FINAL REPORT – WHITE RIVER BASIN ILLICIT DISCHARGE DETECTION AND ELIMINATION STUDY

BARNARD, BETHEL, CHELSEA, GRANVILLE, HANCOCK, HARTFORD, PITTSFIELD, QUEECHEE, RANDOLPH, ROCHESTER, ROYALTON, SHARON, AND TUNBRIDGE,

VERMONT

FINAL REPORT

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1 INTRODUCTION

In February 2016, Watershed Consulting Associates, LLC (WCA) was awarded an Ecosystem Restoration Program grant (#28665) by the Vermont Department of Environmental Conservation to perform an Illicit Discharge Detection and Elimination (IDDE) study for a number of towns in the White River Basin. Participating towns include Barnard, Bethel, Chelsea, Granville, Hancock, Hartford, Pittsfield, Quechee, Randolph, Rochester, Royalton, Sharon, and Tunbridge.

The goal of this study was to find any potential non-stormwater discharges, usually waters related to sanitary sewage, entering the stormwater sewer system, trace them back to their source, and eliminate them. Doing so improves the aquatic ecosystem health of the rivers and streams in those communities and eliminates any potential public health hazards that could be associated with non-stormwater discharges that enter untreated into natural systems.

The geographic scope of this work included 13 towns in the counties of Windsor and Rutland. With a total of 694 outfalls, over half were located in the town of Hartford. As the largest municipality in the area by population, and sitting between Interstates 89 and 91, this area accounted for much of the investigation performed during the study. Randolph also required a large amount of investigation with 119 outfalls to be visited. The remaining nine towns possessed the last third of required investigations, each with less than 50 contributing outfalls.

In addition, eight monitoring points on tributary streams were selected in the Quechee area. These points were chosen by VT DEC as additional IDDE investigation points and were analyzed for ammonia, detergents (as methyl blue active substances or MBAS), temperature, pH, and conductivity. Two of the points were not flowing when investigated. Of the remaining six, none had strong indicators of possible illicit discharge.

The dry weather assessment, also referred to as the Outfall Reconnaissance Inventory or ORI, was conducted during dry weather (defined as <0.1” in the past 24 hours to the maximum extent practicable), with field tests performed on any flowing water found at the system’s pipe outlet. These tests included chemical tests for ammonia, temperature, pH, and conductance, qualitative tests for odor, turbidity, color, and floatables, as well as non-flow-based indicators such as outfall damage, deposits or stains, abnormal vegetation, poor pool quality, and pipe benthic growth. Where any of these indicators suggested a possible illicit discharge, a sample was taken for later analysis for methylene blue active substances (MBAS, which are detergent-related). Additional samples were also obtained, where indicated by the results of other analyses, for *E. coli* and total phosphorus. Occasionally optical brighteners were tested using unbleached cotton pads placed in an outfall and allowed to sit for 4-10 days. If any optical brighteners (substances typically associated with laundry detergent) were present, the pads would fluoresce under UV (black) light.

To identify discharges normally associated with human sewage, WCA partnered with Environmental Canine Services (ECS) to conduct canine scent detection procedures. Following ECS quality control protocol, WCA staff collected, packaged, and shipped samples of concern to the ECS headquarters in Otisfield, Maine. Two canines tested each of the shipped samples, negative control and positive control scenting containers, and their responses were recorded. This procedure was conducted exclusively on outfalls which had flow during dry weather and had been previously suspected of illicit discharges.

Of the 694 outfalls tested, 118 were flowing when investigated and 66 were suspected for possible illicit discharge during the ORI. During the Advanced Investigation (AI) portion of the study, 5 of the 694 outfalls were confirmed to have some sort of illicit discharge.

Table 1: Summary of Assessments by Municipality

Town	Systems Assessed	New Outfalls Found	Outfalls Not Found	Systems with Flow	Suspected Illicit Discharge	Confirmed Illicit Discharge
Barnard	18	0	2	5	5	0
Bethel	41	0	0	13	5	0
Chelsea	18	9	0	7	19	0
Granville	2	0	0	0	0	0
Hancock	5	1	1	0	0	0
Hartford	376	0	8	58	19	4
Pittsfield	15	0	1	4	0	0
Randolph	119	3	3	12	8	1
Rochester	30	1	1	3	3	0
Royalton	47	0	2	12	7	0
Sharon	13	0	1	0	0	0
Tunbridge	10	4	0	4	0	0
TOTAL	694	18	19	118	66	5

2 METHODS

Our general methodology for this study follows the protocols and recommendations established by the Center for Watershed Protection (CWP), as well as additional guidelines developed over the course of several other studies by the State of Vermont.

2.1 Field Work Preparation

Initial preparation for the study involved obtaining the necessary field supplies for sample collection and analysis, creating a digital smartphone-based application for ORI and AI data collection in the field based on the Center for Watershed Protection's (CWP) ORI field and laboratory forms, and creating storm and sanitary sewer digital base layers to use within the smartphone app based on the most recent mapping performed by the VT DEC under the Stormwater Infrastructure Mapping Program.

A kick-off meeting was held in South Royalton with representatives from all towns except Hartford where WCA present an overview of the study, its goals, field methods, requested access letters from each town, discussed follow-up procedures for any illicit discharges found and how they would be enforced or otherwise resolved, and discussed municipal capacity and cooperation as far as the potential for televising storm or sanitary lines, dye testing, and determined if lab facilities could be used to perform water quality analyses. Known problem areas were also discussed during this time in an effort to further target the study. Contact information was obtained for large private landowners or businesses with large private storm sewer systems for each municipality.

For Hartford, a meeting was held with the Department of Public Works to discuss the study and dealt with the same material and issues as outlined above.

2.2 Outfall Reconnaissance Inventory – Dry Weather Survey

Stormwater systems were assessed during dry weather to minimize dilution by large volumes of runoff. Dry weather was defined as <0.1" precipitation in the previous 24 hours to the maximum extent practicable. There were times during the study when outfalls were assessed when precipitation had marginally exceeded this amount – this was noted on the Outfall Reconnaissance Inventory reports. Surveys during these times were kept to a bare minimum and avoided whenever possible. Only systems with two or more catchbasins or other structures were analyzed – single catchbasin systems were left out due to their low likelihood of possible connections that could result in illicit discharges. Outfalls in the public right of way or along a water body were accessed via public land. Where portions of the stormwater system were on private land, permission was obtained prior to investigating the system. If access to property was denied, infrastructure within the public right of way was assessed. Where no publicly accessible infrastructure existed, access denial was noted and the system was not analyzed.

Additionally, WCA conducted stream walks through the more developed portions of each of the study towns to identify any unmapped outfalls and analyze them for potential illicit discharges.

WCA developed a digital smartphone-based application to use for the collection, storage, analysis, and reporting of survey data. This application, developed using a third-party software platform, is based on the CWP field and laboratory forms merged into one overall interface and accessed in the field using a smartphone or tablet device. An integral part of the creation of this application was the import of all stormwater and sanitary sewer infrastructure points from the VT DEC's mapping program. Each of these features was assigned a unique alphanumeric code and color-based symbol. This enabled field staff to

quickly find each outfall or other infrastructure point using the phone's built-in GPS. Using these previously-mapped points also ensured the accuracy of each point's geo-location as built-in phone GPS units are only accurate to 3-5 meters where most of the VT DEC data is sub-meter accurate.

Wherever unmapped points were found, they were either mapped using a sub-meter accurate Trimble GeoXH GPS unit, or were recorded using the phone's built-in GPS and later corrected using high-resolution aerial photos. This process was also particularly useful for unmapped points found under bridges or in a narrow urban stream reaches between taller buildings where satellite reception is poor.

At every outfall point, the basic procedure was to search for the presence or absence of flow. If there was no flow during dry weather, it was generally assumed that there was no chronic illicit discharge present unless other non-flow-based indicators such as outfall damage, deposits or stains, abnormal vegetation, poor pool quality, or pipe benthic growth were noted. If none of these indicators was present, basic time/date information was entered into the application, along with a 'No' indicator for flow and non-flow based indicators and the outfall was assigned an overall characterization of 'Unlikely'.

If flow was present, immediate analysis for temperature, pH, specific conductance, and ammonia was conducted in the field. Other indicators, such as color, odor, turbidity, and floatables were noted as well. If any indicators were above established thresholds (see Table 1), a further sample was taken for analysis later that day for total chlorine (if applicable depending on municipality and methylene blue active substances (MBAS, a detergent indicator).

In cases where other non-flow based indicators (listed above) were present, or a sample was not otherwise able to be obtained from a flow or pool, a cotton pad was placed in the line of assumed flow to capture intermittent discharges and analyze them for the presence of optical brighteners. WCA used this technique sparingly, as most outfalls, or other infrastructure, had adequate flow or a pool to sample from and the water could be analyzed for MBAS.

Additionally, WCA noted any non-IDDE issues at the outfall or structure such as erosion, structure damage, headwall collapses, etc.

2.3 Water Quality Analysis Methods

Temperature/pH/Specific Conductance:

The Hannah Instruments HI98129 Combo pH and EC meter was used for all three parameters. Fresh pH and conductivity buffers were ordered at the beginning of the study from Endyne Labs in Williston, VT to ensure accuracy using standard solutions at known specific conductivity ranges.

Ammonia:

Ammonia was measured immediately in the field using the LaMotte Colorimeter 1200 (Model 3680-01). This unit uses Nessler's reagent for the detection of ammonia using a color reaction that is then measured by the colorimeter. The range is 0-5ppm/0.05ppm NH_3-N. Fresh reagents were maintained throughout the course of the study.

Methylene Blue Active Substances (MBAS):

The presence of detergents was determined using the Chemetrics R-9400 Detergents test which used a methylene blue active substances (MBAS) test, a method consistent with APHA Standard Methods, 21st ed., Method 5540 C (2005).

Total Chlorine:
Total chlorine was measured using the Hach Model CN66 Chlorine – Free and Total Color Disk Kit with a 0-3.5 mg/L range. This kit uses a powdered DPD reagent method and visual color wheel to quickly and accurately determine total chlorine concentration in samples.

Potassium:
Potassium was analyzed using the Horiba Cardy-C Compact Ion Meter C-131 which uses a selective flat ion electrode that is unreceptive to other ions. This meter can measure down to 1ppm at the low range, though 'guaranteed' range is between 39 – 3,900ppm. This unit was calibrated according to Horiba's 2-point calibration method for the greatest degree of accuracy.

Optical Brighteners:
Where indicated WCA used cotton pads placed either in the potential flow path of water at the outfall or in the sump of a catchbasin where flow was anticipated. These pads were allowed to sit for a period of 4-10 days encased in a plastic-coated wire mesh pouch. After this period, pads were retrieved, rinsed, and dried, then exposed to a UV (black) light. In the presence of detergents, the pad will fluoresce to varying degrees. WCA did not attempt to make measurements of the relative amount of fluorescence – this test was only for presence or absence. However, fouling with other debris and dirt often made reading a result difficult. In most cases where there was generally reliable flow or pooled water in the catchbasin sump, the MBAS test was used. Some studies have indicated that it takes a relatively high concentration of optical brighteners to cause a pad to fluoresce under UV light (up to 50 mg/L), while the MBAS test is reliable ranging from 0 – 3 ppm. For this reason we tended to use it more frequently.

2.4 Advanced Investigation Methods

Using water quality thresholds established by the Center for Watershed Protection and used by the US EPA in their Illicit Discharge Detection and Elimination guidance, as well as thresholds referenced in other studies performed throughout Vermont on IDDE (Table 2), outfalls were designated for follow-up investigation based on exceedance of these thresholds. In addition to these chemical benchmarks, other criteria such as outfall damage, deposits or stains, abnormal vegetation, poor pool quality, or pipe benthic growth, as well as water color, odor, turbidity, or the presence of floatables were used to supplement assessments.

Follow-up investigation consists primarily of following any observed flow up a stormline to pin-point its source, then testing that source using the thresholds. If multiple sources were observed coming into a main line, those sources were tested as well to attempt to bracket possible pollution inputs. Where possible, a section of a stormline was isolated as possibly containing the origin point of pollution. This section was then designated for follow-up to confirm or deny an issue's presence. WCA communicated directly with each municipality to discuss the findings and to plan for follow-up investigation. These investigations are described below.

Table 2: Water quality threshold values for determining possibility and nature of illicit discharges.

Test	Threshold (US EPA)	Theshold (VT Specific Studies)	Notes
E. coli (MPN/100ml)	235	400	Wastewater (undiluted) will have levels far exceeding 400 MPN. However E. coli can occur due to animal waste entering the storm system though open catch basins. Additionally, there is some evidence which indicates that E. coli populations can survive in anaerobic sediment conditions found in streams, ponds, or other similar environments. E. coli is a difficult indicator to use in IDDE for these reasons.
Ammonia (mg/L)	0.1	0.25	Ammonia is an indicator of decompostion of organic matter. Decomposing landscaping vegetation within catch basins under anoxic conditions can cause elevated ammonia in water. This can cause misleading results. The threshold of 0.25 mg/L is only used when other indicators are present. Othewise a value of 0.5 mg/L is the trigger for additional investigation.
MBAS (mg/L)	0.25	0.2	Anionic detergents are fairly commonly found at outfalls in low-flow conditions found during dry weather as they correlate with various outdoor washing practices (of cars, house siding, windows, and also windshield washing fluid). Higher levels (typically 0.5-0.75 mg/L or greater) can sometimes indicate wastewater discharges.
Optical Brightener	N/A	Presence	Presence of optical brighteners can indicate washwater or wastewater contaminants as brighteners are contained in some hair conditions, bleached paper products, and laundry detergents. Petroleum products will also cause fluorescence. Some studies indicate that a relatively high concentration of OB must be present for detection. We only use this test when other indicators are strongly present.
Chlorine (mg/L)	N/A	0.06	This test is used only in municipalities where municipal water is provided and chlorinated. This test was used very sparingly during this study as few of the towns chlorinated their water. As it degrades in the presence of organic materials, it's not a good wastewater indicator.
Specific Conductance (uS/cm)	>2000	600	Specific conductance can be elevated by road deicing materials, or metals from corrosion. It can help in determining some industrial discharges but is primarily used in conjunction with other strong indicators.

2.4.1 Televising Sanitary and Stormlines:

An addition method to positively identify illicit discharges is to use either a push or track camera, depending on pipe type and size, to obtain video of pipe cross connections, leaks, or other means by which non-stormwater discharges may be entering storm pipes. This method is most effective when combined with line flushing using dyed water. We did not use this method extensively during this study, however, as only Hartford possessed the necessary equipment. In the past, we have worked with the Vermont Rural Water Association to perform this work. However, we favored using liquid smoke testing over camera investigation during this study due to its efficiency and positivity in identifying or ruling out illicit discharge connections.

2.4.2 Smoke Testing with Vermont Rural Water Association:

Smoke testing using non-toxic liquid smoke was used in a many of the municipalities in this study. Smoke is blown into a manhole or catch basin structure (storm) and visual observations are made of surrounding sanitary infrastructure (manholes are opened adjacent to the storm infrastructure, building sewer gas vent stacks are scrutinized for smoke escaping, and at times buildings are entered, with permission, to check for smoke in basements or other areas). The reverse test is also often done where smoke is blown into sanitary infrastructure and the storm system is inspection, via manholes and catch basins, for smoke intrusion. WCA has found that this is one of the most efficient, reliable means of identifying possible illicit discharges, especially when infrastructure is poorly mapped or understood.

2.4.3 Environmental Canine Services (ECS) Alerts:

Environmental Canine Services (ECS) uses specially trained canines to detect the presence or absence of sanitary sewage. WCA has used this method before in Vermont in Bennington and Pawlet with success. There are two primary methods to use with ECS. The first method is the 'ship and sniff' method where a sample is collected in a sterile plastic Whirl-Pak bag. The outside of the bag is rinsed in distilled water and double-bagged in a resealable plastic bag. These samples are then shipped to ECS in Maine where they are evaluated by the canines and their handlers. A report is prepared of the results. If a dog alerts on a sample, that outfall is then flagged for additional follow-up investigation. This method provides a good screening of outfalls that, based on previous water quality parameters, may have illicit discharges to them. The second method involves bringing a canine and handler to a storm sewer system and doing on-site field investigations of structures. During the course of this study, field investigation was used for one day in Hartford at the Veteran's Hospital and the Hartford High School as investigations at those two locations had proven inconclusive.

3 RESULTS

The overall results for all towns can be seen below. These results are the same as Table 1.

Table 3: Summary Assessments by Municipality

Town	Systems Assessed	New Outfalls Found	Outfalls Not Found	Systems with Flow	Suspected Illicit Discharge	Confirmed Illicit Discharge
Barnard	18	0	2	5	5	0
Bethel	41	0	0	13	5	0
Chelsea	18	9	0	7	19	0
Granville	2	0	0	0	0	0
Hancock	5	1	1	0	0	0
Hartford	376	0	8	58	19	4
Pittsfield	15	0	1	4	0	0
Randolph	119	3	3	12	8	1
Rochester	30	1	1	3	3	0
Royalton	47	0	2	12	7	0
Sharon	13	0	1	0	0	0
Tunbridge	10	4	0	4	0	0
TOTAL	694	18	19	118	66	5

For a more complete overview table showing all results from both the Outfall Reconnaissance Inventory and Advanced Investigation, please see Appendix 2: All Results Summary Table.

3.1 Barnard Results

3.1.1 Outfall Reconnaissance Inventory (ORI):

During the ORI, which was conducted on April 25th, 2016 WCA surveyed 17 different outfalls. Of the 17 outfalls visited, five were flowing and three had discharge that warranted further investigation. We focused on these three outfalls during our Advanced Investigation in Barnard. Results of the initial assessment in Barnard are included in Appendix 2 – All Results Summary Table.

3.1.2 Advanced Investigation (AI):

Of the five systems assessed, none were found to have an illicit discharge that was confirmed.

What follows is a summary, site by site, of each of the outfalls (or other infrastructure within an outfall's drainage system) suspected of possible illicit discharge. Water quality data is presented for all dates visited. Fields left blank in the table represent water quality parameters that were not tested.

3.1.2.1 BRN-OF-16

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Table 4: Water Quality Analysis Data for BRN_OF_16

Infrastructure Code	Date	Flow?	pH	Conductivity (µS/cm)	NH3 (mg/L)	Cl (mg/L)	MBAS (ppm)	OB?
BRN-OF-16	4/25/2016	yes	7.86	440	0		Tr	
BRN_OF_16	8/24/2017	yes	7.94	1115	0.64		0.25	

The initial outfall visit at BRN-OF-16 revealed results that, while not triggering typical thresholds, marked the outfall for additional follow-up based in part on the appearance of the pipe (corrugated metal pipe was stained reddish, which could have been due to corrosion only, and a small amount of suds were observed at the outfall). Accessing the site proved difficult during the summer of 2016 as the area is a private resort. A return trip was conducted on 8-24-17 to obtain an additional water sample for Environmental Canine Services Ship and Sniff testing. The outfall had a trace amount of suds. The ammonia result was found to be artificially high as a field blank tested later in the day on 8-24-17 using distilled water came back with a result of 0.27 mg/L, suggesting contaminated reagent. Therefore, we believe the ammonia results reported from 8-24-17 to be erroneous. During Ship and Sniff testing neither canine alerted on the sample during examination.
Based on the weak water quality results and the results of canine investigation, we do not believe that there is an illicit discharge at this location.

3.1.2.2 BRN-OF-17

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Table 5: Water Quality Analysis Data for BRN_OF_17

Infrastructure Code	Date	Flow?	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Chlorine (mg/L)	Detergents (ppm)	OB?
BRN-OF-17	4/25/2016	yes	8.06	445	0.05		Trace	
BRN-OF-17	8/24/2017	yes	7.81	720	0.63		0.25	

Initial outfall testing at BRN_OF_17 revealed water quality results largely below threshold parameters. However reddish staining of the pipe outlet led the team to flag it for follow-up. Access to the site proved to be difficult as the property is a private resort. A return trip was conducted on 8-24-17, primarily to sample for Environmental Canine Services Ship and Sniff testing.

Please note that the ammonia water quality results from 8-24-17 are believed to be erroneously high as a field blank tested that day returned a result of 0.27 mg/L, suggesting contaminated reagent. However, upon assessment by Environmental Canine Services Ship and Sniff testing, both canines alerted. The owners of the property were alerted to this result and smoke testing was tentatively scheduled for April 2018. However, the work was not performed during this period as a suitable time could not be found. The owners of the property, Twin Farms Estates, expressed their desire that this work be conducted only during April when the resort is closed. We would recommend that a half-day of smoke testing be conducted as a follow-up to this study.

3.1.2.3 BRN-OF-5

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Table 6: Water Quality Analysis Data for BRN-OF-5

Infrastructure Code	Date	Flow?	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Chlorine (mg/L)	Detergents (ppm)	OB?
BRN-OF-5	4/25/2016	yes	8.36	1042	0.03		0.25	
BRN-OF-5	6/2/2016	yes	8.71	1633	0	0.2	0.25	
BRN-OF-5	8/4/2016	no						
BRN-CB-2	8/4/2016	no						

Three visits to this site were conducted in 2016. The first visit, 4-25-16, revealed weak water quality results with 0.03 mg/L ammonia, a trace of MBAS, and slightly elevated conductivity. Some greenish staining was observed on the pipe. A follow-up visit on 6-2-16 revealed similar results – no ammonia detected, slightly elevated conductivity, and no MBAS. A third visit later that summer on 8-4-16 revealed no flow at the outfall. Based on these results we do not suspect a chronic illicit discharge at this outfall.

3.1.1 Streamwalks – Newly Discovered Stormwater Infrastructure

No stream walk was performed in Barnard as there was no significant development in close proximity to streams that warranted an investigation.

3.2 Bethel Results

3.2.1 Outfall Reconnaissance Inventory (ORI):

During the ORI, which was conducted between May 15th and August 4th, 2016. WCA surveyed 41 different outfalls. Of the outfalls visited, 13 were flowing and 5 had discharge that warranted further investigation. We focused on these 5 outfalls during our Advanced Investigation in Bethel. Results of the initial assessment in Bethel are included in Appendix 2 – All Results Summary Table.

3.2.2 Advanced Investigation (AI):

Of the 5 systems assessed, none were found to have an illicit discharge that was confirmed.

What follows is a summary, site by site, of each of the outfalls (or other infrastructure within an outfall's drainage system) suspected of possible illicit discharge. Water quality data is presented for all dates visited. Fields left blank in the table represent water quality parameters that were not tested.

3.2.2.1 BTH-OF-23

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Table 7: Water Quality Analysis Data for BTH-OF-23

Infrastructure Code	Date	Flow?	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Chlorine (mg/L)	Detergents (ppm)	OB?
BTH-OF-23	5/12/2016	yes	7.58	2423	0.29		0.25	
BTH-OF-23	5/27/2016	yes	7.83	2369	0.58	0	0.25	
BTH-OF-23	8/4/2016	yes	8.63	1162	0.42	0.2	1	
BTH-CB-151	5/27/2016	no						
BTH-CB-151	8/4/2016	no						

Outfall water quality testing on 5-12-16 showed flow at this outfall. While temperature and pH were within a normal range, conductivity was somewhat elevated at 2423 uS/cm, ammonia concentration was 0.29 mg/L and MBAS was 0.25 ppm. Chlorine was not tested. A follow-up visit on 5-27-16 showed similar values, with conductivity at 2369 uS/cm, ammonia at 0.59 mg/L and MBAS again at 0.25 ppm. This is a one catch basin outfall. The upstream catch basin was examined and there was no flow in to it. It was decided that the best way to further investigate this system would be through the use of smoke testing.

On 8-7-17, VT Rural Water Association injected smoke in to BTH-CB-151. The outfall had a trickle flow at this time. Smoke was observed from the outfall but not from any other location. The adjacent sanitary manhole was opened and no smoke was observed in that structure. The area underneath the adjacent building, which is largely abandoned, was inspected for smoke but nothing was seen. Smoke was then injected in to the sanitary manhole adjacent to BTH-CB-151. Smoke was observed in all visible sanitary sewer gas vent stacks along the street, but nothing was observed in the stormwater infrastructure for BTH-OF-23 or BTH-OF-22.

It is unlikely that there is an illicit discharge to this outfall. The observed flow and water quality results could be due to groundwater intrusion to the pipe leading from the catch basin to the outfall. High conductivity is likely due to deicing activities in the area during the winter with the accumulated material leaching out in to the pipe during the summer season. Ammonia values could be due to anoxic conditions in groundwater. MBAS could be due to substances associated with vehicles washing off in to the catch basin and being flushed out by ground water intrusion.

3.2.2.2 BTH-OF-26

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Table 8: Water Quality Analysis Data for BTH-OF-26

Infrastructure Code	Date	Flow?	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Chlorine (mg/L)	Detergents (ppm)	OB?
BTH-OF-26	5/12/2016	yes	7.48	501	0.35		0	
BTH-OF-26	5/27/2016	yes	7.48	495	0.43	0	0	
BTH-CB-179	5/27/2016	yes	7.85	144	0.44	0	0	

This outfall was first visited on 5-12-16. Temperature, pH, and conductivity were all within a normal value range Ammonia was slightly elevated at 0.35 mg/L. No chlorine or MBAS were found, though some pipe benthic growth was noted.

A follow-up visit on 5-27-16 found very similar results. In addition, an upstream catch basin was also tested, again with similar results for all parameters. It was decided that smoke testing would be the best way to determine any possible illicit connections.

On 8-7-17 VT Rural Water Association injected smoke in to the catch basin upstream of the outfall. At this time it was discovered that the mapping of this infrastructure was not correct. The outfall for the system of catch basins and pipes extending along N. Main Street actually outfalls from a 15" pipe directly next to BTH-OF-6. This pipe was buried and was unearthed by the Town of Bethel Public Works Department during routine maintenance work. This pipe outlets to the same swale as BTH-OF-6 and is subsequently carried under the Bethel Mills parking lot to BTH-OF-27 (we believe).

After injecting smoke in to the upstream catch basin, no smoke was observed from any residential sanitary sewer vent stacks or any sanitary sewer manholes. Based on the results of the water quality testing and smoke investigation, it is unlikely that there is any illicit discharge to this outfall.

3.2.2.3 *BTH-OF-30*

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Table 9: Water Quality Analysis Data for BTH-OF-30

Infrastructure Code	Date	Flow?	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener
BTH-OF-30	5/12/2016	no						
BTH-OF-30	5/27/2016	no						
BTH-CB-189	5/27/2016	no						
BTH-CB-193	5/27/2016	no						
BTH-CB-194	5/27/2016	no						

Two site visits were conducted at this outfall. No flow was observed during either visit. No non-flow based characteristics were noted at the outfall or in any upstream catchbasins observable from the public right of way (debris, staining, odors, pipe damage or staining, etc.). The property owner at the car dealership above the outfall, Valley Motors, did not grant the team access to the site and became agitated when investigators got close to the catch basins on the property – no investigation could be conducted on the site and no indicators observable at the outfall seem to warrant it. VT DEC had indicated that there may be an issue at the outfall related to vehicle washing at the car dealership, no signs of that were observed during either visit. Based on our observations at this site, we do not suspect a chronic illicit discharge at this site. The Town of Bethel may wish to conduct outreach to the owner to inform them that regular vehicle washing where a discharge could occur into a storm sewer system is not allowable.

3.2.2.4 *BTH-OF-40*

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Table 10: Water Quality Analysis Data for BTH-OF-40

Infrastructure Code	Date	Flow?	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener
BTH-OF-40	5/12/2016	yes	7.65	120	0.3		0	
BTH-OF-40	5/27/2016	yes						
BTH-CB-110	5/27/2016	yes	7.68	131	0.4	0	0	
BTH-CLVI-9	5/27/2016	no						

Initial testing at this single catch basin outfall on 5-12-16 revealed temperature, pH, and conductivity to be within normal ranges. Ammonia was slightly elevated at 0.3 mg/L. MBAS was tested and was not found in the sample. No other indicators were noted.

Follow-up testing on 5-27 revealed sounds of a trickle flow of water, but a sample was not obtained as the pipe was broken above the outfall and water was infiltrating into ground before reaching the pipe outlet. A sample was collected at the upstream catch basin BTH-CB-110 from flow that appeared to be coming from a footing drain near a residence. Temperature, pH, and conductivity were all with normal ranges. Ammonia was slightly elevated at 0.4 mg/L. No chlorine or MBAS were found. No other indicators were present.

It is likely that the flow observed earlier at the outfall was due to flow from this footing drain and that the ammonia is attributable to anoxic conditions in groundwater. As no other indicators were found, we do not believe that there is an illicit discharge to this outfall.

3.2.2.5 *BTH-OF-28*

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Table 11: Water Quality Analysis Data for BTH-OF-28

Infrastructure Code	Date	Flow?	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener
BTH-OF-28	5/12/2016	yes	7.31	810	0.31		Tr	
BTH-OF-28	5/27/2016	no						
BTH-CB-175	5/27/2016	no						

This outfall was initially visited on 5-12-16. Though the pipe was fully submerged under pooled water in a back channel off the main river channel, there was flow evident from the outfall. A sample was obtained from this pool. Temperature, pH, and conductivity were all within normal ranges. Ammonia was slightly elevated at 0.31 mg/L. No MBAS were found. No other indicators were found.

On a return visit on 5-27-16 to investigate additional infrastructure and bracket-test the system, the field team spoke with the manager at the Bethel Mills Lumber Yard, located on-site. The study was explained to

the manager, who then declined further access to the site. No flow was noted at the outfall at this time, nor was there any flow noted in BTH-CB-175, located on N. Main Street above the lumber yard. It is unlikely that there is an illicit discharge to this outfall. Elevated ammonia observed could be due to decomposing organic matter in the pool when sampled on 5-12-16. No other indicators were present, and the lack of flow on 5-23-16 would indicate that there is little likelihood of illicit discharge.

3.2.3 Streamwalks – Newly Discovered Stormwater Infrastructure

As the final component of this study a stream walk was performed along the White River to identify any unmapped stormwater infrastructure directly discharging into streams, lakes, or ponds. This was conducted on the 7th of June 2018. WCA found no new outfalls and it has been concluded that there is no unmapped stormwater infrastructure discharging directly into the White River in Bethel, VT.

3.3 Chelsea Results

3.3.1 Outfall Reconnaissance Inventory (ORI):

During the ORI, which was conducted between May 10th, 2016 and July 19th, 2017. WCA surveyed 19 different outfalls. Of the outfalls visited, 7 were flowing and 3 had discharge that warranted further investigation. We focused on these 3 outfalls during our Advanced Investigation in Chelsea. Results of the initial assessment in Chelsea are included in Appendix 2 – All Results Summary Table.

3.3.2 Advanced Investigation (AI):

Of the 3 systems assessed, none were found to have an illicit discharge that was confirmed.

What follows is a summary, site by site, of each of the outfalls (or other infrastructure within an outfall's drainage system) suspected of possible illicit discharge. Water quality data is presented for all dates visited. Fields left blank in the table represent water quality parameters that were not tested.

3.3.2.1 CHL-OF-4

CHL-OF-4 – Appendix 1 - Advanced Investigation Maps Appendix 1 - Advanced Investigation Maps Mapbook Page 64

Table 12: Water Quality Analysis Data for CHL-OF-4

Infrastructure Code	Date	Flow?	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener
CHL-OF-4	5/10/2016	yes	7.78	852	0.22	0	0.25	
CHL-OF-4	5/23/2016	yes	8.03	957	0.78	0	0	
CHL-CB-7	5/23/2016	yes						
CHL-JXN-1	5/23/2016	yes	8	980	0.59	0.2	Tr	
CHL-CLVI-12	5/23/2016	yes						
CHL-CB-7	8/23/2016	yes				0	Tr	
CHL-OF-4	8/23/2016	yes				0.3	Tr	
CHL-JXN-1	8/23/2016	yes				0	0	
CHL-CLVI-12	8/23/2016	yes				0	Tr	

Initial outfall testing on 5-10-16 revealed slightly elevated ammonia at 0.22 mg/L, MBAS at 0.25 ppm and deposits and stains at the outfall pipe, but no chlorine and pH, conductivity, and temperature within a normal range. A follow-up visit on 5-23-16 found ammonia at 0.78 mg/L, along with deposits, stains, and some benthic growth at the outfall, but no MBAS or chlorine. Investigation of the upstream catch basin (CHL-CB-7) revealed flow, but the grate was such that obtaining a sample was not possible and the grate was paved in placed. A sample was taken from a flowing pipe at CHL-JXN-1 that was believed to be a footing or underdrain pipe. This sample showed relatively normal pH, temperature, and conductivity, with slightly elevated ammonia 0.59 mg/L, no MBAS, and a trace of total chlorine at 0.2 mg/L.

In order to determine if any of these pipes were connected to any non-stormwater discharge pipes, smoke testing was performed on 7-25-17 with VT Rural Water Association. Smoke was injected in CHL-CB-7. Smoke was observed from the outfall, CHL-JXN-1,and CHL-CLVI-12, but no smoke was observed from any house sanitary sewer gas vent stacks, casement windows, or other structures associated with houses. No smoke was observed coming from sanitary manholes in the area.

Based on the results of these smoke tests, we do not believe that there is an illicit discharge at this outfall. Elevated ammonia and MBAS levels were likely due to saturated groundwater (ammonia) and road washoff

of detergents associated with vehicles or potentially fertilizers, which can contain small amounts of MBAS as phosphates. The chlorine result was likely a laboratory error.

3.3.2.2 CHL-OF-8

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Table 13: Water Quality Analysis Data for CHL-OF-8

Infrastructure Code	Date	Flow?	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener
CHL-OF-8	5/10/2016	yes	3.7	696	0	0	0	
CHL-OF-8	5/23/2016	yes	8.29	574	0.35	0	Trace	
CHL-CB-27	5/23/2016	yes						
CHL-CB-31	5/23/2016	yes	7.63	793	0.38	0	Trace	
CHL-CB-32	5/23/2016	yes						
CHL-CB-33	5/23/2016	no						
CHL-CB-27	8/23/2016	yes	8.21	595	0.28	0	0.25	
CHL-CB-29	8/23/2016	yes	8	528	0.21	0	0	
CHL-CB-29	8/23/2016	yes	8.06	1126	0.26	0	Trace	
CHL-OF-8	8/23/2016	yes	8.14	559	0.35	0	0	
CHL-OF-8	7/19/2017	yes	8.54	900	0.08		0.25	
CHL-OF-8	7/19/2017	yes	8.68	475	0.07		0	

Initial outfall testing on 5-10-16 revealed a minor amount of pipe benthic growth, along with a pH reading of 3.7, though it was noted at the time that the reading was suspected to be aberrant. No ammonia, MBAS, or chlorine was detected, and conductivity was relatively low. A follow-up visit on 5-23-16 with a recalibrated pH meter revealed a pH of 8.29, more in line with readings from other flowing outfalls in the area, though this time a slightly elevated ammonia concentration was found of 0.35 mg/L. No MBAS or chlorine was present at that visit. Additional infrastructure was investigated at that time. CHL-CB-31 was sampled. The only elevated concentration was ammonia at 0.38 mg/L. There was observed flow to CHL-CB-32, but no sample was obtained as the grate was paved in and obtaining a sample proved too difficult to achieve using a sampling rod and Whirl-Pak bag.

Follow-up smoke testing was conducted on 7-25-17 with VT Rural Water Association. Smoke was injected in CHL-CB-27. From this location, smoke was observed in nearly every stormwater structure up to CHL-CB-32, indicating good pressurization of the pipe network. No smoke was observed coming from any house sanitary sewer vent stack. No smoke was observed coming from any basement windows. Sanitary sewer manholes running along the center of Maple Avenue were opened – no smoke was observed in those structures. VT Rural Water then moved to inject smoke in to CHL-CB-31 to pressurize the line farther along the upstream reaches of the pipe network. Earlier in the day, an intermittent flow of water had been observed coming in to CHL-CB-23 from 21 Maple Avenue. Testing of this flow revealed low ammonia at 0.07 mg/L and no MBAS. Temperature, pH, and conductivity were all within a normal range. No smoke was observed coming from the house's vent stack or any other structure. It is likely that this water was from a basement sump pump.

As a final test, smoke was injected in to the sanitary sewer system at manhole near the stormwater outfall. No smoke was observed anywhere in the stormwater system, though smoke was observed in all visible vent stacks.

It is not likely that there is an illicit discharge to this outfall, based on the results of both the water quality and smoke testing.

3.3.2.3 CHL-OF-16

CHL-OF-16 – Appendix 1 - Advanced Investigation Maps Mapbook Page 66

Table 14: Water Quality Analysis Data for CHL-OF-16

Infrastructure Code	Date	Flow?	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener
CHL-OF-16	5/10/2016	yes	9.07	2055	0.09	0.2	0.5	
CHL-OF-16	5/23/2016	yes	9	1475	0.4	0	0.5	
CHL-CB-70	5/23/2016	yes						
CHL-CB-67	5/23/2016	yes						
CHL-CB-67	8/23/2016	yes	9.28	1371	0.29	0.1	0.5	
CHL-CB-70	8/23/2016	yes	9.3	1323	0.27	Tr	0.25	
CHL-OF-16	8/23/2016	yes	9.2	1341	0.34	Tr	0.5	

Initial outfall testing of this outfall on 5-10-16 revealed relatively elevated pH of 9.6, though the pH probe had earlier malfunctioned in the field and delivered a reading of 3.7, so this reading was considered somewhat suspect. Conductivity was high at 2055 uS/cm, though ammonia was low at 0.09 mg/L. A trace of total chlorine was detected at 0.2 mg/L and MBAS was 0.5 ppm. Based on these data, follow-up testing was conducted on 5-23-17. pH was still somewhat high at 9, conductivity had dropped to 1475 uS/cm, ammonia had increased to 0.4 mg/L, and detergents remained at the same level, though no total chlorine was detected. Some pipe benthic growth was observed. Flow was observed in the upstream catch basins, the most upstream of which (CHL-CB-67) receives flow from an underdrain under the road ditch. Neither was sampled as the grates are the 'cascade' style grate with louvered holes, precluding sampling. Both grates were paved or soil covered such that removing them without excavation was infeasible. For this reason it was concluded that smoke testing would be the most efficient way of determining if there is an illicit discharge to this outfall.

On 7-25-17, VT Rural Water Association injected smoke in to CHL-CB-70. Smoke was observed at the outfall and from CHL-CB-67. No smoke was observed from any residential vent pipes. An effort was made to open the sanitary manholes adjacent to the catch basin, but they were paved in place and were not able to be opened. Given the lack of smoke from any residential vent pipe, we do not believe there to be an illicit discharge to this outfall.

We believe the relatively high pH and conductivity to be associated with accumulated pollutants in the road ditch along Route 113, a busy state road, infiltrating to the underdrain that flows to CHL-CB-70. This could also account for the observed MBAS value. We do not believe these values to be associated with sanitary sewage, or other non-stormwater discharges to the stormwater system.

3.3.3 Streamwalks – Newly Discovered Stormwater Infrastructure

As the final component of this study a stream walk was performed along the White River to identify any unmapped stormwater infrastructure directly discharging into streams, lakes, or ponds. This was conducted on the seventh of June 2018. WCA found nine new outfalls, none of which were flowing. It has been concluded that there is no unmapped stormwater infrastructure discharging directly into the White River in Chelsea, VT.

Table 15: Streamwalk summary for Chelsea.

Infrastructure Code	Date	Flow?	pH	Conductivity (uS/cm)	Ammonia (mg/L)	Illicit Discharge?
CHL-NEW-001	6/7/2018	yes	8.37	469	-0.11	Unlikely
CHL-NEW-003	6/7/2018	no				Unlikely
CHL-NEW-004	6/7/2018	no				Unlikely
CHL-NEW-009	6/7/2018	no				Unlikely
CHL-NEW-005	6/7/2018	no				Unlikely
CHL-NEW-006	6/7/2018	yes	7.78	512	-0.03	Unlikely
CHL-NEW-007	6/7/2018	no				Unlikely
CHL-NEW-008	6/7/2018	yes	7.75	1476	0.01	Unlikely
CHL-NEW-010	6/7/2018	no				Unlikely

3.4 Granville Results

Illicit discharge detection was performed in Granville in April of 2016. Of the 2 systems assessed, none were flowing during dry weather. Because no flow was detected during the initial reconnaissance, no systems were designated for further investigation. Results of the initial assessment in Granville are included in Appendix 2 – All Results Summary Table.

3.4.1 Streamwalks – Newly Discovered Stormwater Infrastructure

As the final component of this study a stream walk was performed along the White River to identify any unmapped stormwater infrastructure directly discharging into streams, lakes, or ponds. This was conducted on the 17th of May 2018. WCA found no new outfalls and it has been concluded that there is no unmapped stormwater infrastructure discharging directly into the White River in Granville, VT.

3.5 Hancock Results

Illicit discharge detection was performed in Hancock in April of 2016. Of the 5 systems assessed, none were flowing during dry weather. Because no flow was detected during the initial reconnaissance, no systems were designated for further investigation. Results of the initial assessment in Hancock are included in Appendix 2 – All Results Summary Table.

3.5.1 Streamwalks – Newly Discovered Stormwater Infrastructure

As the final component of this study a stream walk was performed along the White River to identify any unmapped stormwater infrastructure directly discharging into streams, lakes, or ponds. This was conducted on the 17th of May, 2018. WCA found one new outfall, which was not flowing. It has been concluded that none of the outfalls were suspected of illicit discharge.

Table 16: Streamwalk summary for Hancock.

Infrastructure Code	Date	Flow?	pH	Conductivity (uS/cm)	Ammonia (mg/L)	Illicit Discharge?
HNC-NEW-001	5/17/2018	no				Unlikely

3.6 Hartford Results

3.6.1 Outfall Reconnaissance Inventory (ORI):

During the ORI, which was conducted between June 16th and August 3rd, 2016. WCA surveyed 380 different outfalls. Of the outfalls visited, 58 were flowing and 19 had a discharge that warranted further investigation. We focused on these 19 outfalls during our Advanced Investigation in Hartford.

3.6.2 Advanced Investigation (AI):

Of the 19 systems assessed, 4 were found to have an illicit discharge that was confirmed.

What follows is a summary, site by site, of each of the outfalls (or other infrastructure within an outfall's drainage system) suspected of possible illicit discharge. Water quality data is presented for all dates visited. Fields left blank in the table represent water quality parameters that were not tested.

3.6.2.1 *HRT-OF-49*

HRT-OF-49 – Appendix 1 - Advanced Investigation Maps Mapbook Page 67

Table 17: Water Quality Analysis Data for HRT-OF-49

Infrastructure Code	Date	Flow?	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener
HRT-OF-49	7/6/2016	yes	8.27	65	0.34	0.1	0.75	
HRT-OF-49	8/3/2016	yes	7.86	67	0.2	Tr	Tr	
HRT-CB-1989	8/3/2016	Yes						
HRT-CB-1989	8/9/2016	no						8/9/16 to 8/12/16 Negative

An initial visit on 7-6-16 revealed a very slow dripping flow to this outfall. Temperature and pH were both with normal ranges. Conductivity was very low at 65 uS/cm. Ammonia was found to be 0.34 mg/L, with 0.1 mg/L chlorine, and 0.75 ppm MBAS. A follow-up visit on 8-3-16 showed similar temperature, pH, and conductivity values with ammonia at 0.2 mg/L, with only a minor trace of chlorine and MBAS. This minor flow was traced to a dripping pipe coming in to HRT-CB-1989, the first upstream catch basin from the outfall. This structure is quite deep and would have required confined space entry training to enter. For this reason, it was decided that smoke testing would be the most efficient means of determining if there was an illicit discharge present to this structure.

On 8-9-17, VT Rural Water Association, along with members of the Hartford Wastewater Division, conducted smoke testing. Smoke was injected in HRT-CB-1989. Smoke was observed at the outfall and from all nearby stormwater structures. No smoke was observed from any building sanitary sewer vent pipes. A nearby sanitary manhole was opened and no smoke was observed in that structure. The pipe thought to be the source of the dripping flow at the outfall leads to the Windsor County District Court building. The field team spoke with the building's facilities manager. The manager did a thorough inspection of the building (the field team was not allowed inside due to security concerns) and found no smoke in any location in the building.

Based on the results of smoke testing, it is unlikely that there is an illicit discharge to this outfall.

3.6.2.2 *HRT-OF-154*

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Table 18: Water Quality Analysis Data for HRT-OF-154

Infrastructure Code	Date	Flow?	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener
HRT-OF-154	6/30/2016	yes	7.88	210	0.94		0.25	
HRT-OF-154	7/13/2016	yes	7.46	104	0.93	Tr	0	
HRT-CB-1662	7/13/2016	No						

Flow observed at this outfall was very low – on both visits only a minor drip was observed. The only indicator that was of concern was ammonia, which was remarkably consistent between assessments at 0.94 mg/L and 0.93 mg/L respectively. As the outfall pipe is buried deep, this result could be due to anoxic groundwater conditions. No other indicators were of concern, despite the trace of chlorine found at the second visit. As the test used is reliant on visual interpretation, a trace of chlorine is not a strong indicator of an issue. The upstream catch basin was dry on both visits (no flow into the CB nor was there any water pooled in the sump). The outfall was smoke tested in the summer of 2017 (date unrecorded). Smoke was first injected into the system from the first upstream catch basin. Smoke was observed in the storm system, but in none of the adjacent sanitary sewer manholes, nor from any residential sanitary sewer gas vent pipes. Smoke was then injected into the sanitary sewer system after clearing the storm sewer system of smoke by pressurizing it with the blower. No smoke was observed in the storm sewer system when blowing smoke into the sanitary system. Based on the results of this test, we do not suspect a chronic illicit discharge at this outfall.

3.6.2.3 HRT-OF-157

HRT-OF-157 – Appendix 1 - Advanced Investigation Maps Mapbook Page 69

Table 19: Water Quality Analysis Data for HRT-OF-157

Infrastructure Code	Date	Flow?	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener
HRT-OF-157	7/7/2016	yes	8.29	1060	0.27	0	0.25	
HRT-OF-157	7/14/2016	yes	7.36	1113	0	0	0	
HRT-CB-1429	7/14/2016	yes						
HRT-CB-1427	7/14/2016	yes						
HRT-OF-157	8/9/2016	yes	7.98	1120	0.27	0	Tr	8/9/16 to 8/12/16 Negative
HRT-CB-1424	8/9/2016	no	7.98	3940	1.16	0.2	0.75	8/9/16 to 8/12/16 Negative
HRT-CB-1427	8/9/2016	no	7.76	1635	0.21	Tr	0.25	8/9/16 to 8/12/16 Negative
HRT_OF_157	8/9/2017	yes	8.03	1010	0.08		0	

Four separate visits were made to this system over the course of the study. Initial results from 7-7-16, while not strongly indicative of an issue, were enough to warrant a follow-up assessment. Flow from the outfall was tested on 7-14-16, but results for all parameters was negative. Flow in the catch basins was not tested as gaining access without assistance from the public works department was inadvisable (traffic issues). The area was revisited on 8-9-16 and the catch basins were tested, this time returning results with elevated ammonia notably at CB-1424 and elevated chlorine and MBAS. OB was negative in this area, however. The

outfall was tested a final time on 8-9-17 during a round of smoke testing (no catch basin flow was sampled at this time.

Smoke was initially injected in the first upstream catch basin above the outfall. Smoke was observed from all catch basins connected to the system. Several sanitary manholes were removed by the Hartford Public Works Department and inspected for smoke. Despite leaving the smoke injecting into the system for nearly 15 minutes, no smoke was observed in the sanitary sewer system, nor was any smoke observed from the residential sanitary sewer gas vents. The storm system was then cleared of smoke using the blower. Smoke was then injected into the sanitary sewer. Smoke was observed all the way up and down Bugbee Street in the sanitary system but none was observed in the storm system at all. Residential sewer vent pipes were observed smoking, indicating that the system was well pressurized by the smoke blower, but no crossover from sanitary to storm sewer systems was observed. Based on this investigation, we do not suspect a chronic illicit discharge at this location. The ammonia results may be due to decomposing organics in the storm sewer, while MBAS may be residual washoff from the road from soaps used to wash vehicles, etc. The presence of chlorine is more difficult to explain but it does not appear to be a sanitary sewer related issue and the flow does not indicate a significant potable water leak if that is the source of the chlorine.

3.6.2.4 *HRT-OF-161*

HRT-OF-161 – Appendix 1 - Advanced Investigation Maps Mapbook Page 70

Table 20: Water Quality Analysis Data for HRT-OF-161

Infrastructure Code	Date	Flow?	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener
HRT-OF-161	7/7/2016	yes	8.58	939	0.47	0.1	0.25	
HRT-OF-161	7/14/2016	yes	7.91	1052	0.48	0	0.25	
HRT-CB-1675	7/14/2016	yes						
HRT-CB-1676	7/14/2016	no						

Results from two visits to this outfall revealed slightly elevated ammonia at 0.47 mg/L on 7-7-16 and 0.48 mg/L and 7-14-16 respectively. MBAS was assessed at 0.25 ppm for both visits. Flow was observed in CB-1675 on the second visit but was not sampled as a sample could not be obtained from the deep sump of the catch basin.

The system was smoke tested on 8-9-17 with the Hartford Public Works department. The system is small, so pressurizing with smoke only took a couple of minutes. An adjacent sanitary sewer manhole was opened during this test. No smoke was observed in the sump of this manhole, nor was any smoke observed from any sanitary sewer vent pipes during this time. Smoke was then cleared from the storm sewer system and the sanitary system was injected with smoke. The system was well pressurized as smoke was observed from the sanitary vent pipes on the building roofs, as well as in sanitary sewer manholes out in the street. However, no smoke was seen in the storm sewer system. While on site no residents came out to say that they had observed smoke in the buildings, which might have indicated a washing machine tied in to the storm system. Based on the results of the smoke testing, we do not believe that there is a chronic illicit discharge at this outfall.

3.6.2.5 *HRT-OF-220*

HRT-OF-220 – Appendix 1 - Advanced Investigation Maps Mapbook Page 71

Table 21: Water Quality Analysis Data for HRT-OF-220

Infrastructure Code	Date	Flow?	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener
HRT-OF-220	6/28/2016	yes	7.79	217	3.29	0.4	3	6/28/16 to 6/30/16 Negative
HRT-OF-220	6/30/2016	no						
HRT-OF-220	7/13/2016	no						
HRT-CB-1032	8/23/2016	yes						

Testing at this outfall was difficult as the 'flow' observed on the first visit was only a slow drip. Obtaining a sample took upwards of 30 minutes to obtain less than 25 mL. Results seemed to indicate however that there was a strong possibility of an illicit discharge with high ammonia, chlorine, and detergents. An OB trap was left for two rain-free days, but came back negative. Two return visits were made to attempt to sample the flow again, but no flow was observed. During this time, no flow was observed in the upstream catch basins.

Smoke testing was performed on 8-9-17 with the Hartford Public Works Department. The storm system quickly pressurized with smoke as the system is small. Sanitary sewer manholes were then opened up. No smoke was observed in any sanitary sewer manhole sumps. Adjacent buildings were inspected for any smoke coming from sanitary sewer vent pipes. No smoke was seen. The storm system was then cleared using the blower and smoke was injected into the sanitary system. Smoke was observed in the sanitary system several manholes up and down from the injection site, but no smoke was seen in the storm system. Smoke was observed from the sanitary sewer vent pipes, indicating good pressurization of the system. Based on the results of the smoke testing, we do not believe there is a chronic illicit discharge to this outfall. There is an automotive garage adjacent to one of the catch basins in the system. It is possible that the 'flow' sampled at the first assessment was related to dumping or runoff of chemicals from spills at that site. The Public Works department was going to follow up with owner to warn them that dumping, or not cleaning up spills, is not acceptable. This activity can't definitively be proven, however. No observations of dumping or staining of the pavement was seen during the visits.

