Plattsburgh Illicit Discharge Detection and Elimination Project: Phase 2 Final Report

PREPARED FOR:

Mae Kate Campbell / Technical Associate
Lake Champlain Basin Program
54 West Shore Road
Grand Isle, VT 05458
mkcampbell@lcbp.org
443-995-4701

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SUBMITTED ON BEHALF OF THE CITY OF PLATTSBURGH, NEW YORK BY:

David Braun
Stone Environmental, Inc.
535 Stone Cutters Way
Montpelier, VT 05602
dbraun@stone-env.com
802-272-8819

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Executive Summary

The City of Plattsburgh is teaming with the Vermont Department of Environmental Conservation (VTDEC) on a multi-year illicit discharge detection and elimination (IDDE) project. The goal is to improve water quality in the Saranac River and in Cumberland Bay of Lake Champlain by eliminating wastewater discharges into stormwater drainage systems. Wastewater leaking from sanitary sewers into stormwater infrastructure or entering via direct connections can degrade receiving water quality and pose a risk to public health. This project is consistent with the Clean Water and Healthy Ecosystem goals of Opportunities for Action due to its expected water quality benefits.

The Plattsburgh IDDE project is being conducted in phases. In Phase 1 (2020-2021), Stone Environmental (Stone) assessed 44 stormwater drainage systems for the presence of illicit discharges and began investigating four stormdrains suspected of passing illicit discharges (systems PB02, PB03, PB11, and PB19). In Phase 2 (2021-2022), Stone completed assessments of an additional 28 stormdrains (for a total of 72) and began investigating four more stormdrains with suspected illicit discharges (PB05, PB07, PB46, and PB48). In Phase 3 (2022-2023), Stone is continuing investigations of PB02, PB03, PB05, PB07, PB11, PB19, PB46, and PB48 and has begun investigation of suspected illicit discharges in the remaining 14 of the 22 stormdrains with suspected illicit wastewater discharges.

In some cases, contaminants detected in stormwater drainage systems likely resulted from transitory events, such as outdoor washing and pet waste deposited in catchbasins. These types of intermittent discharges are inevitable in large urban drainage systems, and they can be difficult to distinguish from chronic illicit discharges. Repeated sampling is usually necessary. However, the presence of multiple wastewater indicators in some stormdrains suggests that chronic wastewater discharges are also occurring. After Plattsburgh's combined sewer system was separated, the new stormwater outfalls were not evaluated. The incidence of illicit discharges is typically higher where old, combined sewer systems have been repurposed as separate stormdrains.

With the exception of PB19, where a definite illicit discharge source was identified, locating the sources of the illicit discharges has been challenging due to the large extent of many of the systems, locations of many critical access structures within the roadway, and heavy or fast traffic. In the third and final project phase, Stone is resolving many questions about possible sources of contamination in Plattsburgh's stormdrains and expects to provide the City of Plattsburgh with sufficient information to eliminate more of them.

Plattsburgh Illicit Discharge Detection and Elimination Project: Phase 1 Final Report

Cover photo: A suspected illicit discharge causes an eddy of foam in the Saranac River in Plattsburgh

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1. Introduction

The City of Plattsburgh is teaming with the Vermont Department of Environmental Conservation (VTDEC) on a multi-year illicit discharge detection and elimination (IDDE) project. The goal is to improve water quality in the Saranac River and in Cumberland Bay of Lake Champlain by eliminating wastewater discharges into stormwater drainage systems. Wastewater leaking from sanitary sewers into stormwater infrastructure or entering via direct connections can degrade receiving water quality and pose a risk to public health.

The City and the Town of Plattsburgh are committed to proper public use and long-term maintenance of their stormwater and wastewater infrastructure. In 2015 the City completed a comprehensive map of stormwater and wastewater infrastructure in both the City and the Town. This inventory enables more efficient and effective detection of illicit discharges. The City is also committed to enforcing its municipal sewer ordinance, which prohibits the discharge of sanitary waste into any conveyance other than the sanitary wastewater system.

The Plattsburgh IDDE project is part of a larger program to complete illicit discharge detection and elimination studies in all the municipalities in the Lake Champlain Basin that are not required to do so under current regulation (MS4 permit, measure #3). In Vermont, VTDEC has overseen an IDDE program since 2006. IDDE studies have been completed in more than 100 Vermont communities. Reports describing IDDE projects completed in Vermont municipalities can be found at: https://dec.vermont.gov/watershed/cwi/manage/idde. In light of its 15 years of experience administering Vermont's IDDE program, VTDEC offered to help facilitate the Plattsburgh IDDE project, advise the City of Plattsburgh and its selected contractor (Stone Environmental, Inc.), and review the project results.

The general approach used in Vermont is to perform a series of low-cost water quality tests for wastewater or washwater indicators—optical brighteners (OB), ammonia, anionic surfactants, chlorine, and often *E. coli* —in conjunction with field observations, to identify potentially contaminated stormwater drainage systems; and then to locate specific sources of contamination within stormdrains using upstream/downstream ("bracket") sampling, pipeline inspection, dye testing, and/or smoke testing. To date, VTDEC, its contractors, and participating Vermont cities and towns have used these methods to locate nearly 300 wastewater discharges and have successfully eliminated the majority of them. Stone is now applying these methods in Plattsburgh.

Due to the extensive developed area covered, the Plattsburgh IDDE project is being conducted in phases. In Phase 1, Stone assessed 44 stormwater drainage systems for the presence of illicit discharges and began investigating four stormdrains suspected of passing illicit discharges (systems PB02, PB03, PB11, and PB19). In Phase 2, Stone completed assessments of an additional 28 stormdrains and began investigating four more stormdrains with suspected illicit discharges (PB05, PB07, PB46, and PB48). In Phase 3 (2022-2023), Stone is continuing investigations of PB02, PB03, PB05, PB07, PB11, PB19, PB46, and PB48 and has begun investigation of suspected illicit discharges in the remaining 14 of the 22 stormdrains with suspected illicit wastewater discharges.

The water quality data collected to date indicate significant contamination across several stormwater drainage systems in Plattsburgh. In some cases, contaminants likely resulted from transitory events, such as outdoor washing or pet waste deposited in catchbasins. These types of intermittent discharges are inevitable in large urban drainage systems, and they can be difficult to distinguish from chronic illicit discharges. Repeated sampling is usually necessary. However, the presence of multiple wastewater indicators in some stormdrains suggests that chronic wastewater discharges are also occurring. After Plattsburgh's combined sewer system was separated, the new stormwater outfalls were not evaluated. Many of the wastewater cross connections VTDEC has found in Vermont have been in similar systems: old, combined sewer systems repurposed as separate stormdrains.

This report summarizes the assessment data collected in 2020-2021 (both Phases 1 and 2). The status and findings of the first eight (Phase 1 and Phase 2) advanced investigations are also described in detail. The report does not describe the ongoing advanced investigations funded under Phase 3.

This project is funded by the Lake Champlain Basin Program and administered by the VTDEC in cooperation with the City of Plattsburgh. This project is consistent with the Clean Water and Healthy Ecosystem goals of Opportunities for Action due to its expected water quality benefits. Reduction of nutrient and microbial pollution of Lake Champlain/Cumberland Bay is anticipated through elimination of illicit discharges to the Saranac River and Lake Champlain direct drainage areas in the City and Town of Plattsburgh.

2. Methods

2.1. Preparation for the Assessment

Data collection and analysis was conducted in accordance with the approved project QAPP. Preparation for the illicit discharge assessment included obtaining and assembling necessary equipment and supplies; preparing an electronic survey field data form and field maps; and meeting with representatives of the City of Plattsburgh to gather information and plan the project. Digital field maps were prepared by overlaying stormwater infrastructure mapping on the best available orthophotography. These maps were annotated in the field. The kickoff meeting provided an opportunity to collect four key types of information:

1. Contact information for municipal managers and public works personnel.
2. General schedules of road, wastewater, and stormwater system projects (to avoid conflict with construction activities).
3. Locations of any known or suspected combined sewer overflows and cross connections.
4. In-house capabilities of the Public Works Department to inspect pipelines.

2.2. Dry Weather Survey

Stormwater drainage systems were assessed during dry weather to minimize dilution from stormwater runoff. Dry weather was defined as negligible rainfall (less than 0.1 inches), beginning at approximately 12:00 p.m. the previous day. Stormwater drainage systems with ten or fewer inlets were typically assessed only at the outfall. Within larger stormwater drainage systems, catchbasins and junction manholes were also assessed to account for any effects of dilution. Stormwater structures were accessed along the public right-of-way or from the receiving waterbody, as appropriate. Where access permission was obtained, stormwater structures located on private property were also assessed, particularly if these structures were connected to a municipal drainage system.

Every outfall or other stormwater structure assessed was assigned a unique identifying code. A visual inspection was made of the condition of each discharge point and the area immediately below each discharge point. If present, dry-weather flows were observed for color, odor, turbidity, and floatable matter. Obvious deficiencies in the structure, such as severe corrosion, were noted. Dry weather flows were sampled by hand, using a telescoping pole, or other similar method, as appropriate. At catchbasins and manholes located at junctions in the storm sewer, samples were collected independently from each in-flowing pipe, when possible. Field data were entered in an electronic survey assessment form using a mobile device, and the position of each structure was geolocated.

In order to identify potential illicit discharges from laundry facilities, leaking sanitary sewers, and cross-connections, each dry weather discharge was tested for ammonia, methylene blue active substances (common detergents), and the presence of optical brighteners. Specific conductance was measured as an indication of the dissolved solids content. To detect treated municipal water leakage, samples were also analyzed for free chlorine concentration.

With few exceptions, structures that were not flowing at the time of the initial inspection were assumed not to have illicit connections and no further assessment of these structures was performed. Stone's

general procedure is to provide additional assessment of non-flowing structures only if there is evidence of contamination, such as suds, odors, or certain deposits.

2.3. Water Analysis Methods

The ammonia concentration was tested using Aquacheck ammonia test strips. Samples were tested for methylene blue active substances (MBAS) using CHEMetrics test kit K-9400, a method consistent with American Public Health Association Standard Methods, 21st ed., Method 5540 C (2005). Free chlorine analysis was conducted with powdered DPD reagent (Hach Method 8167, equivalent to USEPA method 330.5) and a portable Hach DR/900 colorimeter. Specific conductance was measured using an Oakton model conductivity meter, according to Stone Environmental Standard Operating Procedure (SOP) SEI-5.23.3 (Appendix A).

The MBAS test is strongly and linearly affected by the sample dissolved solids content. When interpreting MBAS results, Stone automatically applies a correction factor using the specific conductance of the sample. From many paired samples collected over a period of years, Stone developed the following correction factor:

Corrected MBAS in mg/L =MBAS in mg/L-(0.00007*Sp. cond. in µS/cm-0.0043)

Optical brightener monitoring was performed at outfalls and selected catchbasins and manholes that were flowing at the time of inspection, in accordance with Stone Environmental SOP SEI-5.52.2 (Appendix A). Optical brighteners (OB) are a common laundry and cleaning product constituent. To test for OB, a cotton pad is placed in the flow stream for a period of 4–10 days, after which the pad is rinsed, dried, and viewed under a long-wave ultraviolet light (“black light”). Florescence of the pad (see example in Figure 1) indicates the presence of OB. Pads are held in a sleeve of vinyl screen, affixed to the rim of the outfall pipe or secured with fishing line to a rock or other anchor. At catchbasins and manholes located at junctions in the storm sewer, pads are deployed in incoming pipes, if possible, but are often hung from the catchbasin grate or manhole rung into the sump. An advantage of OB monitoring is that some intermittent or dilute wastewater discharges can be detected due to the multiple-day exposure of the pad, whereas the contaminant may not be detected in tests performed on grab samples.

Figure 1. Positive OB monitoring pad under fluorescent (left) and UV (right) lamps.

Table 1 lists the water quality tests Stone performed at all discharge points and selected catchbasins and manholes that were flowing at the time of inspection.

Table 1: Water quality tests performed at flowing structures

Parameter	Sample Container	Analytical Method
Ammonia	Plastic vial	Aquacheck ammonia test strips
MBAS detergents (anionic surfactants)	Plastic vial	APHA Standard Methods, 21st ed., Method 5540 C (2005)
Free chlorine	Glass cuvette	By DPD, Hach Method 8167 (EPA 330.5)
Specific conductance	Glass jar	Stone SOP SEI-5.23.3
Optical brightener	Cotton test pads	Stone SOP SEI-5.52.2

2.3.1. Advanced Investigations

Benchmark concentrations indicative of the presence of an illicit discharge are summarized in Table 2. Generally, stormwater drainage systems are designated for follow-up sampling and/or investigation when these benchmarks are exceeded. In many cases, systems in Plattsburgh were resampled in 2022 if low concentrations (concentrations near the method detection limit) of ammonia, MBAS detergents, or chlorine were measured in 2020 or 2021. These systems were not designated for intensive investigation unless elevated concentrations reoccurred.

Table 2: Benchmark levels for determining illicit discharges

Test	Benchmark	Remarks
E. coli	>= 235 *MPN*/100 mL	Undiluted municipal wastewater can have *E. coli* levels an order of magnitude or higher than this benchmark. Pet waste and wildlife sources also cause elevated *E. coli* levels.
Ammonia	>= 0.25 mg/L	In the absence of other wastewater indicators, follow-up investigation is performed when the ammonia concentration is 0.50 mg/L or higher. If other wastewater indicators are present, then the 0.25 mg/L benchmark is used. Decomposing vegetation under anoxic conditions can release ammonia to water, causing misleading results.
Detergents (methylene blue active substances)	>=0.25 mg/L	Detection of low concentrations (0.10-0.30 mg/L) of anionic detergents is common at stormwater outfalls. Most detections are not correlated with other wastewater indicators and do not lead to a definite source. These detections may be attributable to outdoor washing. However, concentrations as low as 0.25 mg/L have occasionally led to significant wastewater sources that might otherwise have been missed; therefore, this is a useful test to trigger additional sampling or investigation.
Optical brightener	presence	Presence usually indicates contamination by sanitary wastewater or washwater. Exposure of the test pad for 4 -10 days enables detection of diluted and intermittent discharges. Petroleum compounds can fluoresce at the same wavelength as optical brighteners.
Free chlorine	>=0.10 mg/L	The field test used for free chlorine analysis is sufficiently sensitive to detect municipal tapwater sources diluted by groundwater or runoff approximately 3- to 10-fold, depending on the strength of the tapwater chlorine residual. Chlorine is a good indicator of tapwater leaks and graywater sources. Chlorine is not a good wastewater indicator, because it is degraded in the presence of organic materials.
Specific conductance	>1,000 µS/cm	Specific conductance is not a reliable indicator of wastewater contamination. Road salt and metals from pipe corrosion often result in levels in the 1,000-10,000 µS/cm range, whereas flows contaminated with wastewater generally have specific conductance in the 600-1,000 µS/cm range. Although infrequent, this measurement has proven most useful in identifying certain industrial discharges. Specific conductance data are also needed to correct MBAS measurements (per Section 2.3).

To locate or bracket contaminant sources within storm sewer segments, the same testing methods or a subset of methods are used as in the dry weather survey. The goal is to bracket the contaminant source between adjacent structures, such as a stormline connecting a catchbasin to a downstream manhole. Stone is using the City of Plattsburgh's stormwater infrastructure mapping to guide this effort. The most reliable method to bracket sources of wastewater contamination is usually OB monitoring throughout the drainage system. In Plattsburgh, Stone is using *E. coli* sampling to bracket sources more than usual, because several outfalls have high concentrations, and the laboratory is close. The presence and appearance of dry-weather flows can also be useful in isolating sources of contamination within storm sewer segments.

Stone is working with the City of Plattsburgh to find specific improper connections, leaks, and other problems contributing to the contaminated flows observed in the stormwater drainage systems. After bracketing the discharge source as closely as possible using the water quality test methods, Stone corresponded with municipal representatives to describe these findings.

2.3.2. *E. coli* and Total Phosphorus

At discharge points where wastewater contamination was suspected, Stone collected water samples for *E. coli* and total phosphorus (TP) analysis. Illicit discharges of sanitary wastewater via separated stormwater drainage systems or failed septic systems may contribute *E. coli*. Phosphorus is a concern throughout the Lake Champlain Basin because elevated concentrations of phosphorus promote eutrophication of fresh waters. Therefore, TP was analyzed at all discharge points with suspected wastewater contamination.

Table 3 identifies the TP and *E. coli* analysis methods Endyne Labs performed. These methods and relevant data quality objectives, assessment procedures, and reporting limits are described in Endyne Inc.–Plattsburgh's Quality Manual, Revision 7, dated August 1, 2017 (Endyne, Inc. –Plattsburgh. 2017).

Table 3. Laboratory sample analyses

Parameter	Sample Container	Analytical Method	Sample Preservation	Holding Time
TP	glass vial (50 mL)	EPA 365.1	sulfuric acid, cool (4°C)	28 days
E. coli	sterile bottle (150 mL)	SM 9223B (Colilert Quanti-Tray)	sodium thiosulfate, cool (4°C)	6 hours

3. Results

The assessment data are presented in Appendix B, Table 1. A total of 72 stormdrains were assessed through Phases 1 and 2 (Appendix C, Map 1). Among these systems, 22 were designated for advanced investigation. Four systems (PB02, PB03, B11, and PB19) were prioritized for investigation in Phase 1 and four more systems (PB05, PB07, PB46, and PB48) in Phase 2. In Phase 3 (2022-2023), Stone is continuing investigations of PB02, PB03, PB05, PB07, PB11, PB19, PB46, and PB48 and has begun investigation of suspected illicit discharges in the remaining 14 of the 22 stormdrains with suspected illicit wastewater discharges. Note there are 8 small stormwater drainage systems in Plattsburgh that VTDEC has determined do not warrant assessment.

Table 4 provides an overview of the contaminants detected in Plattsburgh's stormwater drainage systems and the status of the investigations. Investigation findings to date are presented for systems PB02, PB03, PB05, PB07, PB11, PB19, PB46, and PB48 in Sections 3.1 through 3.8.

Table 4. Plattsburgh IDDE system summary

System ID	Focus area	Status
PB02	Rugar Street	Contaminant source appears bracketed between manholes MH03 and MH04 on the south side of Rugar Street. Awaiting camera inspection (in spring 2023 after Plattsburgh's camera is repaired).
PB03	Rugar Street	Contaminant source appears bracketed between manholes MH03 and MH04 on the north side of Rugar Street. Awaiting camera inspection (in spring 2023 after Plattsburgh's camera is repaired).
PB04	Rugar Street	Bracket sampling completed. The lower portion of the system is mis-mapped. There are no visible structures between PB04-CB01 and the outfall. After repeated sampling and inspection, we have tentatively concluded that there is no chronic illicit discharge in this system. We suspect contaminated groundwater containing a low concentration of ammonia infiltrates this line. This system warrants revisiting in 2023 under different flow conditions.
PB05	Rugar Street/Broad Street	After repeated inspection and testing, we have concluded that there is no chronic illicit discharge in this system. High concentrations of *E. coli* were measured in the CB04-CB06 branch of this system in 2021. There were large amounts of leaf litter and trash in the catchbasins, such that collecting a clear sample was difficult. No dry weather flow was observed in the CB04-CB06 line in 2022 in multiple visits. Samples collected from manhole MH06 on 10/19/2022 had low *E. coli*. The mainline at MH04, which flows consistently, was found to contain negligible *E. coli* and no ammonia. We speculate that earlier detections of *E. coli* were likely caused by pet waste in the catchbasin CB04 and CB05 sumps.
PB07	S. Platte Street/Peru Street/etc.	After repeated inspection and testing, we have concluded that there is no chronic illicit discharge in this system. Despite some concern regarding the sanitary sewer crossings observed through this stormdrain, the likeliest source of *E. coli* is wildlife living in or traveling through the stormdrain, for which there was abundant sign.
PB10	Peru Street	Bracket sampling was attempted repeatedly for MBAS, ammonia, and *E. coli*. *E. coli* (>2420 MPN/100 mL) and ammonia were detected in manhole MH01 in September 2022. A source of ammonia was bracketed between CB02 and CB03 on Peru Street. However, a source of *E. coli* appears to enter further up the line (although samples collected in early and mid-October 2022 had dramatically different concentrations). A trickle of dry weather flow enters CB05 via a pipe penetration,

System ID	Focus area	Status
		underneath the pipe from CB06. It is possible sanitary wastewater from the Peru Street sewer main enters via this pathway; however, the flow rate is miniscule, and the absence of OB in this system is a confounding factor. Another possible source is a leak in the sewer lateral from the Army Reserve building on Peru Street. Camera inspection is needed in the spring of 2023 of the Peru Street stormdrain.
PB11	Cornelia Street	The *E. coli* source appears bracketed to the exceedingly deep stormline on Cornelia Street extension and the Margaret/Miller Street intersection. Awaiting camera inspection (in spring 2023 after Plattsburgh's camera is repaired).
PB12-MH01	Oval area	Moderate *E. coli* concentration at MH01 confirmed on three dates. Bracket sampling for *E.* coli completed. The source of *E. coli* appears to be in the vicinity of CB11 on Massachusetts Street. Awaiting camera inspection (in spring 2023 after Plattsburgh's camera is repaired).
PB14-MH01	Dock Street	Reassessed. No chronic illicit discharge suspected. The system is mis-mapped. A flowing stormline enters unmapped catchbasin CB04 from multiple unmapped structures on Dock Street. The metallic sheen on the water surface in these unmapped structures is similar to that observed in MH01 near the buried outlet of this system. The source of dry weather flow, staining, and sheen appears to be shallow, contaminated groundwater infiltrating the system via unmapped structures in the area where Dock Street crosses the railroad tracks. Groundwater may be slightly contaminated due to past industrial activities, such as a fuel spill.
PB18	Margaret Street	This system was inspected many times through the fall of 2022. After a sample with high *E. coli* was collected in the outfall pool on 9/1/2022, we never observed flow, odor, or any indications of contamination on several subsequent dates. Therefore, we must conclude that the source of *E. coli* was transient and there is no chronic illicit discharge in this system.
PB19-MH01	Cumberland Ave.	Reassessed after pump station upgrades. No remaining illicit discharge.
PB22	Broad Street/Margaret Street	1. Bracketed a definite wastewater source on Brinkerhoff Street. Structures throughout this branch of the system contain obvious wastewater. A second wastewater source plus petroleum infiltration (possibly from a documented leak at the former Parrotte's service station) is apparent at 32 Broad Street. Awaiting camera inspection (in spring 2023 after Plattsburgh's camera is repaired). 2. After repeated *E. coli* and optical brightener testing of structures on Margaret Street and side streets, we concluded there is no chronic illicit discharge in the Margaret Street branch of the PB22 system.
PB23	Beach Road	After repeated testing throughout this drainage system, we have concluded that there is no chronic illicit discharge source. We suspect the source of *E. coli* detected at the outfall was geese congregating in the parking area and beach. *E. coli* levels fell in the fall after the geese left.
PB24	Off Bowman Street	Reassessed. No chronic illicit discharge suspected
PB28	US Ave.	Reassessed. No chronic illicit discharge suspected
PB29-CB01	Connecticut Road	Reassessed. No chronic illicit discharge suspected
PB31	Margaret Street	MBAS contamination apparently from large Georgia Pacific property upstream of municipal stormdrain on Margaret Street (line entering CB08). The *E. coli* concentration at the outfall fell sharply between samples collected in September and October 2022. Awaiting camera inspection (in spring 2023 after Plattsburgh's camera is repaired).
PB36-MH01	Oval area	Reassessed. No chronic illicit discharge suspected. Due to a mapping error, it appears a sanitary sewer manhole was sampled in 2020, rather than a stormwater structure. This apparent mix up caused this system to be flagged for advanced investigation.

