Illicit Discharge Detection and Elimination (IDDE) Report

Permit Year 3

PREPARED FOR

Massachusetts Department of Conservation and Recreation
251 Causeway Street, Suite 600
Boston, MA 02114

PREPARED BY

101 Walnut Street
PO Box 9151
Watertown, MA 02471
617.924.1770

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dcr
Massachusetts

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Executive Summary

This Illicit Discharge Detection and Elimination (IDDE) Report for Permit Year 3 (July 1, 2020-June 30, 2021) has been developed by VHB for the Massachusetts Department of Conservation and Recreation (DCR) to track progress towards the requirements of the United States Environmental Protection Agency's (EPA) 2016 National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (MS4) in Massachusetts, hereafter referred to as the "2016 Massachusetts MS4 Permit" or "MS4 Permit."

This report documents progress of the IDDE program, developed to fulfill Minimum Control Measure 3 of the MS4 Permit, for Permit Year 3. The goal of the IDDE program is for DCR to systematically identify and eliminate sources of non-stormwater discharges to its storm sewer system and implement procedures to prevent such discharges.

Activities under the IDDE program include outfall/interconnection screening, catchment investigations, and illicit discharge removal. During this permit year, the IDDE program tasks completed included outfall/interconnection screening in dry and wet weather and catchment investigations focused on Problem Outfalls performed by the Project Team of VHB and subconsultant Stacy DePasquale Engineering, Inc (SDE). The Project Team identified one illicit discharge and it was eliminated. **Table 1** summarizes the screening conducted in Permit Year 3.

Table 1 Permit Year 3 Screening and Sampling Summary

Screening Activity	Details	Previously Screened	Permit Year 3 Screening	Total
	Regulated Outfalls			1,579[1]
Dry Weather	Outfalls Screened	1,052	630	1,682[2]
	Outfalls with Flow	53	88	141
Wet Weather	Outfalls Screened	0	11	11
	Outfalls with Flow	0	7	7
Catchment Investigations	Problem Outfall Investigations Performed	10	14[3]	15
	High/Low Outfall Investigations Performed	0	15	15
Illicit Discharges	Discharges Identified	0	1	1
	Gallons Removed	0	unknown	unknown

Notes:

1 – The number of regulated outfalls will continue to be updated as newer data become available. The total number of regulated outfalls decreased from 1,641 due to further review of outfall ownership/maintenance responsibility, outfall location, outlet discharge type, and drainage infrastructure mapping.

2 – The number of outfalls screened is greater than the total number of regulated outfalls due to the decrease in the total number of regulated outfalls (see above) and the addition of newly identified outfalls.

3 – This number reflects the ongoing catchment investigations in the permit year and includes investigations ongoing from last permit year.

As required by the permit, each outfall was assigned a prioritization category - problem, high (with a select few identified as Highest within the High category where action should be prioritized), low, or excluded - as part of the Year 1 update to the IDDE plan. In order to update priorities prior to performing catchment investigations, these categories were reviewed to reflect results from this year's sampling. Outfalls where dry weather sampling results indicated sewer input are considered likely to contain illicit discharges from sanitary sources and are ranked at the top of the High Priority Outfalls category for investigation. **Table 2** summarizes the updated outfall prioritization.

Table 2 Outfall Prioritization

Prioritization Category	# of Outfalls
Problem	15[1]
High (Highest)	9
High	1,258
Low	100
Excluded	201
Total	1,579

Notes:

1- 16 Problem outfalls were included in the Permit Year 1 Problem Outfall list. One outfall (Outfall 19738) was determined to be a duplicate point of Outfall 19739 and was removed from the Problem Outfall list and database and is no longer include in the count.

The Permit Year 3 catchment investigations included outfalls which were identified by DCR in Permit Year 1 as Problem Outfalls and outfalls where recent sampling results indicated sewer input (Highest Priority in table above). DCR continued to follow-up on the Problem Outfalls, including Stacey Brook in Lynn and Swampscott (2 outfalls), Morrissey Boulevard in Quincy (1 outfall), Wollaston Beach in Quincy (7 outfalls), Neponset Valley Parkway (1 outfall), and Western Avenue (3 outfalls); note that the Tenean Beach Problem Outfall had been completed in Permit Year 2. DCR and VHB/SDE have performed extensive follow up on these outfalls and have either determined that the suspect flow is from municipal interconnections and are working with the municipality to follow up, identified the likely source of flow as groundwater and capped the pipes, or are still chasing the possible illicit discharge. No illicit discharge has been formally identified and/or removed for the Problem Outfalls.

DCR began to initiate catchment investigations for the Highest Priority Outfalls and will continue to focus on Problem and Highest Priority Outfalls in Permit Year 4.

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Outfall/Interconnection Screening

In accordance with the MS4 Permit, DCR has ranked outfalls as Problem, High Priority, Low Priority or Excluded. DCR added a Highest Priority sub-category to High Priority to allow DCR to better track the outfalls with screening results indicating the need for more immediate attention but that were not initially classified as Problem Outfalls at the start of the permit. The ranking determines the priority order and completion schedule for screening outfalls and interconnections pursuant to part 2.3.4.7.b of the MS4 Permit. The outfall/interconnection screening in Permit Year 3 focused on completing dry weather screening and a total of 630 outfalls/interconnections were screened for the presence of dry weather flow.[1] The MS4 Permit requires all outfalls/ interconnections (excluding Problem and Excluded Outfalls) to be screened for the presence of dry weather flow.

2.1 Dry Weather Screening and Sampling

The goal of outfall screening was to identify outfalls with dry weather flow, sample for the required parameters, and review the priority ranking of the outfall based on sampling results. **Table 3** summarizes the status of the dry weather screening. Dry weather screening of known outfalls on DCR regulated properties is considered complete and DCR met the Permit Year 3 deadline. Interconnections and newly mapped outfalls will be screened during dry weather as needed.

[1] Dry weather flow is defined as flow occurring when no more than 0.1 inches of rainfall has occurred in the previous 24-hour period and no significant snow melt is occurring.

Table 3 Dry Weather Screening and Sampling

	Previously Screened	Permit Year 3 Screening	Total	% of Total
Outfalls/Interconnection Screened	1,052	630	1,682	100%[1]
Outfalls with Dry Weather Flow	53	88	141	9%

Notes:

1 – The number of outfalls screened is greater than the total number of regulated outfalls due to the decrease in the total number of regulated outfalls as more detailed review of regulated status of facilities/ outfalls was reviewed and the addition of newly identified outfalls and interconnections during mapping. The number of regulated outfalls will continue to be updated as newer data become available.

In accordance with procedures indicated in DCR's IDDE Plan developed to meet the requirements in the MA MS4 permit (Section 2.3.4.7.b.iii.4.b), SDE took both field measurements and collected samples for lab analysis. SDE performed field measurements for ammonia, chlorine, conductivity, salinity, surfactants (detergents), and temperature. The MS4 permit also states that samples shall be analyzed for *Escherichia coli* (E. coli) for outfalls discharging to a freshwater receiving waterbody or *Enterococcus* for a saline or brackish receiving waterbody and the receiving waterbody's pollutant of concern.[2] The samples were lab analyzed for *E. coli* or *Enterococcus* and the applicable pollutants of concern. SDE used a field probe to measure dissolved oxygen if it was an applicable pollutant of concern. **Table A-1** in **Appendix A** summarizes the field and lab sample results for the outfalls with dry weather flow. The remainder of the outfalls screened had no dry weather flows.

Outfalls with dry weather results which met the likely sewer input indicators[3] were prioritized at the top of the High Priority list for follow-up (Highest Priority). Due to the statewide nature of the outfalls, we have developed a webmap[4] to show the location of the areas investigated (for more information on outfall-specific locations, please contact DCR Stormwater Unit).

