG. The highest spill volume among these was 0.06 MG. During these events, the model simulated level in the regulator was observed to increase in correlation with the meter data. The discrepancy between the metered and model-simulated spill volumes can be almost entirely attributed to the two largest spills, which occurred on July 21 and August 8, 2023, respectively, where modeled spill volumes were larger than metered volumes.

Model results indicate the MWRA Typical Year would result in three spills with a total volume of 0.22 MG. The CSO results at CAM005 are in compliance with the LTCP threshold of 3 spills and 0.84 MG of spill volume for the MWRA Typical Year. However, the storm characteristics of 2023 resulted in CAM005 exceeding the LTCP threshold for number and volume of CSO spills.

CAM 007

Metering results indicated two spills at CAM 007 in 2023 with a total spill volume of 0.87 MG.

Hydraulic model results indicated two spills at CAM 007 in 2023, with a total spill volume of 1.65 MG.

As detailed previously in Section 3.1.2, the water levels at the CAM 007 regulator are highly influenced by the levels in the MWRA interceptor and operations at the Cottage Farm CSO Facility. The Facility is manually operated in response to system conditions that vary for each large event. In comparison, the City's hydraulic model uses a set of fixed Real Time Control (RTC) parameters. Even though the model is well calibrated to the operational data at the Cottage Farm facility, manual operations can sometimes lead to variations between simulation results and real-world operation. It is to be noted that these discrepancies are expected during large storm events. Despite these variations, the hydraulic model provides a reasonable match to the observed wet-weather response in the CAM 007 regulator.

Model results indicate the MWRA Typical Year would result in no spills at CAM 007. The CSO results at CAM007 are in compliance with the LTCP threshold of 1 spill and 0.03 MG of spill volume for the MWRA Typical Year. However, the storm characteristics of 2023 resulted in CAM007 exceeding the LTCP threshold for number and volume of CSO spills.

CAM 017

Overall, in 2023, CAM 017 spilled four times with a total overflow volume of 5.36 MG.

Metering results indicated three spills at CAM 017 in 2023 and metering data was unavailable to record a fourth spill that almost certainly occurred. Hydraulic model results indicated one spill at CAM 017 in 2023, with a spill volume of 3.6 MG. This spill happened on August 8, 2023, during a period where no flow monitoring data was collected at the regulator. Consequently, the simulated CSO volume from the model was utilized for reporting this event at CAM 017, in addition to the three metered spills.

Model simulation results did not indicate CSO spills on July 21, July 29, and December 18, 2023, which were otherwise indicated by the meter data. This difference is a result of the model using rainfall data recorded at the City's WTP rain gauge which is located farther away from the CAM 017 regulator. Beginning in 2024, the City will be using data from both the rain gauges, with CAM 017 being tied to the DPW gauge for more accurate rainfall representation.

As detailed previously in Section 3.1.2, the water levels at CAM 017 are highly influenced by the operations at the MWRA's Prison Point CSO Facility. Similar to CAM 007, the difference between the model's fixed RTC and manual real-world operations can lead to variations between simulation results and operational data, especially during larger storms.

Model results indicate the MWRA Typical Year would result in no spills at CAM 017. The CSO results at CAM017 are in compliance with the LTCP threshold of 1 spill and 0.45 MG of spill volume for the MWRA Typical Year. However, the storm characteristics of 2023 resulted in CAM017 exceeding the LTCP threshold for number and volume of CSO spills.

3.4 Coordination with MWRA

The City of Cambridge, City of Somerville, and MWRA are each developing individual Updated CSO Control Plans to build upon the current MWRA CSO Long-Term Control Plan. While the City is developing an Updated CSO Control Plan focused on the CSO outfalls that the City owns and operates, collaboration with MWRA and the City of Somerville is critical to each plan's success. This collaboration will produce a unified hydraulic model of the three collection systems to evaluate local and regional CSO reduction alternatives and measures, an updated future looking Typical Year, and facilitate discussion on interconnected portions of each system.

The City will continue to coordinate with MWRA and the City of Somerville to routinely exchange information on changes in the regional and City collection systems so that all three parties are informed of existing conditions in infrastructure and simulation in hydraulic models. MWRA metering data, particularly at the Cottage Farm, Prison Point, and Alewife Brook Pump Station facilities, will continue to be used to supplement City metering data for hydraulic model validation. Where variability between the City and MWRA meters are observed, the two entities will continue to coordinate and validate the results.

Pump operations and system optimization at key MWRA facilities is critical to the performance of multiple City CSO outfalls. The actual operation of the MWRA CSO Facilities can vary greatly in response to an event and these variations can impact spill count and volumes at Cambridge CSO outfalls.

3.5 Summary of Recommended Metering Actions for 2024

The City will continue to monitor and recalibrate all sensors being used for monitoring the City's CSO regulators and outfalls. In addition, the following specific actions are recommended to be completed in 2024:

- Check the operation, calibration, and data streams for all sensors at CAM401A. This should include validating the meter offset depths that are used to determine spill thresholds.
- Check the monitoring setup and data collection equipment at CAM401B to alleviate experiencing sensor failures.
- Check the monitoring setup and data collection equipment at CAM005 to alleviate the meter reporting elevated water levels in the regulator for 24 hours after being triggered.

4. Status of CSO Abatement Projects

4.1 Project Updates

The City of Cambridge continues to implement abatement projects to remove stormwater from its combined sewer system, however continued sewer separation is dependent upon cost effective strategies to manage water quality from stormwater discharges, in particular from Phosphorous. This may include expanding areas that are partially separated, in which a portion of the stormwater continues to discharge to the sewer system for treatment. As an example, the partial separation of the service areas tributary to the Endicott and Talbot outfalls has been shown to reduce CSO spill volumes at MWRA's Cottage Farm CSO Facility while allowing the capture and treatment of over 85 percent of the urban stormwater runoff from these areas.

5. Modifications to Nine Minimum Controls Plan

The Nine Minimum Controls Plan (NMCP) was substantially updated in its entirety and submitted together with the first annual report (April 2009). The plan provides a summary of the evaluations undertaken to address each control measure since the original plan was developed in 1997.

Enhancements were made to the NMCP to meet the minimum implementation levels stipulated in the permit. These Public Notification requirements were further updated to reflect changes in current permit requirements and in compliance with State regulations (314 CMR 16.00). These enhancements are summarized in **Table 9**.

Table 9 – Enhancements to the Nine Minimum Controls Plan

Control Measure	Proposed Enhancement
1. Proper Operation and Regular Maintenance Programs	• Adherence to detailed "Good Housekeeping Manual" to provide specific guidance and protocols for major DPW tasks • Development and utilization of routine inspection forms and work order system • Update of infrastructure assets and nomenclature • Update of DPW organizational structure and budget figures
2. Maximization of Storage in the Collection System	• Update database of existing key regulator components • Establish procedure for documentation of purpose and benefits to any future modifications to existing structures
3. Review and Modification of Pretreatment Requirements	• Adherence to recently developed Wastewater and Stormwater Use Regulations, inspection frequencies and enforcement activities
4. Maximization of Flow to POTW	• Maintain updated inventory of CSO capital projects; • Continue funding for annual cleaning and remedial repair and reconstruction contracts
5. Prohibition Elimination of Dry Weather Discharges	• The City is unaware of any dry weather discharges from CSO outfalls
6. Control of Solid and Floatable Materials in CSOs	• Continue to maintain devices that control discharge of floatables at all CSO outfalls. • Continue to require compliance with new City Wastewater and Stormwater Use Regulations
7. Pollution Prevention Programs to Reduce Contaminants in CSOs	• Adherence to "Good Housekeeping Manual" guidance and protocols to reduce the City's contribution of contaminants to stormwater; • Adherence to City of Cambridge Integrated Pest Management plan to reduce contributions of pesticides, fungicides, herbicides and fertilizer to run-off; • Continue aggressive recycling, street sweeping and household hazardous waste collections and management • Continue with public education and outreach activities • Continue to require compliance with new City Wastewater and Stormwater Use Regulations
8. Public Notification	• Public Notification procedure updated to comply with variance requirements and 314 CMR 16.00
9. Metering to Characterize CSO Impacts and Efficacy of CSO Controls	• On a regulator site-specific basis, use revised weir equations and parameters and/or hydraulic models and analysis to estimate effluent volumes released during CSO events

APPENDIX I

2023 PRECIPITATION DATA

2023 Daily Rainfall Data
WTP Gauge

Date	Rainfall (in)	Peak Intensity (in/hr)	Average Intensity (in/hr)
1/1/2023	0.00	0.00	0.00
1/2/2023	0.00	0.00	0.00
1/3/2023	0.00	0.00	0.00
1/4/2023	0.00	0.00	0.00
1/5/2023	0.00	0.00	0.00
1/6/2023	0.00	0.00	0.00
1/7/2023	0.00	0.00	0.00
1/8/2023	0.00	0.00	0.00
1/9/2023	0.00	0.00	0.00
1/10/2023	0.00	0.00	0.00
1/11/2023	0.00	0.00	0.00
1/12/2023	0.00	0.00	0.00
1/13/2023	0.00	0.00	0.00
1/14/2023	0.00	0.00	0.00
1/15/2023	0.00	0.00	0.00
1/16/2023	0.00	0.00	0.00
1/17/2023	0.00	0.00	0.00
1/18/2023	0.02	0.04	0.00
1/19/2023	0.33	0.16	0.01
1/20/2023	0.30	0.32	0.01
1/21/2023	0.00	0.00	0.00
1/22/2023	0.15	0.08	0.01
1/23/2023	0.77	0.20	0.03
1/24/2023	0.00	0.00	0.00
1/25/2023	0.25	0.12	0.01
1/26/2023	0.71	0.28	0.03
1/27/2023	0.00	0.00	0.00
1/28/2023	0.00	0.00	0.00
1/29/2023	0.00	0.00	0.00
1/30/2023	0.00	0.00	0.00
1/31/2023	0.02	0.04	0.00
TOTAL	**2.55**		

2023 Daily Rainfall Data
WTP Gauge

Date	Rainfall (in)	Peak Intensity (in/hr)	Average Intensity (in/hr)
2/1/2023	0.00	0.00	0.00
2/2/2023	0.00	0.00	0.00
2/3/2023	0.01	0.04	0.00
2/4/2023	0.00	0.00	0.00
2/5/2023	0.00	0.00	0.00
2/6/2023	0.00	0.00	0.00
2/7/2023	0.00	0.00	0.00
2/8/2023	0.00	0.00	0.00
2/9/2023	0.00	0.00	0.00
2/10/2023	0.00	0.00	0.00
2/11/2023	0.00	0.00	0.00
2/12/2023	0.00	0.00	0.00
2/13/2023	0.00	0.00	0.00
2/14/2023	0.00	0.00	0.00
2/15/2023	0.00	0.00	0.00
2/16/2023	0.00	0.00	0.00
2/17/2023	0.04	0.08	0.00
2/18/2023	0.00	0.00	0.00
2/19/2023	0.00	0.00	0.00
2/20/2023	0.00	0.00	0.00
2/21/2023	0.10	0.08	0.00
2/22/2023	0.28	0.20	0.01
2/23/2023	0.70	0.28	0.03
2/24/2023	0.01	0.04	0.00
2/25/2023	0.00	0.00	0.00
2/26/2023	0.00	0.00	0.00
2/27/2023	0.00	0.00	0.00
2/28/2023	0.36	0.12	0.01
TOTAL	**1.50**		

2023 Daily Rainfall Data
WTP Gauge

Date	Rainfall (in)	Peak Intensity (in/hr)	Average Intensity (in/hr)
3/1/2023	0.00	0.00	0.00
3/2/2023	0.61	0.28	0.03
3/3/2023	0.00	0.00	0.00
3/4/2023	0.81	0.20	0.03
3/5/2023	0.00	0.00	0.00
3/6/2023	0.00	0.00	0.00
3/7/2023	0.00	0.00	0.00
3/8/2023	0.00	0.00	0.00
3/9/2023	0.00	0.00	0.00
3/10/2023	0.00	0.00	0.00
3/11/2023	0.01	0.04	0.00
3/12/2023	0.00	0.00	0.00
3/13/2023	0.26	0.16	0.01
3/14/2023	2.67	0.32	0.11
3/15/2023	0.00	0.00	0.00
3/16/2023	0.00	0.00	0.00
3/17/2023	0.00	0.00	0.00
3/18/2023	0.00	0.00	0.00
3/19/2023	0.00	0.00	0.00
3/20/2023	0.00	0.00	0.00
3/21/2023	0.00	0.00	0.00
3/22/2023	0.00	0.00	0.00
3/23/2023	0.00	0.00	0.00
3/24/2023	0.00	0.00	0.00
3/25/2023	0.01	0.04	0.00
3/26/2023	0.01	0.04	0.00
3/27/2023	0.11	0.08	0.00
3/28/2023	0.22	0.08	0.01
3/29/2023	0.00	0.00	0.00
3/30/2023	0.00	0.00	0.00
3/31/2023	0.10	0.08	0.00
TOTAL	**4.81**		

2023 Daily Rainfall Data
WTP Gauge

Date	Rainfall (in)	Peak Intensity (in/hr)	Average Intensity (in/hr)
4/1/2023	0.32	0.24	0.01
4/2/2023	0.00	0.00	0.00
4/3/2023	0.00	0.00	0.00
4/4/2023	0.00	0.00	0.00
4/5/2023	0.00	0.00	0.00
4/6/2023	0.00	0.00	0.00
4/7/2023	0.00	0.00	0.00
4/8/2023	0.00	0.00	0.00
4/9/2023	0.00	0.00	0.00
4/10/2023	0.00	0.00	0.00
4/11/2023	0.00	0.00	0.00
4/12/2023	0.00	0.00	0.00
4/13/2023	0.00	0.00	0.00
4/14/2023	0.00	0.00	0.00
4/15/2023	0.00	0.00	0.00
4/16/2023	0.00	0.00	0.00
4/17/2023	0.08	0.08	0.00
4/18/2023	0.00	0.00	0.00
4/19/2023	0.00	0.00	0.00
4/20/2023	0.00	0.00	0.00
4/21/2023	0.00	0.00	0.00
4/22/2023	0.00	0.00	0.00
4/23/2023	0.88	0.48	0.04
4/24/2023	0.00	0.00	0.00
4/25/2023	0.05	0.16	0.00
4/26/2023	0.01	0.04	0.00
4/27/2023	0.09	0.08	0.00
4/28/2023	0.01	0.04	0.00
4/29/2023	0.11	0.08	0.00
4/30/2023	1.58	0.52	0.07
TOTAL	**3.13**		

2023 Daily Rainfall Data
WTP Gauge

Date	Rainfall (in)	Peak Intensity (in/hr)	Average Intensity (in/hr)
5/1/2023	0.36	0.52	0.01
5/2/2023	0.13	0.08	0.01
5/3/2023	0.18	0.16	0.01
5/4/2023	0.06	0.08	0.00
5/5/2023	0.03	0.04	0.00
5/6/2023	0.00	0.00	0.00
5/7/2023	0.00	0.00	0.00
5/8/2023	0.01	0.04	0.00
5/9/2023	0.00	0.00	0.00
5/10/2023	0.00	0.00	0.00
5/11/2023	0.00	0.00	0.00
5/12/2023	0.00	0.00	0.00
5/13/2023	0.00	0.00	0.00
5/14/2023	0.00	0.00	0.00
5/15/2023	0.00	0.00	0.00
5/16/2023	0.00	0.00	0.00
5/17/2023	0.00	0.00	0.00
5/18/2023	0.00	0.00	0.00
5/19/2023	0.00	0.00	0.00
5/20/2023	1.49	1.04	0.06
5/21/2023	0.61	0.68	0.03
5/22/2023	0.00	0.00	0.00
5/23/2023	0.00	0.00	0.00
5/24/2023	0.05	0.12	0.00
5/25/2023	0.00	0.00	0.00
5/26/2023	0.00	0.00	0.00
5/27/2023	0.00	0.00	0.00
5/28/2023	0.00	0.00	0.00
5/29/2023	0.00	0.00	0.00
5/30/2023	0.00	0.00	0.00
5/31/2023	0.00	0.00	0.00
TOTAL	**2.92**		