System ID	Focus area	Status
PB37-CB01	Oval area	Reassessed. No chronic illicit discharge suspected
PB40	Bridge Street bridge	Confirmed water leak at bridge abutment
PB46	Broad Street	There was no dry weather flow and low *E. coli* in CB01 on resampling on 10/6/2022. An additional round of sampling on 10/19/2022 yielded the same result. Therefore, we conclude that there is no chronic illicit discharge source in this system. High *E. coli* detected in CB01 in 2021 may have resulted from pet waste.
PB48-CB01	Oval area	After repeated visits and testing throughout the system, we have tentatively concluded that there is no current illicit discharge in this system. The system was mis-mapped. It is also almost completely obstructed, such that the catchbasins along the bike path are flooded. On August 5, 2021, when a sample with a high *E. coli* concentration of 2,420 MPN/100 mL was collected, the technician observed a "strong odor of death and decay." No odor was observed in October 2022 and the *E. coli* concentration was 1 MPN/100 mL (negligible). Also, optical brightener detected in this system in July 2021 has not reoccurred. This system will be revisited in 2023 to confirm there is no current illicit discharge.

3.1. PB02

PB02 is a large system that drains portions of Rugar Street and several connecting streets and areas of the SUNY Plattsburgh campus (Appendix C, Map 2). It discharges to the Saranac River south of Kent Hall. The PB02 outfall is located next to the PB03 outfall (Figure 2). The PB02 system was designated for further investigation due to positive optical brightener results and suds noted at the outfall. Water quality data for this system are presented in Table 5.

Table 5. Water analysis data for system PB02

Structure ID	Date Assessed	Dry, Wet/no flow, Dripping, or Flowing?	NH_3 (mg/L)	Free Chlorine (mg/L)	MBAS (mg/L)	Specific Cond. (µS/cm)	OB Result	Observations
PB02	7/29/2020	flowing	0.0	0.06	0.02	2,570	positive	clear, no odor
PB02-MH01	7/29/2020	flowing	0.0	0.07, 0.05	0.18	2,550	positive	na
PB02-MH07	7/29/2020	trickling	na	na	na	na	negative	no odor
PB02-MH10	7/29/2020	trickling	na	na	na	na	negative	no odor
PB02-MH0.1	8/12/2020	flowing	na	na	na	na	positive	na
PB02-MH0.5	8/12/2020	flowing	na	na	na	na	positive (strong)	na
PB02-MH01	8/13/2020	flowing	na	na	na	na	positive (strong)	na
PB02-MH04.1	8/13/2020	wet (no flow)	na	na	na	na	negative	na
PB02-CB02	8/31/2021	na	na	na	na	na	positive	no odor
PB02-CB02	10/6/2022	trickling	na	na	na	na	positive	na
PB02-MH01	10/6/2022	trickling	na	na	na	na	positive (weak)	na
PB02-MH02	10/6/2022	trickling	na	na	na	na	positive (weak)	na
PB02-MH03	10/6/2022	trickling	na	na	na	na	positive	na
PB02-MH04	10/6/2022	trickling	na	na	na	na	negative	na
PB02-MH05	10/6/2022	trickling	na	na	na	na	indeterminate	na
PB02-MH07	10/6/2022	trickling	na	na	na	na	negative	na

Findings:

- The following observations were made on July 29, 2020, when PB02 was first assessed:
  - Suds were observed in the Saranac River below the outfall (not necessarily attributable to PB02).
  - At MH01, all flow was from the man line (pipe B). Pipe A (an unmapped six-inch drain from the direction of Mason Hall) and pipe C were dry.
  - No contaminants were detected above levels of concern, although the specific conductance was quite high (~2,600 µS/cm) at the outfall and MH01. Low flows at MH07 and MH10 precluded sampling.
  - OB was detected on pads retrieved from the outfall and manhole MH01. No OB was detected in MH07 and MH10.

Figure 2. PB02 outfall (left) and PB03 outfall (right)

- The system was revisited on August 12 and 13, 2020. OB pads were placed at manholes MH0.1, MH0.5, MH01, and MH04.1. Manholes along Rugar Street between manholes MH01 and MH07 were not accessible. OB was detected in manholes MH0.1, MH0.5, and MH01. The pad from manhole MH0.5 had particularly strong fluorescence. No OB was detected in manhole MH04.1 on Prospect Avenue.
- Samples collected at the outfall on August 5, 2021 had elevated *E. coli* (602 MPN/100 mL) and very low TP (Table 13).
- An OB pad placed at CB02 on August 31, 2021 was positive.
- Samples collected on September 14, 2021 at manhole MH03 and catchbasin CB02 had exceedingly high *E. coli* (>2,420 MPN/100 mL; Table 13).
- OB pads were deployed at all accessible, on-line structures on Rugar Street on October 6, 2022. OB was detected at MH03 and downstream structures. OB was not detected at MH04 or MH07, and the test at MH05 was indeterminate.

Conclusion: Stone has bracketed a likely wastewater source between MH03 and MH04 on the south side of Rugar Street. The next step is to inspect this pipeline with a sewer camera.

Resolution: Pending

3.2. PB03

PB03 is a very large system that drains portions of Rugar Street, Sanborn Avenue, Park Avenue, Dennis Avenue, Broad Street, and Cornelia Street; many connecting streets; and portions of the SUNY Plattsburgh campus (Appendix C, Map 3). This system was flagged for further investigation due to detection of optical brightener. Water quality data for this system are presented in Table 6.

Table 6. Water analysis data for system PB03

Structure ID	Date Assessed	Dry, Wet/no flow, Dripping, or Flowing?	NH_3 (mg/L)	Free Chlorine (mg/L)	MBAS (mg/L)	Specific Cond. (µS/cm)	OB Result	Observations
PB03	7/29/2020	flowing	0.0	0.08, 0.05	0.02	1,166	positive	clear, no odor
PB03-MH03	7/29/2020	flowing	0.0	0.09, 0.08	0.07	1,206	positive (weak)	no odor
PB03-MH04	7/29/2020	trickling	na	na	na	na	negative	no odor
PB03-MH10	7/29/2020	flowing	0.0	0.02	0.40	2,160	negative	na
PB03-CB30	7/29/2020	wet (no flow)	na	na	na	na	negative	na
PB03-MH35	7/29/2020	flowing	na	na	na	na	negative	no odor
PB03-MH0.1	8/12/2020	flowing	na	na	na	na	positive	na
PB03-MH01	8/12/2020	flowing	na	na	na	na	positive (strong)	na
PB03-MH02	8/13/2020	flowing	na	na	na	na	positive	na
PB03	8/20/2020	flowing	na	na	na	na	positive	na
PB03-CB01	8/31/2021	na	na	na	na	na	indeterminate	no odor
PB03-CB02	8/31/2021	na	na	na	na	na	negative	no odor
PB03-CB03	8/31/2021	na	na	na	na	na	negative	no odor
PB03-CB04	8/31/2021	na	na	na	na	na	negative	no odor
PB03-CB05	8/31/2021	na	na	na	na	na	positive	no odor
PB03-CB07	8/31/2021	na	na	na	na	na	negative	no odor
PB03-MH05	8/31/2021	na	na	na	na	na	positive (v. weak)	no odor
PB03-MH02	10/6/2022	flowing	na	na	na	na	positive (strong)	pool-like odor
PB03-MH03	10/6/2022	flowing	na	na	na	na	positive (strong)	dumpster removed; same odor as MH02
PB03-CB04	10/6/2022	wet (no flow)	na	na	na	na	na	same pool odor
PB03-MH04	10/6/2022	flowing	na	na	na	na	negative	less flow than MH03; no odor

Findings:

- The following observations were made on July 29, 2020, when PB03 was first assessed:
  - Suds were observed in the Saranac River below the outfall (not necessarily attributable to PB03).
  - Low concentrations of free chlorine were measured at the outfall and at manhole MH03. No ammonia was detected.
  - OB was detected at the outfall and at MH03, although fluorescence of the pad at MH03 was weak. OB was not detected in the upper branches of the system.

- Pads were placed in manholes MH0.1, MH01, and MH02 on August 12 and 13, 2020. OB was detected in all three structures.
- The outfall was retested on August 20, 2020, and the earlier OB detection was confirmed.
- On August 5, 2021, an elevated *E. coli* concentration (687 MPN/100 mL) was measured at the outfall (Table 13). The TP concentration was negligible.
- OB pads were deployed in multiple catchbasins on August 31, 2021. OB was detected in CB05. This detection may have been caused by leakage of effluent from a dumpster positioned next to CB05.
- On September 14, 2021, samples were collected for *E. coli* analysis from multiple structures (MH01, MH02, and MH03) on Rugar Street. *E. coli* concentrations were negligible (Table 13). There was an odd odor, reminiscent of a swimming pool, at MH02 and MH03. Substantial flow enters the system at both manholes.
- OB pads were deployed at MH02, MH03, and MH04 on the north side of Rugar Street on October 6, 2022. OB was detected at MH03 and at MH02 downstream. OB was not detected at MH04. There was substantial flow and the same odd pool odor observed previously at MH03 and much less flow and no odor upstream at MH04.
- The dumpster that previously stood near catchbasin CB05—and appeared to have leaked into it—was not present on October 6, 2022.

Conclusion: Stone has bracketed a likely washwater source between MH03 and MH04 on the north side of Rugar Street. The next step is to inspect this pipeline with a sewer camera. Dye testing may also be performed.

Resolution: Pending

3.3. PB05

The PB05 system drains parts of the SUNY Plattsburgh campus and Broad, William, and Brinkerhoff Streets (Appendix C, Map 4). The outfall discharges to the Saranac River.

Water quality data for this system are presented in Table 7. The PB05 system was designated for advanced investigation based on elevated *E. coli* concentrations measured at the outfall.

Table 7. Water analysis data for system PB05

Structure ID	Date Assessed	Dry, Wet/no flow, Dripping, or Flowing?	NH_3 (mg/L)	Free Chlorine (mg/L)	MBAS (mg/L)	Specific Cond. (µS/cm)	OB Result	Observations
PB05	7/29/2020	flowing	0.0	0.05	0.10	2170	negative	clear, no odor, some suds
PB05 REP	7/29/2020	flowing	0.0	0.02	0.15	2140	negative	clear, no odor, some suds
PB05-MH04	8/6/2020	dry	0.0	0.05, 0.06	0.10	2140	negative	na
PB05	7/29/2021	flowing	0.0	0.04	0.24	2310	na	no odor, clear, suds
PB05-MH04	10/12/2022	flowing	0.0	na	na	na	na	small trickle from pipe A; flowing from pipe B
PB05-MH06	10/12/2022	wet (no flow)	0.0	na	na	na	na	all incoming pipes dry

Findings:

- High specific conductance was measured, and suds were observed when the PB05 outfall was first visited on July 29, 2020.
- On August 12, 2021, samples collected at the outfall had elevated *E. coli*, 689 and 1300 MPN/100 mL (Table 13).
- Additional *E. coli* samples were collected on three dates in 2021 (8/31, 9/7, 9/14) to try to bracket the source of contamination (Table 13). Junction manhole PB05-MH04 had exceedingly high *E. coli* (>2420 MPN/100 mL) on August 31, 2021. On September 7, samples collected at CB04 and CB05 also had *E. coli* levels exceeding 2420 MPN/100 mL. These results suggested a source of *E. coli* in the CB04–CB06 branch of the system.
- On September 14, 2021, we observed stagnant water and large quantities of leaf litter in catchbasins CB04–CB06. A sample collected at CB6 at a moderate *E. coli* concentration of 301 MPN/100 mL (Table 13).
- On October 19, 2022, samples collected at manholes MH04 and MH06 had low *E. coli* concentrations (7.3 and 88 MPN/100 mL, respectively). MH04 was flowing from the William Street line (pipe B) and trickling from the line from MH06 (pipe A). No ammonia was detected at MH04. All pipes entering MH06 were dry and water in the sump was stagnant. Catchbasins CB04, CB05, and CB06 were dry and packed with leaves.

Conclusion: We do not believe there is a chronic, illicit discharge to this stormdrain. In 2021, there was fecal contamination of catchbasins CB04 and CB05, and structures downstream. However, neither OB nor ammonia were detected. When revisited on October 12, 2022, there was no flow in the MH06–CB04–CB06 branch and a low *E. coli* concentration in the MH06 sump. We suspect the source of *E. coli* in 2021 was pet waste deposited in catchbasins CB04 and CB05.

Resolution: No chronic illicit discharge present.

3.4. PB07

The PB11 system drains parts of South Platte Street, South Peru Street, Elizabeth Street, Johnson Street, Monty Street, McKinley Avenue, Sheridan Avenue, and Flynn Avenue (Appendix C, Map 5). The outfall discharges to the Saranac River.

Water quality data for this system are presented in Table 8. The PB07 system was designated for advanced investigation based on detections of *E. coli* and MBAS detergents.

Table 8. Water analysis data for system PB07

Structure ID	Date Assessed	Dry, Wet/no flow, Dripping, or Flowing?	NH_3 (mg/L)	Free Chlorine (mg/L)	MBAS (mg/L)	Specific Cond. (µS/cm)	OB Result	Observations
PB07	7/30/2020	flowing	0.0	0.04	0.36	2230	negative	MBAS very cloudy
PB07-MH05	7/30/2020	wet (no flow)	0.0	0.02	0.23	1074	negative	
PB07-MH30	7/30/2020	flowing	0.1	0.00	0.05	1451	negative	suds in sump 8/6/20; no suds in MH33

Structure ID	Date Assessed	Dry, Wet/no flow, Dripping, or Flowing?	NH_3 (mg/L)	Free Chlorine (mg/L)	MBAS (mg/L)	Specific Cond. (µS/cm)	OB Result	Observations
PB07	8/4/2021	flowing	0.0	0.04	0.17	2580	na	na
multiple	9/7/2021	na	na	na	na	na	na	sampled for *E. coli* at MH06, MH07, MH08, MH09, MH10
PB07-MH05	9/14/2021	flowing	na	na	na	na	na	na
PB07-MH06	9/14/2021	flowing	na	na	na	na	na	na
PB07-MH07	9/14/2021	wet (no flow)	na	na	na	na	na	no odor
PB07-MH08	9/14/2021	wet (no flow)	na	na	na	na	na	racoon tracks
PB07-MH09	9/14/2021	wet (no flow)	na	na	na	na	na	no odor
PB07-MH10	9/14/2021	wet (no flow)	na	na	na	na	na	na
PB07-MH11	9/14/2021	flowing	na	na	na	na	na	na
PB07	11/3/2022	flowing	na	na	na	na	na	no odor, clear, minor foam
PB07-MH05	11/3/2022	flowing	na	na	na	na	na	racoon scat
PB07-MH06	11/3/2022	flowing	na	na	na	na	na	na
PB07-MH07.1	11/3/2022	dry	na	na	na	na	na	na
PB07-MH07.2	11/3/2022	wet (no flow)	na	na	na	na	na	no odor
PB07-MH08	11/3/2022	wet (no flow)	na	na	na	na	na	na
PB07-MH08.1	11/3/2022	dry	na	na	na	na	na	wet spot under pipe
PB07-MH09	11/3/2022	wet (no flow)	na	na	na	na	na	no odor
PB07-MH10	11/3/2022	wet (no flow)	na	na	na	na	na	na

Findings:

- When the PB07 outfall was first tested on July 30, 2020, the specific conductance was high, 2,230 µS/cm, and a low concentration of MBAS was detected. No OB or ammonia were detected at the outfall or in manholes on Elizabeth Street (MH05) or Flynn Avenue (MH30).
- Moderate concentrations of *E. coli* were measured at the outfall on August 12 (579 MPN/100 mL) and August 31, 2021 (291 MPN/100 mL). On the August 31 date, the *E. coli* concentration was higher (727 MPN/100 mL) at manhole MH05 on Elizabeth Street.
- Three attempts were made to bracket source(s) of *E. coli* in the system:
  - On September 7, 2021, high *E. coli* concentrations (=>2400 MPN/100 mL) were detected at manhole MH08 on Johnson Street, manhole MH09 on Monty Street, and manholes MH06 and MH07 on Elizabeth Street. *E. coli* were negligible (7.4 MPN/100 mL) at MH10 on McKinley Street.
  - One week later, on September 14, 2021, *E. coli* concentrations at manholes on Elizabeth Street were low (<200 MPN/100 mL), and negligible at manhole MH11 on South Peru Street. The negligible *E. coli* detected at MH11 (3.1 MPN/100 mL) indicated that fecal contamination was not a problem in the southern half of the drainage system.
  - Negligible *E. coli* were detected when manholes MH06 on Elizabeth Street (4.1 MPN/100 mL) and MH10 on McKinley Street (2.0 MPN/100 mL) were resampled on November 3, 2022. Unfortunately, a sample collected at the outfall froze in transit and was discarded.

- At least three sanitary sewer laterals cross through the Elizabeth Street stormdrain (Figure 3). A sewer lateral was also seen at manhole MH08.1 on Johnson Street (Figure 4). These laterals were visible within stormwater manholes. Similar laterals may cross the stormdrain between manholes.
- We observed racoon prints and/or scat in several structures in the PB07 system. Scat is visible in Figure 4 on the concrete shelf above the manhole channel.

Figure 3. Sanitary sewer lateral crossing Elizabeth Street stormdrain

Figure 4. Sanitary sewer lateral crossing Johnson Street stormdrain

Conclusion: PB07 is a large system that is difficult to access due to traffic on South Peru Street. High concentrations of *E. coli* were measured in manholes on Elizabeth Street, Johnson Street, and Monty Street on September 7, 2021. However, *E. coli* concentrations in this system dropped sharply in subsequent sampling rounds. No OB was detected at the outfall or in manholes on Elizabeth Street and Flynn Avenue. The absence of OB indicates that residential wastewater is unlikely the source of *E. coli*. Despite some concern regarding the sanitary sewer crossings observed through this stormdrain, we conclude the likeliest source of *E. coli* is wildlife living in or traveling through the stormdrain, for which there was abundant sign. Since it can be challenging to collect water samples from manholes under low flow conditions without scraping sediment into the sample, fecal contamination of the sediment by wildlife may have contributed to the high *E. coli* concentrations on September 7, 2021.

Resolution: No chronic illicit discharge present.

3.5. PB11

The PB11 system drains parts of City Hall Place, Cornelia Street, Miller Street, and Margaret Street in downtown Plattsburgh (Appendix C, Map 6). The outfall is located in a retaining wall on the bank of the Saranac River (Figure 5).

Water quality data for this system are presented in Table 9. The PB11 system was designated for advanced investigation based on detections of OB and MBAS detergents.

Figure 5. Outfall PB11

Table 9. Water analysis data for system PB11

Structure ID	Date Assessed	Dry, Wet/no flow, Dripping, or Flowing?	NH_3 (mg/L)	Free Chlorine (mg/L)	MBAS (mg/L)	Specific Cond. (µS/cm)	OB Result	Observations
PB11	7/29/2020	flowing	0.0	0.00	0.65	5,000	positive	clear; possible ww odor
PB11	8/27/2020	flowing	na	na	na	na	positive	na
PB11-MH01	9/1/2022	na	na	na	na	na	positive	na
PB11-CB02	9/1/2022	na	na	na	na	na	negative	na
PB11-MillerMH3	9/1/2022	na	na	na	na	na	negative	na
PB11-MargaretMH2	9/1/2022	na	na	na	na	na	negative	na
PB11-CityHallMH2	9/1/2022	na	na	na	na	na	negative	na
PB11-MH01	9/14/2022	na	na	na	na	na	positive	na
PB11-CB04	9/14/2022	na	na	na	na	na	negative	na
PB11-CB05	9/14/2022	na	na	na	na	na	negative	na
PB11-CB06	9/14/2022	na	na	na	na	na	negative	na
PB11-MH01	9/29/2022	na	na	na	na	na	positive (weak)	na
PB11-CB01	9/29/2022	na	na	na	na	na	positive (weak)	na

Findings:

- When the PB11 outfall was first visited on July 29, 2020, a wastewater odor was noted, the specific conductance was quite high (5000 µS/cm), and OB was detected.
- A follow-up test on August 27, 2020 confirmed presence of OB at the outfall.
- The outfall was inaccessible in 2021 due to construction. On August 5, 2021, samples were collected for *E. coli* and TP analysis at MH01, located at the end of Cornelia Street. This is the

first accessible structure upstream of the outfall and it is very deep. The *E. coli* concentration exceeded 2,420 MPN/100 mL (Table 13).

- Multiple attempts were made in August 2021 to access structures upstream of MH01; however, traffic conditions and the locations of manholes were challenging, particularly on Miller Street. On September 14, 2021, samples were collected for *E. coli* analysis from manholes on Margaret Street (MargaretMH02) and City Hall Place (CityHallMH02). *E. coli* concentrations were negligible in both samples, indicating the problem is downstream of these structures.
- In August 2022, we inspected manholes located close to the PB11 outfall, determining that 1) pipes divert flow from the Saranac River and out through the outfall, and 2) a combined sewer overflow structure discharges via the outfall. Therefore, the results of sampling at the outfall in 2020 are misleading.
- On September 1, 2022, OB pads were deployed in Cornelia Street MH01, in CB02, and in first accessible manhole on Miller Street (MH03), Margaret Street (MH02), and City Hall Place (MH02) to try to bracket the source. OB was detected in Cornelia Street MH01, but not in the other structures.
- Similarly, no OB was detected in pads placed in catchbasins around the Cornelia Street/Miller Street intersection on September 14, 2022.
- On September 29, 2022, pads were set in MH01 and in CB01 on Cornelia Street. Although catchbasin CB01 is off the main line, a pad was snaked through it into the main stormdrain. Both pads were positive, indicating the OB source is upstream of catchbasin CB01.

Conclusion: The presence of OB and a high *E. coli* concentration in MH01 on Cornelia Street confirms a sanitary wastewater discharge is present in this system upstream of MH01. The source was bracketed to the best of our ability in this high traffic area. The next step is the attempt camera inspection of the pipelines with a sewer camera, although this may be infeasible.

Resolution: Pending

3.6. PB19

PB19 is a large system that drains industrial and residential areas off Boynton Avenue and Margaret Street (Appendix C, Map 7). The outfall is located at the wastewater pump station on Cumberland Avenue. This system required advanced investigation due to obvious wastewater contamination of a stormwater structure on Cumberland Avenue. Water quality data for this system are presented in Table 10.