2.2 Outfall Prioritization Categories Review

The results of dry weather screening must be reviewed and used to update the outfall prioritization categories each year as part of the annual report. **Table 4** summarizes the outfall prioritization categories and the sections below discuss the results in further detail. For outfalls with no dry weather flow the outfall remained in the same priority category. For outfalls with dry weather flow, VHB and SDE reviewed the results and recommend next steps

[2] Where the discharge is directly into a water quality limited water or a water subject to an approved TMDL as indicated in Appendix F of the MS4 permit; the sample shall be analyzed for the pollutant of concern identified as the cause of the impairment as specified in Appendix G of the MS4 permit.

[3] As defined in the MS4 permit, likely sewage input indicators are any of the following:

- Olfactory or visual evidence of sewage,
- Ammonia ≥ 0.5 mg/L, surfactants ≥ 0.25 mg/L, and bacteria levels greater than the water quality criteria applicable to the receiving water, or
- Ammonia ≥ 0.5 mg/L, surfactants ≥ 0.25 mg/L, and detectable levels of chlorine (0.02 mg/L).

[4] IDDE Report Webmap address: https://vhb.maps.arcgis.com/apps/webappviewer/index.html?id=87a35a2683aa4478a07ade7ffb7c1b2a

based on sampling results, the sewage indicator criteria included in the MS4 permit, and DCR's IDDE plan. This review included determining if a higher priority category was appropriate for a particular outfall.

Table 4 Outfall Prioritization

Prioritization Category	# of Outfalls
Problem	15[1]
Highest	9
High	1,258
Low	100
Excluded	201
Total	1,579

Notes:

1- 16 Problem outfalls were included in the Permit Year 1 Outfall list. One outfall (Outfall 19738) was determined to be a duplicate point of Outfall 19739 and was removed from the Problem Outfall list and database and is no longer included in the count.

2.2.1 Problem Outfalls

Fifteen[5] outfalls were identified as Problem Outfalls in Permit Year 1 as part of historical issues and thus were not dry weather screened pursuant to part 2.3.4.7.b of the permit which indicates that the permittee should move right to catchment investigations for these outfalls. The investigation of these outfalls is discussed in **Section 3, Catchment Investigations**. The catchment investigations and wet weather sampling, if appropriate, need to be completed by Year 7 (July 2025) for Problem Outfalls.[6]

2.2.2 Highest Priority Outfalls

This year the dry weather outfall screening sampling results identified additional outfalls meeting the sewer input indicators; these outfalls were recategorized as the subcategory Highest Priority of the MS4 High Priority category. Currently, there are 9 outfalls categorized as Highest Priority. Like the Problem Outfalls, DCR will prioritize ruling out illicit discharges from the system before moving on to catchment investigations. DCR is required to complete catchment investigation of High Priority catchments and perform wet weather sampling, if appropriate, within 10 years of the permit effective date (July 1, 2027).

[5] The Permit Year 2 IDDE Report noted seven problem outfalls. This has been corrected to 15 due to the fact that the number of Problem Outfalls, as defined in the permit, cannot be changed from the number identified in Permit Year 1. This number includes the seven Wollaston Beach outfalls, two Stacey Brook outfalls, one Morrissey Boulevard outfall, one Tenean Beach outfall, one Neponset Valley Parkway outfall, and three Western Avenue outfalls.

[6] MS4 Permit Section 2.3.4.8.a

2.2.3 High Priority Outfalls

In Permit Year 3, VHB/SDE identified 51 outfalls/interconnections that have slightly elevated concentrations of pollutants but do not exceed the MS4 permit sewage indicator criteria. Each of these outfalls had been originally classified as High Priority and VHB/SDE recommends that these outfalls remain categorized as such. The remainder of the outfalls which were originally classified as High Priority outfalls that were screened this year either had no flow or results did not indicate elevated concentrations of pollutants, but due to the listed impairments of the receiving waters these outfalls will remain classified as High Priority. DCR is required to complete catchment investigation of High Priority catchments and perform wet weather sampling, if appropriate, within 10 years of the permit effective date (July 1, 2027).

2.2.4 Low Priority Outfalls

The remainder of outfalls/interconnections screened this year were initially categorized as Low Priority and the screening did not indicate signs of illicit connections. Therefore, these outfalls remain categorized as Low Priority[7]. Catchment investigations for low priority outfalls must be completed within 10 years of the permit effective date (July 1, 2027).

2.2.5 Excluded Outfalls

Outfalls/interconnections with no potential for illicit discharges may be excluded from the IDDE program. The permit identifies that drainage from the following categories below can be excluded:

- Roadway drainage in undeveloped areas with no dwellings and no sanitary sewers,
- Drainage for athletic fields, parks, or undeveloped green space and associated parking without services, or
- Cross-country drainage alignments (that neither cross nor are in proximity to sanitary sewer alignments) through undeveloped land.

DCR has identified outfalls to be excluded from the IDDE program as they are located away from presumed sanitary sewer systems, in undeveloped areas based on land use, and not in proximity to DCR building with restrooms. DCR will continue to refine excluded outfall status through catchment investigations and GIS analysis.

[7] MS4 Permit Section 2.3.4.7.c.i

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Catchment Investigations

DCR must perform catchment investigations on all non-excluded outfalls as part of the IDDE program. In order to complete a catchment investigation, DCR must perform wet weather screening if the catchment includes any System Vulnerability Factors (SVFs) based on previous information or the catchment investigation. In accordance with the MS4 Permit, Problem Outfall investigations must begin within two years and be completed within seven years of the permit effective date. The permit requires that all catchment investigations be completed by Permit Year 10. DCR has continued to refine its catchment investigation procedures as documented in the IDDE Plan.

Catchment investigations in Permit Year 3 focused on Problem Outfalls and Highest Priority Outfalls, which include outfalls/interconnections with known or suspected contributions to illicit discharges. DCR was able to complete investigation of two Problem Outfalls in Permit Year 3 (for a total of three completed during permit so far) and the remaining investigations (12 catchments) are ongoing. Wet weather screening was started in Permit Year 3 and 11 outfalls were screened during wet weather conditions. Catchment investigations, if not yet completed, will proceed based on outfall priority. **Table 5** summarizes the status of the catchment investigations and further detail is provided in the sections below.

Table 5 Catchment Investigations Completed

	Investigation Status	Through Permit Year 3
Problem	In Progress	12
	Complete	3
Highest Priority	In Progress	5
	Complete	0
High Priority	In Progress	8
	Complete	2
Low Priority	In Progress	0
	Complete	1

3.1 Problem Outfalls Catchment Investigations

Before the permit took effect, DCR had identified problem outfalls in six areas based on historic information or ongoing issues identified. Catchments associated with these areas were prioritized for investigation as noted below.

As indicated in the permit, Problem Outfalls do not need to be initially screened for dry weather flow but should progress right to catchment investigations. For the catchment investigations the field crews investigated the systems by opening key junction manholes upstream of the outfalls. Data pertaining to interconnections and unmapped pipes were recorded by the field team. Water samples were taken if flow was observed in a particular pipe. If a pipe was dry, a sandbag was placed for a minimum of 48 hours to capture intermittent flows. The field crew sampled for parameters including temperature, conductivity, pH, salinity, ammonia, chlorine, and surfactants as outlined in DCR's IDDE Plan. All samples collected during the field investigation were also sent to the lab to be tested for *Enterococcus*.