3.6.2.6 *HRT-OF-282*

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Table 22: Water Quality Analysis Data for HRT-OF-282

Infrastructure Code	Date	Flow?	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener
HRT-OF-282	7/1/2016	yes	8.63	1420	0.3	0	0.25	
HRT-OF-282	8/3/2016	yes	8.13	1224	0.06	Tr	Tr	
HRT-CB-1333	8/3/2016	yes	8.17	3820	0.16	Tr	0.25	
HRT-CLVI-793	8/9/2016	yes	7.99	1212	0.23	0	Tr	

This outfall was visited twice. On 7-1-16 slightly elevated ammonia was found (0.3 mg/L), with 0.25 ppm MBAS. Conductivity was relatively high at 1420 uS/cm, which isn't surprising given that this is a high traffic road on a hill slope, subject to above-average deicing activities. The follow-up assessment revealed similar trends with additional testing at upstream infrastructure.

Smoke testing was conducted on 8-9-17 with the Hartford Public Works Department. Smoke was injected into the storm sewer system and several sanitary sewer manholes were opened to observe for smoke. None was seen in the sanitary sewer system, despite allowing the storm system to pressurize for nearly 15 minutes. The storm system was then cleared with the blower and smoke was injected into the sanitary sewer system. Smoke was observed in the sanitary sewer system up and down the line, indicating good pressurization. No smoke was observed in the storm sewer system. We do not believe that there is a chronic illicit discharge at this outfall. The ammonia readings are likely due to decomposing organic matter in the ditch that leads to the storm system. Conductivity is high, but that is not unusual along a stretch of road such as this. The low MBAS readings are likely due to vehicle-related washoff.

3.6.2.7 HRT-OF-465

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Table 23: Water Quality Analysis Data for HRT-OF-465

Infrastructure Code	Date	Flow?	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener
HRT-OF-465	7/20/2016	yes	7.71	375	0.59	Tr	0.5	
HRT-OF-465	8/3/2016	yes	8.12	330	0.16	Tr	0.75	
HRT-CB-2196	8/3/2016	no						
HRT-CB-2216	8/3/2016	no						
HRT-OF-465	8/9/2016	yes						8/9/16 to 8/12/16 Negative
HRT-CB-2196	8/9/2016	no						8/9/16 to 8/12/16 Negative

On 7-20-16 this outfall was visited for the first time. Ammonia was elevated at 0.59 mg/L and MBAS was assessed at 0.5 ppm with a trace of chlorine. However, flow was extremely low, so concentrations may have been very concentrated by low flow, artificially inflating the levels. A follow-up visit was conducted on 8-3-16. Ammonia was below threshold at 0.16 mg/L but MBAS was higher at 0.75 ppm. Again, flow was extremely low and the sample was noted as being slightly greenish in the MBAS comparator. The manufacturer of the test, Chemetrics, notes that this is sometimes caused by the presence of chlorides in water. Further, when chlorides are removed from the water, no MBAS is detected. This could have inflated the MBAS result. No flow was observed in the upstream catch basin. OB pad traps were left at the outfall and in the next upstream catch basin for three days from 8-9-16 to 8-12-16. No optical brightener was detected.

Smoke testing was conducted on 8-9-17 with the Hartford Public Works Department. Smoke was injected in CB-2196. There is no sanitary sewer infrastructure in the immediate vicinity so no sanitary sewer manholes could be inspected. Instead, the surrounding residences were inspected for smoke coming from the sanitary sewer vent pipe on the roof tops. No smoke was observed from any vent pipes, nor was smoke seen anywhere other than the storm system. Attempts were made to contact residents and inquire about smoke in basements or any other location within the house. The residents of the house in closest proximity were home but did not report any smoke in their house. As there are only two catch basins at this system and they are directly in front of this residence, it would have been the most likely location for smoke intrusion. Based on these results, we do not believe there to be a chronic illicit discharge at this outfall.

3.6.2.8 *HRT-OF-471*

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Table 24: Water Quality Analysis Data for HRT-OF-471

Infrastructure Code	Date	Flow?	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener
HRT-OF-471	6/16/2016	yes	7.2	1156	1.63	0	0.25	
HRT-OF-471	8/3/2016	yes	7.9	842	0.14	Tr	Tr	
HRT-CB-2214	8/3/2016	yes	7.7	9.33	2.95	0	0	
HRT-CLVI-981	8/3/2016	yes	7.7	763	0.38	Tr	0.25	

This outfall was first visited on 6-16-16. Ammonia was very high at 1.63 mg/L and 0.25 ppm MBAS were found. A follow-up visit on 8-3-16 found ammonia below threshold at 0.14 mg/L and trace of detergents and chlorine, though these faint results could have been influenced by the reddish tint of the water flowing from the outfall as reddish staining was noted on the bottom of the plastic pipe. The next upstream catch basin was also inspected and ammonia was found to be very high at 2.95 mg/L but MBAS and chlorine were not present. The system is fed by a system of ditches that lead to a culvert inlet, CLVI-981. Ammonia was found to be 0.38 mg/L, with 0.25 ppm MBAS and trace of chlorine. It's important to note that this system is located in a residential neighborhood with extensive lawns. There is also another storm system that outlets to this one that drains a wetland and small pond. These factors could easily account for the elevated ammonia seen. Lawn chemical residues and irrigation may also account for the MBAS and chlorine observed.

Smoke testing was conducted with the Hartford Public Works Department on 8-9-17. Smoke was injected into CB-2214 and was observed from the outlet and culvert inlet. Adjacent sanitary sewer manholes were opened, but no smoke was observed in either. The pipes were also observed to be deeper than the storm system pipes. The storm system was then cleared of smoke using the air blower. Smoke was then injected into the sanitary sewer manholes. The system was observed to be well pressurized as smoke was observed in sanitary sewer manholes up the street and coming from the sewer gas vents on surrounding rooftops. No smoke was observed in any storm sewer infrastructure. Based on this inspection, we do no believe there to be a chronic illicit discharge at this outfall. We believe the water quality test results to be from decomposing vegetation in the wetland upstream of this point, as well as in the ditches. The MBAS and chlorine we suspect are due to irrigation of lawns and lawn chemicals (fertilizers potentially as MBAS are found in phosphates).

3.6.2.9 *HRT-OF-489*

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Table 25: Water Quality Analysis Data for HRT-OF-489

Infrastructure Code	Date	Flow?	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener
HRT-OF-489	6/15/2016	yes						
HRT-CB-489	6/15/2016	yes	3.14	877	0.09	Tr	Tr	
HRT-CB-153	6/15/2016	no						
HRT-OF-489	8/23/2016	yes	7.72	963	0		0.25	

This outfall was first visited on 6-15-17. Only residual water was found at the outfall, so the upstream infrastructure was tested. There was flow observed at CB-489 (next upstream) but none in CB-153 (the second and last catch basin in the system). Ammonia was very low at 0.09 mg/L and trace of both MBAS and chlorine were found. pH was recorded at a very low 3.14. The pH probe was later inspected and

calibrated and found to be displaying falsely low readings. This was corrected. On a follow-up assessment on 8-23-16, ammonia was found to be not present with 0.25 ppm MBAS and pH was a near-neutral 7.72.

On 8-9-17 smoke testing of the system was conducted with the Hartford Public Works Department. Smoke was injected into CB-489 and was observed at the outfall and in CB-153. Adjacent sanitary sewer manholes were opened, but no smoke was observed in the sumps or pipes of this system. Additionally, the sewer gas vent pipes on the adjacent buildings (commercial buildings) were inspected for smoke as well. No smoke was observed. The buildings occupants were asked if there was any smoke within the buildings. None was observed. The storm system was then cleared of smoke using the air blower. Smoke was then injected into the sanitary sewer system. The system was observed to be well-pressurized as smoke was seen in several sanitary sewer system manholes, as well as coming from the sewer gas vent pipes on the surrounding buildings. No smoke was seen in the storm sewer system. Based on the results of this smoke testing, we do not believe there to be a chronic illicit discharge at this outfall.

3.6.2.10 *HRT-OF-274*

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Table 26: Water Quality Analysis Data for HRT-OF-274

Infrastructure Code	Date	Flow?	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener
HRT-OF-274	7/6/2016	yes	7.68	1140	0.45	0.1	0.25	
HRT-OF-274	8/4/2016	no	7.18	222	0.17	0	0.25	
HRT-OF-274	8/9/2016	no						8/9/16 to 8/12/16 Negative
HRT-CB-1146	8/9/2016	no						8/9/16 to 8/12/16 Negative
HRT-CB-1142	8/9/2016	no						8/9/16 to 8/12/16 Negative

This outfall was first visited on 7-6-16 and sample was obtained from the non-flowing pool of water at the outlet. This system drains a very large portion of Hartford and outlets to an eroded ditch with a large scour pool at the end that backwaters the culvert substantially. This was sampled as an initial assessment. Ammonia was 0.45 mg/L, with 0.1 mg/L chlorine and 0.25 ppm MBAS. No flow was observed in upstream infrastructure along Main Street. A return assessment was conducted on 8-4-16. Again, the outfall was pooled but not flowing. Pool quality was not particularly poor (no algae/turbidity/suds). Ammonia was found to be below threshold at 0.17 mg/L with no chlorine and 0.25 ppm MBAS.

An assessment of optical brighteners was conducted from 8-9-16 to 8-12-16. OB traps were placed at the outfall, as well as the key junctions of CB-1146 and CB-1142 (in order to capture flow from the main drainage branches of the system). After three days, the pads were inspected. No optical brighteners were detected.

A screening of the outfall using Environmental Canine Services Ship and Sniff testing was conducted in the summer of 2017. Neither canine alerted on the shipped sample from the outfall pool. Based on the results of the optical brightener testing as well as the results from Environmental Canine Services, we do not believe there to be a chronic illicit discharge at this outfall.

3.6.2.11 *HRT-OF-272*

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Table 27: Water Quality Analysis Data for HRT-OF-272

Infrastructure Code	Date	Flow?	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener
HRT-OF-272	7/6/2016	yes			0.08	0.2	0.25	
HRT-OF-272	7/14/2016	yes	8.03	163	0.38	0.2	0.25	
HRT-CB-1118	7/14/2016	yes						
HRT-OF-272	8/4/2016	no						
HRT-OF-272	8/9/2016	no						8/9/16 to 8/12/16 Negative
HRT-CB-1119	8/9/2016	no						8/9/16 to 8/12/16 Negative

On the first visit to this outfall on 7-6-16, flow was barely adequate to obtain a sample for testing. No testing was conducted for pH, conductivity, or temperature. Assessment was performed for ammonia (below threshold at 0.08 mg/L), chlorine (0.2 mg/L) and detergents (0.25 mg/L). A follow-up visit was conducted on 7-14-16 where ammonia was found to be higher at 0.38 mg/L, with the same values for chlorine and MBAS. pH was within a normal range at 8.03, while conductivity was low at 163 uS/cm. Flow was observed in the next upstream catch basin (CB-1118), but was not sampled as the sump was deep and precluded sampling even with a sampling rod.

The outfall was visited again on 8-9-16 but no flow was observed. OB traps were placed at the outfall and in CB-1119 (the second upstream CB with a shallower sump – this CB takes the majority of flow from the system). The traps were left from 8-9-16 to 8-12-16. The traps came back negative for optical brightener.

During the summer of 2017 the outfall was visited and a sample was obtained for Environmental Canine Services Ship and Sniff testing. Neither canine alerted on the shipped sample. The outfall and upstream infrastructure were inspected again on 8-9-17 for flow and possible smoke testing with the Town of Hartford. The system was found to be dry during this visit. Based on the weak water quality results, lack of optical brightener, and lack of alert from Environmental Canine Services, we do not believe there to be a chronic illicit discharge at this location.

3.6.2.12 *HRT-OTH-900*

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Table 28: Water Quality Analysis Data for HRT-OTH-900

Infrastructure Code	Date	Flow?	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener
HRT-OTH-900	6/16/2016	yes	7.34	3135	0.08			6/16/16 to 6/17/16 Negative
HRT-OTH-900	8/4/2016	no						

While inspecting an adjacent outfall (HRT-OF-67), water was observed leaking from hydraulic pressure relief ports under the bridge into to the Village of Quechee. The water was observed to be creating deposits on

the concrete abutment. However, water quality results were not outside of threshold for ammonia (0.08 mg/L), though conductivity was high at 3135 uS/cm. Not enough sample was obtained to assess chlorine or MBAS. An optical brightener pad was placed for a 24-hour period. Results were negative for optical brightener. A follow-up visit was conducted on 8-4-16. No flow was observed at that time.

During the summer of 2017, a sample was obtained for Environmental Canine Services Ship and Sniff testing. Neither canine alerted on the sample. Based on the weak water quality results, along with the results from Environmental Canine Services, we do not believe there to be a chronic illicit discharge at this outfall.

3.6.2.13 *HRT-OF-902*

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Table 29: Water Quality Analysis Data for HRT-OF-902

Infrastructure Code	Date	Flow?	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener
HRT-OF-902	7/6/2016	no						
HRT-OF-902	8/4/2016	no						
HRT-OF-902	8/9/2016	no						8/9/16 to 8/12/16 Positive, fluorescent spots
HRT-OF-902	8/12/2016	no						

During investigation for other outfalls (HRT-OF-272 and HRT-OF-273), this pipe outlet was found. On 7-6-16, there was no flow but there was a strong odor of sewage. The infrastructure was investigated with the Town of Hartford. The pipe outlet had formerly been a Combined Sewer Overflow, but had supposedly been shut off. A return visit on 8-4-16 found no flow. A follow-up visit on 8-9-16 was conducted to place optical brightener traps was made and the traps were left

Figure 1: Sanitary manhole sump after repair. Note grout blocking pipe inlet.

Figure 2: Sanitary manhole sump prior to repair.

for three days. They were found to have specks of fluorescence on investigation. During a visit on 8-12-16, what appeared to be fecal matter and toilet paper was observed at the outfall. Following this inspection, the Hartford Public Works Department inspected the sanitary sewer manhole that formerly led to this outfall. In their opinion, no sewage was able to leak from this manhole to the outfall. However they sealed

the sump again with concrete, in addition to a screw plug that had been inserted into the old outfall previously. They provided photos of this work. They also televised the line to inspect the previously-placed screw plug to verify that it was still in place. They confirmed its presence in an August 23, 2016 e-mail.

Following this work, the outlet was visited. There was no flow and no odor. Based on the work performed, we consider this issue to be resolved and there is no further potential for an illicit discharge stemming from the manhole repaired to this outfall.

3.6.2.14 *HRT-OF-120*

HRT-OF-120 – Appendix 1 - Advanced Investigation Maps Mapbook Page 80

Table 30: Water Quality Analysis Data for HRT-OF-120

Infrastructure Code	Date	Flow?	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener
HRT-OF-120	6/27/2016	yes	7.45	548	6.6	0	1.25	
HRT-OF-120	6/30/2016	yes	7.12	414	5.6	Tr	1.5	

On 6-27-16 this outfall was visited. Very high ammonia was found (6.6 mg/L) and MBAS was found to be 1.25 ppm. Flow was not measured as pooling in the outfall precluded flow measurement. A strong sewage odor was present. The field team immediately followed flow up the storm line to catch basin CB-1032 which is in the middle of residential lawn area between Summer and Maple Streets. Sewage flow was observed in the sump. No flow was observed in the catch basins along Summer Street. These results were communicated to Hartford Public Works Department on 6-27-16 and the outfall was posted as required on 7-13-16. A follow-up visit three days later on 6-30-16 confirmed the initial results. The issue was referred to the Hartford Public Works Department. The following e-mail, sent from Everett Hammond, Public Works Assistant Director, on 8-10-16 provides a basic summer of the resolution:

"On March 8, 2016 the Town rec'd an email from Jim Pease regarding a possible Illicit Discharge on Ferry Boat Crossing. The Town investigated the connections along Ferry Boat Crossing and did not find any possible illicit discharge. In June, 2016 Watershed Consulting Associates began field work in Hartford, VT on an Illicit Discharge Study. Watershed Management's investigation narrowed down the potential discharge to a property on Summer Street in Hartford Village. After Watershed Consulting Associates determined that there was Illicit Discharge at the outfall near Ferry Boat Crossing the Town was asked by Jim Pease to post the above temp sign (see attached pdf) as part of the new Public Notification process. Earl Dyke (Chief Wastewater Operator) posted this NOTICE on July 13, 2016. The discharge to the Connecticut River is the same as it was when the posting was made on July 13, 2016; however we have now pinpointed the source to 116 Summer Street."

An earlier e-mail from Earl Dyke, Wastewater Operator, indicated that the source had been pinpointed on 8-5-16 using dye testing and camera investigation of the issue, which was ultimately determined to be an improperly connected sewer lateral from 116 Summer Street. The Public Works Department excavated the pipe and connected it to the adjacent sewer pipe.

During the summer of 2018 follow-up visits were conducted.
Testing was conducted on CB-1032. Ammonia was found to be low at 0.55 mg/L, with MBAS at 0.25 ppm. No chlorine was detected. An optical brightener trap was left for 14 days (8-31 to 9-13). Results were negative. Additional testing up and downstream of this structure was conducted. In upstream CB-793, ammonia values were similar at 0.52 mg/L, while MBAS triggered the color reaction but was a faint 0.25

ppm. No chlorine was detected. Optical brightener was negative. CB-797 had slightly lower ammonia at 0.27 mg/L. MBAS barely registered. No chlorine was detected. Optical brightener was negative. The team went up to the source of observed flow, CLVI-770. No sanitary sewer infrastructure is mapped above this point and no further closed stormwater sewer infrastructure exists above this point. All drainage is open ditches and culverts. Ammonia was measured at 0.47 mg/L, while MBAS barely registered at less than 0.25 ppm. No chlorine was detected. Optical brightener was negative.

Additionally, downstream infrastructure was checked. SMH-15, directly downstream of CB-1032 was inspected. In addition to the minor amount of flow coming from the direction of CB-1032, there was moderate flow coming from a pipe to the east. This flow was tested. Ammonia was low at 0.1 mg/L. Conductivity was 441 uS/cm while pH was 7.96. MBAS was faint and barely registered at 0.25 ppm. No chlorine was detected. An optical brightener trap was left but was lost to flows during the two week test period. Based on the results of this testing, we do not suspect there to be an illicit discharge at this outfall.

Further, based on the upstream sampling we conducted, we don't believe there to be an additional illicit discharge to this system as the water quality parameters suggest that the elevated ammonia is primarily a function of the open drainage system that runs into the closed system at the bottom of the hill.

3.6.2.15 *HRT-OF-45*

HRT-OF-145 – Appendix 1 - Advanced Investigation Maps Mapbook Page 81

Table 31: Water Quality Analysis Data for HRT-OF-45

Infrastructure Code	Date	Flow?	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener
HRT-OF-45	7/1/2016	yes	7.36	2450	0.34	Tr	0.25	No
HRT-OF-45	7/14/2016	yes	7.74	2578	0.43	0	0.25	No
HRT-CB-2077	7/14/2016	yes	7.91	>4000	0.3	0	0.25	No
HRT-CB-2291	7/14/2016	yes	8.51	>4000	0.08	0	0.25	No

Weak water quality indicators for a possible illicit discharge were observed at the OF-45 though as can be seen from the table above, they were not strong or conclusive. Bracket sampling was conducted, though access to the Veteran's Administration Hospital facility complicated field work as all field teams had to be accompanied by VA personnel and they often weren't available. Because of this, it was decided to use Environmental Canine Services to attempt to more rapidly pinpoint a potential source. On 9-19-17 a half-day of investigation was performed at the VA with ECS. Results weren't conclusive. It appears from the canine investigation that there is a possibility of illicit discharge to the stormwater line to the east of the campus. Canines did not alert on the stormwater pipes to the west side of the campus (except in one location where VA personnel indicated that the catch basin in question may or may not be connected to the sanitary sewer).

Following canine investigation, it was decided to spend a day using liquid smoke testing to attempt to further narrow down the potential source of illicit discharge. The initial focus was on the eastern stormwater system. Smoke was injected into numerous catch basins and adjacent sanitary sewer manholes were opened to inspect for crossover. Additionally, VA personnel were stationed on the building roofs to

observe sewer gas vent pipes. No smoke was observed at any point from vent pipes. In addition to smoke testing from storm sewer access points, smoke was injected into sanitary sewer manholes to search for crossover. No crossover was observed at any point.

Extensive effort was put into finding a potential illicit discharge at this location. However, no discharge was definitively located. Our recommendation for this site would be to work closely with the VA to better map the sanitary and storm sewer systems on the campus (several stormwater manholes were not found), and potentially do a site-specific re-assessment. While indicators for an illicit discharge are not strong at this site, the canine alerts may indicate some small level of non-stormwater discharge to the stormwater system.

3.6.2.16 *HRT-OF-180*

HRT-OF-180 – Appendix 1 - Advanced Investigation Maps Mapbook Page 82

Table 32: Water Quality Analysis Data for HRT-OF-180

Infrastructure Code	Date	Flow?	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener
HRT-OF-180	7/1/2016	yes	7.95	365	0.31	0	0	
HRT-OF-180	7/14/2016	yes	8.13	377	0.18	0	0.25	

This outfall, below the Hartford High School, was visited twice. The first time on 7-1-16 somewhat elevated ammonia of 0.31 mg/L was found, but no detergents or chlorine were detected. A follow-up visit on 7-14-16 revealed ammonia below threshold at 0.18 mg/L with no chlorine and MBAS of 0.25 mg/L. At one point during investigation an intermittent flushing of water was noticed. When this was mentioned to the Public Works Department, they signaled that this outfall sometimes receives water from the ice arena and the High School pool.

A sample was obtained during the summer of 2017 for Environmental Canine Services Ship and Sniff testing. Both canines alerted on the sample obtained at the outfall. Based on this result, a half-day of on-site investigation was scheduled with Environmental Canine Services for 9-19-17. The results of this investigation were inconclusive. See the map for a more detailed graphical narrative. It is possible that overflow or discharge from the pool may have been leaving a residual scent in the storm system that the canines were picking up on. Both canines did alert on pool water (thought the pool was partially drained at this point in the year). This is logical as the pool water would contain chlorine, as well as trace amounts of human sanitary sewage (feces/urine), that the canines could detect.

As the results from the canine investigation were inconclusive, an additional day of smoke testing was conducted on 10-20-17. Vermont Rural Water Association conducted the testing, accompanied by the field team from Watershed. This testing was conducted at all points in the system from the storm system manhole near the outfall to the catch basins and storm system manholes behind the High School. During this testing, adjacent sanitary sewer manholes were opened and inspected for smoke. No smoke was observed at any point in the system. The interior of the high school was also inspected for any smoke intrusion in the company of the school's janitor. No smoke was observed in the high school. Smoke was observed coming from a drain system near the pool. The test was then performed in reverse from the sanitary sewer system once the storm sewer system had been cleared of smoke using the air blower. Smoke was observed in all sanitary sewer manholes, as well as coming from the school's sewer gas vent pipes on the roof. However, no smoke was seen anywhere in the storm sewer system on the campus. Observations

were made from the roof of the school as well, to attempt to find any previously unmapped or otherwise unknown points of possible entry. None were seen. Based on the results of the water quality tests, canine investigation, and smoke testing, we believe that it is possible that pool water may have been the cause of the results seen at the outfall. This could have caused the canines to alert, and may have been the source of ammonia and MBAS. The chlorine results are perplexing, though could be due to the fact that chlorine evaporates relatively quickly and water may only have been discharged after it had been sitting in the pool for some time.

3.6.2.17 *HRT-OF-446*

HRT-OF-446 – Appendix 1 - Advanced Investigation Maps Mapbook Page 83

Table 33: Water Quality Analysis Data for HRT-OF-446

Infrastructure Code	Date	Flow?	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener
HRT-OF-446	7/20/2016	yes	7.27	734	3.48	Tr	Tr	
HRT-OF-446	8/3/2016	yes	7.87	743	2.71	0.5	0.25	
HRT-CLVO-933	8/3/2016	yes	7.21	784	3.6	0	Tr	
HRT-CLVI-991	8/23/2016	yes	7.12	800	5.2		0	
HRT-SMH-340 (underdrain PVC pipe)	8/23/2016	yes	7.56	712	0.23	0	Tr	
HRT-SMH-340 (culvert)	8/23/2016	yes	7.49	764	3.6	0	Tr	

This outfall was visited three times. The first visit revealed very high ammonia, with only a trace of chlorine and MBAS. However, the sample was obtained from a partially submerged pipe that outlets to a wetland area. This may have influenced the ammonia results. The second visit revealed slightly higher chlorine at 0.5 mg/L with 0.25 ppm MBAS and ammonia at 2.71 mg/L. The outlet from a culvert coming from a tree and plant nursery (CLVO-933) was also tested on this visit. Ammonia was similar but MBAS and chlorine were not found. A follow-up visit on 8-23-16 further tested the culvert inlet (CLVI-991) coming from the nursery where the highest point of flow was observed. Similar ammonia, MBAS, and chlorine results were found as for the visit of the culvert outlet on 8-3-16. Testing of the two different pipes coming into the downstream manhole, the underdrain PVC pipe coming from the nursery and the culvert outlet coming off the parking lot was not illustrative. The underdrain PVC pipe had relatively low ammonia and negligible amounts of MBAS and chlorine, while the culvert had high ammonia, but similarly negligible amounts of MBAS and chlorine.

Obtaining a sample for Environmental Canine Services screening was deemed infeasible because of the mixing of the sample with wetland water, making it difficult to definitively isolate any one source. Similarly smoke testing of this site was not seen as potentially being conclusive as much of the drainage infrastructure is open. We believe that the high ammonia seen is from runoff due to the nursery (large amounts of organic matter clippings, etc., on-site).

3.6.2.18 *HRT-OF-12*

HRT-OF-12 – Appendix 1 - Advanced Investigation Maps Mapbook Page 84

Table 34: Water Quality Analysis Data for HRT-OF-12

Infrastructure Code	Date	Flow?	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener
HRT-OF-12	7/7/2016	yes	8	557	0.55	0	0	
HRT-OF-12	7/13/2016	yes	7.07	650	0.72	0	Tr	
HRT-OF-12	8/3/2016	yes	7.67	740	0.35	0	Tr	
HRT-CB-767	8/3/2016	yes	7.54	531	0.22	0	0	
HRT-CB-767	8/9/2016	yes						8/9/16 to 8/12/16 Negative
HRT-CLVI-594	8/9/2016	yes	7.75	487	0.35	0	0.5	

This outfall was visited three times. The first visit on 7-7-16 revealed ammonia of 0.55 mg/L with reddish staining of the water at the outfall. No MBAS or chlorine was detected. On a follow-up visit on 7-13-16, slightly higher ammonia was found at 0.72 mg/L with no chlorine and a faint trace of MBAS. The third and final visit conducted on 8-3-16 saw lower ammonia at 0.35 mg/L, with similarly low levels of MBAS and chlorine as on previous visits. Upstream infrastructure was investigated as well with similar results from CB-767. On 8-9-16 an optical brightener trap was placed in CB-767 for three days but no OB was detected. When the OB pad was retrieved, a water quality test of the water flowing through this single catch basin system was tested at the culvert inlet (CLVI-594). Ammonia was above threshold at 0.35 mg/L and MBAS was higher at 0.5 ppm. An inspection of the channel up to the approximate crossing of the sanitary sewer line was made, but no suspicious indicators were noted. We believe that ammonia is high in this system due to decomposing organics in the drainage ditch above the outfall. The MBAS and chlorine results don't indicate an illicit discharge. We do not believe there to be a chronic illicit discharge to this outfall.

3.6.2.19 *HRT-OF-470*

HRT-OF-470 – See Map for HRT-OF-471

Table 35: Water Quality Analysis Data for HRT-OF-470

Infrastructure Code	Date	Flow?	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener
HRT-CB-2214	8/3/2016	yes	7.7	9.33	2.95	0	0	

This outfall was also smoked tested as part of advanced investigation for HRT-OF-470. No suspicious connections were found despite testing between storm and sanitary sewer systems. We believe the elevated ammonia seen here to be due to the large system of open ditches that drain from a wetland area above this outfall, as well as due to the iron-rich runoff observed here.

3.6.2.20 *Quechee Stream Testing*

Quechee Stream Testing – Appendix 1 - Advanced Investigation Maps Mapbook Page 85

At the request of VT DEC, eight different points were tested in the Quechee area of Hartford for temperature, pH, conductivity, ammonia, and MBAS to determine if any of the streams was experience effluent from sanitary sewers or failed onsite septic systems. This testing was conducted during the summer of 2017 over the course of two days. Ammonia was under the threshold for all but one point (QCH-PT-007). This point was analyzed for MBAS and found to have 0.0 ppm MBAS. All points were

analyzed for MBAS. Two (QCH-PT-001 and QCH-PT-003) were found to have MBAS of 0.25 ppm or above (001 was 0.5 ppm and 003 was 0.25 ppm). However, neither of these points had any detectable amount of ammonia. None of the other parameters analyzed displayed values above thresholds. While this study is not a definitive analysis of any and all possible failed septic issues in the Quechee area, it indicates that generally streams in that area do not seem to be experiencing chronic ongoing illicit discharge of severity that shows up in natural waters.

3.6.3 Streamwalks – Newly Discovered Stormwater Infrastructure

As the final component of this study a stream walk was performed along the White River to identify any unmapped stormwater infrastructure directly discharging into streams, lakes, or ponds. This was conducted on the 19th of July, 2018. WCA found no new outfalls and it has been concluded there are no illicit discharges occurring from unmapped pipes on the White River in Hartford, VT.

3.7 Pittsfield Results

Illicit discharge detection was performed in Pittsfield on April 25th of 2016. Of the 15 systems assessed, only four were flowing during dry weather. No contaminants were detected above levels of concern; therefore, no systems were designated for further investigation. Results of the initial assessment in Pittsfield are included in Appendix 2 – All Results Summary Table.

3.7.1 Streamwalks – Newly Discovered Stormwater Infrastructure

As the final component of this study a stream walk was performed along the White River to identify any unmapped stormwater infrastructure directly discharging into streams, lakes, or ponds. This was conducted on the 17th of May, 2018. WCA found no new outfalls and it has been concluded that there is no unmapped stormwater infrastructure discharging directly into the White River in Pittsfield, VT.

3.8 Randolph Results

3.8.1 Outfall Reconnaissance Inventory (ORI):

During the ORI, which was conducted between May 27th, 2016 and June 3rd, 2018 WCA surveyed 119 different outfalls. Of the 119 outfalls visited, 12 were flowing and 8 had discharge that warranted further investigation. We focused on these 8 outfalls during our Advanced Investigation in Randolph. Results of the initial assessment in Randolph are included in Appendix 2 – All Results Summary Table.

3.8.2 Advanced Investigation (AI):

Of the 8 systems assessed, one was found to have an illicit discharge that was confirmed. What follows is a summary, site by site, of each of the outfalls (or other infrastructure within an outfall's drainage system) suspected of possible illicit discharge. Water quality data is presented for all dates visited. Fields left blank in the table represent water quality parameters that were not tested.

3.8.2.1 RND-OF-18

RND-OF-18 – Appendix 1 - Advanced Investigation Maps Mapbook Page 86

Table 36: Water Quality Analysis Data for RND-OF-18

Infrastructure Code	Date	Flow?	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener
RND-OF-18	6/2/2016	yes	8.04	170	0.17	0.6	0.25	
RND-OF-18	8/4/2016	yes	8.09	1108	0.15	1.6	0.25	
RND-CB-270	8/4/2016	no						

Initial testing at this outfall at the New England Precision business revealed a slightly dripping outfall with temperature, pH, and conductivity all within normal ranges. Ammonia was below threshold of sample collection at 0.17 mg/L but because the facility is industrial, it was decided that collecting a sample for additional analysis would be prudent. Chlorine was somewhat elevated at 0.6 mg/L and MBAS was 0.25 ppm. No follow-up testing was conducted at this location. No flow was noted in the upstream catch basins.

Initially, it was decided that smoke testing of the line would help determine the issue. In speaking with Bob Eccher, the facility manager for the site, and appraising him of the water quality values, he offered the following summary and solution on 7-31-17.

"After having thought about your of finding detergent and chlorine in our storm drain water I have an explanation. Once a year or so we wash off our sky lights. This water and soap would run directly into the storm drain. In house we have a RO, Reverse Osmosis, filtration system to produce very clean mineral free water. We filter domestic water from the town. During the filtering process the filters are back flushed periodically. This would explain the presence of the chlorine. We are in the process of diverting this water to an evaporator which evaporates all our process water."

Mr. Eccher then wrote on 8-7-17 to say that this work had been finished.

Watershed returned during the fall of 2017 to inspect the outfall. No flow was observed. We consider this issue to be resolved.

3.8.2.2 *RND-OF-44*

RND-OF-44 – Appendix 1 - Advanced Investigation Maps Mapbook Page 87

Table 37: Water Quality Analysis Data for RND-OF-44

Infrastructure Code	Date	Flow?	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener
RND-OF-44	7/20/2016	yes	6.45	1348	1.34	0.4	0.5	
RND-CB-487	7/20/2016	no						

This outfall at the Vermont Technical College farm facility was initially visited on 7-20-2016. Temperature, pH, and conductivity were all within normal ranges. Ammonia was very high at 1.34 mg/L, chlorine was detected at 0.4 mg/L, and MBAS was 0.5 ppm. Color, odor, and turbidity were found present in the sample and there was pipe benthic growth and poor pool quality at the outfall. An upstream catch basin, RND-CB-487, was investigated but no flow was found. It was determined that smoke testing would be the best way to determine the source of this flow.

VTC's facilities manager, Ted Manazir, was contacted to obtain permission to conduct this testing. Permission to access the site previously for outfall testing had been obtained by the field team from on-site staff working at the farm on the day of the initial testing. The illicit discharge detection and elimination program was explained to Mr. Manazir, as was the process for smoke testing a drainage system. Mr. Manazir declined access to the site for smoke testing and stated that the problem had been fixed by his engineering firm, Trudell Consulting Engineers. This was not confirmed with Trudell Consulting Engineers.

At this time, no further investigation can be conducted on the site, though the water quality testing results indicate the possibility of an illicit discharge to this outfall.

3.8.2.3 *RND-OF-57*

RND-OF-57 – Appendix 1 - Advanced Investigation Maps Mapbook Page 88

Table 38: Water Quality Analysis Data for RND-OF-57

Infrastructure Code	Date	Flow?	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener
RND-OF-57	6/1/2016	yes	7.51	435	0.12	0.2	0.5	
RND-OF-57	8/4/2016	yes	8.35	313	0.3	Tr	0.5	

This outfall was first visited on 6-1-16. No flow was observed but the outfall pool was turbid, algae-covered water. Ammonia was low at 0.12 mg/L, as was conductivity. No MBAS testing was conducted. Observations in upstream infrastructure did not reveal any flow or suspicious characteristics. A follow-up visit on 8-4-16 revealed turbid water but no algae at the outfall and no flow anywhere in the system. Ammonia was slightly elevated at 0.3 mg/L, with 0.5 ppm MBAS and a trace of chlorine. However, the sample was obtained from

the only water observable in the system at the outfall pool. As the outfall is on the river, this water is heavily mixed with river water, so these results can't necessarily be seen as only due to what is potentially coming from the storm system.

This outfall was subsequently tested by Environmental Canine Services via the Ship and Sniff program in August, 2017. Neither canines alerted on the sample. Based on this, as well as low values for ammonia and MBAS, along with a lack of flow during the Ship and Sniff sample visit in August 2017 (a sample was obtained from pooled water), we believe it is unlikely that there is an illicit discharge to this outfall.

3.8.2.4 *RND-OF-11*

RND-OF-11 – Appendix 1 - Advanced Investigation Maps Mapbook Page 89

Table 39: Water Quality Analysis Data for RND-OF-11

Infrastructure Code	Date	Flow?	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener
RND-OF-11	6/2/2016	yes	8.53	420	0.21	0	0.25	
RND-OF-11	8/4/2016	yes	8	416	0.15	0	0	

During a visit on 6-2-16, a trickle flow was found at this outfall. Temperature, pH, and conductivity were all within normal ranges. A low concentration of ammonia was found at 0.21 mg/L. MBAS was 0.25 ppm. No chlorine or other indicators were found. Based on the low values found here, along with the small size of the system, no follow-up testing was conducted for this site as it is not likely that has illicit discharge to this outfall. It is more likely that the flow observed is attributable to a footing drain.

3.8.2.5 *RND-OF-77*

RND-OF-77 – Appendix 1 - Advanced Investigation Maps Mapbook Page 90

Table 40: Water Quality Analysis Data for RND-OF-77

Infrastructure Code	Date	Flow?	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener
RND-OF-77	5/27/2016	yes	8.27	1072	0	0	0	0

Initial testing at this outfall at the Randolph Park and Ride facility revealed temperature, pH, and conductivity all within normal ranges. No ammonia, MBAS, or chlorine was found, nor were there any other indicators. However, there was pipe benthic growth and observed poor pool quality at the outfall, which is in to a stormwater detention pond. Follow-up testing in 2017 indicated similarly benign results. It is unlikely that there is an illicit discharge to this outfall as there is no sanitary infrastructure on the site, nor any other infrastructure that would cause an illicit discharge. The pipe benthic growth and poor pool quality may be the result of a nutrient-rich environment within the pond.

3.8.2.6 *RND-OF-56*

RND-OF-56 – Appendix 1 - Advanced Investigation Maps Mapbook Page 91

Table 41: Water Quality Analysis Data for RND-OF-56

Infrastructure Code	Date	Flow?	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener
RND-OF-56	6/2/2016	yes						6/2/16 to 6/3/16 Negative
RND-CB-530	8/4/2016	no						
RND-OF-56	8/2/2017	no						

This outfall was initially visited on 6-2-16. Though there was a trickle flow, it was too minute to collect a sample. Some staining was noted at the pipe outlet. An optical brightener pad was left at the outfall from 9:17AM on 6-2 until 6:00PM on 6-3 and was removed at that time due to predicted rain. The pad showed no evidence of optical brightener when tested. A follow-up visit occurred on 8-4-16. No sample was collected at this time, again because flow was too insignificant to collect. A final visit was conducted on 8-2-17. No flow was observed at that time. The outfall was completely dry, as were all upstream catch basins. Based on the results of these visits, it is unlikely that there is an illicit discharge to this outfall.

3.8.2.7 RND_OF_98

RND-OF-98 – Appendix 1 - Advanced Investigation Maps Mapbook Page 92

Table 42: Water Quality Analysis Data for RND-OF-98

Infrastructure Code	Date	Flow?	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener
RND-OF-98	6/2/2016	yes	7.85	694	0.93	0	0.25	
RND-OF-98	8/4/2016	yes	8.22	656	0.92	0.2	0.5	
	8/4/2016	no						
RND-CB-319	8/2/2017	no						

On 6-2-16, this outfall was visited via access by the Ayers Brook. It was found to be dripping slowly with a considerable amount of organic debris at the outfall trapped by a wildlife barrier. Conductivity was low at 696 us/cm but ammonia was elevated at 0.93 mg/L. Light suds were noted. No MBAS analysis was conducted at the time. A return visit was conducted on 8-4-16. The outfall was again dripping, with a significant amount of organic debris and trash nearly plugging the outfall outlet. Conductivity was again low at 656 us/cm, with elevated ammonia of 0.92 mg/L. MBAS was assessed at 0.5 ppm with chlorine at 0.2 mg/L. Access to the Randolph Technical Career Center, the property directly upstream from the outfall, was sought in order to open upstream manholes to assess flow. Permission was not obtained on 8-4-16. A return visit was conducted (date not recorded) and permission was again sought in person. The supervisor, Mark McKinstry, was not on site at the time. Numerous follow-up phone calls were made with no response.

In an attempt to bracket the possible source of flow, upstream infrastructure within the pubic right of way was investigated as well. One visit was conducted on 8-4-16. No flow was observed in the catch basin (labeled RND-CB-319) located directly above the campus. No non-flow based signs of illicit discharge were noted at that time. A second return visit, and third attempt to access the property, was made on 8-2-17.

No flow was noted in the catch basin at this time and no permission for access could be obtained at the time.

We are unable to definitely say if there is potentially a chronic source of illicit discharge to this outfall or not as access to the site, despite numerous attempts to obtain it, could not be secured. The water quality results are somewhat difficult to interpret for this outfall given the large amount of trapped organic matter behind the outfall grate which could be contributing to the high ammonia content observed. However, the presence of MBAS and chlorine are more problematic and deserve additional follow-up which was not performed as part of this study.

3.8.2.8 RND_OF_52

RND-OF-52 – Appendix 1 - Advanced Investigation Maps Mapbook Page 93

Table 43: Water Quality Analysis Data for RND-OF-52

Infrastructure Code	Date	Flow?	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener
RND-OF-52	6/3/2018	NA	NA	NA	NA	NA	NA	NA

This outfall was visited twice during the summer of 2016 by two different field teams in an attempt to located the outfall. The outfall was not located during either visit. Mapping data from VT DEC indicates that this data was attributed to orthophotograpy interpretation, not GPS mapping. No upstream infrastructure is visible as all mapped infrastructure is listed as floor drains which may lead to this point. The building appears to be abandoned and access was not possible. There does not appear to be any means which to assess this outfall.

3.8.3 Streamwalks – Newly Discovered Stormwater Infrastructure

As the final component of this study a stream walk was performed along the White River to identify any unmapped stormwater infrastructure directly discharging into streams, lakes, or ponds. This was conducted on the 19th of July, 2018. WCA found three new outfalls, none of which were flowing. It has been concluded that none of the outfalls were suspected of illicit discharge.

3.9 Rochester Results

3.9.1 Outfall Reconnaissance Inventory (ORI):

During the ORI, which was conducted between April 18th AND May 26th, 2016 WCA surveyed 30 different outfalls. Of the 30 outfalls visited, three were flowing and three had discharge that warranted further investigation. We focused on these three outfalls during our Advanced Investigation in Rochester.

3.9.2 Advanced Investigation (AI):

Of the three systems assessed, none were found to have an illicit discharge that were confirmed.

What follows is a summary, site by site, of each of the outfalls (or other infrastructure within an outfall's drainage system) suspected of possible illicit discharge. Water quality data is presented for all dates visited. Fields left blank in the table represent water quality parameters that were not tested.

3.9.2.1 RCH-OF-10

RCH-OF-10 – Appendix 1 - Advanced Investigation Maps Mapbook Page 94

Table 44: Water Quality Analysis Data for RCH-OF-10

Infrastructure Code	Date	Flow?	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener
RCH-OF-10	4/18/2016							
RCH-CB-6	4/18/2016	yes	7.13	1848	0.21		0.25	
RCH-CB-6	5/27/2016	yes	7.39	1981	0.35	0	0.25	
RCH-CB-76	5/27/2016	no						
RCH-CB-32	5/27/2016	no						

This outfall was first visited on 4-18-16, though the outfall itself was not found as it was buried in rip rap. The first upstream catch basin, RCH-CB-6 was tested as a proxy. Temperature and pH were within normal range, with slightly elevated conductivity of 1848 uS/cm, slightly elevated ammonia of 0.21 mg/L (below the normal threshold of 0.25 mg/L, however) and MBAS of 0.25 ppm.

A follow-up visit on 5-27-16 to attempt to locate the outfall was unsuccessful in doing so. RCH-CB-6 was again tested with similar results. Further investigation upstream of RCH-CB-6 revealed that RCH-CB-76 was dry, as was RCH-CB-32. It was concluded that smoked testing this network would be the most effective way to determine the source of flow, as well as potentially the outfall location.

Between the time of initial testing in 2016 and smoke testing on 8-7-17 with VT Rural Water Association, the park near the outfall was renovated, which included finding and daylighting the outfall pipe. At the time of smoke testing, the pipe was flowing. Smoke was injected in to a newly-installed catch basin directly above RCH-OF-10. Smoke was observed from the outfall and in all upstream structures up to School Street from this location. No smoke was observed in any residential sanitary sewer vent pipes. A sanitary manhole in the nearby Park and Ride was opened, but no smoke was observed in that structure. It was noted that the sanitary pipes in that structure were much deeper than the stormwater pipe depths.

Smoke was then injected in to the sanitary manhole at the Park and Ride. Smoke was observed in all visible residential vent stacks along N. Main Street up to School Street. No smoke was observed in any stormwater structures.

It is unlikely that there is an illicit discharge to this outfall. Ammonia, while present, was generally low when tested and the presence of MBAS could be explained by washoff from the street associated with either substances associated with vehicles (windshield washer fluid, detergents used for cleaning cars, etc.,) or with some fertilizers which contain phosphates and can trigger MBAS assays.

3.9.2.2 RCH-OF-16

RCH-OF-16 – Appendix 1 - Advanced Investigation Maps Mapbook Page 95

Table 45: Water Quality Analysis Data for RCH-OF-16

Infrastructure Code	Date	Flow?	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener
RCH-OF-16	4/18/2016	yes	7.7	75	0.3		Tr	
RCH-OF-16	5/27/2016	no						
RCH-CB-34	5/27/2016	no						

An initial visit on 4-18-16 to this single catch basin outfall revealed a minor amount of flow, with temperature, pH, and conductivity all within normal ranges. Conductivity was especially low at 75 uS/cm. Ammonia was 0.3 mg/L. Some pipe benthic growth was noted. No MBAS was present.

A follow-up visit on 5-27-16 revealed both the outfall and upstream catch basin, RCH-CB-34, to be dry. Given the size of the system and the low occurrence of water quality indicators, it is not believed that there is an illicit discharge to this outfall.

3.9.2.3 RCH-OF-29

RCH-OF-29 – Appendix 1 - Advanced Investigation Maps Mapbook Page 96

Table 46: Water Quality Analysis Data for RCH-OF-29

Infrastructure Code	Date	Flow?	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener
RCH-OF-29	4/18/2016	yes	7.92	38	0.27		0.25	
RCH-OF-29	5/29/2016	yes						
RCH-CB-20	5/27/2016	yes						

An initial visit on 4-18-16 to this single catch basin outfall revealed a moderate amount of flow, with temperature, pH, and conductivity all within normal ranges. Conductivity was especially low at 38 uS/cm. Ammonia was 0.27 mg/L. Some pipe benthic growth was noted. MBAS was 0.25 ppm.

A follow-up visit on 5-27-16 revealed that the flow to the outfall was due to a small stream routed to the upstream catch basin, RCH-CB-20. Given the low values found in the flow on 4-18-16, it is unlikely that there is an illicit discharge to this outfall.

3.9.3 Streamwalks – Newly Discovered Stormwater Infrastructure

As the final component of this study a stream walk was performed along the White River to identify any unmapped stormwater infrastructure directly discharging into streams, lakes, or ponds. This was

conducted on the 17th of May, 2018. WCA found one new outfalls, which showed no signs of flow. It is concluded there are no suspected cases of illicit discharge from unmapped outfalls.

Table 47: Streamwalk analysis for Rochester.

Infrastructure Code	Date	Flow?	pH	Conductivity (uS/cm)	Ammonia (mg/L)	Illicit Discharge?
RCH-New-001	5/17/2018	no				Unlikely

3.10 Royalton Results

3.10.1 Outfall Reconnaissance Inventory (ORI):

During the ORI, which was conducted between May 13th and July 20th, 2016 WCA surveyed 45 different outfalls. Of the 45 outfalls visited, 12 were flowing and seven had discharge that warranted further investigation. We focused on these seven outfalls during our Advanced Investigation in Royalton.

3.10.2 Advanced Investigation (AI):

Of the seven systems assessed, none were found to have an illicit discharge that was confirmed.

What follows is a summary, site by site, of each of the outfalls (or other infrastructure within an outfall's drainage system) suspected of possible illicit discharge. Water quality data is presented for all dates visited. Fields left blank in the table represent water quality parameters that were not tested.

3.10.2.1 *RYL-OF-2*

RYL-OF-2 – Appendix 1 - Advanced Investigation Maps Mapbook Page 97

Table 48: Water Quality Analysis Data for RYL-OF-2

Infrastructure Code	Date	Flow?	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener
RYL-OF-2	7/20/2016	yes	7.86	110	5.3	Tr	0.5	
RYL-OF-2	8/4/2016	yes	8.05	172	2.36	0	0.5	
RYL-CB-290	8/4/2016	yes	7.72	229	4.52	Tr	0.75	

Outfall testing at the outfall, which is located at G.W. Plastics Royalton facility, on 7-20-16 showed temperature, pH, and conductivity within normal ranges. Ammonia was extremely high at 5.3 mg/L and MBAS was 0.5 ppm. No chlorine was detected. Some pipe benthic growth was noted at this time. During the initial testing, the site was undergoing construction of a new wing of the building. It was determined that smoke testing would be the best way of determine the source of this flow.

The site was visited on 8-7-17 for smoke testing with VT Rural Water Association. The facilities supervisor was not on-site at the time and no personnel were able to give permission to perform the testing. Numerous phone calls were made to the facility's supervisor. None were returned to set up a time and date for smoke testing. This site may need additional investigation via smoke testing, but access could not be obtained during this study. Numerous phone calls were made to plant management but a suitable time could not be settled on.

3.10.2.2 *RYL-OF-45*

RYL-OF-45 – Appendix 1 - Advanced Investigation Maps Mapbook Page 98

Table 49: Water Quality Analysis Data for RYL-OF-45

Infrastructure Code	Date	Flow?	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener
RYL-OF-45	5/13/2016	yes	7.59	2502	0.34		0	
RYL-OF-45	5/23/2016	yes	7.35	224	0.38	0	0	
RYL-CB-397	5/13/2016	yes	7.45	258	0.13			
RYL-CB-396	5/23/2016	yes						

On 5-13-16, RYL-OF-45 was tested as flow was found. Temperature and pH were within normal ranges. Conductivity was elevated at 2502 uS/cm. Ammonia was slightly elevated at 0.38 mg/L. Chlorine and MBAS were both 0.0. Some pipe benthic growth was noted at the outfall. An upstream catch basin, RYL-CB-397, was also tested. Temperature and pH were similar, conductivity was much lower at 258 uS/cm, as was ammonia at 0.13 mg/L. No MBAS or chlorine was found. A follow-up test on 5-23-16 found temperature, pH, and conductivity to be within normal ranges. Ammonia was similar to the results found on 5-13-16 at 0.34 mg/L. No MBAS was found. An additional upstream catch basin, RYL-CB-396, was found to have flow in it but was not tested at that time. The VT DEC mapping layer notes the possibility of failed septic behind the multi-family apartment houses located along Caron Circle. It was determined that smoke testing would be the most effective way of determining if there is an illicit discharge at this location.

On 8-9-17, VT Rural Water Association injected smoke in to RYL-CB-396. Smoke was observed at the outfall as well as from RYL-CB-397. No smoke was observed from residential vent stacks or from any of the visible concrete septic system vaults behind the apartment buildings. Smoke was then injected in to the sanitary sewer manhole adjacent to RYL-CB-396. Smoke was observed in all visible residential sanitary sewer vent pipes. No smoke was observed from the concrete vaults. No evidence of sanitary sewerage was noted on the ground around the concrete vaults, which would indicate a failed septic system.

Based on the results of smoke testing, it is unlikely that there is an illicit discharge to this outfall.

3.10.2.3 *RYL-OF-10*

RYL-OF-10 – Appendix 1 - Advanced Investigation Maps Mapbook Page 99

Table 50: Water Quality Analysis Data for RYL-OF-10

Infrastructure Code	Date	Flow?	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener
RYL-OF-10	5/13/2016	yes	7.85	770	0.37		Tr	
RYL-OF-10	5/23/2016	yes	8.33	710	0.28	0	Tr	
RYL-CB-305	5/13/2016	no						
RYL-CB-305	5/23/2016	no						
RYL-CB-372	5/23/2016	no						
RYL-CB-373	5/13/2016	yes						
RYL-CB-373	5/23/2016	yes						
RYL-OF-10	8/2/2017	no						

On 5-13-16 this outfall was visited and temperature, pH, and conductivity were found to be within normal ranges. Ammonia was found to be 0.37 mg/L. There was no MBAS. Chlorine was not tested. Some pipe benthic growth was noted at this time. A follow-up visit on 5-23-16 found similar values for temperature, pH, and conductivity, with ammonia at 0.28 mg/L. No MBAS or chlorine was found at this visit. Pipe benthic growth was again noted. Additional upstream infrastructure was investigated. Flow was observed to RYL-CB-373. This was noted as the point of highest flow to RYL-OF-10. No sample was obtained as the grate was paved in place and the 'cascade' style grate made it impossible to obtain a sample. No flow was observed in any other catch basins. It was decided that smoke testing would be the most efficient way to determine any illicit connections.