Table 10. Water analysis data for system PB19

Structure ID	Date Assessed	Dry, Wet/ no flow, Dripping, or Flowing?	NH_3 (mg/L)	Free Chlorine (mg/L)	MBAS (mg/L)	Specific Cond. (µS/cm)	OB Result	Observations
PB19-MH01	8/11/2020	flowing	0.0	0.06, 0.12	0.21	1317	positive (weak)	clear, no odor
PB19-MH04	8/11/2020	flowing	na	0.07	0.23	298	negative	clear, no odor

Structure ID	Date Assessed	Dry, Wet/ no flow, Dripping, or Flowing?	NH_3 (mg/L)	Free Chlorine (mg/L)	MBAS (mg/L)	Specific Cond. (µS/cm)	OB Result	Observations
PB19-MH10	8/11/2020	wet (no flow)	0.0	0.06, 0.08	0.08	1751	negative	clear, no odor
PB19-MH18	8/11/2020	flowing	na	0.02	<=0.10	na	negative	clear, no odor
PB19-MH01	8/27/2020	flowing	na	na	na	na	lost	sewage odor
PB19-CB01	9/1/2022	na	na	na	na	na	negative	clear, no odor
PB19-CB02	9/1/2022	na	na	na	na	na	negative	clear, no odor
PB19-CB03	9/1/2022	na	na	na	na	na	negative	clear, no odor

Findings:

- This system was first visited on August 11, 2020. A representative from the City of Plattsburgh accompanied the visit. Upon arrival, it was apparent that a sanitary sewer overflow had occurred during a recent storm. The cover of sanitary manhole SAM01 (Figure 6; Appendix C, Map 7) was ajar, sanitary paper was seen on the surrounding ground, and a wastewater odor prevailed. More sanitary paper was visible on the grate of catchbasin CB01, indicating that wastewater had entered the PB19 system at this point (Figure 7).

Figure 6. Sanitary manhole SAM01

Figure 7. Toilet paper on catchbasin CB01 grate following sewer overflow event

- Manhole MH01 was flowing heavily when tested on August 11, 2020. The northwest branch, sampled at manhole MH18 on Boynton Avenue at the northeast corner of Penfield Park, was flowing, while the southern branch, sampled at manhole MH10 on Riley Avenue near the intersection of Hyde Avenue, was not flowing. Optical brightener was detected at MH01, but not at any points upstream.
- Samples collected at MH01 on August 5, 2021 had low *E. coli* (121 MPN/100 mL) and TP concentrations (Table 13).
- The City of Plattsburgh (Jonathan Ruff) explained that the hydraulic capacity of the sewer from manhole SAM01 to the wastewater pump station was increased in the fall of 2021. A wastewater pump at the pump station was also upgraded. Since these improvements, the City does not expect many, if any, future wastewater overflows from SAM01 into the stormdrain.
- OB was not detected in catchbasins CB01, CB02, and CB03 on pads deployed between September 1-14, 2022. The water in the catchbasin sumps was clear and had no odor.

Conclusion: The City of Plattsburgh made major improvements at the Cumberland Avenue pump station to eliminate sanitary sewer overflows from the SAM01 sanitary manhole into the PB19 stormdrain.

Resolution: We consider this issue resolved.

3.7. PB46

The PB46 system drains a small section of Bridge Street (Appendix C, Map 8).

Water quality data for this system are presented in Table 11. The PB46 system was designated for advanced investigation based on high *E. coli* concentrations (Table 13) and elevated MBAS measured in catchbasin CB01 in 2021.

Table 11. Water analysis data for system PB46

Structure ID	Date Assessed	Dry, Wet/no flow, Dripping, or Flowing?	NH_3 (mg/L)	Free Chlorine (mg/L)	MBAS (mg/L)	Specific Cond. (µS/cm)	OB Result	Observations
PB46	7/29/2021	na	na	na	na	na	na	outfall may be buried in riprap.
PB46-CB01	8/5/2021	wet (no flow)	0.0	0.07, 0.04	0.32	2630	negative	no odor
PB46-MH01	9/29/2022	wet (no flow)	na	na	na	na	na	no odor
PB46-CB01	9/29/2022	wet (no flow)	na	na	na	na	na	no odor, minor suds. CB02 = wet/no flow; CB03 and CB04 dry
PB46-CB01	10/6/2022	wet (no flow)	0.0	na	na	na	na	no flow at MH01
PB46-MH01	10/19/2022	wet (no flow)	na	na	na	na	na	sampled CB01 and CB02; CB03 and CB04 dry

Findings:

- The outfall could not be located. It may be buried in rip rap.

- MBAS was slightly elevated (0.32 mg/L) when sampled at catchbasin CB01 on August 5, 2021, and the specific conductance was high.
- In 2022, the system was inspected and sampled on two dates, October 6 and October 19. There was no flow in the system on either date. Catchbasins CB01 and CB02 were full and CB03 and CB04 were dry. Negligible *E. coli* were measured in CB01 on both dates (<30 MPN/100 mL; Table 13). Low *E. coli* (75 MPN/100 mL) was measured at CB02 on October 19, 2022.

Conclusion: No OB or ammonia was detected in this stormdrain. There was low *E. coli* in CB01 and no dry weather flow when the stormdrain was resampled on October 6, 2022. An additional round of sampling on October 19, 2022 yielded the same result. Therefore, we conclude that there is no chronic illicit discharge source in this system. High *E. coli* detected in CB01 in 2021 may have resulted from pet waste or other transient source.

Resolution: No chronic illicit discharge present.

3.8. PB48

The PB48 system drains the parking lot and landscape around a building on Wisconsin Street off the Oval (Appendix C, Map 9). The outfall could not be located on the steep wooded bank between the railroad tracks and the lakeshore. The system discharges to Lake Champlain.

The PB48 system was designated for advanced investigation based on detections of OB, MBAS, and ammonia in the catchbasin closest to the mapped outfall location, CB01. Water quality data for this system are presented in Table 12.

Table 12. Water analysis data for system PB48

Structure ID	Date Assessed	Dry, Wet/no flow, Dripping, or Flowing?	NH_3 (mg/L)	Free Chlorine (mg/L)	MBAS (mg/L)	Specific Cond. (µS/cm)	OB Result	Observations
PB48-CB01	7/29/2021	wet (no flow)	1.0, 1.0	0.01	2.44	984	positive (strong)	very turbid, no odor
PB48-CB02	7/29/2021	flowing	1.5	0.03	2.9	967	positive (strong)	no odor, clear, suds
PB48-CB03	7/29/2021	na	na	na	na	na	na	na
PB48-CB01	8/5/2021	wet (no flow)	4	0.04	2.9	1064	na	strong odor of death and decay; CB02 flooded
PB48-CB04	9/29/2022	wet (no flow)	na	na	na	na	negative	na
PB48-MH01	9/29/2022	na	na	na	na	na	negative	na
PB48-CB05	9/29/2022	trickling	na	na	na	na	negative	na
PB48-CB01	10/6/2022	na	na	na	na	na	na	CB01 and CB02 flooded

Findings:

- High concentrations of MBAS (~2.4 mg/L) and ammonia (1.0 mg/L) were measured at catchbasin CB01 when the PB48 system was first visited on July 29, 2021.

- The system is mis-mapped. The main line appears to enter catchbasin CB02 and flow toward CB03 and then CB01. It is unclear whether the structure labeled MH01 is connected with this system. We have assumed that catchbasins CB04 and CB05 are connected.
- The high MBAS and ammonia concentrations at CB01 were confirmed a week later, on August 5, 2021 (Table 12), and the *E. coli* concentration was very high, 2,420 MPN/100 mL (Table 13). A foul odor was noted and CB02 was flooded.
- There were no similar indications of wastewater contamination on two dates in 2022. No optical brightener was at CB04 and CB05 on September 29, 2022. On October 6, the lower portion of the system was flooded, and negligible *E. coli* were measured at CB01 (1 MPN/100 mL).
- The prevalence of iron staining at CB01 and CB02 suggests contaminated groundwater from historic uses on the oval enters the stormdrain.

Figure 8. Flooded catchbasin CB01

Conclusion: After repeated visits and testing throughout the system, we have tentatively concluded that there is no current illicit discharge in this system. We are not sure how to explain the apparent change between the 2021 and 2022 sampling events. It is possible there was a sanitary wastewater leak or accidental discharge to the stormdrain that was corrected. This system will be revisited in 2023 to confirm there is no current illicit discharge.

Resolution: NA

4. *E. coli* and Total Phosphorus Results

Samples were collected on multiple dates in 2021 and 2022 for *E. coli* and TP analysis by Endyne Labs. These data are presented in Table 13. Samples were collected during dry weather conditions. Where the sampling objective was bracketing contaminant discharges within stormdrains, only *E. coli* samples were collected, because total phosphorus is not a particularly useful indicator in this context. As discussed in the previous section, the high concentrations of *E. coli* measured in several systems are indicative of sanitary wastewater contributions.

Table 13. E. coli and total P data for selected stormwater structures

System	IDDE ID	Date	*E. coli* (MPN/100 mL)	TP (mg/L)
PB02	PB02	8/5/2021	602	0.018
PB02	PB02-CB02	9/14/2021	>2420	NA
PB02	PB02-MH03	9/14/2021	>2420	NA
PB03	PB03	8/5/2021	687	0.018
PB03	PB03-MH01	9/14/2021	1.0	NA
PB03	PB03-MH02	9/14/2021	<1	NA
PB03	PB03-MH03(A)	9/14/2021	<1	NA
PB03	PB03-MH03(B)	9/14/2021	<1	NA
PB04	PB04	9/1/2022	200	0.2
PB05	PB05	8/12/2021	1300	0.050
PB05	PB05 (Dupe)	8/12/2021	689	0.040
PB05	PB05	8/31/2021	1300	NA
PB05	PB05 (Dupe)	8/31/2021	579	NA
PB05	PB05-CB01	8/31/2021	< 1	NA
PB05	PB05-MH03	8/31/2021	131	NA
PB05	PB05-MH04J	8/31/2021	>2420	NA
PB05	PB05-CB03	9/7/2021	816	NA
PB05	PB05-CB04	9/7/2021	>2420	NA
PB05	PB05-CB05	9/7/2021	>2420	NA
PB05	PB05-MH03	9/7/2021	687	NA
PB05	PB05-MH04J	9/7/2021	>2420	NA
PB05	PB05-CB06	9/14/2021	301	NA
PB05	PB05-MH04	10/19/2022	7.3	NA
PB05	PB05-MH06	10/19/2022	88	NA
PB07	PB07	8/12/2021	579	0.032
PB07	PB07	8/31/2021	291	NA
PB07	PB07-MH05	8/31/2021	727	NA
PB07	PB07-MH06	9/7/2021	>2420	NA

System	IDDE ID	Date	*E. coli* (MPN/100 mL)	TP (mg/L)
PB07	PB07-MH06 (Dupe)	9/7/2021	>2420	NA
PB07	PB07-MH07	9/7/2021	2420	NA
PB07	PB07-MH08	9/7/2021	>2420	NA
PB07	PB07-MH09	9/7/2021	>2420	NA
PB07	PB07-MH10	9/7/2021	7.4	NA
PB07	PB07-MH05	9/14/2021	86.2	NA
PB07	PB07-MH06	9/14/2021	199	NA
PB07	PB07-MH11	9/14/2021	3.1	NA
PB07	PB07-MH06	11/3/2022	4.1	NA
PB07	PB07-MH10	11/3/2022	2.0	NA
PB10	PB10	9/1/2022	>2400	0.39
PB10	PB10-CB02	10/6/2022	>2400	NA
PB10	PB10-CB03	10/6/2022	>2400	NA
PB10	PB10-CB03	10/19/2022	120	NA
PB10	PB10-CB04	10/19/2022	100	NA
PB10	PB10-CB05	10/19/2022	460	NA
PB11	PB11-MH01	8/5/2021	> 2420	0.14
PB11	PB11-MargaretMH02	9/14/2021	2.0	NA
PB11	PB11CityHallMH02	9/14/2021	18.5	NA
PB12	PB12-MH01	9/14/2022	770	0.04
PB12	PB12-MH01 DUP	9/14/2022	980	0.015
PB12	PB12-MH01	10/6/2022	790	NA
PB12	PB12-CB02	10/19/2022	46	NA
PB12	PB12-CB03	10/19/2022	13	NA
PB12	PB12-CB04	10/19/2022	370	NA
PB12	PB12-CB05	10/19/2022	550	NA
PB12	PB12-MH01	10/19/2022	410	NA
PB12	PB12-Nevada1	10/19/2022	5.2	NA
PB12	PB12-CB05	11/3/2022	86.0	NA
PB12	PB12-CB09	11/3/2022	260.3	NA
PB12	PB12-CB11	11/3/2022	>2419.6	NA
PB12	PB12-MaryMH4-A	11/3/2022	2.0	NA
PB12	PB12-MaryMH4-B	11/3/2022	71.7	NA
PB12	PB12-MaryMH5-A	11/3/2022	101.7	NA
PB12	PB12-MaryMH5-A DUP	11/3/2022	325.5	NA
PB12	PB12-MaryMH5-Sump	11/3/2022	172.5	NA
PB18	PB18	9/1/2022	1600	0.039
PB18	PB18	10/19/2022	240	NA
PB19	PB19-MH01	8/5/2021	121	0.055
PB22	PB22-MH02(a)	8/5/2021	< 1	0.015
PB23	PB23	9/1/2022	920	0.032
PB23	PB23	10/19/2022	110	NA

System	IDDE ID	Date	*E. coli* (MPN/100 mL)	TP (mg/L)
PB23	PB23-MH03	10/19/2022	23	NA
PB24	PB24	9/1/2022	120	0.03
PB28	PB28	9/1/2022	160	0.036
PB29	PB29	9/1/2022	610	0.44
PB29	PB29-DSCulv	10/6/2022	100	NA
PB31	PB31	9/1/2022	>2400	0.12
PB31	PB31	10/19/2022	24	NA
PB31	PB31-CB08	10/19/2022	7.4	NA
PB36	PB36-MH01	8/12/2021	6.1	0.19
PB37	PB37	9/1/2022	62	0.021
PB40	PB40	9/1/2022	<1	0.013
PB46	PB46-CB01	8/12/2021	914	0.090
PB46	PB46-CB01	9/7/2021	>2420	NA
PB46	PB46-CB02	9/7/2021	980	NA
PB46	PB46-CB03	9/7/2021	140	NA
PB46	PB46-CB01	10/6/2022	20	NA
PB46	PB46-CB01	10/19/2022	29	NA
PB46	PB46-CB02	10/19/2022	75	NA
PB48	PB48-CB01	8/5/2021	2420	1.0
PB48	PB48-CB01	10/6/2022	1	NA
PB64	PB64-MH01	8/12/2021	57.1	0.016

5. Conclusions

A total of 72 stormwater drainage systems in the City and Town of Plattsburgh were assessed for illicit discharges in 2020-2021. One or more illicit discharges was suspected in 22 of these systems. Progress has been made to locate the sources of the illicit discharges or, in some cases, to confirm that no chronic illicit discharge exists. These efforts have been challenging due to the large extent of many of the systems, locations of many critical access structures within the roadway, and heavy or fast traffic.

6. References

American Public Health Association, Standard Methods for the Examination of Water and Wastewater, 21st edition, Washington D.C., 2005.

Endyne, Inc.-Plattsburgh. 2017. Quality Assurance Manual for Endyne, Inc. – Plattsburgh, Revision 7, Plattsburgh, NY.

Hach Company. Hach Method #8167. Loveland, CO.

Stone Environmental, Inc., SEI SOP 5.23.3: Maintenance and Calibration of the pH/Con 10 Meter. February 24, 2003.

Stone Environmental, Inc., SEI SOP 5.52.2: Optical Brightener Testing, June 11, 2018.

Appendix A. Stone Environmental SOPs

STANDARD OPERATING PROCEDURE

SEI-5.23.3

MAINTENANCE AND CALIBRATION OF THE pH/CON 10 METER

SOP Number: SEI-5.23.3 Date Issued: 5/14/99
Revision Number: 3 Date of Revision: 2/24/03

1.0 OBJECTIVE

This standard operating procedure (SOP) explains the calibration and maintenance of the Oakton pH/Con 10 meter and the Cole-Parmer pH/Con 10 meter. The meters are identical except for the distributor's names. The meter is manufactured by Cole-Parmer and distributed by Cole-Parmer and Oakton. The operator's manual should be referred to for the applicable procedures described below. The pH/Con 10 meter is used for measuring the pH, specific conductance, and temperature of water. The pH/conductivity meters generate and measure data, and thus must meet the requirements of 40 CFR part 160 subpart D.

2.0 POLICIES

1. According to 40 CFR Part 160, Subpart D, Section 160.61, Equipment used in the generation, measurement, or assessment of data and equipment used for facility environmental control shall be of appropriate design and adequate capacity to function according to the protocol and shall be suitable located for operation, inspection, cleaning, and maintenance.
2. Personnel will legibly record data and observations in the field to enable others to reconstruct project events and provide sufficient evidence of activities conducted.

3.0 SAFETY ISSUES

1. If necessary and appropriate, a site-specific health and safety plan shall be created for each study site. A template for creating a proper health and safety plan is provided on the SEI network.
2. If necessary and appropriate, all chemicals are required to be received with Material Safety Data Sheets (MSDS) or appropriate application label. These labels or MSDS shall be made available to all personnel involved in the sampling and testing.

4.0 PROCEDURES

4.1 Equipment and Materials

1. The pH/Con 10 meter, pH/conductivity/ temperature probe. The probe cable has a notched 6-pin connector to attach to probe meter.

2. If necessary and appropriate, standard solutions (e.g., standard pH 4.0 and 7.0, conductivity standards)
3. Clean beakers or other appropriate containers
4. Log or other appropriate medium to record calibration.

4.2 Meter Set-up and Conditioning

1. The pH/Con 10 meter uses a combination pH/conductivity/temperature probe. The probe cable has a notched 6-pin connector to attach the probe meter. Keep connector dry and clean.
2. To connect the probe, line up the notches and 6-pins on the probe connector with the holes in the connector located on the top of the meter. Push down and the probe connector will lock into place.
3. To remove probe, slide up the metal sleeve on the probe connector. While holding onto metal sleeve, pull probe away from the meter. Do not pull on the probe cord or the probe wires might disconnect.
4. Be sure to decontaminate the probe prior to use. The probe shall be tripled rinsed with distilled or deionized water. Further decontamination and cleaning procedures may be called for in special situations or outlined in approved protocols or work plans. This will be documented in field notes or in an appropriate logbook.
5. Be sure to remove the protective rubber cap of the probe before conditioning, calibration, or measurement. If the probe is clean, free of corrosion, and the pH bulb has not become dehydrated, simply soak the probe in tap water for ten minutes before calibrating or taking readings to saturate the pH electrode surface to minimize drift. Wash the probe as necessary in a mild detergent solution. If corrosion appears on the steel pins in the conductivity cell, use a swab soaked in isopropyl alcohol to clean the pins. Do not wipe the probe; this causes a build-up of electrostatic charge on the glass surface. If the pH electrode has dehydrated, soak it for 30 minutes in a 2M-4M KCI boot solution prior to soaking in tap water.
6. Wash the probe in deionized water after use and store in pH 4.0 standard solution or an approved boot solution (per the manufacturer's instruction).

4.3 pH Calibration

1. The meter is capable of up to 3-point pH calibration to ensure accuracy across the entire pH range of the meter. At the beginning of each day of use, perform a 2 or 3-point calibration with standard pH buffers 4.00, 7.00, and 10.00. Calibration standards that bracket the expected sample range should be used. Never reuse buffer solutions; contaminants in the solution can affect the calibration.

2. Press the MODE key to select pH mode. The pH indicator appears in the upper right corner of the display.
3. Dip the probe into the calibration buffer. The end of the probe must be completely immersed into the buffer. Stir the probe gently to create a homogeneous buffer solution. Tap probe to remove any air bubbles.
4. Press CAL/MEAS to enter pH calibration mode. The primary display will show the measured reading while the smaller secondary display will indicate the pH standard buffer solution.
5. Press or keys to scroll up or down until the secondary display value is the same as the pH buffer value (pH 4.00, 7.00 or 10.00).
6. Wait for the measured pH value to stabilize. The READY indicator will display when the reading stabilizes. After the READY indicator turns on, press ENTER to confirm calibration. A confirming indicator (CON) flashes and disappears. The meter is now calibrated at the buffer indicated in the secondary display.
7. Repeat steps 3, 5, and 6 using a second or third pH standard
8. Press CAL/MEAS to return to pH measurement mode.

4.4 Conductivity Calibration

1. Select a conductivity standard with a value near the sample value expected. The meter should be calibrated by the user(s) at the beginning of each day of use.
2. Pour out two separate portions of your calibration standard and one of deionized water into separate clean containers.
3. Press MODE key to select Conductivity. The ΦS or mS indicator will appear on the right side of the display.
4. Rinse the probe with deionized water, and then rinse the probe in one of the portions of calibration standard Record the calibration standard on the per-use maintenance form or other appropriate medium.
5. Immerse the probe into the second portion of calibration standard. The meter's auto-ranging function selects the appropriate conductivity range (four ranges are possible). Be sure to tap the probe to remove air bubbles. Air bubbles will cause errors in calibration.
6. Wait for the reading to stabilize. The READY indicator lights when the reading is stable. Press the CAL/MEAS key. The CAL indicator appears above the primary display. The primary display shows the measured reading and the secondary display shows the temperature. Record the initial calibration standard on the per-use maintenance form or other appropriate medium.

7. Press the □ or □ keys to scroll to the value of your conductivity standard Press and hold the □ or □ keys to scroll faster. The meter automatically compensates for temperature differences using a factor of 2.00% per BC.

8. Press ENTER key to confirm calibration. Upon confirmation, the CON indicator appears briefly. The meter automatically switches back into Measurement mode. The display now shows the calibrated, temperature compensated conductivity value. However, if the calibration value input into the meter is different from the initial value displayed by more than 20%, the ERR annunciator appears in the lower left corner of the display

4.5 Temperature Calibration/Verification

1. The built-in temperature sensor is factory calibrated. Therefore, no additional calibration is necessary. However, the temperature may be verified against another working thermometer. However, if errors in temperature readings are suspected or if a replacement probe is used. Refer to the operating instructions if temperature calibration is necessary.

4.6 General and Annual Maintenance

Individual users are responsible for the calibration, cleaning, repair, and maintenance of the instrument.

Routine inspection and maintenance schedules vary from each piece of equipment. Typically, there are minor maintenance needs each piece of equipment will need to undergo prior to use in the field (such as cleaning or conditioning). Always consult the manufacturer=s instructions for general maintenance.

Specific per use maintenance needs for the pH /Con 10 meter include but are not limited to:

1. Inspect probe for physical damage and debris
2. Inspect meter for physical damage and debris
3. Clean probe w/ mild detergent
4. Rinse probe in distilled water
5. Clean conductivity pins with isopropyl alcohol (if necessary)
6. Condition probe
7. Calibrated to pH 7.0
8. Calibrated to pH 4.0
9. Calibrated to pH 10.0

The pH /con 10 meter shall be stored in a clean dry place, usually the padded box that it came in. Care should be given to keep the instrument from dust and contamination.

Wash the probe in distilled water after use, and store in pH 4 solution.

All maintenance, repairs, and calibrations are to be documented on an equipment maintenance log or other appropriate medium. Follow the checklist provided on the equipment maintenance

log for regular use maintenance needs. Any maintenance must include documentation of whether the maintenance was routine and followed the SOP or not.