2023 Daily Rainfall Data
WTP Gauge

Date	Rainfall (in)	Peak Intensity (in/hr)	Average Intensity (in/hr)
6/1/2023	0.00	0.00	0.00
6/2/2023	0.68	0.36	0.03
6/3/2023	0.03	0.04	0.00
6/4/2023	0.12	0.08	0.00
6/5/2023	0.09	0.08	0.00
6/6/2023	0.00	0.00	0.00
6/7/2023	0.00	0.00	0.00
6/8/2023	0.00	0.00	0.00
6/9/2023	0.09	0.16	0.00
6/10/2023	0.14	0.28	0.01
6/11/2023	0.01	0.04	0.00
6/12/2023	0.25	0.52	0.01
6/13/2023	0.03	0.04	0.00
6/14/2023	0.42	1.04	0.02
6/15/2023	0.00	0.00	0.00
6/16/2023	0.00	0.00	0.00
6/17/2023	1.16	0.84	0.05
6/18/2023	0.07	0.08	0.00
6/19/2023	0.00	0.00	0.00
6/20/2023	0.00	0.00	0.00
6/21/2023	0.00	0.00	0.00
6/22/2023	0.00	0.00	0.00
6/23/2023	0.00	0.00	0.00
6/24/2023	0.03	0.04	0.00
6/25/2023	0.23	0.56	0.01
6/26/2023	0.02	0.08	0.00
6/27/2023	0.50	0.84	0.02
6/28/2023	0.47	1.16	0.02
6/29/2023	0.00	0.00	0.00
6/30/2023	0.00	0.00	0.00
TOTAL	**4.34**		

2023 Daily Rainfall Data
WTP Gauge

Date	Rainfall (in)	Peak Intensity (in/hr)	Average Intensity (in/hr)
7/1/2023	0.00	0.00	0.00
7/2/2023	0.56	0.76	0.02
7/3/2023	1.03	1.32	0.04
7/4/2023	0.48	0.20	0.02
7/5/2023	0.00	0.00	0.00
7/6/2023	0.00	0.00	0.00
7/7/2023	0.00	0.00	0.00
7/8/2023	0.00	0.00	0.00
7/9/2023	0.00	0.00	0.00
7/10/2023	1.26	1.12	0.05
7/11/2023	0.01	0.04	0.00
7/12/2023	0.00	0.00	0.00
7/13/2023	0.00	0.00	0.00
7/14/2023	0.23	0.28	0.01
7/15/2023	0.00	0.00	0.00
7/16/2023	1.36	0.60	0.06
7/17/2023	0.00	0.00	0.00
7/18/2023	0.00	0.00	0.00
7/19/2023	0.00	0.00	0.00
7/20/2023	0.00	0.00	0.00
7/21/2023	1.24	2.28	0.05
7/22/2023	0.00	0.00	0.00
7/23/2023	0.00	0.00	0.00
7/24/2023	0.00	0.00	0.00
7/25/2023	0.49	1.52	0.02
7/26/2023	0.00	0.00	0.00
7/27/2023	0.05	0.08	0.00
7/28/2023	0.00	0.00	0.00
7/29/2023	1.60	1.36	0.07
7/30/2023	0.00	0.00	0.00
7/31/2023	0.00	0.00	0.00
TOTAL	**8.31**		

2023 Daily Rainfall Data
WTP Gauge

Date	Rainfall (in)	Peak Intensity (in/hr)	Average Intensity (in/hr)
8/1/2023	0.00	0.00	0.00
8/2/2023	0.00	0.00	0.00
8/3/2023	0.00	0.00	0.00
8/4/2023	0.00	0.00	0.00
8/5/2023	0.00	0.00	0.00
8/6/2023	0.00	0.00	0.00
8/7/2023	0.00	0.00	0.00
8/8/2023	1.95	2.52	0.08
8/9/2023	0.00	0.00	0.00
8/10/2023	0.10	0.08	0.00
8/11/2023	0.12	0.24	0.01
8/12/2023	0.00	0.00	0.00
8/13/2023	0.10	0.20	0.00
8/14/2023	0.00	0.00	0.00
8/15/2023	0.69	0.28	0.03
8/16/2023	0.00	0.00	0.00
8/17/2023	0.00	0.00	0.00
8/18/2023	0.59	1.12	0.02
8/19/2023	0.01	0.04	0.00
8/20/2023	0.00	0.00	0.00
8/21/2023	0.34	0.68	0.01
8/22/2023	0.00	0.00	0.00
8/23/2023	0.00	0.00	0.00
8/24/2023	0.00	0.00	0.00
8/25/2023	1.92	0.68	0.08
8/26/2023	0.00	0.00	0.00
8/27/2023	0.00	0.00	0.00
8/28/2023	0.00	0.00	0.00
8/29/2023	0.13	0.16	0.01
8/30/2023	0.62	0.52	0.03
8/31/2023	0.00	0.00	0.00
TOTAL	**6.57**		

2023 Daily Rainfall Data
WTP Gauge

Date	Rainfall (in)	Peak Intensity (in/hr)	Average Intensity (in/hr)
9/1/2023	0.00	0.00	0.00
9/2/2023	0.00	0.00	0.00
9/3/2023	0.00	0.00	0.00
9/4/2023	0.00	0.00	0.00
9/5/2023	0.00	0.00	0.00
9/6/2023	0.00	0.00	0.00
9/7/2023	0.00	0.00	0.00
9/8/2023	0.00	0.00	0.00
9/9/2023	0.14	0.44	0.01
9/10/2023	0.19	0.16	0.01
9/11/2023	0.19	0.12	0.01
9/12/2023	0.02	0.04	0.00
9/13/2023	1.17	1.20	0.05
9/14/2023	0.01	0.04	0.00
9/15/2023	0.00	0.00	0.00
9/16/2023	0.08	0.04	0.00
9/17/2023	0.00	0.00	0.00
9/18/2023	2.56	0.72	0.11
9/19/2023	0.03	0.04	0.00
9/20/2023	0.00	0.00	0.00
9/21/2023	0.00	0.00	0.00
9/22/2023	0.00	0.00	0.00
9/23/2023	0.08	0.08	0.00
9/24/2023	0.23	0.20	0.01
9/25/2023	0.10	0.04	0.00
9/26/2023	0.00	0.00	0.00
9/27/2023	0.00	0.00	0.00
9/28/2023	0.01	0.04	0.00
9/29/2023	0.44	0.28	0.02
9/30/2023	0.03	0.08	0.00
TOTAL	**5.28**		

2023 Daily Rainfall Data
WTP Gauge

Date	Rainfall (in)	Peak Intensity (in/hr)	Average Intensity (in/hr)
10/1/2023	0.00	0.00	0.00
10/2/2023	0.00	0.00	0.00
10/3/2023	0.00	0.00	0.00
10/4/2023	0.00	0.00	0.00
10/5/2023	0.00	0.00	0.00
10/6/2023	0.00	0.00	0.00
10/7/2023	0.21	0.24	0.01
10/8/2023	0.06	0.12	0.00
10/9/2023	0.00	0.00	0.00
10/10/2023	0.00	0.00	0.00
10/11/2023	0.00	0.00	0.00
10/12/2023	0.00	0.00	0.00
10/13/2023	0.00	0.00	0.00
10/14/2023	0.00	0.00	0.00
10/15/2023	0.00	0.00	0.00
10/16/2023	0.05	0.04	0.00
10/17/2023	0.02	0.08	0.00
10/18/2023	0.00	0.00	0.00
10/19/2023	0.00	0.00	0.00
10/20/2023	0.01	0.04	0.00
10/21/2023	0.67	0.20	0.03
10/22/2023	0.00	0.00	0.00
10/23/2023	0.00	0.00	0.00
10/24/2023	0.00	0.00	0.00
10/25/2023	0.00	0.00	0.00
10/26/2023	0.00	0.00	0.00
10/27/2023	0.00	0.00	0.00
10/28/2023	0.00	0.00	0.00
10/29/2023	0.25	0.12	0.01
10/30/2023	0.55	0.12	0.02
10/31/2023	0.00	0.00	0.00
TOTAL	**1.82**		

2023 Daily Rainfall Data
WTP Gauge

Date	Rainfall (in)	Peak Intensity (in/hr)	Average Intensity (in/hr)
11/1/2023	0.00	0.00	0.00
11/2/2023	0.00	0.00	0.00
11/3/2023	0.00	0.00	0.00
11/4/2023	0.00	0.00	0.00
11/5/2023	0.00	0.00	0.00
11/6/2023	0.00	0.00	0.00
11/7/2023	0.03	0.04	0.00
11/8/2023	0.00	0.00	0.00
11/9/2023	0.06	0.04	0.00
11/10/2023	0.00	0.00	0.00
11/11/2023	0.00	0.00	0.00
11/12/2023	0.00	0.00	0.00
11/13/2023	0.00	0.00	0.00
11/14/2023	0.00	0.00	0.00
11/15/2023	0.00	0.00	0.00
11/16/2023	0.00	0.00	0.00
11/17/2023	0.00	0.00	0.00
11/18/2023	0.14	0.12	0.01
11/19/2023	0.00	0.00	0.00
11/20/2023	0.00	0.00	0.00
11/21/2023	0.01	0.04	0.00
11/22/2023	0.95	0.36	0.04
11/23/2023	0.00	0.00	0.00
11/24/2023	0.00	0.00	0.00
11/25/2023	0.00	0.00	0.00
11/26/2023	0.01	0.04	0.00
11/27/2023	0.28	0.20	0.01
11/28/2023	0.00	0.00	0.00
11/29/2023	0.00	0.00	0.00
11/30/2023	0.00	0.00	0.00
TOTAL	**1.48**		

2023 Daily Rainfall Data
WTP Gauge

Date	Rainfall (in)	Peak Intensity (in/hr)	Average Intensity (in/hr)
12/1/2023	0.02	0.04	0.00
12/2/2023	0.00	0.00	0.00
12/3/2023	0.80	0.24	0.03
12/4/2023	0.07	0.04	0.00
12/5/2023	0.00	0.00	0.00
12/6/2023	0.00	0.00	0.00
12/7/2023	0.00	0.00	0.00
12/8/2023	0.00	0.00	0.00
12/9/2023	0.00	0.00	0.00
12/10/2023	0.65	0.44	0.03
12/11/2023	1.81	0.96	0.08
12/12/2023	0.00	0.00	0.00
12/13/2023	0.00	0.00	0.00
12/14/2023	0.00	0.00	0.00
12/15/2023	0.00	0.00	0.00
12/16/2023	0.00	0.00	0.00
12/17/2023	0.38	0.24	0.02
12/18/2023	2.12	1.00	0.09
12/19/2023	0.00	0.00	0.00
12/20/2023	0.00	0.00	0.00
12/21/2023	0.00	0.00	0.00
12/22/2023	0.00	0.00	0.00
12/23/2023	0.00	0.00	0.00
12/24/2023	0.02	0.04	0.00
12/25/2023	0.00	0.00	0.00
12/26/2023	0.00	0.00	0.00
12/27/2023	0.00	0.00	0.00
12/28/2023	0.77	0.12	0.03
12/29/2023	0.00	0.00	0.00
12/30/2023	0.12	0.08	0.01
12/31/2023	0.00	0.00	0.00
TOTAL	**6.76**		

APPENDIX II

MONTHLY CSO ACTIVATIONS

2023 Daily Rainfall and Combined Sewer Overflow Volumes

Date	Rainfall	Alewife Brook								Charles					
		CAM001		CAM002		CAM401A*		CAM401B		CAM005		CAM007		CAM017**	
	WTP Rain Gauge	Foch St. @ Alewife Brook Pkwy.		Mass. Ave. @ Alewife Brook Pkwy.		Sherman St. @ B&M Railroad		Mass Ave/.Columbus Ave. @ Alewife Brook Pkwy		Lowell St. @ Mt. Auburn St.		Memorial Dr. @ Hawthorne St.		Edwin Land Blvd. @ Binney St.	
	in	MG	Hours	MG	Hours	MG	Hours	MG	Hours	MG	Hours	MG	Hours	MG	Hours
1/1/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/2/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/3/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/4/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/5/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/6/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/7/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/8/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/9/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/10/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/11/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/12/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/13/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/14/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/15/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/16/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/17/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/18/2023	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/19/2023	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/20/2023	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/21/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/22/2023	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/23/2023	0.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/24/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/25/2023	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/26/2023	0.71	0.00	0.00	0.00	0.00	0.24	2.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/27/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/28/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/29/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/30/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/31/2023	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	**2.55**	**0.00**	**0.00**	**0.00**	**0.00**	**0.24**	**2.25**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

*Due to inconsistencies in flow monitoring data, CSO statistics for CAM 401A are based on both metered and model simulated data.

**Due to non-operation of CAM 017 data between 8/3-9/11, model simulation data is used for that period.

2023 Daily Rainfall and Combined Sewer Overflow Volumes

Date	Rainfall	Alewife Brook								Charles					
		CAM001		CAM002		CAM401A*		CAM401B		CAM005		CAM007		CAM017**	
	WTP Rain Gauge	Foch St. @ Alewife Brook Pkwy.		Mass. Ave. @ Alewife Brook Pkwy.		Sherman St. @ B&M Railroad		Mass Ave/.Columbus Ave. @ Alewife Brook Pkwy		Lowell St. @ Mt. Auburn St.		Memorial Dr. @ Hawthorne St.		Edwin Land Blvd. @ Binney St.	
	in	MG	Hours	MG	Hours	MG	Hours	MG	Hours	MG	Hours	MG	Hours	MG	Hours
2/1/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/2/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/3/2023	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/4/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/5/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/6/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/7/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/8/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/9/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/10/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/11/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/12/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/13/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/14/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/15/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/16/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/17/2023	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/18/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/19/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/20/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/21/2023	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/22/2023	0.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/23/2023	0.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/24/2023	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/25/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/26/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/27/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/28/2023	0.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	**1.50**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

*Due to inconsistencies in flow monitoring data, CSO statistics for CAM 401A are based on both metered and model simulated data.
**Due to non-operation of CAM 017 data between 8/3-9/11, model simulation data is used for that period.

2023 Daily Rainfall and Combined Sewer Overflow Volumes

Date	Rainfall	Alewife Brook								Charles					
		CAM001		CAM002		CAM401A*		CAM401B		CAM005		CAM007		CAM017**	
	WTP Rain Gauge	Foch St. @ Alewife Brook Pkwy.		Mass. Ave. @ Alewife Brook Pkwy.		Sherman St. @ B&M Railroad		Mass Ave/.Columbus Ave. @ Alewife Brook Pkwy		Lowell St. @ Mt. Auburn St.		Memorial Dr. @ Hawthorne St.		Edwin Land Blvd. @ Binney St.	
	in	MG	Hours	MG	Hours	MG	Hours	MG	Hours	MG	Hours	MG	Hours	MG	Hours
3/1/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3/2/2023	0.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3/3/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3/4/2023	0.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3/5/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3/6/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3/7/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3/8/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3/9/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3/10/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3/11/2023	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3/12/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3/13/2023	0.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3/14/2023	2.67	0.00	0.00	0.00	0.00	1.15	5.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3/15/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3/16/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3/17/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3/18/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3/19/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3/20/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3/21/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3/22/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3/23/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3/24/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3/25/2023	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3/26/2023	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3/27/2023	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3/28/2023	0.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3/29/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3/30/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3/31/2023	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	**4.81**	**0.00**	**0.00**	**0.00**	**0.00**	**1.15**	**5.50**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

*Due to inconsistencies in flow monitoring data, CSO statistics for CAM 401A are based on both metered and model simulated data.
**Due to non-operation of CAM 017 data between 8/3-9/11, model simulation data is used for that period.