On 8-9-17, VT Rural Water Association injected smoke in to the first stormwater manhole upstream of RYL-OF-10. Smoke was observed in all upstream catch basins up to New Street, as well as in infrastructure on the adjacent Vermont Law School campus. No smoke was observed in any sanitary sewer vent pipes or coming from any basement windows. A sanitary manhole near the stormwater manhole was opened. No

smoke was observed at any point in this structure. It should be noted that the sanitary sewer pipes were considerably deeper at this point than the stormwater pipes. The smoke blower was then moved to the sanitary sewer manhole. Smoke was observed from all visible sanitary sewer vent pipes on roofs in the area.

A small sanitary sewer cleanout adjacent to the China Partnership building at 150 Chelsea Street, located in the lawn area, was observed smoking. There was no cap on this cleanout. VT Law School facilities staff was informed of this. They indicated that it would be capped as soon as possible.

Based on the results of this smoke testing, we do not believe that there is any illicit discharge to this outfall. We believe the flow observed at RYL-CB-373 to be due to a footing drain discharging in to the catch basin.

3.10.2.4 *RYL-OF-27*

RYL-OF-27 – Appendix 1 - Advanced Investigation Maps Mapbook Page 100

Table 51: Water Quality Analysis Data for RYL-OF-27

Infrastructure Code	Date	Flow?	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener
RYL-OF-27	5/13/2016	yes	8.35	2454	0		0.5	
RYL-OF-27	5/23/2016	no						5/23/16 to 5/27/16 **Negative**
RYL-OF-27	5/27/2016	no						

An initial visit on 5-13-16 revealed a small amount of flow to this outfall. Temperature was normal, though pH was slightly elevated at 8.35 and conductivity was somewhat high at 2454 uS/cm. No ammonia was found. MBAS was 0.5 ppm. Deposits and stains on the pipe were noted. The site was marked for follow-up but on two separate visits, on 5-23-16 and 5-27-16, no flow or evidence of intermittent illicit discharge was noted. No further testing was conducted at this outfall as it is unlikely that there is an illicit discharge to this outfall.

3.10.2.5 *RYL-OF-62*

RYL-OF-62 – Appendix 1 - Advanced Investigation Maps Mapbook Page 101

Table 52: Water Quality Analysis Data for RYL-OF-62

Infrastructure Code	Date	Flow?	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener
RYL-OF-62	5/23/2016	yes	7.98	462	0.3	0.2	0.25	
RYL-OF-62	6/2/2016	yes	7.72	486	0.21	0	0	
RYL-CB-429	6/2/2016	yes						

On an initial visit to this outfall on 5-23-16, there was a small trickle flow to this outfall that could not be measured as it was too slow. Temperature, pH, and conductivity were all within normal ranges. Ammonia was found to be 0.3 mg/L. MBAS was 0.25 ppm while chlorine was 0.2 mg/L. A slight oil sheen was noted on the surface of the water. On a follow-up visit on 6-2-16, temperature, pH, and conductivity were all within normal ranges and similar to values found before. Ammonia concentration was 0.21 mg/L (below the normal collection threshold of 0.25 mg/L). Neither chlorine nor MBAS was found and no oil sheen was noted on the surface. The upstream catch basin, RYL-CB-429, was noted as flowing but sample was obtained as the sump of the catch basin was approximately ~20 deep. Two pipes are mapped as entering

this catch basin, but their source is unknown. Tracing the path of these pipes on the ground did not reveal anything.

Based on the values found at the second round of testing, it was decided to not pursue further investigation at this outfall as it seems unlikely that there is an illicit discharge to this outfall. Though some chlorine and MBAS were found in the initial round along with an oil sheen, it was not definitively determined if the oily sheen was due to petroleum products or to bacteria. The additional indicators (chlorine, MBAS) were very low and do not strongly indicate the possibility of illicit discharge.

3.10.2.6 *RYL-OF-65*

RYL-OF-65 – Appendix 1 - Advanced Investigation Maps Mapbook Page 102

Table 53: Water Quality Analysis Data for RYL-OF-65

Infrastructure Code	Date	Flow?	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener
RYL-OF-65	5/23/2016	yes	7.81	104	0.36	0	0	
RYL-OF-65	6/2/2016	yes	8	146	0.06	0	0	

On a visit to this outfall on 5-23-16, flow was noted at this outfall. Temperature, pH, and conductivity were all within normal ranges. Ammonia was recorded at 0.36 mg/L. No chlorine or MBAS were detected in the flow, but suds were noted at the outfall. Investigation of the system showed that the flow was due largely to the presence of a perimeter swale around the facility, which is a Green Mountain Power dispatch office. This swale drains in to the catch basin system. On a follow-up visit on 6-2-16, flow was again noted. Temperature, pH, and conductivity were in similar ranges to the values found before. Ammonia was found to have decreased to 0.06 mg/L. No chlorine or MBAS was present. No suds were observed. The field team spoke with on-site staff at the facility to determine if vehicle washing ever occurred outside the garage. They said that, on occasion, it may have. The observed suds may have been due to that activity occurring prior to the site visit on 5-23-16. Staff at the facility were informed that vehicle washing should occur inside where wash water could drain to the sanitary sewer facility for proper treatment. They indicated that they would pass that information along and that no further washing would occur outside.

3.10.3 Streamwalks – Newly Discovered Stormwater Infrastructure

As the final component of this study a stream walk was performed along the White River to identify any unmapped stormwater infrastructure directly discharging into streams, lakes, or ponds. This was conducted on the seventh of June, 2018. WCA found 2 new outfalls, none of which were flowing. It was concluded that neither of the outfalls were suspected of illicit discharge.

Table 54: Streamwalk analysis for Royalton.

Infrastructure Code	Date	Flow?	pH	Conductivity (uS/cm)	Ammonia (mg/L)	Illicit Discharge?
RYL-NEW-01	7/19/2018	no				Unlikely
RYL-NEW-02	6/7/2018					Unlikely

3.11 Sharon Results

Illicit discharge detection was performed in Sharon in May of 2016. Of the 12 systems assessed, none were flowing during dry weather. Because no flow was detected during the initial reconnaissance, no systems were designated for further investigation. Results of the initial assessment in Sharon are included in Appendix 2 – All Results Summary Table.

3.11.1 Streamwalks – Newly Discovered Stormwater Infrastructure

As the final component of this study a stream walk was performed along the White River to identify any unmapped stormwater infrastructure directly discharging into streams, lakes, or ponds. This was conducted on the 19th of July, 2018. WCA found no new outfalls and it has been concluded there are no illicit discharges occurring in Sharon, VT.

3.12 Tunbridge Results

Illicit discharge detection was performed in Tunbridge in May of 2016. Of the 10 systems assessed, none were flowing during dry weather. Because no flow was detected during the initial reconnaissance, no systems were designated for further investigation. Results of the initial assessment in Tunbridge are included in Appendix 2 – All Results Summary Table.

3.12.1 Streamwalks – Newly Discovered Stormwater Infrastructure

As the final component of this study a stream walk was performed along the White River to identify any unmapped stormwater infrastructure directly discharging into streams, lakes, or ponds. This was conducted on the 31st of May, 2018. WCA found four new outfalls, one of which was flowing. After preliminary water quality analysis it was concluded that none of the outfalls were suspected of illicit discharge.

4 SUMMARY AND RECOMMENDATIONS FOR FUTURE ACTION

4.1 Barnard – Future Action Recommendations:

- BRN-OF-17 – This outfall, located at the Twin Farms Estates Property, should be re-assessed based on the results of this investigation. However, the only suitable time that such an investigation could take place would be during the month of April, when the resort is closed for cleaning and other grounds work. Though the resort was amenable to having a follow-up investigation conducted, a suitable time could not be found to conduct smoke or dye testing during the course of this study. This would be the recommend course of action for a subsequent study.

4.2 Bethel – Future Action Recommendations:

- No chronic illicit discharges were found or are suspected in Bethel. The only potential issue to follow up on is BTH-OF-30, the outfall located downstream of the Valley Motors car dealership. No clear evidence of illicit discharge was noted during this study, but access to the property was denied by the owner. Further re-assessment would be possible only with the permission of the owner and would have to be negotiated.

4.3 Chelsea – Future Action Recommendations:

- No chronic illicit discharges were found or are suspected in Chelsea.

4.4 Granville – Future Action Recommendations:

- No chronic illicit discharges were found or are suspected in Granville.

4.5 Hancock – Future Action Recommendations:

- No chronic illicit discharges were found or are suspected in Hancock.

4.6 Hartford – Future Action Recommendations:

- HRT-OF-220 – The possibility of illegal dumping at this location was suspected. The matter was referred to the Hartford Department of Public Works for their enforcement.
- HRT-OF-902 – A sanitary sewer manhole sump was sealed up. Follow-up visits to this outfall revealed no further evidence of possible illicit discharges. This issue is considered resolved.
- HRT-OF-120 – A sanitary sewer lateral connected to the storm line was disconnected by the Hartford Department of Public Works. Follow-up testing indicates that this solution repaired the illicit discharge and that no further illicit discharges are occurring within this system. This issue is considered resolved.
- HRT-OF-180 – No chronic illicit discharge was found at this site. However, it is possible that the school pool or ice arena do occasionally discharge water to this outfall. As long as the pool and ice melt water have been sitting for 30 days or more, thereby evaporating all chlorine, the discharge is considered acceptable. If this is not the case, the facility should follow this regulation. The issue has been referred the Hartford Department of Public Works. This issue is considered resolved.
- HRT-OF-45 – The outfall that drains a portion of town roads as well as part of the Veteran's Administration campus was assessed extensively. However, no confirmed illicit discharge was found, though some evidence of one was found through canine investigation. This area should be re-assessed during a future study.
- HRT-OF-446 – Discharge from this outfall should be re-assessed as water quality indicators seemed to indicate the possibility of an illicit discharge, but that could not be definitively confirmed.

4.7 Pittsfield – Future Action Recommendations:

- No chronic illicit discharges were found or are suspected in Pittsfield.

4.8 Randolph – Future Action Recommendations:

- RND-OF-44 – This outfall is located at the Vermont Technical Center Farm and displays the potential for illicit discharge. However, access to the site was denied and follow-up investigation could not be conducted to confirm or deny this possibility. Re-assessment of this site should occur only if access is assured.
- RND-OF-98 – Water quality parameters indicate that there could be an illicit discharge at this outfall. However, access to the Randolph Technical Career Center could not be obtained, despite several efforts. Re-assessment of this site should occur only if access is assured.

4.9 Rochester – Future Action Recommendations:

- No chronic illicit discharges were found or are suspected in Rochester.

4.10 Royalton – Future Action Recommendations:

- RND-OF-2 – The outfall as GW Plastics was assessed preliminarily and displays indicators of a possible illicit discharge. However, access for smoke or dye testing could not be obtained during this study. Re-assessment of this site should occur only if access is assured.

4.11 Sharon – Future Action Recommendations:

- No chronic illicit discharges were found or are suspected in Sharon.

4.12 Tunbridge – Future Action Recommendations:

- No chronic illicit discharges were found or are suspected in Tunbridge.

5 PHOSPHORUS AND NITROGEN LOADING ESTIMATES

5.1 Load Reductions:

Table 55– Load Reductions:

Infrastructure Code	Illicit Discharge	E. coli	Potential P Reduction	Potential N Reduction
HRT-OF-220	Illegal Dumping	No Calculation Possible	No Calculation Possible	No Calculation Possible
HRT-OF-902	Sewage Overflow	No Calculation Possible	No Calculation Possible	No Calculation Possible
HRT-OF-120	Sewer Direction Connection	Pre: >2400 MPN Post:: 410 MPN	23.64 lbs	181.26 lbs.
HT-OF-180	Pool water overflow	N/A	No Calculation Possible	No Calculation Possible
RND-OF-18	Skylight Washwater	N/A	No Calculation Possible	No Calculation Possible

Total P load reductions for are 23.6 lbs. / year.
Total N load reductions for are 181.2 lbs. / year.

6 CONCLUSIONS

A thorough assessment of stormwater drainage systems in the White River Basin was conducted in an attempt to find any non-stormwater discharges to the stormwater system that could then possibly enter natural water bodies in those communities. This work was conducted during the spring, summer, and fall of 2016, 2017, and part of 2018 on all mapped stormwater outfalls known at that time. Additionally, the natural water ways in the more urbanized portions of each municipality were walked to identify possible additional outfalls that had not been mapped. This resulted in a total of 694 systems visited. 14 new outfalls were found. Of these, 118 were flowing. 66 of these flowing outfalls were designated for further study. 5 confirmed illicit discharges were found for all study towns.

7 REFERENCES

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APPENDIX 1

Advanced Investigation Maps

Outfall ID	Infrastructure Code	Date	Notes	Flow?	Temp (C)	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Color, Odor, Turbidity, or Floatables?	Other Indicators?	Overall Characterization	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener	Notes
BRN-OF-16	BRN-OF-16	4/25/2016	Larger metal pipe	yes	7.6	7.9	440	0	no	Poor pool quality,Deposits/ Stains	Possible		Tr		Twin Farms.
	BRN_OF_16	8/24/2017	Suspect ammonia result incorrect due to contaminated reagent 2. Tested DI water to check. Result : 0.23 mg/L. Need to retest with good reagent.	yes	18.1	7.9	1115	0.64			Possible		0.25		

N

0 45 90 180 Feet

Advanced Investigation
BRN-OF-16

WATERSHED CONSULTING ASSOCIATES, LLC

Map Produced: 1/25/2018

Infrastructure Code	Date	Flow?	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Chlorine (mg/L)	Detergents (ppm)	OB?
BRN-OF-17	4/25/2016	yes	8.06	445	0.05		Trace	
BRN-OF-17	8/24/2017	yes	7.81	720	0.63		0.25	

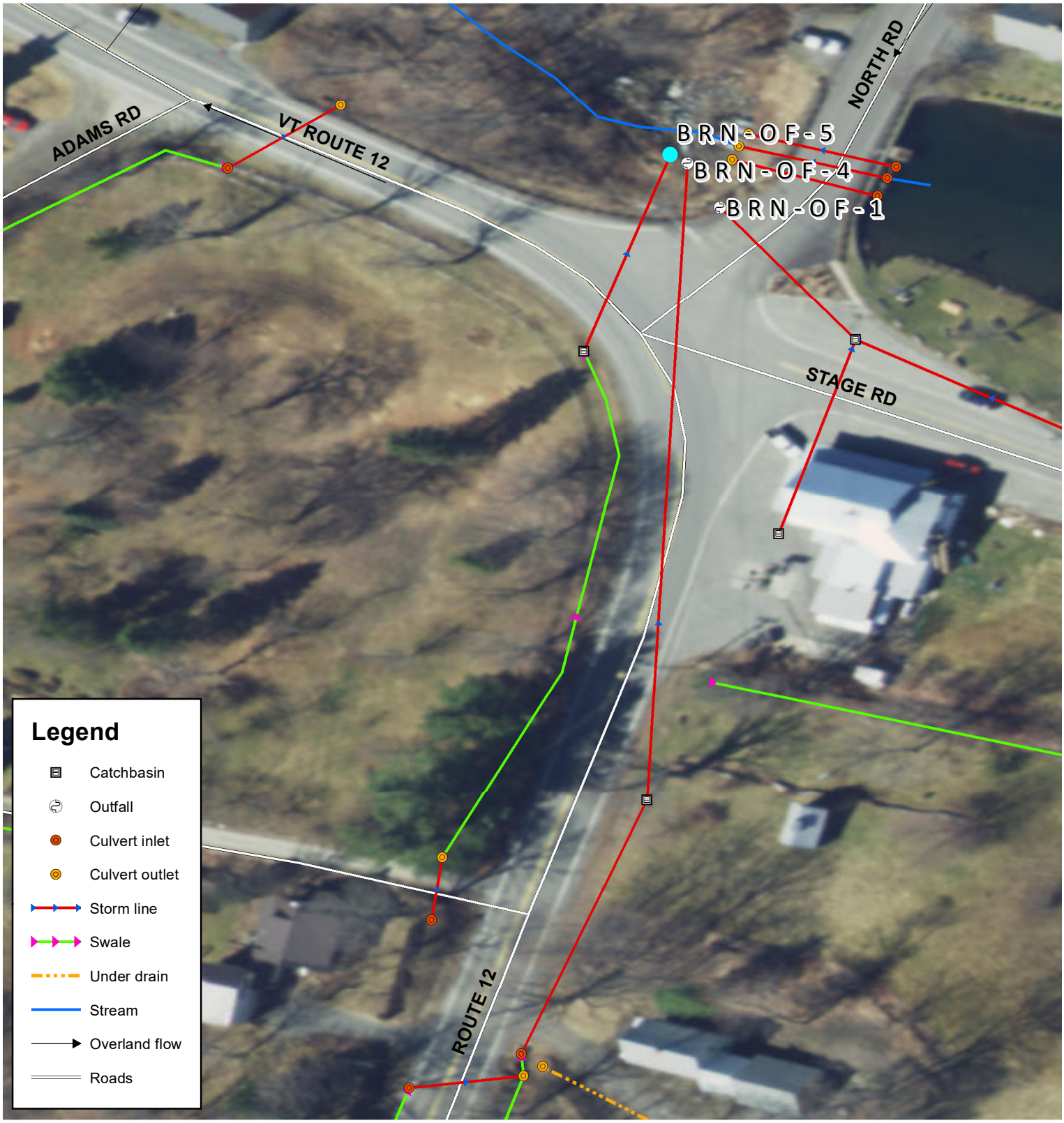
N

0 50 100 200 Feet

Advanced Investigation
BRN-OF-17

WATERSHED CONSULTING ASSOCIATES, LLC

Map Produced: 8/14/2018



Outfall ID	Infrastructure Code	Date	Notes	Flow?	Temp (C)	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Color, Odor, Turbidity, or Floatables?	Other Indicators?	Overall Characterization	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener	Notes
BRN-OF-5	BRN-OF-5	4/25/2016		yes	8	8.4	1042	0.03	no		Possible		0.25		Slow drip or no flow. Likely residual flow. Collects stormwater from route VT-12.
	BRN-OF-5	6/2/2016	Used 10mL bottle to measure discharge due to such insignificant flow rate.	yes	22.4	8.7	1633	0	no	Pipe benthic growth	Possible	0.2	0.25		
	BRN-OF-5	8/4/2016		no							Unlikely				
	BRN-CB-2	8/4/2016		no							Unlikely				

N

0 25 50 100 Feet

Advanced Investigation
BRN-OF-5

WATERSHED CONSULTING ASSOCIATES, LLC

Map Produced: 8/14/2018

Upon two different dry weather surveys outfall BTH-OF-23 demonstrated small amounts of flow. At these times, the only catcbasin in the system, BTH-CB-151, showed no signs of flow. The system was smoke tested from BTH-CB-151, no smoke appeared to discharge from any location except the outfall. The adjacent sanitary system was also injected with smoke, no smoke appeared from any stormwater infrastructure. It is concluded that the observed flow from BTH-OF-23 is due to groundwater intrusion to the pipe.

Outfall ID	Infrastructure Code	Date	Notes	Flow?	Temp (C)	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Color, Odor, Turbidity, or Floatables?	Other Indicators?	Overall Characterization	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener	Notes
BTH-OF-23	BTH-OF-23	5/12/2016	Unable to calculate flow because outfall is on dam wall. MBAS test was slightly green.	yes	20.4	7.6	2423	0.29	no	Deposits/Stains	Possible		0.25		Outfall on dam wall, one CB outfall. CB dry.
	BTH-OF-23	5/27/2016		yes	21.4	7.8	2369	0.58	no	Pipe benthic growth	Possible	0	0.25		
	BTH-OF-23	8/4/2016		yes	30.4	8.6	1162	0.42		Deposits/Stains	Possible	0.2	1		
	BTH-CB-151	5/27/2016		no						Deposits/Stains	Possible				
	BTH-CB-151	8/4/2016		no							Unlikely				

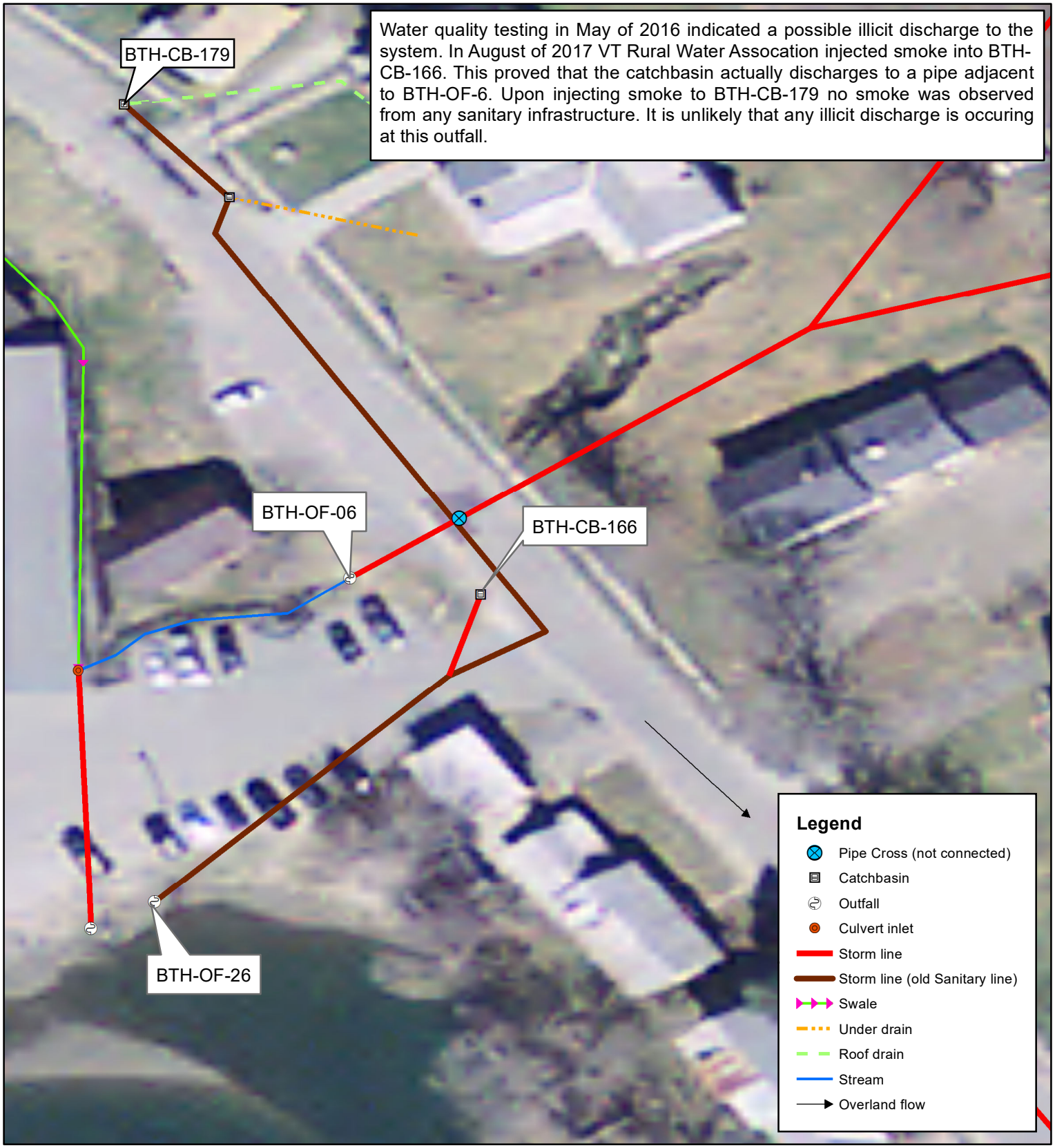
N

0 20 40 80 Feet

Advanced Investigation
BTH-OF-23

WATERSHED CONSULTING ASSOCIATES, LLC

Map Produced: 5/1/2018



Outfall ID	Infrastructure Code	Date	Notes	Flow?	Temp (C)	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Color, Odor, Turbidity, or Floatables?	Other Indicators?	Overall Characterization	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener	Notes
BTH-OF-26	BTH-OF-26	5/12/2016		yes	12.1	7.5	501	0.35	no	Pipe benthic growth	Unlikely		0		The footing drain into CB is spiking ammonia because of anaerobic conditions
	BTH-OF-26	5/27/2016		yes	14.1	7.5	495	0.43	no	Pipe benthic growth	Possible	0	0		
	BTH-CB-179	5/27/2016		yes	17.6	7.9	144	0.44	no		Unlikely	0	0		

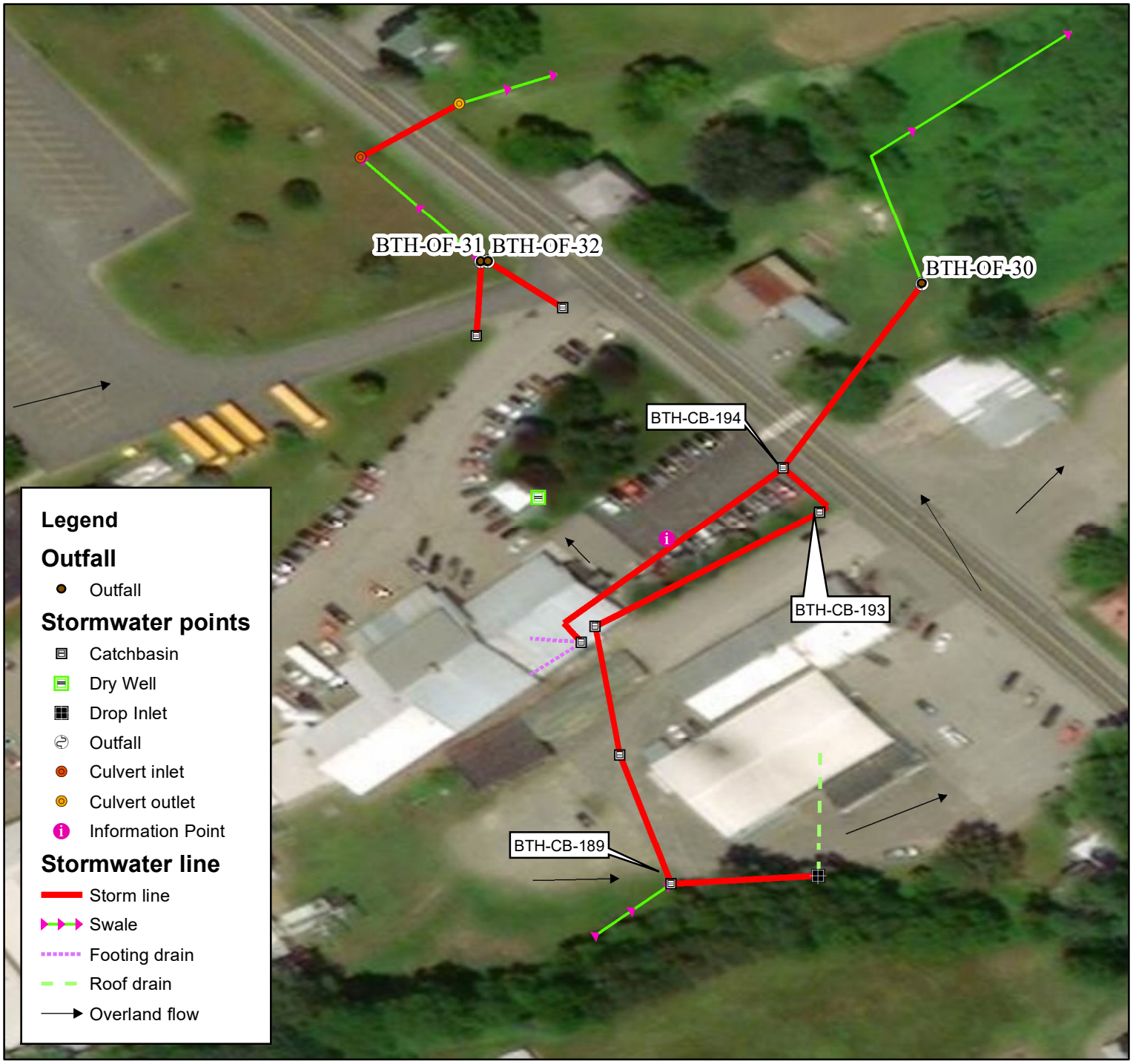
N

0 15 30 60 Feet

Advanced Investigation
BTH-OF-26

WATERSHED CONSULTING ASSOCIATES, LLC

Map Produced: 05/01/2018



Outfall ID	Infrastructure Code	Date	Notes	Flow?	Temp (C)	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Color, Odor, Turbidity, or Floatables?	Other Indicators?	Overall Characterization	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener	Notes
BTH-OF-30	BTH-OF-30	5/12/2016	Pipe size is an estimate. Jim Pease says this one may be the outfall where the car-wash facility at Valley Motors discharges to the storm system.	no							Possible				Not granted access to site by Valley Motors, no signs were observed during visit but the Town of Bethel may wish to conduct outreach to inform them that regular vehicle washing where a discharge could occur into a storms ewer is not allowable.
	BTH-OF-30	5/27/2016	Soil wet in flow path as if flowing earlier	no							Possible				
	BTH-CB-189	5/27/2016	Oil and old tanks right next to catch basin	no							Unlikely				
	BTH-CB-193	5/27/2016	Water in sump, not flowing	no							Unlikely				
	BTH-CB-194	5/27/2016	Water in sump, not flowing	no							Unlikely				

N

0 40 80 160 Feet

Advanced Investigation
BTH-OF-30

WATERSHED CONSULTING ASSOCIATES, LLC

Map Produced: 8/14/2018

Initial testing at this single catchbasin outfall revealed slightly elevated readings of Ammonia. A follow up visit revealed the pipe was broken above the outfall and water was infiltrating the pipe before reaching the outfall. A look at an upstream catchbasin revealed connection to a residential footing drain. It is likely that the elevated ammonia levels can be attributable to anoxic conditions in groundwater. Because no other indicators were found, we do not believe there is an illicit discharge to this outfall.

Outfall ID	Infrastructure Code	Date	Notes	Flow?	Temp (C)	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Color, Odor, Turbidity, or Floatables?	Other Indicators?	Overall Characterization	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener	Notes
BTH-OF-40	BTH-OF-40	5/12/2016		yes	12	7.7	120	0.3	no		Possible		0		Storm line crosses North Main Street.
	BTH-OF-40	5/27/2016	Pipe broken, unable to collect sample. Sounds like same trickle as found in above CB	yes					no		Unlikely				
	BTH-CB-110	5/27/2016	Footing drain around house next to CB that ties in above CB.	yes	15.6	7.7	131	0.4	no		Unlikely	0	0		
	BTH-CLVI-9	5/27/2016		no							Unlikely				

N

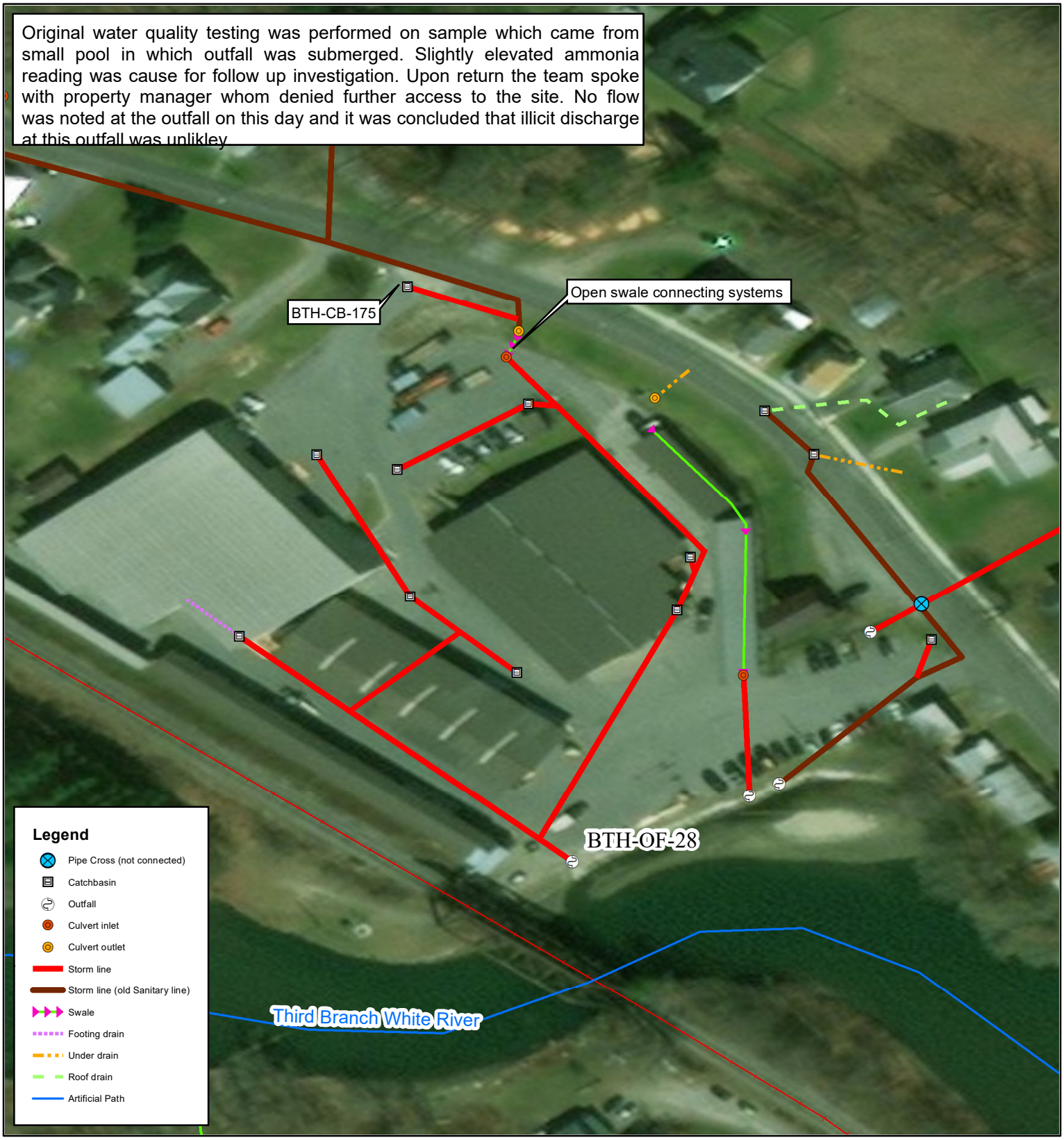
0 20 40 80 Feet

Advanced Investigation
BTH-OF-40

WATERSHED CONSULTING ASSOCIATES, LLC

Map Produced: 5/01/2018

Original water quality testing was performed on sample which came from small pool in which outfall was submerged. Slightly elevated ammonia reading was cause for follow up investigation. Upon return the team spoke with property manager whom denied further access to the site. No flow was noted at the outfall on this day and it was concluded that illicit discharge at this outfall was unlikley



Outfall ID	Infrastructure Code	Date	Notes	Flow?	Temp (C)	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Color, Odor, Turbidity, or Floatables?	Other Indicators?	Overall Characterization	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener	Notes
BTH-OF-28	BTH-OF-28	5/12/2016	Pipe fully submerged, unable to measure flow.	yes	19.6	7.3	810	0.31	no		Possible		Tr		Could not access CBs. Private property of Bethel Mills Lumber.
	BTH-OF-28	5/27/2016	Talked to store manager at Bethel Mills Lumber, unable to access CBs on property	no							Unlikely				
	BTH-CB-175	5/27/2016		no							Unlikely				

N

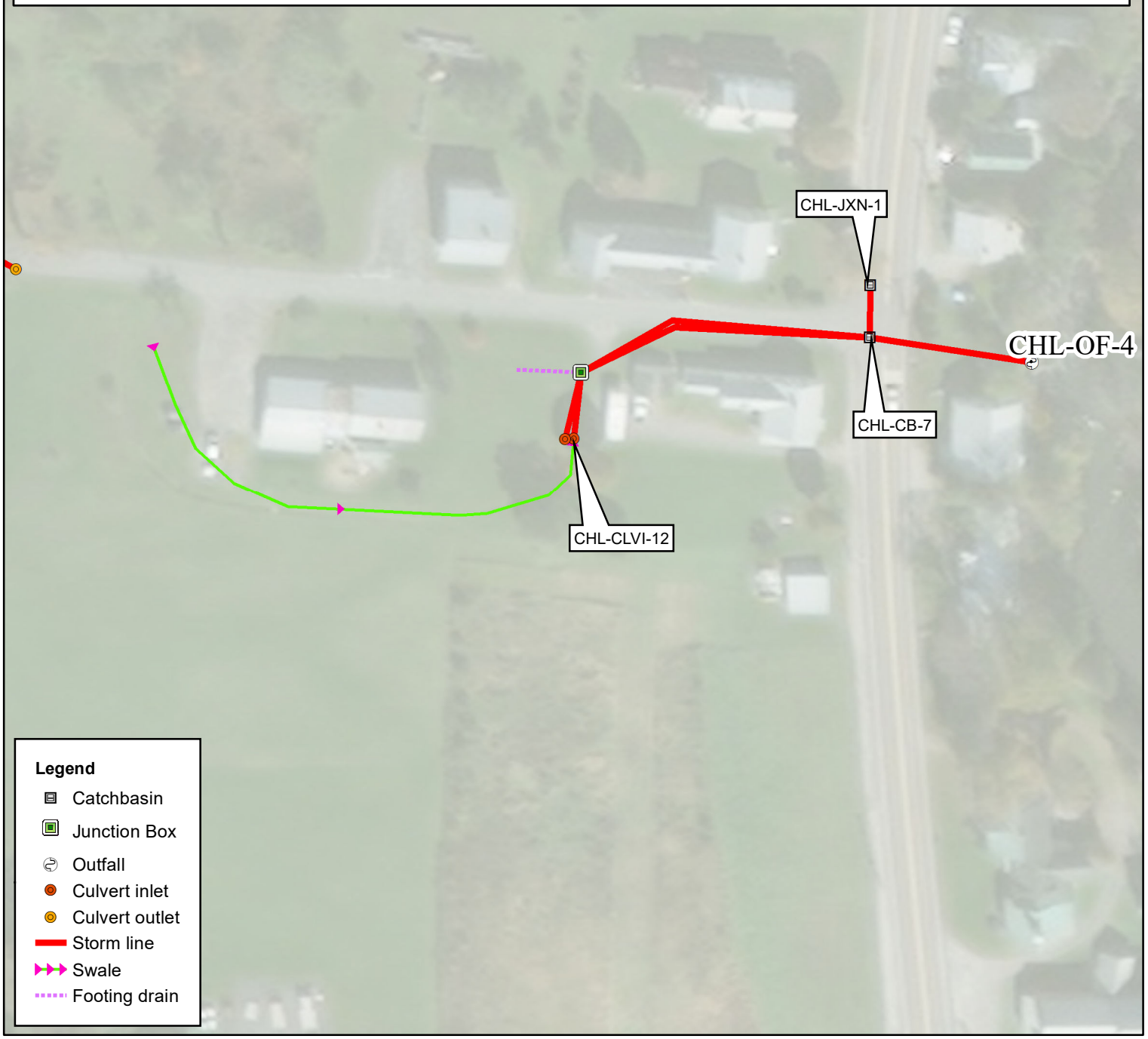
0 37.5 75 150 Feet

Advanced Investigation
BTH-OF-28

WATERSHED CONSULTING ASSOCIATES, LLC

Map Produced: 5/1/2018

Initial water quality testing at CHL-OF-4 revealed slightly elevated levels of ammonia and MBAS. Pipes connected to the system showed flow on many occasions and smoke testing was conducted to determine if they were connected to any non-stormwater sources. The test proved successful as no smoked was observed from non-stormwater related infrastructure. Elevated levels of ammonia and MBAS were likely due to satureated groundwater and roadwash off, respectively.



Outfall ID	Infrastructure Code	Date	Notes	Flow?	Temp (C)	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Color, Odor, Turbidity, or Floatables?	Other Indicators?	Overall Characterization	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener	Notes
CHL-OF-4	CHL-OF-4	5/10/2016		yes	11.2	7.78	852	0.22	yes	Deposits/Stains	Possible (2 or more indicators present)	0	0.25		Swale around home runs through catchbasins to outfall.
	CHL-OF-4	5/23/2016	Small pipe coming out into river next to outfall, not flowing.	yes	16.7	8.03	957	0.78	no	Deposits/Stains,Pipe benthic growth	Possible (2 or more indicators present)	0	0		
	CHL-CB-7	5/23/2016		yes											
	CHL-JXN-1	5/23/2016	Sample taken from flowing footing drain pipe.	yes	16.5	8	980	0.59	no	Poor pool quality	Possible (2 or more indicators present)	0.2	Tr		
	CHL-CLVI-12	5/23/2016		yes											
	CHL-CB-7	8/23/2016		yes					no		Unlikely	0	Tr		
	CHL-OF-4	8/23/2016		yes					no	Deposits/Stains,Pipe benthic growth	Unlikely	0.3	Tr		
	CHL-JXN-1	8/23/2016		yes					no		Unlikely	0	0		
	CHL-CLVI-12	8/23/2016	No flow, sampled from pool.	yes					no		Unlikely	0	Tr		

N

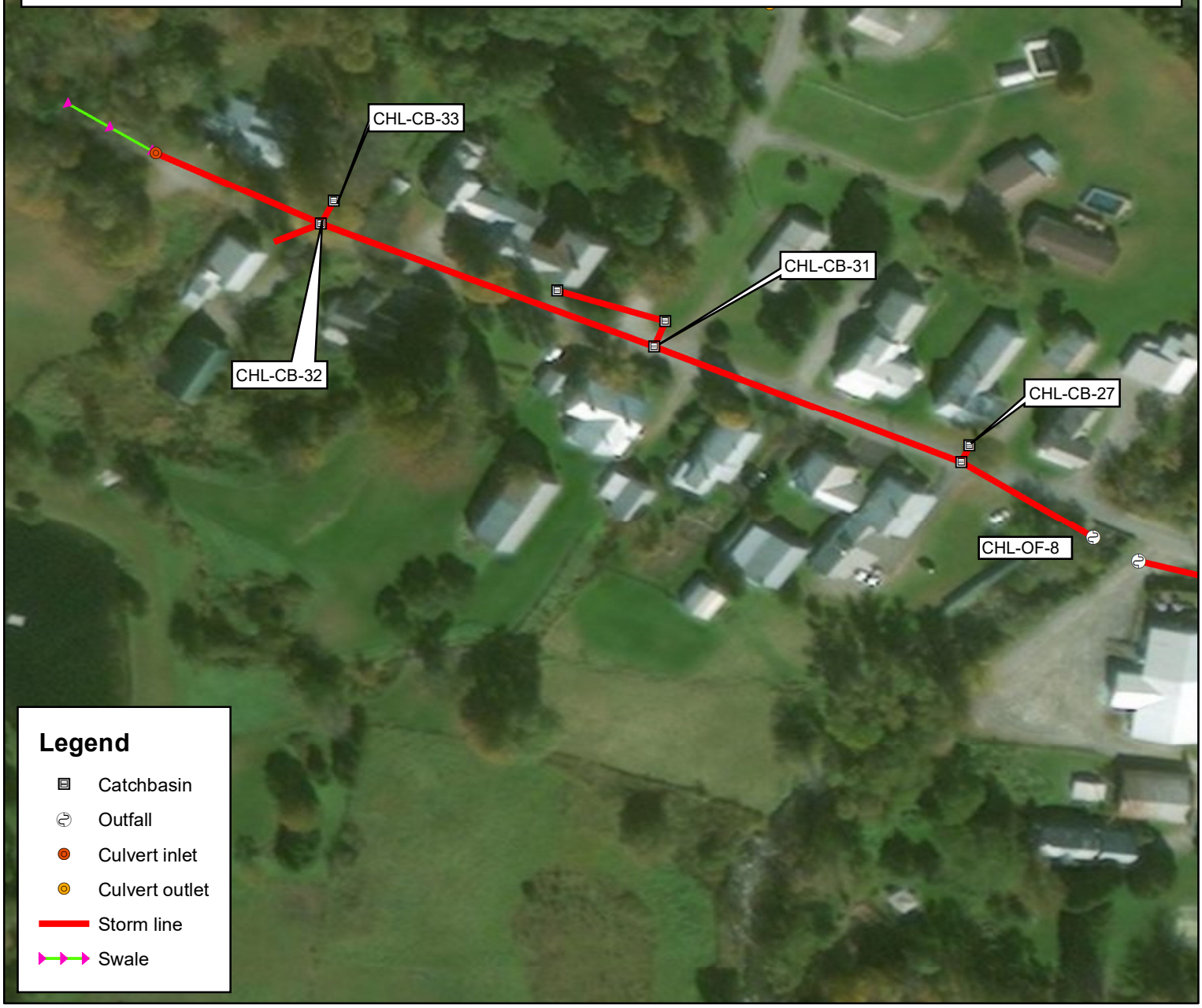
0 40 80 160 Feet

Advanced Investigation
CHL-OF-4

WATERSHED CONSULTING ASSOCIATES, LLC

Map Produced: 5/3/2018

Initial water quality testing revealed very low pH of 3.7 with no other elevated parameters. Upon return with a recalibrated pH meter revealed a more typical reading of 8.29. Smoke was injected into CHL-CB-27 and no smoke was observed at any non-stormwater related infrastructure. Smoke was also injected into the sanitary sewer line and again no crossover was evident. Illicit discharge is unlikely.



Outfall ID	Infrastructure Code	Date	Notes	Flow?	Temp (C)	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Color, Odor, Turbidity, or Floatables?	Other Indicators?	Overall Characterization	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener	Notes
CHL-OF-8	CHL-OF-8	5/10/2016	Suspected error in ph reading.	yes	10.3	3.7	696	0	no	Pipe benthic growth	Possible	0	0		Line runs down street with homes on either side. No flow at top culvert inlet from swale. Crosses sewer line in-between last CB and outfall.
	CHL-OF-8	5/23/2016		yes	14.4	8.3	574	0.35	no		Possible	0	Tr		
	CHL-CB-27	5/23/2016		yes											
	CHL-CB-31	5/23/2016	Pipe coming in from up the road, unmapped.	yes	15.6	7.6	793	0.38	no		Possible	0	Tr		
	CHL-CB-32	5/23/2016		yes											
	CHL-CB-33	5/23/2016		no							Unlikely				
	CHL-CB-27	8/23/2016		yes	21.2	8.2	595	0.28	no		Unlikely	0	0.25		
	CHL-CB-29	8/23/2016	(A) longer line up same side of street	yes	18.6	8	528	0.21	no		Unlikely	0	0		
	CHL-CB-29	8/23/2016	(B) other side of street from unknown source	yes	21	8.1	1126	0.26	no		Unlikely	0	Tr		
	CHL-OF-8	8/23/2016		yes	22	8.1	559	0.35	no		Unlikely	0	0		
	CHL-OF-8	7/19/2017		yes	23	8.5	900	0.08			Unlikely		0.25		
	CHL-OF-8	7/19/2017		yes	20.4	8.7	475	0.07			Unlikely		0		

N

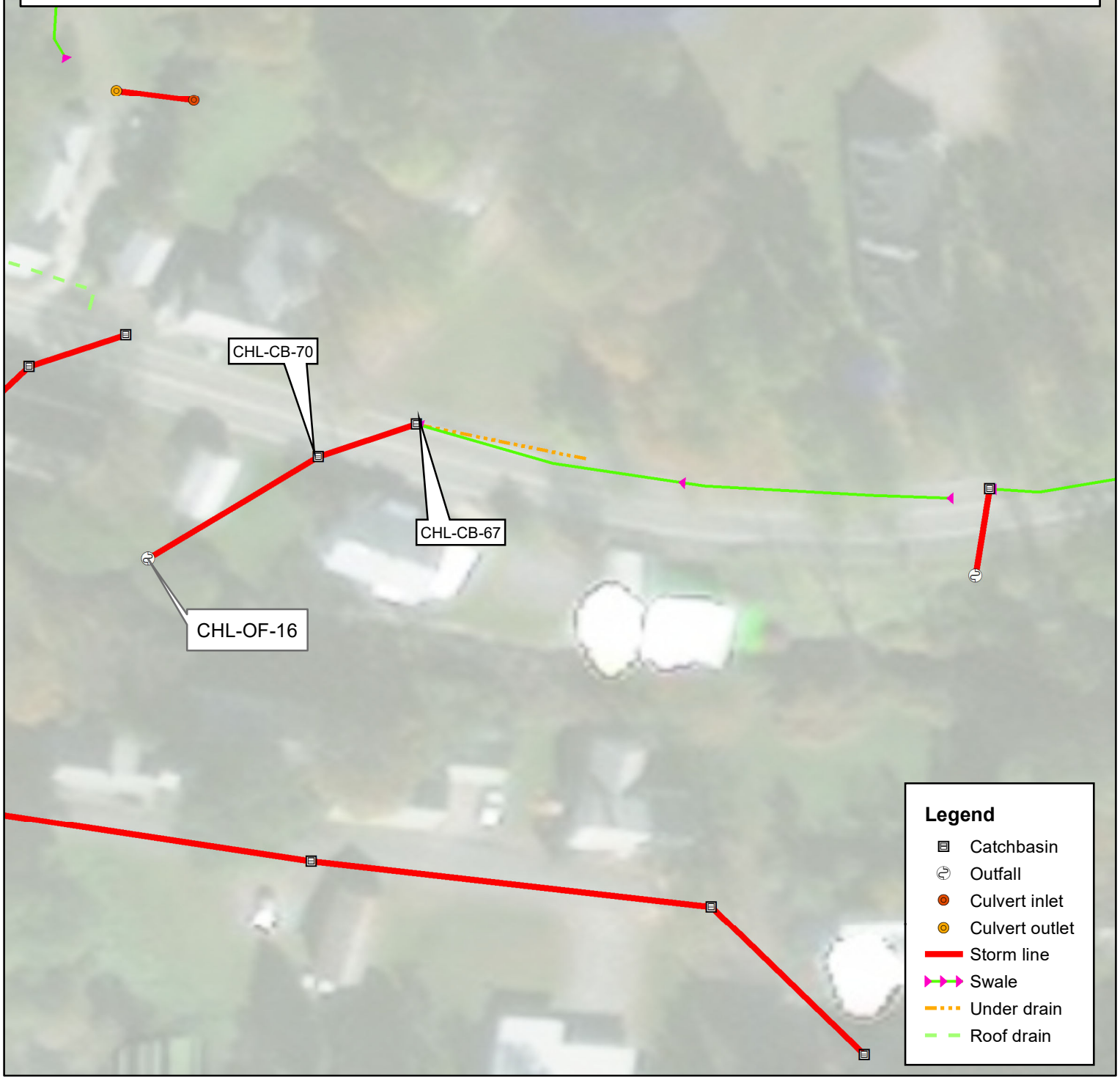
0 50 100 200 Feet

Advanced Investigation
CHL-OF-8

WATERSHED CONSULTING ASSOCIATES, LLC

Map Produced: 5/3/2018

Initial water quality testing revealed a relatively elevated pH of 9.6 and conductivity of 2055 uS/cm. Connected to an underdrain, upstream catchbasins were flowing but infrastructure restricted sampling. Smoke was injected into CHL-CB-70 and no smoke was observed from any non-stormwater related infrastructure. Illicit discharge unlikely.