Equipment logs shall be brought to the field for documenting use and calibration. The logs will be returned to the office after each field use and filed in the equipment records filing cabinet.

In the event of failure due to breakage or loss of parts, an attempt will be made to repair or replace the necessary parts by the field personnel who discover the malfunction. All repairs will be documented in field notes and/or on a non-routine maintenance log. If the instrument is rendered "out of service" or "broken", it should be tagged as such. If further repair is necessary, return the instrument to the manufacturer following proper shipping procedures.

Non-routine repairs must include documentation of the nature of the defect, how and when the defect was discovered, and any remedial action taken in response to the defect.

5.0 RESPONSIBILITIES

1. All personnel will legibly record data and observations (including phone conversations) in accordance with this SOP to enable others to reconstruct project events and provide sufficient evidence of activities conducted.
2. Prior to use and after use, all equipment will be appropriately cleaned, decontaminated, calibrated (if necessary) and stored in accordance with the manufacturer's instructions and this SOP.

6.0 DEFINITIONS

1. *Decontamination* – Procedures followed to ensure cross contamination does not occur between sampling points or that potential contamination of equipment does not pose a hazard to sampling personnel.
2. *EPA* the U.S. Environmental Protection Agency.
3. *FIFRA* the Federal Insecticide, Fungicide, and Rodenticide Act as amended.
4. *Maintenance* – Actions performed on equipment to standardize and/or correct the accuracy and precision of a piece of equipment to ensure that the equipment is operating within the manufacturer's specifications and standard values.
5. *Study* means any experiment at one or more test sites, in which a test substance is studied in a test system under laboratory conditions or in the environment to determine or help predict its effects, metabolism, product performance (pesticide efficacy studies only as required by 40 CFR 158.640) environmental and chemical fate, persistence, or residue, or other characteristics in humans, other living organisms, or media. The term "study" does not include basic exploratory studies carried out to determine whether a test substance or a test method has any potential utility.

7.0 REFERENCES

40 CFR Part 160 Good Laboratory Practice Standards, August 1989.

8.0 TABLES, DIAGRAMS, FLOWCHARTS, AND VALIDATION DATA

None

9.0 AUTHORIZATION

Revisited by: _____ Date: _____

Michael Nuss, Staff Scientist

Approved by: _____ Date: _____

Christopher T. Stone, President

10.0 REVISION HISTORY

Revision number 1:

1. Changed title and references to Oakton in Sections 1.0 and 2.0 to enable this standard operating procedure to apply to both the Oakton pH/Con 10 meter and the Cole-Parmer pH/Con 10 meter, as these are identical meters.
2. Added instructions about cleaning and re-hydrating the probe to Section 3.1.
3. Added Section 9.0.
4. Reformatted.
5. Minor word editing.

Revision number 2:

1. Changed the title.
2. Removed sections 7.0 (Measurement) and 8.0 (Maintenance/Repairs).
3. Added section called (General and Annual Maintenance).
4. Minor editing.
5. Reformatted.

Revision number 3:

1. Minor wording edits in Section 1.0, Objective.
2. Updated style to match SEI Style Guide – font and text. Reformatted using MS Word
3. Added standardized section headers: 2.0 Policies, 3.0 Safety, 5.0 Responsibilities, 6.0 Definitions, 7.0 References, 8.0 Tables, Diagrams, Flowcharts and Validation data. Authorization moved to Section 9.0, andSection10.0 Revision History.
4. Deleted section on logs being given to the QAU.
5. Other minor wording edits.

STANDARD OPERATING PROCEDURE

SEI-6.38.1

OPTICAL BRIGHTENER TESTING

SOP Number: SEI-6.38.1 Date Issued: 9/11/08

Revision Number: 1 Date of Revision: 3/18/13

1.0 OBJECTIVE

Optical brighteners are a class of fluorescent dyes used in almost all laundry detergents. Many paper products also contain optical brighteners. When optical brightener is applied to cotton fabrics, they will absorb ultraviolet (UV) rays in sunlight and release them as blue rays. These blue rays interact with the natural yellowish color of cottons to give the garment the appearance of being “whiter than white”. Optical brightener dyes are generally found in domestic wastewaters that have a laundry effluent component. Because optical brighteners absorb UV light and fluoresce in the blue region of the visible spectrum, they can be detected using a long wave UV light (a “black” light).

Optical brightener monitoring can be used to indicate the presence of wastewater in stormwater drainage systems, streams, and other water bodies. Since optical brighteners are removed by adsorption onto soil and organic materials as effluent passes through soil and aquifer media, optical brightener monitoring may also be used to identify incompletely renovated wastewater effluent in groundwater at wastewater dispersal sites.

To test for optical brightener, a cotton pad is placed in a flow stream for a period of 4-10 days, after which the pad is rinsed, air dried, and viewed under a long-range UV light. Florescence indicates the presence of optical brightener. Optical brighteners may be monitored in a wide range of structures and flow streams. For example, monitoring pads may be placed in stormwater outfall pipes, within catchbasins and manholes, or in any other man-made or natural water conveyance. Optical brightener pads may be placed in dry pipes or other dry structures to monitor possible intermittent flow streams. However, the more common application is to monitor discharge points that are flowing under dry weather conditions.

2.0 POLICIES

1. According to Stone’s Corporate Quality Management Plan, Stone shall have standard operating procedures in writing setting forth study methods that management is satisfied are adequate to ensure the quality and integrity of the data generated in the course of a study.
2. Personnel will legibly record data and observations in the field to enable others to reconstruct project events and provide sufficient evidence of activities conducted.

3.0 SAFETY ISSUES

1. If necessary and appropriate, a site-specific health and safety plan shall be created for each study site. A template for creating a proper health and safety plan is provided on the SEI network.
2. Care must always be taken when approaching a sampling location. Do not, under any circumstances, place yourself in danger to collect a sample.
3. If necessary and appropriate, all chemicals are required to be received with Material Safety Data Sheets (MSDS) or appropriate application labels. These labels or MSDS shall be made available to all personnel involved in the sampling and testing.

4.0 PROCEDURES

4.1 Equipment and Materials

1. Untreated cotton pad measuring approximately 10 cm by 10 cm (e.g., VWR cat no. 21902-985 or equivalent).
2. Fiberglass or nylon screen to enclose the cotton pad (sewn or stapled).
3. Monofilament fishing line (approximately 20 to 50 lb. test).
4. Binder clips of various sizes.
5. Field notebook, sample collection form, or other acceptable medium for recording field data.
6. Protective gloves if contamination is suspected in the water to be sampled, or if cold weather may be hazardous with wet hands.

4.2 Sampling Procedure and Sample Handling

4.2.1 Optical Brightener Pad Assembly

To assemble an optical brightener monitoring pad, place an untreated cotton pad measuring approximately 10 cm by 10 cm (e.g., VWR cat no. 21902-985) in an envelope made of a screen material. A light fiberglass screen is preferred. The pad may be folded in half to double its thickness. Sew, staple, or otherwise secure all open sides of the screen envelope to enclose the pad.

4.2.2 Optical Brightener Pad Placement

1. Secure the pad at the monitoring point using high test nylon fishing line (20 - 50 lb. test), a binder clip, or both. The pad may be attached to any convenient anchor, provided the pad is as well exposed to the flow stream as possible and the anchor point appears stable enough to resist the force of high flow events. When sampling culverts or stormwater outfall pipes, the pad may be clipped directly to the inner rim of the outfall. The pad should lie flat against the

bottom surface of the pipe. The pad may also be hung from a catchbasin grate or manhole rung.

2. If a suitable anchor is not present, a heavy object may be placed in the flow stream or channel to anchor the pad. For example, a pad may be anchored in a stream by tying it to a concrete block.
3. Two or more optical brightener monitoring pads may be placed at monitoring points if appropriate. If more than a single pad is used, the pads should be anchored so that they do not become entangled.
4. Record the date each pad is deployed and any other relevant information in a field logbook or on a specified sample collection form.

4.2.3 Optical Brightener Pad Retrieval and Handling

1. After a 4-10 day period of exposure, optical brightener pads should be collected. The collection of each pad should be recorded in a field logbook or on a specified sample collection form.
2. Any object inserted in a pipe or other structure to anchor the pad should be removed.
3. Pads should be placed in individually labeled, re-sealable plastic bags. The sample label should indicate the monitoring point identification.
4. The pad should be removed from the screen envelope using scissors to cut open the envelope. The pad should be gently rinsed using cold tap water. Lightly squeeze out excess water with a clean hand. Do not wring out the pad. When processing the pads be aware that you may spread dye from one pad to another with your hands. Wear disposable gloves.
5. The pad should then be returned immediately to the labeled bag.
6. Pads should be air dried. The pad may be hung on a line to dry within the labeled bag. If a re-sealable plastic bag is used, cut the bottom corners of the bag to allow airflow to the pad.

4.3 Optical Brightener Analysis

1. When the pad is dry, expose the pad under a high-quality long-range UV light in a room that is completely dark. A non-exposed and an exposed pad are used as controls and compared to each test pad as it is exposed to the UV light.
2. There are three qualitative results: Positive, Negative, and Indeterminate. A pad will very definitely glow (fluoresce) if it is positive. If it is negative, it will be noticeably drab and similar to the control pad. All other tests are indeterminate. Pads may be sorted into the basic categories: positive test, negative test, and indeterminate. Further, for positive tests, the pads may be sorted into categories by the relative strength of the fluorescence. A pad that is fluoresces brightly over most or all its surface may be considered a strongly positive test,

whereas a pad on which fluorescence appears patchy or faint may be considered a weakly positive test. Indeterminate results generally dictate that the test be repeated.

3. In some instances, only a portion of the pad or simply the outer edge will fluoresce after being exposed to optical brightener. This can be caused by many factors but is usually the result of an uneven exposure to the dye in the flow stream due to sedimentation or the way the pad was positioned in the water. Regardless, as long as a portion of the pad fluoresces, it should be considered positive.
4. Since paper and cotton dust is so pervasive, it is common to see fluorescent fibers or specks on the test or control pads. These should be ignored and not used to indicate a positive result.
5. With the lights back on, record the identification number and the test result for each pad.
6. It is advisable to have a second reader perform the pad observations independently. The results are then compared. Any conflicting interpretations may be resolved though repeated observation of the pad in question, or a by a third observer.

5.0 RESPONSIBILITIES

1. All personnel will legibly record data and observations (including phone conversations) in accordance with this SOP to enable others to reconstruct project events and provide sufficient evidence of activities conducted.

6.0 DEFINITIONS

1. *Study* means any experiment at one or more test sites, in which a test substance is studied in a test system under laboratory conditions or in the environment to determine or help predict its effects, metabolism, product performance (pesticide efficacy studies only as required by 40 CFR 158.640) environmental and chemical fate, persistence, or residue, or other characteristics in humans, other living organisms, or media. The term “study” does not include basic exploratory studies carried out to determine whether a test substance or a test method has any potential utility.

7.0 REFERENCES

40 CFR Part 160 Good Laboratory Practice Standards, August 1989.

MASS Bay Program. 1998. An Optical Brightener Handbook.
http://www.thecompass.org/8TB/pages/SamplingContents.html

8.0 TABLES, DIAGRAMS, FLOWCHARTS, AND VALIDATION DATA

None

9.0 AUTHORIZATION

Revisited by: _____ Date: _____

Dave Braun, Project Scientist/Water Quality Specialist

Approved by: _____ Date: _____

Christopher T. Stone, President

10.0 REVISION HISTORY

Revision number 1:

1. Minor clarifications and rewording throughout.
2. Changed 4-8-day pad exposure period to 4-10-day exposure period.
3. Changed description of indeterminate results.
4. Added use of binder clips to secure pads.
5. Updated procedure for processing exposed pads.