2023 Daily Rainfall and Combined Sewer Overflow Volumes

Date	Rainfall	Alewife Brook								Charles					
		CAM001		CAM002		CAM401A*		CAM401B		CAM005		CAM007		CAM017**	
	WTP Rain Gauge	Foch St. @ Alewife Brook Pkwy.		Mass. Ave. @ Alewife Brook Pkwy.		Sherman St. @ B&M Railroad		Mass Ave/.Columbus Ave. @ Alewife Brook Pkwy		Lowell St. @ Mt. Auburn St.		Memorial Dr. @ Hawthorne St.		Edwin Land Blvd. @ Binney St.	
	in	MG	Hours	MG	Hours	MG	Hours	MG	Hours	MG	Hours	MG	Hours	MG	Hours
4/1/2023	0.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4/2/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4/3/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4/4/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4/5/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4/6/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4/7/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4/8/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4/9/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4/10/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4/11/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4/12/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4/13/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4/14/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4/15/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4/16/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4/17/2023	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4/18/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4/19/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4/20/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4/21/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4/22/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4/23/2023	0.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4/24/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4/25/2023	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4/26/2023	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4/27/2023	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4/28/2023	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4/29/2023	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4/30/2023	1.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	**3.13**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

*Due to inconsistencies in flow monitoring data, CSO statistics for CAM 401A are based on both metered and model simulated data.
**Due to non-operation of CAM 017 data between 8/3-9/11, model simulation data is used for that period.

2023 Daily Rainfall and Combined Sewer Overflow Volumes

Date	Rainfall	Alewife Brook								Charles					
		CAM001		CAM002		CAM401A*		CAM401B		CAM005		CAM007		CAM017**	
	WTP Rain Gauge	Foch St. @ Alewife Brook Pkwy.		Mass. Ave. @ Alewife Brook Pkwy.		Sherman St. @ B&M Railroad		Mass Ave/.Columbus Ave. @ Alewife Brook Pkwy		Lowell St. @ Mt. Auburn St.		Memorial Dr. @ Hawthorne St.		Edwin Land Blvd. @ Binney St.	
	in	MG	Hours	MG	Hours	MG	Hours	MG	Hours	MG	Hours	MG	Hours	MG	Hours
5/1/2023	0.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/2/2023	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/3/2023	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/4/2023	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/5/2023	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/6/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/7/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/8/2023	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/9/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/10/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/11/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/12/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/13/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/14/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/15/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/16/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/17/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/18/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/19/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/20/2023	1.49	0.00	0.00	0.00	0.00	1.26	2.50	0.27	2.00	0.04	0.75	0.00	0.00	0.00	0.00
5/21/2023	0.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/22/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/23/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/24/2023	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/25/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/26/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/27/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/28/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/29/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/30/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/31/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	**2.92**	**0.00**	**0.00**	**0.00**	**0.00**	**1.26**	**2.50**	**0.27**	**2.00**	**0.04**	**0.75**	**0.00**	**0.00**	**0.00**	**0.00**

*Due to inconsistencies in flow monitoring data, CSO statistics for CAM 401A are based on both metered and model simulated data.
**Due to non-operation of CAM 017 data between 8/3-9/11, model simulation data is used for that period.

2023 Daily Rainfall and Combined Sewer Overflow Volumes

Date	Rainfall	Alewife Brook								Charles					
		CAM001		CAM002		CAM401A*		CAM401B		CAM005		CAM007		CAM017**	
	WTP Rain Gauge	Foch St. @ Alewife Brook Pkwy.		Mass. Ave. @ Alewife Brook Pkwy.		Sherman St. @ B&M Railroad		Mass Ave/.Columbus Ave. @ Alewife Brook Pkwy		Lowell St. @ Mt. Auburn St.		Memorial Dr. @ Hawthorne St.		Edwin Land Blvd. @ Binney St.	
	in	MG	Hours	MG	Hours	MG	Hours	MG	Hours	MG	Hours	MG	Hours	MG	Hours
6/1/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6/2/2023	0.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6/3/2023	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6/4/2023	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6/5/2023	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6/6/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6/7/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6/8/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6/9/2023	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6/10/2023	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6/11/2023	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6/12/2023	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6/13/2023	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6/14/2023	0.42	0.00	0.00	0.00	0.00	0.02	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6/15/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6/16/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6/17/2023	1.16	0.00	0.00	0.00	0.00	0.75	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6/18/2023	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6/19/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6/20/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6/21/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6/22/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6/23/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6/24/2023	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6/25/2023	0.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6/26/2023	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6/27/2023	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6/28/2023	0.47	0.00	0.00	0.00	0.00	0.60	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6/29/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6/30/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	**4.34**	**0.00**	**0.00**	**0.00**	**0.00**	**1.37**	**1.67**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

*Due to inconsistencies in flow monitoring data, CSO statistics for CAM 401A are based on both metered and model simulated data.
**Due to non-operation of CAM 017 data between 8/3-9/11, model simulation data is used for that period.

2023 Daily Rainfall and Combined Sewer Overflow Volumes

Date	Rainfall	Alewife Brook								Charles					
		CAM001		CAM002		CAM401A*		CAM401B		CAM005		CAM007		CAM017**	
	WTP Rain Gauge	Foch St. @ Alewife Brook Pkwy.		Mass. Ave. @ Alewife Brook Pkwy.		Sherman St. @ B&M Railroad		Mass Ave/.Columbus Ave. @ Alewife Brook Pkwy		Lowell St. @ Mt. Auburn St.		Memorial Dr. @ Hawthorne St.		Edwin Land Blvd. @ Binney St.	
	in	MG	Hours	MG	Hours	MG	Hours	MG	Hours	MG	Hours	MG	Hours	MG	Hours
7/1/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7/2/2023	0.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7/3/2023	1.03	0.00	0.00	0.00	0.00	1.02	1.50	0.00	0.00	0.04	0.17	0.00	0.00	0.00	0.00
7/4/2023	0.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7/5/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7/6/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7/7/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7/8/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7/9/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7/10/2023	1.26	0.00	0.00	0.00	0.00	0.02	0.17	0.02	0.25	0.03	0.75	0.00	0.00	0.00	0.00
7/11/2023	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7/12/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7/13/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7/14/2023	0.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7/15/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7/16/2023	1.36	0.00	0.00	0.00	0.00	0.01	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7/17/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7/18/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7/19/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7/20/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7/21/2023	1.24	0.00	0.00	0.00	0.00	1.82	2.25	0.08	0.50	0.16	0.75	0.33	0.75	1.38	1.67
7/22/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7/23/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7/24/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7/25/2023	0.49	0.00	0.00	0.00	0.00	0.12	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7/26/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7/27/2023	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7/28/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7/29/2023	1.60	0.00	0.00	0.00	0.00	0.48	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.35	0.50
7/30/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7/31/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	**8.31**	**0.00**	**0.00**	**0.00**	**0.00**	**3.47**	**8.42**	**0.10**	**0.75**	**0.23**	**1.67**	**0.33**	**0.75**	**1.73**	**2.17**

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**Due to non-operation of CAM 017 data between 8/3-9/11, model simulation data is used for that period.

2023 Daily Rainfall and Combined Sewer Overflow Volumes

Date	Rainfall	Alewife Brook								Charles					
		CAM001		CAM002		CAM401A*		CAM401B		CAM005		CAM007		CAM017**	
	WTP Rain Gauge	Foch St. @ Alewife Brook Pkwy.		Mass. Ave. @ Alewife Brook Pkwy.		Sherman St. @ B&M Railroad		Mass Ave/.Columbus Ave. @ Alewife Brook Pkwy		Lowell St. @ Mt. Auburn St.		Memorial Dr. @ Hawthorne St.		Edwin Land Blvd. @ Binney St.	
	in	MG	Hours	MG	Hours	MG	Hours	MG	Hours	MG	Hours	MG	Hours	MG	Hours
8/1/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/2/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/3/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/4/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/5/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/6/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/7/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/8/2023	1.95	0.00	0.00	0.00	0.00	4.66	2.25	0.54	1.50	0.51	1.75	0.92	1.75	3.60	1.50
8/9/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/10/2023	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/11/2023	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/12/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/13/2023	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/14/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/15/2023	0.69	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/16/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/17/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/18/2023	0.59	0.00	0.00	0.00	0.00	0.20	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/19/2023	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/20/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/21/2023	0.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/22/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/23/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/24/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/25/2023	1.92	0.00	0.00	0.00	0.00	1.74	2.00	0.00	0.00	0.01	1.25	0.00	0.00	0.00	0.00
8/26/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/27/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/28/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/29/2023	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/30/2023	0.62	0.00	0.00	0.00	0.00	0.27	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/31/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	**6.57**	**0.00**	**0.00**	**0.00**	**0.00**	**6.87**	**5.08**	**0.54**	**1.50**	**0.52**	**3.00**	**0.92**	**1.75**	**3.60**	**1.50**

*Due to inconsistencies in flow monitoring data, CSO statistics for CAM 401A are based on both metered and model simulated data.

**Due to non-operation of CAM 017 data between 8/3-9/11, model simulation data is used for that period.

2023 Daily Rainfall and Combined Sewer Overflow Volumes

Date	Rainfall	Alewife Brook								Charles					
		CAM001		CAM002		CAM401A*		CAM401B		CAM005		CAM007		CAM017**	
	WTP Rain Gauge	Foch St. @ Alewife Brook Pkwy.		Mass. Ave. @ Alewife Brook Pkwy.		Sherman St. @ B&M Railroad		Mass Ave/.Columbus Ave. @ Alewife Brook Pkwy		Lowell St. @ Mt. Auburn St.		Memorial Dr. @ Hawthorne St.		Edwin Land Blvd. @ Binney St.	
	in	MG	Hours	MG	Hours	MG	Hours	MG	Hours	MG	Hours	MG	Hours	MG	Hours
9/1/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9/2/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9/3/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9/4/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9/5/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9/6/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9/7/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9/8/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9/9/2023	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9/10/2023	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9/11/2023	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9/12/2023	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9/13/2023	1.17	0.00	0.00	0.00	0.00	0.26	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9/14/2023	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9/15/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9/16/2023	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9/17/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9/18/2023	2.56	0.00	0.00	0.00	0.00	1.72	3.25	0.03	0.50	0.01	0.75	0.00	0.00	0.00	0.00
9/19/2023	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9/20/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9/21/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9/22/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9/23/2023	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9/24/2023	0.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9/25/2023	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9/26/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9/27/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9/28/2023	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9/29/2023	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9/30/2023	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	**5.28**	**0.00**	**0.00**	**0.00**	**0.00**	**1.98**	**3.75**	**0.03**	**0.50**	**0.01**	**0.75**	**0.00**	**0.00**	**0.00**	**0.00**

*Due to inconsistencies in flow monitoring data, CSO statistics for CAM 401A are based on both metered and model simulated data.
**Due to non-operation of CAM 017 data between 8/3-9/11, model simulation data is used for that period.

2023 Daily Rainfall and Combined Sewer Overflow Volumes

Date	Rainfall	Alewife Brook								Charles					
		CAM001		CAM002		CAM401A*		CAM401B		CAM005		CAM007		CAM017**	
	WTP Rain Gauge	Foch St. @ Alewife Brook Pkwy.		Mass. Ave. @ Alewife Brook Pkwy.		Sherman St. @ B&M Railroad		Mass Ave/.Columbus Ave. @ Alewife Brook Pkwy		Lowell St. @ Mt. Auburn St.		Memorial Dr. @ Hawthorne St.		Edwin Land Blvd. @ Binney St.	
	in	MG	Hours	MG	Hours	MG	Hours	MG	Hours	MG	Hours	MG	Hours	MG	Hours
10/1/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/2/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/3/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/4/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/5/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/6/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/7/2023	0.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/8/2023	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/9/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/10/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/11/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/12/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/13/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/14/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/15/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/16/2023	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/17/2023	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/18/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/19/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/20/2023	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/21/2023	0.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/22/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/23/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/24/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/25/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/26/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/27/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/28/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/29/2023	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/30/2023	0.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/31/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	**1.82**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

*Due to inconsistencies in flow monitoring data, CSO statistics for CAM 401A are based on both metered and model simulated data.

**Due to non-operation of CAM 017 data between 8/3-9/11, model simulation data is used for that period.

2023 Daily Rainfall and Combined Sewer Overflow Volumes

Date	Rainfall	Alewife Brook								Charles					
		CAM001		CAM002		CAM401A*		CAM401B		CAM005		CAM007		CAM017**	
	WTP Rain Gauge	Foch St. @ Alewife Brook Pkwy.		Mass. Ave. @ Alewife Brook Pkwy.		Sherman St. @ B&M Railroad		Mass Ave/.Columbus Ave. @ Alewife Brook Pkwy		Lowell St. @ Mt. Auburn St.		Memorial Dr. @ Hawthorne St.		Edwin Land Blvd. @ Binney St.	
	in	MG	Hours	MG	Hours	MG	Hours	MG	Hours	MG	Hours	MG	Hours	MG	Hours
11/1/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/2/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/3/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/4/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/5/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/6/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/7/2023	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/8/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/9/2023	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/10/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/11/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/12/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/13/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/14/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/15/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/16/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/17/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/18/2023	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/19/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/20/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/21/2023	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/22/2023	0.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/23/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/24/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/25/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/26/2023	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/27/2023	0.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/28/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/29/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/30/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	**1.48**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

*Due to inconsistencies in flow monitoring data, CSO statistics for CAM 401A are based on both metered and model simulated data.
**Due to non-operation of CAM 017 data between 8/3-9/11, model simulation data is used for that period.

2023 Daily Rainfall and Combined Sewer Overflow Volumes

Date	Rainfall	Alewife Brook								Charles					
		CAM001		CAM002		CAM401A*		CAM401B		CAM005		CAM007		CAM017**	
	WTP Rain Gauge	Foch St. @ Alewife Brook Pkwy.		Mass. Ave. @ Alewife Brook Pkwy.		Sherman St. @ B&M Railroad		Mass Ave/.Columbus Ave. @ Alewife Brook Pkwy		Lowell St. @ Mt. Auburn St.		Memorial Dr. @ Hawthorne St.		Edwin Land Blvd. @ Binney St.	
	in	MG	Hours	MG	Hours	MG	Hours	MG	Hours	MG	Hours	MG	Hours	MG	Hours
12/1/2023	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12/2/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12/3/2023	0.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12/4/2023	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12/5/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12/6/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12/7/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12/8/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12/9/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12/10/2023	0.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12/11/2023	1.81	0.00	0.00	0.00	0.00	2.56	3.00	0.02	0.50	0.01	0.50	0.00	0.00	0.00	0.00
12/12/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12/13/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12/14/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12/15/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12/16/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12/17/2023	0.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12/18/2023	2.12	0.00	0.00	0.00	0.00	1.62	1.25	0.04	0.50	0.06	0.50	0.00	0.00	0.03	0.33
12/19/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12/20/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12/21/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12/22/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12/23/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12/24/2023	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12/25/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12/26/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12/27/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12/28/2023	0.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12/29/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12/30/2023	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12/31/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	**6.76**	**0.00**	**0.00**	**0.00**	**0.00**	**4.18**	**4.25**	**0.06**	**1.00**	**0.07**	**1.00**	**0.00**	**0.00**	**0.03**	**0.33**
TOTAL FOR 2023	**49.47**	**0.00**	**0.00**	**0.00**	**0.00**	**20.52**	**33.42**	**1.00**	**5.75**	**0.87**	**7.17**	**1.25**	**2.50**	**5.36**	**4.00**

*Due to inconsistencies in flow monitoring data, CSO statistics for CAM 401A are based on both metered and model simulated data.
**Due to non-operation of CAM 017 data between 8/3-9/11, model simulation data is used for that period.

APPENDIX III

CSO NOTIFICATIONS

COMBINED SEWER OVERFLOW REPORTING

State regulations (314 CMR 16.00) require the City of Cambridge to notify the public when certain events occur that result in untreated wastewater being released into surface water--a river or stream. Notifications are posted below and also sent out via email. All Data are preliminary and subject to change. Subscribe to Cambridge's Combined Sewer Overflow (CSO) Alerts.