Outfall ID	Infrastructure Code	Date	Notes	Flow?	Temp (C)	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Color, Odor, Turbidity, or Floatables?	Other Indicators?	Overall Characterization	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener	Notes
CHL-OF-16	CHL-OF-16	5/10/2016		yes	9.6	9.1	2055	0.09	no		Suspect	0.2	0.5		Swale run into catch basins and flows across Route 113. Crosses sewer line in street.
	CHL-OF-16	5/23/2016		yes	19.7	9	1475	0.4	no	Pipe benthic growth	Suspect	0	0.5		
	CHL-CB-70	5/23/2016		yes											
	CHL-CB-67	5/23/2016		yes											
	CHL-CB-67	8/23/2016		yes	26	9.3	1371	0.29	no		Unlikely	0.1	0.5		
	CHL-CB-70	8/23/2016		yes	22.8	9.3	1323	0.27	no		Unlikely	Tr	0.25		
	CHL-OF-16	8/23/2016		yes	21.9	9.2	1341	0.34	no		Unlikely	Tr	0.5		

N

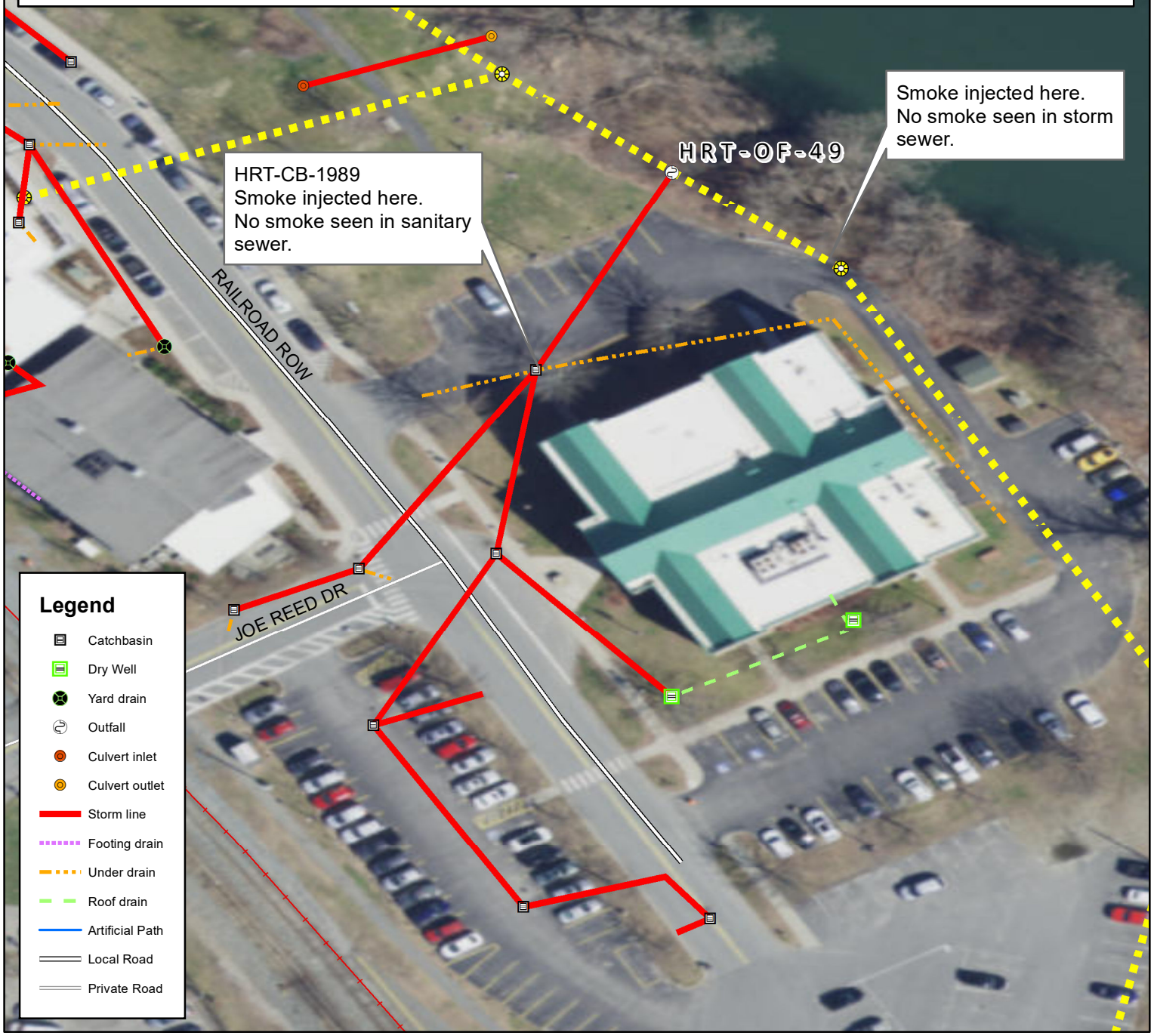
0 20 40 80 Feet

Advanced Investigation
CHL-OF-16

WATERSHED CONSULTING ASSOCIATES, LLC

Map Produced:5/3/2018

Initial investigation revealed a very small amount of flow but with elevated concentrations of ammonia, chlorine, and detergents. The source of the flow was a pipe discharging to nearest upstream catchbasin. Based on the results of smoke testing it is unlikely there is an illicit discharge to this



Outfall ID	Infrastructure Code	Date	Notes	Flow?	Temp (C)	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Color, Odor, Turbidity, or Floatables?	Other Indicators?	Overall Characterization	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener	Notes
HRT-OF-49	HRT-OF-49	7/6/2016	Slow drip	yes	233	8.3	65	0.34			Possible	0.1	0.75		Ammonia, chlorine, and detergents levels on 8/3/16 possibly lower because on proceeding Monday the 1st 0.69in of rain flushed the system out. Negative OB pads.
	HRT-OF-49	8/3/2016	Slow drip	yes	18.6	7.9	67	0.2		Deposits/Stains	Possible	Tr	Tr		
	HRT-CB-1989	8/3/2016	The only pipe coming into CB that is flowing (dripping slowly) is the under drain from Windsor County District Court.	Yes							Unlikely				
	HRT-CB-1989	8/9/2016	3 OBs set 8/9/16-8/12/16	no							Unlikely			8/9/16 to 8/12/16 Negative	

N

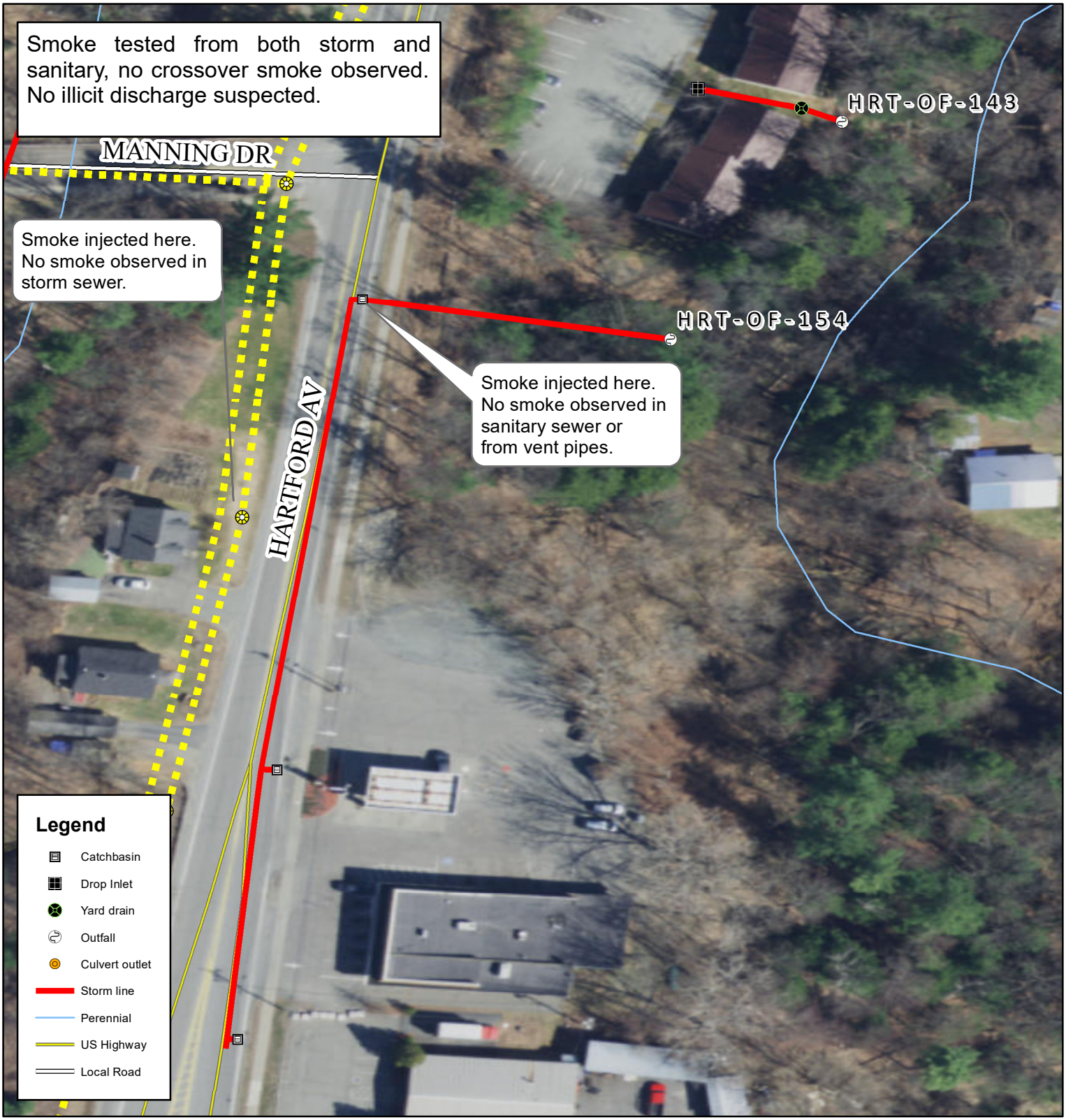
0 30 60 120 Feet

Advanced Investigation

HRT-OF-49

WATERSHED CONSULTING ASSOCIATES, LLC

Map Produced: 5/4/2018



Outfall ID	Infrastructure Code	Date	Notes	Flow?	Temp (C)	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Color, Odor, Turbidity, or Floatables?	Other Indicators?	Overall Characterization	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener	Notes
HRT-OF-154	HRT-OF-154	6/30/2016	Did not measure flow as discharge was insignificant (slow drip).	yes	21.3	7.9	210	0.94		Deposits/Stains	Possible (2 or more indicators present)		0.25		No sewer line crossed from HRT-CB-1662 to outfall, believe slow drip at outfall is groundwater source.
	HRT-OF-154	7/13/2016		yes	24.2	7.5	104	0.93		Deposits/Stains	Possible (2 or more indicators present)	Tr	0		
	HRT-CB-1662	7/13/2016	No flow, dry sump.	No							Unlikely				

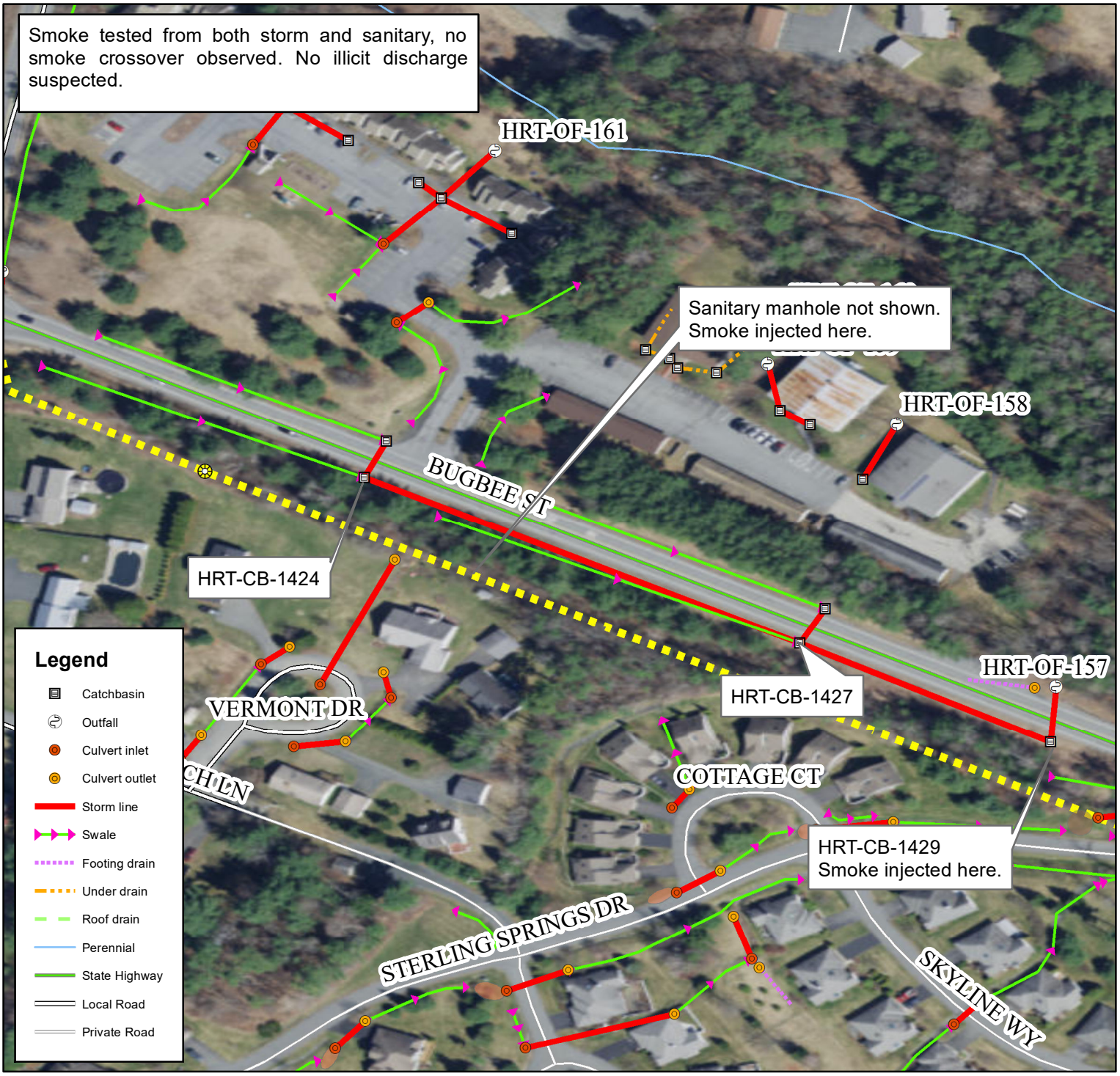
N

0 37.5 75 150 Feet

Advanced Investigation
HRT-OF-154

WATERSHED CONSULTING ASSOCIATES, LLC

Map Produced: 5/04/2018



Outfall ID	Infrastructure Code	Date	Notes	Flow?	Temp (C)	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Color, Odor, Turbidity, or Floatables?	Other Indicators?	Overall Characterization	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener	Notes
HRT-OF-157	HRT-OF-157	7/7/2016		yes	18	8.3	1060	0.27			Possible	0	0.25		Groundwater, open bottom catchbasins. Not crossing any other lines.
	HRT-OF-157	7/14/2016		yes	16.2	7.4	1113	0		Deposits/Stains	Unlikely	0	0		
	HRT-CB-1429	7/14/2016	Flow	yes							Unlikely				
	HRT-CB-1427	7/14/2016	Trickle, top of flow	yes							Unlikely				
	HRT-OF-157	8/9/2016	OB set 8/9/16-8/12/16	yes	17.9	8	1120	0.27		Pipe benthic growth	Possible	0	Tr	8/9/16 to 8/12/16 Negative	
	HRT-CB-1424	8/9/2016	No flow, water in sump. OB set 8/9/16-8/12/16	no	18	8	3940	1.16			Possible	0.2	0.75	8/9/16 to 8/12/16 Negative	
	HRT-CB-1427	8/9/2016	No flow, water in sump. OB set 8/9/16-8/12/16	no	17.2	7.8	1635	0.21			Possible	Tr	0.25	8/9/16 to 8/12/16 Negative	
		8/9/2017		yes	21.7	8	1010	0.08			Unlikely		0		

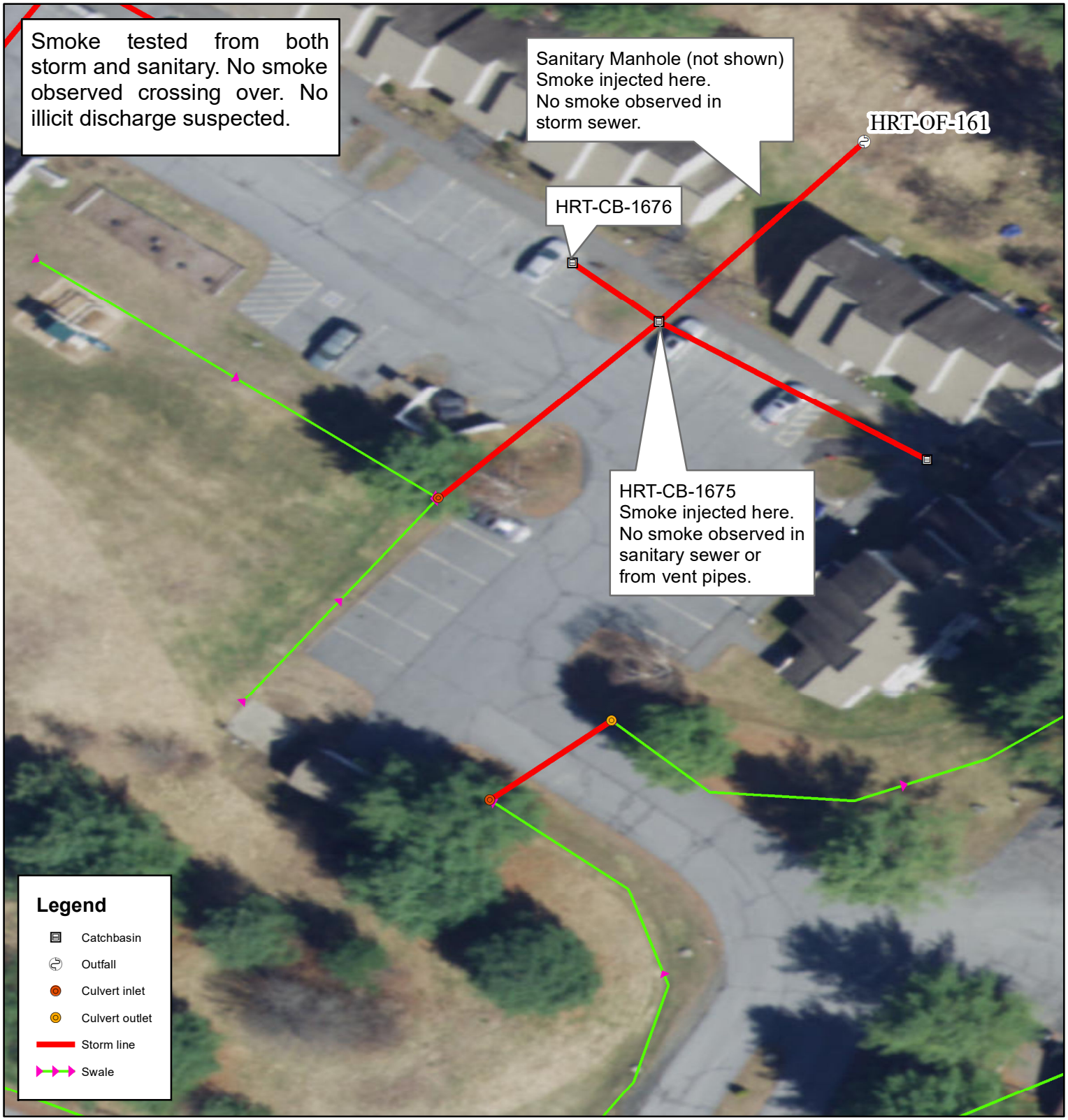
N

0 75 150 300 Feet

Advanced Investigation
HRT-OF-157

WATERSHED CONSULTING ASSOCIATES, LLC

Map Produced: 5/4/2018



Outfall ID	Infrastructure Code	Date	Notes	Flow?	Temp (C)	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Color, Odor, Turbidity, or Floatables?	Other Indicators?	Overall Characterization	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener	Notes
HRT-OF-161	HRT-OF-161	7/7/2016		yes	19.3	8.6	939	0.47			Possible	0.1	0.25		Oil stains in parking lot area, suspect that to be why numbers are slightly elevated.
	HRT-OF-161	7/14/2016		yes	18.8	7.9	1052	0.48		Deposits/Stains,Poor pool quality	Possible	0	0.25		
	HRT-CB-1675	7/14/2016	CB sump wet, oil sheen and trash seen on surface of water. Parking lot very stained.	yes							Unlikely				
	HRT-CB-1676	7/14/2016	CB sump wet, oil sheen and trash seen on surface of water.	no							Unlikely				

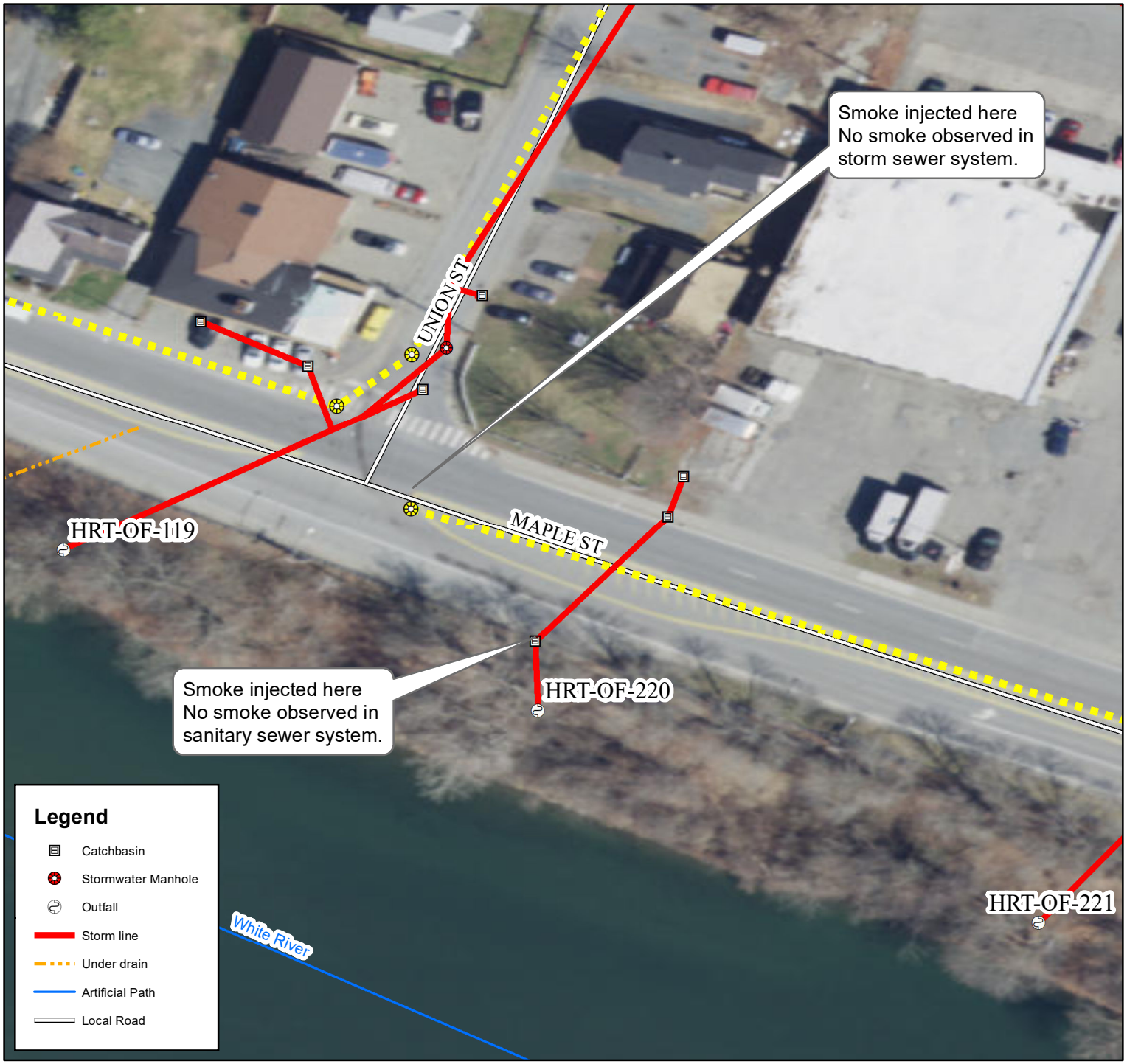
N

0 15 30 60 Feet

Advanced Investigation
HRT-OF-161

WATERSHED CONSULTING ASSOCIATES, LLC

Map Produced: 05/04/2018



Outfall ID	Infrastructure Code	Date	Notes	Flow?	Temp (C)	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Color, Odor, Turbidity, or Floatables?	Other Indicators?	Overall Characterization	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener	Notes
HRT-OF-220	HRT-OF-220	6/28/2016	Unable to measure flow - barely dripping. OB pad placed (negative). MBAS looked very dark in color in comparator.	yes	22.7	7.8	217	3.29			Suspect	0.4	3	6/28/16 to 6/30/16 Negative	Investigated sewer line that the storm line crosses 7/13/2016. Opened HRT-SSMH-430 to flush water through to test connection. SSMH was found to be collapsed and non-functioning, not possible to flush water through. Possibly single wash event on Mowers News Service property. OB pad placed 6/28/16 to 6/30/16 (negative).
	HRT-OF-220	6/30/2016		no							Possible				
	HRT-OF-220	7/13/2016		no							Unlikely				
	HRT-CB-1032	8/23/2016	OB pad was not processed for 10 days. Difficult to rinse off thick layer of effluents. Time before processing and inability to clean may be contributing to lack of positive results as house is directly tied into storm line.	yes					yes		Obvious				

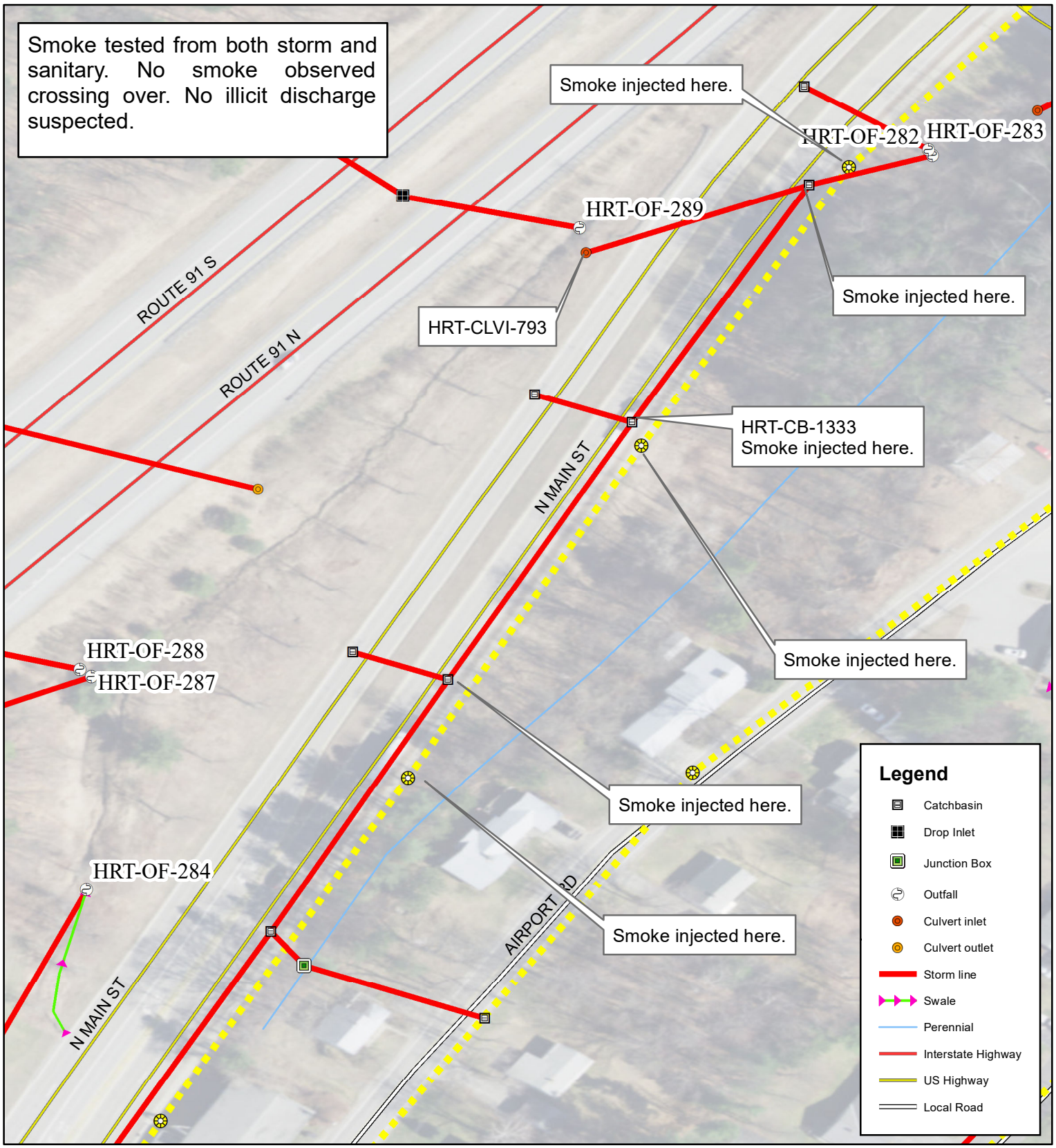
N

0 30 60 120 Feet

Advanced Investigation
HRT-OF-220

WATERSHED CONSULTING ASSOCIATES, LLC

Map Produced: 1/25/2018



Outfall ID	Infrastructure Code	Date	Notes	Flow?	Temp (C)	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Color, Odor, Turbidity, or Floatables?	Other Indicators?	Overall Characterization	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener	Notes
HRT-OF-282	HRT-OF-282	7/1/2016		yes	19.7	8.6	1420	0.3			Possible	0	0.25		Outfall drains directly into river. Across street catches water running down a swale, CBs on the other side of the street.
	HRT-OF-282	8/3/2016		yes	18.3	8.1	1224	0.06		Poor pool quality	Possible	Tr	Tr		
	HRT-CB-1333	8/3/2016	Top of flow for HRT-OF-282	yes	19	8.2	3820	0.16			Possible	Tr	0.25		
	HRT-CLVI-793	8/9/2016		yes	24	8	1212	0.23		Pipe benthic growth	Possible	0	Tr		

N

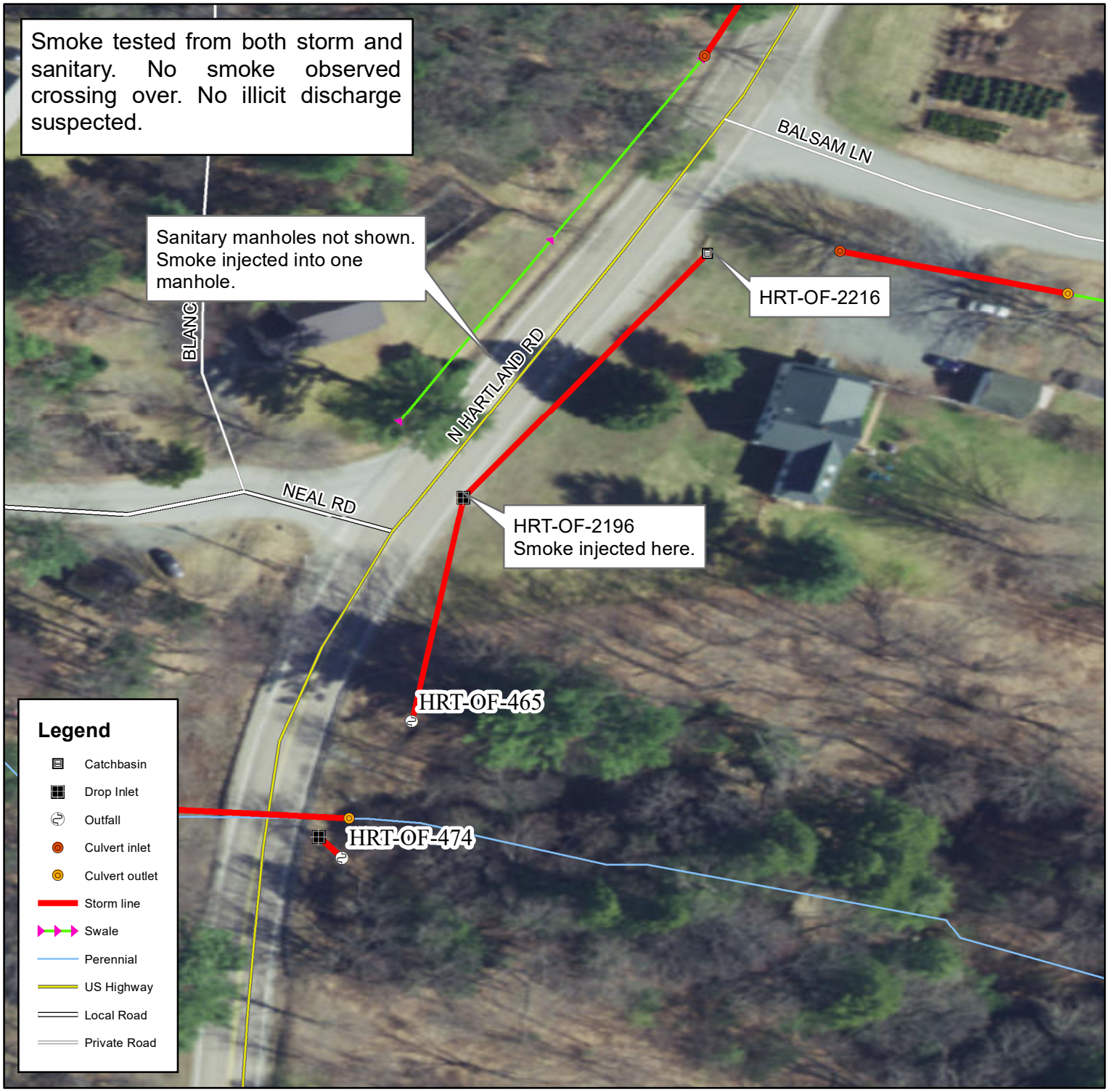
0 45 90 180 Feet

Advanced Investigation

HRT-OF-282

WATERSHED CONSULTING ASSOCIATES, LLC

Map Produced: 1/25/2018



Outfall ID	Infrastructure Code	Date	Notes	Flow?	Temp (C)	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Color, Odor, Turbidity, or Floatables?	Other Indicators?	Overall Characterization	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener	Notes
HRT-OF-465	HRT-OF-465	7/20/2016		yes	19.2	7.71	375	0.59			Possible	Tr	0.5		Outfall draining the east side of North Hartland Road. Very slow drip constantly. OB pads negative.
	HRT-OF-465	8/3/2016	MBAS sample green in comparator, high organics	yes	22.7	8.12	330	0.16			Possible	Tr	0.75		
	HRT-CB-2196	8/3/2016	Wet in sump, not flowing	no							Unlikely				
	HRT-CB-2216	8/3/2016		no							Unlikely				
	HRT-OF-465	8/9/2016	OB set 8/9/16-8/12/16	yes							Unlikely			8/9/16 to 8/12/16 Negative	
	HRT-CB-2196	8/9/2016	OB set 8/9/16-8/12/16	no							Unlikely			8/9/16 to 8/12/16 Negative	

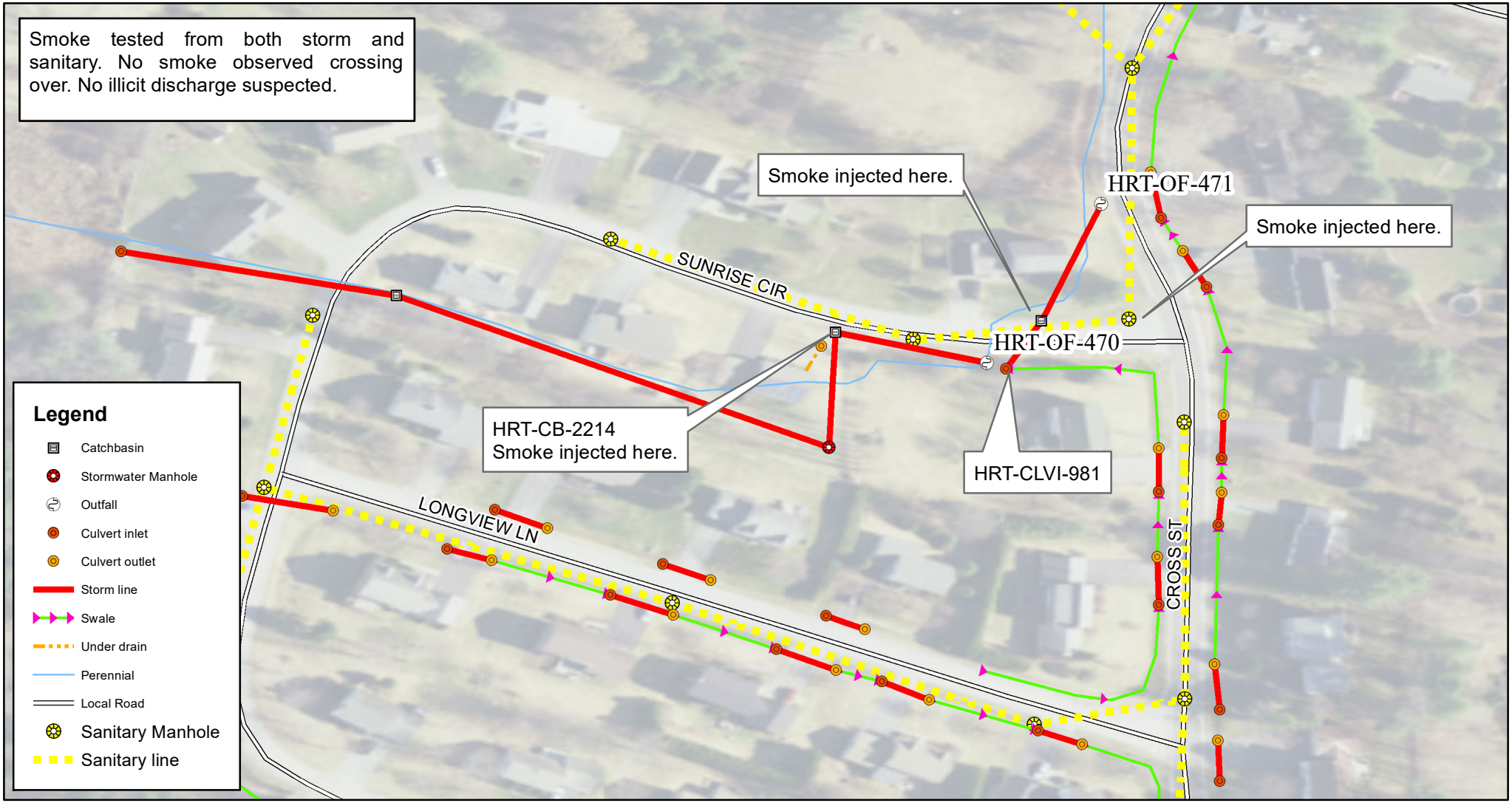
N

0 30 60 120 Feet

Advanced Investigation
HRT-OF-465

WATERSHED CONSULTING ASSOCIATES, LLC

Map Produced: 5/4/2018



Outfall ID	Infrastructure Code	Date	Notes	Flow?	Temp (C)	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Color, Odor, Turbidity, or Floatables?	Other Indicators?	Overall Characterization	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener	Notes
HRT-OF-471	HRT-OF-471	6/16/2016		yes	17.4	7.2	1156	1.63		Poor pool quality,Pipe benthic growth	Possible	0	0.25		Outfall inlet lies in a low saturated area of standing water.
	HRT-OF-471	8/3/2016		yes	22	7.9	842	0.14		Deposits/Stains,Poor pool quality	Possible	Tr	Tr		
	HRT-CLVI-981	8/3/2016	Cannot tell if flowing	yes	21.5	7.7	763	0.38		Poor pool quality	Possible	Tr	0.25		
HRT-OF-470	HRT-CB-2214	8/3/2016	Cannot tell if flowing. Used for HRT-OF-471, 470 leads to 471 though open ditch.	yes	19.3	7.7	9.33	2.95		Poor pool quality	Possible	0	0		

N

0 55 110 220 Feet

Advanced Investigation
HRT-OF-471 & 470

WATERSHED CONSULTING ASSOCIATES, LLC

Map Produced: 05/04/2018

Outfall ID	Infrastructure Code	Date	Notes	Flow?	Temp (C)	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Color, Odor, Turbidity, or Floatables?	Other Indicators?	Overall Characterization	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener	Notes
HRT-OF-489	HRT-CB-153	6/15/2016	Water pooled in CB sump but not flowing to pipe. Could hear water flowing into pipe down from CB. Will sample at downstream CB.	no							Unlikely				Outfall drains a small section of Woodstock Rd. The swale that runs into the second CB crosses a sewer line.
	HRT-CB-489	6/15/2016		yes	19.7	3.1	877	0.09			Possible	Tr	Tr		
	HRT-OF-489	6/15/2016	Residual water in sump, minimal flow. Checked HRT-CB-489	yes							Unlikely				
	HRT-OF-489	8/23/2016	No flow, sample from pool. Detergents test green.	yes	19.6	7.7	963	0	no		Unlikely		0.25		

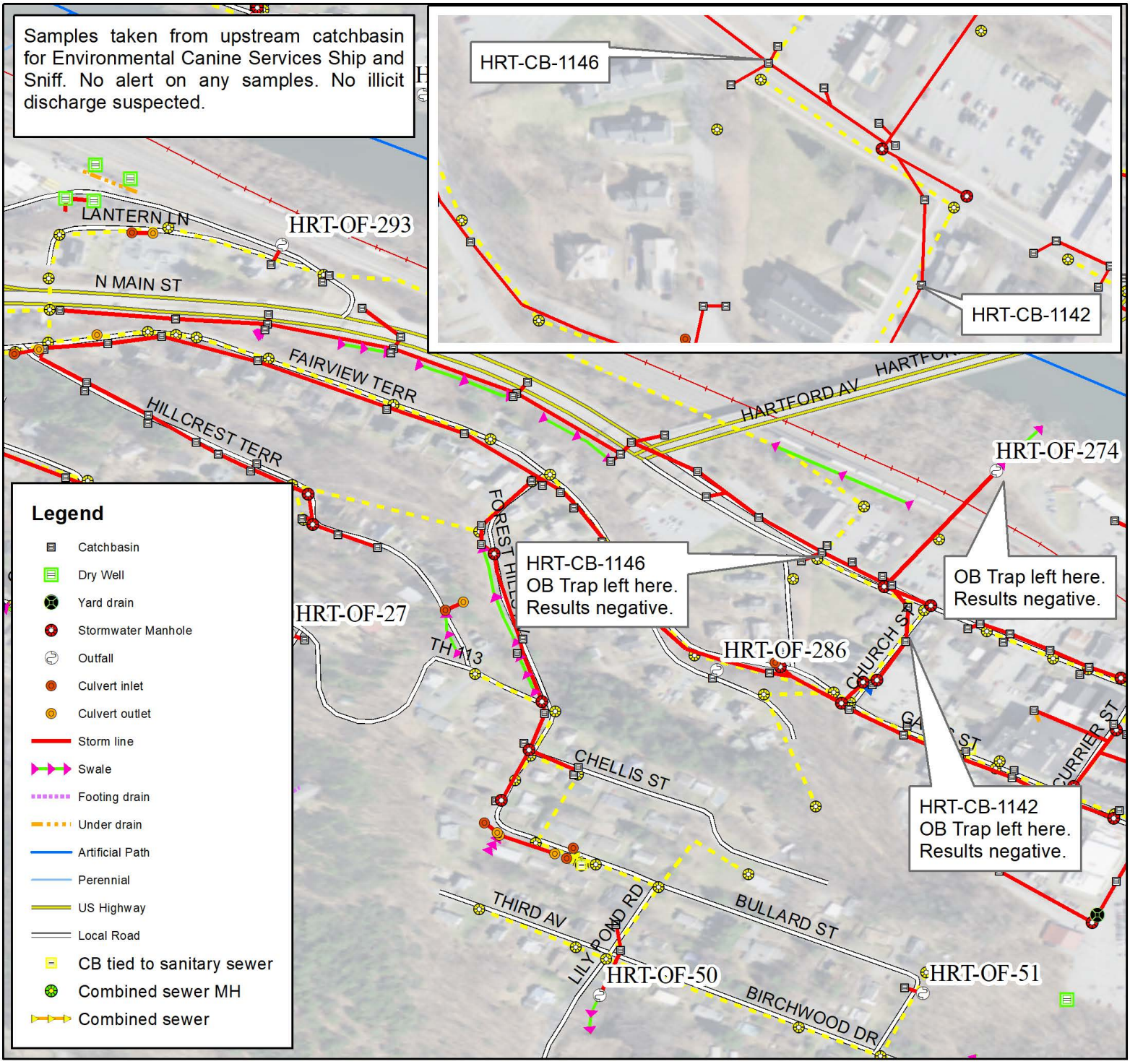
N

0 20 40 80 Feet

Advanced Investigation
HRT-OF-489

WATERSHED CONSULTING ASSOCIATES, LLC

Map Produced: 02/05/2018



Outfall ID	Infrastructure Code	Date	Notes	Flow?	Temp (C)	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Color, Odor, Turbidity, or Floatables?	Other Indicators?	Overall Characterization	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener	Notes
HRT-OF-274	HRT-OF-274	7/6/2016		yes	16.5	7.7	1140	0.45			Possible (2 or more indicators present)	0.1	0.25		Outfall draining large portion of residential area. Negative OB.
	HRT-OF-274	8/4/2016	No flow, pool quality good, no odor, no alarming features. Sample from pool.	no	17.8	7.2	222	0.17			Possible (2 or more indicators present)	0	0.25		
	HRT-OF-274	8/9/2016	OB set 8/9/16-8/12/16	no							Unlikely			8/9/16 to 8/12/16 Negative	
	HRT-CB-1146	8/9/2016	Water in sump, no flow. OB set 8/9/16-8/12/16	no							Unlikely			8/9/16 to 8/12/16 Negative	
	HRT-CB-1142	8/9/2016	OB set 8/9/16-8/12/16	no							Unlikely			8/9/16 to 8/12/16 Negative	

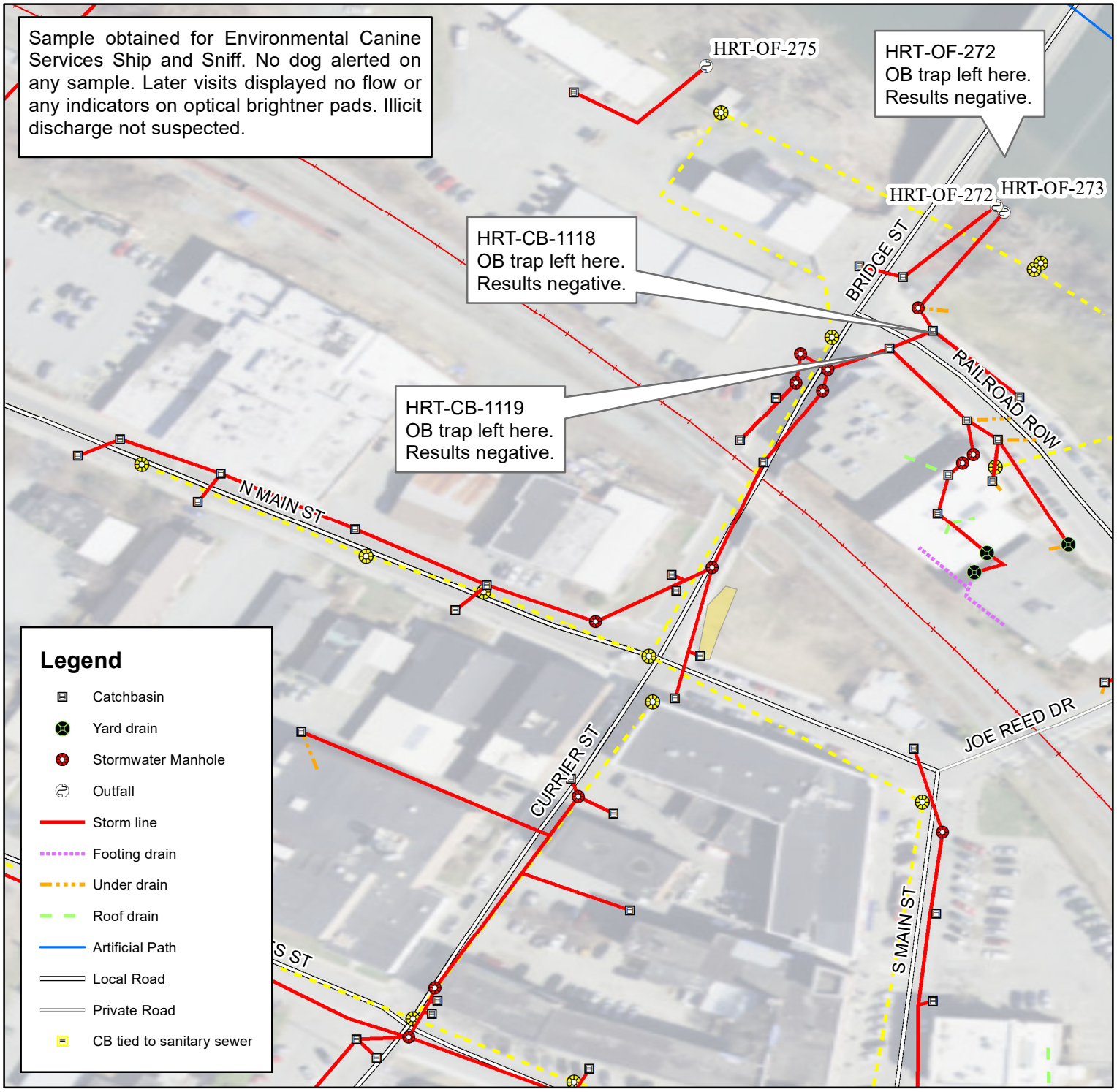
N

0 195 390 780 Feet

Advanced Investigation
HRT-OF-274

WATERSHED CONSULTING ASSOCIATES, LLC

Map Produced: 05/04/2018



Outfall ID	Infrastructure Code	Date	Notes	Flow?	Temp (C)	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Color, Odor, Turbidity, or Floatables?	Other Indicators?	Overall Characterization	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener	Notes
HRT-OF-272	HRT-OF-272	7/6/2016	Very small drip flow. Did not have enough to measure or to test temp/pH/conductivity.	yes				0.08			Possible	0.2	0.25		Outfall draining North Main St and Bridge Street. OB negative.
	HRT-OF-272	7/14/2016	Dripping very slow, unable to calculate flow.	yes	23.6	8	163	0.38			Possible	0.2	0.25		
	HRT-CB-1118	7/14/2016	Cloudy water in sump, drip into pipe	yes							Unlikely				
	HRT-OF-272	8/4/2016		no							Unlikely				
	HRT-OF-272	8/9/2016	OB set 8/9/16-8/12/16	no							Unlikely			8/9/16 to 8/12/16 Negative	
	HRT-CB-1119	8/9/2016	OB set 8/9/16-8/12/16	no							Unlikely			8/9/16 to 8/12/16 Negative	