Appendix B. Assessment Data Tables

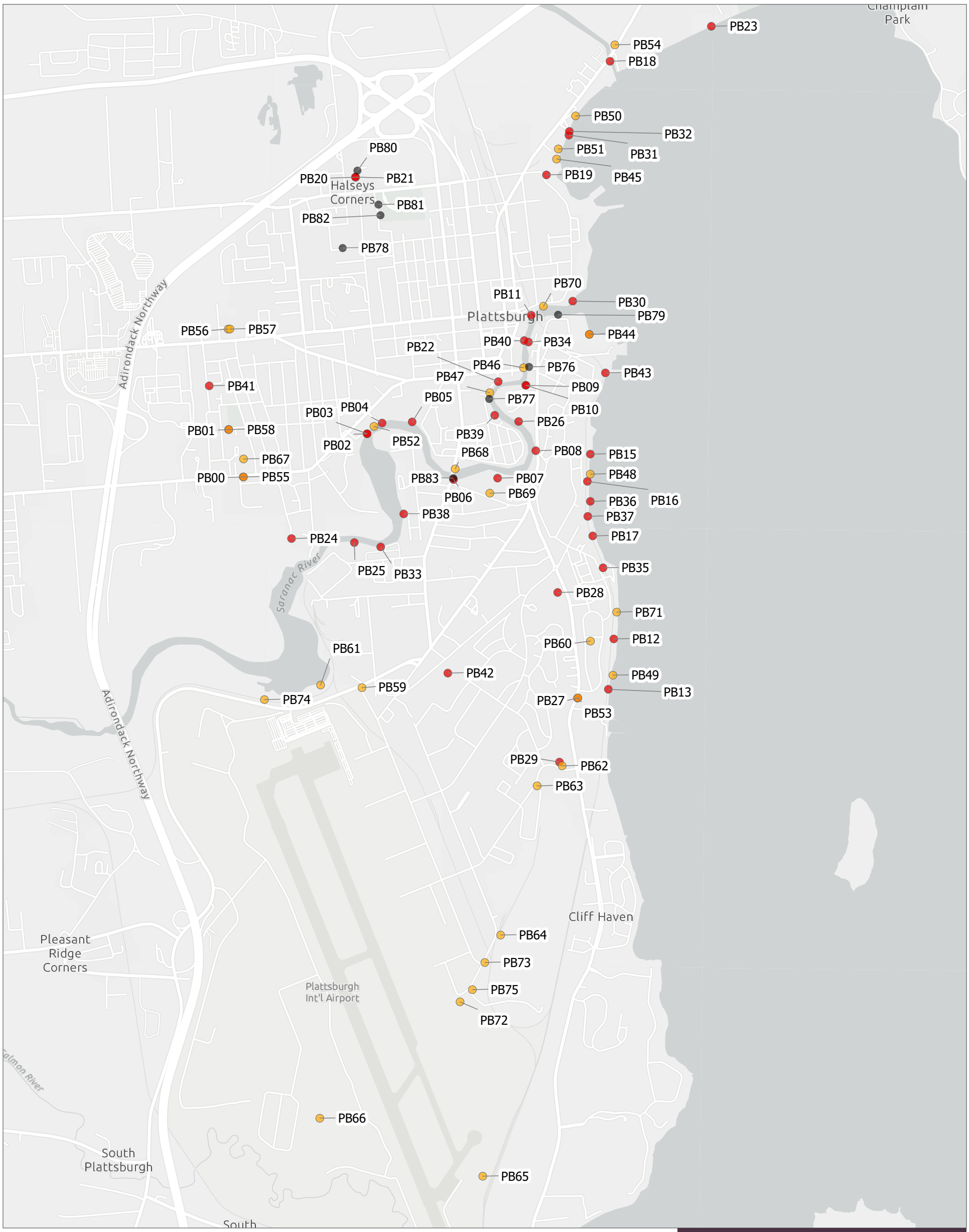
System	IDDE ID	Date	Inspector	Structure type	Inner diameter (in.)	Material (outfall only)	Flow	Flow depth (in.)	Outfall position	Erosion at outfall	Discharge characteristics	Floatables		Deposits/ staining	Obstructions	Ammonia (mg/L)	Free chlorine (mg/L)	Sp. cond. (µS/cm)	MBAS (mg/L)	Corrected MBAS (mg/L)	Date OB pad set	Date OB pad retrieved	OB result	Comments
PB00	PB00-MH02	7/28/2020	GV	manhole	na	na	dry	na	free flow	none	clear, no odor	none	none		none	0.0	0.02	1834	0.20	0.08	8/5/2020	8/13/2020	negative	
PB01	PB01-CB01	7/28/2020	GV	catch basin	na	na	flowing	na	free flow	none	clear, no odor	none	none		none	0.0	0.00	1051	0.25	0.18	7/28/2020	8/5/2020	negative	Intermittent stream - see MH01 results for pure sample
PB01	PB01-MH01	7/29/2020	GV	manhole	na	na	flowing	0.25	free flow	none	na	none	none		none	0.0	0.03	1822	0.30	0.18	7/28/2020	8/5/2020	negative	Pipe A dry, pipe B flowing 0.25", pipe C wet
PB02	PB02	7/29/2020	GV	outfall	36	concrete	flowing	0.25	free flow	none	clear, no odor	suds	none		none	0.0	0.06	2570	0.20	0.02	7/29/2020	8/20/2020	positive	Suds in river below outfall - may not be attributable to this outfall
PB02	PB02-MH01	7/29/2020	GV	manhole	na	na	flowing	0.25	na	na	na	none	none		na	0.0	0.07, 0.05	2550	0.35	0.18	7/29/2020	8/5/2020	positive	Pipe A is unmapped 6-in. drain (dry), pipe B flowing 0.25-in., pipe C dry
PB02	PB02-MH07	7/29/2020	GV	manhole	na	na	trickling	na	na	na	no odor	none	none		na	na	na	na	na	na	8/5/2020	8/13/2020	negative	Pipe B flowing 0.1", pipe C trickling; not enough water to sample
PB02	PB02-MH10	7/29/2020	GV	manhole	na	na	trickling	na	na	na	no odor	none	none		na	na	na	na	na	na	7/29/2020	8/5/2020	negative	Pipe C trickling
PB02	PB02-MH0.1	8/12/2020	GV	manhole	na	na	flowing	1.5	na	na	na	none	none		na	na	na	na	na	na	8/12/2020	8/20/2020	positive	
PB02	PB02-MH0.5	8/12/2020	GV	manhole	na	na	flowing	1	na	na	na	none	none		na	na	na	na	na	na	8/12/2020	8/20/2020	positive (strong)	
PB02	PB02-MH01	8/13/2020	GV	manhole	na	na	flowing	1	na	na	na	none	none		na	na	na	na	na	na	8/13/2020	8/20/2020	positive (strong)	
PB02	PB02-MH04.1	8/13/2020	GV	manhole	na	na	wet (no flow)	na	na	na	na	none	none		na	na	na	na	na	na	8/13/2020	8/20/2020	negative	
PB02	PB02-CB02	8/31/2021	JA	catch basin	na	na	na	na	na	na	no odor	none	none		na	na	na	na	na	na	8/31/2021	9/14/2021	positive	
PB02	PB02-CB02	10/6/2022	DCB	catch basin	na	na	trickling	na	na	na	na	na	na		na	na	na	na	na	na	10/6/2022	10/12/2022	positive	
PB02	PB02-MH01	10/6/2022	DCB	manhole	na	na	trickling	na	na	na	na	na	na		na	na	na	na	na	na	10/6/2022	10/12/2022	positive (weak)	
PB02	PB02-MH02	10/6/2022	DCB	manhole	na	na	trickling	na	na	na	na	na	na		na	na	na	na	na	na	10/6/2022	10/12/2022	positive (weak)	
PB02	PB02-MH03	10/6/2022	DCB	manhole	na	na	trickling	na	na	na	na	na	na		na	na	na	na	na	na	10/6/2022	10/12/2022	positive	
PB02	PB02-MH04	10/6/2022	DCB	manhole	na	na	trickling	na	na	na	na	na	na		na	na	na	na	na	na	10/6/2022	10/12/2022	negative	
PB02	PB02-MH05	10/6/2022	DCB	manhole	na	na	trickling	na	na	na	na	na	na		na	na	na	na	na	na	10/6/2022	10/12/2022	indeterminate	
PB02	PB02-MH07	10/6/2022	DCB	manhole	na	na	trickling	na	na	na	na	na	na		na	na	na	na	na	na	10/6/2022	10/12/2022	negative	
PB03	PB03	7/29/2020	GV	outfall	48	corrugated white plastic	flowing	1	free flow	none	clear, no odor	none	none		none	0.0	0.08, 0.05	1166	0.10	0.02	7/29/2020	8/5/2020	positive	Suds in river below outfall - may not be attributable to outfall; pad fell onto rocks
PB03	PB03-CB30	7/29/2020	GV	catch basin	na	na	wet (no flow)	na	free flow	none	na	none	none		none	na	na	na	na	na	7/29/2020	8/5/2020	negative	No water sampled due to heavy traffic at structure
PB03	PB03-MH03	7/29/2020	GV	manhole	na	na	flowing	2	na	na	no odor	none	none		na	0.0	0.09, 0.08	1206	0.15	0.07	8/5/2020	8/13/2020	positive (weak)	Flowing heavily here but not at MH04
PB03	PB03-MH04	7/29/2020	GV	manhole	na	na	trickling	na	na	na	no odor	none	none		na	na	na	na	na	na	7/29/2020	8/5/2020	negative	Too little flow to sample
PB03	PB03-MH10	7/29/2020	GV	manhole	na	na	flowing	2	na	na	na	none	none		na	0.0	0.02	2160	0.55	0.40	7/29/2020	8/5/2020	negative	
PB03	PB03-MH35	7/29/2020	GV	manhole	na	na	flowing	na	na	na	no odor	none	none		na	na	na	na	na	na	7/29/2020	8/5/2020	negative	Pipe A wet, pipe B trickling
PB03	PB03-MH0.1	8/12/2020	GV	manhole	na	na	flowing	2	na	na	na	none	none		na	na	na	na	na	na	8/12/2020	8/20/2020	positive	
PB03	PB03-MH01	8/12/2020	GV	manhole	na	na	flowing	1.5	na	na	na	none	none		na	na	na	na	na	na	8/12/2020	8/20/2020	positive (strong)	
PB03	PB03-MH02	8/13/2020	GV	manhole	na	na	flowing	1.5	na	na	na	none	none		na	na	na	na	na	na	8/13/2020	8/20/2020	positive	
PB03	PB03	8/20/2020	GV	outfall	48	corrugated white plastic	flowing	3	free flow	none	na	none	none		none	na	na	na	na	na	8/11/2020	8/20/2020	positive	
PB03	PB03-CB01	8/31/2021	JA	catch basin	na	na	na	na	na	na	no odor	none	none		na	na	na	na	na	na	8/31/2021	9/7/2021	indeterminate	
PB03	PB03-CB02	8/31/2021	JA	catch basin	na	na	na	na	na	na	no odor	none	none		na	na	na	na	na	na	8/31/2021	9/7/2021	negative	
PB03	PB03-CB03	8/31/2021	JA	catch basin	na	na	na	na	na	na	no odor	none	none		na	na	na	na	na	na	8/31/2021	9/7/2021	negative	
PB03	PB03-CB04	8/31/2021	JA	catch basin	na	na	na	na	na	na	no odor	none	none		na	na	na	na	na	na	8/31/2021	9/7/2021	negative	
PB03	PB03-CB05	8/31/2021	JA	catch basin	na	na	na	na	na	na	no odor	none	none		na	na	na	na	na	na	8/31/2021	9/7/2021	positive	
PB03	PB03-CB07	8/31/2021	JA	catch basin	na	na	na	na	na	na	no odor	none	none		na	na	na	na	na	na	8/31/2021	9/7/2021	negative	
PB03	PB03-MH05	8/31/2021	JA	catch basin	na	na	na	na	na	na	no odor	none	none		na	na	na	na	na	na	8/31/2021	9/14/2021	positive (v. weak)	
PB03	PB03-MH02	9/14/2021	DCB	manhole	na	na	flowing	na	na	na	na	na	na		na	na	na	na	na	na	na	na	na	substantial flow, odd odor like a pool
PB03	PB03-MH03	9/14/2021	DCB	manhole	na	na	flowing	na	na	na	na	na	na		na	na	na	na	na	na	na	na	na	substantial flow, odd odor like a pool
PB03	PB03-MH04	9/14/2021	DCB	manhole	na	na	trickling	na	na	na	na	na	na		na	na	na	na	na	na	na	na	na	Insufficient depth to sample for E. coli
PB03	PB03-MH02	10/6/2022	DCB	manhole	na	na	flowing	na	na	na	na	na	na		na	na	na	na	na	na	10/6/2022	10/12/2022	positive (strong)	Heavy flow from main line (pipe A), minimal flow from pipe B, pool-like odor
PB03	PB03-MH03	10/6/2022	DCB	manhole	na	na	flowing	na	na	na	na	na	na		na	na	na	na	na	na	10/6/2022	10/12/2022	positive (strong)	Pipe A flowing (main line), pipe B surcharged. Dumpster from previous investigation removed. Same odor as MH02
PB03	PB03-CB04	10/6/2022	DCB	catch basin	na	na	wet (no flow)	na	na	na	na	na	na		na	na	na	na	na	na	na	na	na	Same pool odor
PB03	PB03-MH04	10/6/2022	DCB	manhole	na	na	flowing	na	na	na	na	na	na		na	na	na	na	na	na	10/6/2022	10/12/2022	negative	Some flow, much less than MH03, no odor
PB04	PB04	8/13/2020	GV	outfall	36	concrete	flowing	1	free flow	none	clear, no odor	none	none		none	0.0	0.04	3490	0.65	0.41	8/13/2020	8/20/2020	negative	
PB04	PB04	7/27/2021	SW	outfall	36	concrete	wet (no flow)	na	partially submerged	none	clear, no odor	none	none		none	na	na	na	na	na	na	na	na	
PB04	PB04	9/1/2022	DCB	outfall	36	concrete	flowing	no data	free flow	none	clear, no odor	none	none		none	1.0	0.00	2980	no data	no data	na	na	na	Flow rate: 6-in wide, 1-in deep, 1 sec/foot
PB04	PB04	10/12/2022	DCB	outfall	36	concrete	flowing	na	na	na	na	na	na		na	0.4	na	na	na	na	na	na	na	
PB04	PB04-CB01	10/12/2022	DCB	catch basin	na	na	flowing	na	na	na	na	na	na		na	0.2	na	na	na	na	na	na	na	
PB04	PB04-CB02	10/12/2022	DCB	catch basin	na	na	dry	na	na	na	na	na	na		na	na	na	na	na	na	na	na	na	Drain from building also dry
PB05	PB05	7/29/2020	GV	outfall	24	concrete	flowing	0.5	free flow	none	clear, no odor, some suds	suds	none		none	0.0	0.05	2170	0.25	0.10	7/29/2020	8/6/2020	negative	
PB05	PB05 REP	7/29/2020	GV	outfall	24	concrete	flowing	0.5	free flow	none	clear, no odor, some suds	suds	none		none	0.0	0.02	2140	0.30	0.15	7/29/2020	8/6/2020	negative	
PB05	PB05-MH04	8/6/2020	GV	manhole	na	na	dry	na	free flow	none	na	none	none		na	0.0	0.05, 0.06	2140	0.25	0.10	7/29/2020	8/6/2020	negative	
PB05	PB05	7/29/2021	JA	outfall	24	concrete	flowing	0.25	free flow	none	no odor, clear	suds	none		none	0.0	0.04	2310	0.40	0.24	na	na	na	
PB05	PB05-MH04	10/12/2022	DCB	manhole	na	na	flowing	na	na	na	na	na	na		na	0.0	na	na	na	na	na	na	na	Small trickle from pipe A; flowing from pipe B. 0.0 mg/L ammonia from both pipes
PB05	PB05-MH06	10/12/2022	DCB	manhole	na	na	wet (no flow)	na	na	na	na	na	na		na	0.0	na	na	na	na	na	na	na	All pipes coming in are dry. Murky stagnant water at the bottom. CB4, CB5, and CB6 all dry and packed with leaves
PB06	PB06	8/6/2020	GV	outfall	24	corrugated black plastic	flowing	0.75	free flow	none	clear, no odor	none	none		none	0.0	0.03	1810	0.20	0.08	8/6/2020	8/13/2020	negative	
PB07	PB07	7/30/2020	GV	outfall	48	concrete	flowing	0.75	free flow	none	na	none	none		none	0.0	0.04	2230	0.51	0.36	8/6/2020	8/13/2020	negative	MBAS very cloudy
PB07	PB07-MH05	7/30/2020	GV	manhole	na	na	wet (no flow)	na	free flow	none	na	none	none		none	0.0	0.02	1074	0.30	0.23	7/30/2020	8/6/2020	negative	
PB07	PB07-MH30	7/30/2020	GV	manhole	na	na	flowing	1	free flow	none	clear, no odor	suds	none		none	0.1	0.00	1451	0.15	0.05	7/30/2020	8/6/2020	negative	Suds in sump 8/6/20; no suds in MH33
PB07	PB07	8/4/2021	JA	outfall	na	concrete	flowing	0.75	free flow	none	no odor, clear	suds	none		none	0.0	0.04	2580	0.35	0.17	na	na	na	
PB07	multiple	9/7/2021	JA	manhole	na	na	na	na	na	na	na	na	na		na	na	na	na	na	na	na	na	na	Sampled for *E. coli* at MH06, MH07, MH08, MH09, MH10
PB07	PB07-MH05	9/14/2021	JA	manhole	na	na	flowing	na	na	na	na	na	na		na	na	na	na	na	na	na	na	na	Elizabeth. Sampled for *E. coli*
PB07	PB07-MH06	9/14/2021	JA	manhole	na	na	flowing	na	na	na	na	na	na		na	na	na	na	na	na	na	na	na	Elizabeth. Sampled for *E. coli* on upstream side of sewer lateral crossing
PB07	PB07-MH07	9/14/2021	JA	manhole	na	na	wet (no flow)	na	na	na	no odor	na	na		na	na	na	na	na	na	na	na	na	Elizabeth
PB07	PB07-MH08	9/14/2021	JA	manhole	na	na	wet (no flow)	na	na	na	na	na	na		na	na	na	na	na	na	na	na	na	Johnson. Racoon tracks in sediment
PB07	PB07-MH09	9/14/2021	JA	manhole	na	na	wet (no flow)	na	na	na	no odor	na	na		na	na	na	na	na	na	na	na	na	Monty
PB07	PB07-MH10	9/14/2021	JA	manhole	na	na	wet (no flow)	na	na	na	na	na	na		na	na	na	na	na	na	na	na	na	McKinley
PB07	PB07-MH11	9/14/2021	JA	manhole	na	na	flowing	na	na	na	na	na	na		na	na	na	na	na	na	na	na	na	S. Peru. Substantial flow in this Peru Street manhole. Sampled for *E. coli*
PB07	PB07	11/3/2022	DCB	outfall	na	concrete	flowing	na	free flow	none	no odor, clear, some foam	suds	na		na	na	na	na	na	na	na	na	na	8L/6.35sec=1.25L/sec
PB07	PB07-MH05	11/3/2022	DCB	manhole	na	na	flowing	na	na	na	na	na	na		na	na	na	na	na	na	na	na	na	Raccoon scat, dead animal on the street.
PB07	PB07-MH06	11/3/2022	DCB	manhole	na	na	flowing	na	na	na	na	na	na		na	na	na	na	na	na	na	na	na	AKA ElizabethMH3. Significant flow. Sewer lateral crossing half buried in sediment. No obvious leaks
PB07	PB07-MH07.1	11/3/2022	DCB	manhole	na	na	dry	na	na	na	na	na	na		na	na	na	na	na	na	na	na	na	AKA ElizabethMH5. Sewer lateral crosses directly below
PB07	PB07-MH07.2	11/3/2022	DCB	manhole	na	na	wet (no flow)	na	na	na	no odor	na	na		na	na	na	na	na	na	na	na	na	AKA ElizabethMH6. Several sewer pipes cross through storm system
PB07	PB07-MH08	11/3/2022	DCB	manhole	na	na	wet (no flow)	na	na	na	na	na	na		na	na	na	na	na	na	na	na	na	AKA JohnsonMH2
PB07	PB07-MH08.1	11/3/2022	DCB	manhole	na	na	dry	na	na	na	small wet spot under pipe	na	na		na	na	na	na	na	na	na	na	na	AKA JohnsonMH1
PB07	PB07-MH09	11/3/2022	DCB	manhole	na	na	wet (no flow)	na	na	na	no odor	na	na		na	na	na	na	na	na	na	na	na	AKA Monty MH1
PB07	PB07-MH10	11/3/2022	DCB	manhole	na	na	wet (no flow)	na	na	na	na	na	na		na	na	na	na	na	na	na	na	na	AKA McKinley MH1. Mucky stagnant water, burning rubber odor from factory. Small leakage at pipe penetration
PB08	PB08	7/30/2020	GV	outfall	18	corrugated black plastic	flowing	0.25	free flow	none	clear, slight odor	none	none		none	0.0	0.03	1837	0.20	0.08	7/30/2020	8/6/2020	negative	
PB08	PB08 REP	7/30/2020	GV	outfall	18	corrugated black plastic	flowing	0.25	free flow	none	clear, slight odor	none	none		none	0.0	0.00	1824	0.15	0.03	8/6/2020	8/13/2020	negative	
PB09	PB09	7/30/2020	GV	outfall	24	corrugated black plastic	dry	na	free flow	none	na	none	none		none	na	na	na	na	na	7/30/2020	8/6/2020	negative	
PB10	PB10	7/30/2020	GV	outfall	24	corrugated black plastic	flowing	0.25	free flow	none	slight odor	none	none		none	5.0	0.06, 0.04	2290	0.20	0.04	7/30/2020	8/6/2020	negative	Pad washed downstream a few feet, may have contacted water from PB09
PB10	PB10	8/4/2021	JA	outfall	na	na	na	na	na	na	na	na	na		na	na	na	na	na	na	na	na	na	Outfall inaccessible due to construction
PB10	PB10-MH01	9/1/2022	DCB	manhole	na	na	na	na	na	na	clear, possible ww odor	none	none		none	1.5	0.07	2270	no data	no data	na	na	na	
PB10	PB10-CB02	9/14/2022	DCB	catch basin	na	na	na	na	na	na	na	na	na		na	na	na	na	na	na	9/14/2022	9/20/2022	indeterminate	
PB10	PB10-CB03	9/14/2022	DCB	catch basin	na	na	na	na	na	na	na	na	na		na	na	na	na	na	na	9/14/2022	9/20/2022	negative	
PB10	PB10-MH01	9/14/2022	DCB	manhole	na	na	na	na	na	na	na	na	na		na	na	na	na	na	na	9/14/2022	9/20/2022	negative	
PB10	PB10-CB02	9/29/2022	DCB	catch basin	na	na	na	na	na	na	na	na	na		na	na	na	na	na	na	9/29/2022	10/5/2022	positive	
PB10	PB10-CB03	10/12/2022	DCB	catch basin	na	na	trickling	na	na	na	na	na	na		na	0.0	na	na	0.30	<=0.30	10/12/2022	10/19/2022	negative	
PB10	PB10-CB04	10/12/2022	DCB	catch basin	na	na	trickling	na	na	na	na	na	na		na	0.0	na	2100	0.30	0.16	10/12/2022	10/19/2022	negative	
PB10	PB10-CB05	10/12/2022	DCB	catch basin	na	na	trickling	na	na	na	na	na	na		na	0.0	na	na	0.30	<=0.30	10/12/2022	10/19/2022	negative	
PB11	PB11	7/29/2020	GV	outfall	48	concrete	flowing	na	free flow	none	clear, possible ww odor	none	none		none	0.0	0.00	5000	1.00	0.65	7/29/2020	8/12/2020	positive	Pad fell onto rocks below outfall; may have been submerged in river at some point
PB11	PB11	8/27/2020	GV	outfall	48	concrete	flowing	0.25	free flow	none	na	none	none		none	na	na	na	na	na	8/27/2020	9/3/2020	positive	
PB11	PB11-MH01	9/1/2022	DCB	manhole	na	na	na	na	na	na	na	na	na		na	na	na	na	na	na	9/1/2022	9/14/2022	positive	
PB11	PB11-CB02	9/1/2022	DCB	catch basin	na	na	na	na	na	na	na	na	na		na	na	na	na	na	na	9/1/2022	9/14/2022	negative	
PB11	PB11-MillerMH3	9/1/2022	DCB	manhole	na	na	na	na	na	na	na	na	na		na	na	na	na	na	na	9/1/2022	9/14/2022	negative	
PB11	PB11-MargaretMH2	9/1/2022	DCB	manhole	na	na	na	na	na	na	na	na	na		na	na	na	na	na	na	9/1/2022	9/14/2022	negative	
PB11	PB11-CityHallMH2	9/1/2022	DCB	manhole	na	na	na	na	na	na	na	na	na		na	na	na	na	na	na	9/1/2022	9/14/2022	negative	
PB11	PB11-MH01	9/14/2022	DCB	manhole	na	na	na	na	na	na	na	na	na		na	na	na	na	na	na	9/14/2022	9/20/2022	positive	
PB11	PB11-CB04	9/14/2022	DCB	catch basin	na	na	na	na	na	na	na	na	na		na	na	na	na	na	na	9/14/2022	9/20/2022	negative	