During the investigations along Wollaston Beach, the field crews determined that DCR did not own the final outfall for five catchments and instead, the DCR drainage system interconnected upstream of the outfall. The DCR regulated discharge point was updated in the mapping and the database. Changes to these regulated outfalls and the impacts on the Problem Outfall investigations are reflected in the table and summary discussion below.

Table 6 Problem Outfalls Catchment Investigations Summary

Receiving Water (ID); Area/ Town	Investigation Complete		
Outfall #	**Dry Weather**	**Wet Weather**	**Status Notes**
Nahant Bay (MA93-24); Stacey Brook, Lynn and Swampscott			
Stacey Brook 1 (38017)	No	No	No sign of illicit connections into system in DCR drainage system. DCR has updated the mapping in this catchment and is working with Swampscott to determine who should perform dye-testing of the residence adjacent to the pipe.
Stacey Brook 2 (37114.1)	Yes	No	Dry weather sampling results did not indicate sewer input. Wet weather screening needed to complete catchment investigation.
Neponset River (MA73-04); Morrissey Boulevard, Quincy			
Morrissey Blvd 1 (21850)	No	No	BWSC to investigate adjacent sewer lines before completing catchment investigation.
Neponset River (MA73-04); Tenean Beach, Quincy			
Tenean Beach 1 (18257)	Yes	No SVFs	DCR capped pipes entering system. No other signs of illicit connections into DCR drainage system. Follow up sampling did not indicate sewer input. **Problem outfall catchment investigation complete.**
Quincy Bay (MA70-05); Wollaston Beach, Quincy			
Wollaston Beach 1 (34509.3)	Yes	No	Dry weather sampling results did not indicate sewer input. Wet weather screening needed to complete catchment investigation.
Wollaston Beach 2 (34507.3)	Yes	No	Dry weather sampling results did not indicate sewer input. Wet weather screening needed to complete catchment investigation.
Wollaston Beach 3 (4 interconnections to MH34502.3, to Outfall 17661)	Yes	No	DCR regulated discharge points determined to be upstream of Quincy outfall and four interconnection points at the upstream manhole. Regulated interconnections were mapped in database. Dry weather sampling results did not indicate sewer input. Wet weather screening needed to complete catchment investigation.
Wollaston Beach 4 (3 interconnections to MH34497.3, 1 interconnection to MH34454.3, 1 interconnection to MH29946, drains to Outfall 34500.3)	Yes	No	DCR regulated discharge point determined to be upstream of Quincy outfall and five interconnection points. Regulated interconnections were mapped in database. Dry weather sampling results did not indicate sewer input. Wet weather screening needed to complete catchment investigation.
Wollaston Beach 5 (MH37223.1, MH666667017 interconnects to Outfall 38020)	Yes	No	DCR regulated discharge point determined to be upstream of Quincy outfall and two interconnection points. Regulated interconnections mapped in database. Dry weather sampling results did not indicate sewer input. Wet weather screening needed to complete catchment investigation.

Receiving Water (ID); Area/ Town	Investigation Complete		
Outfall #	**Dry Weather**	**Wet Weather**	**Status Notes**
Wollaston Beach 6 (MH37193 interconnects to Outfall 37221.1)	Yes	No	DCR regulated discharge point determined to be upstream of Quincy outfall at interconnection point. Regulated interconnections mapped in database. Dry weather sampling results did not indicate sewer input. Wet weather screening needed to complete catchment investigation.
Wollaston Beach 7 (MH 37195.00, MH6002.40 interconnects to Outfall 90000.1)	Yes	No	DCR regulated discharge point determined to be upstream of Quincy outfall and two interconnection points. Regulated interconnections mapped in database. One manhole in the catchment had dry weather sampling results indicating sewer input. CCTV of the system did not identify an illicit discharge. Wet weather screening to be completed before catchment investigation is completed.
Neponset River (MA73-02); Neponset Valley Parkway, Boston			
Neponset (17289)	No	No	Catchment investigation underway.
Charles River (MA72-36); Western Avenue, Cambridge			
Western Ave 1 (F19105)	Yes	No SVFs	**Problem outfall catchment investigation complete.**
Western Ave 2 (19377)	Yes	No SVFs	**Problem outfall catchment investigation complete.**
Western Ave 3 (19378)	n/a	n/a	Outfall was initially included as Problem Outfall, but mapping review determined the database point was a duplicate of Outfall 19379 and was removed from the database. **No further action required.**
Western Ave 4 (19379)	No	No SVFs	Catchment investigation underway. DCR recently reviewed and updated mapping in this area.

The following sections describe each of the areas with Problem Outfalls. For simplicity we have included historical screening and sampling information regarding the investigation but highlighted the work this year.

3.1.1 Stacey Brook

The storm drainage area, comprised of two outfalls under review, is located around Stacey Brook in Lynn and Swampscott, MA. Stacey Brook flows underground through a 6-foot culvert and discharges through an outfall on Red Rock Beach and ultimately into Nahant Bay. There is a second outfall adjacent to the first. DCR's drainage network to these outfalls is mostly limited to Lynn Shore Drive, Red Rock Beach, and the landscaped areas between the roadway and beach; it also includes a portion of Eastern Ave and Humphrey Street. These outfalls were flagged as Problem Outfalls based on previous sampling results indicating high bacteria (both *E. Coli* and *Enterococcus*) as well as the presence of pharmaceutical indicators that suggested the presence of human waste. It was not initially clear which outfall had been sampled so both outfalls were classified as Problem Outfalls.

The catchment investigation occurred over several days in May and June 2019. Based on sampling results, the area of interest was narrowed to the infrastructure along Humphrey Street in Swampscott (38017). The contributing DCR drainage infrastructure was CCTVed and did not show any signs of illicit connection or dry weather flows but the dry weather flows continued to show elevated parameters. Based on the investigation it was determined that the flow could be coming from one of the Swampscott residences adjacent to the area of interest. DCR sent a letter to the Town of Swampscott in November 2019 with a summary of the sampling results and requested that Swampscott dye-test the several residences. COVID remote working impacted DCR's meeting with Swampscott and DCR is still working with Swampscott to investigate and remove, if applicable, the source so DCR can perform follow up testing.

The second outfall (37114.1), located in Lynn, will be screened for potential SVFs and if present, wet weather screening will be conducted before considering this catchment investigation complete. The sampling results from the catchment investigation did not indicate sewer input and no illicit connections were identified during the catchment investigation.

3.1.2 Morrissey Boulevard

The storm drainage system is located along Morrissey Boulevard in Quincy, MA and includes one outfall. The outfall drains to the mouth of the Neponset River and ultimately Dorchester Bay. This outfall (21850) was flagged as a Problem Outfall based on previous sampling results from both the Boston Water and Sewer Commission (BWSC) and DCR which showed elevated levels of *Enterococcus.* BWSC shares sampling data with DCR on an annual basis in locations where its system interconnects with DCR's system.

The catchment investigation occurred over several days in July 2019. Based on sampling results, the areas of interest were narrowed to the intersection of Morrissey Boulevard and Tenean Street and near the intersection of Morrissey Boulevard and McKone Street. DCR performed follow-up investigations of the infrastructure in the areas of interest and bricked off the connections from several pipes that were identified during CCTV investigation but not included on the map and were confirmed to be abandoned by CCTV investigation.

In order to further confirm the source of the dry weather flow and since there are BWSC sewer lines intersecting the DCR stormwater infrastructure, DCR reached out to BWSC in November 2019 with a summary of sampling results and a request to share information and investigate some of the adjacent sewer lines. DCR sent a follow-up request to BWSC in April 2021. DCR is awaiting a response from this request. Further investigation and possible sampling to further narrow down the dry weather flow will be needed before DCR can move on to wet weather sampling and complete this catchment investigation. DCR will continue to coordinate with BWSC to complete this investigation in Permit Year 4.