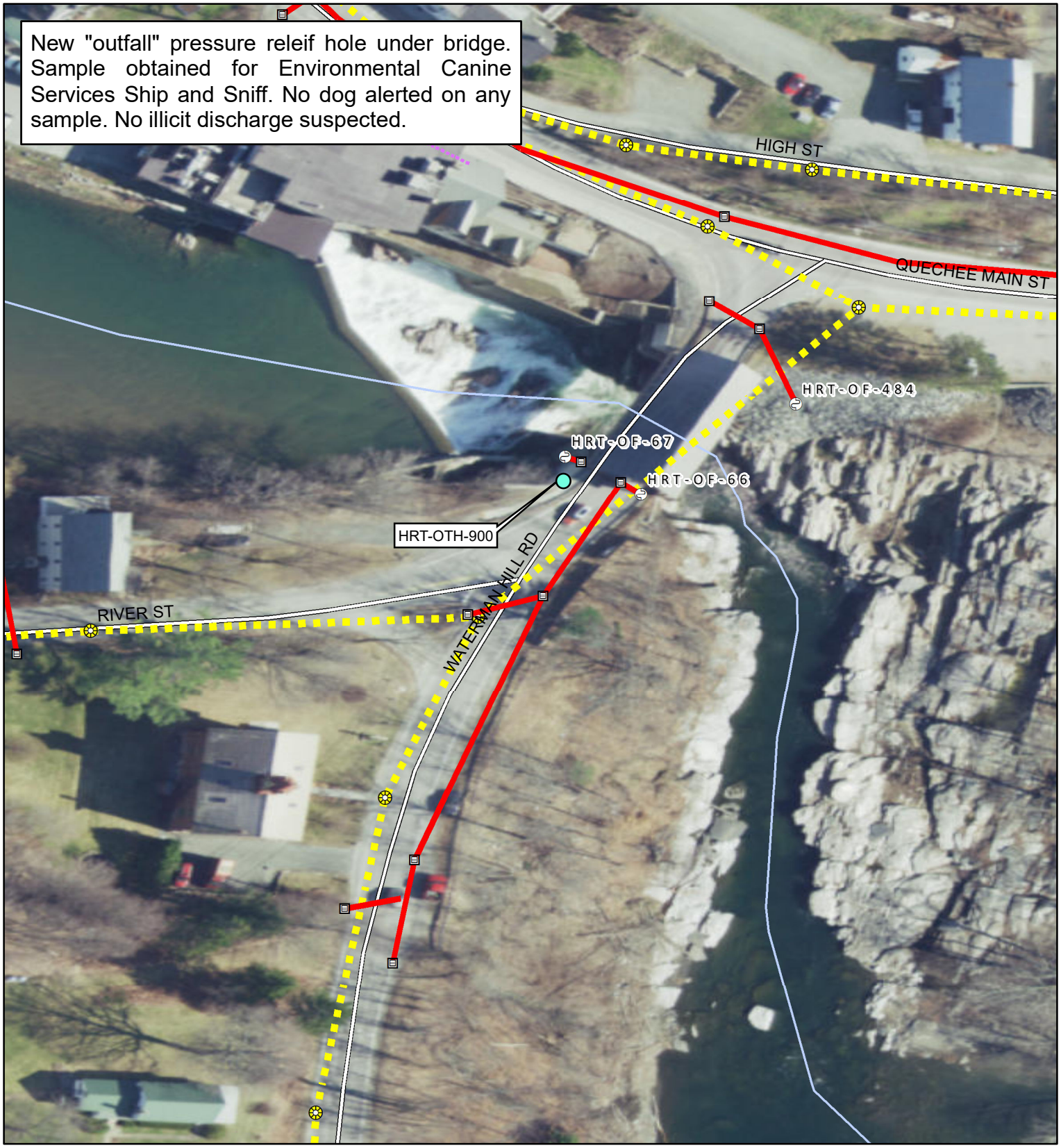
N

0 55 110 220 Feet

Advanced Investigation
HRT-OF-272

WATERSHED CONSULTING ASSOCIATES, LLC

Map Produced: 05/04/2018



Outfall ID	Infrastructure Code	Date	Notes	Flow?	Temp (C)	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Color, Odor, Turbidity, or Floatables?	Other Indicators?	Overall Characterization	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener	Notes
HRT-OTH-900	HRT-OTH-900	6/17/2016	(New Point) Pressure relief valve for bridge	yes	18.1	7.3	3135	0.08		Deposits/Stains,Pipe benthic growth	Possible				New point added. OB pad placed 6/16/16 to 6/17/16 (negative).
	HRT-OTH-900	8/4/2016		no							Unlikely			6/16/16 to 6/17/16 Negative	

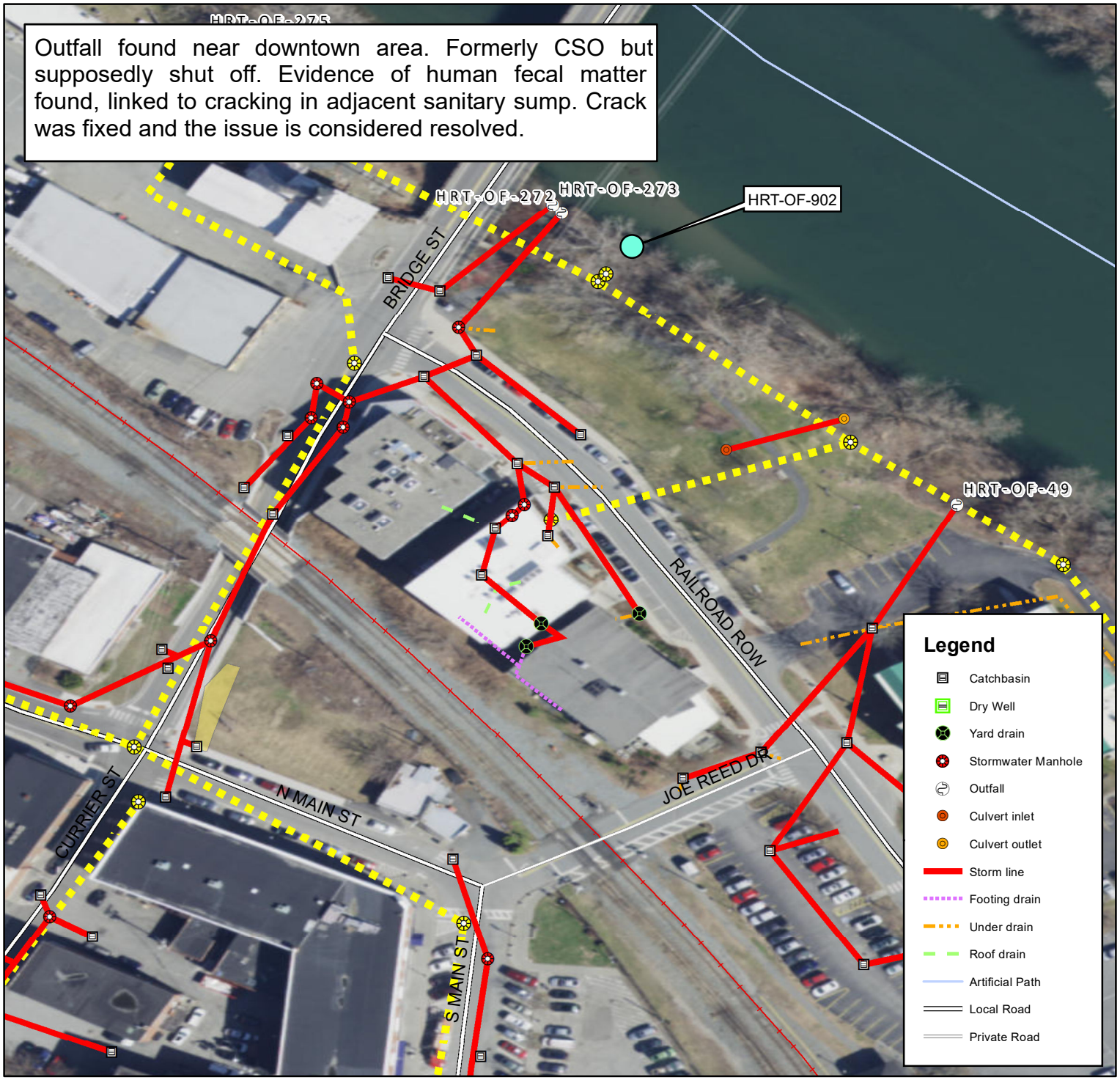
N

0 30 60 120 Feet

Advanced Investigation
HRT-OTH-900

WATERSHED CONSULTING ASSOCIATES, LLC

Map Produced: 5/4/2018



Outfall ID	Infrastructure Code	Date	Notes	Flow?	Temp (C)	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Color, Odor, Turbidity, or Floatables?	Other Indicators?	Overall Characterization	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener	Notes
HRT-OF-902	HRT-OF-902	7/6/2016	(New Point) Very close to two sanitary sewer manholes. Listed as possible due to proximity of sanitary infrastructure and smell of sewage from pipe.	no							Possible				New point added. Below two sewer man holes. Wondering if it is permitted overflow. OB pad did fluoresce under black light, most likely toilet paper flecks. Need to contact town and ask. Resolved, sealed by town.
	HRT-OF-902	8/4/2016	No flow, no smell.	no							Unlikely				
	HRT-OF-902	8/9/2016	No flow, no smell. OB set 8/9/16-8/12/16	no							Unlikely			8/9/16 to 8/12/16 Positive, fluorescent spots	
	HRT-OF-902	8/12/2016	Smells. Other possibly fecal mater and toilet paper at end of pipe.	no							Suspect				

N

0 37.5 75 150 Feet

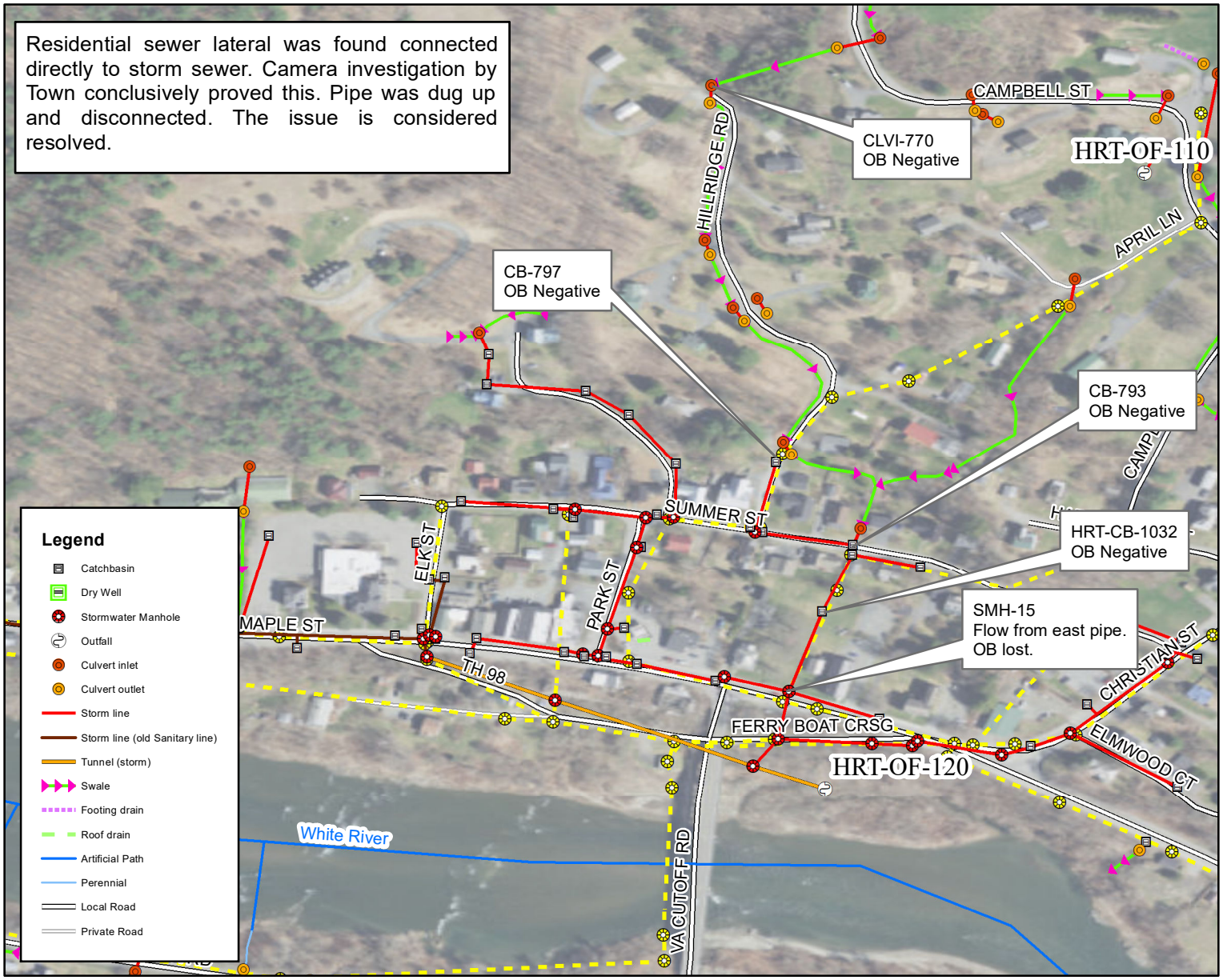
Advanced Investigation

HRT-OF-902

New Point

WATERSHED CONSULTING ASSOCIATES, LLC

Map Produced: 5/4/2018



Outfall ID	Infrastructure Code	Date	Notes	Flow?	Temp (C)	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Color, Odor, Turbidity, or Floatables?	Other Indicators?	Overall Characterization	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener	Notes
HRT-OF-120	HRT-OF-120	6/30/2016	Could not measure flow.	yes	18.5	7.12	414	5.6	Odor,Color	Poor pool quality	Possible	Tr	1.5		Line was cameraed 7/13/18 and found pipe coming into storm line. Resident was notified and line was corrected on 8/05/2016. Follow up was performed in 2018 and the issue was concluded to have been fixed.
	HRT-OF-120	6/27/2016	Can't measure flow.	yes	16.9	7.45	548	6.6	Odor	Poor pool quality	Suspect	0	1.25		
	HRT-CB-1032	8/23/2016	OB pad was not processed for 10 days.	yes					yes		Obvious			8/12/16 to 8/23/16 Negative	
	HRT-OF-120	8/10/2018	No flow, all analysis done from water in small pool	yes	20.6	7.7	807	1.68			Unlikely				
	HRT-CB-1032	8/10/2018		yes	21.6	8.28	918	0.16			Unlikely				
	HRT-OF-120	8/31/2018		yes	20.9	7.85	616	0.85			Unlikely	0	0.5	no	
	HRT-SMH-15	8/31/2018	Testing water from east line. OB pad lost.	yes	22.3	7.96	441	0.1			Unlikely	0	0.25	8/31/18 to 9/13/18 - Negative	
	HRT-CLVI-770	8/31/2018	Recently cut grass in flow. pH probe broken.	yes	21.4	NA	1060	0.55			Unlikely	0	0.25	8/31/18 to 9/13/18 - Negative	
	HRT-CB-793	8/31/2018	Sample taken from network on east side of storm system. pH probe broken.	yes	22.1	NA	767	0.52			Unlikely	0	0.25	no	
	HRT-CB-797	8/31/2018	pH probe broken.	yes	22.3	NA	801	0.27			Unlikely	0	0.25	8/31/18 to 9/13/18 - Negative	

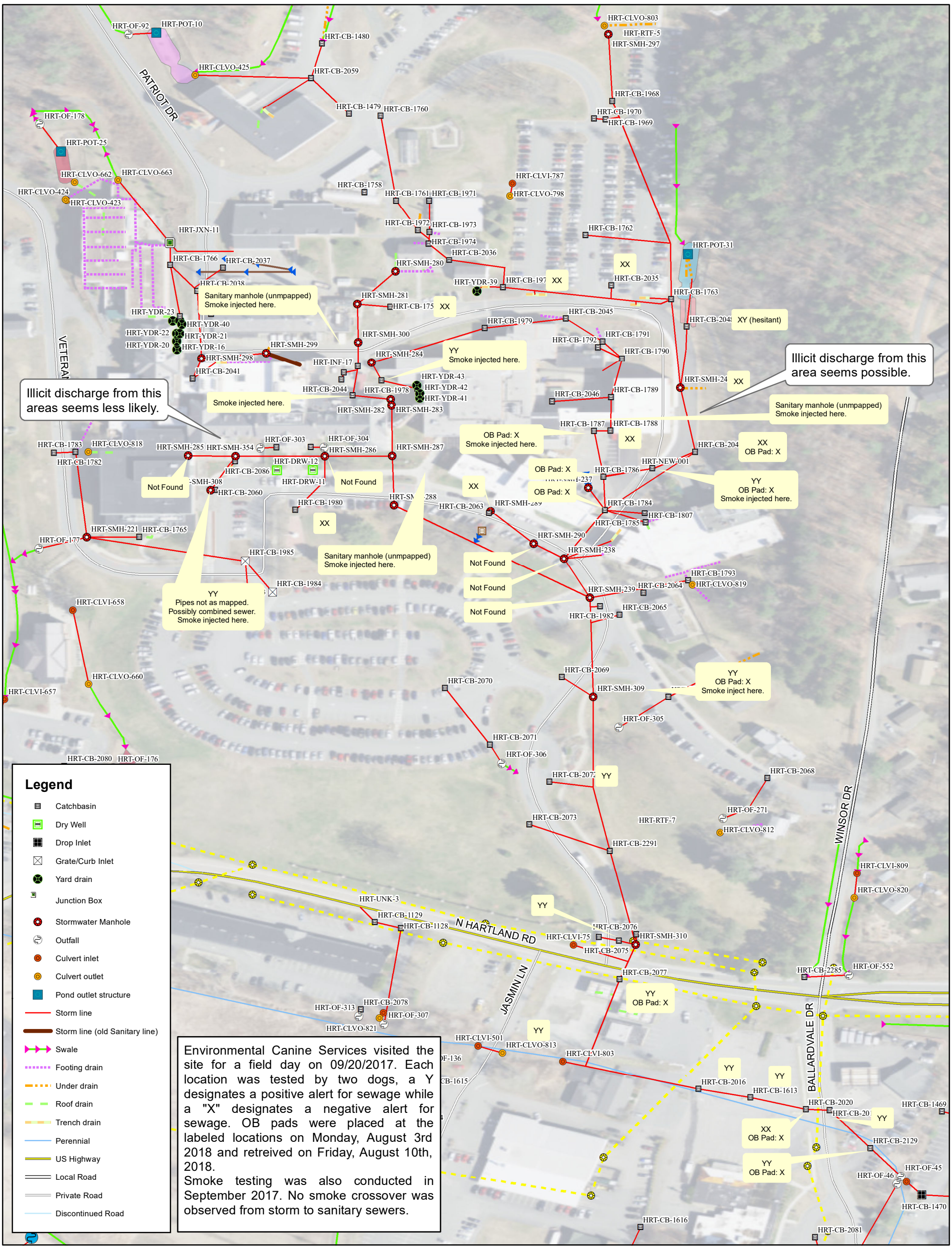
N

0 155 310 620 Feet

Advanced Investigation
HRT-OF-120

WATERSHED CONSULTING ASSOCIATES, LLC

Map Produced: 9/21/2018



Outfall ID	Infrastructure Code	Date	Notes	Flow?	Temp (C)	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Color, Odor, Turbidity, or Floatables?	Other Indicators?	Overall Characterization	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener	Notes
HRT-OF-45	HRT-OF-45	7/1/2016		yes	18	7.36	2450	0.34		Pipe benthic growth	Possible	Tr	0.25		Veterans Affairs Hospital, area was comprehensively analyzed using water quality analysis, Environmental Canine Services, and obtical brightner pads.
	HRT-OF-45	7/14/2016		yes	18.6	7.74	2578	0.43		Pipe benthic growth	Possible	0	0.25		
	HRT-CB-2077	7/14/2016	Conductivity above detectable limit	yes	20.6	7.91	>4000	0.3			Possible	0	0.25		
	HRT-CB-2291	7/14/2016	Conductivity too high for probe to measure	yes	25	8.51	>4000	0.08			Possible	0	0.25		
	HRT_OF_45	7/1/2016		yes	18	7.36	2450	0.34		Pipe benthic growth	Possible		0.25		

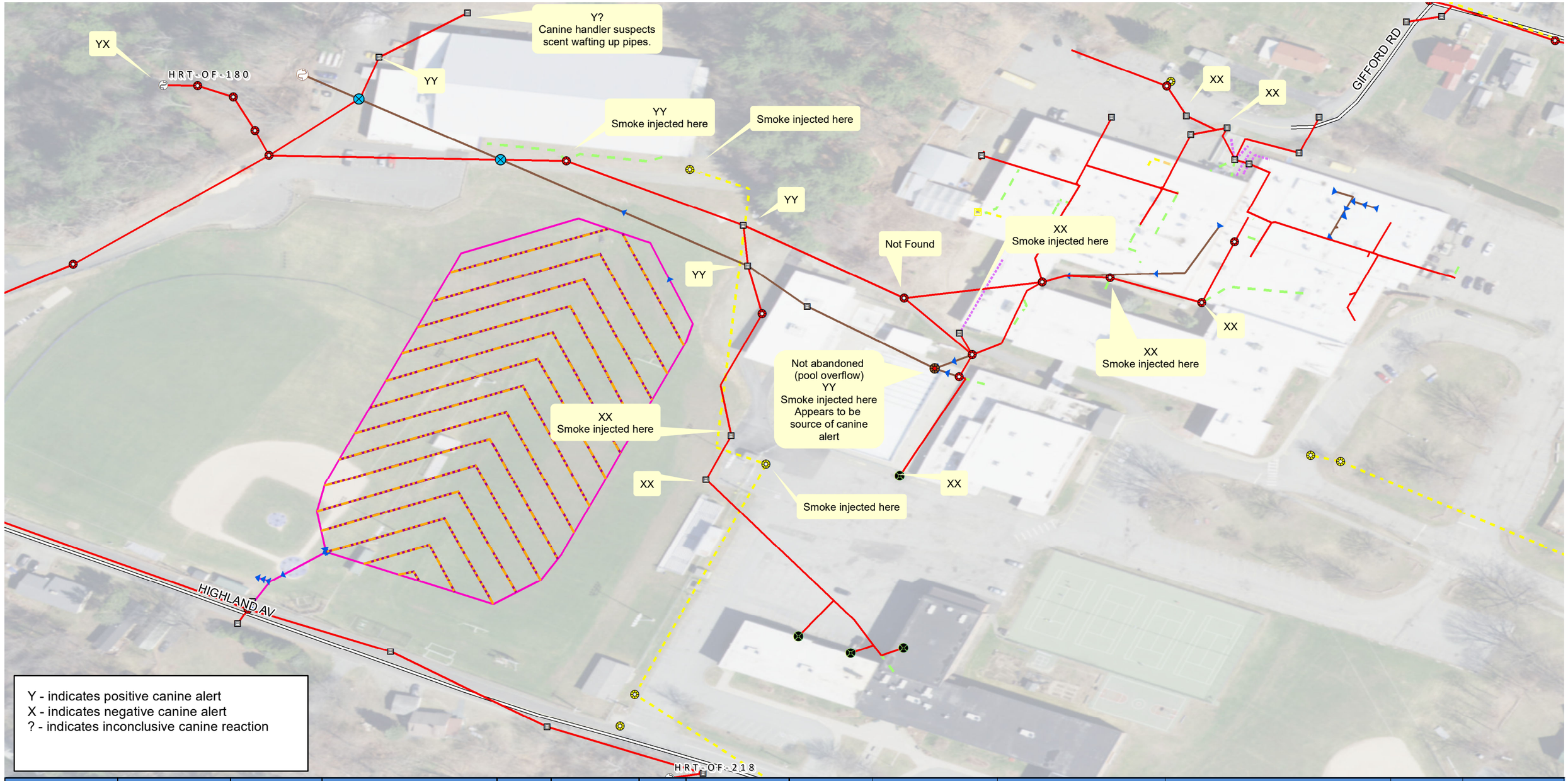
N

0 75 150 300 Feet

Advanced Investigation
HRT-OF-45

WATERSHED CONSULTING ASSOCIATES, LLC

Map Produced: 09/10/2018

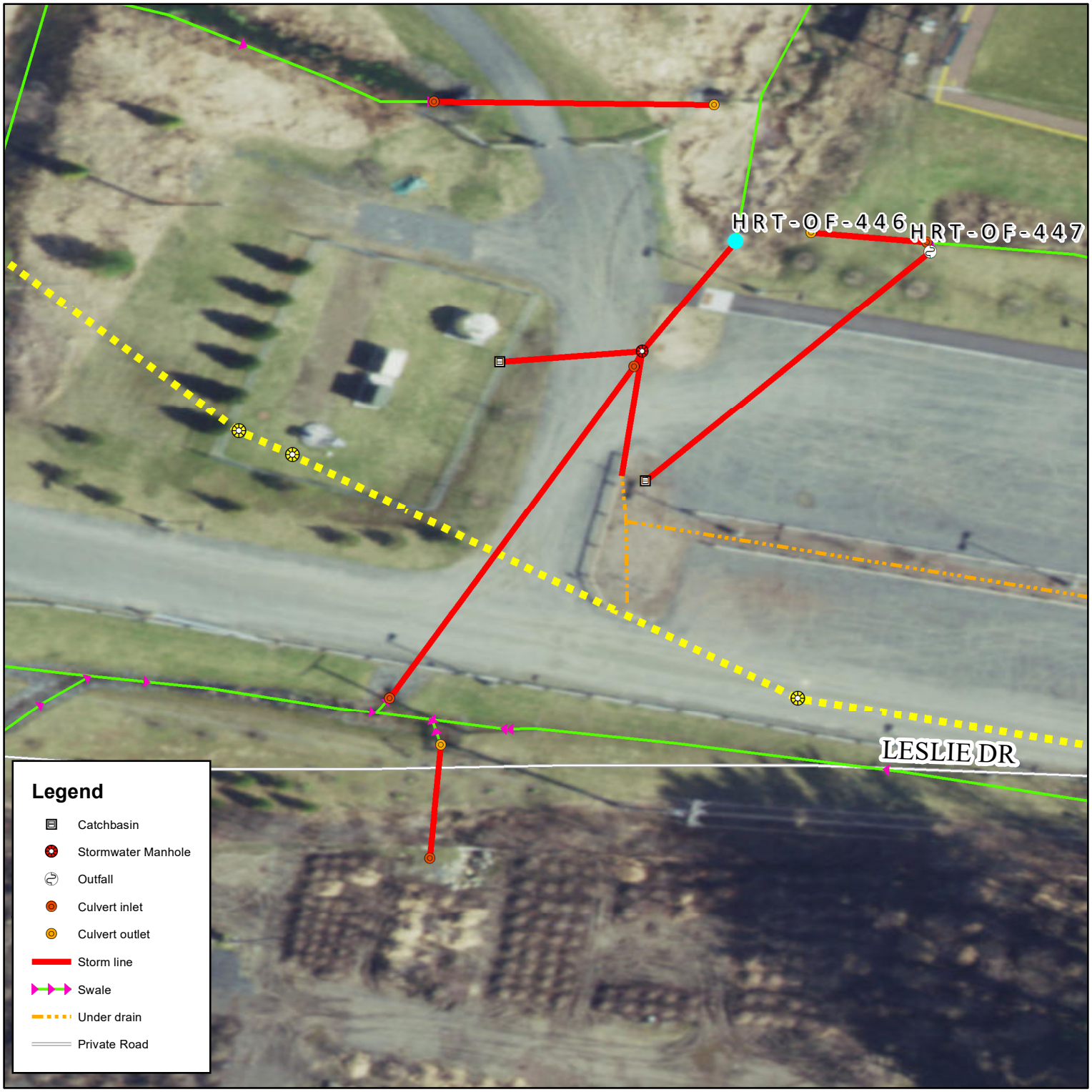


Oufall ID	Infrastructure Code	Date	Notes	Flow?	Temp (C)	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Color, Odor, Turbidity, or Floatables?	Other Indicators?	Overall Characterization	Chlorine (mg/L)	Detergents (ppm)
HRT-OF-180	HRT-OF-180	7/1/2016		yes	17.5	7.95	365	0.31		Deposits/Stains	Possible		0
	HRT-OF-180	7/14/2016		yes	17.5	8.13	377	0.18		Deposits/Stains	Possible		0.25

0 75 150 300 Feet

HRT-OF-180

Map Produced: 9/19/18



Outfall ID	Infrastructure Code	Date	Notes	Flow?	Temp (C)	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Color, Odor, Turbidity, or Floatables?	Other Indicators?	Overall Characterization	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener	Notes
HRT-OF-446	HRT-OF-446	7/20/2016		yes	20	7.27	734	3.48		Poor pool quality,Pipe benthic growth	Possible	Tr	Tr		Northern Nurseries runoff from yard to outfall.
	HRT-OF-446	8/3/2016		yes	21.2	7.87	743	2.71		Poor pool	Possible	0.5	0.25		
	HRT-CLVO-933	8/3/2016	Could not measure flow	yes	22.2	7.21	784	3.6		Poor pool	Possible	0	Tr		
	HRT-CLVI-991	8/23/2016	Seems like tree nursery has underdrains that lead to culvert inlet. Top of found flow. Detergents green.	yes	21.7	7.12	800	5.2	yes	Deposits/Stains ,Poor pool quality	Possible		0		
	HRT-SMH-340	8/23/2016	Underdrain pvc pipe	yes	21.2	7.56	712	0.23	no		Unlikely	0	Tr		
	HRT-SMH-340	8/23/2016	Culvert	yes	19.7	7.49	764	3.6	no		Unlikely	0	Tr		

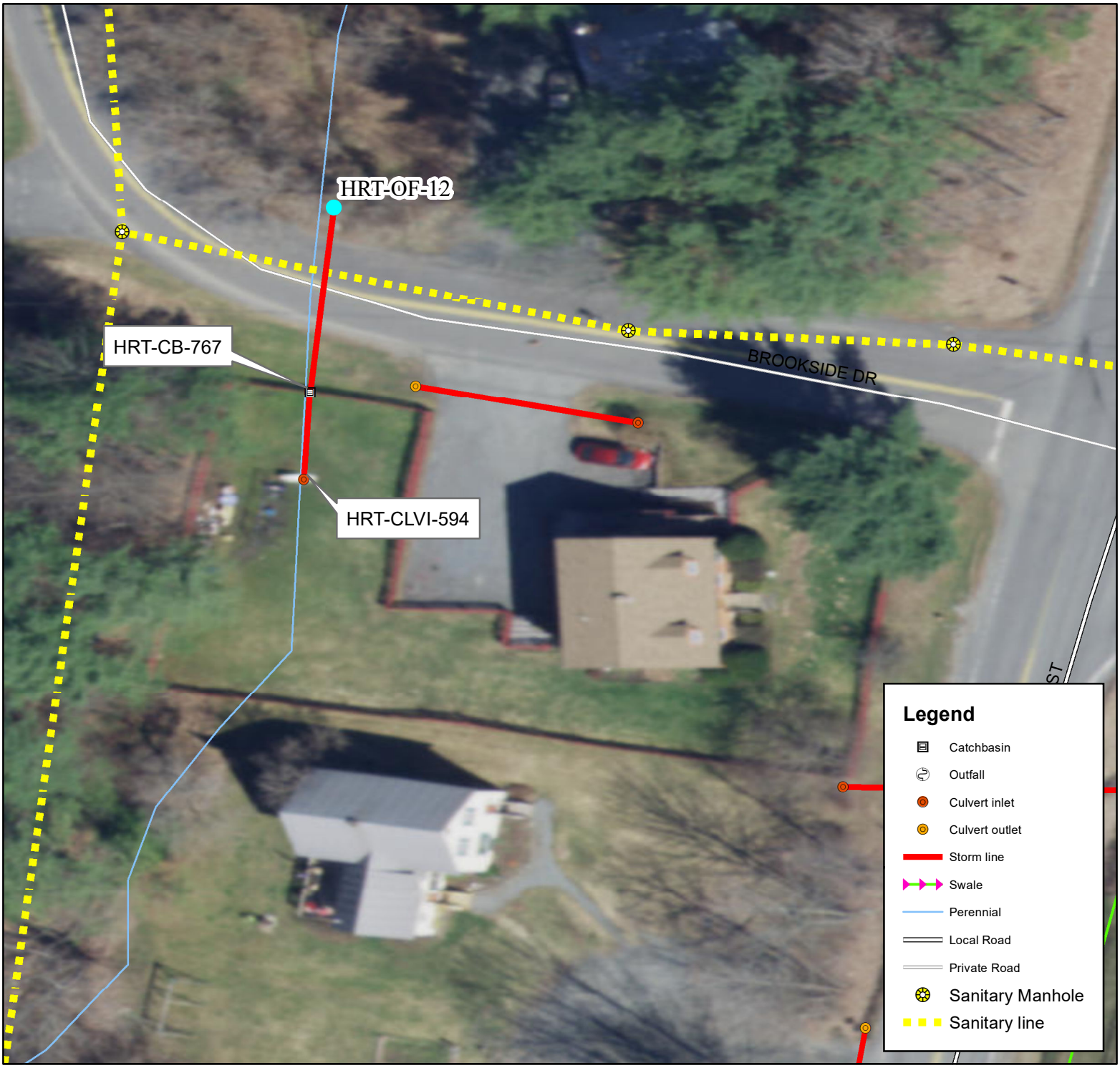
N

0 15 30 60 Feet

Advanced Investigation
HRT-OF-446

WATERSHED CONSULTING ASSOCIATES, LLC

Map Produced: 9/10/2018



Outfall ID	Infrastructure Code	Date	Notes	Flow?	Temp (C)	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Color, Odor, Turbidity, or Floatables?	Other Indicators?	Overall Characterization	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener	Notes
HRT-OF-12	HRT-OF-12	7/7/2016		yes	18	8	557	0.55			Unlikely	0	0		Outfall is partially submerged in water and sediment. Unable to collect sample directly from pipe, sample taken from flow/pool. Ammonia levels on 8/3/16 possibly lower because on proceeding Monday the 1st 0.69in of rain flushed the system out. Placed OB pad, results were negative.
	HRT-OF-12	7/13/2016	Unable to measure flow in shallow water	yes	17.8	7.1	650	0.72		Poor pool quality	Possible	0	Tr		
	HRT-OF-12	8/3/2016	Sample taken close to pipe, some pooling water and flow.	yes	18.4	7.7	740	0.35		Poor pool quality,Deposits/ Stains	Possible	0	Tr		
	HRT-CB-767	8/3/2016		yes	17.9	7.5	531	0.22		Pipe benthic erowth	Unlikely	0	0		
	HRT-CB-767	8/9/2016	OB set 8/9/16-8/12/16	yes							Possible			8/9/16 to 8/12/16 Negative	
	HRT-CLVI-594	8/9/2016	Saturated flow. Channel damp but not flowing. Brown sample color detracted from detergents and Cl accuracy.	yes	18.9	7.8	487	0.35			Possible	0	0.5		

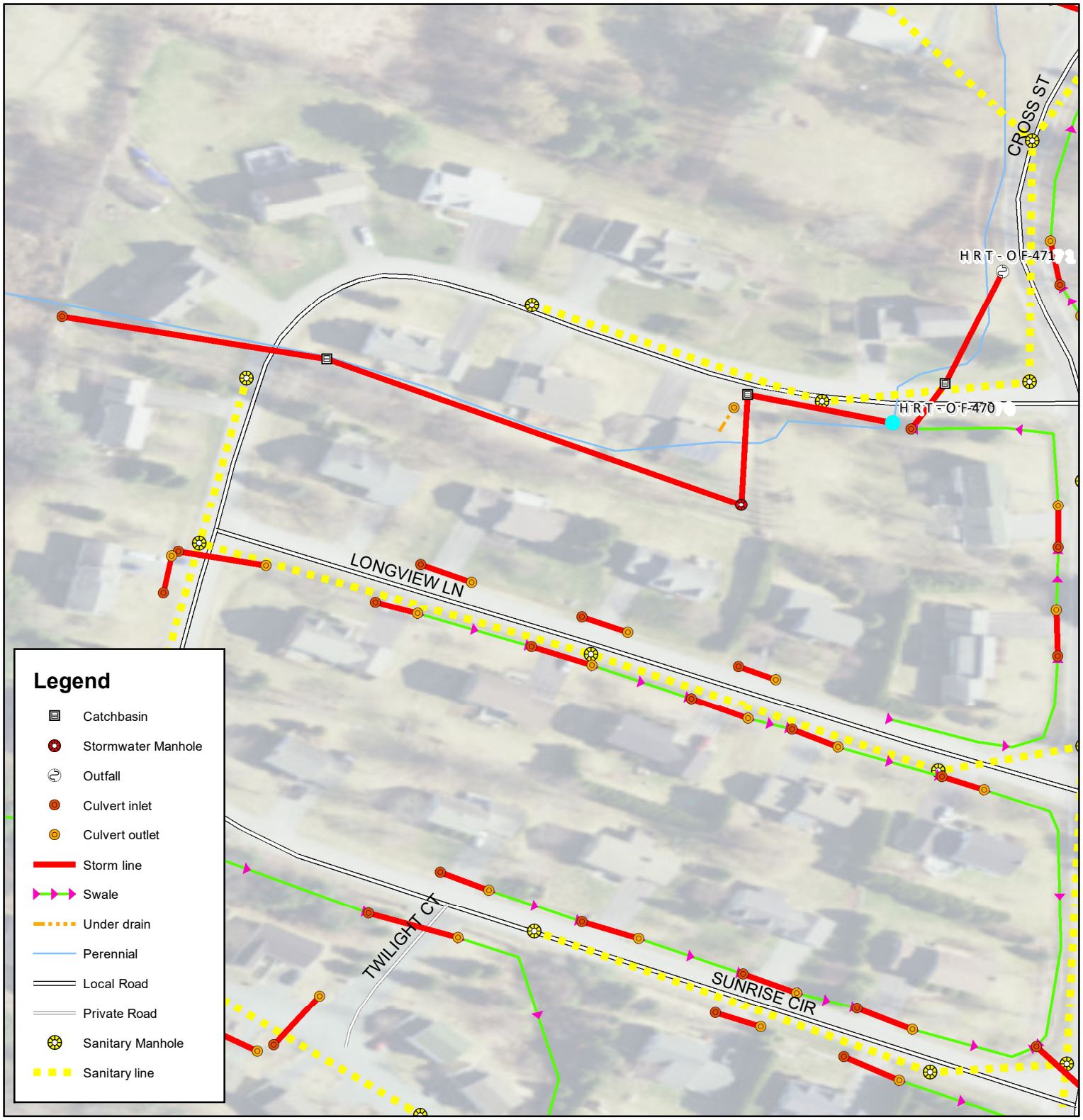
N

0 15 30 60 Feet

Advanced Investigation
HRT-OF-12

WATERSHED CONSULTING ASSOCIATES, LLC

Map Produced: 08/22/2018



Outfall ID	Infrastructure Code	Date	Notes	Flow?	Temp (C)	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Color, Odor, Turbidity, or Floatables?	Other Indicators?	Overall Characterization	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener	Notes
HRT-OF-470	HRT-CB-2214	8/3/2016	Cannot tell if flowing. Used for HRT-OF-471, 470 leads to 471 though open ditch.	yes	19.3	7.7	9.33	2.95		Poor pool quality	Possible	0	0		Outfall inlet lies in a low saturated area of standing water.
HRT-OF-471	HRT-OF-471	6/16/2016		yes	17.4	7.2	1156	1.63		Poor pool quality,Pipe benthic growth	Possible	0	0.25		
	HRT-OF-471	8/3/2016		yes	22	7.9	842	0.14		Deposits/Stains,Poor pool quality	Possible	Tr	Tr		
	HRT-CLVI-981	8/3/2016	Cannot tell if flowing	yes	21.5	7.7	763	0.38		Poor pool quality	Possible	Tr	0.25		

N

0 55 110 220 Feet

Advanced Investigation
HRT-OF-470

WATERSHED CONSULTING ASSOCIATES, LLC

Map Produced: 2/5/2018

Outfall ID	Infrastructure Code	Date	Notes	Flow?	Temp (C)	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Color, Odor, Turbidity, or Floatables?	Other Indicators?	Overall Characterization	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener	Notes
RND-OF-18	RND-OF-18	6/2/2016		yes	15.8	8	170	0.17	no		Possible	0.6	0.25		New England Precision. Question if floor drain is tied in.
	RND-OF-18	8/4/2016		yes	21.4	8.1	1108	0.15		Deposits/Stains	Possible	1.6	0.25		
	RND-CB-270	8/4/2016		no							Unlikely				

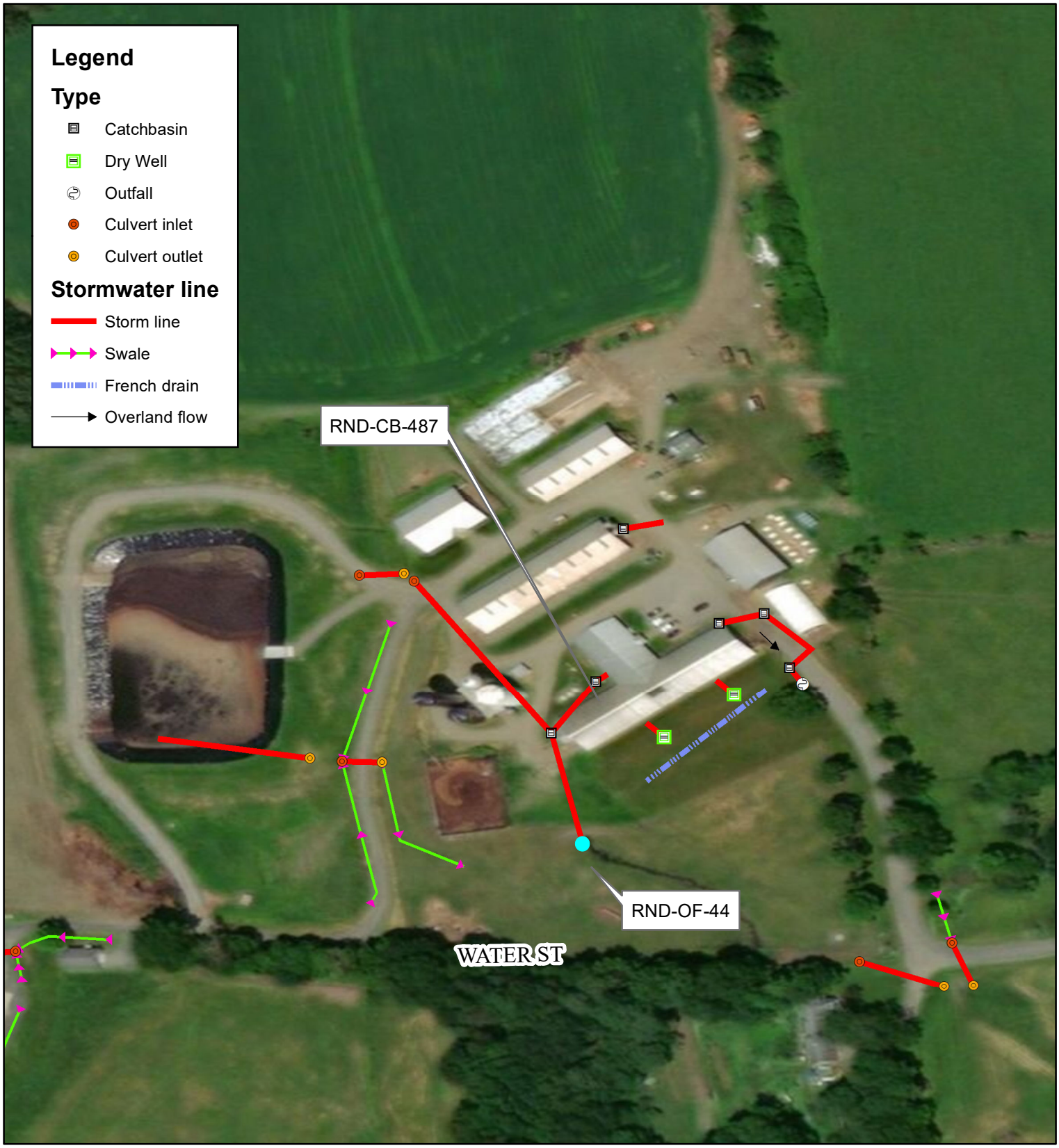
N

0 30 60 120 Feet

Advanced Investigation
RND-OF-18

WATERSHED CONSULTING ASSOCIATES, LLC

Map Produced: 8/21/2018



Outfall ID	Infrastructure Code	Date	Notes	Flow?	Temp (C)	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Color, Odor, Turbidity, or Floatables?	Other Indicators?	Overall Characterization	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener	Notes
RND-OF-44	RND-OF-44	7/20/2016	Detergent test approximated as sample was too viscous for comparator.	yes	18.6	6.5	1348	1.34	Color,Odor, Turbidity	Poor pool quality,Pipe benthic growth	Possible	0.4	0.5		Further access to the site was denied by facilities manager, Ted Manazir. No further investigation can be conducted on site, though water quality results indicate a possible illicit discharge.
	RND-CB-487	7/20/2016	Not flowing in CB but moderate flow at OF.	no							Unlikely				

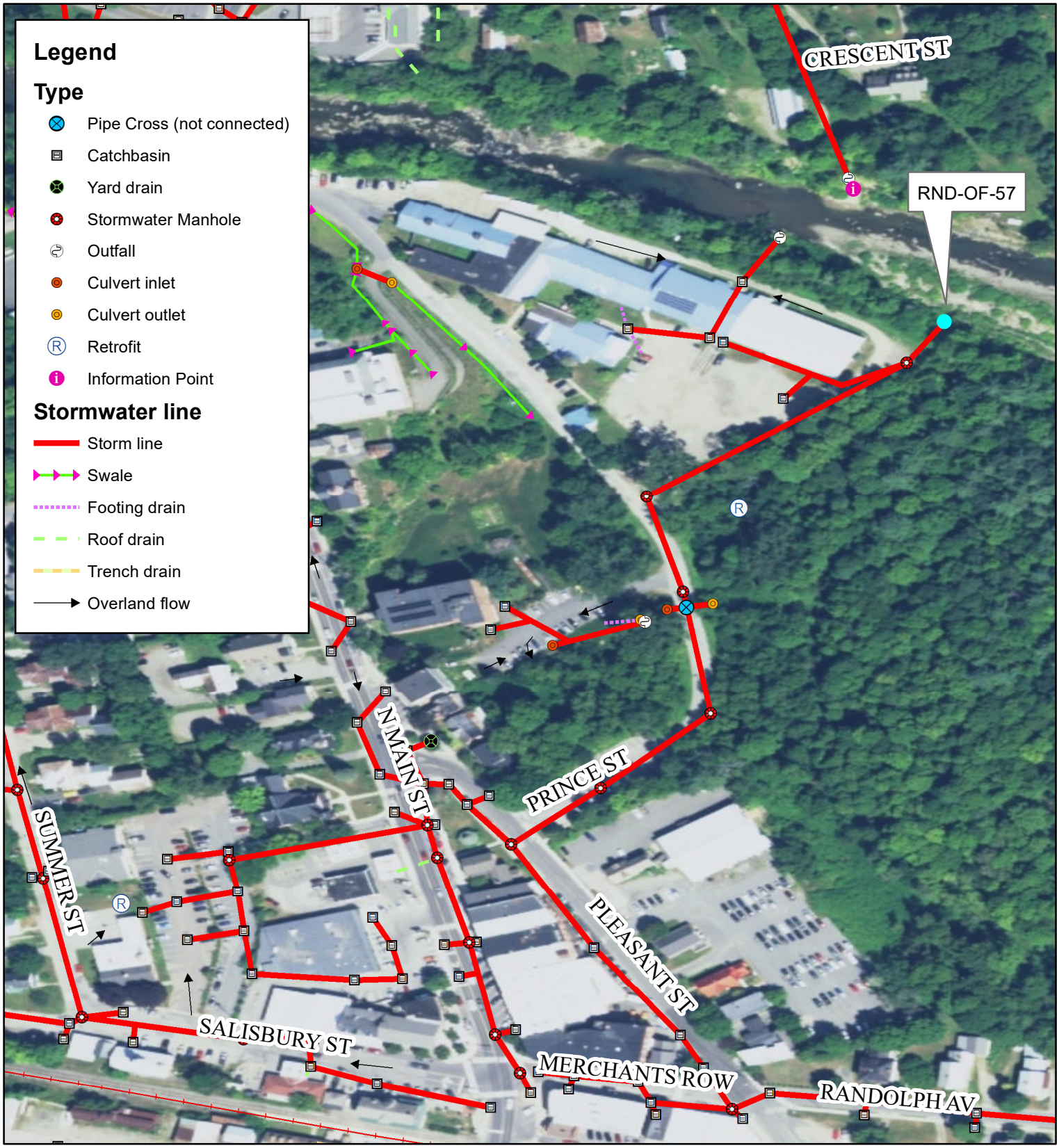
N

0 65 130 260 Feet

Advanced Investigation
Vermont Technical College Farm Facility
RND-OF-44

WATERSHED CONSULTING ASSOCIATES, LLC

Map Produced: 8/21/2018



Outfall ID	Infrastructure Code	Date	Notes	Flow?	Temp (C)	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Color, Odor, Turbidity, or Floatables?	Other Indicators?	Overall Characterization	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener	Notes
RND-OF-57	RND-OF-57	6/1/2016	Not flowing but looks suspicious. Sample from pool.	yes	18.1	7.5	435	0.12	no	Pipe benthic growth	Possible	0.2	0.5		Drains a large portion of the downtown area. Outfall never seen flowing however pool looks suspicious.
	RND-OF-57	8/4/2016	Not flowing sample of pool	yes	24	8.4	313	0.3			Possible	Tr	0.5		

N

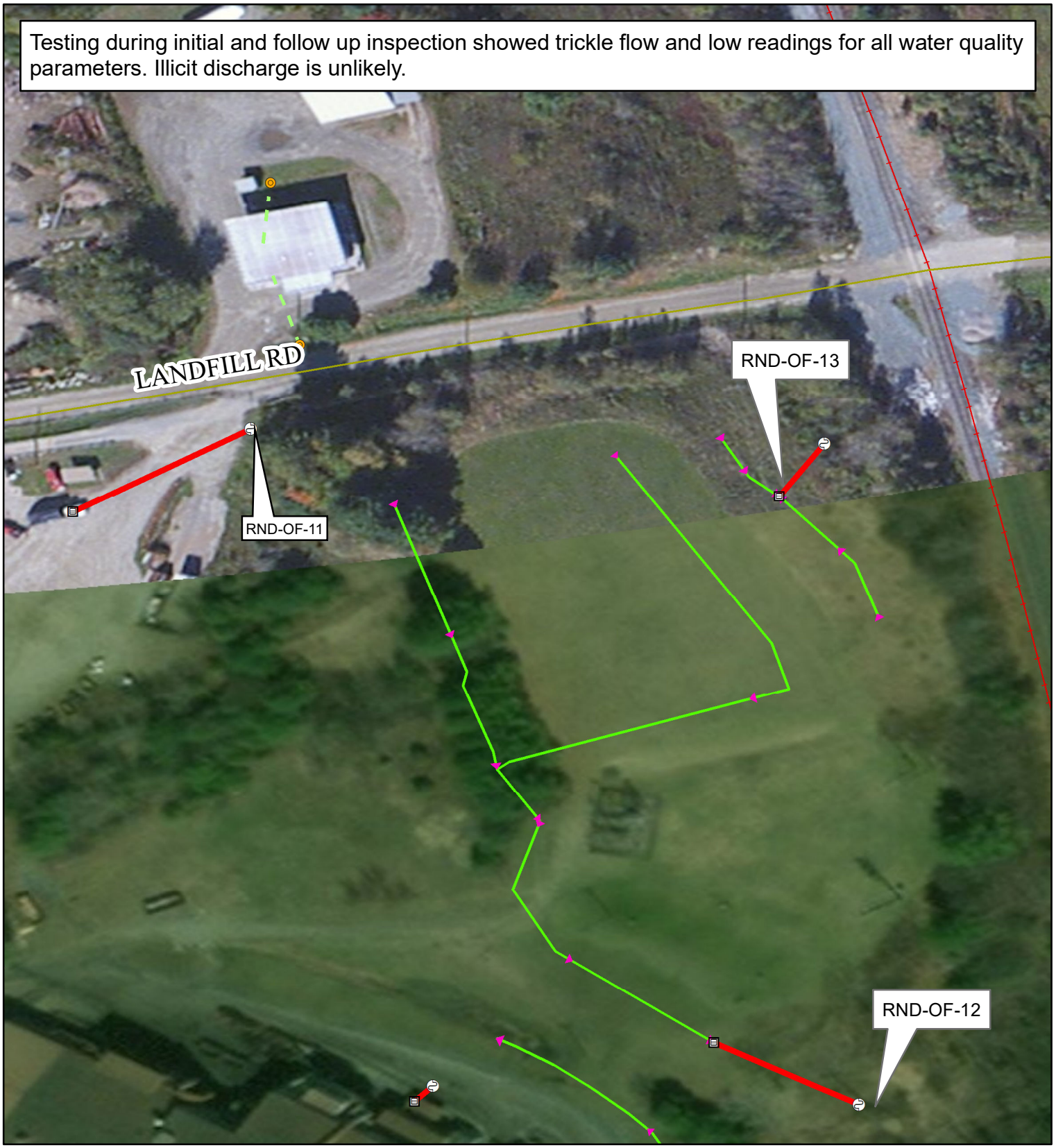
0 75 150 300 Feet

Advanced Investigation
RND-OF-57

WATERSHED CONSULTING ASSOCIATES, LLC

Map Produced: 8/21/2018

Testing during initial and follow up inspection showed trickle flow and low readings for all water quality parameters. Illicit discharge is unlikely.