City of Cambridge Public Notification Plan

The City of Cambridge submitted to the Massachusetts Department of Environmental Protection (MassDEP) a Public Notification Plan describing how it will comply with the requirements of An Act Promoting Awareness of Sewage in Public Waters, signed into la in 2021. MassDEP issued an approval of Cambridge's Public Notification Plan on June 16, 2023. The Cambridge Public Notificatior Plan was modified to reflect reporting of the "*average*" discharge (not "median" discharge) from data reported to MassDEP and EPA for the prior three years..

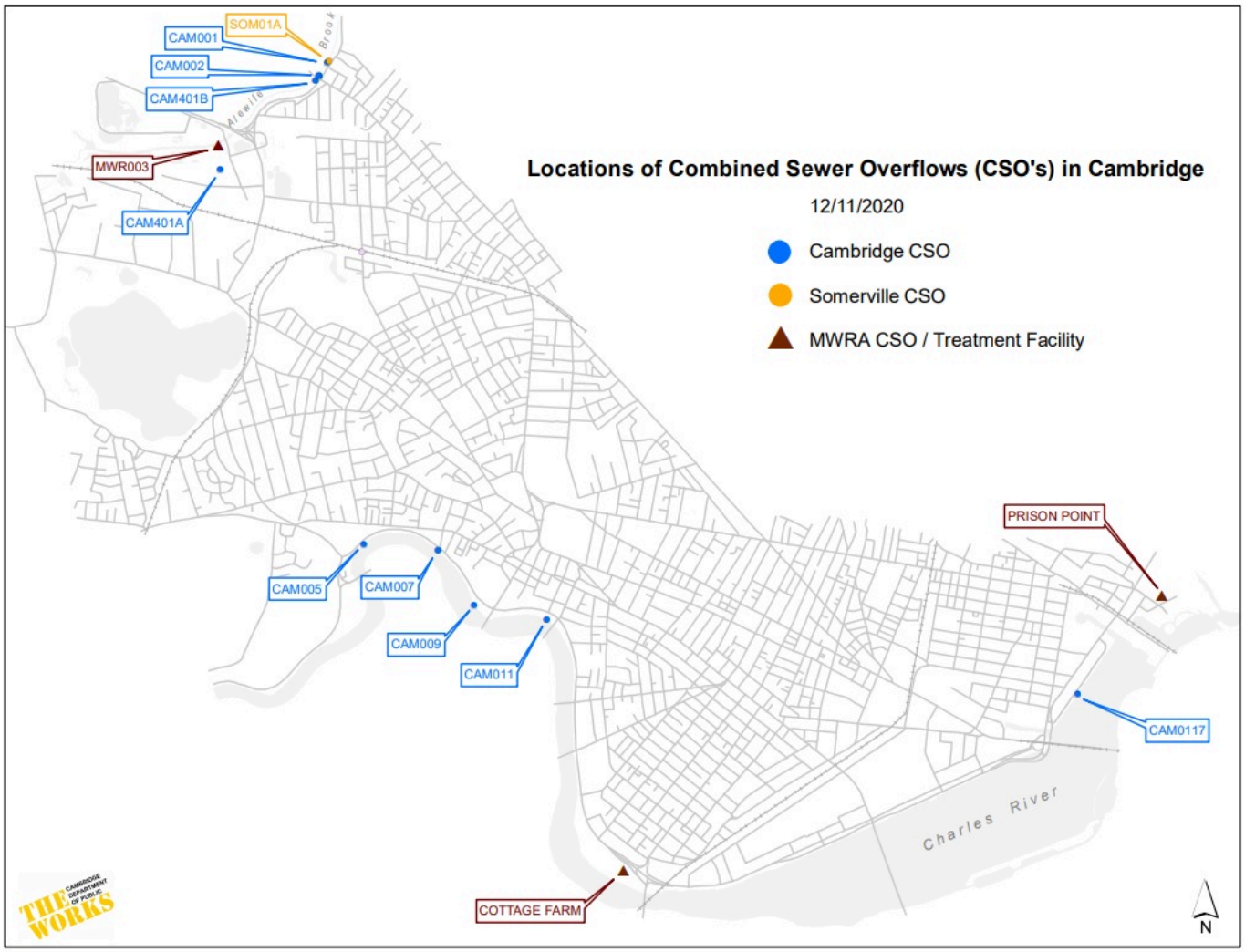
A combined sewer overflow (CSO) occurs when a large storm overwhelms the combined sewerage system causing rainwater to mi with wastewater and discharge to a nearby water body. This relief measure prevents sewage backups into homes and businesses. Cambridge owns combined sewer outfalls that discharge to the Charles River and Alewife Brook. When a CSO occurs at a Cambridge-owned outfall, there will be a notification displayed in the table below.

The Massachusetts Water Resource Authority (MWRA) and the cities of Boston, Chelsea and Somerville manage their own combined sewer outfalls, including CSO reporting. These communities must be contacted directly for information regarding their CSO discharges. To see where all CSO outfalls are located, download this MWRA map of MWRA and community CSO sites.

PUBLIC HEALTH NOTIFICATIONS

State regulations require local public health departments to provide notice to the public when these discharges may create a risk to public health, including when a discharge lasts for two or more hours. Public health warnings related to sewage discharges will be posted on the Cambridge Public Health Departments News & Events webpage.

Public health officials recommend avoiding contact with water bodies during rainstorms and for 48 hours afterwards, as ther may be increased health risks due to bacteria or other pollutants associated with urban stormwater runoff and CSO discharges. To see what Cambridge is doing to address pollutants from stormwater runoff please visit our stormwater management website and learn how you can also help reduce stormwater pollution. For more information on water quality data in the Charles River and the Mystic River please see: Charles River Watershed Association Water quality Reports & Data and the Mystic River Watershed Association Mystic Daily Boating Advisory.



To view a full-size version of this map, click here.

Description of CSO Locations and Potentially Affected Areas

CAM001: Alewife Brook, discharges downstream of Massachusetts Ave Bridge across from Murry Hill Road.

CAM002: Alewife Brook, discharges downstream of Massachusetts Ave Bridge

CAM401A: Alewife Brook, discharges upstream of the confluence with the Little River and upstream of the Route 2 Bridge.

CAM401B: Alewife Brook, discharges upstream of the Massachusetts Ave Bridge.

CAM005: Charles River, discharges downstream of the Eliot Bridge across from Mount Auburn Hospital.

CAM007: Charles River, discharges downstream of the Eliot Bridge across from Hawthorne Street.

CAM009: Charles River, discharges upstream of the Anderson Bridge (temporarily closed).

CAM011: Charles River, discharges upstream of the Weeks Footbridge (temporarily closed).

CAM017: Charles River, discharges downstream of the Longfellow Bridge across from Front Park.

Note: The CSO discharge table below provides details of recent discharges. Data for CSOs is preliminary and subject to change. Discharge duration and volume are estimates and are subject to calculation limitations, including meter data reliability, unmonitored downstream conditions such as river level, and MWRA system operations. See the following links for information on past CSO annual reporting and yearly CSO discharge summaries. Annual reporting data for each calendar year will be published b April 30 of the following year. Updated/revised data is indicated by ( ).

							(0.00)	
01.10.2024	CAM401B (Revised)	Alewife Brook	Upstream of the Massachusetts Ave Bridge	3:36 am (3:45 am)	7:29 am (7:15 am)	3 hours, 53 minutes 3 hours, 30 minutes)	0.32 MG (estimated average of last three years) (0.90 MG)	2.26"
01.10.2024	CAM401A (Revised)	Alewife Brook	Upstream of the confluence with the Little River and upstream of the Route 2 Bridge	12:46 am (2:30 am)	6:11 am (6:00 am)	5 hours, 25 minutes (3 hours, 30 minutes)	0.66 MG (estimated average of last three years) (7.81 MG)	2.26"
12.18.2023 (Revised)	CAM005 (Revised0	Charles River	Downstream of the Eliot Bridge across from Mount Auburn Hospital	12:41 pm (12:40 pm)	12:54 pm (1:06 pm)	13 minutes (20 minutes)	0.28 MG (estimated average of last three years) (0.06 MG)	2.50"
12.18.2023 (Revised)	CAM017 9revised)	Charles River	Downstream of the Longfellow Bridge across from Front Park	12:36 pm (12:35 pm)	12:54 pm (12:50 pm)	18 minutes (15 minutes)	1.9 MG (estimated average of last three years) (0.03 MG)	2.50"
12.18.2023 (Revised)	CAM401B (Revised)	Alewife Brook	Upstream of the Massachusetts Ave Bridge	12:30 pm (12:45 pm)	1:07 pm (1:15 pm)	37 minutes (30 minutes)	0.32 MG (estimated average of last three years) (0.04 MG)	2.50"
12.18.2023 (Revised)	CAM401A (Revised)	Alewife Brook	Upstream of the confluence with the Little River and upstream of the Route 2 Bridge	12:21 pm (12:30 pm)	1:16 pm (1:45 pm)	55 minutes (1 hour, 15 minutes)	0.66 MG (estimated average of last three years) (1.62 MG)	2.50"
12.11.2023 (Revised)	CAM017	Charles River	Downstream of the Longfellow Bridge across from front Park	3:20 am (NA)	3:30 am (NA)	10 minutes (NA)	1.9 MG (estimated average of last three years) (0.00)	2.46"

12.11.2023 (Revised)	CAM005	Charles River	Downstream of the Eliot Bridge across from Mount Auburn Hospital	3:06 am (3:15 am)	4:13 am (3:45 am)	1 hour, 17 minutes (30 minutes)	0.28 MG (estimated average of last three years) (0.01 MG)	2.46"
12.11.2023 (Revised)	CAM401B	Alewife Brook	Upstream of the Massachusetts Ave Bridge	3:06 am (3:15 am)	3:42 am (3:45 am)	36 minutes (30 minutes)	0.32 MG (estimated average of last three years) (0.02 MG)	2.46"
12.11.2023 (Revised)	CAAM401A	Alewife Brook	Upstream of the confluence with the Little River and upstream of the Route 2 Bridge	2:41 am (2:45 am)	5:36 am (5:45 am)	2 hours, 55 minutes (3 hours)	0.66 MG (estimated average of last three years) (2.56 MG)	2.46"
09.18.2023 (Rev)	CAM401A (Reactivation)	Alewife Brook	Upstream of the confluence with the Little River and upstream of the Route 2 Bridge	10:50 pm (11:00 pm)	11:05 pm (11:15 pm)	15 minutes [Total CSO spill time 1 hour, 45 minutes including reactivation. Reactivations that occur within 12 hours of initial activation are considered the same event. This event will be reported as a 3 hour event to DEP: beginning of first activation (8:15 pm) and ending time of reactivation (11:15 pm)]	0.66 MG (estimated average of last three years) (0.57 MG for both activations)	2.77"

09.18.2023 (Rev)	CAM401B	Alewife Brook	Upstream of the Massachusetts Ave Bridge	8:36 pm (8:45 pm)	9:13 pm (9:15 pm)	37 minutes (30 minutes)	0.32 MG (estimated average of last three years) (0.03 MG)	2.77"
09.18.2023 (Rev)	CAM005	Charles River	Downstream of the Eliot Bridge across from Mount Auburn Hospital	8:20 pm (8:30 pm)	9:03 pm (9:15 pm)	43 minutes (45 minutes)	0.28 MG (estimated average of last three years) (0.01 MG)	2.77"
09.18.2023 (Rev)	CAM401A	Alewife Brook	Upstream of the confluence with the Little River and upstream of the Route 2 Bridge	8:10 pm (8:15 pm)	9:30 pm (9:45 pm)	1 hour, 20 minutes (1 hour, 30 minutes)	0.66 MG (estimated average of last three years) (see reactivation summary)	2.77"
09.13.2023 (Rev)	CAM401A	Alewife Brook	Upstream of the confluence with the Little River and upstream of the Route 2 Bridge	1:35 pm (1:45 pm)	2:00 pm (2:15 pm)	25 minutes (30 minutes)	0.66 MG (estimated average of last three years) (0.14 MG)	1.52"
08.30.2023 (rev)	CAM401A	Alewife Brook	Upstream of the confluence with the Little River and upstream of the Route 2 Bridge	9:35 am (9:45 am)	9:55 am (10:15 am)	20 minutes (30 minutes)	0.66 MG (estimated average of last three years) (0.09 MG)	0.71"
08.25.2023 (Rev)	CAM401B	Alewife Brook	Upstream of the Massachusetts Ave Bridge	9:56 am (10:00 am)	10:20 am (10:30 am)	24 minutes (30 minutes)	0.28 MG (estimated average of last three years) (<0.01 MG)	2.46"
08.25.2023 (Rev)	CAM005	Charles River	Downstream of the Eliot Bridge across from Mount Auburn Hospital	9:05 am (9:00 am)	11:33 am (10:15 am)	2 hours, 28 minutes (1 hour, 15 minutes)	0,28 MG (estimated average of last three years) (0.01 MG)	2.46"

08.25.2023 (Rev)	CAM401A	Alewife Brook	Upstream of the confluence with the Little River and upstream of the Route 2 Bridge	8:50 am (9:00 am)	1:10 pm (11:00 am)	4 hours, 20 minutes (2 hours)	0,66 MG (estimated average of last three years) (0.58 MG)	2.46"
08.21.2023 (Rev)	CAM401A	Alewife Brook	Upstream of the confluence with the Little River and upstream of the Route 2 Bridge	8:40 pm (8:45 pm)	8:50 pm (9:00 pm)	10 minutes (15 minutes)	0.66 MG (estimated average of last three years) (0.03 MG)	0.43"
08.18.2023 (Rev)	CAM401A	Alewife Brook	Upstream of the confluence with the Little River and upstream of the Route 2 Bridge	4:20 pm (4:30 pm)	4:30 pm (4:45 pm)	10 minutes (15 minutes)	0.66 MG (estimated average of last three years) (0.02 MG)	0.62"
08.08.2023 (rev)	CAM007	Charles River	Downstream of the Eliot Bridge across from Hawthorne Street	11:05 am (11:15 am)	12:21 pm (1:00 pm)	1 hour, 16 minutes (1 hour, 45 minutes)	1.04 (estimated average of last three years) (0.92 MG)	2.53"
08.08.2023 (Rev)	CAM005	Charles River	Downstream of the Eliot Bridge across from Mount Auburn Hospital	10:51 am (11:00 am)	12:20 pm (11:53 am)	1 hour, 29 minutes (53 minutes)	0.28 MG (estimated average of last three years) (0.63 MG)	2.53"
08.08.2023 (Rev)	CAM001	Alewife Brook	Downstream of Massachusetts Ave Bridge across from Murry Hill Road	11:05 am (11:15 am)	11:41 am (11:45 am)	36 minutes (30 minutes)	0.05 MG (estimated average of last three years) (<0.01 MG)	2.53"
08.08.2023 (Rev)	CAM401B	Alewife Brook	Upstream of the Massachusetts Ave Bridge	10:51 am (11:00 am)	12:27 pm (12:30 pm)	1 hour, 36 minutes (1 hour, 30 minutes)	0.32 MG (estimated average of last three years) (0.53 MG)	2.53"