3.1.3 Tenean Beach

The storm drainage system is located immediately south of Tenean Beach in Quincy, MA. The system extends from the parking area and through the park to one outfall draining to

the mouth of the Neponset River and ultimately Dorchester Bay. This outfall (18257) was flagged as a Problem Outfall based on previous sampling results showing elevated levels of *Enterococcus*.

The catchment investigation occurred over several days in July 2019, September 2019, and February 2020. The July 2019 investigation narrowed the areas of interest to two previously unmapped pipes and two catch basins. DCR determined the two unmapped pipes were no longer in use and these were capped. The catch basins and surrounding infrastructure were reviewed by DCR staff and it was confirmed that there were no illicit connections. DCR then cleaned the entire drainage system. To confirm there was no longer potential illicit discharges, samples were taken from two catch basins in September 2019 following the cleaning and sampling results showed a decrease in *Enterococcus*.

To close out the problem outfall catchment investigation per the permit, the outfall was sampled in February 2020, which was the soonest available dry weather screening window, to conduct sampling after DCR conducted all follow-up actions. Since sampling results at the outfall did not exceed MS4 sewer input indicators, the catchment had been fully reviewed, and no SVFs have been identified in this area to require wet weather screening, the outfall catchment investigation for this drainage system is now considered complete.

3.1.4 Wollaston Beach

DCR investigated seven catchments along Wollaston Beach in Quincy, MA. The infrastructure for each of the catchments was generally along Quincy Shore Drive and the beach. All of the outfalls drain directly to Quincy Bay. These outfalls were flagged as Problem Outfalls based on previous sampling results showing elevated levels of *Enterococcus*.

The catchment investigations occurred in November 2019 and February 2020. The November investigation was cut short due to weather and the next favorable weather window was not until February 2020. The November and February investigations narrowed the area of interest to two outfalls (17661 and 90000.1) with the remaining five not showing signs of potential illicit discharges based on the sewer input indicators outlined in the MS4 Permit. DCR performed follow-up structure investigations including CCTV and cleaning of the two systems. No illicit connections were identified during these follow-up investigations.

Five of the outfalls originally identified as Problem Outfalls were determined to be City of Quincy outfalls, including the two outfalls with potential illicit discharges, with DCR drainage interconnecting upstream in the system. DCR's regulated discharge point was moved in DCR's GIS map to be the interconnection point from DCR's system into Quincy's system. For many of the outfalls there are more than one interconnection point and each one was mapped, and a new catchment area developed. DCR has kept the categorization of these catchments as Problem since they drain to the outfalls historically showing elevated levels of *Enterococcus*. DCR's interconnection points were sampled as part of the catchment investigation. DCR has shared sampling results from this investigation with the City of Quincy.

The dry weather screening of the seven DCR catchments is considered complete. The catchment investigation will not be considered complete until wet weather screening has occurred since this area has more than one SVF.

3.1.5 Neponset Valley Parkway

Outfall 17289 was included in the Problem Outfall list in Permit Year 1, but DCR is not aware of historical sampling data indicating potential illicit discharges at this location. The catchment investigation at this location has not yet been completed. This catchment will be prioritized in Permit Year 4.

3.1.6 Western Avenue

Four outfalls in this location were included in the Permit Year 1 Problem Outfall list but DCR is not aware of historical sampling data indicating potential illicit discharges. During review of the outfall locations in the database we determined that Outfall 19738 was a duplicate of Outfall 19739 and therefore there were only three outfalls to follow up on in this area. Outfall 19738 was removed from DCR's database.

DCR recently reviewed one of the three outfalls to update mapping. Now that mapping is complete, DCR will complete the catchment investigation.

For the remaining two outfalls, the catchment investigations were completed in June 2021; there was no flow present. There are no known SVFs in this location and the catchment investigation for these locations is considered complete.

3.2 Highest Priority Catchment Investigations

In addition to investigating Problem Outfalls, DCR focused on Highest Priority Outfalls in Permit Year 3. Highest Priority Outfalls have recent sampling results indicating sewer input but had not been historically flagged as a Problem Outfall. As of this report, DCR has begun dry weather investigations for five of the nine Highest Priority catchments.

3.3 High Priority Catchment Investigations

There were eight High Priority catchment investigations started in Permit Year 3 and two completed. The dry weather investigation has been completed and the catchment investigation will not be considered complete until wet weather screening has been completed, if applicable.

Catchment investigations of High Priority outfalls proceeded while DCR was finishing its dry weather outfall screening, which yielded some additional Highest Priority catchments. Additionally, the Highest Priority category was established this year for tracking purposes. Going forward, DCR will focus on Highest Priority catchments first and then proceed to High Priority.

3.4 Low Priority Catchment Investigations

There was one Low Priority catchment investigation started in Permit Year 3 for an outfall that discharges into Sales Creek in Revere. The Low Priority catchment was investigated for efficiency purposes; it was located adjacent to High Priority catchments and the field crew decided to investigate this catchment since there was time remaining to do it. As part of the catchment investigation, DCR reviewed mapping and ownership ultimately determining that the infrastructure belonged to the City of Medford. The catchment investigation is now considered complete.

3.5 Confirmation of Illicit Discharges Removed Catchment Investigations

DCR identified one source of illicit discharge into a drainage system that discharges into the Charles River in Boston and this illicit discharge was eliminated promptly. Details of the illicit discharge are included in the next section.

DCR is still working to pinpoint the source of the dry weather discharges with potential illicit flows as described above. In future years, this section will report on the follow-up sampling.

4

Illicit Discharge Removal

As detailed in **Section 3, Catchment Investigations,** DCR is in the process of conducting Problem Outfall investigations. DCR was able to narrow the area of interest for each of the Problem Outfall catchments but have not confirmed that there is an illicit discharge.

DCR identified one source of illicit discharge into a drainage system draining into the Charles River in Boston and this illicit discharge was eliminated promptly. Below are the details for the illicit discharge:

- Location: Community Rowing, Boston (Charles River)
- Description: two sinks (hand washing basins) discharging into a catch basin
- Method and date of discovery: catchment investigation on 5/19/2021
- Date of elimination: 6/7/2021
- Mitigation or enforcement action or planned corrected measures and schedule for completing the illicit discharge removal: N/A
- Estimated gallons of flow removed: Unknown. It is unclear how long the hand washing basins were discharging to the catch basin and approximately how often it may have been used during this period.

Table 7 Illicit Discharge Removal

	Permit Year 3	Overall Program
# of Illicits Located	1	1
# of Illicits Removed	1	1
Estimated Illicit Flow Removed (gal)	unknown	unknown

4.1 Regulatory Authority

DCR's draft Illicit Discharge Policy has been in use since 2011. The policy prohibits illicit discharges to the DCR stormwater system and establishes procedures for notifying the dischargers of the illicit connection. If an illicit connection is identified, DCR will notify the discharger of the illicit connection and indicate a specified date for removing the illicit connection. If this deadline is not met, DCR will work with the Office of General Counsel to provide enforcement of the policy. DCR will also notify EPA and DEP of the violation. The draft Illicit Discharge Policy is included in DCR's IDDE Plan.

DCR has not formally adopted the draft Illicit Discharge Policy and instead is in the process of developing regulations to prohibit, detect, and eliminate illegal discharges and illicit connections to the DCR stormwater drainage system. DCR had planned to have the regulations in place by the end of Permit Year 3 but due to COVID-19 and public hearing requirements, the adoption of the regulations has been delayed. DCR anticipates that the regulations will be in place by the end of Permit Year 4.