Outfall ID	Infrastructure Code	Date	Notes	Flow?	Temp (C)	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Color, Odor, Turbidity, or Floatables?	Other Indicators?	Overall Characterization	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener	Notes
RND-OF-11	RND-OF-11	6/2/2016	Likely a footing drain. Values low.	yes	26.8	8.5	420	0.21	no		Possible	0	0.25		Likely a footing drain, no CBs in area.
	RND-OF-11	8/4/2016	Believed to be a footing drain. Unable to locate any catch basins in this area.	yes	26.5	8	416	0.15			Unlikely	0	0		

N

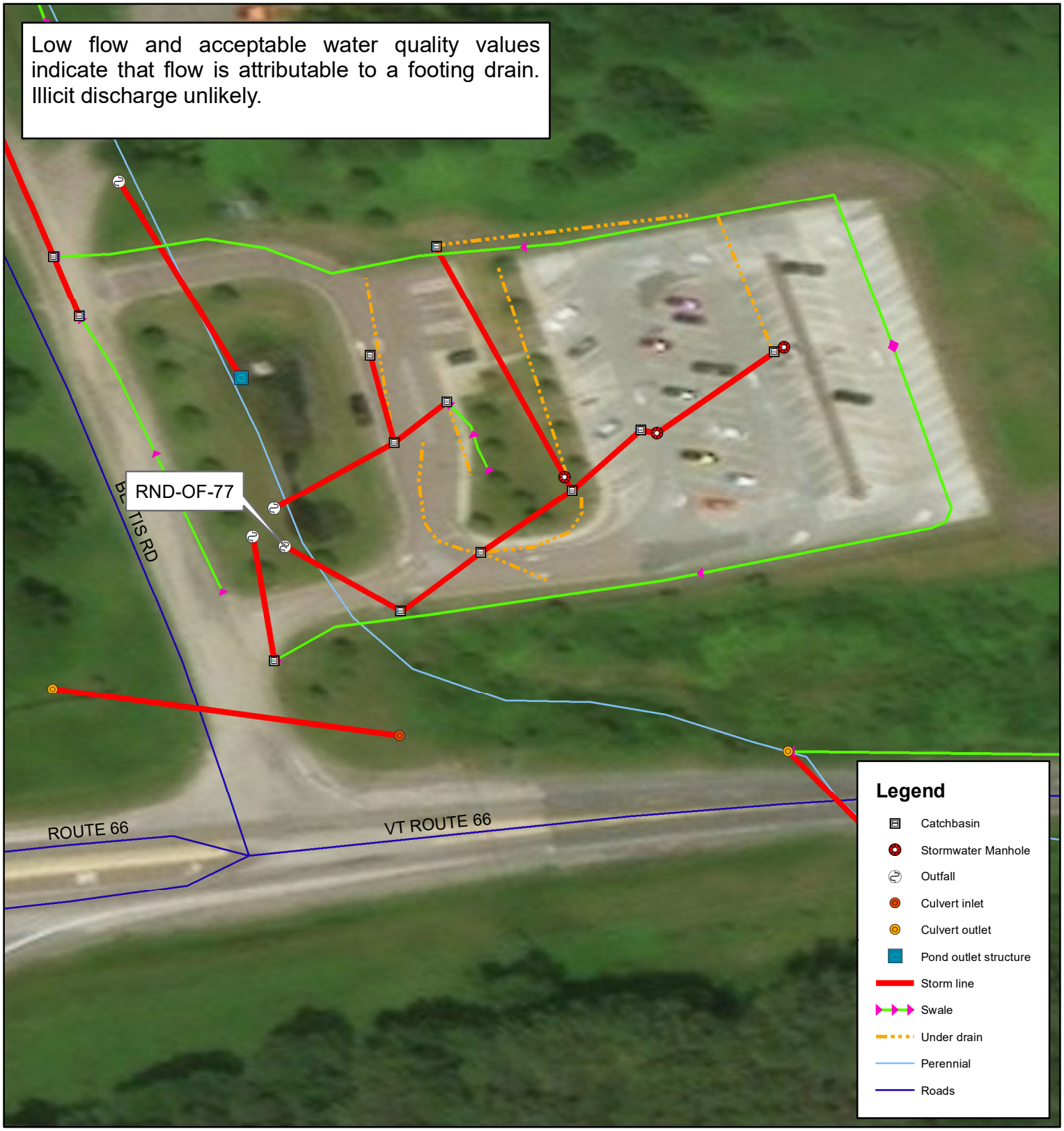
0 45 90 180 Feet

Advanced Investigation

RND-OF-11

WATERSHED CONSULTING ASSOCIATES, LLC

Map Produced: 05/03/2018



Infrastructure Code	Date	Flow?	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener
RND-OF-77	5/27/2016	yes	8.27	1072	0	0	0	0

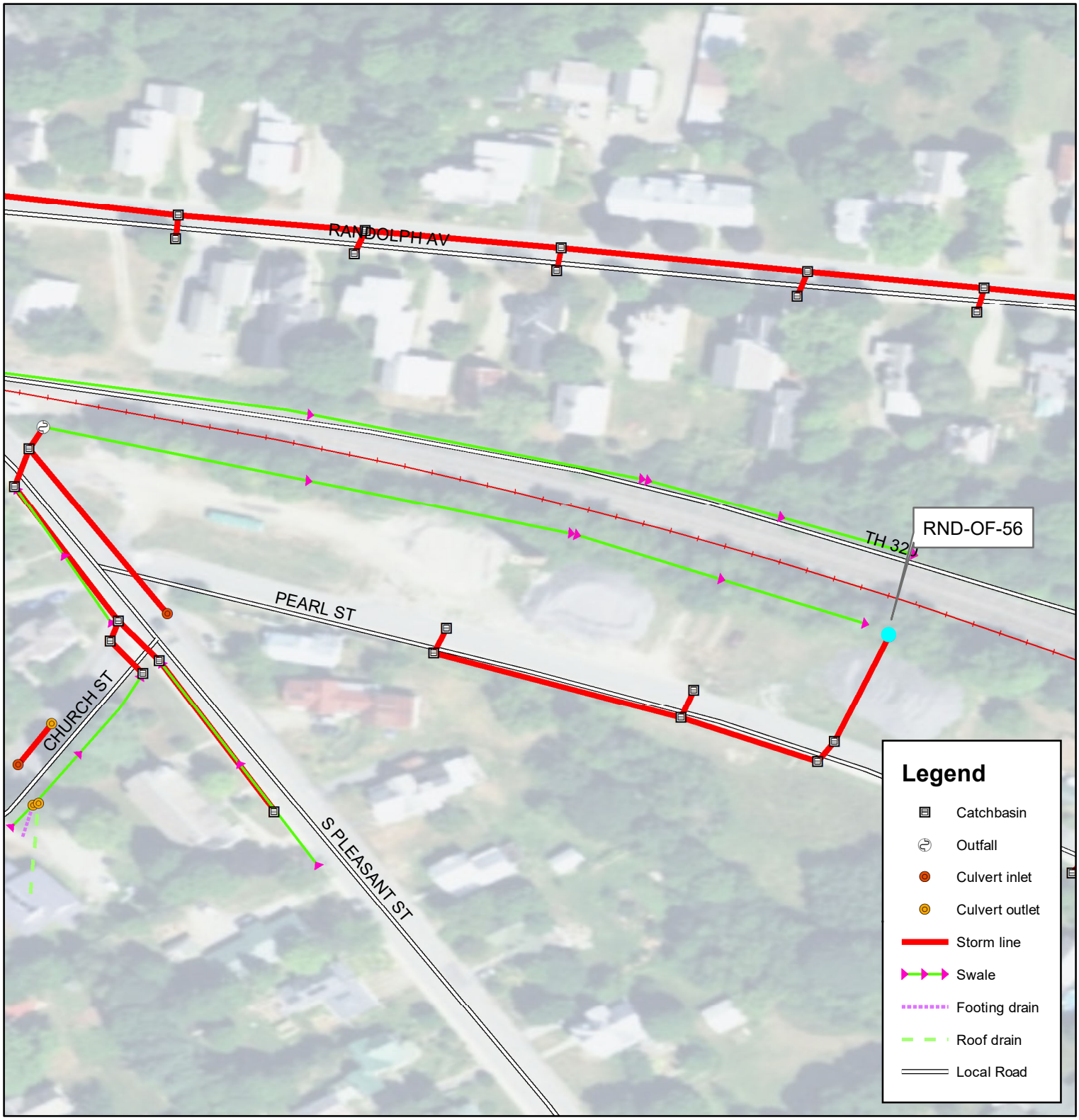
N

0 30 60 120 Feet

Advanced Investigation
RND-OF-77

WATERSHED CONSULTING ASSOCIATES, LLC

Map Produced: 04/26/2018



Outfall ID	Infrastructure Code	Date	Notes	Flow?	Temp (C)	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Color, Odor, Turbidity, or Floatables?	Other Indicators?	Overall Characterization	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener	Notes
RND-OF-56	RND-OF-56	6/2/2016	6-2-16: placed OB pad. Not enough flow to sample and test.	yes						Pipe benthic growth	Possible			6/2/16 to 6/3/16 Negative	Inadequate flow on first two visits to collect samples and analyze. No flow on third visit.
	RND-OF-56	8/4/2016	Dripping so slow unable to collect sample for tests.	yes						Pipe benthic growth	Possible				
	RND-CB-530	8/4/2016		no							Unlikely				
	RND-OF-56	8/2/2017	Third visit. No flow in any upstream infrastructure. No concern here.	no							Unlikely				

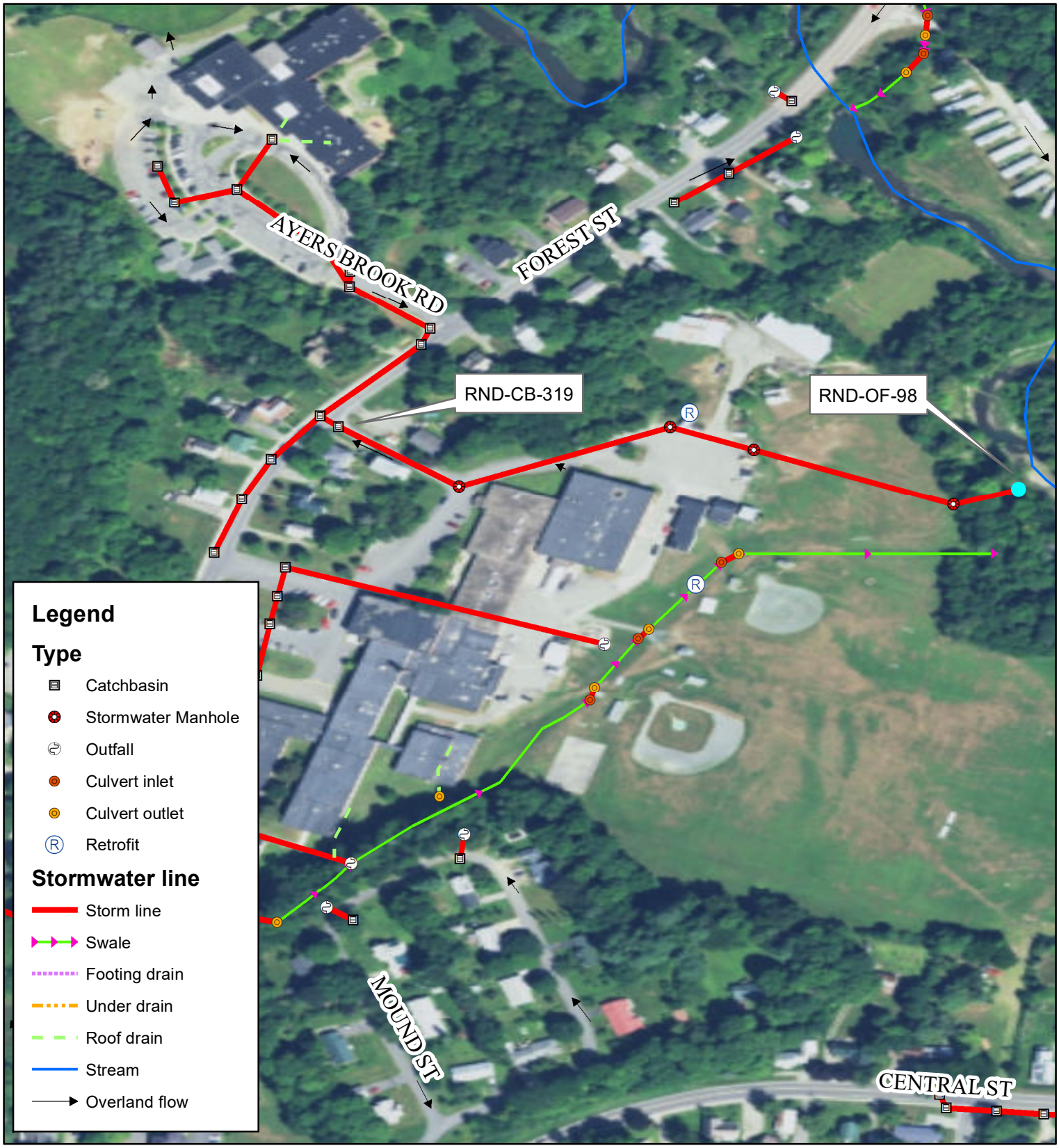
N

0 45 90 180 Feet

Advanced Investigation
RND-OF-56

WATERSHED CONSULTING ASSOCIATES, LLC

Map Produced: 8/22/2018



Outfall ID	Infrastructure Code	Date	Notes	Flow?	Temp (C)	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Color, Odor, Turbidity, or Floatables?	Other Indicators?	Overall Characterization	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener	Notes
RND-OF-98	RND-OF-98	6/2/2016	Dripping	yes	18.3	7.9	694	0.93	no	Deposits/Stains,Poor pool quality	Possible	0	0.25		Behind Randolph Technical Career Center
	RND-OF-98	8/4/2016	Dripping	yes	20	8.2	656	0.92		Deposits/Stains	Possible	0.2	0.5		
		8/4/2016		no							Unlikely				
	RND-CB-319	8/2/2017		no							Unlikely				

N

0 90 180 360 Feet

Advanced Investigation
Randolph Technical Career Center
RND-OF-98

WATERSHED CONSULTING ASSOCIATES, LLC

Map Produced: 8/21/2018

Outfall ID	Infrastructure Code	Date	Notes	Flow?	Temp (C)	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Color, Odor, Turbidity, or Floatables?	Other Indicators?	Overall Characterization	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener	Notes
RND-OF-52	RND-OF-52	6/3/2018	Unable to locate outfall. Only other infrastructure is area drains within neighboring building. VTrans mapped by "Hazmat Plans" and "Orthophotography Interpretation." Many test wells in area.												Outfall not found, no access to system.

N

0 15 30 60 Feet

Advanced Investigation
RND-OF-52

WATERSHED CONSULTING ASSOCIATES, LLC

Map Produced: 8/21/2018

Upon initial investigation the outfall was not found as it was buried under rip rap. The upstream catchbasin, RCH-CB-6 was tested as proxy and revealed slightly elevated values for multiple water quality parameters. After a second visit revealed no flow present in upstream catchbasins smoke testing was deemed most effective. No smoke was seen discharging from any non-stormwater related infrastructure. Illicit discharge at the outfall is unlikely.

Outfall ID	Infrastructure Code	Date	Notes	Flow?	Temp (C)	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Color, Odor, Turbidity, or Floatables?	Other Indicators?	Overall Characterization	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener	Notes
RCH-OF-10	RCH-OF-10	4/18/2016	Unable to locate outfall. See: RCH-CB-6												
	RCH-CB-6	4/18/2016	Unable to locate RCH-OF-10.	yes	10	7.1	1848	0.21	no		Possible		0.25		
	RCH-CB-6	5/27/2016	Unable to locate RCH-OF-10.	yes	15.5	7.4	1981	0.35	no		Possible	0	0.25		
	RCH-CB-76	5/27/2016	Dry	no							Unlikely				
	RCH-CB-32	5/27/2016	Dry	no							Unlikely				

N

0 50 100 200 Feet

Advanced Investigation
RCH-OF-10

WATERSHED CONSULTING ASSOCIATES, LLC

Map Produced: 05/03/2018

Initial inspection had small amount of flow with non-alarming water quality parameter readings. A second visit contained no flow at outfall and only upstream catchbasin. Given the small size of the system and low inititial readings, illicit discharge is deemed unlikely.

Outfall ID	Infrastructure Code	Date	Notes	Flow?	Temp (C)	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Color, Odor, Turbidity, or Floatables?	Other Indicators?	Overall Characterization	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener	Notes
RCH-OF-16	RCH-OF-16	4/18/2016		yes	12.4	7.7	75	0.3	no	Pipe benthic growth	Possible		Tr		Single catch basin out falling across Route 100 South.
	RCH-OF-16	5/27/2016	CB above dry	no							Unlikely				
	RCH-CB-34	5/27/2016		no							Unlikely				

N

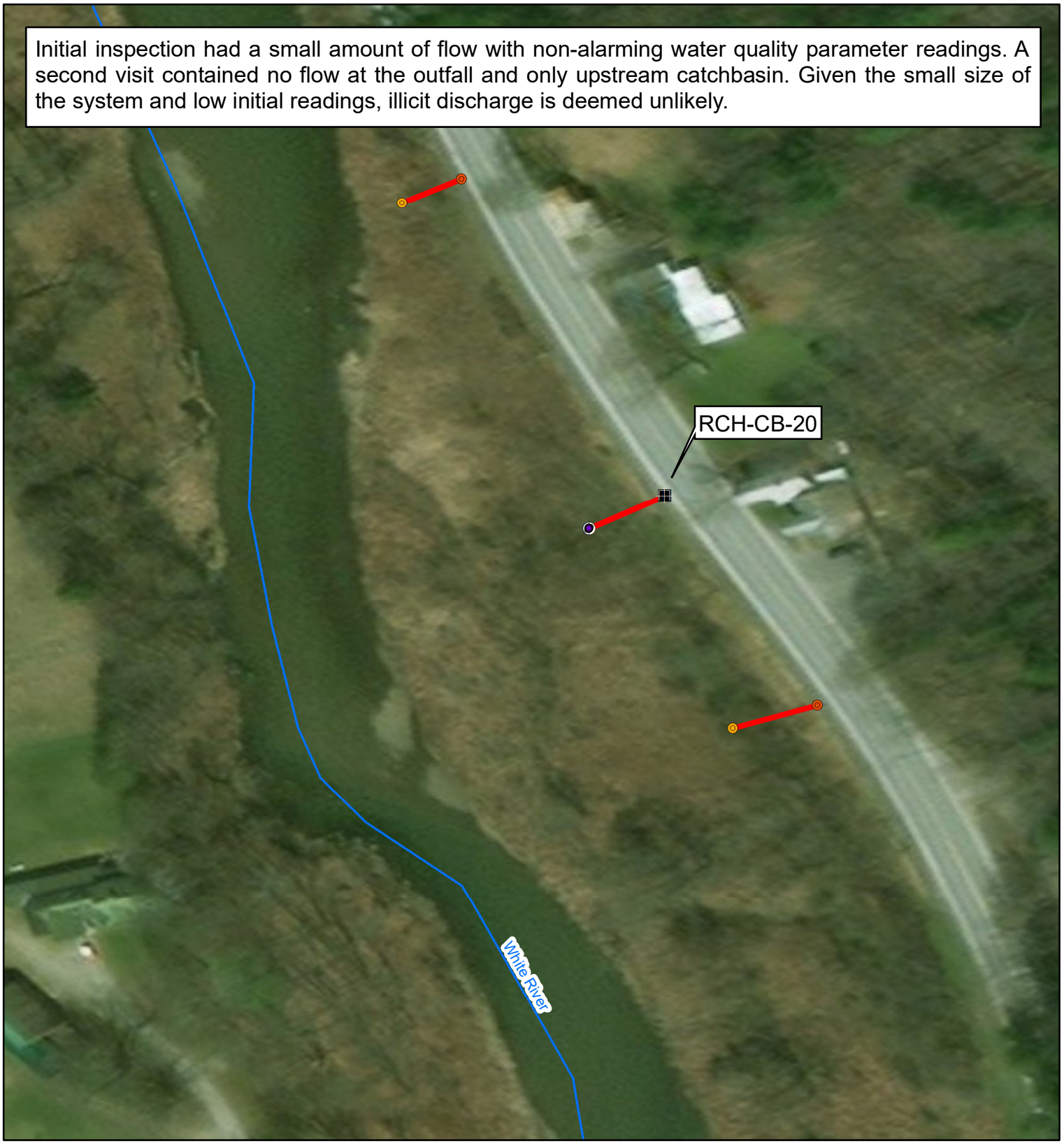
0 20 40 80 Feet

Advanced Investigation
RCH-OF-16

WATERSHED CONSULTING ASSOCIATES, LLC

Map Produced: 05/03/2018

Initial inspection had a small amount of flow with non-alarming water quality parameter readings. A second visit contained no flow at the outfall and only upstream catchbasin. Given the small size of the system and low initial readings, illicit discharge is deemed unlikely.



Outfall ID	Infrastructure Code	Date	Notes	Flow?	Temp (C)	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Color, Odor, Turbidity, or Floatables?	Other Indicators?	Overall Characterization	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener	Notes
RCH-OF-29	RCH-OF-29	4/18/2016		yes	8.5	7.9	38	0.27	no	Pipe benthic growth	Possible		0.25		Single catch basin out falling across Route 100 North. Single catch basin receiving flow from above stream. No need for more investigation.
	RCH-OF-29	5/29/2016	Stream flow	yes							Unlikely				
	RCH-CB-20	5/27/2016	Stream running into catch basin	yes					no		Unlikely				

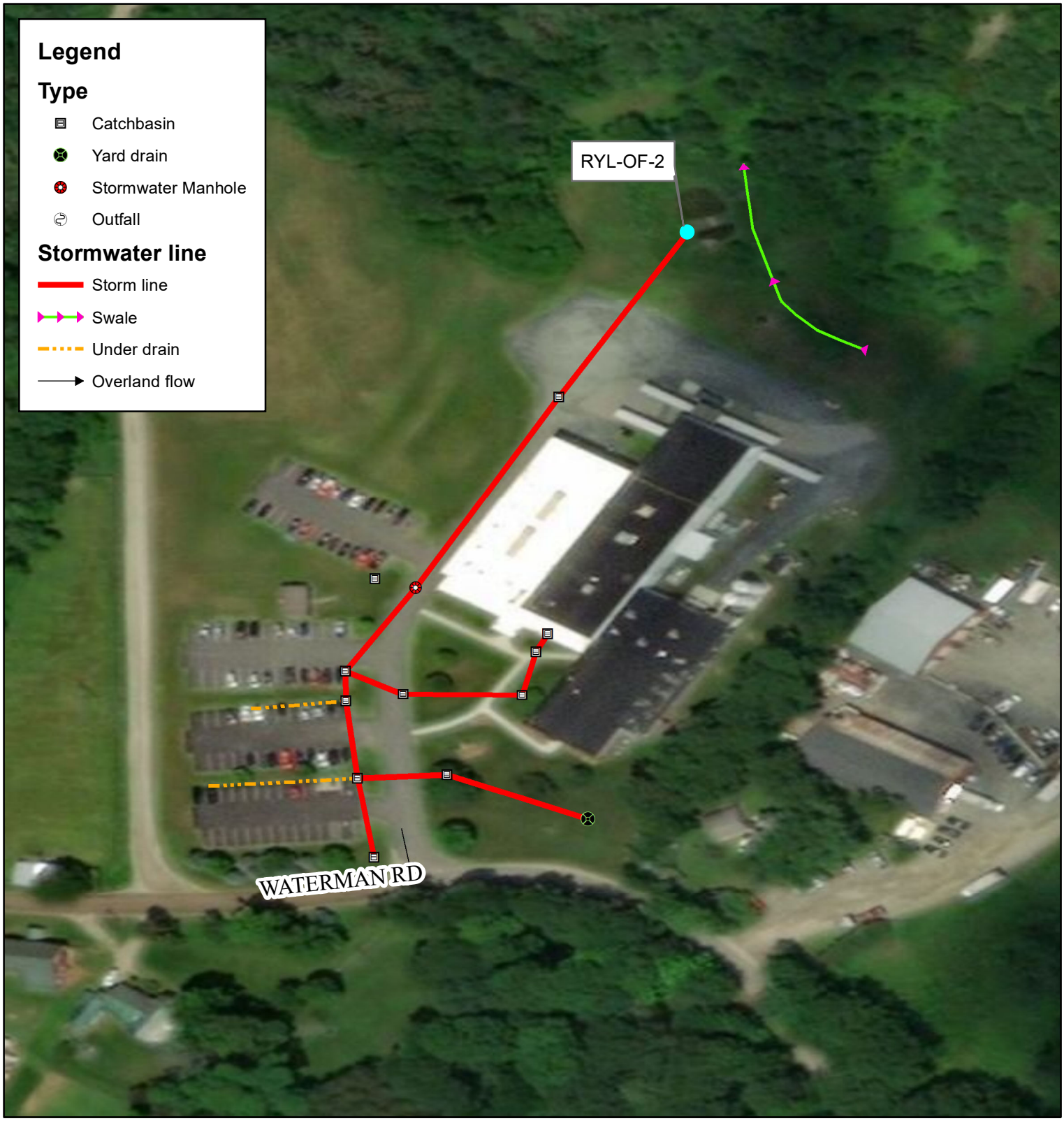
N

0 37.5 75 150 Feet

Advanced Investigation
RCH-OF-29

WATERSHED CONSULTING ASSOCIATES, LLC

Map Produced: 05/03/18



Outfall ID	Infrastructure Code	Date	Notes	Flow?	Temp (C)	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Color, Odor, Turbidity, or Floatables?	Other Indicators?	Overall Characterization	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener	Notes
RYL-OF-2	RYL-OF-2	7/20/2016	Detergents test was approximated because the sample was too viscous.	yes	21.7	7.9	110	5.3		Pipe benthic growth,Poor pool quality	Possible	Tr	0.5		Smoke testing recommended, could settle on date or time with facilities management during study timeline.
	RYL-OF-2	8/4/2016		yes	21.1	8.1	172	2.36		Poor pool quality,Pipe benthic growth	Possible	0	0.5		
	RYL-CB-290	8/4/2016		yes	21.4	7.7	229	4.52			Possible	Tr	0.75		

N

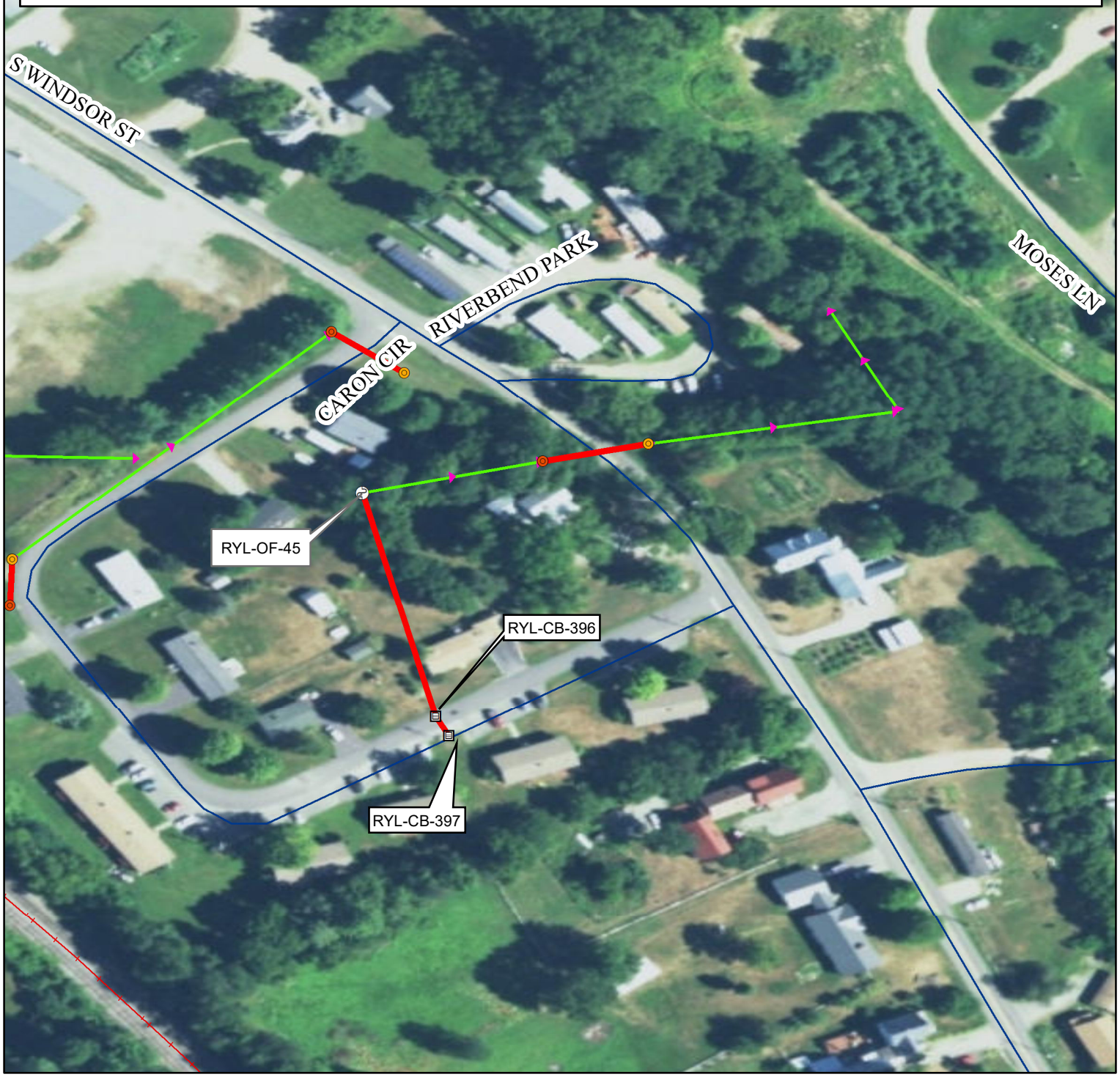
0 50 100 200 Feet

Advanced Investigation
RYL-OF-2

WATERSHED CONSULTING ASSOCIATES, LLC

Map Produced: 8/21/2018

Slightly elevated water quality parameters at the outfall and RYL-CB-397 were cause for concern and smoke testing was performed in August of 2017. No smoke was seen discharging from any non-stormwater related infrastructure. Conversely, smoke was injected into the sanitary sewer line and no smoke was seen discharging from any stormwater related infrastructure. Illicit discharge unlikely.



Outfall ID	Infrastructure Code	Date	Notes	Flow?	Temp (C)	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Color, Odor, Turbidity, or Floatables?	Other Indicators?	Overall Characterization	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener	Notes
RYL-OF-45	RYL-OF-45	5/13/2016		yes	11.9	7.6	2502	0.34			Possible		0		Runs through small neighborhood.
	RYL-OF-45	5/23/2016	Could not measure flow, too shallow	yes	15.4	7.4	224	0.38	no	Pipe benthic growth	Possible	0	0		
	RYL-CB-397	5/13/2016		yes	13.1	7.5	258	0.13	no		Unlikely				
	RYL-CB-396	5/23/2016		yes											

N

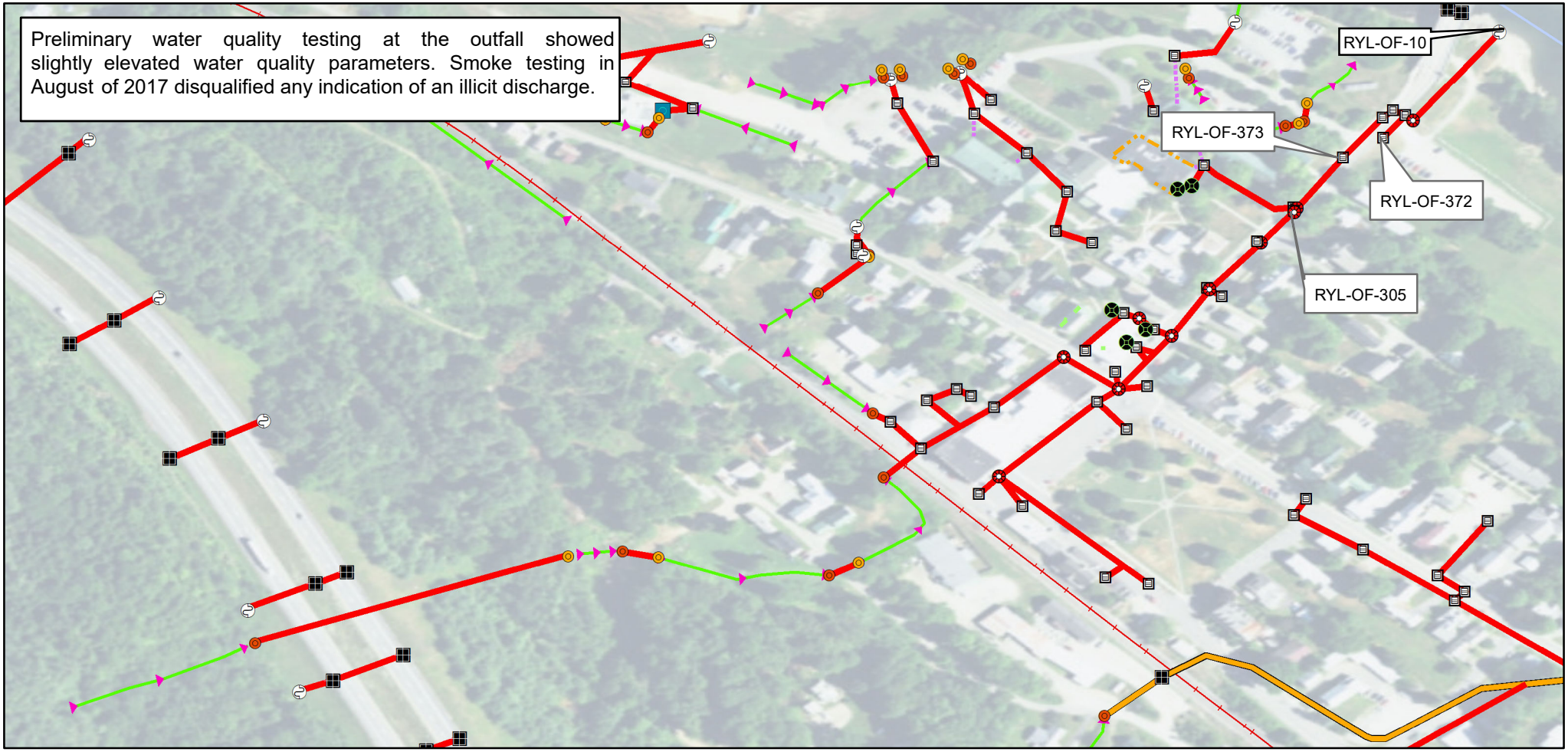
0 50 100 200 Feet

Advanced Investigation

RYL-OF-45

WATERSHED CONSULTING ASSOCIATES, LLC

Map Produced: 5/3/2018



Outfall ID	Infrastructure Code	Date	Notes	Flow?	Temp (C)	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Color, Odor, Turbidity, or Floatables?	Other Indicators?	Overall Characterization	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener	Notes
RYL-OF-10	RYL-OF-10	5/13/2016		yes	11.2	7.9	770	0.37		Pipe benthic growth	Possible		Tr		Outfalls into White River draining most of South Royalton.
	RYL-OF-10	5/23/2016		yes	15	8.3	710	0.28	no	Pipe benthic growth	Possible	0	Tr		
	RYL-CB-305	5/13/2016	No flow observed to RYL-OF-10	no							Unlikely				
	RYL-CB-305	5/23/2016		no							Unlikely				
	RYL-CB-372	5/23/2016	Dry	no							Unlikely				
	RYL-CB-373	5/13/2016	Point of highest flow to RYL-OF-10	yes											
	RYL-CB-373	5/23/2016		yes											
	RYL-OF-10	8/2/2017		no							Unlikely				

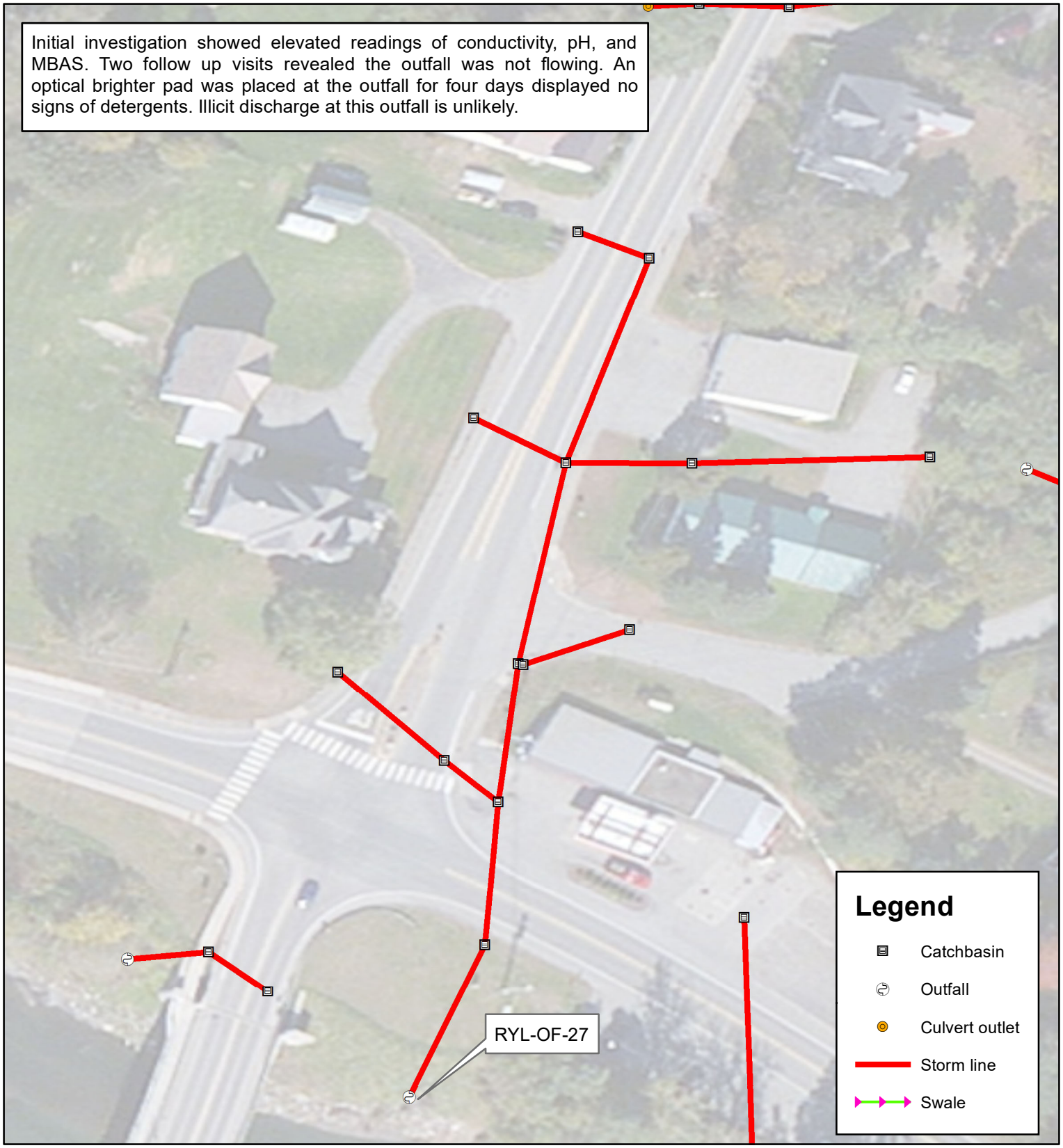
N

0 115 230 460 Feet

Advanced Investigation
RYL-OF-10

WATERSHED CONSULTING ASSOCIATES, LLC

Map Produced: 02/02/2018



Outfall ID	Infrastructure Code	Date	Notes	Flow?	Temp (C)	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Color, Odor, Turbidity, or Floatables?	Other Indicators?	Overall Characterization	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener	Notes
RYL-OF-27	RYL-OF-27	5/13/2016		yes	11.8	8.4	2454	0	no	Deposits/Stains	Possible		0.5		Outfalls into White River draining most of developed area on north side of bridge. OB pad set 5/23/16 to 5/27/16 (negative).
	RYL-OF-27	5/23/2016		no							Unlikely			5/23/16 to 5/27/16 Negative	
	RYL-OF-27	5/27/2016		no							Unlikely				

N

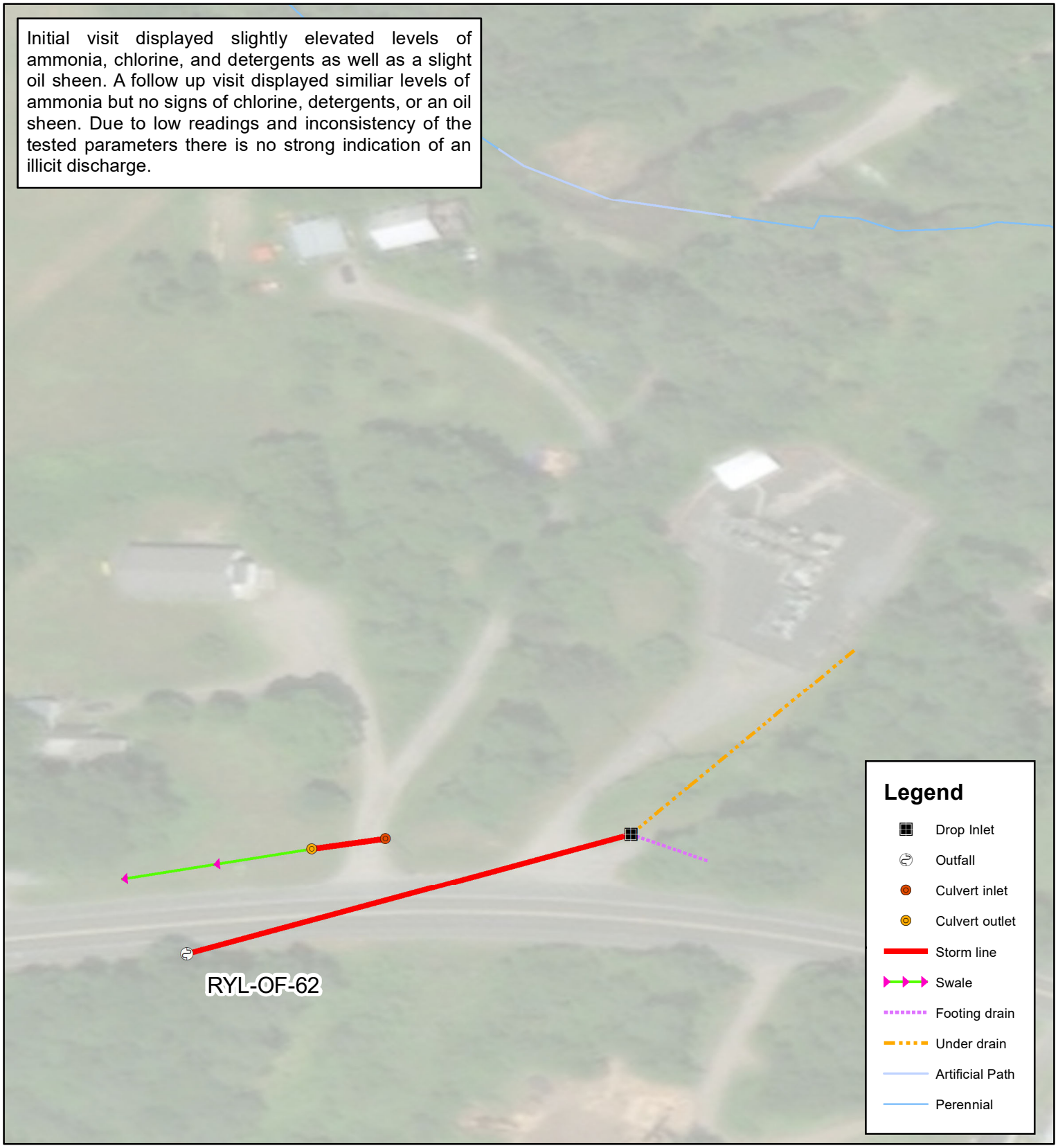
0 25 50 100 Feet

Advanced Investigation
RYL-OF-27

WATERSHED CONSULTING ASSOCIATES, LLC

Map Produced: 05/03/2018

Initial visit displayed slightly elevated levels of ammonia, chlorine, and detergents as well as a slight oil sheen. A follow up visit displayed similiar levels of ammonia but no signs of chlorine, detergents, or an oil sheen. Due to low readings and inconsistency of the tested parameters there is no strong indication of an illicit discharge.



Outfall ID	Infrastructure Code	Date	Notes	Flow?	Temp (C)	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Color, Odor, Turbidity, or Floatables?	Other Indicators?	Overall Characterization	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener	Notes
RYL-OF-62	RYL-OF-62	5/23/2016	Could not measure flow.	yes	11.6	8	462	0.3	yes	Poor pool quality	Suspect	0.2	0.25		Storm line crosses Route 107. Source of outfall unknown.
	RYL-OF-62	6/2/2016		yes	11.9	7.7	486	0.21	no	Poor pool quality	Unlikely	0	0		
	RYL-CB-429	6/2/2016	Flowing	yes						Poor pool quality	Unlikely				

N

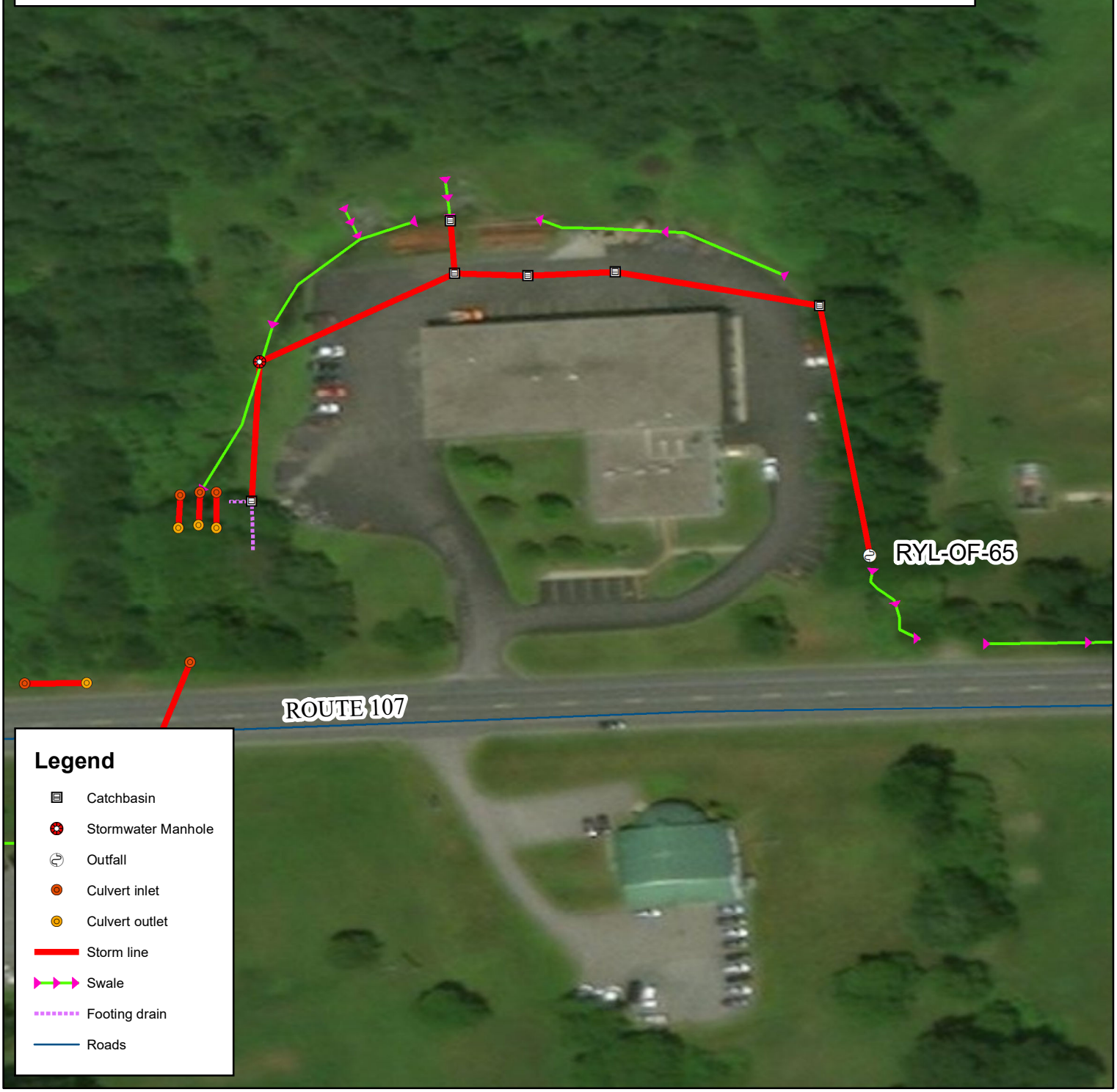
0 37.5 75 150 Feet

Advanced Investigation
RYL-OF-62

WATERSHED CONSULTING ASSOCIATES, LLC

Map Produced: 05/03/2018

Due to slightly elevated ammonia readings during the initial investigation a follow up visit took place the following week. Flow was attributed to a swale which lines the back parking lot of Green Mountain Power. Suds were observed and staff was informed to wash vehicles inside where wash water could drain to the sanitary sewer. No other illicit discharge is suspected.