08.08.2023 (Rev)	CAM401A	Alewife Brook	Upstream of the confluence with the Little River and upstream of the Route 2 Bridge	10:36 am (10:45 am)	12:34 pm (12:45 pm)	1 hour, 58 minutes (2 hours)	0.66 MG (estimated average of last three years) (3.55 MG)	2.53"
07.29.2023	CAM017	Charles River	Downstream of the Longfellow Bridge across from front Park	5:10 pm	5:40 pm	30 minutes	0.35 MG (estimated average of last three years)	2.37"
07.29.2023 (Rev)	CAM005	Charles River	Downstream of the Eliot Bridge across from Mount Auburn Hospital	6:19 pm (NA)	8:53 pm (NA)	2 hours, 34 minutes (NA)	0.28 MG (estimated average of last three years) (NA)	2.37"
07.29.2023 (Rev)	CAM401A	Alewife Brook	Upstream of the confluence with the Little River and upstream of the Route 2 Bridge	6:09 pm (5:30 pm)	9:14 pm (9:15 pm)	3 hours, 5 minutes (3 hours, 45 minutes)	0.66 MG (estimated average of last three years) (2.0 MG)	2.37"
07.25.2023 (Rev)	CAM401A	Alewife Brook	Upstream of the confluence with the Little River and upstream of the Route 2 Bridge	3:30 pm	3:40 pm (3:45 pm)	10 minutes (15 minutes)	0.66 MG (estimated average of last three years) ((0.31 MG)	0.42"
07.21.2023 (Rev)	CAM401B	Alewife Brook	Upstream of the Massachusetts Ave Bridge	9:25 pm (9:30 pm)	10:01 pm (10:00 pm)	36 minutes (30 minutes)	0.32 MG (estimated average of last three years) (0.08 MG)	1.68"
07.21.2023 (Rev)	CAM007	Charles River	Downstream of the Eliot Bridge across from Hawthorne Street	9:20 pm (9:30 pm)	10:05 pm (10:15 pm)	45 minutes	1.05 MG (estimated average of last three years) (0.33 MG)	1.68"

07.21.2023 (Rev)	CAM401A	Alewife Brook	Upstream of the confluence with the Little River and upstream of the Route 2 Bridge	9:20 pm (9:30 pm)	11:00 pm (11:15 pm)	1 hour, 40 minutes (1 hour, 45 minutes)	0.66 MG (estimated average of last three years) (3.05 MG)	1.68"
07.21.2023 (Rev)	CAM005	Charles River	Downstream of the Eliot Bridge across from Mount Auburn Hospital	9:20 pm (9:13 pm)	10:40 pm (9:58 pm)	1 hour, 20 minutes (45 minutes)	0.28 MG (estimated average of last three years) (0.60 MG)	1.68"
07.21.2023 (Rev)	CAM017	Charles River	Downstream of the Longfellow Bridge across from Front Park	8:25 pm (8:30 pm)	10:10 pm	1 hour, 45 minutes (1 hour, 40 minutes)	1.90 MG (estimated average of last three years) (1.38 MG)	1.68"
07.16.2023 (Rev)	CAM401A	Alewife Brook	Upstream of the confluence with the Little River and upstream of the Route 2 Bridge	12:10 pm (12:15 pm)	12:20 pm (12:30 pm)	10 minutes (15 minutes)	0.66 MG (estimated average of last three years) (0.04 MG)	1.97"
07.10.2023 (Rev)	CAM401B	Alewife Brook	Upstream of the Massachusetts Ave Bridge	2:30 pm (2:45 pm)	3:00 pm	30 minutes (15 minutes)	0.32 MG (estimated average of last three years) (0.02 MG)	1.06"
07.10.2023 (Rev)	CAM401A	Alewife Brook	Upstream of the confluence of the Little River and upstream of the Route 2 Bridge	2:10 pm (2:15 pm)	3:11 pm (3:00 pm)	61minutes (45 minutes)	0.66 MG (estimated average of last three years) (0.67 MG)	1.06"
07.10.2023 (Rev)	CAM005	Charles River	Downstream of the Elliot Bridge across from Mount Auburn Hospital	2:20 pm	2:50 pm (2:30 pm)	30 minutes (10 minutes)	0.28 MG (estimated average of last three years) (0.01)	1.06"

07.03.2023 (Rev)	CAM401B	Alewife brook	Upstream of the Massachusetts Ave Bridge	2:01 am (2:15 am)	2:23 am (2:30 am	22 minutes (15 minutes)	0.32 MG (estimated average of last three years) (<0.01 MG)	1.28"
07.03.2023 (Rev)	CAM005	Charles River	Downstream of the Eliot Bridge across from mount Auburn hospital	1:50 am (1:45 am)	2:12 am (1:55 am)	22 minutes (10 minutes)	0.28 MG (estimated average of last three years) (0.04 MG)	1.28"
07.03.2023 (Rev)	CAM401A	Alewife Brook	Upstream of the confluence of the Little River and upstream of the Route 2 bridge	1:36 am (1:45 am)	3:01 am (3:00 am)	1 hour, 25 minutes (1 hour, 15 minutes)	0.66 MG (estimated average of last three years) (0.69 MG)	1.28"
05.20.2023 (Rev)	CAM001	Alewife Brook	Downstream of Massachusetts Ave Bridge across from Murry Hill Road	11:50 pm (NA)	1:58 am (NA)	2 hours, 8 minutes (NA)	0.05 MG (estimated average of last three years) (0.00)	2.27
05.20.2023 (Rev)	CAM401B	Alewife Brook	Upstream of the Massachusetts Ave Bridge	11:37 pm (11:45 pm)	1:32 am (1:30 am)	1 hour, 55 minutes (1 hour, 45 minutes)	0.32 MG (estimated average of last three years) (0.27 MG)	2.27
05.20.2023 (Rev)	CAM005	Charles River	Downstream of the Eliot Bridge across from Mount Auburn Hospital	11:36 pm (11:45 pm)	12:51 am (1:45 am)	1 hour, 15 minutes (2 hours)	0.28 MG (estimated average of last three years) (0.04 MG)	2.27
05.20.2023 (Rev)	CAM401A	Alewife Brook	Upstream of the confluence with the Little river and upstream of the Route 2 Bridge	11:20 pm (11:33 pm)	1:47 am (2:10 am)	2 hours, 27 minutes (2 hours, 37 minutes)	0.66 MG (estimated average of last three years) (1.77 MG - modeled)	2.27

05.01.2023 (Rev)	CAM401A	Alewife Brook	Upstream of the confluence with the Little River and Upstream of the Route 2 Bridge	12:51 am (1:00 am)	1:15 am (1:30 am)	24 minutes (30 minutes)	0.66 MG (estimates average of last three years) (0.05 MG)	1.52"
03.14.2023 (Rev)	CAM401A	Alewife brook	Upstream of the confluence with the Little River and Upstream of the route 2 Bridge	7:11 am (9:00 am)	12:46 pm (12:30 pm)	5 hours, 35 minutes 3 hours, 30 minutes)	0.66 MG (estimated average of last three years) (0.42 MG)	2.5"
03.14.2023	CAM007	Charles River	Downstream of the Eliot Bridge across from Hawthorne Street	NA	NA	NA	NA	2.5"
03.02.2023	CAM401A	Alewife Brook	Upstream of the confluence with the Little River and upstream of the Route 2 Bridge	NA	NA	NA	NA	0.70"
01.26.2023 (Rev)	CAM401A	Alewife Brook	Upstream of the confluence with the Little River and upstream of the Route 2 Bridge	2:05 am (2:15 am)	4:15 am	2 hours, 10 minutes (2 hours)	0.78 MG (estimated average of last three years) (0.09 MG)	1.08"
12.23.2022 (Rev)	CAM401A	Alewife Brook	Upstream of the confluence with the Little River and upstream of the Route 2 Bridge	12:55 am (12:59 am)	1:36 am (1:19 am)	41 minutes (20 minutes)	0.78 MG (estimated average of last three years) (< 0.01 MG)	1.85" (1.73")
11.30.2022 (Rev)	CAM401A	Alewife Brook	Upstream of the confluence with the Little River and upstream of the Route 2 Bridge	7:20 pm (7:19 pm)	7:36 pm (7:39 pm)	16 minutes (20 minutes)	0.78 MG (estimated average of last three years) (0.09MG)	0.73 (0.82")

APPENDIX IV

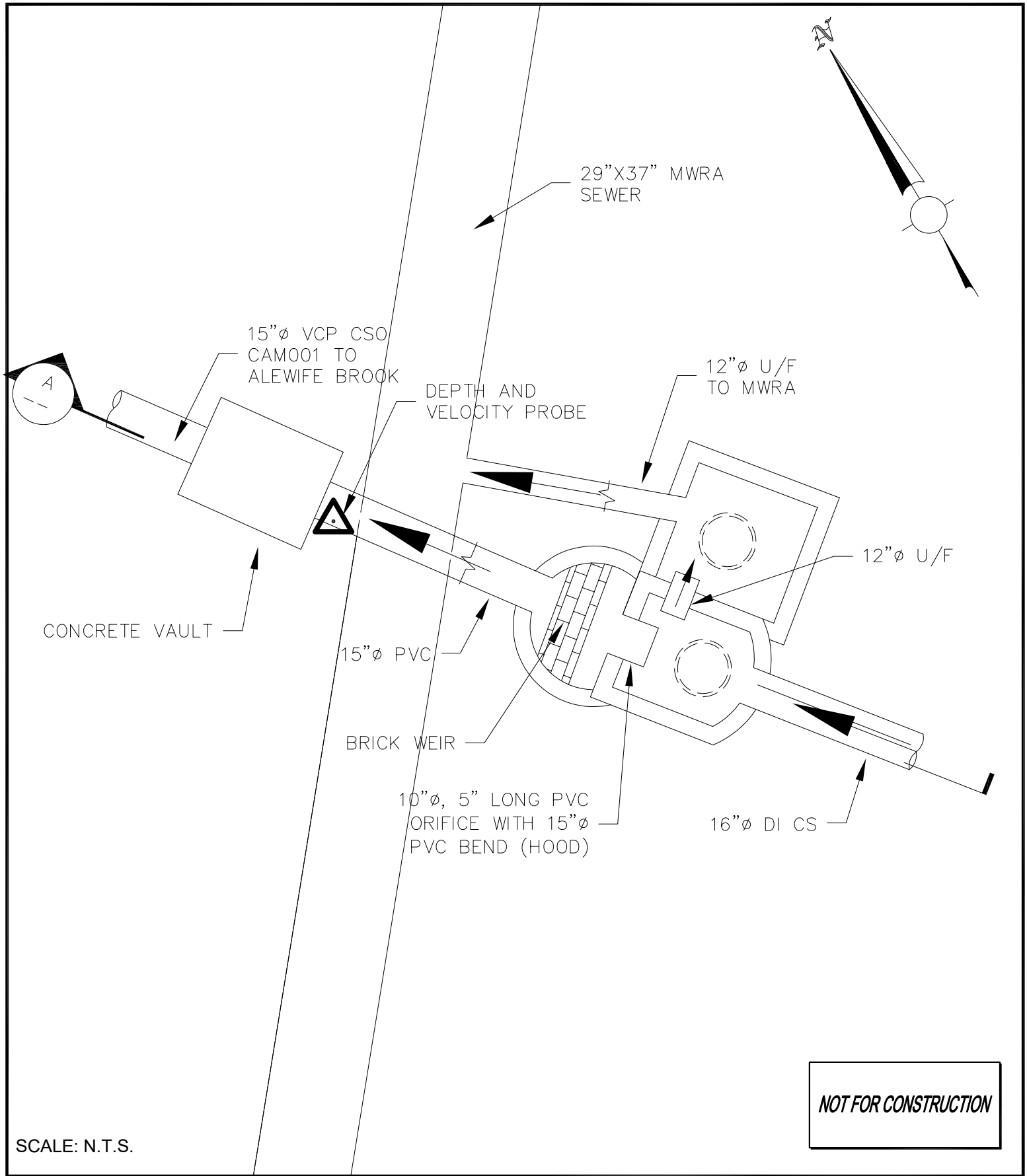
INITIALLY REPORTED AND FINAL CALCULATED CSO VOLUMES

Outfall	Annual Report CSO Statistics		CDPW Website Reporting, Calculated From Preliminary Data		Comments
	Date	VOLUME (MG)	Date	VOLUME (MG)	
CAM401A	1/26/2023	*0.24*	1/26/2023	0.09	Correction to be reported
	3/2/2023	No Spill	3/2/2023	N/A	
	3/14/2023	*1.15*	3/14/2023	0.42	Correction to be reported
	5/1/2023	*No Spill*	5/1/2023	0.05	Correction to be reported
	5/20/2023	*1.26*	5/20/2023	1.77	Correction to be reported- Modeled Volume
	6/14/2023	*0.02*			Not reported in real time
	6/17/2023	*0.75*			Not reported in real time
	6/28/2023	*0.60*			Not reported in real time
	7/3/2023	*1.02*	7/3/2023	0.69	Correction to be reported- Modeled Volume
	7/10/2023	*0.02*	7/10/2023	0.67	Correction to be reported
	7/16/2023	*0.01*	7/16/2023	0.04	Correction to be reported
	7/21/2023	*1.82*	7/21/2023	3.05	Correction to be reported- Modeled Volume
	7/25/2023	*0.12*	7/25/2023	0.31	Correction to be reported
	7/29/2023	*0.48*	7/29/2023	2.00	Correction to be reported- Modeled Volume
	8/8/2023	*4.66*	8/8/2023	3.55	Correction to be reported- Modeled Volume
	8/18/2023	*0.20*	8/18/2023	0.02	Correction to be reported
	8/21/2023	*No Spill*	8/21/2023	0.03	Correction to be reported
	8/25/2023	*1.74*	8/25/2023	0.58	Correction to be reported
	8/30/2023	*0.27*	8/30/2023	0.09	Correction to be reported
	9/13/2023	*0.26*	9/13/2023	0.14	Correction to be reported
	9/18/2023	*1.72*	9/18/2023	0.57	Correction to be reported
	12/11/2023	2.56	12/11/2023	2.56	
	12/18/2023	1.62	12/16/2023	1.62	
	Total:	**20.52**	**Total:**	**18.25**	

Outfall	Annual Report CSO Statistics		CDPW Website Reporting, Calculated From Preliminary Data		Comments
	Date	VOLUME (MG)	Date	VOLUME (MG)	
CAM401B	5/20/2023	0.27	5/20/2023	0.27	
	7/10/2023	0.02	7/10/2023	0.02	
	7/21/2023	0.08	7/21/2023	0.08	
	8/8/2023	0.54	8/8/2023	0.53	
	9/18/2023	0.03	9/18/2023	0.03	
	12/11/2023	0.02	12/11/2023	0.02	
	12/18/2023	0.04	12/18/2023	0.04	
	Total	**1**	**Total**	**0.99**	
CAM005	5/20/2023	0.04	5/20/2023	0.04	
	7/3/2023	0.04	7/3/2023	0.04	
	7/10/2023	*0.03*	7/10/2023	0.01	Correction to be reported
	7/21/2023	*0.16*	7/21/2023	0.6	Correction to be reported
	7/29/2023	No Spill	7/29/2023	No Spill	
	8/8/2023	*0.51*	8/8/2023	0.63	Correction to be reported
	8/25/2023	0.01	8/25/2023	0.01	
	9/18/2023	0.01	9/18/2023	0.01	
	12/11/2023	0.01	12/11/2023	0.01	
	12/18/2023	0.06	12/18/2023	0.06	Modeled
	Total	**0.87**	**Total**	**1.41**	
CAM007	7/21/2023	0.33	3/14/2023	N/A	
	8/8/2023	0.92	7/21/2023	0.33	
			8/8/2023	0.92	
	Total	**1.25**	**Total**	**1.25**	
CAM017	7/21/2023	1.38	7/21/2023	1.38	
	7/29/2023	*0.35*	7/29/2023	0.35	Submitted to the City but spill volume not visible on CDPW Website
	8/8/2023	*3.6*			Not reported in real time. Modeled volume; meters not operational during August 8 event
	12/18/2023	0.03	12/18/2023	0.03	
	Total	**5.36**	**Total**	**1.76**	