Appendices

Appendix A – Dry Weather Screening Results

Table A-1: Permit Year 3 Dry Weather Investigation Results for Systems with Flow

Outfall ID	Location	Receiving Waterbody Name and ID	PY 2 Outfall Priority	Sample Date	Temp (°F)	Conductivity (µS/cm)	pH	Salinity (ppm)	Ammonia (mg/L)	Chlorine (mg/L)	Surfactants (mg/L)	E. coli (MPN/ 100 mL)	Enterococcus (MPN/ 100 mL)	Total Phosphorus (mg/L)	Arsenic, Total (mg/L)	Fecal Coliform (CFU/100 mL)	Dissolved Oxygen (mg/L)	Oil and Grease (mg/L)	Total Suspended Solids (mg/L)	Visual/ Olfactory Observations	Notes
Sewage indicator [a]									***≥0.5 mg/L***	***≥ 0.02 mg/L***	***≥0.25 mg/L***	***235 colonies/ 100 mL*** [b]	***104 colonies/ 100 mL*** [b]							**Olfactory or visual evidence**	
Problem Outfall: Problem Outfall in Initial Priority Ranking																					
37114.1	SE of intersection of Lynn Shore Dr & Eastern Ave	Nahant Bay MA93-24	Problem	7/7/2020	64.9	6340	8.28	4.3	0.1	0	**0.75**	-	**820**	-	-	-	-	-	-	Clear flow, hydrogen sulfide odor	Surfactants level is higher than expected stormwater values but results do not exceed sewage indicator criteria.
38017	SE of intersection of Lynn Shore Dr & Eastern Ave	Nahant Bay MA93-24	Problem	7/7/2020	68.4	9640	8.35	6.7	0.1	**0.04**	**1.5**	-	**670**	-	-	-	-	-	-	Clear flow, hydrogen sulfide odor	Chlorine, surfactants and enterococcus are higher than expected stormwater values but results do not exceed sewage indicator criteria.
Highest Priority: Follow-up Catchment Investigation Prioritized																					
666667251*	N of intersection of Soldiers Field Rd & N Beacon St	Charles River MA72-36	-	4/26/2021	58.3	4690	7.19	2.5	**0.8**	**0.12**	**0.5**	0	7.5	-	-	-	-	-	-	Clear flow, no odor	Exceeded sewage indicator criteria suggests potential illicit discharge. Added to highest priority.

Outfall ID	Location	Receiving Waterbody Name and ID	PY 2 Outfall Priority	Sample Date	Temp (°F)	Conductivity (µS/cm)	pH	Salinity (ppm)	Ammonia (mg/L)	Chlorine (mg/L)	Surfactants (mg/L)	E. coli (MPN/ 100 mL)	Enterococcus (MPN/ 100 mL)	Total Phosphorus (mg/L)	Arsenic, Total (mg/L)	Fecal Coliform (CFU/100 mL)	Dissolved Oxygen (mg/L)	Oil and Grease (mg/L)	Total Suspended Solids (mg/L)	Visual/ Olfactory Observations	Notes
Sewage indicator [a]									***≥0.5 mg/L***	***≥ 0.02 mg/L***	***≥0.25 mg/L***	***235 colonies/ 100 mL [b]***	***104 colonies/ 100 mL[b]***							**Olfactory or visual evidence**	
17902	SE of intersection of Morrissey Blvd & Dominic J Bianculli Blvd	Dorchester Bay MA70-03	High	7/15/2020	69.08	12090	7.51	7	**5**	**0.1**	**2**	-	**420**	-	-	>80,000	-	-	22	Tan to light brown flow, hydrogen sulfide odor, sheen/scum present	Standing water in outfall, sampling completed at upstream manhole. Exceeded sewage indicator criteria suggests potential illicit discharge. Moved to highest priority.
MH-20359 (inter-connection)	W side of Fenway, W of Public Alley 807	Hammond Pond MA72044	-	7/15/2020	67.46	1508	7.18	0.8	**5**	**0.06**	**1**	**58,000**	-	0.661	-	-	6.08	1.4	-	Clear flow, no odor, sheen/scum present	Exceeded sewage indicator criteria suggests potential illicit discharge. Added to highest priority.
666667157*	W of Nahant Rd	Lynn Harbor MA93-52	-	4/14/2021	51.8	>999	7.65	>999	**0.6**	**0.59**	**2**	-	**414**	-	-	-	-	-	-	Clear flow, no odor	Could not locate outfall, sample taken at upstream manhole. Exceeded sewage indicator criteria suggests potential illicit discharge. Added to highest priority.
666667157*	W of Nahant Rd	Lynn Harbor MA93-52	-	4/14/2021	53.78	>999	7.63	>999	**0.6**	**0.19**	**2**	-	<10	-	-	-	-	-	-	Clear flow, no odor	Could not locate outfall, sample taken at upstream manhole. Exceeded sewage indicator criteria suggests potential illicit discharge. Added to highest priority.

Outfall ID	Location	Receiving Waterbody Name and ID	PY 2 Outfall Priority	Sample Date	Temp (°F)	Conductivity (µS/cm)	pH	Salinity (ppm)	Ammonia (mg/L)	Chlorine (mg/L)	Surfactants (mg/L)	E. coli (MPN/ 100 mL)	Enterococcus (MPN/ 100 mL)	Total Phosphorus (mg/L)	Arsenic, Total (mg/L)	Fecal Coliform (CFU/100 mL)	Dissolved Oxygen (mg/L)	Oil and Grease (mg/L)	Total Suspended Solids (mg/L)	Visual/ Olfactory Observations	Notes
Sewage indicator [a]									***≥0.5 mg/L***	***≥ 0.02 mg/L***	***≥0.25 mg/L***	***235 colonies/ 100 mL*** [b]	***104 colonies/ 100 mL*** [b]							**Olfactory or visual evidence**	
666666991	W of Nahant Rd	Neponset River MA73-02	Low	7/13/2020	69.08	1989	7.93	1	**4**	**0.24**	**0.5**	**910**	-	-	-	1,000	7.13	-	7	Clear flow, no odor	Outfall was inaccessible, upstream manhole was sample. Exceeded sewage indicator criteria suggests potential illicit discharge. Moved to highest priority.
36955	SW of intersection of North Shore Rd and Revere Beach Pkwy	Sales Creek MA71-12	Low	7/7/2020	72.14	1151	8.08	0.7	**4**	**0.19**	**0.5**	50	-	-	-	-	-	-	-	Flow has yellowish tints, orange foam deposits in channel, no odor, sheen/scum present	Standing water at outfall, sampling completed at upstream manhole. Exceeded sewage indicator criteria suggests potential illicit discharge. Moved to highest priority.
High Priority: Move on to Catchment Investigation																					
666667178*	E of S Marble St, N of Meadow Rd	Aberjona River MA71-01	-	4/5/2021	45.7	791	6.78	0.4	0	0	0	10	-	-	-	-	6.6	-	-	Clear flow, no odor	
14463	W of McKinley Dr	Beaver Brook MA62-09	High	7/15/2020	67.8	532	7.49	0.2	0	0	0	20	-	-	-	10	-	-	-	Clear flow, no odor	
14468	W of Linwood St	Beaver Brook MA62-09	High	7/15/2020	71.1	628	7.4	0.3	0	**0.02**	0	<10	-	-	-	<10	-	-	-	Clear flow, no odor	Chloride level is higher than expected stormwater values but results do not exceed sewage indicator criteria.
24077	W of Linwood St	Beaver Brook MA62-09	High	7/15/2020	70.2	624	7.2	0.3	0	0	0	20	-	-	-	140	-	-	-	Clear flow, no odor	