Outfall ID	Infrastructure Code	Date	Notes	Flow?	Temp (C)	pH	Conductivity (µS/cm)	Ammonia (mg/L)	Color, Odor, Turbidity, or Floatables?	Other Indicators?	Overall Characterization	Chlorine (mg/L)	Detergents (ppm)	Optical Brightener	Notes
RYL-OF-65	RYL-OF-65	5/23/2016		yes	13.2	7.8	104	0.36	no	Pipe benthic growth,Poor pool quality	Possible	0	0		Stormwater system for Green Mountain power. Suds found on first visit most likely from a single wash event.
	RYL-OF-65	6/2/2016		yes	18.6	8	146	0.06	no		Unlikely	0	0		

N

0 40 80 160 Feet

Advanced Investigation
RYL-OF-65

WATERSHED CONSULTING ASSOCIATES, LLC

Map Produced: 5/3/2018

APPENDIX 2

All Results Summary Table

Table 1. Town of Barnard Summary

Outfall ID	Infrastructure ID	Date	Investigator	Notes	Flow?	Flow Description	Flow Location	Flow (CFS)	Temp. (C)	pH	Conductivity (us/cm)	Ammonia (mg/L)	Canine Investigation?	Physical Indicators	Non-Flow Related Indicators?	Non-Flow Related Indicators	Overall Characterization	Sample for Lab?	Sample Source	Optical Brightner Pad Set?	OB Set Date	OB Removed Date	Maintenance Needed?	Maintenance Notes	Lab Analysis Date	Parameters Tested	Chlorine (mg/L)	Detergents (ppm)	Optical Brightner Present?	Lab Notes	Drainage Structure	Pipe Material	Pipe Submerged?	Submersion Amount	Pipe Diameter (inches)
BRN-4-OF	BRN-OF-4	2017-08-02	Dana Allen		yes	Trickle	Closed Pipe		21.4	8.61	2270	0.1		no	no	,,,,,	Unlikely	yes	Flow				no								Pipe	CMP	N/A		40
BRN-5-OF	BRN-OF-5	2016-04-25	Molly Bruno		yes	Trickle	Closed Pipe	0	8	8.36	1042	0.03	no	no	no	,,,,,	Possible (2 or more indicators present)	yes	Flow	no			no		2016-04-25	Detergents (MBAS)		0.25			Pipe	CMP	N/A		18
BRN-5-OF	BRN-OF-5	2016-06-02	Kateri Bisceglio	Used 10mL bottle to measure discharge due to such insignificant flow rate.	yes	Trickle	Closed Pipe		22.4	8.71	1633	0	no	no	yes	Pipe benthic growth,,,,,	Possible (2 or more indicators present)	yes	Flow	no			no								Pipe	CMP	N/A		18
BRN-5-OF	BRN-OF-5	2016-08-04	Molly Bruno	Actually OF-5	no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CMP	N/A		18
BRN-OF-1	BRN-OF-1	2016-04-25	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CMP	Sediment	Partially	28
BRN-OF-10	BRN-OF-10	2016-04-25	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	PVC	N/A		14
BRN-OF-11	BRN-OF-11	2016-04-25	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CPP	N/A		15
BRN-OF-12	BRN-OF-12	2016-04-25	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			yes	Crushed pipe, submerged in sediment							Pipe	CMP	Sediment	Partially	18
BRN-OF-13	BRN-OF-13	2016-04-25	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CMP	Water	Partially	12
BRN-OF-15	BRN-CB-34	2016-04-25	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			no												
BRN-OF-16	BRN-OF-16	2016-04-25	Molly Bruno	Larger metal pipe Ammonia -0.03	yes	Moderate	Closed Pipe	0.004	7.6	7.86	440	0		no	yes	Poor pool quality,Deposits /Stains,,,Colors, ,Iron staining	Unlikely	yes	Flow	no			no		2016-04-25	Detergents (MBAS)		0		Trace detergents	Pipe	CMP	N/A		18
BRN-OF-16	BRN-OF-16	2016-04-25	Molly Bruno	16B Other blue pipe next to OF-16 PVC 4" Trickle 50seconds to fill 1ml Ammonia -0.02	yes	Trickle	Closed Pipe	0.001	6.4	7.78	831	0.39		no	yes	Poor pool quality,,,Colors,, Iron deposits	Possible (2 or more indicators present)	yes	Flow	no			no		2016-04-25	Detergents (MBAS)		0		Trace detergents	Pipe	CMP	N/A		18
BRN-OF-16	BRN-OF-16	2017-08-24	Dana Allen	Suspect ammonia result incorrect due to contaminated reagent 2. Tested DI water to check. Result : 0.23 mg/L. Need to retest with good reagent.	yes	Moderate	Closed Pipe		18.1	7.94	1115	0.64		no	no	,,,,,	Possible (2 or more indicators present)	yes	Flow	no					2017-08-24	Detergents (MBAS)		0.25			Pipe	CMP	N/A		18
BRN-OF-17	BRN-OF-17	2016-04-25	Molly Bruno		yes	Moderate	Closed Pipe	1	12.1	8.06	445	0.4	no	no	yes	Deposits/Stains, Orange iron staining,,,,Heav en orange staining	Possible (2 or more indicators present)	yes	Flow	no			no		2016-04-25	Detergents (MBAS)		0		Trace detergents	Pipe	CMP	N/A		24
BRN-OF-17	BRN-OF-17	2017-08-24	Dana Allen	Suspect ammonia result incorrect due to contaminated reagent. Will re-test.	yes	Moderate	Closed Pipe		20.3	7.81	720	0.63				,,,,,	Possible (2 or more indicators present)	yes	Flow	no					2017-08-24	Detergents (MBAS)		0.25			Pipe	CMP	N/A		24
BRN-OF-2	BRN-OF-2	2016-04-25	Molly Bruno	Eaf heat tracing pipe mechanism in pvc	no								no		no	,,,,,	Unlikely	no		no			no								Pipe	PVC	N/A		8
BRN-OF-3	BRN-CLVI-96	2016-04-25	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			yes	Lots of leaf litter blocking inlet							Pipe	CMP	N/A		12
BRN-OF-5	BRN-CB-2	2016-08-04	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			no												
BRN-OF-6	BRN-OF-6	2016-04-25	Molly Bruno	Heavy erosion through back yard seen and notes by residence.	no								no		no	,,,,,	Unlikely	no		no			yes	Leaf litter and sediment submerged							Pipe	CMP	Sediment	Partially	12
BRN-OF-7	BRN-OF-7	2016-04-25	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CMP	N/A		16
BRN-OF-8	BRN-OF-8	2016-04-25	Molly Bruno		no								no		yes	Poor pool quality,,,Oil Sheen,Colors,, Orange iron growth and small amount of sheen	Unlikely	no		no			no								Pipe	RCP	Water	Partially	18
BRN-OF-9	BRN-OF-9	2016-04-25	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CMP	Sediment	Partially	14

Table 2. Town of Bethel Summary

Outfall ID	Infrastructure ID	Date	Investigator	Notes	Flow?	Flow Description	Flow Location	Flow (CFS)	Temp. (C)	pH	Conductivity (us/cm)	Ammonia (mg/L)	Canine Investigation?	Physical Indicators	Non-Flow Related Indicators?	Non-Flow Related Indicators	Overall Characterization	Sample for Lab?	Sample Source	Optical Brightner Pad Set?	OB Set Date	OB Removed Date	Maintenance Needed?	Maintenance Notes	Lab Analysis Date	Parameters Tested	Chlorine (mg/L)	Detergents (ppm)	Optical Brightner Present?	Lab Notes	Pipe Material	Pipe Submerged?	Submersion Amount	Pipe Diameter (inches)
BTH-OF-1	BTH-OF-1	2016-05-12	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			yes	Slightly crushed and rusting							CMP	N/A		14
BTH-OF-10	BTH-OF-10	2016-05-12	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			yes	Scour beneath flow path							CMP	N/A		15
BTH-OF-11	BTH-OF-11	2016-05-12	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			yes	Sediment blocking flow							PVC	Sediment	Fully	6
BTH-OF-12	BTH-OF-12	2016-05-12	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			yes	Sediment build up							CMP	Sediment	Partially	24
BTH-OF-13	BTH-OF-13	2016-05-12	Kerrie Garvey		yes	Trickle	Closed Pipe	8.75	11.1	8.24	310	0.25	no	no	no	,,,,,	Unlikely	no		no			yes	Pipe half submerged in sediment							CMP	Sediment	Partially	18
BTH-OF-14	BTH-OF-14	2016-05-12	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			yes	Pipe buried, erosion, trash								Sediment	Fully	
BTH-OF-15	BTH-OF-15	2016-05-12	Kerrie Garvey		yes	Trickle	Closed Pipe	0.004	13.8	7.03	118	0.29	no	no	yes	Pipe benthic growth,,,,,Continues below pipe	Unlikely	yes	Flow	no			yes	outfall channel erosion	2016-05-13	Detergents (MBAS)		0			CMP	N/A		6
BTH-OF-15	BTH-CB-118	2016-05-27	Molly Bruno	Trickle in from two pipes, mountain side and opposite traffic direction .	yes	Trickle							no	no	no	,,,,,	Unlikely	no		no			no											
BTH-OF-15	BTH-CB-119	2016-05-27	Dana Allen		no								no		no	,,,,,	Unlikely	no		no			no											
BTH-OF-17	BTH-OF-17	2016-05-12	Kerrie Garvey		yes	Moderate	Closed Pipe	0.012	12.9	6.93	116	0.28	no	no	yes	Pipe benthic growth,,,,,Below pipe	Unlikely	yes	Flow	no			yes	Erosion below outfall	2016-05-13	Detergents (MBAS)		0			PVC	N/A		24
BTH-OF-18	BTH-OF-18	2016-05-12	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			yes	Sediment build up, scour							Concrete	N/A		18
BTH-OF-19	BTH-OF-19	2016-05-12	Molly Bruno		yes	Moderate	Closed Pipe	0.044	8.8	7.15	244	0.12	no	no	yes	Deposits/Stains,,,,,Rust y brown color in flow path and pipe	Unlikely	yes	Flow	no			no		2016-05-13	Detergents (MBAS)		0			CPP	N/A		24
BTH-OF-2	BTH-OF-2	2016-05-12	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			no								CPP	N/A		12
BTH-OF-20	BTH-OF-20	2016-05-12	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			yes	Breaking, many cigarettes							PVC	N/A		4
BTH-OF-21	BTH-OF-21	2016-05-12	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			no								PVC	N/A		4
BTH-OF-22	BTH-OF-22	2016-05-12	Molly Bruno	Could not preform flow measurement because on dam wall	yes	Moderate	Closed Pipe		14	7.34	303	0.26	no	no	no	,,,,,	Unlikely	yes	Flow	no			no		2016-05-13	Detergents (MBAS)		0			CPP	N/A		18
BTH-OF-23	BTH-OF-23	2016-05-12	Molly Bruno	Unable to calculate flow because outfall is on dam wall	yes	Trickle	Closed Pipe		20.4	7.58	2423	0.29	no	no	yes	Deposits/Stains,,,,,Brow n	Possible (2 or more indicators present)	yes	Flow	no			no		2016-05-13	Detergents (MBAS)		0.25		MBAS test was slightly green				
BTH-OF-23	BTH-CB-151	2016-05-27	Dana Allen		no								no		yes	Deposits/Stains,,,,,Wate r in sump looks oily	Possible (2 or more indicators present)	no		no			no								PVC	N/A		18
BTH-OF-23	BTH-OF-23	2016-05-27	Molly Bruno		yes	Trickle	Closed Pipe		21.4	7.83	2369	0.58	no	no	yes	Pipe benthic growth,,,,,	Possible (2 or more indicators present)	yes	Flow	no			no											
BTH-OF-23	BTH-CB-151	2016-08-04	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			no								PVC	N/A		18
BTH-OF-23	BTH-OF-23	2016-08-04	Molly Bruno		yes	Trickle	Closed Pipe		30.4	8.63	1162	0.42	no	no	yes	Deposits/Stains,,,,,	Possible (2 or more indicators present)	yes	Flow	no			no		2016-08-04	Detergents (MBAS),Chlori ne	0.2	1						
BTH-OF-24	BTH-OF-24	2016-05-12	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			no								CPP	N/A		18
BTH-OF-25	BTH-OF-25	2016-05-12	Molly Bruno	Pulsing flow	yes	Trickle	Closed Pipe	0	12.2	7.66	677	0.3	no	no	yes	Deposits/Stains,,,,,Gree n	Unlikely	yes	Flow	no			yes	Pipe crushed slightly	2016-05-13	Detergents (MBAS)		0			CMP	N/A		15
BTH-OF-26	BTH-OF-26	2016-05-12	Molly Bruno		yes	Trickle	Closed Pipe	0.003	12.1	7.48	501	0.35	no	no	yes	Pipe benthic growth,,,,,	Unlikely	yes	Flow	no			no		2016-05-13	Detergents (MBAS)		0			CPP	N/A		12
BTH-OF-26	BTH-OF-26	2016-05-27	Molly Bruno		yes	Trickle	Closed Pipe	0.004	14.1	7.48	495	0.43	no	no	yes	Pipe benthic growth,,,,,	Possible (2 or more indicators present)	yes	Flow	no			no		2016-05-27	Chlorine,Deter gents (MBAS)	0	0			CPP	N/A		12
BTH-OF-26	BTH-CB-179	2016-05-27	Dana Allen		yes	Moderate	Closed Pipe		17.6	7.85	144	0.44	no	no	no	,,,,,	Unlikely	yes	Flow	no			no		2016-05-27	Detergents (MBAS),Chlori ne	0	0			PVC	N/A		8
BTH-OF-27	BTH-OF-27	2016-05-12	Kerrie Garvey		yes	Moderate	Closed Pipe	1	17.4	7.8	136	0	no	no	no	,,,,,	Unlikely	no		no			no								PVC	Water	Partially	24
BTH-OF-28	BTH-OF-28	2016-05-12	Molly Bruno	Pipe fully submerged so unable to measure flow	yes	Moderate	Closed Pipe		19.6	7.31	810	0.31	no	no	no	,,,,,	Possible (2 or more indicators present)	yes	Flow	no			no		2016-05-13	Detergents (MBAS)		0		Trace of MBAS	PVC	Water	Fully	12
BTH-OF-28	BTH-OF-28	2016-05-27	Molly Bruno	Talked to store manager at Bethel Mills Lumber, unable to access CBs on property	no								no		no	,,,,,	Unlikely	no		no			no								PVC	Water	Fully	12
BTH-OF-28	BTH-CB-175	2016-05-27	Dana Allen		no								no		no	,,,,,	Unlikely																	
BTH-OF-29	BTH-OF-29	2016-05-12	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			yes	Scour beneath flow path							CMP	N/A		15
BTH-OF-3	BTH-OF-3	2016-05-12	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			yes	Sediment deposits							CMP	N/A		18
BTH-OF-30	BTH-OF-30	2016-05-12	Kerrie Garvey	Jim Pease says this one may be the outfall where the car-wash facility at Valley Motors discharges to the storm system.	no								no		no	,,,,,	Possible (2 or more indicators present)	no		no			yes	Buried in sediment							CMP	Sediment	Fully	15
BTH-OF-30	BTH-CB-189	2016-05-27	Molly Bruno	Oil and old tanks right next to catch basin	no								no		no	,,,,,	Unlikely	no		no			yes	Oily metal pieces next to catch basin										
BTH-OF-30	BTH-CB-193	2016-05-27	Molly Bruno	Water in sump, now flowing	no								no		no	,,,,,	Unlikely	no		no			no											
BTH-OF-30	BTH-CB-194	2016-05-27	Molly Bruno	Water in sump but now flowing	no								no		no	,,,,,	Unlikely	no		no			no											

Outfall ID	Infrastructure ID	Date	Investigator	Notes	Flow?	Flow Description	Flow Location	Flow (CFS)	Temp. (C)	pH	Conductivity (us/cm)	Ammonia (mg/L)	Canine Investigation?	Physical Indicators	Non-Flow Related Indicators?	Non-Flow Related Indicators	Overall Characterization	Sample for Lab?	Sample Source	Optical Brightner Pad Set?	OB Set Date	OB Removed Date	Maintenance Needed?	Maintenance Notes	Lab Analysis Date	Parameters Tested	Chlorine (mg/L)	Detergents (ppm)	Optical Brightner Present?	Lab Notes	Pipe Material	Pipe Submerged?	Submersion Amount	Pipe Diameter (inches)
BTH-OF-30	BTH-OF-30	2016-05-27	Molly Bruno	Soil wet in flow path as if flowing earlier	no								no		no	,,,,,	Possible (2 or more indicators present)	no		no			yes	Sediment							CMP	Sediment	Fully	15
BTH-OF-31	BTH-OF-31	2016-05-12	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			yes	Partially filled with sediment							CMP	Sediment	Partially	15
BTH-OF-32	BTH-OF-32	2016-05-12	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			yes	Pipe partially crushed and filled with sediment							CMP	Sediment	Partially	18
BTH-OF-33	BTH-CLVO-6	2016-05-12	Kateri Bisceglio	Unable to measure flow - too shallow for ping pong ball to float	yes	Trickle	Closed Pipe		13.7	8.23	234	0	no	no	yes	Pipe benthic growth,,,,,	Unlikely	no		no			no								Concrete	N/A		15
BTH-OF-34	BTH-OF-34	2016-05-12	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			no								CPP	N/A		18
BTH-OF-35	BTH-CB-210	2016-05-12	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			no											
BTH-OF-35	BTH-OF-35															,,,,,	Unlikely																	
BTH-OF-36	BTH-OF-36	2016-05-12	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			yes	Sediment							RCP	Sediment	Partially	15
BTH-OF-37	BTH-OF-37	2016-05-12	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			yes	Sediment							RCP	Sediment	Partially	24
BTH-OF-37	BTH-OF-38	2016-05-12	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			yes	Pipe disconnected, broken. Spoke to home owner who indicated pipe was blocked and needs to be cleaned out.							Concrete	Sediment	Partially	15
BTH-OF-39	BTH-OF-39	2016-05-12	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			yes	Pipe broken, disconnected, and eroded							CPP	N/A		15
BTH-OF-4	BTH-OF-4	2016-05-12	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			yes	Pipe disconnected and crushed							Clay	N/A		6
BTH-OF-40	BTH-OF-40	2016-05-12	Kateri Bisceglio		yes	Trickle	Closed pipe disconnected and water flowing underneath through ditch		12	7.65	120	0.3	no	no	no	,,,,,	Possible (2 or more indicators present)	yes	Flow	no			yes	Pipe disconnected and water flowing underneath	2016-05-13	Detergents (MBAS)		0			CMP	N/A		16
BTH-OF-40	BTH-CB-110	2016-05-27	Molly Bruno	Footing drain around house next to CB that ties in above CB.	yes	Trickle	Closed Pipe		15.6	7.68	131	0.4	no	no	no	,,,,,	Unlikely	yes	Flow	no			no		2016-05-27	Detergents (MBAS),Chlorine	0	0						
BTH-OF-40	BTH-CLVI-9	2016-05-27	Dana Allen		no								no		no	,,,,,	Unlikely	no		no			yes	Pipe partially clogged.							CMP	N/A		12
BTH-OF-40	BTH-OF-40	2016-05-27	Molly Bruno	Pipe broken, unable to collect sample. Sounds like same trickle as found in above CB	yes	Trickle							no	no	no	,,,,,	Unlikely	no		no			yes	Pipe broken and rusted							CMP	N/A		16
BTH-OF-41	BTH-CB-213	2016-05-12	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			no											
BTH-OF-42	BTH-CB-185	2016-05-12	Kateri Bisceglio	Could not find outfall. Storm sewer manhole paved over. This is 1st catchbasin in line.	no								no		no	,,,,,	Unlikely	no		no			no									N/A		
BTH-OF-5	BTH-OF-5	2016-05-12	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			no								CPP	N/A		22
BTH-OF-6	BTH-OF-6	2016-05-12	Molly Bruno		yes	Substantial	Closed Pipe	1.6	15.6	7.38	97	0.31	no	no	no	,,,,,	Unlikely	yes	Flow	no			no		2016-05-13	Detergents (MBAS)		0			CMP	N/A		40
BTH-OF-7	BTH-OF-7	2016-05-12	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			no								CMP	N/A		18
BTH-OF-8	BTH-OF-8	2016-05-12	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			no								CMP	N/A		15
BTH-OF-9	BTH-OF-9	2016-05-12	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			yes	Eroded							CMP	N/A		15

Table 3. Town of Chelsea Summary

Outfall ID	Infrastructure ID	Date	Investigator	Notes	Flow?	Flow Description	Flow Location	Flow (CFS)	Temp. (C)	pH	Conductivity (us/cm)	Ammonia (mg/L)	Canine Investigation?	Physical Indicators	Non-Flow Related Indicators?	Non-Flow Related Indicators	Overall Characterization	Sample for Lab?	Sample Source	Optical Brightner Pad Set?	OB Set Date	OB Removed Date	Maintenance Needed?	Maintenance Notes	Lab Analysis Date	Parameters Tested	Chlorine (mg/L)	Detergents (ppm)	Optical Brightner Present?	Lab Notes	Inspection Notes	Pipe Material	Pipe Submerged?	Submersion Amount	Pipe Diameter (inches)
CHL-New-001	CHL-New-001	2018-06-07		All parameters are good. Possibly underground stream unmapped	yes	Substantial	Closed Pipe		12.8	8.37	469	-0.11	no			.....	Unlikely															CMP			18
CHL-NEW-003	CHL-New-002	2018-06-07														.....	Unlikely																		
CHL-New-004	CHL-New-003	2018-06-07														.....	Unlikely																		
CHL-new-005	CHL-New-004	2018-06-07														.....	Unlikely															CPP			8
CHL-new-006	CHL-New-005	2018-06-07			yes	Moderate			10.4	7.78	512	-0.03	no			.....	Unlikely															Steel			15
CHL-new-007	CHL-New-006	2018-06-07			no											.....	Unlikely															ABS?			4
CHL-new-008	CHL-New-007	2018-06-07			yes	Moderate			12.9	7.75	1476	0.01	no		no	.....	Unlikely															CMP			8
CHL-New-009	CHL-New-008	2018-06-07		Seems like abandoned clay pipe network												.....	Unlikely																		
CHL-New-010	CHL-New-009	2018-06-07			no											.....	Unlikely															CMP			12
CHL-OF-1	CHL-OF-1	2016-05-10	Molly Bruno		no								no		no	.....	Unlikely	no		no			yes	Pipe broken								Clay	N/A		12
CHL-OF-10	CHL-OF-10	2016-05-10	Molly Bruno		no								no		no	.....	Unlikely	no		no			yes	Sediment in bottom of pipe, pipe rusting								CMP	Water	Partially	18
CHL-OF-11	CHL-OF-11	2016-05-10	Molly Bruno		no								no		no	.....	Unlikely	no		no			no									CPP	N/A		12
CHL-OF-12	CHL-OF-12	2016-05-10	Kateri Bisceglio		yes	Trickle	Closed Pipe	0.002	8.5	8.36	279	0.03	no	no	no	.....	Unlikely	no		no			no									CMP	N/A		10
CHL-OF-13	CHL-OF-13	2016-05-10	Molly Bruno		no								no		no	.....	Unlikely	no		no			yes	Sediment in pipe								CMP	N/A		15
CHL-OF-14	CHL-OF-14	2016-05-10	Kateri Bisceglio		no								no		no	.....	Unlikely	no		no			yes	Pipe disconnected								Concrete	N/A		18
CHL-OF-15	CHL-OF-15	2016-05-10	Kateri Bisceglio		no								no		no	.....	Unlikely	no		no			no									Concrete	N/A		18
CHL-OF-16	CHL-OF-16	2016-05-10	Kateri Bisceglio		yes	Trickle	Closed Pipe	0	9.6	9.07	2055	0.09	no	no	no	.....	Suspect (one or more indicators with severity of 3)	yes	Flow	no			no		2016-05-10	Detergents (MBAS),Chlorine	0.2	0.5				Concrete	N/A		15
CHL-OF-16	CHL-CB-67	2016-05-23	Molly Bruno		yes	Trickle										.....	Unlikely																		
CHL-OF-16	CHL-CB-70	2016-05-23	Molly Bruno		yes	Trickle										.....	Unlikely																		
CHL-OF-16	CHL-OF-16	2016-05-23	Molly Bruno		yes	Trickle	Closed Pipe	0	19.7	9	1475	0.4	no	no	yes	Pipe benthic growth,,,,,	Suspect (one or more indicators with severity of 3)	yes	Flow	no			no		2016-05-23	Chlorine,Detergents (MBAS)	0	0.5				Concrete	N/A		15
CHL-OF-16	CHL-CB-67	2016-08-23	Molly Bruno		yes	Trickle			26	9.28	1371	0.29	no	no	no	.....	Possible (2 or more indicators present)	yes	Pool	no			no		2016-08-23	Chlorine,Detergents (MBAS)	0.1	0.5							
CHL-OF-16	CHL-CB-70	2016-08-23	Molly Bruno		yes	Trickle	Catchbasin Sump		22.8	9.3	1323	0.27	no	no	no	.....	Possible (2 or more indicators present)	yes	Sump	no			no		2016-08-23	Chlorine,Detergents (MBAS)	0	0.25		Trace chlorine					
CHL-OF-16	CHL-OF-16	2016-08-23	Molly Bruno		yes	Trickle	Closed Pipe		21.9	9.2	1341	0.34	no	no	no	.....	Possible (2 or more indicators present)	yes	Flow	no			no		2016-08-23	Chlorine,Detergents (MBAS)	0	0.5		Trace chlorine		Concrete	N/A		15
CHL-OF-17	CHL-OF-17	2016-05-10	Kateri Bisceglio		yes	Trickle	Closed Pipe	3.25	9	8.12	751	0.02	no	no	no	.....	Unlikely	no		no			yes	Garbage around OF and bank heavily eroded								Concrete	N/A		18
CHL-OF-18	CHL-OF-18	2016-05-10	Kateri Bisceglio		no								no		no	.....	Unlikely	no		no			yes	Partially submerged in sediment and vegetation								CMP	Sediment	Partially	12
CHL-OF-19	CHL-OF-19	2016-05-10	Molly Bruno		no								no		no	.....	Unlikely	no		no			yes	Pipe broken								Clay	Water	Partially	12
CHL-OF-2	CHL-CB-59	2016-05-10	Molly Bruno		no								no		no	.....	Unlikely	no		no			no								Could not locate CHL-OF-2				
CHL-OF-3	CHL-OF-3	2016-05-10	Molly Bruno		no								no		no	.....	Unlikely	no		no			yes	Pipe disconnected, cannot find where it should be connected to, broken							Pipe disconnected could not find source, CB above dry	RCP	N/A		15
CHL-OF-3	CHL-CB-72	2016-05-10	Molly Bruno		no								no		no	.....	Unlikely	no		no			yes	Outfall broken and unable to find							Could not locate outfall CH-OF-3				
CHL-OF-4	CHL-OF-4	2016-05-10	Kateri Bisceglio		yes	Moderate	Closed Pipe	3	11.2	7.78	852	0.22	no	yes, bubbles	yes	Deposits/Stains,,,,,Staining in pipe and on flow path to river	Possible (2 or more indicators present)	yes	Flow	no			no		2016-05-10	Detergents (MBAS),Chlorine	0	0.25				CMP	N/A		18
CHL-OF-4	CHL-CB-7	2016-05-23	Molly Bruno		yes	Trickle										.....	Unlikely																		
CHL-OF-4	CHL-OF-4	2016-05-23	Kateri Bisceglio	Small pipe coming out next to outfall into river. No flow.	yes	Trickle	Closed Pipe	4	16.7	8.03	957	0.78	no	no	yes	Deposits/Stains,,,,,Pipe benthic growth,,,,,	Possible (2 or more indicators present)	yes	Flow	no			no		2016-05-23	Chlorine,Detergents (MBAS)	0	0				CMP	N/A		18
CHL-OF-4	CHL-JXN-1	2016-05-23	Molly Bruno	Sample taken from flowing footing drain pipe.	yes	Trickle			16.5	8	980	0.59		no	yes	Poor pool quality,,,Colors,,	Possible (2 or more indicators present)	yes	Sump	no			no		2016-05-23	Detergents (MBAS),Chlorine	0.2	0		Trace detergents					
CHL-OF-4	CHL-CLVI-12	2016-05-23	Molly Bruno		yes	Trickle										.....	Unlikely																		
CHL-OF-4	CHL-CB-7	2016-08-23	Molly Bruno		yes	Trickle	Closed Pipe						no	no	no	.....	Possible (2 or more indicators present)	yes	Flow	no			no		2016-08-23	Chlorine,Detergents (MBAS)	0	0		Trace detergents					
CHL-OF-4	CHL-OF-4	2016-08-23	Kateri Bisceglio		yes	Trickle	Closed Pipe						no	no	yes	Deposits/Stains,Pipe benthic growth,,,,,	Possible (2 or more indicators present)	yes	Flow	no			no		2016-08-23	Chlorine,Detergents (MBAS)	0.3	0		Trace detergents		CMP	N/A		18
CHL-OF-4	CHL-JXN-1	2016-08-23	Molly Bruno		yes	Trickle	Catchbasin Sump						no	no	no	.....	Unlikely	yes	Sump	no					2016-08-23	Chlorine,Detergents (MBAS)	0	0							
CHL-OF-4	CHL-CLVI-12	2016-08-23	Molly Bruno	No flow, sampled from pool.	yes								no	no	no	.....	Possible (2 or more indicators present)	yes	Pool	no			no		2016-08-23	Chlorine,Detergents (MBAS)	0	0		Trace detergents					
CHL-OF-4	CHL-OF-4	2018-06-07		Secondary investigation. Not sure AI has been performed	yes	Moderate			13.4	8.14	1005	-0.15	no	Turbidity,Color		.....	Unlikely															CMP	N/A		18
CHL-OF-5	CHL-OF-5	2016-05-10	Kateri Bisceglio		no								no		no	.....	Unlikely	no		no			yes	Pipe partially submerged in sediment								CPP	Sediment	Partially	12
CHL-OF-6	CHL-OF-6	2016-05-10	Kateri Bisceglio		no								no		no	.....	Unlikely	no		no			no									CMP	Sediment	Partially	24
CHL-OF-7	CHL-OF-7	2016-05-10	Molly Bruno		yes	Moderate	Closed Pipe	2.1	8.7	8.25	359	0	no	no	no	.....	Unlikely	no		no			no									CMP	N/A		19
CHL-OF-8	CHL-OF-8	2016-05-10	Kateri Bisceglio		yes	Trickle	Closed Pipe	1.5	10.3	3.7	696	0	no	no	yes	Pipe benthic growth,,,,,Small amount at bottom of pipe	Possible (2 or more indicators present)	yes	Flow	no			yes	Pipe partially crushed and rusting	2016-05-10	Detergents (MBAS),Chlorine	0	0				CMP	N/A		14
CHL-OF-8	CHL-CB-27	2016-05-23	Molly Bruno		yes	Trickle										.....	Unlikely																		

Outfall ID	Infrastructure ID	Date	Investigator	Notes	Flow?	Flow Description	Flow Location	Flow (CFS)	Temp. (C)	pH	Conductivity (us/cm)	Ammonia (mg/L)	Canine Investigation?	Physical Indicators	Non-Flow Related Indicators?	Non-Flow Related Indicators	Overall Characterization	Sample for Lab?	Sample Source	Optical Brightner Pad Set?	OB Set Date	OB Removed Date	Maintenance Needed?	Maintenance Notes	Lab Analysis Date	Parameters Tested	Chlorine (mg/L)	Detergents (ppm)	Optical Brightner Present?	Lab Notes	Inspection Notes	Pipe Material	Pipe Submerged?	Submersion Amount	Pipe Diameter (inches)
CHL-OF-8	CHL-CB-31	2016-05-23	Molly Bruno		yes	Trickle	Closed Pipe		15.6	7.63	793	0.38	no	no	no	.....	Possible (2 or more indicators present)	yes	Flow				no		2016-05-23	Chlorine,Detergents (MBAS)	0	0		Trace detergents	Pipe coming in from up the road, unmapped				
CHL-OF-8	CHL-CB-32	2016-05-23	Molly Bruno		yes	Trickle										.....	Unlikely														Flow is evident coming from small inspection pipe on 21 maple ave, likely that it is a sump pump				
CHL-OF-8	CHL-CB-33	2016-05-23	Molly Bruno		no											.....	Unlikely																		
CHL-OF-8	CHL-OF-8	2016-05-23	Kateri Bisceglio		yes	Trickle	Closed Pipe	0.002	14.4	8.29	574	0.35	no	no	no	.....	Possible (2 or more indicators present)	yes	Flow	no			yes	Crushed at end of pipe	2016-05-23	Chlorine,Detergents (MBAS)	0	0		Trace detergents		CMP	N/A		14
CHL-OF-8	CHL-CB-27	2016-08-23	Kateri Bisceglio		yes	Trickle	Catchbasin Sump		21.2	8.21	595	0.28	no	no	no	.....	Possible (2 or more indicators present)	yes	Flow	no			no		2016-08-23	Chlorine,Detergents (MBAS)	0	0.25							
CHL-OF-8	CHL-CB-29	2016-08-23	Molly Bruno	(A) longer line up same side of street	yes	Trickle	Catchbasin Sump		18.6	8	528	0.21	no	no	no	.....	Unlikely	yes	Flow	no			no		2016-08-23	Chlorine,Detergents (MBAS)	0	0							
CHL-OF-8	CHL-CB-29	2016-08-23	Molly Bruno	(B) other side of street from unknown source	yes	Trickle	Catchbasin Sump		21	8.06	1126	0.26	no	no	no	.....	Possible (2 or more indicators present)	yes	Flow	no			no		2016-08-23	Detergents (MBAS),Chlorine	0	0		Trace detergents					
CHL-OF-8	CHL-OF-8	2016-08-23	Molly Bruno		yes	Trickle	Closed Pipe		22	8.14	559	0.35	no	no	no	.....	Unlikely	yes	Flow	no			no		2016-08-23	Chlorine,Detergents (MBAS)	0	0				CMP	N/A		14
CHL-OF-8	CHL-CB-31	2017-07-19	Dana Allen		yes	Trickle	Catchbasin Sump		23	8.54	900	0.08	no	no	no	.....	Unlikely	yes	Sump	no			no		2017-07-21	Detergents (MBAS)		0.25			Pipe coming in from up the road, unmapped				
CHL-OF-8	CHL-CB-32	2017-07-19	Dana Allen		yes	Moderate	Catchbasin Sump		20.4	8.68	475	0.07	no	no	no	.....	Unlikely	yes	Sump	no			no		2017-07-24	Detergents (MBAS)		0			Flow is evident coming from small inspection pipe on 21 maple ave, likely that it is a sump pump				
CHL-OF-8	CHL-OF-8	2017-07-19	Dana Allen		yes	Moderate	Closed Pipe		20.3	9.05	735	0.12	no	no	no	.....	Unlikely	yes	Flow	no			no		2017-07-21	Detergents (MBAS)		0.25				CMP	N/A		14
CHL-OF-9	CHL-OF-9	2016-05-10	Molly Bruno		yes	Moderate	Closed Pipe	0.029	8	7.65	552	0	no	no	yes	Abnormal Vegetation,...,Moss/ benthic growth (mossy area)	Unlikely	no		no			yes	Pipe partially crushed								CMP	N/A		25

Table 4. Town of Granville Summary

Outfall ID	Infrastructure ID	Date	Investigator	Notes	Flow?	Flow Description	Flow Location	Flow (CFS)	Temp. (C)	pH	Conductivity (us/cm)	Ammonia (mg/L)	Canine Investigation?	Physical Indicators	Non-Flow Related Indicators?	Non-Flow Related Indicators	Overall Characterization	Sample for Lab?	Sample Source	Optical Brightner Pad Set?	OB Set Date	OB Removed Date	Maintenance Needed?	Maintenance Notes	Lab Analysis Date	Parameters Tested	Chlorine (mg/L)	Detergents (ppm)	Optical Brightner Present?	Lab Notes	Drainage Structure	Pipe Material	Pipe Submerged?	Submersion Amount	Pipe Diameter (inches)
GRN-OF-1	GRN-OF-1	2016-04-18	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			yes	Pipe crushed							Pipe	CMP	N/A		18
GRN-OF-2	GRN-OF-2	2016-04-18	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			yes	Pipe mostly filled with sediment							Pipe	CMP	Sediment	Partially	12

Table 5. Town of Hancock Summary

Outfall ID	Infrastructure ID	Date	Investigator	Notes	Flow?	Flow Description	Flow Location	Flow (CFS)	Temp. (C)	pH	Conductivity (us/cm)	Ammonia (mg/L)	Canine Investigation?	Physical Indicators	Non-Flow Related Indicators?	Non-Flow Related Indicators	Overall Characterization	Sample for Lab?	Sample Source	Optical Brightner Pad Set?	OB Set Date	OB Removed Date	Maintenance Needed?	Maintenance Notes	Lab Analysis Date	Parameters Tested	Chlorine (mg/L)	Detergents (ppm)	Optical Brightner Present?	Lab Notes	Pipe Material	Pipe Submerged?	Submersion Amount	Pipe Diameter (inches)
HNC-new-001		2018-05-17		Culvert from roadside swale. Add riprap. No flow	no											,,,,,	Unlikely																	
HNC-OF-1	HNC-OF-1	2016-04-18	Alex Arsenault		no								no		no	,,,,,	Unlikely	no		no			yes	Filled with sediment							CMP	Sediment	Partially	20
HNC-OF-2	HNC-OF-2	2016-04-18	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			no								CPP	N/A		20
HNC-OF-3	HNC-OF-3	2016-04-18	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			yes	Pipe crushed and rusted. Partially filled with sediment. Garbage around outfall site.							CMP	Sediment	Partially	12
HNC-OF-4	HNC-OF-4	2016-04-18	Alex Arsenault		no								no		no	,,,,,	Unlikely	no		no			no								RCP	Water	Partially	24
HNC-OF-5	HNC-OF-5	2016-04-18	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			yes	Hole rusted in pipe							CMP	N/A		24

Table 6 - Town of Hartford Summary

Outfall ID	Infrastructure ID	Date	Investigator	Notes	Flow?	Flow Description	Flow Location	Flow (CFS)	Temp. (C)	ph	Conductivity (us/cm)	Ammonia (mg/L)	Canine Investigation?	Physical Indicators?	Non Flow Related Indicators?	Non-Flow Related Indicators	Overall Characterization	Sample for Lab?	Sample Source	Optical Brightner Pad Set?	OB Set Date	OB Removal Date	Maintenance Needed?	Maintenance Notes?	Lab Analysis Date	Parameters Tested	Chlorine (mg/L)	Detergents (ppm)	Optical Brightner Present?	Lab Notes	Drainage Structure	Pipe Material	Pipe Submerged?	Submersion Amount	Pipe Diameter (inches)	Depth	Top Width	Bottom Width	Infrastructure Notes
HRT-OTH-900	HRT-OTH-900	2016-06-17	Kateri Bisceglio		yes	Trickle	Closed Pipe	0	18.1	7.34	3135	0.08	no	no	yes	Deposits/Stains,Pipe benthic growth,,,Brown,,	Possible (2 or more indicators present)	yes	Flow	yes	2016-06-16	2016-06-17	no		2016-07-05	Optical Brightener			no	Negative	Pipe	PVC	N/A		4				Pressure relief valve for bridge
HRT-OTH-900	HRT-OTH-900	2016-08-04	Molly Bruno		no								no		no	,,,,,,	Unlikely	no		no			no								Pipe	PVC	N/A		4				Pressure relief valve for bridge
HRT-OF-1	HRT-OF-1	2016-07-07	Molly Bruno		no								no		no	,,,,,,	Unlikely	no		no			no								Pipe	CMP	N/A		36				
HRT-OF-2	HRT-OF-2	2016-07-07	Molly Bruno		no								no		no	,,,,,,	Unlikely	no		no			no								Pipe	CPP	N/A		15				
HRT-OF-3	HRT-OF-3	2016-07-12	Kerrie Garvey		yes	Moderate	Closed Pipe	0.122	15.4	7.5	1620	0.06	no	no	yes	Pipe benthic growth,,,Green,,In pipe and below outfall	Unlikely	no		no			no								Pipe	CPP	N/A		30				
HRT-OF-4	HRT-OF-4	2016-07-06	Kateri Bisceglio		no								no		no	,,,,,,	Unlikely	no		no			no								Pipe	PVC	N/A		18				
HRT-OF-5	HRT-OF-5	2016-07-06	Molly Bruno		no								no		no	,,,,,,	Unlikely	no		no			yes	Rust							Pipe	CMP	N/A		6				
HRT-OF-6	HRT-OF-6	2016-07-06	Molly Bruno		no								no		no	,,,,,,	Unlikely	no		no			no								Pipe	CPP	N/A		15				
HRT-OF-7	HRT-OF-7	2016-07-06	Molly Bruno		no								no		no	,,,,,,	Unlikely	no		no			yes	Sediment							Pipe	CMP	Sediment	Partially	15				
HRT-OF-8	HRT-OF-8	2016-07-06	Molly Bruno		yes	Trickle	Closed Pipe	0	19.3	8.16	314	0.24	no	no	no	,,,,,,	Unlikely	no		no			yes	Sediment							Pipe	CMP	N/A		12				
HRT-OF-9	HRT-OF-9	2016-07-06	Molly Bruno		yes	Trickle	Closed Pipe	0.112	16.2	7.54	939	0.29	no	no	no	,,,,,,	Unlikely	no		no			no								Pipe	CMP	N/A		20				
HRT-OF-10	HRT-OF-10	2016-07-06	Molly Bruno		no								no		no	,,,,,,	Unlikely	no		no			no								Pipe	CMP	N/A		15				
HRT-OF-11	HRT-OF-11	2016-07-06	Molly Bruno		no								no		no	,,,,,,	Unlikely	no		no			no								Pipe	CMP	N/A		12				
HRT-OF-12	HRT-OF-12	2016-07-07	Kerrie Garvey		yes	Moderate	Closed Pipe	0.014	18	8	557	0.55	no	no	no	,,,,,,	Unlikely	yes	Flow	no			yes	Partially filled with sediment	2016-07-07	Chlorine,Detergents (MBAS)	0	0			Pipe	CMP	Sediment	Partially	15				
HRT-OF-12	HRT-OF-12	2016-07-13	Molly Bruno	Unable to measure flow in shallow water	yes	Trickle	Closed Pipe		17.8	7.07	650	0.72	no	no	yes	Poor pool quality,Colors,,,,Iron deposits	Possible (2 or more indicators present)	yes	Flow	no			no		2016-07-13	Detergents (MBAS),Chlorine	0	0		Trace detergents	Pipe	CMP	Sediment	Partially	15				
HRT-OF-12	HRT-CB-767	2016-08-03	Molly Bruno		yes	Trickle	Closed Pipe		17.9	7.54	531	0.22	no	no	yes	Pipe benthic growth,,,Orange,,Iron?	Unlikely	yes	Flow	no			no		2016-08-03	Chlorine,Detergents (MBAS)	0	0											
HRT-OF-12	HRT-OF-12	2016-08-03	Kateri Bisceglio	Sample taken close to pipe, some pooling water and flow.	yes	Trickle	Closed Pipe		18.4	7.67	740	0.35	no	no	yes	Poor pool quality,Deposits/Stains,Colors,,Iron growth?	Possible (2 or more indicators present)	yes	Pool	no			no		2016-08-03	Chlorine,Detergents (MBAS)	0	0		MBAS trace	Pipe	CMP	Sediment	Partially	15				
HRT-OF-12	HRT-CB-767	2016-08-09	Dana Allen		yes	Trickle							no			,,,,,,	Possible (2 or more indicators present)			yes	2016-08-09	2016-08-12			2016-08-16	Optical Brightener			no										
HRT-OF-12	HRT-CLVI-594	2016-08-09	Kateri Bisceglio	Saturated flow. Channel damp but not flowing.	yes	Trickle	Open Drainage (ditch)		18.9	7.75	487	0.35	no	no	no	,,,,,,	Possible (2 or more indicators present)	yes	Pool	no			no		2016-08-09	Chlorine,Detergents (MBAS)	0	0.5		Sample color detracted from detergents and Cl accuracy.	Pipe	CPP	Sediment	Partially	12				
HRT-OF-13	HRT-OF-13	2016-07-07	Kerrie Garvey		no								no		yes	Pipe benthic growth,,,Brown,,Minor	Unlikely	no		no			yes	Unstable headwall							Pipe	CPP	N/A		24				
HRT-OF-14	HRT-OF-14	2016-07-06	Kateri Bisceglio		no								no		no	,,,,,,	Unlikely	no		no			no								Pipe	CMP	N/A		12				
HRT-OF-15	HRT-OF-15	2016-07-06	Kateri Bisceglio		no								no		no	,,,,,,	Unlikely	no		no			no								Pipe	CMP	N/A		12				
HRT-OF-16	HRT-OF-16	2016-07-01	Kerrie Garvey		no								no		no	,,,,,,	Unlikely	no		no			yes	Partially filled with sediment							Pipe	HDPE	Sediment	Partially	12				
HRT-OF-17	HRT-OF-17	2016-07-01	Kerrie Garvey		no								no		no	,,,,,,	Unlikely	no		no			yes	Mostly filled with sediment							Pipe	CMP	Sediment	Partially	12				Diameter is an estimate
HRT-OF-18	HRT-OF-18	2016-07-06	Dana Allen		no								no		no	,,,,,,	Unlikely	no		no			yes	Trash grate totally clogged with leaves.							Pipe	CPP	N/A		36				
HRT-OF-19	HRT-OF-19	2016-07-01	Molly Bruno		no								no		no	,,,,,,	Unlikely	no		no			no								Pipe	CMP	N/A		18				
HRT-OF-20	HRT-OF-20	2016-06-30	Kateri Bisceglio		no								no		no	,,,,,,	Unlikely	no		no			no								Pipe	CPP	N/A		24				
HRT-OF-21	HRT-OF-21	2016-07-06	Dana Allen	This is a known CSO.	no								no		no	,,,,,,	Unlikely	no		no			no								Pipe	RCP	N/A		36				Noted as a CSO according to an adjacent sign.
HRT-OF-22	HRT-OF-22	2016-06-28	Kerrie Garvey		no								no		no	,,,,,,	Unlikely	no		no			yes	Eroded below outfall							Pipe	CMP	N/A		10				
HRT-OF-23	HRT-OF-23	2016-06-28	Kerrie Garvey		no								no		no	,,,,,,	Unlikely	no		no			yes	Eroded under pipe							Pipe	CMP	N/A		12				
HRT-OF-25	HRT-CB-1077	2016-07-01	Molly Bruno		no								no		no	,,,,,,	Unlikely	no		no			no																Unable to locate OF-35 on bank.
HRT-OF-25	HRT-OF-25	2016-07-01	Kerrie Garvey		no								no		no	,,,,,,	Unlikely	no		no			yes	Pipe is broken. Clogged.															Pipe appears to be collapsed and broken. See CB 1077.
HRT-OF-26	HRT-OF-26	2016-07-01	Molly Bruno		no								no		no	,,,,,,	Unlikely	no		no			no								Pipe	CPP	N/A		18				
HRT-OF-27	HRT-OF-27	2016-07-20	Kateri Bisceglio		no								no		no	,,,,,,	Unlikely	no		no			yes	Pipe submerged in sediment and partially crushed							Pipe	CMP	Sediment	Fully	12				
HRT-OF-28	HRT-CB-229	2016-06-28	Kateri Bisceglio	CB not flowing, OF located on poison ivy covered bank.	no								no		no	,,,,,,	Unlikely	no		no			no																
HRT-OF-29	HRT-OF-29	2016-06-28	Kateri Bisceglio		no								no		no	,,,,,,	Unlikely	no		no			no								Pipe	PVC	N/A		15				
HRT-OF-30	HRT-OF-30	2016-06-27	Kerrie Garvey		no								no		no	,,,,,,	Unlikely	no		no			no								Pipe	HDPE	N/A		12				
HRT-OF-31	HRT-CB-634	2016-07-07	Molly Bruno		no								no		no	,,,,,,	Unlikely	no		no			no								Pipe	CMP	N/A		22				Unable to locate OF-31
HRT-OF-32	HRT-OF-32	2016-07-07	Molly Bruno		no								no		no	,,,,,,	Unlikely	no		no			no								Pipe	CMP	N/A		15				
HRT-OF-33	HRT-OF-33	2016-07-07	Kerrie Garvey		no								no		yes	Pipe benthic growth,,,Brown,,Minor	Unlikely	no		no			no								Pipe	HDPE	N/A		15				
HRT-OF-34	HRT-OF-34	2016-06-28	Kateri Bisceglio		no								no		no	,,,,,,	Unlikely	no		no			yes	Partially full of sediment.							Pipe	CMP	N/A		18				
HRT-OF-35	HRT-OF-35	2016-06-27	Kateri Bisceglio		no								no		no	,,,,,,	Unlikely	no		no			no								Pipe	CMP	N/A		34				
HRT-OF-35	HRT-OF-302	2016-06-27	Kerrie Garvey		no								no		no	,,,,,,	Unlikely	no		no			yes	Eroded around outfall							Pipe	CPP	N/A		12				
HRT-OF-36	HRT-OF-36	2016-06-27	Kateri Bisceglio		no								no		no	,,,,,,	Unlikely	no		no			no								Pipe	CPP	N/A		15				
HRT-OF-37	HRT-OF-37	2016-06-27	Kateri Bisceglio		no								no		no	,,,,,,	Unlikely	no		no			yes	Bank eroded above OF							Pipe	CMP	N/A		42				
HRT-OF-38	HRT-CB-748	2016-07-06	Molly Bruno		no								no		no	,,,,,,	Unlikely	no		no			no																Unable to locate OF-38
HRT-OF-39	HRT-OF-39	2016-06-27	Kerrie Garvey		no								no		no	,,,,,,	Unlikely	no		no			no								Pipe	RCP	N/A		15				
HRT-OF-40	HRT-OF-40	2016-06-27	Kateri Bisceglio		no								no		no	,,,,,,	Unlikely	no		no			no								Pipe	RCP	N/A		15				
HRT-OF-41	HRT-OF-41	2016-06-27	Kateri Bisceglio		no								no		no	,,,,,,	Unlikely	no		no			no								Pipe	CPP	N/A		15				
HRT-OF-42	HRT-OF-42	2016-06-27	Kateri Bisceglio		no								no		no	,,,,,,	Unlikely	no		no			no								Pipe	CPP	N/A		15				
HRT-OF-43	HRT-OF-43	2016-06-27	Kerrie Garvey		no								no		no	,,,,,,	Unlikely	no		no			no								Pipe	RCP	N/A		18				
HRT-OF-44	HRT-OF-44	2016-06-24	Kateri Bisceglio		yes	Trickle	Closed Pipe	0.141	14.8	7.57	863	0.14	no	no	no	,,,,,,	Unlikely	no		no			no								Pipe	CMP	N/A		55				
HRT-OF-45	HRT-OF-45	2016-07-01	Kateri Bisceglio		yes	Moderate	Closed Pipe	0.018	18	7.36	2450	0.34	no	no	yes	Pipe benthic growth,,,Brown,,	Possible (2 or more indicators present)	yes	Flow	no			no		2016-07-01	Detergents (MBAS),Chlorine	0	0.25		Trace Cl	Pipe	CPP	N/A		48				
HRT-OF-45	HRT-OF-45	2016-07-14	Molly Bruno		yes	Moderate	Closed Pipe		18.6	7.74	2578	0.43	no	no	yes	Pipe benthic growth,,,Brown,,	Possible (2 or more indicators present)	yes	Flow	no			no		2016-07-14	Detergents (MBAS),Chlorine	0	0.25			Pipe	CPP	N/A		48				
HRT-OF-45	HRT-CB-2077	2016-07-14	Molly Bruno	Conductivity above detectable limit	yes	Moderate		0.25	20.6	7.91	3999	0.3	no	no	no	,,,,,,	Possible (2 or more indicators present)	yes	Flow	no			no		2016-07-14	Chlorine,Detergents (MBAS)	0	0.25											
HRT-OF-45	HRT-CB-2291	2016-07-14	Kateri Bisceglio	Conductivity too high for probe to measure	yes	Moderate	Catchbasin Sump		25	8.51		0.08	no	no	no	,,,,,,	Possible (2 or more indicators present)	yes	Flow	no			no		2016-07-14	Chlorine,Detergents (MBAS)	0	0.25											
HRT-OF-46	HRT-OF-46	2016-07-01	Dana Allen		no								no		no	,,,,,,	Unlikely	no		no			no								Pipe	HDPE	N/A		12				
HRT-OF-47	HRT-OF-47	2016-07-01	Kerrie Garvey		yes	Trickle	Closed Pipe	0.004	17	7.64	1528	0.18	no		yes	Deposits/Stains,,,,,,	Unlikely						yes	Rust							Pipe	CMP	N/A		30				
HRT-OF-48	HRT-CB-1362	2016-07-07	Molly Bruno		no								no		no	,,,,,,	Unlikely	no		no			no								Pipe	CPP	N/A		14				Unable to locate OF-48. Talked to resident and said forbidden to enter fenced field where outfall is. Estimate of pipe size in CB.
HRT-OF-49	HRT-OF-49	2016-07-06	Dana Allen		yes	Trickle	Closed Pipe		233	8.27	65	0.34	no	no	no	,,,,,,	Possible (2 or more indicators present)	yes	Flow	no			no		2016-07-07	Chlorine,Detergents (MBAS)	0.1	0.75			Pipe	HDPE	N/A		18				
HRT-OF-49	HRT-OF-49	2016-08-03	Molly Bruno		yes	Trickle	Closed Pipe		18.6	7.86	67	0.2	no	no	yes	Deposits/Stains,,,,,,	Possible (2 or more indicators present)	yes	Flow	no			no		2016-08-03	Chlorine,Detergents (MBAS)	0	0		Trace Cl and MBAS	Pipe	HDPE	N/A		18				
HRT-OF-49	HRT-CB-1989	2016-08-03	Molly Bruno	The only pipe coming into CB that is flowing (slowly dripping) is the under drain from Windsor County Court.	yes	Trickle	Closed Pipe						no	no		,,,,,,	Unlikely	no		no			no																
HRT-OF-49	HRT-CB-1989	2016-08-09	Kateri Bisceglio		no								no		no	,,,,,,	Unlikely	no		yes	2016-08-09	2016-08-12	no		2016-08-16	Optical Brightener			no	Placed OB pads in three pipes coming into CB. 1989a, 1989b, and 1989c were all negative for Optical Brightener								
HRT-OF-50	HRT-OF-50	2016-07-06	Dana Allen		no								no		no	,,,,,,	Unlikely	no		no			no								Pipe	CMP	N/A		18				
HRT-OF-51	HRT-OF-51	2016-07-06	Dana Allen		no								no		no	,,,,,,	Unlikely	no		no			no								Pipe	CMP	N/A		12				
HRT-OF-52	HRT-OF-52	2016-07-12	Kerrie Garvey		no								no		no	,,,,,,	Unlikely	no		no			yes	Mostly filled with sediment, leaves							Pipe	CPP	Sediment	Partially	18				
HRT-OF-53	HRT-OF-53	2016-06-17	Kerrie Garvey		no								no		no	,,,,,,	Unlikely	no		no			yes	Filled with sediment							Pipe	CMP	Sediment	Fully	15				
HRT-OF-54	HRT-OF-54	2016-06-17	Kateri Bisceglio		yes	Trickle	Closed Pipe	0.015	14.8	8.2	532	0.02	no	no	yes	Pipe benthic growth,,,Green,,	Unlikely	no		no			no								Pipe	CMP	N/A		31				
HRT-OF-55	HRT-OF-55	2016-06-17	Kateri Bisceglio		no								no		no	,,,,,,	Unlikely	no		no			no								Pipe	CMP	N/A		18				
HRT-OF-56	HRT-CB-1370	2016-06-17	Kateri Bisceglio	Could not access OF. Located on steep, poison ivy covered bank, behind house.	no								no		no	,,,,,,	Unlikely	no		no			no																
HRT-OF-56	HRT-OF-56	2016-06-17	Kateri Bisceglio	Could not locate OF.. Located on steep, poison ivy covered bank behind house. Checked CB. See HRT-CB-1370. CB dry.	no								no		no	,,,,,,	Unlikely	no		no			no																Could not locate OF. Checked CB. See HRT-CB-1370. CB dry.
HRT-OF-57	HRT-OF-57	2016-06-17	Kateri Bisceglio		no								no		no	,,,,,,	Unlikely	no		no			no								Pipe	CMP	N/A		12				
HRT-OF-58	HRT-OF-58	2016-06-17	Kateri Bisceglio		no								no		no	,,,,,,	Unlikely	no		no			yes	Large amount of debris built up in front of OF.							Pipe	CMP	N/A		24				
HRT-OF-59	HRT-OF-59	2016-06-17	Kateri Bisceglio		no								no		no	,,,,,,	Unlikely	no		no			no								Pipe	CMP	N/A		12				
HRT-OF-60	HRT-CB-1374	2016-06-17	Kateri Bisceglio		no								no		no	,,,,,,	Unlikely	no		no			no																
HRT-OF-60	HRT-OF-60	2016-06-17	Kateri Bisceglio	Could not locate. Property owner has no knowledge of OF. Likely abandoned. Checked CB, dry and full of sediment.	no								no		no	,,,,,,	Unlikely	no		no			no																
HRT-OF-61	HRT-CB-1375	2016-06-17	Kateri Bisceglio	Could not locate OF. Likely abandoned.	no								no		no	,,,,,,	Unlikely	no		no			no																
HRT-OF-61	HRT-OF-61	2016-06-17	Kateri Bisceglio	Could not locate OF. Likely abandoned. Checked CB. See HRT-CB-1375. CB dry.	no								no		no	,,,,,,	Unlikely	no		no			no																Could not locate OF. Likely abandoned. Checked HRT-CB-1375. CB dry.
HRT-OF-62	HRT-CB-1376	2016-06-17	Kateri Bisceglio	Could not locate OF. Likely abandoned.	no								no		no	,,,,,,	Unlikely	no		no			no																
HRT-OF-62	HRT-OF-62	2016-06-17	Kateri Bisceglio	Could not locate OF. likely abandoned. Checked CB. See HRT-CB-1376. CB dry.	no								no		no	,,,,,,	Unlikely	no		no			no																Could not locate OF. Checked HRT-CB-1376. CB dry.
HRT-OF-63	HRT-OF-63	2016-06-17	Kerrie Garvey		no								no		no	,,,,,,	Unlikely	no		no			yes	Pipe crushed and mostly filled with sediment							Pipe	CMP	Sediment	Partially	18				
HRT-OF-64	HRT-CB-1397	2016-06-21	Kateri Bisceglio		no								no		no	,,,,,,	Unlikely	no		no			no																
HRT-OF-65	HRT-OF-65	2016-06-21	Kerrie Garvey		yes	Trickle	Closed Pipe	0.052	15.6	7.68	715	0.21	no	no	no	,,,,,,	Unlikely	no		no			yes	Pipe broken							Pipe	Clay	Water	Partially	12				
HRT-OF-66	HRT-OF-66	2016-06-15	Kateri Bisceglio		no								no		no	,,,,,,	Unlikely	no		no			no								Pipe	CPP	N/A		18				
HRT-OF-67	HRT-OF-67	2016-06-15	Dana Allen		no								no		no	,,,,,,	Unlikely	no		no			no								Pipe	CPP	N/A		18				
HRT-OF-68	HRT-OF-68	2016-06-17	Kateri Bisceglio		yes	Trickle	Closed Pipe	0.001	15.5	7.61	690	0	no	no	no	,,,,,,	Unlikely	no		no			no								Pipe	CMP	N/A		18				