APPENDIX V

PLAN AND PROFILE SCHEMATICS OF CSO REGULATORS



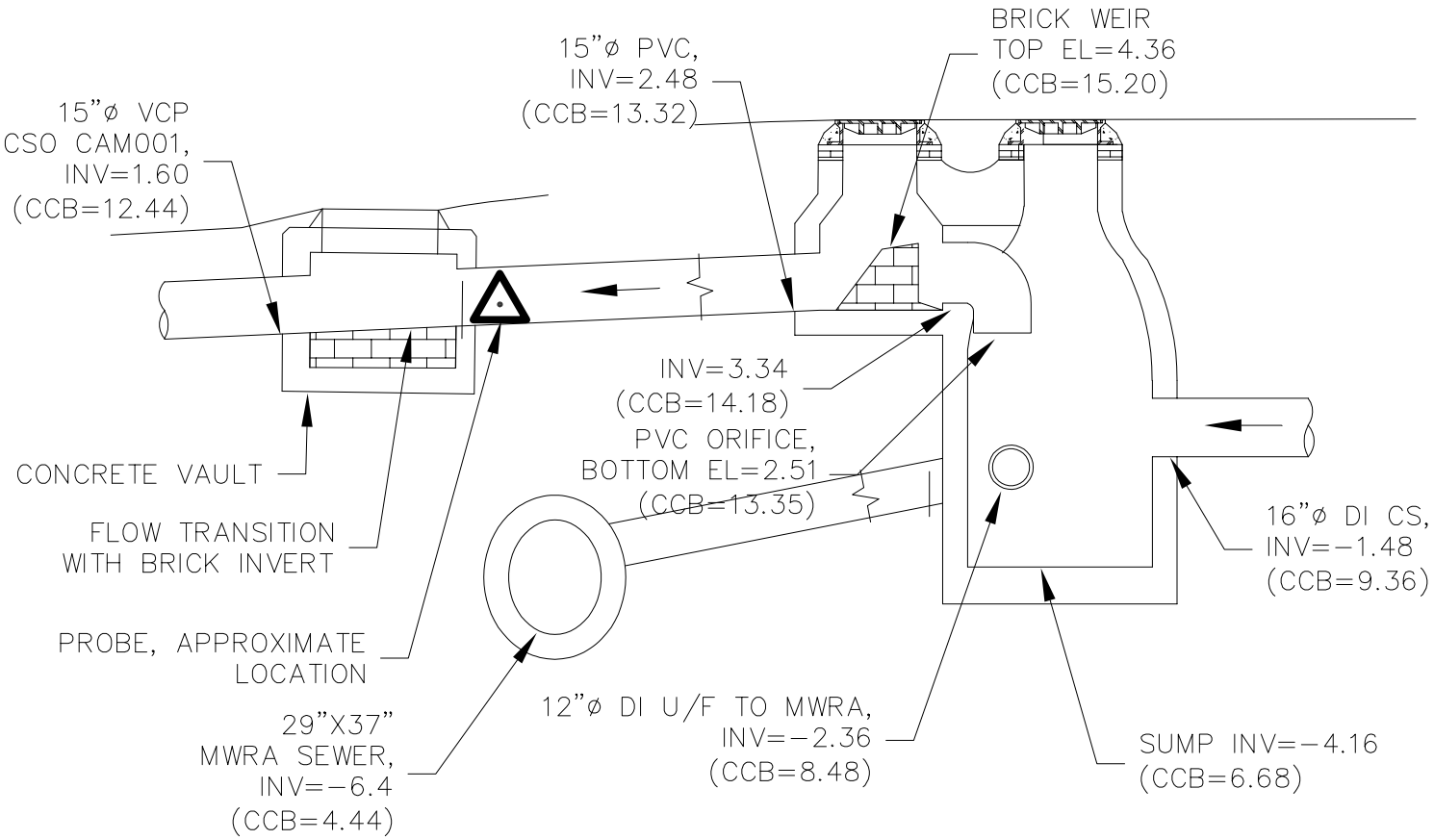
NOT FOR CONSTRUCTION

SCALE: N.T.S.

CSO REGULATOR STRUCTURE
CAM001 PLAN

CITY OF CAMBRIDGE, MASSACHUSETTS

April 2020



SECTION A

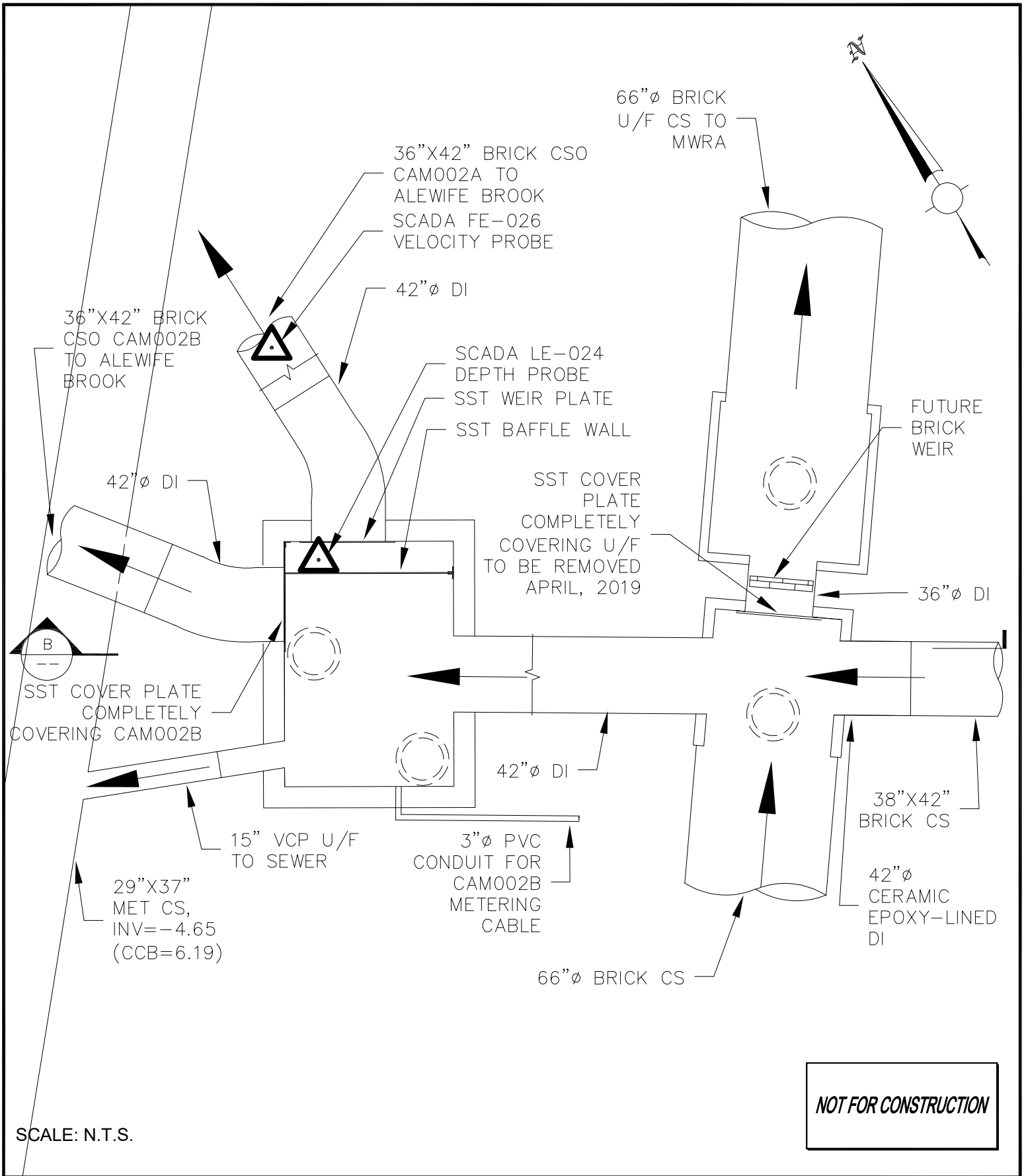
NOT FOR CONSTRUCTION

SCALE: N.T.S.

CSO REGULATOR STRUCTURE CAM001 PROFILE

CITY OF CAMBRIDGE, MASSACHUSETTS

April 2020



NOT FOR CONSTRUCTION

SCALE: N.T.S.

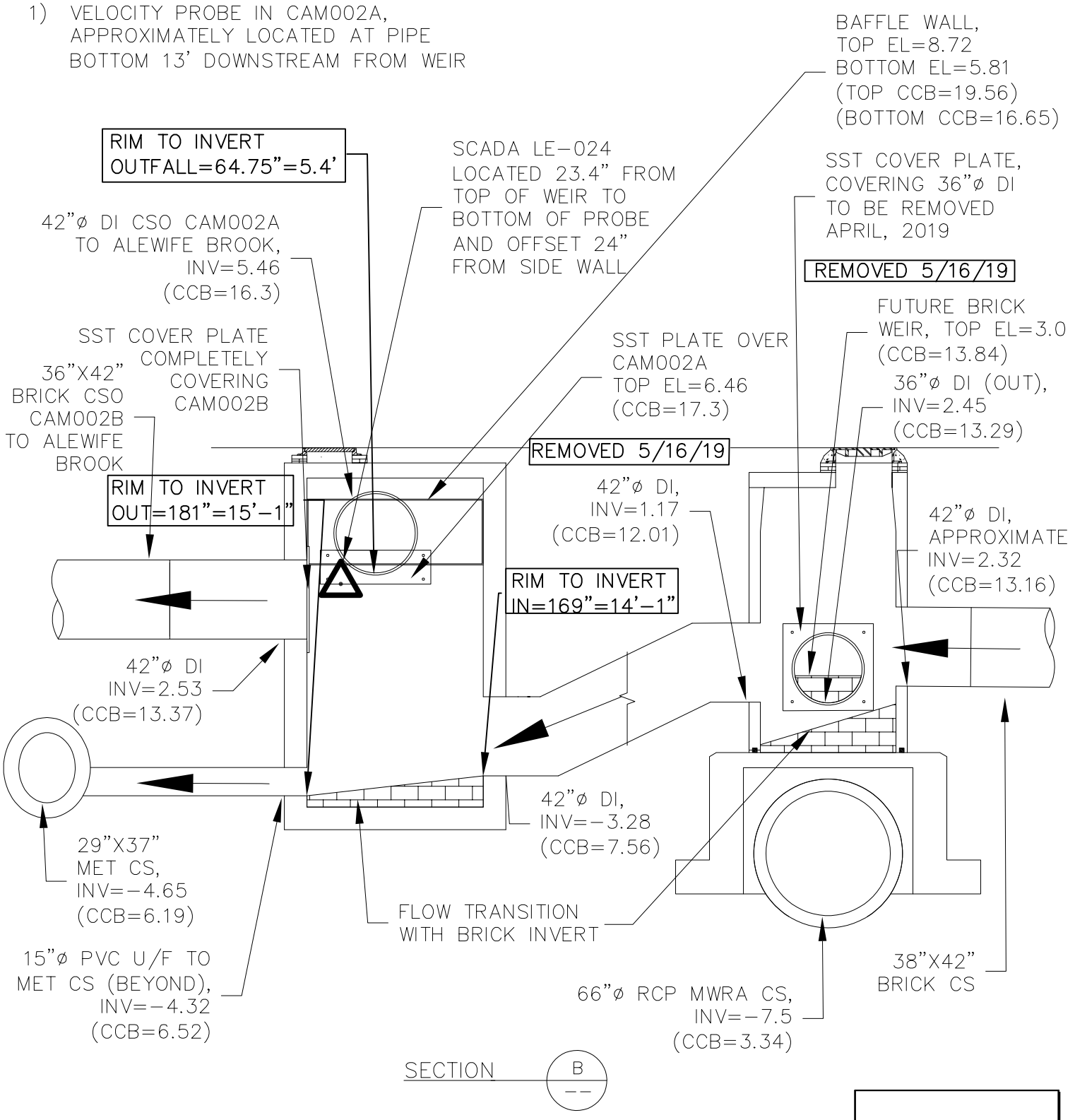
CSO REGULATOR STRUCTURE CAM002 PLAN

CITY OF CAMBRIDGE, MASSACHUSETTS

April 2020

NOTES:

1) VELOCITY PROBE IN CAM002A, APPROXIMATELY LOCATED AT PIPE BOTTOM 13' DOWNSTREAM FROM WEIR

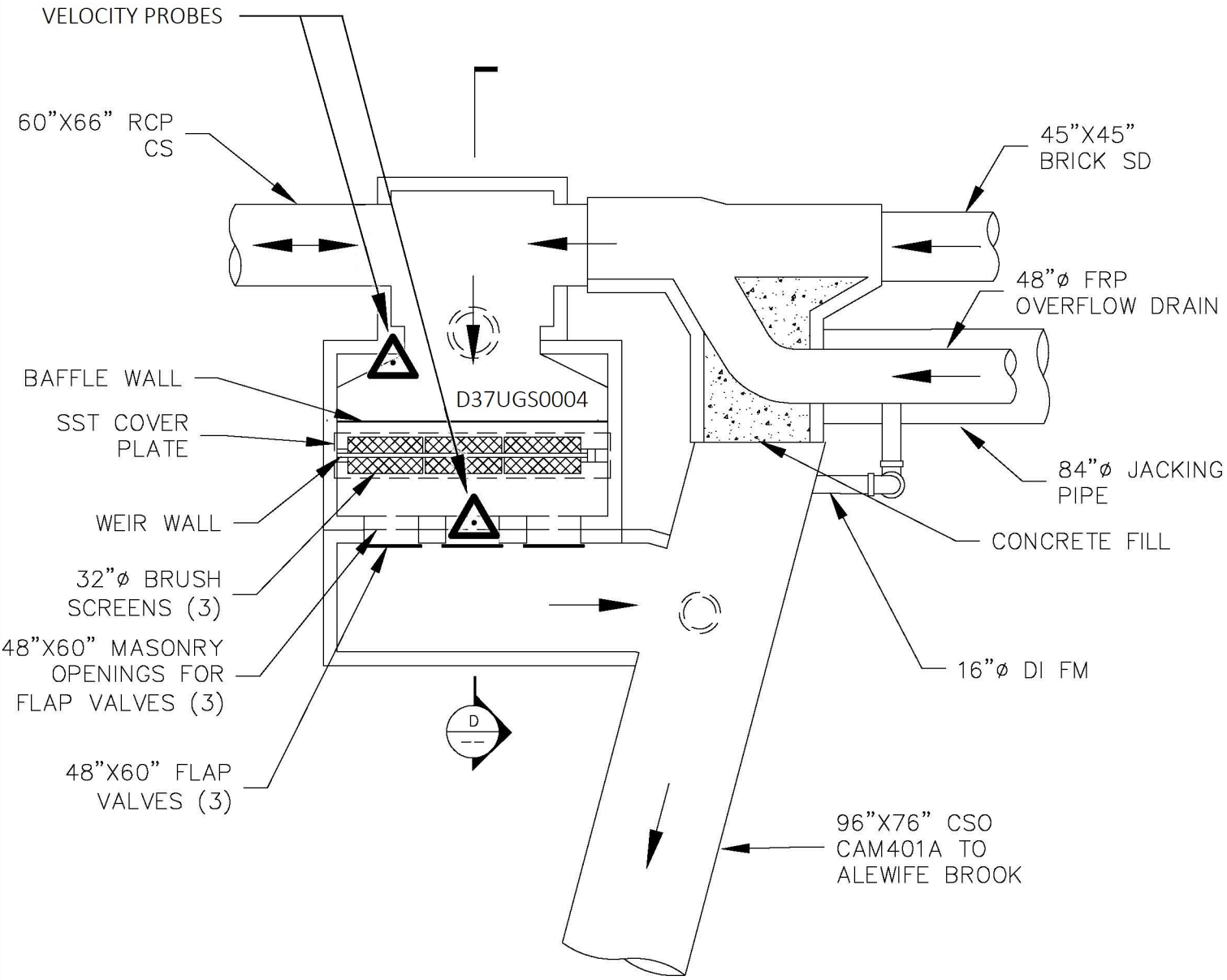


NOT FOR CONSTRUCTION

SCALE: N.T.S.