Outfall ID	Location	Receiving Waterbody Name and ID	PY 2 Outfall Priority	Sample Date	Temp (°F)	Conductivity (µS/cm)	pH	Salinity (ppm)	Ammonia (mg/L)	Chlorine (mg/L)	Surfactants (mg/L)	E. coli (MPN/ 100 mL)	Enterococcus (MPN/ 100 mL)	Total Phosphorus (mg/L)	Arsenic, Total (mg/L)	Fecal Coliform (CFU/100 mL)	Dissolved Oxygen (mg/L)	Oil and Grease (mg/L)	Total Suspended Solids (mg/L)	Visual/ Olfactory Observations	Notes
Sewage indicator [a]									***≥0.5 mg/L***	***≥ 0.02 mg/L***	***≥0.25 mg/L***	***235 colonies/ 100 mL*** [b]	***104 colonies/ 100 mL*** [b]							**Olfactory or visual evidence**	
22554	S of Lynn Fells Pkwy	Bennetts Pond Brook MA93-48	High	7/7/2020	62.8	848	7.14	0.4	0	**0.05**	0	**>80,000**	-	-	-	-	9.87	-	-	Clear flow, no odor	Results do not exceed the sewage indicator criteria, but E. coli higher than expected stormwater values indicates some follow up should be done before moving to wet weather sampling.
23845	S of Lynn Fells Pkwy	Bennetts Pond Brook MA93-48	High	7/7/2020	65.5	386	7.45	0.2	0	**0.13**	0	**580**	-	-	-	-	-	-	-	Clear flow, no odor	Chlorine and E. coli levels are higher than expected stormwater values but results do not exceed sewage indicator criteria.
666667303	S of Lynn Fells Pkwy	Bennetts Pond Brook MA93-48	High	3/31/2021	55.2	932	6.13	0.4	0	0	0	<10	-	-	-	-	-	-	-	Clear flow, no odor	Outfall inaccessible, sample taken at upstream catch basin.
10803	W of VFW Pkwy	Charles River MA72-07	High	7/13/2020	73.9	647	8.39	0.4	0.3	0	**0.25**	120	-	0.091	-	-	-	-	-	Tan to light brown flow, no odor	Surfactants level is higher than expected stormwater values but results do not exceed sewage indicator criteria.
666667122	SW of Quinobequin Rd	Charles River MA72-07	High	7/14/2020	74.3	961	7.43	0.5	0	0	0	**1,200**		0.028	-	-	-	-	-	Clear flow, no odor	E. coli level is higher than expected stormwater values but results do not exceed sewage indicator criteria.
666667124	NW of intersection of Quinobequin Rd & Boylston St	Charles River MA72-07	High	7/14/2020	73.0	1247	7.7	0.6	0.1	**0.72**	0	<10		0.026	-	-	-	-	-	Clear flow, no odor	Chlorine level is higher than expected stormwater values but results do not exceed sewage indicator criteria.

Outfall ID	Location	Receiving Waterbody Name and ID	PY 2 Outfall Priority	Sample Date	Temp (°F)	Conductivity (µS/cm)	pH	Salinity (ppm)	Ammonia (mg/L)	Chlorine (mg/L)	Surfactants (mg/L)	E. coli (MPN/ 100 mL)	Enterococcus (MPN/ 100 mL)	Total Phosphorus (mg/L)	Arsenic, Total (mg/L)	Fecal Coliform (CFU/100 mL)	Dissolved Oxygen (mg/L)	Oil and Grease (mg/L)	Total Suspended Solids (mg/L)	Visual/ Olfactory Observations	Notes
Sewage indicator [a]									***≥0.5 mg/L***	***≥ 0.02 mg/L***	***≥0.25 mg/L***	***235 colonies/ 100 mL [b]***	***104 colonies/ 100 mL[b]***							**Olfactory or visual evidence**	
666667138*	Leo J Martin Memorial Golf Course, E of Park Rd	Charles River MA72-07	-	7/14/2020	73.0	503	6.65	0.2	0	0	0	100		0.02	-	-	-	-	-	Clear flow, no odor	
24192	E of Prospect St; W of Milford Regional Medical Center	Charles River MA72-33	High	4/28/2021	60.3	984	7.48	0.5	0.1	0	0	-		-	-	-	-	-	-	Clear flow, no odor	
24192	E of Prospect St; W of Milford Regional Medical Center	Charles River MA72-33	High	5/3/2021	59.0	1243	6.33	0.6	0	**0.15**	**0.25**	-		-	-	-	-	-	-	Clear flow, no odor	Chlorine and surfactants levels are higher than expected stormwater values but results do not exceed sewage indicator criteria.
666667112	E of Greenough Blvd, N of Eliot Bridge	Charles River MA72-36	High	3/31/2021	55.0	855	7.33	0.4	0.3	**1.46**	**0.25**	<10		<0.020	-	-	11.06	-	<2.0	Clear flow, no odor	Chlorine and surfactants levels are higher than expected stormwater values but results do not exceed sewage indicator criteria.
17890	W of Morrissey Blvd, SW end of Bridge	Dorchester Bay MA70-03	High	7/8/2020	72.3	>999	7.67	>999	0.2	**0.08**	**1.5**	-	**140**	-	-	550	-	-	24	Clear flow, no odor	Chlorine, surfactants, enterococcus, and fecal coliform levels are higher than expected stormwater values but results do not exceed sewage indicator criteria.

Outfall ID	Location	Receiving Waterbody Name and ID	PY 2 Outfall Priority	Sample Date	Temp (°F)	Conductivity (µS/cm)	pH	Salinity (ppm)	Ammonia (mg/L)	Chlorine (mg/L)	Surfactants (mg/L)	E. coli (MPN/ 100 mL)	Enterococcus (MPN/ 100 mL)	Total Phosphorus (mg/L)	Arsenic, Total (mg/L)	Fecal Coliform (CFU/100 mL)	Dissolved Oxygen (mg/L)	Oil and Grease (mg/L)	Total Suspended Solids (mg/L)	Visual/ Olfactory Observations	Notes
Sewage indicator [a]									***≥0.5 mg/L***	***≥ 0.02 mg/L***	***≥0.25 mg/L***	***235 colonies/ 100 mL*** [b]	***104 colonies/ 100 mL*** [b]							**Olfactory or visual evidence**	
18290	N side of Squantum Point Park	Dorchester Bay MA70-03	High	7/13/2020	75.6	16470	8.35	>999	0.2	0	**1.5**	<10	10	-	-	90	-	-	5	Clear flow, no odor	Chlorine level is higher than expected stormwater values but results do not exceed sewage indicator criteria.
18300	SE of Playstead Rd	Dorchester Bay MA70-03	High	7/8/2020	73.6	>999	7.55	>999	0.3	**0.19**	**1.5**	-	**900**	-	-	2,900	-	-	43	Clear flow, Musty odor	
18362	E of Morrissey Blvd, N of bridge	Dorchester Bay MA70-03	High	7/8/2020	74.5	>999	7.23	>999	0.2	**0.05**	**2**	-	**230**	-	-	170	-	-	6	Clear flow, no odor	Chlorine and surfactants levels are higher than expected stormwater values but results do not exceed sewage indicator criteria.
18364	E of Morrissey Blvd, N of bridge	Dorchester Bay MA70-03	High	7/8/2020	77.0	>999	7.98	>999	0	**0.22**	**2**	-	30	-	-	350	-	-	<2	Clear flow, no odor	Chlorine and surfactants levels are higher than expected stormwater values but results do not exceed sewage indicator criteria.
17676	Carson Beach, E of Day Blvd	Dorchester Bay MA70-03	High	4/15/2021	52.34	7380	7.03	4	0.3	0	**0.75**	-	<10	-	-	10	4.18	-	-	Clear flow, no odor	Could not locate outfall, sample taken at upstream manhole.
18890	S of intersection of Columbia Rd & Day Blvd	Dorchester Bay MA70-03	High	7/8/2020	70.88	18,820	7.82	>999	0.2	**0.08**	**1.5**	-	80	-	-	1,500	-	-	10	-	Chlorine and surfactants levels are higher than expected stormwater values but results do not exceed sewage indicator criteria.