System	IDDE ID	Date	Inspector	Structure type	Inner diameter (in.)	Material (outfall only)	Flow	Flow depth (in.)	Outfall position	Erosion at outfall	Discharge characteristics	Floatables		Deposits/ staining	Obstructions	Ammonia (mg/L)	Free chlorine (mg/L)	Sp. cond. (µS/cm)	MBAS (mg/L)	Corrected MBAS (mg/L)	Date OB pad set	Date OB pad retrieved	OB result	Comments
PB11	PB11-CB05	9/14/2022	DCB	catch basin	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	9/14/2022	9/20/2022	negative	
PB11	PB11-CB06	9/14/2022	DCB	catch basin	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	9/14/2022	9/20/2022	negative	
PB11	PB11-MH01	9/29/2022	DCB	manhole	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	9/29/2022	10/5/2022	positive (weak)	
PB11	PB11-CB01	9/29/2022	DCB	catch basin	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	9/29/2022	10/5/2022	positive (weak)	
PB12	PB12-CB02	8/12/2020	GV	catch basin	na	na	flowing	3	free flow	none	na	none	none	none	none	na	na	na	na	na	na	na	na	Pipe A wet, pipe B and pipe C both flowing heavily
PB12	PB12-CB03	8/12/2020	GV	catch basin	na	na	flowing	2	free flow	none	clear, slight odor	none	none	none	none	0.0	0.03	1444	0.65	0.55	8/12/2020	8/20/2020	negative	
PB12	PB12-CB11	8/12/2020	GV	catch basin	na	na	wet (no flow)	na	free flow	none	clear, no odor	none	none	none	none	0.0	0.05, 0.06	1089	0.50	0.43	8/12/2020	8/20/2020	negative	
PB12	PB12-MH01	8/12/2020	GV	manhole	na	na	flowing	3	free flow	none	clear, no odor	none	none	none	none	0.0	0.00	956	0.20	0.14	8/12/2020	8/20/2020	negative	Could not access outfall; flowing heavily
PB12	PB12-MH03	8/12/2020	GV	manhole	na	na	flowing	2	free flow	none	clear, no odor	none	none	none	none	0.0	0.04	917	0.10	0.04	8/12/2020	8/20/2020	negative	
PB12	PB12-CB02J	8/4/2021	JA	catch basin	na	na	flowing	na	na	na	no odor	none	none	na	0.0	0.00	1037	0.20	0.13	na	na	na		
PB12	PB12-MH01	9/14/2022	JM	manhole	na	na	flowing	na	na	na	clear, no odor	na	na	na	0.0	0.02	828	0.10	0.05	na	na	na	Heavy flow, 2-in depth out of 5-ft pipe Duplicate: chlorine=0.00, ammonia=0.0, conductance=837, MBAS=0	
PB12	PB12-Nevada1	10/19/2022	DCB	manhole	na	na	flowing	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	Flowing from two directions, New Hampshire St and Nevada oval, flow collected from Nevada
PB12	PB12-CB02	10/19/2022	DCB	catch basin	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	CB02 on side of street closer to outfall. CB04 off line
PB12	PB12-CB05	10/19/2022	DCB	catch basin	na	na	flowing	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	Flowing in from both sides. Minor suds
PB12	PB12-CB06	11/3/2022	DCB	catch basin	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	Dirty, turbid water. Lots of flow in the pipe, rest of catch basin is filled with leaves. Yellow foam, probably from paving operation.
PB12	PB12-MaryMH5	11/3/2022	DCB	manhole	na	na	flowing	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	Large amount of flow. Pipe A clear no odor, pipe B residual iron muck. Bright yellow water
PB13	PB13	8/12/2020	GV	outfall	36	corrugated metal	flowing	1.5	free flow	none	clear, no odor	none	none	none	none	0.0	0.04	1351	0.20	0.11	8/12/2020	8/20/2020	negative	
PB14	PB14-MH01	7/30/2020	GV	manhole	na	na	wet (no flow)	na	free flow	none	clear, no odor	none	none	none	none	0.4	0.00	315	0.35	0.33	7/30/2020	8/6/2020	negative	Outfall buried, so sampled here; sample taken in sump
PB14	PB14-MH01	8/4/2021	JA	manhole	na	na	dry	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	
PB14	PB14	9/1/2022	JM	outfall	na	na	dry	na	free flow	none	na	none	none	none	na	na	na	na	na	na	na	na	na	
PB14	PB14-CB01	9/20/2022	DCB	catch basin	na	na	na	na	na	na	sheen and suds, looks gross	na	na	na	0.0	na	na	0.30	<=0.30	na	na	na	na	MBAS test was green
PB14	PB14-CB02	9/20/2022	DCB	catch basin	na	na	wet (no flow)	na	na	na	no flow, minor suds	na	na	na	0.0	na	na	0.20	<=0.20	na	na	na	na	MBAS slightly green tinge
PB14	PB14-CB03	9/20/2022	DCB	catch basin	na	na	na	na	na	na	dark cast on water	na	na	na	0.0	na	na	0.20	<=0.20	na	na	na	na	No green color in MBAS Unmapped branch of PB14 system. Metallic sheen on surface similar to mapped basins down flow.
PB14	PB14-CB04	10/6/2022	DCB	catch basin	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	Connected to two catch basins and a culvert inlet along railroad tracks.
PB15	PB15-CB01	8/12/2020	GV	catch basin	na	na	trickling	na	free flow	none	no odor	none	none	none	none	na	na	na	na	na	8/12/2020	8/20/2020	lost	Outfall not accessible--sampled first catchbasin upstream; MH01 dry
PB15	PB15-CB01	8/31/2021	JA	catch basin	na	na	trickling	na	na	na	no odor	none	none	none	none	na	na	na	na	na	8/31/2021	9/7/2021	negative	
PB16	PB16-CB01	8/12/2020	GV	catch basin	na	na	trickling	na	free flow	none	clear, slight odor	none	none	none	none	0.0	0.00	876	0.10	0.04	8/20/2020	8/27/2020	negative	Could not access outfall
PB17	PB17	8/12/2020	GV	outfall	18	corrugated metal	dry	na	free flow	none	na	none	none	none	none	na	na	na	na	na	8/12/2020	8/20/2020	negative	
PB18	PB18	7/28/2020	GV	outfall	24	corrugated black plastic	wet (no flow)	na	free flow	none	clear, no odor	none	none	none	none	0.0	0.04	83	0.50	0.50	7/28/2020	8/5/2020	negative	Sample taken in pool at outfall
PB18	PB18-CB04	7/28/2020	GV	catch basin	na	na	dry	na	free flow	none	slight odor	none	oily	none	na	na	na	na	na	na	7/28/2020	8/5/2020	negative	
PB18	PB18	9/1/2022	DCB	outfall	24	corrugated black plastic	wet (no flow)	6in	free flow	none	clear, no odor	none	none	none	none	0.0	0.00	135.5	no data	no data	na	na	na	Recent flow, but not flowing now. Water pooled at mouth of outfall. Small puddle of gasoline in water
PB18	PB18	10/12/2022	DCB	outfall	na	na	dry	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	
PB18	PB18	10/19/2022	DCB	outfall	na	na	wet (no flow)	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	
PB18	PB18-CB01	10/19/2022	DCB	catch basin	na	na	wet (no flow)	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	Incoming pipes dry
PB18	PB18-MH01	10/19/2022	DCB	manhole	na	na	wet (no flow)	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	Manhole immediately upstream of outfall. Withing the manhole, the main line has a Tideflex valve Pipes A and B both flowing; SAMH01 likely overflowed to CB01 during 7/20/20 storm (toilet paper
PB19	PB19-MH01	8/11/2020	GV	manhole	na	na	flowing	0.5	free flow	none	clear, no odor	none	none	none	none	0.0	0.06, 0.12	1317	0.30	0.21	8/11/2020	8/20/2020	positive (weak)	on grate)
PB19	PB19-MH04	8/11/2020	GV	manhole	na	na	flowing	0.25	free flow	none	clear, no odor	none	none	none	none	na	0.07	298	0.25	0.23	8/11/2020	8/20/2020	negative	
PB19	PB19-MH10	8/11/2020	GV	manhole	na	na	wet (no flow)	na	free flow	none	clear, no odor	none	none	none	none	0.0	0.06, 0.08	1751	0.20	0.08	8/11/2020	8/20/2020	negative	
PB19	PB19-MH18	8/11/2020	GV	manhole	na	na	flowing	0.25	free flow	none	clear, no odor	none	none	none	none	na	0.02	na	0.10	<=0.10	8/11/2020	8/20/2020	negative	Too little water to sample for all tests
PB19	PB19-MH01	8/27/2020	GV	manhole	na	na	flowing	0.5	free flow	none	na	none	none	none	none	na	na	na	na	na	9/3/2020	lost	lost	Smells like sewage around structure
PB19	PB19-CB01	9/1/2022	DCB	catch basin	na	na	na	na	na	na	clear, no odor	na	na	na	na	na	na	na	na	na	9/1/2022	9/14/2022	negative	AKA CB-B
PB19	PB19-CB02	9/1/2022	DCB	catch basin	na	na	na	na	na	na	clear, no odor	na	na	na	na	na	na	na	na	na	9/1/2022	9/14/2022	negative	AKA CB-C
PB19	PB19-CB03	9/1/2022	DCB	catch basin	na	na	na	na	na	na	clear, no odor	na	na	na	na	na	na	na	na	na	9/1/2022	9/14/2022	negative	AKA CB-A
PB20	PB20	7/28/2020	GV	outfall	48	corrugated metal	flowing	0.25	free flow	eroded banks	na	none	none	none	none	0.0	0.03	930	0.30	0.24	7/28/2020	8/5/2020	negative	
PB20	PB20-MH09	7/28/2020	GV	manhole	na	na	dry	na	free flow	none	clear, no odor	none	none	none	none	na	na	na	na	na	8/5/2020	8/13/2020	indeterminate	
PB20	PB20-MH14B	7/28/2020	GV	manhole	na	na	flowing	1	free flow	none	clear, no odor	none	solid brown mineral buildup	none	none	0.0	0.03	1567	0.25	0.14	8/5/2020	8/13/2020	negative	
PB20	PB20-MH15	7/28/2020	GV	manhole	na	na	dry	na	free flow	none	na	none	none	none	none	na	na	na	na	na	7/28/2020	8/5/2020	negative	
PB20	PB20-MH09	8/27/2020	GV	manhole	na	na	flowing	0.25	free flow	none	na	none	none	none	none	na	na	na	na	na	8/27/2020	9/3/2020	negative	
PB20	PB20	7/27/2021	JA	outfall	48	corrugated metal	flowing	0.75	free flow	none	no odor	suds	none	none	none	0.0	0.04	851	0.25	0.19	na	na	na	Oily sheen 15 ft. downstream and directly below an unmapped, dry outflow
PB21	PB21	7/28/2020	GV	outfall	48	corrugated metal	dry	na	free flow	none	na	none	none	none	none	na	na	na	na	na	7/28/2020	8/5/2020	negative	
PB21	PB21-CB01	7/28/2020	GV	catch basin	na	na	wet (no flow)	na	free flow	none	clear, no odor	none	none	none	none	0.0	0.03	1911	0.35	0.22	7/28/2020	8/5/2020	negative	Unmarked pipe B (trickling 7/28/20) enters catchbasin sump from Halsey Rd.
PB21	PB21-CB01 REP	7/28/2020	GV	catch basin	na	na	wet (no flow)	na	free flow	none	clear, no odor	none	none	none	none	0.0	0.02	1915	0.35	0.22	7/28/2020	8/5/2020	negative	
PB22	PB22-MH02	8/5/2020	GV	manhole	na	na	flowing	3	free flow	none	clear, no odor	none	none	none	none	0.0	0.04	1690	0.25	0.14	8/5/2020	8/12/2020	positive	Sampled where north and west branches meet
PB22	PB22-CB05	8/20/2020	GV	catch basin	na	na	wet (no flow)	na	free flow	none	na	none	none	none	none	na	na	na	na	na	8/20/2020	9/3/2020	positive (strong)	
PB22	PB22-MH04	8/20/2020	GV	manhole	na	na	wet (no flow)	na	free flow	none	na	none	none	none	none	na	na	na	na	na	8/20/2020	8/27/2020	positive	
PB22	PB22-CB07	8/27/2020	GV	catch basin	na	na	dry	na	free flow	none	na	none	none	none	none	na	na	na	na	na	8/27/2020	9/3/2020	negative	
PB22	PB22-MH08	8/27/2020	GV	manhole	na	na	na	na	free flow	none	na	none	none	none	none	na	na	na	na	na	8/27/2020	9/3/2020	negative	
PB22	PB22-MH02(a)	8/5/2021	JA	manhole	na	na	flowing	na	na	na	no odor, clear	none	none	na	0.0	0.44, 0.49	581	0.30	0.26	na	na	na	Discharge was from line along west side of Broad St. Line from Margaret St. was dry.	
PB22	PB22-Brinkerhoff3	9/29/2022	DCB	catch basin	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	9/29/2022	10/5/2022	negative	
PB22	PB22-Brinkerhoff4	9/29/2022	DCB	catch basin	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	9/29/2022	10/5/2022	negative	
PB22	PB22-Couch2	9/29/2022	DCB	catch basin	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	9/29/2022	10/5/2022	positive	
PB22	PB22-Couch3	9/29/2022	DCB	manhole	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	9/29/2022	10/5/2022	positive (strong)	
PB22	PB22-Margaret1	9/29/2022	DCB	manhole	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	9/29/2022	10/5/2022	negative	
PB22	PB22-Margaret2	9/29/2022	DCB	manhole	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	9/29/2022	10/5/2022	negative	
PB22	PB22-Protection1	9/29/2022	DCB	catch basin	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	9/29/2022	10/5/2022	negative	
PB22	PB22-Broad11	9/29/2022	DCB	catch basin	na	na	trickling	na	na	na	petroleum odor, not at strong as CB9	na	na	na	na	na	na	na	na	na	9/29/2022	10/5/2022	positive (weak)	
PB22	PB22-Broad12	9/29/2022	DCB	catch basin	na	na	wet (no flow)	na	na	na	same as Broad11, supple petroleum odor, less flow	na	na	na	na	na	na	na	na	na	9/29/2022	10/5/2022	negative	
PB22	PB22-BroadCB9	9/29/2022	DCB	catch basin	na	na	flowing	na	na	na	distinct petroleum odor, glows under UV light	na	na	na	na	na	na	na	na	na	9/29/2022	10/5/2022	positive (strong)	
PB22	PB22-Catherine1	9/29/2022	DCB	catch basin	na	na	trickling	na	na	na	strong ww odor, fluorescent flow, petroleum odor, flies	na	na	na	na	na	na	na	na	na	9/29/2022	10/5/2022	positive (strong)	Very deep structure
PB22	PB22-Clinton1	9/29/2022	DCB		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	9/29/2022	10/5/2022	negative	
PB22	PB22-Couch1	9/29/2022	DCB	catch basin	na	na	trickling	na	na	na	ww odor, gray/blue sediment, flies	na	na	na	na	na	na	na	na	na	9/29/2022	10/5/2022	positive (strong)	
PB22	PB22-Helen1	9/29/2022	DCB	catch basin	na	na	flowing	na	na	na	ww odor, gray/blue sediment	na	na	na	na	na	na	na	na	na	9/29/2022	10/5/2022	positive (strong)	
PB22	PB22-Margaret0.5	10/6/2022	DCB	manhole	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	10/6/2022	10/12/2022	negative	
PB22	PB22-Margaret1	10/6/2022	DCB	manhole	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	10/6/2022	10/12/2022	negative	
PB22	PB22-Margaret1.5	10/6/2022	DCB	manhole	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	Intersection of Margaret and Brinkerhoff. Totally dry. No problem above Brinkerhoff
PB22	PB22-Pleasant1	10/12/2022	DCB	catch basin	na	na	wet (no flow)	na	na	na	na	na	na	na	na	na	na	na	na	na	10/12/2022	10/19/2022	negative	
PB22	PB22-Brinkerhoff1	10/12/2022	DCB	catch basin	na	na	trickling	na	na	na	na	na	na	na	na	na	na	na	na	na	10/12/2022	10/19/2022	negative	
PB22	PB22-Brinkerhoff2	10/12/2022	DCB	catch basin	na	na	tricking	na	na	na	na	na	na	na	na	na	na	na	na	na	10/12/2022	10/19/2022	positive (strong)	
PB23	PB23	7/28/2020	GV	outfall	48	concrete	flowing	2	free flow	none	slight odor, clear, some suds	none	none	none	none	0.1	0.03	258	0.65	0.64	7/28/2020	8/5/2020	negative	
PB23	PB23-MH03	7/28/2020	GV	manhole	na	na	wet (no flow)	na	free flow	none	na	none	none	none	none	0.0	0.05, 0.05	179	0.35	0.34	7/28/2020	8/5/2020	negative	Sample taken in sump; according to mapping, has five inflow pipes--cannot see due to the width of the junction box
PB23	PB23	9/1/2022	DCB	outfall	48	concrete	tricklling	6in at mouth	free flow	none	clear, no odor	none	none	none	none	0.0	0.02	253	no data	no data	na	na	na	Flow rate-1ft cross section, 1/2in deep, 3sec/foot. MBAS invalid
PB23	PB23-MH01	9/20/2022	DCB	manhole	na	na	na	na	na	na	clear, no odor	na	na	na	na	0.0	na	na	0.20	<=0.20	na	na	na	
PB23	PB23	9/20/2022	DCB	outfall	na	na	na	na	na	na	na	na	na	na	na	0.1	na	na	0.20	<=0.20	na	na	na	
PB23	PB23-MH03	9/20/2022	DCB	manhole	na	na	na	na	na	na	minor suds and sheen, water has dark cast, no odor	na	na	na	na	0.2	na	na	0.30	<=0.30	na	na	na	
PB23	PB23-CreteCB1	10/6/2022	DCB	catch basin	na	na	dry	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	Dry, no inlets
PB23	PB23-CreteCB2	10/6/2022	DCB	catch basin	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	Wet no flow. Unmapped, unconnected from CB upline. Other two CBs at intersection dry
PB23	PB23-CreteCB3	10/6/2022	DCB	catch basin	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	Wet, incoming and outgoing pipes surcharged. No flow. Oily sheen on top Sump ammonia=.2 Zero flow off of E, D (in intersection) zero flow, MBAS 0.25, conductivity 1885 pipe C zero flow, pipe B (big line) trickling, MBAS 0.1, conductivity 863
PB23	PB23-MH03	10/6/2022	DCB	manhole	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	pipe A wet zero flow(?) with water seeping in around the flow, MBAS 0.25, conductivity 1667
PB23	PB23	10/6/2022	DCB	outfall	na	na	wet (no flow)	na	na	na	na	na	na	na	na	0.1	na	1328	0.25	0.16	na	na	na	Incorrect coordinates
PB24	PB24	7/29/2020	GV	outfall	36	corrugated metal	flowing	1	free flow	none	clear, no odor	none	none	none	none	0.0	0.02	2190	0.15	0.00	7/29/2020	8/5/2020	negative	
PB24	PB24-CB03	7/29/2020	GV	catch basin	na	na	flowing	na	free flow	none	clear, no odor	none	none	none	none	0.0	0.02	2120	0.30	0.16	7/29/2020	8/5/2020	negative	Pipe A surcharged, pipe B flowing 1.5"
PB24	PB24-MH06	7/29/2020	GV	manhole	na	na	flowing	na	free flow	none	na	none	none	none	none	na	0.02	2660	0.35	0.17	7/29/2020	8/5/2020	negative	Pipe A trickling, pipe B flowing 0.5", pipe C trickling
PB24	PB24-MH06 REP	7/29/2020	GV	manhole	na	na	flowing	na	free flow	none	clear, no odor	none	none	none	none	0.0	0.01	2660	0.50	0.32	7/29/2020	8/5/2020	lost	Pipe A trickling, pipe B flowing 0.5", pipe C trickling

System	IDDE ID	Date	Inspector	Structure type	Inner diameter (in.)	Material (outfall only)	Flow	Flow depth (in.)	Outfall position	Erosion at outfall	Discharge characteristics	Floatables	Deposits/ staining	Obstructions	Ammonia (mg/L)	Free chlorine (mg/L)	Sp. cond. (µS/cm)	MBAS (mg/L)	Corrected MBAS (mg/L)	Date OB pad set	Date OB pad retrieved	OB result	Comments
PB24	PB24	7/27/2021	SW	outfall	36	corrugated metal	flowing	0.5	free flow	none	clear, no odor	none	none	none	na	no data	no data	no data	no data	na	na	na	
PB24	PB24-CB04	7/27/2021	JA	catch basin	na	na	trickling	na	na	na	no odor	none	none	na	0.0	0.00	2910	0.35	0.15	na	na	na	
PB24	PB24-CB05	7/27/2021	JA	catch basin	na	na	flowing	na	na	na	no odor	none	none	na	0.0	0.01	1112	0.20	0.13	na	na	na	
PB24	PB24	9/1/2022	DCB	outfall	36	corrugated metal	flowing	1in	free flow	none	clear, no odor	none	none	none	0.0	0.02	1354	no data	no data	na	na	na	3.5 sec/2L
PB25	PB25	8/6/2020	GV	manhole	na	na	wet (no flow)	na	partially submerged	none	na	none	none	none	na	na	na	na	na	8/20/2020	8/27/2020	negative	Outfall and manhole surcharged at river; lost several well-tied OB pads here--might be an animal that bites them off
PB25	PB25-MH11	8/6/2020	GV	manhole	na	na	flowing	2	free flow	none	slight organic odor	none	none	none	0.3	0.00	1961	0.15	0.02	8/6/2020	8/13/2020	negative	Bombardier contact: Joe (Health and Safety); pipe A flowing, pipe B (unmapped) 18" HDPE wet , pipe C (unmapped) 8" dry
PB25	PB25-MH16	8/6/2020	GV	manhole	na	na	flowing	1	free flow	none	clear, no odor	none	none	none	0.0	0.00	770	0.05	0.00	8/6/2020	8/13/2020	negative	Looks like it is located in PB06 on map, but actually flows toward PB25
PB26	PB26-CB01	8/11/2020	GV	catch basin	na	na	flowing	0.5	free flow	none	clear, no odor	none	none	none	0.0	0.05	1548	0.20	0.10	8/11/2020	8/20/2020	negative	Three unmapped pvc drains enter basin; took photo; could not find outfall
PB26	PB26-CB01 REP	8/11/2020	GV	catch basin	na	na	flowing	0.5	free flow	none	clear, no odor	none	none	none	0.0	0.05	1514	0.15	0.05	8/11/2020	8/20/2020	negative	Three unmapped pvc drains enter basin; took photo; could not find outfall
PB27	PB27-MH07	8/6/2020	GV	manhole	na	na	wet (no flow)	na	free flow	none	no odor	none	none	none	na	na	na	na	na	8/6/2020	8/13/2020	negative	
PB27	PB27-CB02	8/13/2020	GV	catch basin	na	na	dry	na	free flow	none	slightly turbid, no odor	none	none	none	0.0	0.00	835	0.05	0.00	8/6/2020	8/13/2020	negative	
PB28	PB28	8/6/2020	GV	outfall	36	corrugated black plastic	wet (no flow)	na	free flow	none	slight sheen, organic odor	sheen	none	none	na	na	na	na	na	8/6/2020	8/13/2020	negative	Mapped incorrectly--see Collector for correct point
PB28	PB28-CB05	8/6/2020	GV	catch basin	na	na	flowing	2.5	free flow	none	clear, no odor	none	none	none	0.0	0.00	2320	0.25	0.09	8/6/2020	8/13/2020	negative	
PB28	PB28-MH03	8/6/2020	GV	manhole	na	na	flowing	2	free flow	none	organic odor, a few suds	suds	none	none	0.2	0.00	2330	0.75	0.59	8/6/2020	8/13/2020	negative	Pipe A trickling, pipe B flowing 3"; water mostly draining out pipe C toward PB12 system; some water trickling out toward PB28
PB28	PB28-MH01	8/4/2021	JA	manhole	na	na	trickling	na	na	na	possible wastewater odor	none	none	na	0.0	0.04	1321	0.30	0.21	na	na	na	Outfall inaccessible. Sampled MH sump. Entire branch is mis-mapped. Main line (unmapped) is trickling. Line from northwest is dripping.
PB28	PB28-MH03J	8/4/2021	JA	manhole	na	na	flowing	na	na	na	no odor, clear	none	none	na	0.0	0.03	2940	0.40	0.20	na	na	na	Flowing directly into stormdrain on street, but manhole cover says “sanitary sewer.”
PB28	PB28	9/1/2022	DCB	outfall	36	corrugated black plastic	wet (no flow)	na	free flow	none	na	none	none	none	0.1	0.01	98.9	no data	no data	na	na	na	Outfall to storm water pond in south west corner of complex.
PB29	PB29-CB01	8/11/2020	GV	junction box	na	na	flowing	3	free flow	none	na	none	none	none	na	0.01	923	0.05	0.00	8/11/2020	8/20/2020	negative	Could not find outfall
PB29	PB29-CB02	8/11/2020	GV	manhole	na	na	flowing	0.5	free flow	none	clear, no odor	none	none	none	na	0.09, 0.10	na	0.10	<=0.10	8/11/2020	8/20/2020	negative	Not enough flow for all tests
PB29	PB29-CB03	8/11/2020	GV	catch basin	na	na	wet (no flow)	na	free flow	none	brown suds on surface	suds	none	none	na	na	na	na	na	8/11/2020	8/20/2020	negative	Could not open lid to sample
PB29	PB29-CB12	8/11/2020	GV	catch basin	na	na	flowing	2	free flow	none	clear, no odor	none	none	none	0.0	0.01	586	0.15	0.11	8/11/2020	8/20/2020	negative	Pipe A flowing heavily; same in next catchbasin up (could not open)
PB29	PB29-CB02J	8/4/2021	JA	catch basin	na	na	flowing	na	na	na	no odor	none	none	na	0.0	0.02	802	0.15	0.10	na	na	na	
PB29	PB29	9/1/2022	DCB	outfall	60	corrugated metal	flowing	6-8in	free flow	none	opaque brown, murky	none	none	none	0.3	0.00	680	no data	no data	na	na	na	Flow rate: 60-in width, 4-in depth, 1 sec/foot
PB29	PB29-DSCulv	10/6/2022	DCB	stream	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	
PB30	PB30-MH01	7/30/2020	GV	manhole	na	na	dry	na	free flow	none	no odor	none	none	none	na	na	na	na	na	7/30/2020	8/5/2020	negative	Outfall crushed and buried; unmapped drain pipe B enters (dry)
PB31	PB31	7/28/2020	GV	outfall	28	corrugated green plastic	flowing	2	partially submerged	none	clear, no odor	none	none	none	0.0	0.06	335	0.25	0.23	7/28/2020	8/5/2020	negative	
PB31	PB31-CB03	7/28/2020	GV	catch basin	na	na	flowing	2	free flow	none	clear, slight odor	none	none	none	0.0	0.07, 0.06	131.7	0.55	0.55	7/28/2020	8/5/2020	negative	
PB31	PB31	7/27/2021	SW	outfall	na	corrugated metal	flowing	1	partially submerged	none	turbid, no odor	sheen	none	none	0.0	0.00	379	0.25	0.23	na	na	na	
PB31	PB31	9/1/2022	JM	outfall	28	corrugated green plastic	flowing	1/2in	free flow	none	clear, no odor	none	none	none	0.0	0.02	447	no data	no data	na	na	na	Flow measurement- 1ft wide, 1/2in average deep, 5sec/foot
PB31	PB31	9/14/2022	JM	outfall	28	corrugated green plastic	flowing	na	free flow	none	na	none	none	none	na	na	na	na	na	9/14/2022	9/20/2022	negative	
PB31	PB31-CB01	9/14/2022	JM	catch basin	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	9/14/2022	9/20/2022	negative	Flow from CB4 toward outfall
PB31	PB31-CB02	9/14/2022	JM	catch basin	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	Bad access, filled with debris.
PB31	PB31-CB03	9/14/2022	JM	catch basin	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	9/14/2022	9/20/2022	negative	Flows across street to CB3. Junction catch basin
PB31	PB31-CB04	9/14/2022	JM	catch basin	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	9/14/2022	9/20/2022	negative	Flows across street to CB3. Junction catch basin
PB31	PB31-CB05	9/14/2022	JM	catch basin	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	9/14/2022	9/20/2022	negative	Flows north to south, CB6 enters from across the street
PB31	PB31-CB07	9/14/2022	JM	catch basin	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	9/14/2022	9/20/2022	negative	Significant foam, flows south to north to CB2.
PB31	PB31-CB07	10/6/2022	JM	catch basin	na	na	na	na	na	na	na	na	na	na	na	na	na	0.30	<=0.30	na	na	na	
PB31	PB31-CB08	10/6/2022	JM	catch basin	na	na	na	na	na	na	na	na	na	na	na	na	na	0.30	<=0.30	na	na	na	
PB32	PB32-CB01	7/28/2020	GV	catch basin	na	na	wet (no flow)	na	free flow	none	clear, no odor	none	none	none	0.1	0.12, 0.10	105	0.85	0.85	7/28/2020	8/5/2020	negative	Outfall buried; sampled CB instead; Association president (Theresa) believes system is connected to PB31 system on Margaret St.
PB32	PB32	7/27/2021	SW	outfall	18	corrugated metal	dry	na	free flow	none	na	na	na	none	na	na	na	na	na	na	na	na	
PB32	PB32-CB01	8/4/2021	JA	catch basin	na	na	wet (no flow)	na	na	na	no odor	none	na	na	0.0	0.05	199.1	0.20	0.19	na	na	na	Both inflows dry. Sampled from sump
PB33	PB33	8/6/2020	GV	outfall	24	smooth plastic	flowing	na	partially submerged	none	rusty water, slight oil sheen	sheen	na	none	na	na	na	na	na	na	na	na	Samples taken at MH01
PB33	PB33-MH02	8/6/2020	GV	manhole	na	na	flowing	4	free flow	none	slightly rusty/turbid, light sheen, no odor	none	none	none	na	0.00	946	0.25	0.19	8/6/2020	8/13/2020	negative	
PB33	PB33-MH01	8/13/2020	GV	manhole	na	na	flowing	3	partially submerged	none	turbid and rusty colored, no odor	none	iron staining	none	0.2	0.00	837	0.10	0.05	8/13/2020	8/20/2020	negative	Plattsburgh DPW cut lock off of doors, found Tideflex valve inside basin
PB33	PB33-MH01 REP	8/13/2020	GV	manhole	na	na	flowing	3	partially submerged	none	turbid and rusty colored, no odor	none	iron staining	none	0.2	0.00	794	0.20	0.15	8/13/2020	8/20/2020	negative	Plattsburgh DPW cut lock off of doors, found Tideflex valve inside basin
PB34	PB34-CB02	8/13/2020	GV	catch basin	na	na	wet (no flow)	na	free flow	none	na	none	none	none	na	na	na	na	na	8/13/2020	8/20/2020	negative	
PB34	PB34-CB05	8/13/2020	GV	catch basin	na	na	wet (no flow)	na	free flow	none	na	none	none	none	na	na	na	na	na	8/20/2020	8/27/2020	negative	
PB35	PB35-CB01	8/12/2020	GV	catch basin	na	na	dry	na	free flow	none	na	none	none	none	na	na	na	na	na	8/12/2020	8/20/2020	negative	
PB35	PB35-CB03	8/20/2020	GV	catch basin	na	na	wet (no flow)	na	free flow	none	na	none	none	none	na	na	na	na	na	8/20/2020	8/27/2020	negative	
PB36	PB36-MH01	8/12/2020	GV	manhole	na	na	flowing	1.5	free flow	none	clear, very sharp odor	none	white filamentous material on pipe	none	0.0	0.00	1590	0.30	0.19	8/12/2020	8/20/2020	negative	Could not access outfall
PB36	PB36-MH01	7/29/2021	JA	manhole	na	na	flowing	na	na	na	no odor, clear	none	none	na	0.05	0.03	1836	0.75	0.63	na	na	na	
PB36	PB36-OvalCB1	9/29/2022	JM	catch basin	na	na	wet (no flow)	na	na	na	yellowish, no odor	na	na	na	0.0	0.10	206	0.0	0.00	na	na	na	
PB37	PB37-CB01	8/12/2020	GV	catch basin	na	na	wet (no flow)	na	free flow	none	clear, slight odor	none	none	none	0.0	0.08, 0.12	185	0.40	0.39	8/12/2020	8/20/2020	negative	Could not access outfall
PB37	PB37-CB02	7/29/2021	JA	catch basin	na	na	dripping	na	na	na	no odor, clear	none	none	na	0.0	0.02	196.3	0.15	0.14	na	na	na	Two visible inflow pipes. CB1 could not be pried open
PB37	PB37	9/1/2022	DCB	outfall	na	corrugated metal	trickling	2cm	free flow	none	clear, some suds, metallic odor	none	none	none	0.25	0.00	1181	no data	no data	na	na	na	Approximately 3.5 sec/50 mL
PB37	PB37-CB01	9/14/2022	DCB	catch basin	na	na	wet (no flow)	na	na	na	na	na	na	na	0.0	0.00	120.1	0.1	0.10	na	na	na	
PB37	PB37-CB01	9/29/2022	DCB	catch basin	na	na	wet (no flow)	na	na	na	no odor	na	na	na	na	na	na	na	na	na	na	na	
PB37	PB37-CB02	9/29/2022	DCB	catch basin	na	na	wet (no flow)	na	na	na	clear, no odor	na	na	na	na	na	na	na	na	na	na	na	
PB38	PB38	8/6/2020	GV	outfall	12	steel	trickling	na	free flow	plunge pool and gully	clear, no odor	none	none	none	0.0	0.03	2640	0.50	0.32	8/13/2020	8/20/2020	negative	
PB38	PB38	8/4/2021	JA	outfall	12	smooth metal	dry	na	free flow	none	na	na	na	na	na	na	na	na	na	na	na	na	
PB39	PB39-MH01	8/18/2020	GV	manhole	na	na	dry	na	free flow	none		none	none	none	na	na	na	na	na	9/3/2020	lost	lost	Could not find outfall; pipe A wet
PB39	PB39-MH02	8/31/2021	JA	manhole	na	na	dry	na	na	na	no odor	none	none	na	na	na	na	na	na	8/31/2021	9/7/2021	negative	
PB40	PB40	7/29/2020	GV	outfall	8	smooth plastic	flowing	0.25	free flow	none	clear, no odor	none	none	none	0.0	0.46, 0.33	339	0.1	0.08	8/12/2020	8/20/2020	negative	CB01 trickling; water must be entering between CB01 and outfall
PB40	PB40	7/29/2021	JA	outfall	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	Outfall inaccessible under bridge, possibly submerged
PB40	PB40-CB01	7/29/2021	JA	catch basin	na	na	wet (no flow)	na	na	na	no odor	none	none	na	na	na	na	na	na	na	na	na	
PB40	PB40	9/1/2022	DCB	outfall	8	smooth plastic	flowing	no data	free flow	none	clear, no odor	none	none	none	0.0	0.35	341	no data	no data	na	na	na	Flow rate: 14 sec/2L. First CB next to bridge abutment offline, CB2 has strong flow. Mapped CB4 almost dry, CB3 not found
PB40	PB40-CB01	9/14/2022	DCB	catch basin	na	na	wet (no flow)	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	Flows back to CB2
PB40	PB40-CB02	9/14/2022	DCB	catch basin	na	na	na	na	na	na	na	na	na	na	na	0.04	na	na	na	na	na	na	No side inlets, 1 in one out
PB40	PB40-CB03	9/14/2022	DCB	catch basin	na	na	na	na	na	na	na	na	na	na	na	0.03	na	na	na	na	na	na	Pipe A: 4-in corrugated drain, dry; Pipe B: 12-in main line, dripping; Pipe C: 8-in clay pipe, wet/no flow
PB40	PB40	9/14/2022	DCB	outfall	na	na	flowing	na	na	na	na	na	na	na	na	0.38	na	na	na	na	na	na	
PB41	PB41	7/28/2020	GV	outfall	36	concrete	flowing	2	free flow	none	clear, slight odor	none	none	none	0.0	0.03	1200	0.45	0.37	7/28/2020	8/5/2020	negative	
PB41	PB41	7/27/2021	SW	outfall	36	concrete	wet (no flow)	na	partially submerged	none	clear, no odor	none	none	none	na	na	na	na	na	na	na	na	CB1 also not flowing
PB42	PB42-MH01	8/11/2020	GV	manhole	na	na	wet (no flow)	na	free flow	none	na	none	none	none	na	na	na	na	na	8/11/2020	8/20/2020	negative	Could not find outlet; still dry at pad pickup
PB43	PB43	7/30/2020	GV	outfall	24	corrugated black plastic	dry	na	free flow	gully below outfall		none	none	none	na	na	na	na	na	7/30/2020	8/6/2020	negative	
PB44	PB44	8/4/2021	JA	outfall	35	corrugated black plastic	dry	na	free flow	none	na	na	na	none	na	na	na	na	na	na	na	na	Boat washing station ~15 ft. uphill
PB45	PB45-CB01	7/27/2021	JA	catch basin	na	na	dripping	na	na	na	no odor	none	none	na	0.0	0.06, 0.05	761	0.2	0.15	7/27/2021	8/4/2021	negative	Sample obtained from sump
PB46	PB46	7/29/2021	JA	outfall	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	Outfall may be buried in riprap
PB46	PB46-CB01	8/5/2021	JA	catch basin	na	na	wet (no flow)	na	na	na	no odor	none	none	na	0.0	0.07, 0.04	2630	0.5	0.32	8/5/2021	8/12/2021	negative	No odor
PB46	PB46-MH01	9/29/2022	DCB	manhole	na	na	wet (no flow)	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	No odor
PB46	PB46-CB01	9/29/2022	DCB	catch basin	na	na	wet (no flow)	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	No odor, minor suds. CB02 wet/no flow; CB03 and CB04 dry
PB46	PB46-CB01	10/6/2022	DCB	catch basin	na	na	wet (no flow)	na	na	na	na	na	na	na	0.0	na	na	na	na	na	na	na	No flow at MH01
PB46	PB46-MH01	10/19/2022	DCB	manhole	na	na	wet (no flow)	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	Sampled CB01 and CB02; CB03 and CB04 dry
PB47	PB47	7/29/2021	JA	outfall	15	concrete	trickling	0.125	free flow	none	no odor, clear	none	none	none	0.0	0.03	414	0.3	0.28	7/29/2021	8/4/2021	negative	
PB48	PB48-CB01	7/29/2021	JA	catch basin	na	na	wet (no flow)	na	na	na	very turbid, no odor	none	none	na	1.0, 1.0	0.01	984	2.5	2.44	7/29/2021	8/4/2021	positive (strong)	Sampled sump. Suspended sediment may have interfered in CI2 test. Dead mole in sump. Inlet and outlet pipes likely submerged.
PB48	PB48-CB02	7/29/2021	JA	catch basin	na	na	flowing	na	na	na	no odor, clear	suds	none	na	1.5	0.03	967	3	2.9	7/29/2021	8/4/2021	positive (strong)	Small plastic corrugated pipe flowing from south, likely the mainline, which is mapped as flowing into CB1 (mis-mapped).
PB48	PB48-CB03	7/29/2021	JA	catch basin	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	Could not locate. Possibly buried, but more likely mis-mapped
PB48	PB48-CB01	8/5/2021	JA	catch basin	na	na	wet (no flow)	na	na	na	strong odor of death/decay	none	none	na	4	0.04	1064	3	2.9	na	na	na	CB2 flooded, unlike first visit when it flowed freely. Difficult to tell if flowing. Sample taken from CB1 sump. MBAS was >=3.0 mg/L.
PB48	PB48-CB04	9/29/2022	DCB	catch basin	na	na	wet (no flow)	na	na	na	na	na	na	na	na	na	na	na	na	9/29/2022	10/5/2022	negative	
PB48	PB48-MH01	9/29/2022	DCB	manhole	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	9/29/2022	10/5/2022	negative	
PB48	PB48-CB05	9/29/2022	DCB	catch basin	na	na	trickling	na	na	na	na	na	na	na	na	na	na	na	na	9/29/2022	10/5/2022	negative	
PB48	PB48-CB01	10/6/2022	DCB	catch basin	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	CB01 and CB02 flooded. E. coli sample collected from puddle above CB1.
PB49	PB49	8/5/2021	JA	outfall	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	Could not access outfall or any catch basins along the mainline as they are behind a railroad fence
PB50	PB50	7/27/2021	SW	outfall	12	corrugated metal	dry	na	free flow	none	na	none	none	none	na	na	na	na	na	na	na	na	
PB51	PB51	7/27/2021	SW	outfall	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	Outfall not located
PB52	PB52	7/27/2021	JA	outfall	22	concrete	trickling	0.25	free flow	none	no odor	none	none	none	0.15	0.02	7650	1	0.5	7/27/2021	8/12/2021	indeterminate	