CSO REGULATOR STRUCTURE CAM002 PROFILE

CITY OF CAMBRIDGE, MASSACHUSETTS | April 2020

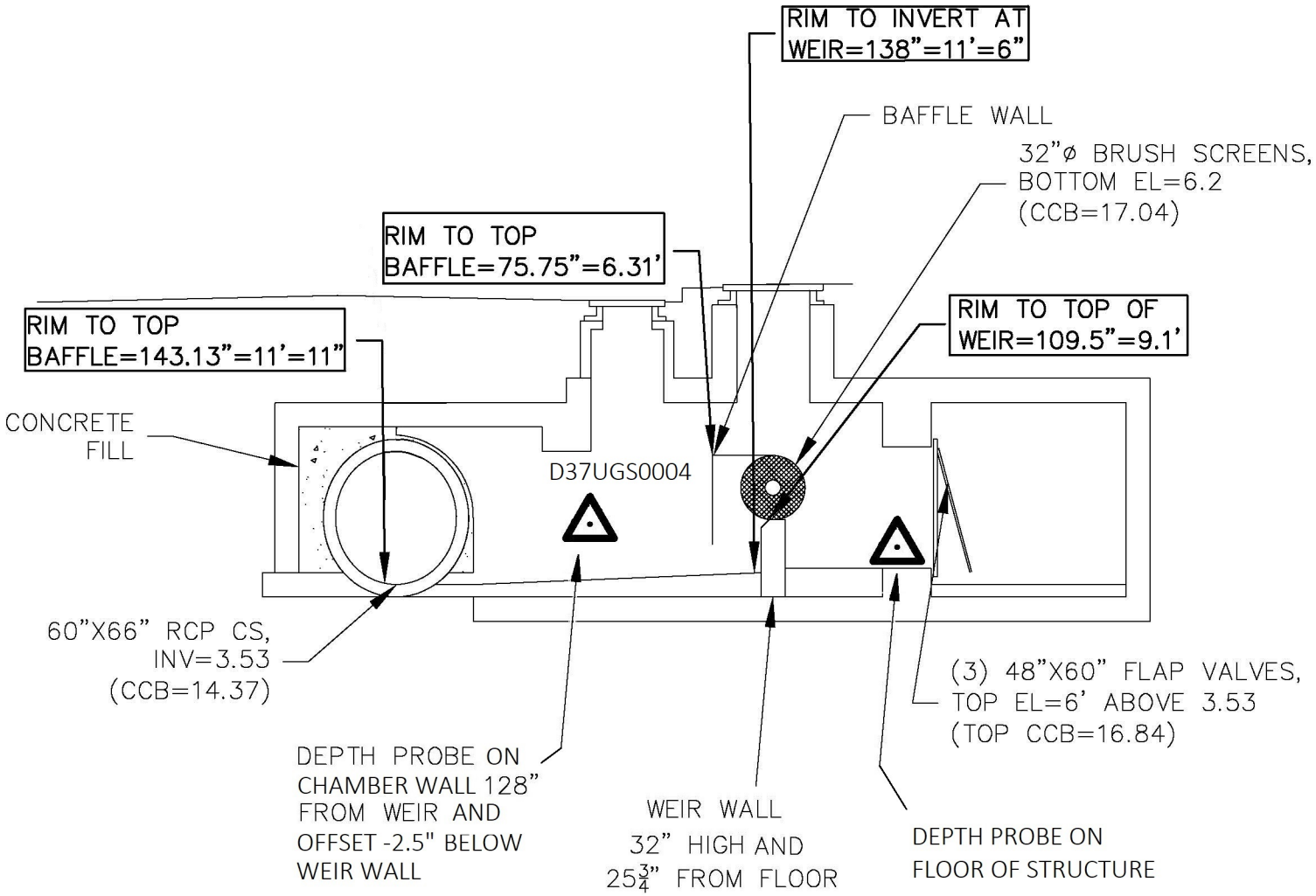


SCALE: N.T.S.

CSO REGULATOR STRUCTURE CAM0401A PLAN

CITY OF CAMBRIDGE, MASSACHUSETTS

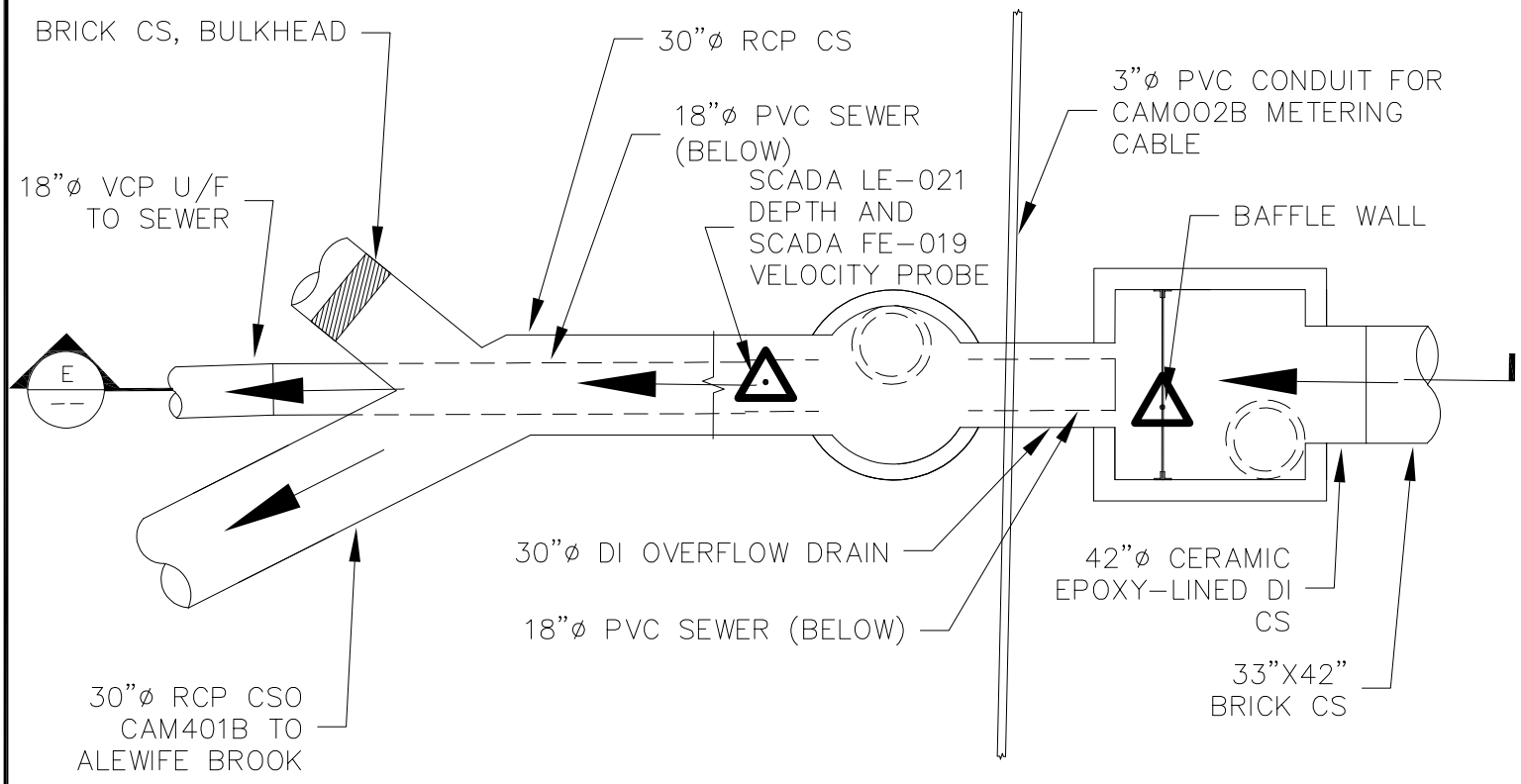
MARCH 2024



CSO REGULATOR STRUCTURE CAM401A PROFILE

CITY OF CAMBRIDGE, MASSACHUSETTS

MARCH 2024



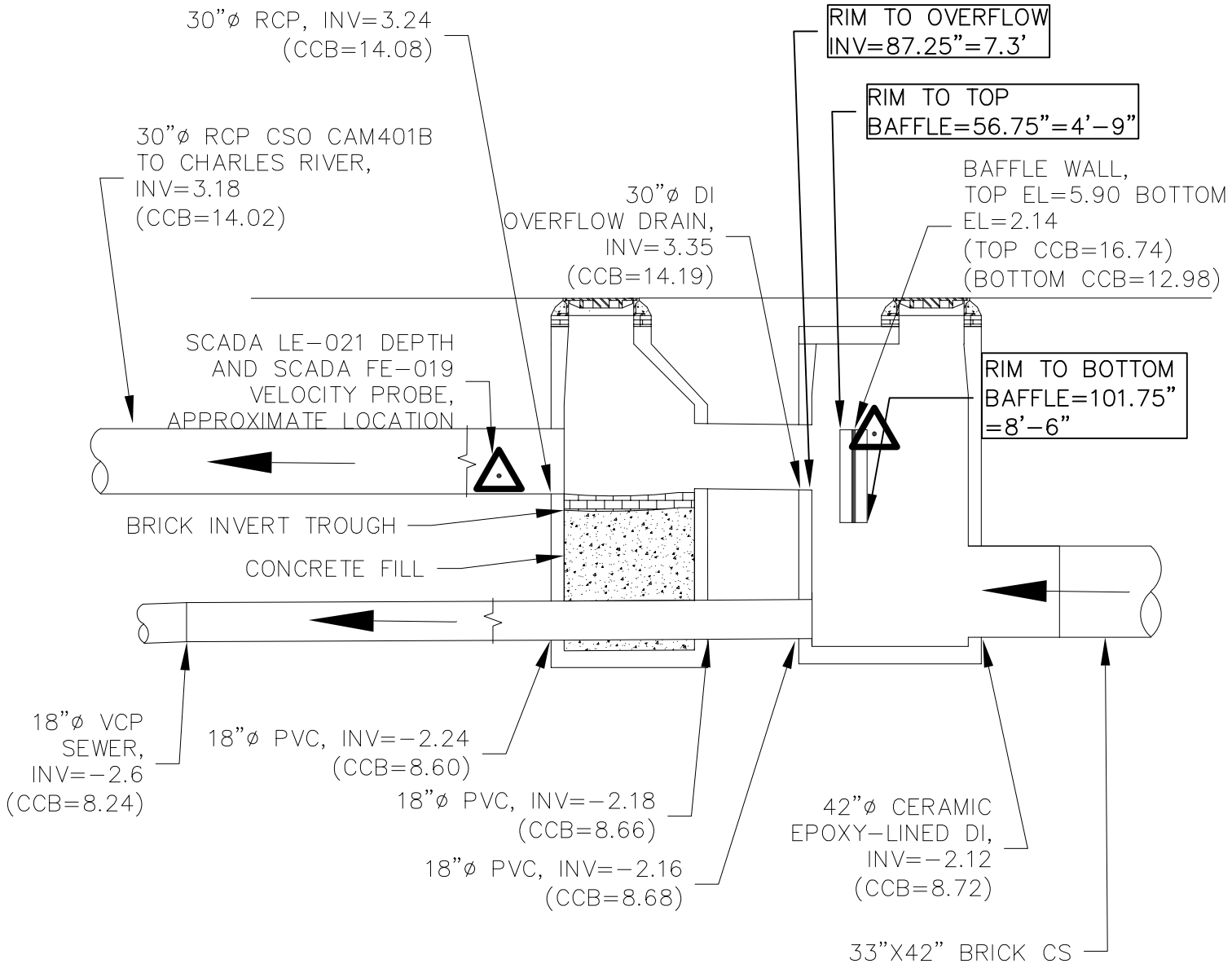
NOT FOR CONSTRUCTION

SCALE: N.T.S.

CSO REGULATOR STRUCTURE CAM401B PLAN

CITY OF CAMBRIDGE, MASSACHUSETTS

April 2020



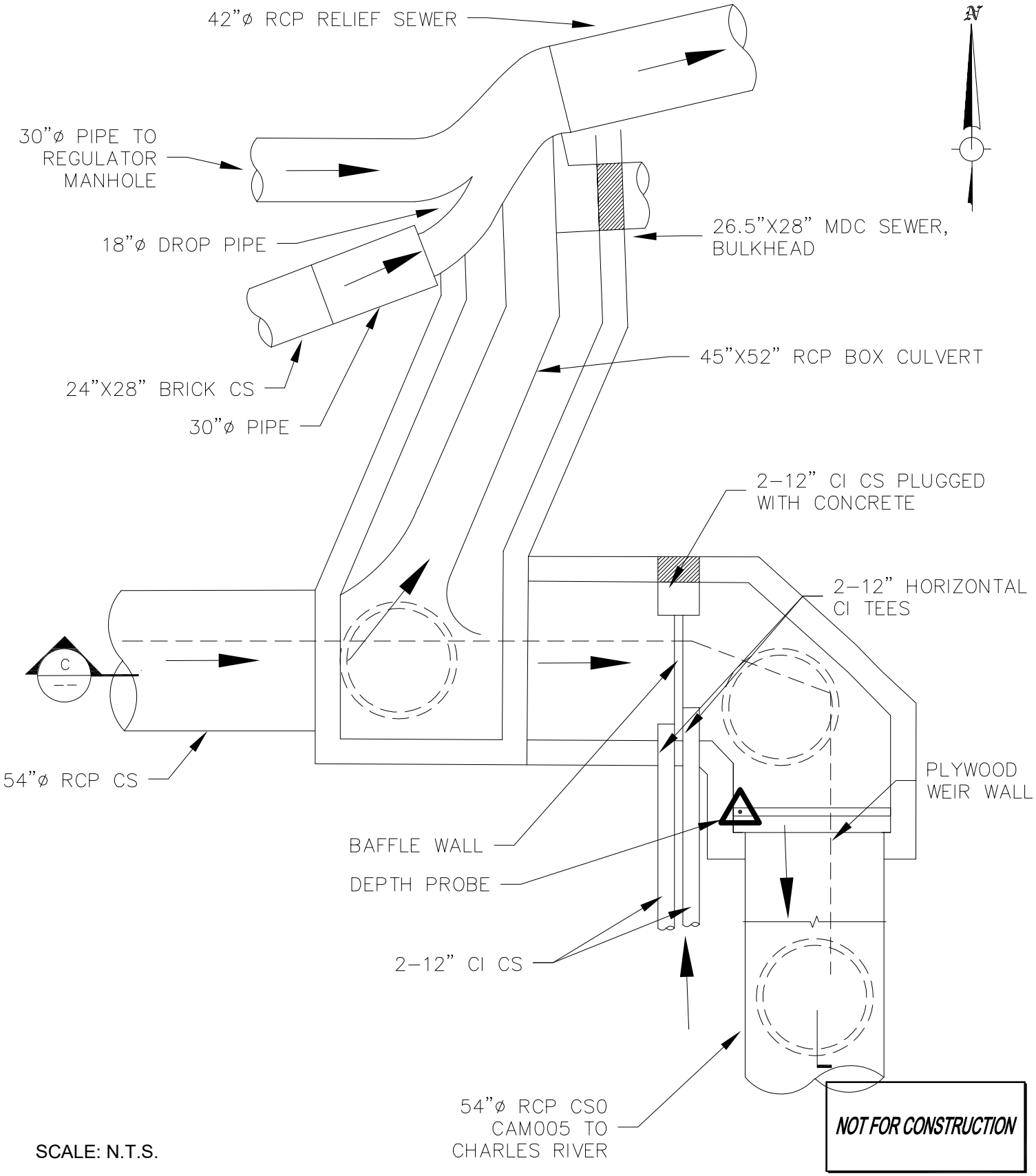
SECTION E

NOT FOR CONSTRUCTION

SCALE: N.T.S.