Outfall ID	Location	Receiving Waterbody Name and ID	PY 2 Outfall Priority	Sample Date	Temp (°F)	Conductivity (µS/cm)	pH	Salinity (ppm)	Ammonia (mg/L)	Chlorine (mg/L)	Surfactants (mg/L)	E. coli (MPN/ 100 mL)	Enterococcus (MPN/ 100 mL)	Total Phosphorus (mg/L)	Arsenic, Total (mg/L)	Fecal Coliform (CFU/100 mL)	Dissolved Oxygen (mg/L)	Oil and Grease (mg/L)	Total Suspended Solids (mg/L)	Visual/ Olfactory Observations	Notes
Sewage indicator [a]									***≥0.5 mg/L***	***≥ 0.02 mg/L***	***≥0.25 mg/L***	***235 colonies/ 100 mL*** [b]	***104 colonies/ 100 mL*** [b]							**Olfactory or visual evidence**	
17218	S of Hillside St, Canton/Milton Town Line	Farm River MA74-07	High	7/9/2020	74.66	300	5.79	0.1	0	**0.53**	**0.25**	30	-	-	-	-	-	-	-	Clear flow, no odor	Could not locate outfall, sampling completed at upstream manhole.
17062	E of Wampatuck Rd	Furnace Brook MA74-10	High	7/9/2020	72.3	537	6.41	0.2	0	**0.01**	**0.25**	40	-	<0.020	-	-	5.28	-	-	Clear flow, no odor	
666667184*	SE of Furnace Brook Pkwy, W of Hudson St	Furnace Brook MA74-10	-	3/30/2021	52.2	>999	7.05	>999	0	0	**2**	-	7.5	-	-	-	7.4	-	-	Clear flow, no odor	
666667309	E of Wampatuck Rd	Furnace Brook MA74-10	High	4/15/2021	61.3	744	6.7	0.3	0	0	0.25	<10	-	-	-	-	6.4	-	-	Clear flow, no odor	Outlet within culvert, sample taken at upstream catch basin.
25059	S of Lynnway	Lynn Harbor MA93-52	High	5/13/2021	58.6		7.59		0.4	**0.23**	**3**	-	-	-	-	0	-	-	-	Clear flow, saltwater odor, Sheen/Scum present	Chlorine and surfactants levels are higher than expected stormwater values but results do not exceed sewage indicator criteria.
38008	W of Ocean Ave	Lynn Harbor MA93-53	High	7/7/2020	73.04	>999	7.68	>999	0	**0.07**	**2**	-	30	-	-	-	-	-	-	Clear flow, no odor, sheen/scum present	Sampling completed at upstream manhole.
22802*	N of Ravine Rd	Malden River MA71-05	-	4/5/2021	48.2	1747	7.33	0.9	0	0	0	**345**	-	-	-	-	8.98	-	-	Clear flow, no odor	
13238	W of Jamaica Way	Muddy River MA72-11	High	4/7/2021	54.9	1200	7.02	0.6	0.1	**0.06**	**0.25**	10	-	0.028	-	-	7.87	1.6	2.3	Clear flow, no odor	

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Sewage indicator [a]									***≥0.5 mg/L***	***≥ 0.02 mg/L***	***≥0.25 mg/L***	***235 colonies/ 100 mL [b]***	***104 colonies/ 100 mL[b]***							**Olfactory or visual evidence**	
27668	NW of intersection of Arborway & Meadow Rd	Muddy River MA72-11	High	7/9/2020	75.9	2240	7	1.1	0	**0.12**	0	20	**-**	0.011	-	-	7.3	<1.4	-	Clear flow, no odor	
666667116	NE of Perkins St & Chestnut St	Muddy River MA72-11	High	7/16/2020	77.0	843	7.42	0.4	0	0	0	30	-	0.02	-	-	5.46	<1.4	-	Clear flow, no odor	
24978	W of intersection of Commandants Way & Route 1	Mystic River MA71-03	High	7/13/2020	66.6	1155	8.43	0.6	0	0	0	-	100	0.022	-	140	8.58	<1.4	<2	Clear flow, no odor	
17030	N of Neponset Valley Pkwy	Neponset River MA73-02	High	7/7/2020	66.4	482	6.6	0.2	0	**0.05**	0	**190**	-	0.027	-	160	9.35	-	5	Clear flow, no odor	
17031	N of Neponset Valley Pkwy	Neponset River MA73-02	High	7/7/2020	59.2	498	6.64	0.2	0	**0.05**	0	30	**-**	0.02	-	110	10.27	-	3	Clear flow, no odor	
17033	N of Neponset Valley Pkwy	Neponset River MA73-02	High	7/7/2020	70.3	1151	6.68	0.6	0.2	**0.19**	0	**440**	**-**	<0.020	-	360	7.91	-	<2	Tea/Coffee flow, no odor	
17300	W of intersection of Neponset Valley Pkwy & Brush Hill Rd	Neponset River MA73-02	High	7/7/2020	68.5	410	6.93	0.2	0	0	0	**260**	-	0.52	-	400	8.53	-	<2	Clear flow, no odor	

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Sewage indicator [a]									***≥0.5 mg/L***	***≥ 0.02 mg/L***	***≥0.25 mg/L***	***235 colonies/ 100 mL*** [b]	***104 colonies/ 100 mL*** [b]							**Olfactory or visual evidence**	
17110	N of Truman Hwy	Neponset River MA73-03	High	7/7/2020	65.8	343	7.34	0.2	0.2	**0.05**	**0.25**	**370**	**135**	<0.020	-	530	8.52	-	-	Clear flow, no odor	Chlorine, surfactants, and bacteria levels are higher than expected stormwater values but results do not exceed sewage indicator criteria.
17125	W of Blue Hills Pkwy	Neponset River MA73-03	High	4/15/2021	52.7	254	7.06	0.1	0	**0.03**	0	<10	-	<0.020	-	20	14.14	-	-	Clear flow, no odor	
17286	NW of Truman Hwy	Neponset River MA73-03	High	4/15/2021	54.7	1814	7.42	0.9	0	0	**0.25**	20	-	0.036	-	10	17.31	-	-	Clear flow, no odor	
17291	NW of Brush Hill Rd & Cheever St	Neponset River MA73-03	High	7/7/2020	74.5	743	7.85	0.4	0	0	0	<10	10	0.023	-	10	8.52	-	-	Clear flow, no odor	
17294	NW of Brush Hill Rd & Truman Hwy	Neponset River MA73-03	High	7/7/2020	75.6	222	8.15	0.1	**0.6**	**1.16**	0	**280**	**220**	<0.020	-	300	7.93	-	-	Clear flow, no odor	Ammonia, chlorine and bacteria levels are higher than expected stormwater values but results do not exceed sewage indicator criteria.
17707	S of Neponset Ave, SW of Neponset Bridge	Neponset River MA73-04	High	7/15/2020	77.0	>999	6.98	>999	0.1	**0.25**	**3**	-	**1,300**	0.024	-	79,000	7.15	-	10	Clear flow, no odor	Chlorine and surfactants levels are higher than expected stormwater values but results do not exceed sewage indicator criteria.
18173	N of Commander Shea Blvd	Neponset River MA73-04	High	7/13/2020	75.0	>999	7.81	>999	0.1	**0.08**	**1.5**	-	80	0.32	-	140	5.03	-	14	Clear flow, no odor	Chlorine and surfactants levels are higher than expected stormwater values but results do not exceed sewage indicator criteria.