System	IDDE ID	Date	Inspector	Structure type	Inner diameter (in.)	Material (outfall only)	Flow	Flow depth (in.)	Outfall position	Erosion at outfall	Discharge characteristics	Floatables	Deposits/ staining	Obstructions	Ammonia (mg/L)	Free chlorine (mg/L)	Sp. cond. (µS/cm)	MBAS (mg/L)	Corrected MBAS (mg/L)	Date OB pad set	Date OB pad retrieved	OB result	Comments
PB53	PB53	8/5/2021	JA	outfall	17	corrugated black plastic	dripping	na	free flow	none	fish odor from PB27	none	none	none	na	na	na	na	na	8/5/2021	8/12/2021	negative	Dripping too infrequently to sample
PB54	PB54	7/27/2021	SW	outfall	24	corrugated black plastic	wet (no flow)	na	partially submerged	none	clear, no odor	sheen	none	partially obstructed	na	na	na	na	na	na	na	na	
PB55	PB55	7/23/2021	SW	outfall	60	corrugated metal	flowing	1	free flow	none	clear, no odor	suds	none	none	na	na	na	na	na	na	na	na	Stream crossing culvert flowing, inflowing storm pipe is dry. Suds are from stream flow.
PB56	PB56	7/23/2021	SW	outfall	15	corrugated black plastic	dry	na	partially submerged	none	na	none	none	none	na	na	na	na	na	na	na	na	Next catch basin upstream is dry
PB57	PB57	7/23/2021	JA	outfall	15	corrugated black plastic	wet (no flow)	na	partially submerged	none	no odor	none	none	none	na	na	na	na	na	na	na	na	
PB58	PB58	7/23/2021	SW	outfall	55	corrugated metal	wet (no flow)	na	partially submerged	none	clear, no odor	none	none	none	na	na	na	na	na	7/23/2021	8/4/2021	negative	One barrel of double culvert conveys a stream; stormdrain enters left barrel from east; padded cross culvert, which was surcharged by stream. Suspended solids may impact Cl2. MH02 is wet/no flow. MH02 has minor suds but no inlets. MBAS
PB58	PB58-MH01	7/23/2021	SW	manhole	na	na	wet (no flow)	na	na	na	clear, no odor	none	none	na	0.0	0.05	1107	0.33	0.25	7/23/2021	8/4/2021	negative	in MH01 probably from outdoor washing
PB59	PB59	7/23/2021	SW	outfall	8	corrugated black plastic	dry	na	free flow	none	na	na	na	none	na	na	na	na	na	na	na	na	
PB60	PB60	8/5/2021	JA	outfall	na	corrugated black plastic	wet (no flow)	na	partially submerged	none	no odor	none	none	partially obstructed	na	na	na	na	na	8/5/2021	8/12/2021	negative	
PB61	PB61	7/23/2021	SW	outfall	48	corrugated metal	flowing	0.25	free flow	none	no odor, mildly turbid	none	none	none	0.0	0.04	405	0.2	0.18	7/23/2021	8/4/2021	negative	
PB62	PB62	8/5/2021	JA	outfall	na	na	na	na	na	na	na	na	na	none	na	na	na	na	na	na	na	na	Could not locate outfall
PB63	PB63	8/5/2021	JA	outfall	40	corrugated metal	flowing	1.25	free flow	none	no odor, slightly turbid	none	iron staining	none	0.0	0.02	623	0.2	0.16	8/5/2021	8/12/2021	negative	
PB63	PB63 (dupe)	8/5/2021	JA	outfall	40	corrugated metal	flowing	1.25	free flow	none	no odor, slightly turbid	none	iron staining	none	0.0	0.03	632	0.2	0.16	na	na	na	
PB64	PB64-MH01	7/26/2021	JA	manhole	na	na	flowing	na	na	na	no odor	none	none	na	na	na	na	na	na	7/26/2021	8/4/2021	negative	
PB64	PB64-MH01(b)	7/26/2021	JA	manhole	na	na	flowing	na	na	na	no odor	none	none	na	0.4	0.00	1167	0.2	0.12	na	na	na	
PB64	PB64-MH01(c)	7/26/2021	JA	manhole	na	na	flowing	na	na	na	no odor	none	none	na	0.0	0.03	1019	0.2	0.13	na	na	na	
PB64	PB64-MH02	7/26/2021	JA	manhole	na	na	flowing	na	na	na	no odor	sheen	none	na	0.1	0.03	501	0.15	0.12	7/26/2021	8/4/2021	negative	
PB64	PB64-MH02(a)	7/26/2021	JA	manhole	na	na	flowing	na	na	na	no odor	none	none	na	0.0	0.03	1034	0.2	0.13	na	na	na	
PB64	PB64-MH03	7/26/2021	JA	manhole	na	na	flowing	na	na	na	no odor	none	none	na	na	na	na	na	na	7/26/2021	8/4/2021	negative	Appears the pad was deployed in the MH03 manhole sump
PB64	PB64-MH03(a)	7/26/2021	SW	manhole	na	na	flowing	na	na	na	clear, no odor	none	none	na	0.2	0.03	640	0.2	0.16	na	na	na	
PB64	PB64-MH03(b)	7/26/2021	SW	manhole	na	na	flowing	na	na	na	fairly turbid, no odor	sheen	na	na	0.0	0.09	574	0.2	0.16	na	na	na	Sheen was seen one MH up from sampled structure
PB64	PB64-MH05	7/26/2021	SW	manhole	na	na	flowing	na	na	na	clear, no odor	none	none	na	0.0	0.02	1310	0.2	0.11	na	na	na	
PB64	PB64-CB01	8/12/2021	JA	catch basin	na	na	dry	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	
PB67	PB67	7/23/2021	JA	outfall	15	corrugated metal	wet (no flow)	na	free flow	none	no odor	none	none	none	na	na	na	na	na	7/23/2021	8/4/2021	negative	
PB68	PB68	7/23/2021	SW	outfall	24	concrete	dry	na	free flow	none	na	na	na	none	na	na	na	na	na	na	na	na	
PB69	PB69	7/23/2021	SW	outfall	24	corrugated metal	wet (no flow)	na	free flow	none	clear, no odor	none	none	none	na	na	na	na	na	na	na	na	
PB70	PB70	7/23/2021	SW	outfall	24	corrugated metal	dry	na	free flow	none	na	na	na	none	na	na	na	na	na	na	na	na	Last section has separated from rest of pipe, some dirt caving in
PB71	PB71-CB01	8/5/2021	JA	catch basin	na	na	trickling	na	na	na	no odor	sheen	iron staining	none	0.0	invalid	1044	0.2	0.13	8/5/2021	8/12/2021	negative	Mainline was dry. All flow from single catch basin across street. Chlorine data invalid due to high iron content.
PB71	PB71-CB01 (dupe)	8/5/2021	JA	catch basin	na	na	trickling	na	na	na	no odor	sheen	iron staining	na	0.0	invalid	1036	0.2	0.13	na	na	na	
PB72	PB72-CB01	7/23/2021	SW	catch basin	na	na	flowing	na	na	na	petroleum odor	none	iron staining	na	na	na	na	na	na	7/23/2021	8/4/2021	negative	Padded sump and sampled pipes A, B, and C independently. This system drains a known contaminated site, the Plattsburgh Air Force Base
PB72	PB72-CB01(a)	7/23/2021	SW	catch basin	na	na	flowing	na	na	na	petroleum odor	none	iron staining	na	0.8	invalid	301	0.2	0.18	na	na	na	Pipe A heavily iron stained; sample has petroleum odor
PB72	PB72-CB01(b)	7/23/2021	SW	catch basin	na	na	flowing	na	na	na	no odor	none	na	na	0.0	0.00	364	0.1	0.08	na	na	na	
PB72	PB72-CB01(c)	7/23/2021	SW	catch basin	na	na	flowing	na	na	na	no odor	none	na	na	no data	0.03	322	0.1	0.08	na	na	na	
PB73	PB73	7/26/2021	JA	outfall	52	corrugated metal	flowing	2	free flow	none	no odor, slightly turbid	suds	iron staining	none	0.0	0.04	859	0.2	0.14	7/26/2021	8/4/2021	negative	
PB73	PB73-CB01	7/26/2021	JA	manhole	na	na	flowing	na	na	na	no odor	none	none	na	na	na	na	na	na	7/26/2021	8/4/2021	negative	
PB73	PB73-MH02	7/26/2021	JA	manhole	na	na	trickling	na	na	na	no odor	none	none	na	0.0	0.04	521	0.1	0.07	7/26/2021	8/4/2021	negative	PB73-MH02(a) is dry, PB73-MH02(b) is trickling
PB73	PB73-CB01(a)	7/26/2021	JA	manhole	na	na	flowing	na	na	na	no odor	none	none	na	0.1	0.00	812	0.2	0.15	na	na	na	Inflows a and b were both flowing
PB73	PB73-CB01(b)	7/26/2021	JA	manhole	na	na	flowing	na	na	na	no odor	none	none	na	0.1	0.05	800	0.2	0.15	na	na	na	Inflows A and B were both flowing

Appendix C. Maps



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Map 1. Stormwater Outfalls Assessed in Plattsburgh

Plattsburgh IDDE

STONE ENVIRONMENTAL

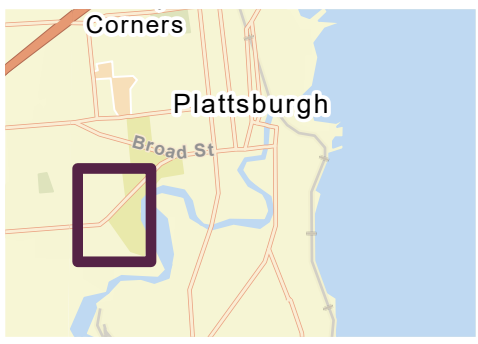
LEGEND

- Catchbasin
- Stormwater Manhole
- Outfall
- Storm line
- Combined sewer
- Sanitary line

N

0 0.02 0.04

Miles



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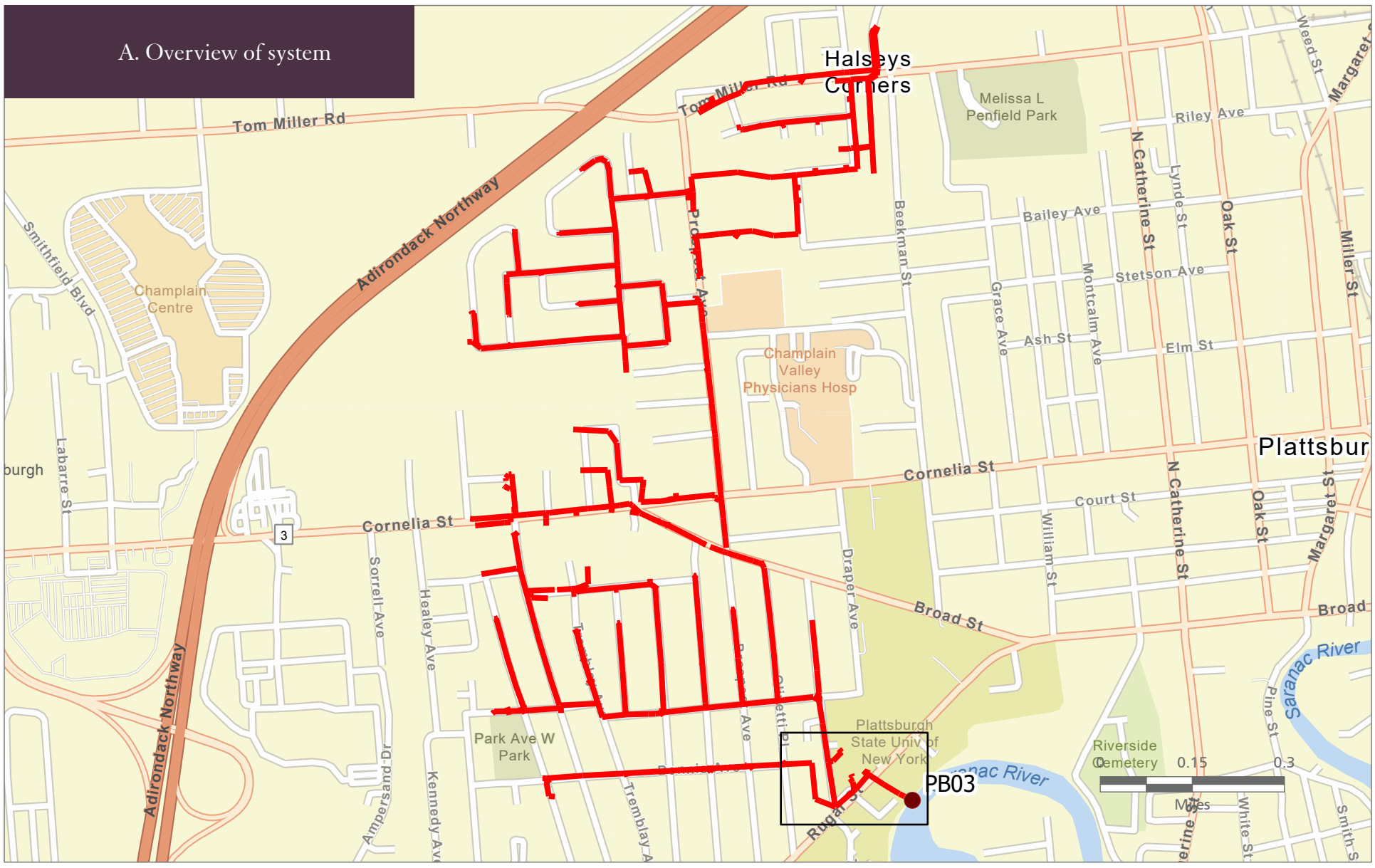
Map 2. PB02