CSO REGULATOR STRUCTURE CAM401B PROFILE

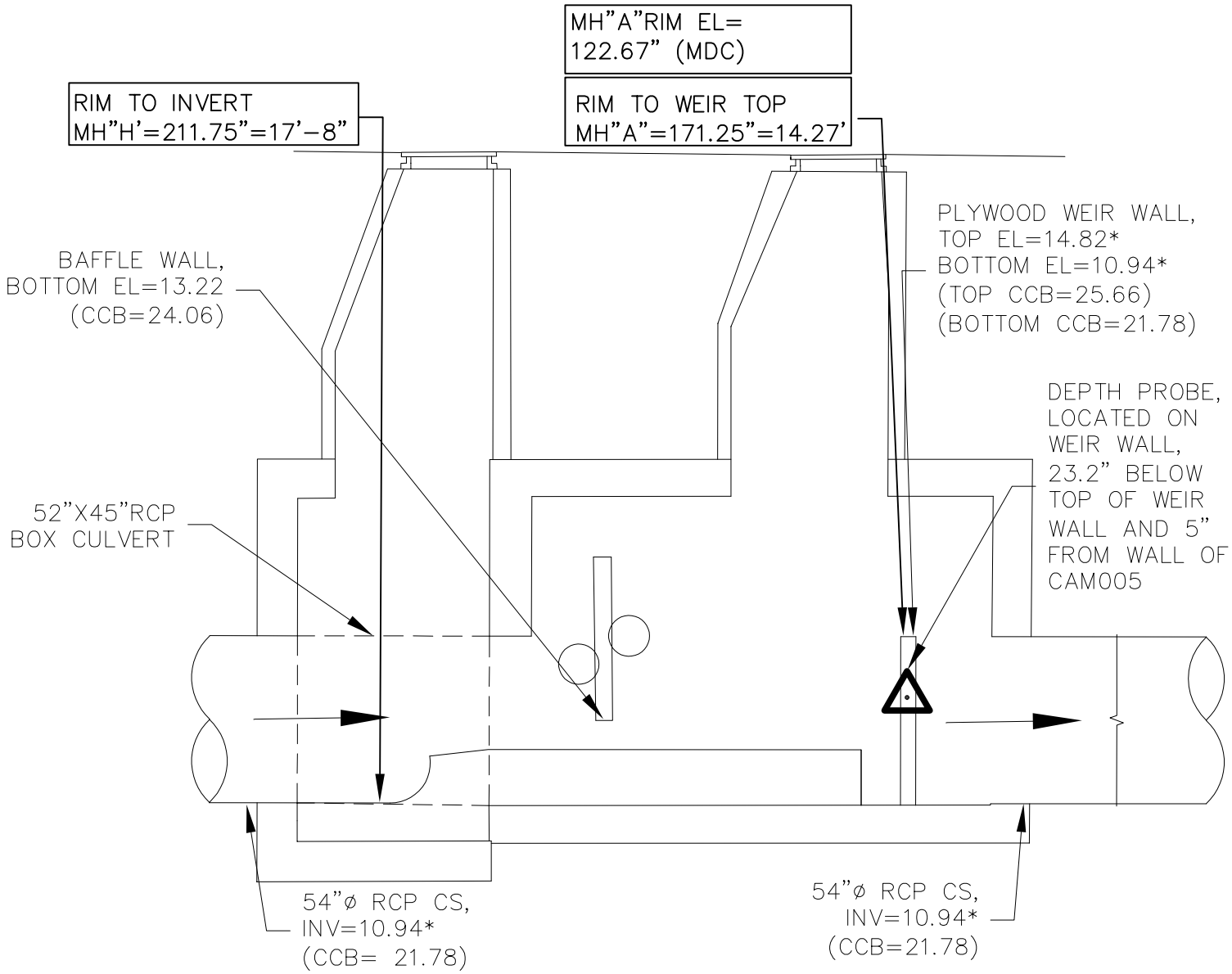
CITY OF CAMBRIDGE, MASSACHUSETTS | April 2020



CSO REGULATOR STRUCTURE CAM005 PLAN

CITY OF CAMBRIDGE, MASSACHUSETTS

April 2020



SECTION C

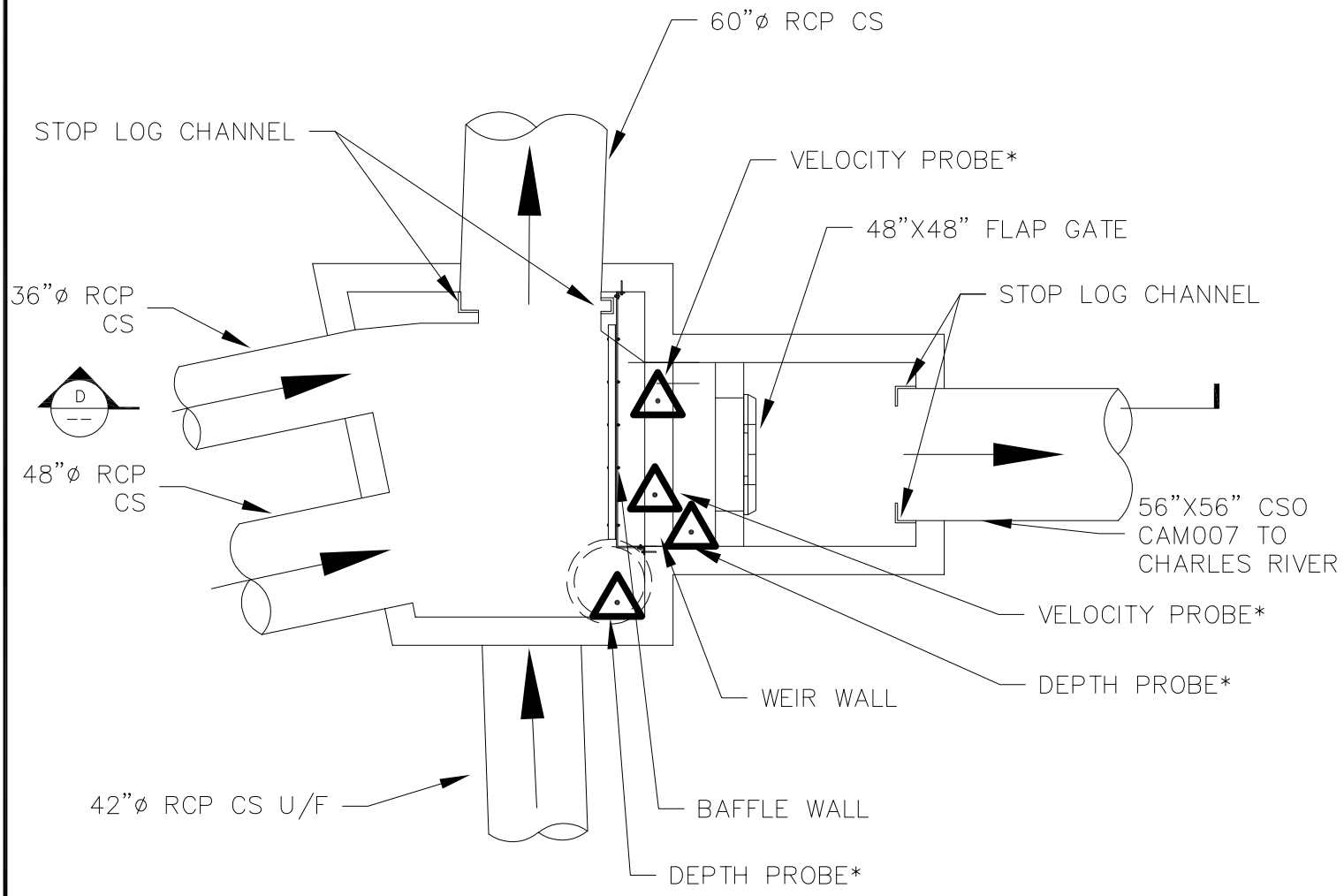
NOT FOR CONSTRUCTION

SCALE: N.T.S.

CSO REGULATOR STRUCTURE CAM005 PROFILE

CITY OF CAMBRIDGE, MASSACHUSETTS

April 2020



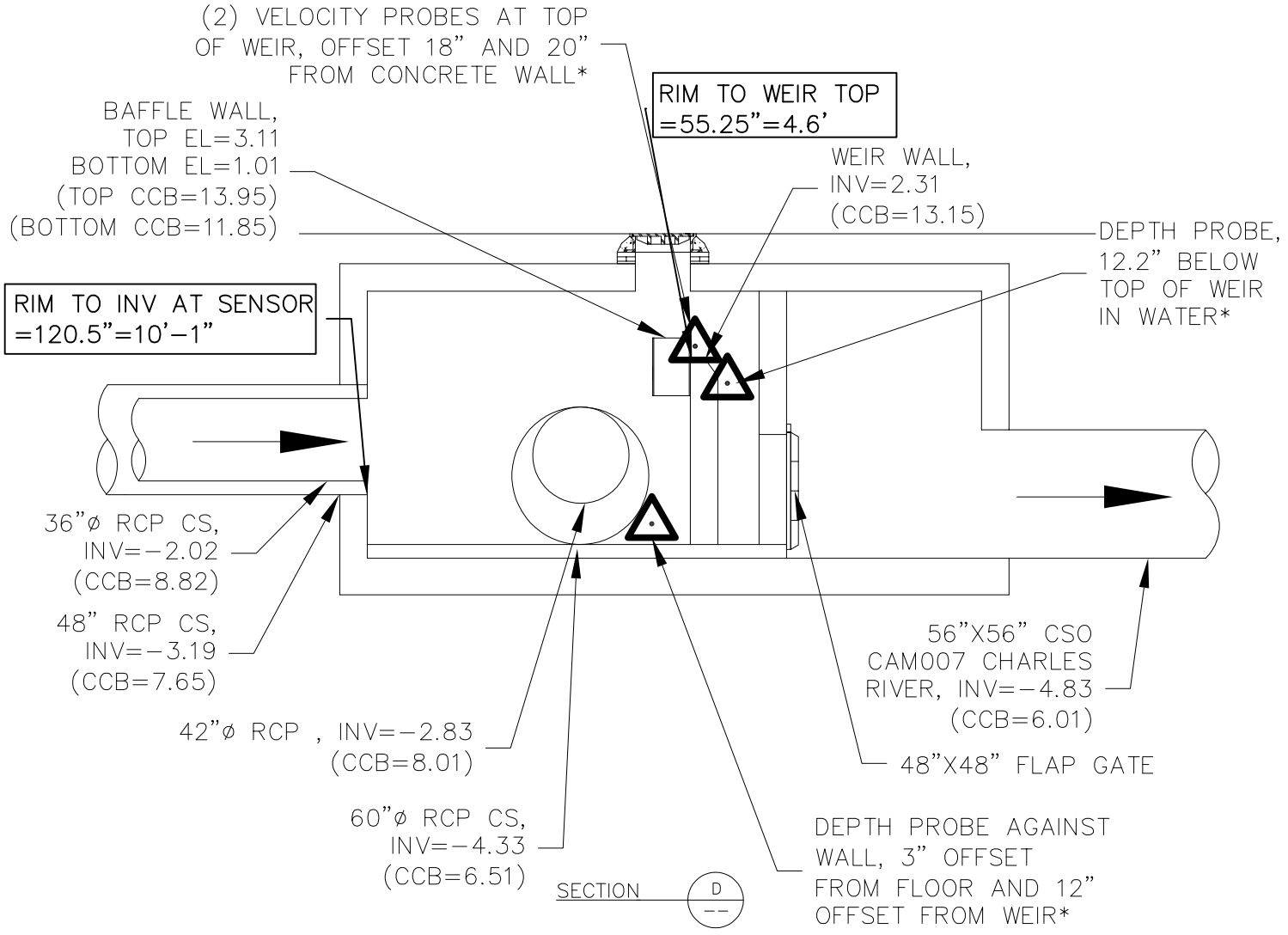
NOT FOR CONSTRUCTION

SCALE: N.T.S.

CSO REGULATOR STRUCTURE CAM007 PLAN

CITY OF CAMBRIDGE, MASSACHUSETTS

April 2020



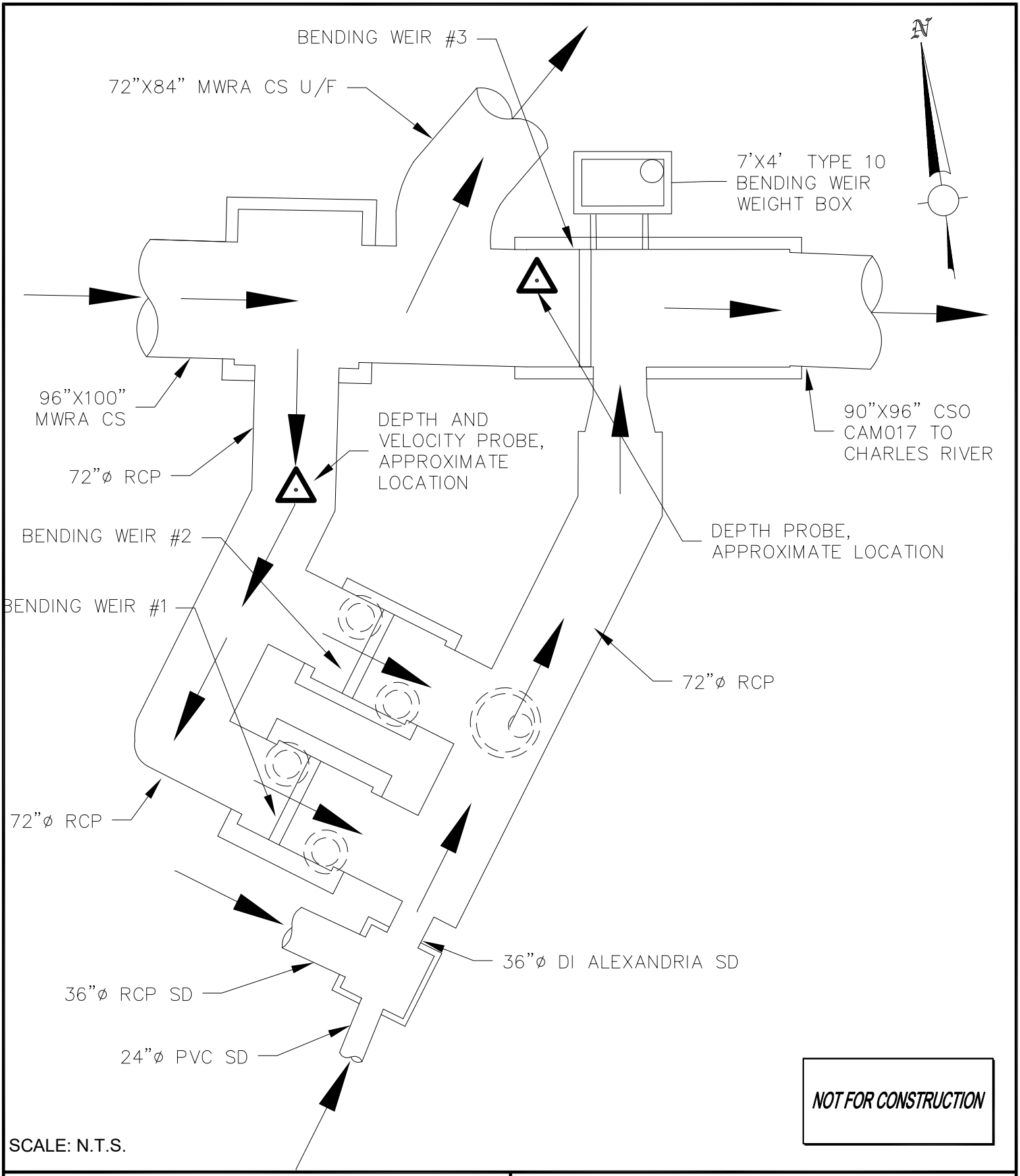
NOT FOR CONSTRUCTION

SCALE: N.T.S.

CSO REGULATOR STRUCTURE CAM007 PROFILE

CITY OF CAMBRIDGE, MASSACHUSETTS

April 2020



CSO REGULATOR STRUCTURE CAM017 PLAN

CITY OF CAMBRIDGE, MASSACHUSETTS

April 2020