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Sewage indicator [a]									***≥0.5 mg/L***	***≥ 0.02 mg/L***	***≥0.25 mg/L***	***235 colonies/ 100 mL [b]***	***104 colonies/ 100 mL[b]***							**Olfactory or visual evidence**	
27761	N of Airport Rd & Quincy Shore Dr	Neponset River MA73-04	High	7/13/2020	70.34	2170	6.91	1	0.4	0	**0.5**	-	**10,000**	-	-	54,000	4.96	-	6	Clear flow, no odor	Standing water at outfall, sampling completed at upstream manhole.
666666992	NW of Truman Pkwy	Neponset River MA73-03	Low	7/7/2020	64.9	980	7.5	0.5	0	**0.06**	**0.25**	**250**	**460**	<0.020	-	460	11.33	-	-	Clear flow, no odor	Moved to high priority due to high chlorine, surfactants, and bacteria.
24234	SE of Green St	Outer New Bedford Harbor MA95-63	High	7/6/2020	70.7	500	7	0.3	**0.8**	0	**0.25**	60	-	-	-	220	6.17	-	-	Clear flow, no odor	Could not locate outfall, sampling completed at upstream manhole.
666666966	S of Canton Ave & Sumner St	Pine Tree Brook MA73-29	Low	7/13/2020	72.1	659	7.41	0.3	0	0	0	90	-	<0.020	-	1,500	7.49	-	<2	Clear flow, no odor	Moved to high priority due to bacteria.
666667171*	W of Washington St & Turnpike St	Ponkapog Brook MA73-27	-	4/14/2021	54.0	323	7	0.1	0	**0.08**	0	<10	-	-	-	-	-	-	-	Clear flow, no odor	
24094*	Armstrong Arena, W of Long Pond Rd	Russell Millpond MA94132	-	7/15/2020	65.1	110.9	6.42	0	0.2	0	**0.25**	<10	-	-	-	-	-	-	-	Clear flow, no odor	
26477	N of W Roxbury Pkwy & Newton St	Sawmill Brook MA72-23	High	7/9/2020	124.2	900	8.18	0.4	0.1	**0.06**	0	**380**	-	0.023	-	-	9.33	<1.4	-	Clear flow, no odor	
26922	S of Hammond Pond Pkwy	Sawmill Brook MA72-23	High	4/12/2021	50	1075	7.06	0.5	0.4	**0.33**	**0.25**	10	-	0.26	-	-	8.2	-	-	Clear flow, no odor	
666667145*	W of Woodland Rd	Spot Pond MA71039	-	4/5/2021	49.6	1520	7.13	0.8	0	0	0	<10	-	-	-	-	8.91	-	-	Clear flow, no odor	

Outfall ID	Location	Receiving Waterbody Name and ID	PY 2 Outfall Priority	Sample Date	Temp (°F)	Conductivity (µS/cm)	pH	Salinity (ppm)	Ammonia (mg/L)	Chlorine (mg/L)	Surfactants (mg/L)	E. coli (MPN/ 100 mL)	Enterococcus (MPN/ 100 mL)	Total Phosphorus (mg/L)	Arsenic, Total (mg/L)	Fecal Coliform (CFU/100 mL)	Dissolved Oxygen (mg/L)	Oil and Grease (mg/L)	Total Suspended Solids (mg/L)	Visual/ Olfactory Observations	Notes
Sewage indicator [a]									***≥0.5 mg/L***	***≥ 0.02 mg/L***	***≥0.25 mg/L***	***235 colonies/ 100 mL*** [b]	***104 colonies/ 100 mL*** [b]							**Olfactory or visual evidence**	
10745	S of Enneking Pkwy	Stony Brook MA72-37	Low	7/13/2020	73.2	974	8.24	0.6	0	0	**0.5**	**1,400**	-	-	-	-	-	-	-	Clear flow, no odor	Moved to high priority due to high bacteria.
12870.03	W of Beaman St	Wachusett Reservoir MA81147	High	4/15/2021	56.3	232	6.87	0.1	0	0	**0.25**	<10	-	-	-	-	13.3	-	-	Clear flow, no odor	
27787	S of McDuff's Lndg	Weir River MA74-11	High	7/14/2020	73.4	>999	7.47	>999	0	**0.1**	**3**	-	40	-	-	140	-	-	-	Clear flow, Musty odor	
Low Priority: Move on to Catchment Investigation																					
MH-666667974 (interconnection)	W of Veterans Dr	Crystal Lake MA35014	-	7/6/2020	68.36	868	6.53	0.4	0	**0.64**	0	52	-	-	-	-	-	-	-	Clear flow, no odor, sheen/scum present	
24883	S of Dunn Pond Trl	Dunn Pond MA35021	Low	7/6/2020	69.3	324	6.41	0.1	0.3	**0.17**	0	<10	-	-	-	-	-	-	-	Clear flow, no odor	
666667219	N of Pearl St and Dunn Pond Trl	Dunn Pond MA35021	-	5/3/2021	54.14	1172	6.27	0.5	0.1	0	**0.25**	<10	-	-	-	-	-	-	-	Clear flow, no odor	Outfall submerged, sample taken at upstream manhole.
MH-26493 (interconnection)	In between Hammond Pond Pkwy N & S bound	Muddy River MA72-11	-	5/12/2021	56.84	142	8.15	0	0.2	0	0	-	-	-	-	-	-	-	-	Clear flow, no odor	
666666990	W of Truman Pkwy	Neponset River MA73-02	Low	7/13/2020	74.7	487	7.9	0.2	0	**0.13**	0	<10	-	<0.020	-	50	7.72	-	2	Clear flow, no odor	

Outfall ID	Location	Receiving Waterbody Name and ID	PY 2 Outfall Priority	Sample Date	Temp (°F)	Conductivity (µS/cm)	pH	Salinity (ppm)	Ammonia (mg/L)	Chlorine (mg/L)	Surfactants (mg/L)	E. coli (MPN/ 100 mL)	Enterococcus (MPN/ 100 mL)	Total Phosphorus (mg/L)	Arsenic, Total (mg/L)	Fecal Coliform (CFU/100 mL)	Dissolved Oxygen (mg/L)	Oil and Grease (mg/L)	Total Suspended Solids (mg/L)	Visual/ Olfactory Observations	Notes
Sewage indicator [a]									***≥0.5 mg/L***	***≥ 0.02 mg/L***	***≥0.25 mg/L***	***235 colonies/ 100 mL*** [b]	***104 colonies/ 100 mL*** [b]							**Olfactory or visual evidence**	
666667136*	E of Brockton High School	West Meadow Pond MA62208	Low	4/26/2021	55.0	520	6.01	0.2	0	0	0	<10	-	-	-	-	6.43	-	-	Clear flow, no odor	
24599	John C Robinson State Park	Westfield River MA32-07	Low	7/14/2020	73.9	1250	7.45	0.6	0	0	0	<10	-	-	-	-	-	-	-	Clear flow, no odor	

Notes: Data shown in bold print exceed MS4 Permit indicators of likely sewage input individually.

*Outfall location was mapped after June 2020, no PY 2 Outfall Priority was assigned.

a. MA MS4 General Permit. https://www3.epa.gov/region1/npdes/stormwater/ma/2016fpd/final-2016-ma-sms4-gp.pdf

b. Massachusetts Surface Water Quality Standards. https://www.mass.gov/doc/314-cmr-4-massachusetts-surface-water-quality-standards/download