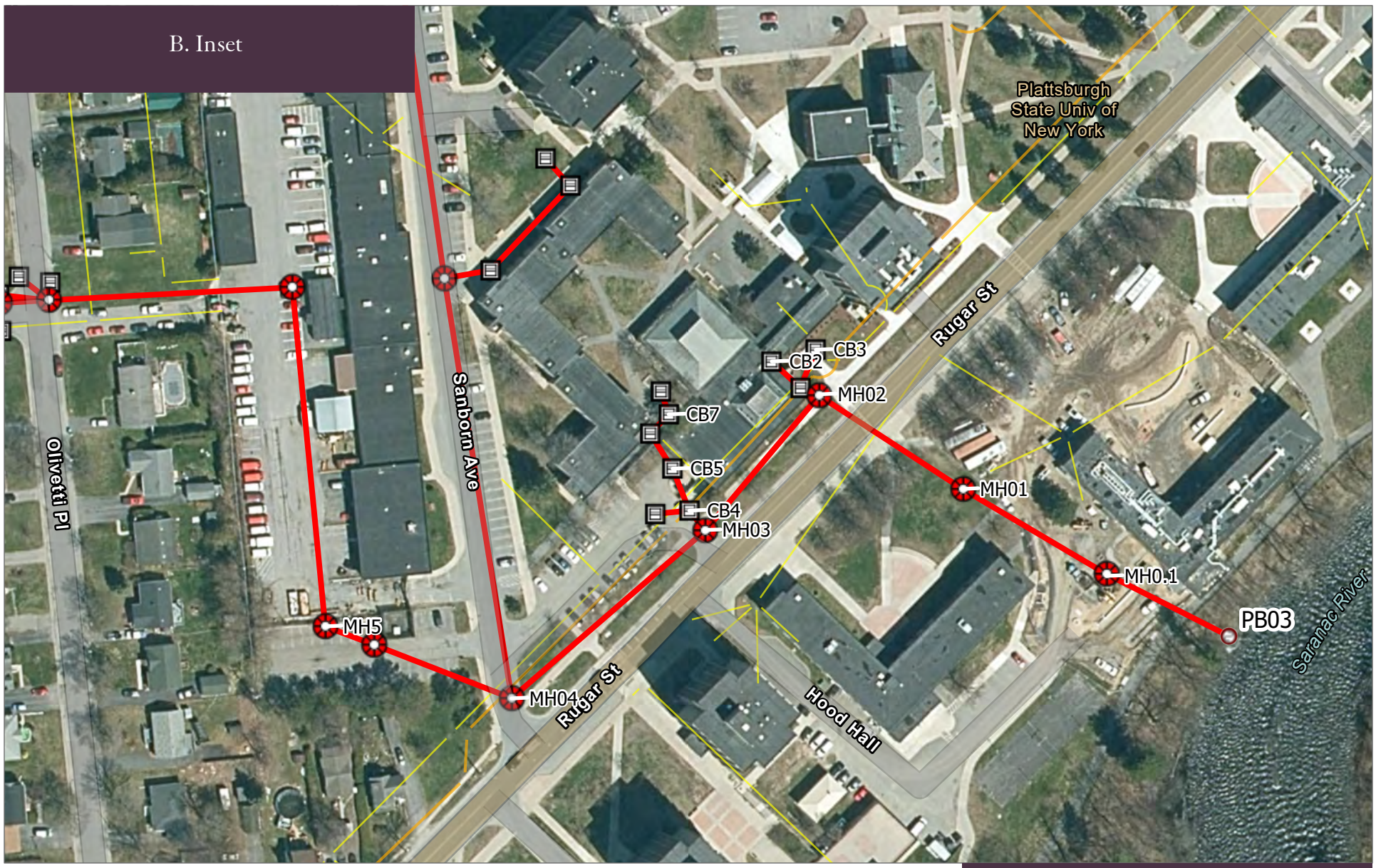
Plattsburgh IDDE

STONE ENVIRONMENTAL

A. Overview of system



B. Inset



LEGEND

- Catchbasin
- Stormwater Manhole
- Outfall
- Storm line
- Combined sewer
- Sanitary line

N

Map 3. PB03

Plattsburgh IDDE

STONE ENVIRONMENTAL

Source: Esri World Imagery

Path: O:\PROJ-20\WRM\20-031 Plattsburgh IDDE\GIS\MapDocuments\PresentationsAndReports\Phase_2_Report_maps_January_2023\Phase_2_Report_maps_January_2023.aprx PB03

LEGEND

- Catchbasin
- Stormwater Manhole
- Outfall
- Phase 1 outfalls
- Storm line
- Combined sewer
- Sanitary line

N

0 0.01 0.03

Miles

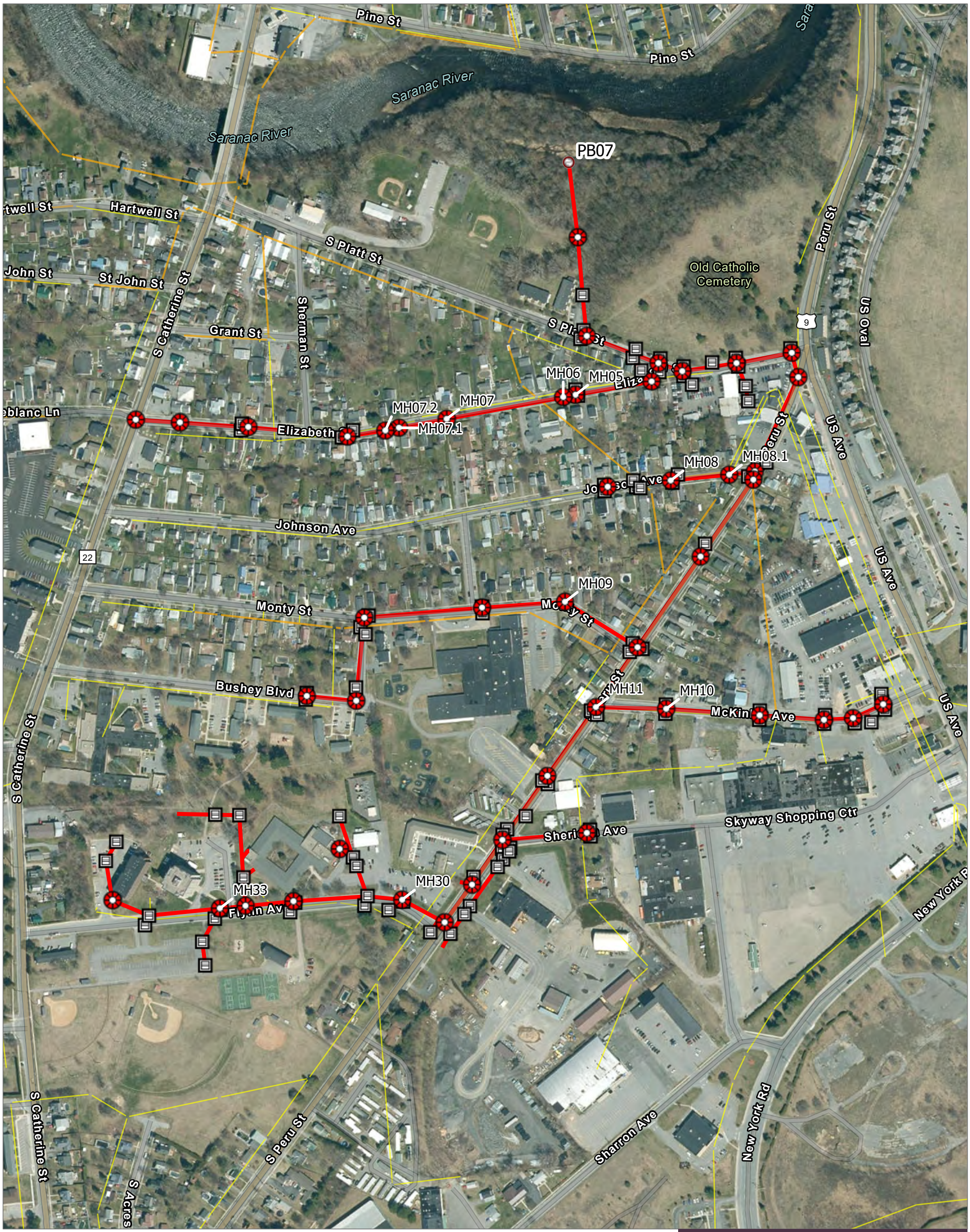
Map 4. PB05

Plattsburgh IDDE

Source: Esri World Imagery

Path: O:\PROJ-20\WRM\20-031 Plattsburgh IDDE\GIS\MapDocuments\PresentationsAndReports\Phase_2_Report_maps_January_2023\Phase_2_Report_maps_January_2023.aprx PB05

STONE ENVIRONMENTAL



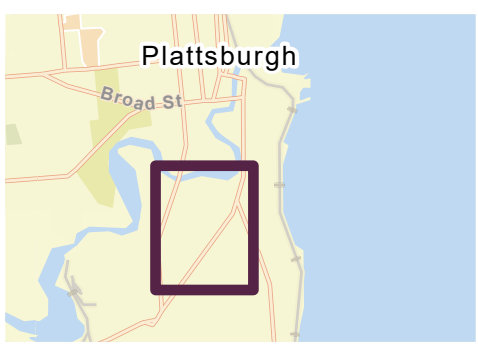
LEGEND

- Catchbasin
- Stormwater Manhole
- Outfall
- Storm line
- Combined sewer
- Sanitary line

N

0 0.03 0.06

Miles



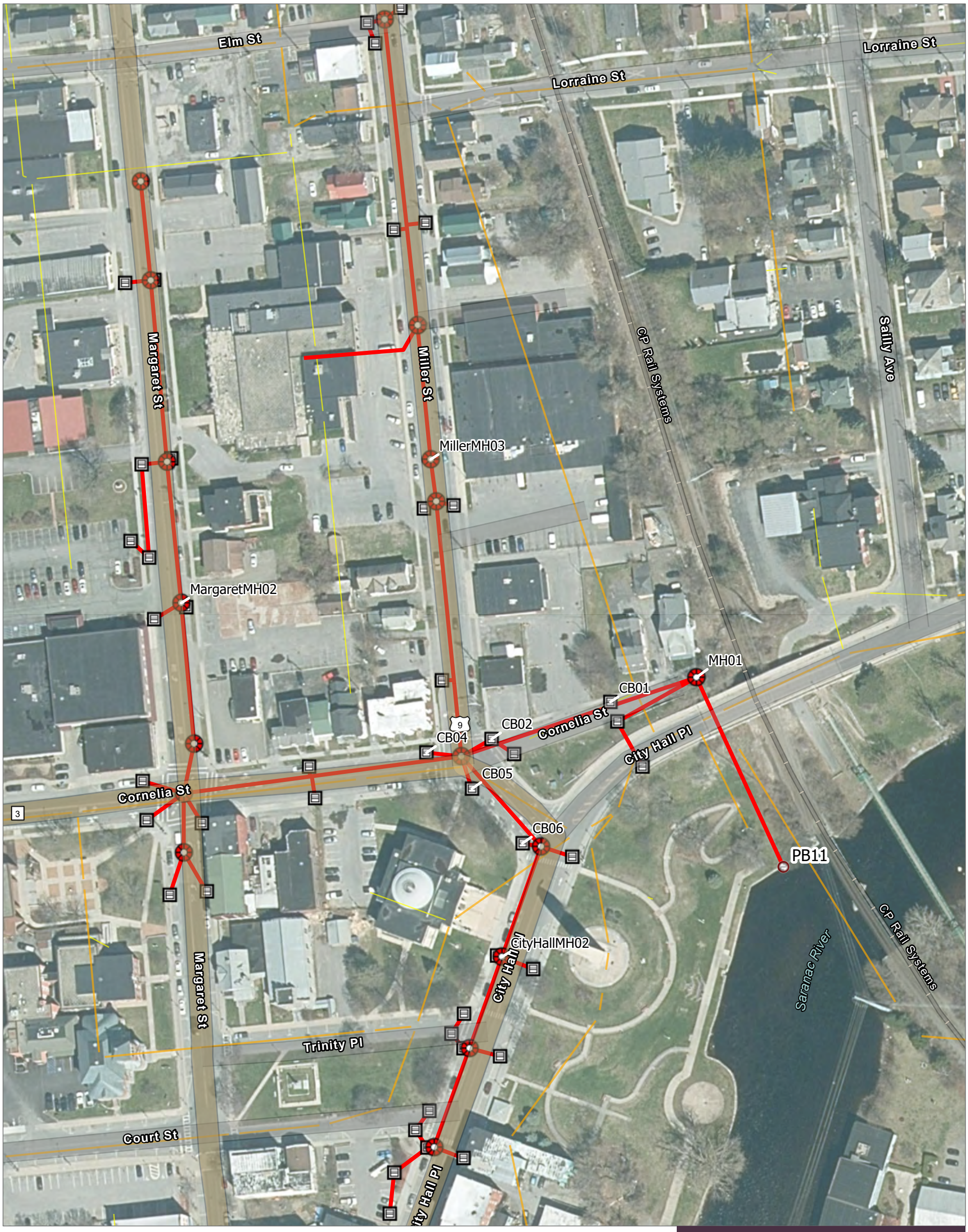
Map 5. PB07

Plattsburgh IDDE

STONE ENVIRONMENTAL

Source: Esri World Imagery

Path: O:\PROJ-20\WRM\20-031 Plattsburgh IDDE\GIS\MapDocuments\PresentationsAndReports\Phase_2_Report_maps_January_2023\Phase_2_Report_maps_January_2023.aprx PB07



LEGEND

- Catchbasin
- Stormwater Manhole
- Outfall
- Storm line
- Combined sewer
- Sanitary line

N

0 0.01 0.02

Miles

Source: Esri World Imagery

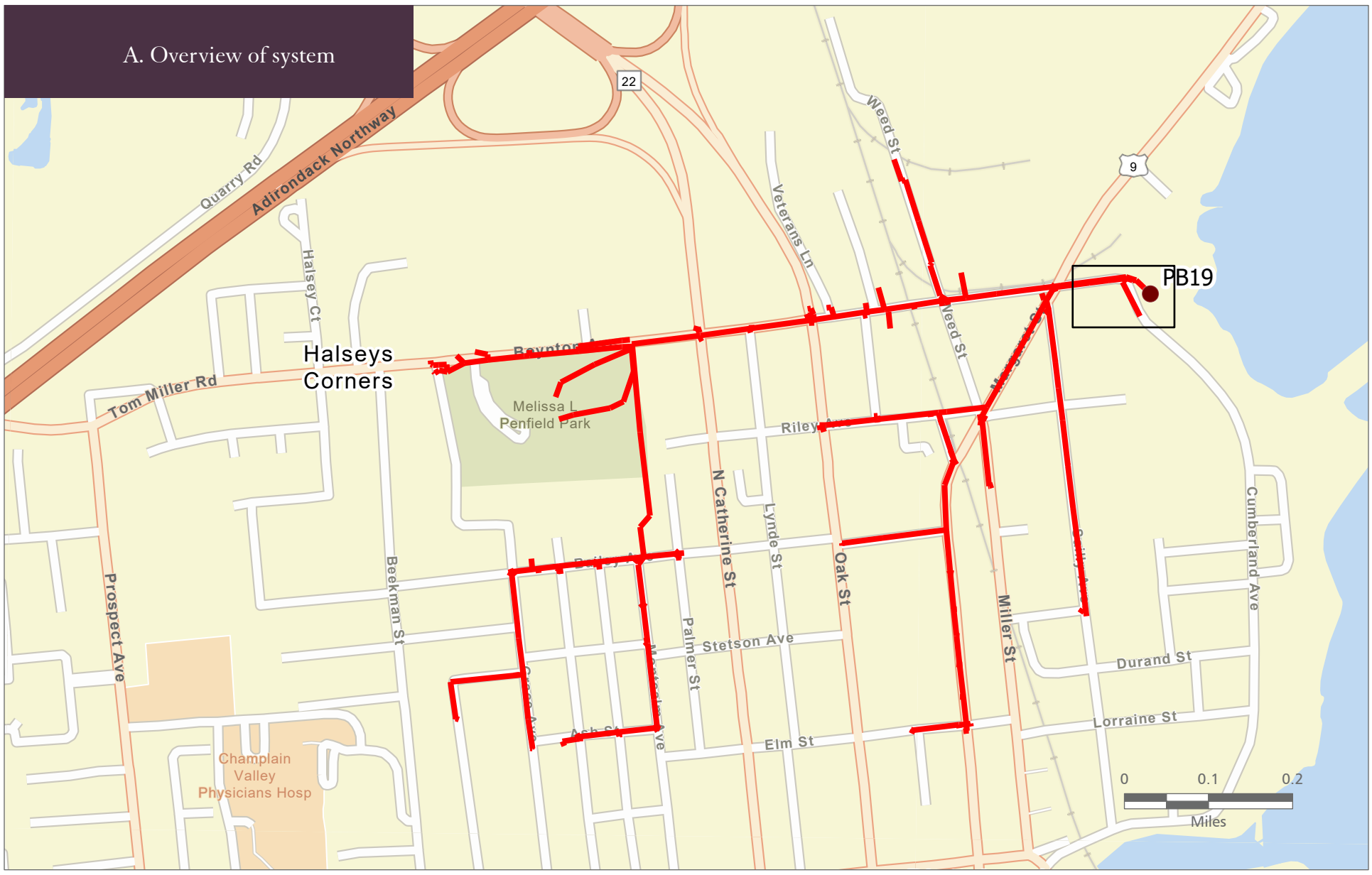
Path: O:\PROJ-20\WRM\20-031 Plattsburgh IDDE\GIS\MapDocuments\PresentationsAndReports\Phase_2_Report_maps_January_2023\Phase_2_Report_maps_January_2023.aprx PB11

Map 6. PB11

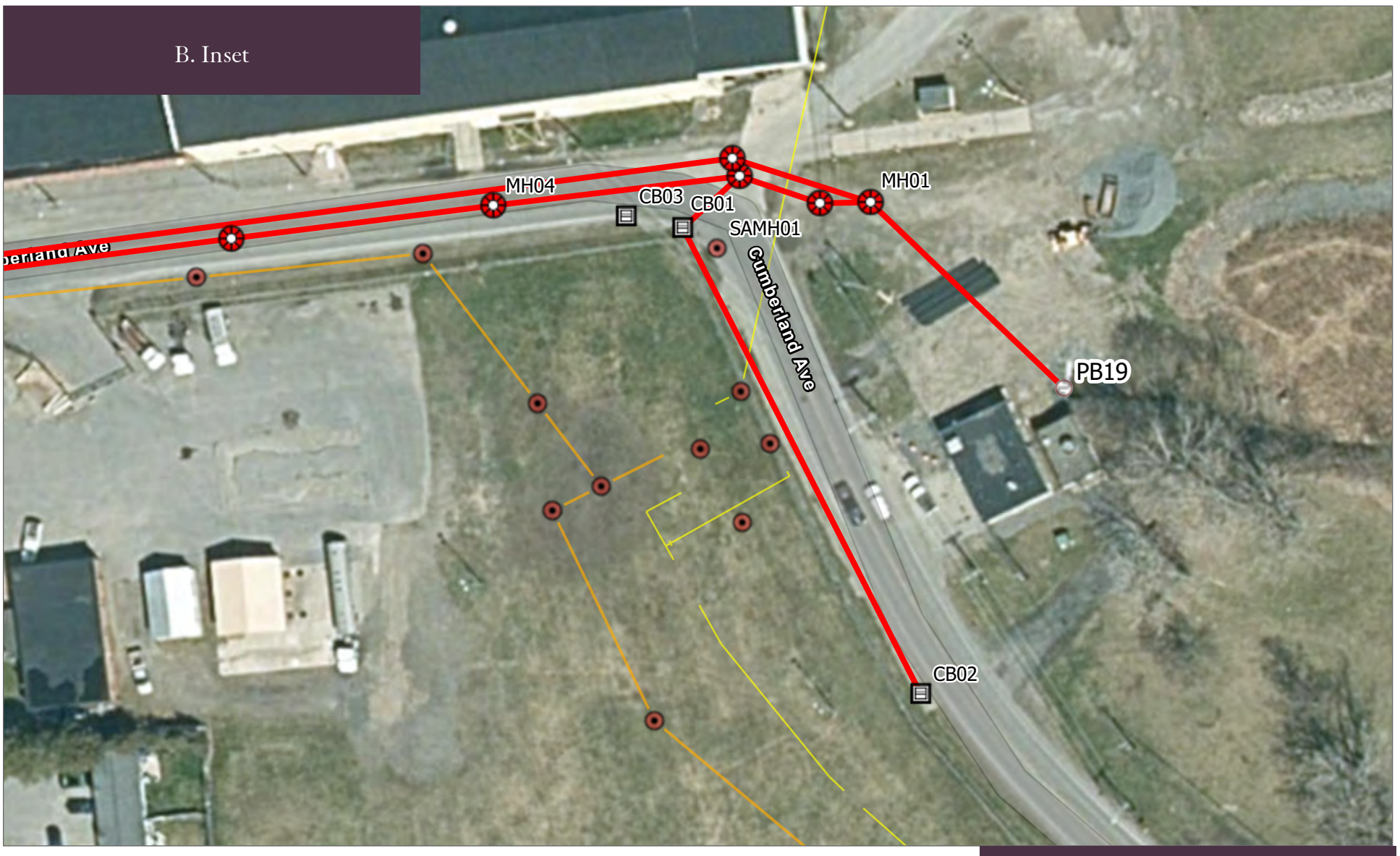
Plattsburgh IDDE

STONE ENVIRONMENTAL

A. Overview of system



B. Inset



N

LEGEND

- Catchbasin
- Stormwater Manhole
- Outfall
- Sanitary Manhole
- Storm line
- Combined sewer
- Sanitary line

Source: Esri World Imagery

Path: O:\PROJ-20\WRM\20-031 Plattsburgh IDDE\GIS\MapDocuments\PresentationsAndReports\Phase_2_Report_maps_January_2023\Phase_2_Report_maps_January_2023.aprx PB19

Map 7. PB19

Plattsburgh IDDE

STONE ENVIRONMENTAL

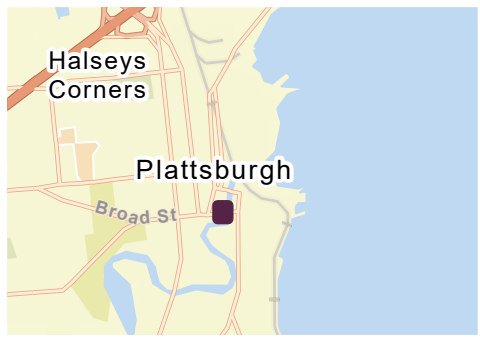
LEGEND

- Catchbasin
- Stormwater Manhole
- Outfall
- Phase 2 outfalls
- Storm line
- Combined sewer

N

0 0 0.01

Miles



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Map 8. PB46

Plattsburgh IDDE

STONE ENVIRONMENTAL

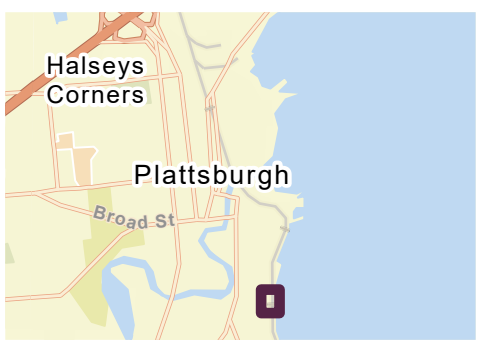
LEGEND

- Catchbasin
- Stormwater Manhole
- Outfall
- Phase 2 outfalls
- Storm line
- Sanitary line

N

0 0.01 0.01

Miles



Source: Esri World Imagery

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Map 9. PB48

Plattsburgh IDDE

STONE ENVIRONMENTAL