Outfall ID	Infrastructure ID	Date	Investigator	Notes	Flow?	Flow Description	Flow Location	Flow (CFS)	Temp. (C)	ph	Conductivity (us/cm)	Ammonia (mg/L)	Canine Investigation?	Physical Indicators?	Non Flow Related Indicators?	Non-Flow Related Indicators	Overall Characteriztion	Sample for Lab?	Sample Source	Optical Brightner Pad Set?	OB Set Date	OB Removal Date	Maintenance Needed?	Maintenance Notes?	Lab Analysis Date	Parameters Tested	Chlorine (mg/L)	Detergents (ppm)	Optical Brightner Present?	Lab Notes	Drainage Structure	Pipe Material	Pipe Submerged?	Submersion Amount	Pipe Diameter (inches)	Depth	Top Width	Bottom Width	Infrastructure Notes
HRT-OF-69	HRT-OF-69	2016-06-17	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CMP	N/A		15				
HRT-OF-70	HRT-CB-1415	2016-06-16	Kateri Bisceglio	Could not locate HRT-OF-70. Most likely buried.	no								no		no	,,,,,	Unlikely	no		no			yes	Needs a better fitting cover.															
HRT-OF-70	HRT-OF-70	2016-06-16	Molly Bruno	Unable to locate outfall see CB-1415												,,,,,	Unlikely																						
HRT-OF-71	HRT-OF-71	2016-06-15	Kateri Bisceglio		yes	Moderate	Closed Pipe	0.006	14.3	7.78	773	0	no	no	yes	Pipe benthic growth,,,Brown,,	Unlikely	no		no			no								Pipe	CPP	N/A		15				
HRT-OF-72	HRT-CB-1419	2016-06-15	Kateri Bisceglio	Below HRT-CB-1418. Flowing. Sewer line runs in between the two CBs. No flow at HRT-OF-72, only water in sump. Talked to locals, springs run through hill above CBs year-round.	yes	Trickle	Catchbasin Sump		13.6	7.9	780	0.15	no	no	no	,,,,,	Unlikely	no		no			no																
HRT-OF-72	HRT-OF-72	2016-06-15	Kateri Bisceglio	Water in sump. HRT-CB-1418 flowing. Testing HRT-CB-1419, also flowing, because sewer line runs in between.	no								no		no	,,,,,	Unlikely	no		no			no								Pipe	RCP	N/A		15				
HRT-OF-74	HRT-OF-74	2016-07-01	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	PVC	N/A		8				
HRT-OF-75	HRT-OF-75	2016-07-01	Dana Allen	Water pooled at outlet. Outlet of infiltration Basin. Not flowing. Did not test - do not suspect illicit discharge.	no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CPP	N/A		12				
HRT-OF-76	HRT-OF-76	2016-07-07	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CPP	N/A		24				
HRT-OF-77	HRT-OF-77	2016-07-01	Dana Allen		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	HDPE	N/A		12				
HRT-OF-78	HRT-OF-78	2016-07-01	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CPP	N/A		12				
HRT-OF-79	HRT-OF-79	2016-06-27	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	PVC	N/A		12				
HRT-OF-80	HRT-OF-80	2016-07-20	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			yes	Erosion of bank around OF							Pipe	CMP	N/A		15				
HRT-OF-81	HRT-OF-81	2016-07-20	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CMP	Sediment	Partially	18				
HRT-OF-82	HRT-OF-82	2016-07-07	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CPP	N/A		18				
HRT-OF-85	HRT-OF-85	2016-07-06	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CPP	N/A		15				
HRT-OF-86	HRT-OF-86	2016-07-01	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			yes								Pipe	CPP	Sediment	Partially	12				
HRT-OF-87	HRT-CB-1450	2016-07-01	Dana Allen		no								no		no	,,,,,	Unlikely	no		no			no																Not flowing
HRT-OF-88	HRT-OF-88	2016-07-01	Dana Allen		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CPP	N/A		12				
HRT-OF-89	HRT-OF-89	2016-07-01	Kerrie Garvey		no								no			,,,,,	Unlikely	no		no											Pipe								See CB 1476. Pipe under water in pond.
HRT-OF-89	HRT-CB-1476	2016-07-01	Kerrie Garvey		no								no			,,,,,	Unlikely	no		no			yes	Should be vactored															
HRT-OF-90	HRT-OF-90	2016-07-01	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CPP	N/A		24				Confirmed not flowing from outfall structure.
HRT-OF-91	HRT-OF-91	2016-07-07	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			yes	Water passes under erosion fabric							Open Drainage (channel)					8	48	12	Pond outlets to spillway
HRT-OF-92	HRT-OF-92	2016-06-24	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CMP	N/A		15				
HRT-OF-93	HRT-OF-93	2016-07-20	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CPP	N/A		30				
HRT-OF-94	HRT-OF-94	2016-07-01	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CMP	N/A		12				
HRT-OF-95	HRT-OF-95	2016-06-15	Kateri Bisceglio	Petroleum sheen in standing pools below OF	no								no		no	,,,,,	Unlikely	no		no			no								Pipe	he Box Cu	N/A		46				
HRT-OF-96	HRT-OF-96	2016-06-15	Dana Allen		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CPP	N/A		18				
HRT-OF-97	HRT-OF-97	2016-06-15	Dana Allen		no								no		no	,,,,,	Unlikely	no		no			no																
HRT-OF-98	HRT-OF-98	2016-06-15	Dana Allen		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CPP	N/A		18				
HRT-OF-99	HRT-CB-1502	2016-06-15	Dana Allen	Some water pooled in sump of CB. Source of dripping water at outfall. Did not sample from sump.	no								no		no	,,,,,	Unlikely	no		no			no																
HRT-OF-99	HRT-OF-99	2016-06-15	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	PVC	N/A		12				
HRT-OF-100	HRT-CB-1229	2016-06-28	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CMP	N/A						Couldn't locate outfall, dense brush. Cb is not flowing.
HRT-NEW-OF-101	HRT-NEW-OF-100	2016-06-21	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	HDPE	N/A		8				
HRT-OF-101	HRT-OF-101	2016-06-28	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	Steel	N/A		8				
HRT-OF-102	HRT-OF-102	2016-07-07	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CPP	N/A		22				Estimated pipe diameter, fenced in
HRT-OF-103	HRT-OF-103	2016-07-07	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	PVC	N/A		12				
HRT-OF-104	HRT-OF-104	2016-06-28	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			yes	Bottom of pipe starting to rust through							Pipe	CMP	N/A		18				
HRT-OF-105	HRT-OF-105	2016-06-27	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	PVC	N/A		10				
HRT-OF-106	HRT-OF-106	2016-06-27	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			yes	Pipe almost entirely filled with sediment							Pipe	CMP	Sediment	Partially	15				
HRT-OF-107	HRT-OF-107	2016-06-27	Kerrie Garvey		yes	Moderate	Closed Pipe	0.005	16.7	7.98	185	0.13	no	no	yes	Pipe benthic growth,,,Brown,,	Unlikely	no		no			no								Pipe	CMP	N/A		15				
HRT-OF-108	HRT-OF-108	2016-06-27	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			yes	Pipe crumbling. Sediment in pipe and in flow path,							Pipe	Clay	N/A		15				
HRT-OF-109	HRT-OF-109	2016-06-27	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CPP	N/A		12				
HRT-OF-110	HRT-OF-110	2016-06-27	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			yes	Pipe nearly filled with sediment.							Pipe	CMP	Sediment	Partially	15				
HRT-OF-112	HRT-OF-112	2016-07-01	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			yes	Partially filled with sediment							Pipe	CMP	Sediment	Partially	12				
HRT-OF-113	HRT-OF-113	2016-07-06	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			yes	Unstable head wall and bank erosion							Pipe	CMP	N/A		12				
HRT-OF-114	HRT-CB-727	2016-07-06	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			no																
HRT-OF-115	HRT-OF-115	2016-07-06	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CMP	N/A		12				
HRT-OF-116	HRT-OF-116	2016-07-06	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CMP	N/A		24				
HRT-OF-117	HRT-OF-117	2016-06-28	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			yes	Eroded below outfall							Pipe	HDPE	N/A		12				
HRT-OF-118	HRT-OF-118	2016-06-28	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CMP	N/A		6				
HRT-OF-119	HRT-OF-119	2016-06-28	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			yes	Flow path inside pipe wearing away.							Pipe	PVC	N/A		8				
HRT-OF-120	HRT-OF-120	2016-06-27	Kerrie Garvey	Can't measure flow.	yes	Trickle	Closed Pipe		16.9	7.45	548	6.6	no	Odor	yes	Poor pool quality,,Pool on verge of being stagnant. Water turbid and grey,,,,	Suspect (one or more indicators with severity of 3)	yes	Pool	no			yes	Bank erosion around OF	2016-06-27	Chlorine,Detergents (MBAS)	0	1.25			Pipe	RCP	Water	Partially	18				
HRT-OF-120	HRT-OF-120	2016-06-30	Kateri Bisceglio	Could not measure flow.	yes	Moderate	Closed Pipe		18.5	7.12	414	5.6	no	Odor,Color	yes	Poor pool quality,Excessive Algae,,,,	Possible (2 or more indicators present)	yes	Pool	no			no		2016-06-30	Chlorine,Detergents (MBAS),Bacteria,Phosphorus	0	1.5		Cl trace	Pipe	RCP	Water	Partially	18				
HRT-OF-120	HRT-CB-1032	2016-08-23	Kateri Bisceglio	Sewage, toilet paper floating.	yes	Trickle	Catchbasin Sump						no	Floatables - Not Trash	no	,,,,,	Obvious	no		yes	2016-08-12	2016-08-23	yes	Established connection to house	2016-09-06	Optical Brightener			no	Pad was not processed for 10 days. Difficult to rinse off thick layer of effluents. Time before processing and inability to clean may be contributing to lack of positive results as house is directly tied into storm line.									
HRT-OF-120	HRT-CB-1032	2018-08-10	Kerrie Garvey		yes	Moderate			21.6	8.28	918	0.16	no			,,,,,	Unlikely																					
HRT-OF-120	HRT-OF-120	2018-08-10	Kerrie Garvey	No flow, all analysis done from water in small pool	yes				20.6	7.7	807	1.68	no			,,,,,	Unlikely	yes							2018-08-10	Detergents (MBAS)					Pipe	RCP	Water	Partially	18				
HRT-OF-120	HRT-CB-797	2018-08-31	Kerrie Garvey		yes	Trickle	Closed Pipe	0	22.3		801	0.27	no		no	,,,,,	Unlikely	yes	Flow	yes	2018-08-31	2018-09-13			2018-08-31	Chlorine,Detergents (MBAS),Optical Brightener	0	0.25	no	Very weak detergents. Def less than .25									
HRT-OF-120	HRT-SMH-15	2018-08-31	Dana Allen	Testing water from east line. OB pad lost	yes	Moderate	Closed Pipe	0.002	22.3	7.96	441	0.1	no	no	no	,,,,,	Unlikely	yes	Flow	yes	2018-08-31		no		2006-08-31	Detergents (MBAS),Chlorine	0	0.25		Trace mbas-less than .25									
HRT-OF-120	HRT-CB-793	2018-08-31	Kerrie Garvey	Sample taken from network on east side of storm system	yes	Moderate	Catchbasin Sump		22.1		767	0.52	no	no		,,,,,	Unlikely	yes	Flow	no					2018-08-31	Detergents (MBAS),Chlorine	0	0.25		Detergents very weak, <.25									
HRT-OF-120	HRT-CB-1032	2018-08-31	Kerrie Garvey	Recently cut grass in flow.	yes	Moderate		0.001	21.4		1060	0.55	no			,,,,,	Unlikely	yes	Flow	yes	2018-08-31	2018-09-13			2018-08-31	Chlorine,Detergents (MBAS),Optical Brightener	0	0.25	no										
HRT-OF-120	HRT-OF-120	2018-08-31	Kerrie Garvey		yes	Trickle			20.9	7.85	616	0.85	no	no	no	,,,,,	Unlikely	yes		no					2018-08-31	Chlorine,Detergents (MBAS)	0	0.5			Pipe	RCP	Water	Partially	18				
HRT-OF-120	HRT-CLVI-770	2018-08-31	Kerrie Garvey		yes	Moderate	In-Stream		20.9	8.1	711	0.47	no	no	no	,,,,,	Unlikely	yes	Flow	yes	2018-08-31	2018-09-13	no		2018-08-31	Chlorine,Detergents (MBAS),Optical Brightener	0	0.25	no	Trace nbas. Less than .25									
HRT-OF-121	HRT-OF-121	2016-07-07	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CMP	Water	Partially	18				
HRT-OF-122	HRT-OF-122	2016-07-06	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			yes	Cut back vegetation															No water in pond. Could not locate OF. Pond very vegetated.
HRT-OF-127	HRT-OF-127	2016-07-07	Kerrie Garvey		no								no		yes	Pipe benthic growth,,,Brown,,	Unlikely	no		no			no								Pipe	PVC	N/A		18				
HRT-OF-128	HRT-OF-128	2016-07-07	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	PVC	N/A		24				
HRT-OF-129	HRT-OF-129	2016-07-01	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			yes	Completely filled with leaves and debris							Pipe		Sediment	Fully					Completely filled with leaves and debris
HRT-OF-129	HRT-CB-1556	2016-07-01	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			no								Pipe								Outfall buried
HRT-OF-130	HRT-OF-130	2016-06-28	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			yes	Pipe rusting							Pipe	Steel	N/A		12				
HRT-OF-131	HRT-OF-131	2016-06-17	Kateri Bisceglio		yes	Trickle	Closed Pipe	0	11.6	8.25	792	0.04	no	no	no	,,,,,	Unlikely	no		no			no								Pipe	CPP	N/A		24				
HRT-OF-133	HRT-OF-133	2016-07-07	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			yes	Ponding, sediment deposits below outfall							Pipe	CPP	N/A		18				
HRT-OF-134	HRT-OF-134	2016-07-01	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CPP	N/A		24				
HRT-OF-135	HRT-OF-135	2016-06-28	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			yes								Pipe	CPP	N/A		15				
HRT-OF-136	HRT-OF-136	2016-06-24	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CPP	N/A		12				
HRT-OF-137	HRT-CB-1616	2016-07-01	Dana Allen		no								no		no	,,,,,	Unlikely	no		no			no																
HRT-OF-139	HRT-OF-139	2016-07-06	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CPP	N/A		12				
HRT-OF-140	HRT-OF-140	2016-07-06	Kateri Bisceglio		yes	Moderate	Closed Pipe	0.005	20.1	8.42	426	0.26	no	no	yes	Pipe benthic growth,Deposits/Stains,,,Green,,	Unlikely	no		no			no								Pipe	CMP	N/A		12				
HRT-OF-141	HRT-OF-141	2016-07-06	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			yes	Sediment							Pipe	RCP	Sediment	Partially	18				

Outfall ID	Infrastructure ID	Date	Investigator	Notes	Flow?	Flow Description	Flow Location	Flow (CFS)	Temp. (C)	ph	Conductivity (uo/cm)	Ammonia (mg/L)	Canine Investigation?	Physical Indicators?	Non Flow Related Indicators?	Non-Flow Related Indicators	Overall Characterization	Sample for Lab?	Sample Source	Optical Brightner Fail Test?	OB Set Date	OB Removal Date	Maintenance Needed?	Maintenance Notes?	Lab Analysis Date	Parameters Tested	Chlorine (mg/L)	Detergents (ppm)	Optical Brightner Present?	Lab Notes	Drainage Structure	Pipe Material	Pipe Submerged?	Submersion Amount	Pipe Diameter (inches)	Depth	Top Width	Bottom Width	Infrastructure Notes
HRT-OF-142	HRT-OF-142	2016-07-06	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CMP	N/A		18				
HRT-OF-143	HRT-CB-1635	2016-06-30	Kateri Bisceglio	Could not locate OF on bank.	no								no		no	,,,,,	Unlikely	no		no			no																
HRT-OF-144	HRT-OF-144	2016-07-06	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CPP	N/A		15				
HRT-OF-145	HRT-OF-145	2016-07-06	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CPP	N/A		15				
HRT-OF-146	HRT-OF-146	2016-07-06	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CPP	N/A		18				
HRT-OF-147	HRT-OF-147	2016-07-06	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			yes	Pipe almost filled with sediment							Pipe	RCP	Sediment	Partially	10				
HRT-OF-148	HRT-CB-666	2016-07-07	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			no																
HRT-OF-149	HRT-OF-149	2016-07-07	Molly Bruno		yes	Moderate	Closed Pipe	0.064	15.6	7.15	655	0.04	no	no	no	,,,,,	Unlikely	no		no			no								Pipe	CPP	Water	Partially	15				
HRT-OF-150	HRT-OF-150	2016-07-07	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CPP	Sediment	Partially	8				
HRT-OF-152	HRT-OF-152	2016-06-30	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			yes	Pipe rusting. And erosion around pipe.							Pipe	CMP	N/A		18				
HRT-OF-153	HRT-OF-153	2016-06-30	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CMP	N/A		12				
HRT-OF-154	HRT-OF-154	2016-06-30	Kateri Bisceglio	Did not measure flow as discharge was insignificant (slow drip).	yes	Trickle	Closed Pipe		21.3	7.88	210	0.94	no	no	yes	Deposits/Stains,,,,,	Possible (2 or more indicators present)	yes	Flow	no			yes	Bank surrounding OF is severely eroded/collapsing.	2016-06-30	Detergents (MBAS)		0.25			Pipe	CMP	N/A		18				
HRT-OF-154	HRT-CB-1662	2016-07-13	Molly Bruno	No flow, dry sump.	no								no		no	,,,,,	Unlikely	no		no			no																
HRT-OF-154	HRT-OF-154	2016-07-13	Kateri Bisceglio		yes	Trickle	Closed Pipe	0	24.2	7.46	104	0.93	no	no	yes	Deposits/Stains,,,,,	Possible (2 or more indicators present)	yes	Flow	no			yes	Bank severely eroded	2016-07-13	Chlorine,Detergents (MBAS)	0	0		Trace Cl	Pipe	CMP	N/A		18				
HRT-OF-155	HRT-OF-155	2016-07-06	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			yes	CB-775 full of leaf litter and sediment.							Pipe	PVC	N/A		6				
HRT-OF-156	HRT-OF-156	2016-07-06	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CMP	N/A		15				
HRT-OF-157	HRT-OF-157	2016-07-07	Kerrie Garvey		yes	Moderate	Closed Pipe	0.001	18	8.29	1060	0.27	no	no	no	,,,,,	Unlikely	yes	Flow	no			no		2016-07-07	Chlorine,Detergents (MBAS)	0	0.25			Pipe	CMP	N/A		18				
HRT-OF-157	HRT-CB-1427	2016-07-14	Molly Bruno	Trickle, top of flow	yes	Trickle	Closed Pipe						no	no	no	,,,,,	Unlikely	no		no			no																
HRT-OF-157	HRT-CB-1429	2016-07-14	Molly Bruno	Flow	yes	Trickle	Closed Pipe						no	no	no	,,,,,	Unlikely	no		no			no																
HRT-OF-157	HRT-OF-157	2016-07-14	Molly Bruno		yes	Trickle	Closed Pipe	0.001	16.2	7.36	1113	0	no	no	yes	Deposits/Stains,,,,,Mineral build up	Unlikely	yes	Flow	no			no		2016-07-14	Chlorine,Detergents (MBAS)	0	0			Pipe	CMP	N/A		18				
HRT-OF-157	HRT-CB-1424	2016-08-09	Molly Bruno	No flow, water in sump	yes	Trickle	Catchbasin Sump		18	7.98	3940	1.16	no	no	no	,,,,,	Possible (2 or more indicators present)	yes	Sump	yes	2016-08-09	2016-08-12	no		2016-08-09	Chlorine,Detergents (MBAS),Optical Brightener	0.2	0.75	no	Analyzed for Optical Brightener on 8-16-2016									
HRT-OF-157	HRT-CB-1427	2016-08-09	Molly Bruno	No flow, water in sump.	yes				17.2	7.76	1635	0.21	no	no	no	,,,,,	Possible (2 or more indicators present)	yes	Sump	yes	2016-08-09	2016-08-12	no		2016-08-09	Chlorine,Detergents (MBAS),Optical Brightener	0	0.25	no	Trace Cl; Analyzed for Optical Brightener on 8-16-2016									
HRT-OF-157	HRT-OF-157	2016-08-09	Molly Bruno		yes	Trickle	Closed Pipe	0.001	17.9	7.98	1120	0.27	no	no	yes	Pipe benthic growth,,,Green,,	Possible (2 or more indicators present)	yes	Flow	yes	2016-08-09	2016-08-12	yes	Erosion in flow path, recommend riprap	2016-08-09	Chlorine,Detergents (MBAS),Optical Brightener	0	0	no	Trace detergents; Optical Brightener analyzed on 8/16/2016	Pipe	CMP	N/A		18				
HRT-OF-157	HRT-OF-157	2017-08-09	Kateri Bisceglio		yes	Moderate	Closed Pipe		21.7	8.03	1010	0.08	no	no	no	,,,,,	Unlikely	yes	Flow	no			no		2017-08-09	Detergents (MBAS)		0			Pipe	CMP	N/A		18				
HRT-OF-158	HRT-OF-158	2016-07-07	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			yes	Pipe is cracked							Pipe	HDPE	N/A		4				
HRT-OF-159	HRT-CB-1670	2016-07-07	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CPP	N/A		6				Couldn't locate outfall 159. Both CBs are dry.
HRT-OF-160	HRT-OF-160	2016-07-07	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	PVC	N/A		4				
HRT-OF-161	HRT-OF-161	2016-07-07	Kerrie Garvey		yes	Trickle	Closed Pipe	0	19.3	8.58	939	0.47	no	no	no	,,,,,	Unlikely	yes	Flow	no			no		2016-07-07	Chlorine,Detergents (MBAS)	0.1	0.25			Pipe	CMP	N/A		15				
HRT-OF-161	HRT-CB-1675	2016-07-14	Molly Bruno	CB sump wet, oil sheen and trash seen on surface of water. Parking lot very stained.	yes	Trickle							no	no	no	,,,,,	Unlikely	no		no			yes	Parking lot very stained, source of sheen seen in CB.															
HRT-OF-161	HRT-CB-1676	2016-07-14	Molly Bruno	CB sump wet, oil sheen and trash seen on surface of water.	no								no		no	,,,,,	Unlikely	no		no			no																
HRT-OF-161	HRT-OF-161	2016-07-14	Molly Bruno		yes	Trickle	Closed Pipe	0	18.8	7.91	1052	0.48	no	no	yes	Deposits/Stains,Poor pool quality,Suds,,,,	Possible (2 or more indicators present)	yes	Flow	no			no		2016-07-14	Chlorine,Detergents (MBAS)	0	0.25			Pipe	CMP	N/A		15				
HRT-OF-162	HRT-OF-162	2016-07-07	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CMP	N/A		15				
HRT-OF-163	HRT-OF-163	2016-07-01	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CPP	N/A		24				
HRT-OF-164	HRT-OF-164	2016-07-01	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CPP	N/A		29				
HRT-OF-165	HRT-OF-165	2016-07-07	Kerrie Garvey		yes	Trickle	Closed Pipe	0	20.4	8.26	1523	0.19	no	no	no	,,,,,	Unlikely	no		no			yes	Small scour pool below outfall							Pipe	CMP	N/A		18				
HRT-OF-166	HRT-OF-166	2016-07-07	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CMP	Water	Partially	18				
HRT-OF-170	HRT-OF-170	2016-07-01	Dana Allen		no								no		no	,,,,,	Unlikely	no		no			yes	Daylight end of pipe - covered by rock.							Pipe								Pipe outlet covered by large rock. No flow observed. CB above dry.
HRT-OF-171	HRT-OF-171	2016-07-01	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			yes	Bottom of pipe rusted out. Hillside eroding around pipe.							Pipe	CMP	N/A		12				
HRT-OF-172	HRT-OF-172	2016-07-01	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			yes	Partially filled with sediment							Pipe	CMP	Sediment	Partially	12				
HRT-OF-173	HRT-CB-968	2016-07-01	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			no																Able to locate OF-173 however covered in sediment and water.
HRT-OF-173	HRT-OF-173	2016-07-01	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			yes	Outfall unable to drain well. Currently in a hole filled with sediment and water.							Pipe			Fully					Outfall covered in sediment and water.
HRT-OF-174	HRT-OF-174	2016-06-16	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			yes	Pipe getting crushed.							Pipe	CPP	N/A		18				
HRT-OF-176	HRT-CB-1764	2016-06-24	Kateri Bisceglio	Outfall 176 is located on the edge of a retention pond with a locked gate. Could not access.	no								no		no	,,,,,	Unlikely	no		no			no																
HRT-OF-177	HRT-OF-177	2016-06-24	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	RCP	N/A		12				
HRT-OF-178	HRT-OF-178	2016-06-24	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	PVC	N/A		12				
HRT-OF-179	HRT-OF-179	2016-06-17	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CPP	N/A		15				
HRT-OF-180	HRT-OF-180	2016-07-01	Kateri Bisceglio		yes	Moderate	Closed Pipe	0.001	17.5	7.95	365	0.31	no	no	yes	Poor pool quality,Pipe benthic growth,Suds,,Brown,,	Possible (2 or more indicators present)	yes	Flow	no			no		2016-07-01	Detergents (MBAS),Chlorine	0	0			Pipe	PVC	N/A		24				
HRT-OF-180	HRT-OF-180	2016-07-14	Kateri Bisceglio		yes	Trickle	Closed Pipe	0.001	17.5	8.13	377	0.18	no	no	yes	Deposits/Stains,Poor pool quality,,Fine, sandy, white deposit along flow path,,,	Possible (2 or more indicators present)	yes	Flow	no			no		2016-07-14	Chlorine,Detergents (MBAS)	0	0.25			Pipe	PVC	N/A		24				
HRT-OF-181	HRT-OF-181	2016-06-16	Kateri Bisceglio		yes	Trickle	Closed Pipe	0.003	15.3	8.11	141	0.03	no	no	yes	Pipe benthic growth,Poor pool quality,Excessive Algae,Colors,,Orange,,	Unlikely	no		no			no								Pipe	PVC	N/A		24				
HRT-OF-182	HRT-OF-182	2016-07-07	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			yes	Sediment from the driveway is washing into CBs and discharging at outfall							Pipe	CPP	Sediment	Partially	12				
HRT-OF-183	HRT-CB-1777	2016-06-15	Kateri Bisceglio	CB dry.												,,,,,	Unlikely																						
HRT-OF-183	HRT-OF-183	2016-06-15	Dana Allen	Outfall pipe not seen - pipe buried. Water observed on ground surface. Did not test - too contaminated with grass clippings and soil. Sanitary force main crosses below the storm pipe.												,,,,,	Unlikely																						
HRT-OF-184	HRT-OF-184	2016-07-12	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CPP	N/A		18				
HRT-OF-185	HRT-OF-185	2016-06-17	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CPP	N/A		18				
HRT-OF-185	HRT-OF-186	2016-06-17	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CPP	N/A		15				
HRT-OF-185	HRT-OF-187	2016-06-17	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CPP	N/A		15				
HRT-OF-188	HRT-OF-188	2016-07-20	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CPP	N/A		18				
HRT-OF-189	HRT-OF-189	2016-07-20	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CPP	Water	Fully	12				
HRT-OF-190	HRT-OF-190	2016-07-20	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CPP	Water	Partially	6				
HRT-OF-192	HRT-OF-192	2016-06-16	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CMP	N/A		18				
HRT-OF-193	HRT-OF-193	2016-06-21	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			yes	Pipe scour							Pipe	CMP	N/A		18				
HRT-OF-194	HRT-OF-194	2016-06-21	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	Stone	N/A		36				Open box, no pipe
HRT-OF-195	HRT-OF-195	2016-06-21	Kateri Bisceglio		yes	Moderate	Closed Pipe	0.047	15.1	7.91	680	0.03	no	no	yes	Pipe benthic growth,,,Brown,,	Unlikely	no		no			no								Pipe	CPP	N/A		15				
HRT-OF-196	HRT-OF-196	2016-06-21	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CPP	N/A		15				
HRT-OF-197	HRT-OF-197	2016-06-24	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CMP	N/A		18				
HRT-OF-198	HRT-CB-477	2016-06-24	Kateri Bisceglio	Could not locate OF on bank. CB dry.	no								no		no	,,,,,	Unlikely	no		no			no																
HRT-OF-203	HRT-OF-203	2016-07-01	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CMP	N/A		12				
HRT-OF-204	HRT-OF-204	2016-07-01	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CPP	N/A		15				
HRT-OF-205	HRT-CB-1302	2016-06-24	Kateri Bisceglio	Could not locate OF on bank. Could not determine if flow was present.	no								no		no	,,,,,	Unlikely	no		no			no																
HRT-OF-206	HRT-CB-337	2016-06-15	Dana Allen	Dry.	no								no		no	,,,,,	Unlikely	no		no			no																
HRT-OF-206	HRT-CB-1909	2016-06-15	Kateri Bisceglio	Some moisture. Not flowing. Partially filled with sediment.	no								no		no	,,,,,	Unlikely	no		no			yes	Partially filled with sediment. OF completely filled with sediment and is causing water to pool.															
HRT-OF-206	HRT-OF-206	2016-06-15	Kateri Bisceglio	Pipe requires maintenance. Fully submerged in sediment.	no								no		no	,,,,,	Unlikely	no		no			yes	Pipe submerged in sediment							Pipe								
HRT-OF-206	HRT-OF-207	2016-06-15	Dana Allen	Pooled water at outlet. Not flowing. Will check upstream CB.	no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CMP	Sediment	Partially	15				
HRT-OF-208	HRT-CB-1910	2016-06-15	Kateri Bisceglio	Highest flow point.	yes	Trickle	Catchbasin Sump		17.4	7.9	780	0.03	no	no	no	,,,,,	Unlikely	no		no			no																
HRT-OF-208	HRT-CB-1911	2016-06-15	Dana Allen		no								no		no	,,,,,	Unlikely	no		no			no																
HRT-OF-208	HRT-OF-208	2016-06-15	Kateri Bisceglio	Water in sump. Testing from HRT-CB-1910.	yes	Trickle	Closed Pipe						no	no	yes	Pipe benthic growth,,,Green,,	Unlikely	no		no			no								Pipe	CMP	N/A		15				
HRT-OF-208	HRT-CB-2238	2016-06-15	Dana Allen		no								no		no	,,,,,	Unlikely	no		no			no																
HRT-OF-209	HRT-OF-209	2016-06-15	Dana Allen	Water pooled but not flowing.	no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CPP	N/A		15				
HRT-OF-209	HRT-CB-1914	2016-06-15	Dana Allen	Dry.	no								no		no	,,,,,	Unlikely	no		no			no																
HRT-OF-210	HRT-OF-210	2016-06-16	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CPP	N/A		24				
HRT-OF-211	HRT-CB-152	2016-06-15	Dana Allen	Dry. No flow.	no								no		no	,,,,,	Unlikely	no		no			no																
HRT-OF-211	HRT-OF-211	2016-06-15	Kateri Bisceglio	Water dammed up and pooling in pipe	no								no		no	,,,,,	Unlikely	no		no			yes	Clear out flow path so water won't pool.							Pipe	RCP	N/A		18				
HRT-OF-215	HRT-OF-215	2016-06-30	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			yes	Sediment							Pipe	CMP	Sediment	Partially	18				
HRT-OF-216	HRT-OF-216	2016-07-01	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	PVC	N/A		15				
HRT-OF-217	HRT-OF-217	2016-06-30	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CPP	N/A		10				
HRT-OF-218	HRT-OF-218	2016-07-01	Kateri Bisceglio	Pipe plugged with concrete	no								no		no	,,,,,	Unlikely	no		no			no								Pipe	Clay	N/A		12				
HRT-OF-219	HRT-OF-219	2016-07-01	Kateri Bisceglio	Pipe dripping. Sump I'm CB above not flowing. Did not test.	no								no		no	,,,,,	Unlikely	no		no			no								Pipe	PVC	N/A		15				

Outfall ID	Infrastructure ID	Date	Investigator	Notes	Flow?	Flow Description	Flow Location	Flow (CFS)	Temp. (C)	ph	Conductivity (us/cm)	Ammonia (mg/L)	Canine Investigation?	Physical Indicators?	Non Flow Related Indicators?	Non-Flow Related Indicators	Overall Characterization	Sample for Lab?	Sample Source	Optical Brightner Pad Set?	OB Set Date	OB Removal Date	Maintenance Needed?	Maintenance Notes?	Lab Analysis Date	Parameters Tested	Chlorine (mg/L)	Detergents (ppm)	Optical Brightner Present?	Lab Notes	Drainage Structure	Pipe Material	Pipe Submerged?	Submersion Amount	Pipe Diameter (inches)	Depth	Top Width	Bottom Width	Infrastructure Notes
HRT-OF-220	HRT-OF-220	2016-06-28	Kerrie Garvey		yes	Trickle	Closed Pipe		22.7	7.79	217	3.29	no	no	no	,,,,,	Suspect (one or more indicators with severity of 3)	yes	Flow	yes	2016-06-28	2016-06-30			2016-06-28	Chlorine,Detergents (MBAS),Optical Brightener	0.4	3	no	MBAS looked very dark in color in comparator. OB pad negative.	Pipe	CMP	N/A		18				Unable to measure flow - barely dripping
HRT-OF-220	HRT-OF-220	2016-06-30	Kateri Bisceglio		no								no		no	,,,,,	Possible (2 or more indicators present)	no		no			no								Pipe	CMP	N/A		18				Unable to measure flow - barely dripping
HRT-OF-220	HRT-OF-220	2016-07-13	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CMP	N/A		18				Unable to measure flow - barely dripping
HRT-OF-221	HRT-OF-221	2016-06-28	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			yes	Eroded below outfall and bottom of pipe rusting out							Pipe	CMP	N/A		18				
HRT-OF-222	HRT-OF-222	2016-06-28	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			yes	Liner is torn.							Pipe	CMP	N/A		48				
HRT-OF-223	HRT-OF-223	2016-06-28	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			yes	Pipe damaged							Pipe	CMP	N/A		24				
HRT-OF-225	HRT-OF-225	2016-07-20	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CMP	N/A		6				
HRT-OF-226	HRT-CB-1202	2016-06-30	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			no																Unable to locate OF-226
HRT-OF-227	HRT-OF-227	2016-07-07	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CMP	N/A		36				
HRT-OF-228	HRT-OF-228	2016-07-07	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CPP	N/A		8				
HRT-OF-269	HRT-CB-1234	2016-06-28	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			yes	Clean out sump							Pipe								Couldn't locate outfall- on heavily vegetated bank.
HRT-OF-270	HRT-OF-270	2016-06-27	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			yes	Clogged with sediment							Pipe	CMP	Sediment	Fully	15				Diameter is estimated
HRT-OF-271	HRT-OF-271	2016-07-01	Dana Allen		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	Clay	N/A		6				
HRT-OF-272	HRT-OF-272	2016-07-06	Dana Allen	Very small drip flow. Did not have enough to measure or to test temp/pH/conductivity.	yes	Trickle	Closed Pipe					0.08	no	no	no	,,,,,	Possible (2 or more indicators present)	yes	Flow	no			no		2016-07-07	Chlorine,Detergents (MBAS)	0.2	0.25			Pipe	Steel	N/A		24				
HRT-OF-272	HRT-CB-1118	2016-07-14	Molly Bruno	Cloudy water in sump, drip into pipe	yes	Trickle							no	no	no	,,,,,	Unlikely	no		no			no																
HRT-OF-272	HRT-OF-272	2016-07-14	Molly Bruno	Dripping very slow, unable to calculate flow.	yes	Trickle	Closed Pipe		23.6	8.03	163	0.38	no	no	no	,,,,,	Possible (2 or more indicators present)	yes	Flow	no			no		2016-07-14	Chlorine,Detergents (MBAS)	0.2	0.25			Pipe	Steel	N/A		24				
HRT-OF-272	HRT-OF-272	2016-08-04	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	Steel	N/A		24				
HRT-OF-272	HRT-CB-1119	2016-08-09	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		yes	2016-08-09	2016-08-12	no		2016-08-16	Optical Brightener			no	OB pads placed in both pipes coming into CB; no fluorescence for 1119a and 1119b								
HRT-OF-272	HRT-OF-272	2016-08-09	Molly Bruno		no								no		no	,,,,,	Unlikely	no		yes	2016-08-09	2016-08-12	no		2016-08-16	Optical Brightener			no		Pipe	Steel	N/A		24				
HRT-OF-273	HRT-OF-273	2016-07-06	Dana Allen		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CPP	N/A		18				
HRT-OF-274	HRT-OF-274	2016-07-06	Dana Allen		yes	Trickle	Closed Pipe	0.045	16.5	7.68	1140	0.45	no	no	no	,,,,,	Possible (2 or more indicators present)	yes	Sump	no			yes	Outfall highly eroded. Needs armoring.	2016-07-07	Chlorine,Detergents (MBAS)	0.1	0.25			Pipe	CMP	Sediment	Partially	36				
HRT-OF-274	HRT-OF-274	2016-08-04	Molly Bruno	No flow, pool quality good, no odor, no alarming features Pool T emp:17.8 Conductivity:222 pH:7.18 Ammonia: 0.17	no								no		no	,,,,,	Possible (2 or more indicators present)	yes	Pool	no			yes	Heavy erosion	2016-08-04	Chlorine,Detergents (MBAS)	0	0.25			Pipe	CMP	Sediment	Partially	36				
HRT-OF-274	HRT-CB-1142	2016-08-09	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		yes	2016-08-09	2016-08-12	no		2016-08-16	Optical Brightener			no										
HRT-OF-274	HRT-CB-1146	2016-08-09	Molly Bruno	Water in sump, no flow	no								no		no	,,,,,	Unlikely	no		yes	2016-08-09	2016-08-12	no		2016-08-16	Optical Brightener			no										
HRT-OF-274	HRT-OF-274	2016-08-09	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		yes	2016-08-09	2016-08-12	yes	Pipe partially submerged in sediment and somewhat crushed. Severe bank erosion above OF and around banks	2016-08-16	Optical Brightener			no		Pipe	CMP	Sediment	Partially	36				
HRT-OF-275	HRT-OF-275	2016-07-06	Dana Allen		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CMP	N/A		12				
HRT-OF-276	HRT-CB-763	2016-07-06	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			no																Unable to locate OF-276
HRT-OF-277	HRT-OF-277	2016-07-06	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CMP	N/A		12				Resident noted outfall was replaced last year.
HRT-OF-278	HRT-OF-278	2016-07-06	Dana Allen	Could not find outfall. No flow in CB above. Single CB outfall.									no			,,,,,	Unlikely	no		no																			Could not find outfall in vegetation. No flow in CB above. Single CB outfall.
HRT-OF-279	HRT-OF-279	2016-07-06	Dana Allen		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CMP	N/A		24				
HRT-OF-280	HRT-OF-280	2016-07-06	Dana Allen		yes	Moderate	Closed Pipe	0.008	13.3	6.8	1600	0	no	no	no	,,,,,	Unlikely	no		no			no																
HRT-OF-281	HRT-OF-281	2016-07-06	Dana Allen		yes	Moderate	Closed Pipe	0.005	14.6	7.28	1675	0	no	no	no	,,,,,	Unlikely	no		no			no								Pipe	CMP	N/A		24				
HRT-OF-282	HRT-OF-282	2016-07-01	Kerrie Garvey		yes	Trickle	Closed Pipe	0.002	19.7	8.63	1420	0.3	no	no	no	,,,,,	Possible (2 or more indicators present)	yes	Flow	no			yes	Pool scour	2016-07-01	Detergents (MBAS),Chlorine	0	0.25			Pipe	CMP	N/A		47				
HRT-OF-282	HRT-OF-282	2016-08-03	Kateri Bisceglio		yes	Trickle	Closed Pipe		18.3	8.13	1224	0.06	no	yes	yes	Poor pool quality,Suds,,,,	Possible (2 or more indicators present)	yes	Flow	no			yes	Bottom of pipe rusted out	2016-08-03	Chlorine,Detergents (MBAS)	0	0		Trace Cl and MBAS	Pipe	CMP	N/A		47				
HRT-OF-283	HRT-OF-283	2016-07-01	Kerrie Garvey		no								no			,,,,,	Unlikely	no		no			no								Pipe	CMP	N/A		18				
HRT-OF-284	HRT-OF-284	2016-07-01	Molly Bruno		yes	Trickle	Closed Pipe	0.003	21.2	8.31	1875	0.19	no	no	yes	Deposits/Stains,,,,,	Unlikely	no		no			no								Pipe	CMP	N/A		24				
HRT-OF-284	HRT-CB-1333	2016-08-03	Kateri Bisceglio	Top of flow for HRT-OF-282.	yes	Trickle	Catchbasin Sump		19	8.17	3820	0.16	no	no	no	,,,,,	Possible (2 or more indicators present)	yes	Sump	no			no		2016-08-03	Chlorine,Detergents (MBAS)	0	0.25		Trace Cl									
HRT-OF-284	HRT-CLVI-793	2016-08-09	Kateri Bisceglio		yes	Trickle	In-Stream		24	7.99	1212	0.23	no	no	yes	Pipe benthic growth,,,Brown,,	Possible (2 or more indicators present)	yes	Flow	no			no		2016-08-10	Chlorine,Detergents (MBAS)	0	0		Trace detergents	Pipe	CMP	N/A		48				
HRT-OF-285	HRT-OF-285	2016-06-24	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CMP	N/A		15				
HRT-OF-286	HRT-OF-286	2016-07-06	Dana Allen		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	RCP	N/A		12				
HRT-OF-293	HRT-OF-293	2016-07-06	Dana Allen	Nothing found here.									no			,,,,,	Unlikely																						No infrastructure found - outfall or CB. Outfall is single CB outfall (supposedly)
HRT-OF-294	HRT-OF-294	2016-07-06	Dana Allen		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CMP	N/A						
HRT-OF-295	HRT-OF-295	2016-07-06	Dana Allen		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CMP	N/A		24				
HRT-OF-296	HRT-OF-296	2016-07-06	Dana Allen		yes	Substantial	Closed Pipe	0.141	14.5	7.83	1401	0	no	no	no	,,,,,	Unlikely	no		no			yes	Bottom of pipe collapsing.							Pipe	CMP	N/A		48				
HRT-OF-297	HRT-OF-297	2016-07-06	Dana Allen	Could not find outfall.									no			,,,,,	Unlikely																						Could not find outfall. CB above dry.
HRT-OF-298	HRT-CB-1534	2016-06-28	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			no								Pipe								Outlet pipe is abandoned and bricked over
HRT-OF-299	HRT-OF-299	2016-06-28	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CMP	N/A		8				
HRT-OF-300	HRT-OF-300	2016-06-28	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			yes	Scour below outfall , trash							Pipe	CMP	N/A		12				
HRT-OF-301	HRT-OF-301	2016-06-28	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			yes	Erosion below outfall							Pipe	Steel	N/A		8				
HRT-OF-303	HRT-OF-303	2016-06-24	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	PVC	N/A		6				
HRT-OF-304	HRT-OF-304	2016-06-24	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	PVC	N/A		6				
HRT-OF-305	HRT-OF-305	2016-07-01	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	PVC	N/A		6				
HRT-OF-306	HRT-OF-306	2016-06-24	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	PVC	N/A		12				
HRT-OF-307	HRT-CB-1128	2016-06-24	Kateri Bisceglio	Couldn't locate outfall on bank. CB dry.	no								no		no	,,,,,	Unlikely	no		no			no								Pipe								
HRT-OF-308	HRT-OF-308	2016-07-01	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CPP	N/A		12				
HRT-OF-309	HRT-OF-309	2016-06-27	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CPP	N/A		28				
HRT-OF-310	HRT-CB-1925	2016-06-30	Kateri Bisceglio	Could not locate HRT-OF-310 on bank. Covered in brush and debris. CB dry.	no								no		no	,,,,,	Unlikely	no		no			no																
HRT-OF-311	HRT-CB-871	2016-06-30	Kateri Bisceglio	Could not locate HRT-OF-311. Covered in brush. CB not flowing.	no								no		no	,,,,,	Unlikely	no		no			no																
HRT-OF-312	HRT-OF-312	2016-06-24	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CMP	N/A		15				
HRT-OF-313	HRT-OF-313	2016-06-24	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CPP	N/A		15				
HRT-OF-314	HRT-CB-973	2016-07-01	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			no								Pipe								Outfall area under heavy construction. Couldn't access.
HRT-OF-315	HRT-OF-315	2016-07-01	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			yes	Homeowners are very concerned. Significant erosion along pipe. Turbid discharge noted by homeowner. Homeowner also states that he thinks the church CBs are draining here.							Pipe	CMP	Water	Fully	18				
HRT-OF-316	HRT-OF-316	2016-07-01	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			yes	Stone washed down below outfall							Pipe	CPP	N/A		18				
HRT-OF-317	HRT-OF-317	2016-06-27	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CMP	Sediment	Partially	24				
HRT-OF-320	HRT-OF-320	2016-07-06	Dana Allen		no								no		no	,,,,,	Unlikely	no		no			yes	Slightly eroded below outfall. Needs rip rap.							Pipe	CMP	N/A		12				
HRT-OF-321	HRT-OF-321	2016-07-06	Dana Allen		no								no		no	,,,,,	Unlikely	no		no			yes	Pipe outlet crushed and collapsing above outlet. Needs to be replaced.							Pipe	CMP	N/A		24				Pipe crushed
HRT-OF-322	HRT-OF-322	2016-06-28	Kerrie Garvey		no								no			,,,,,	Unlikely	no		no			yes	Partially filled with sediment							Pipe	CMP	Sediment	Partially	18				
HRT-OF-323	HRT-OF-323	2016-07-01	Dana Allen		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CMP	N/A		24				
HRT-OF-336	HRT-OF-336	2016-06-24	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			yes	Pipe completely submerged with sediment and lead litter							Pipe	CMP	Sediment	Fully					
HRT-OF-356	HRT-OF-356	2016-06-24	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			yes	Full of sediment							Pipe	RCP	N/A		18				
HRT-OF-357	HRT-OF-357	2016-06-24	Kateri Bisceglio		no								no			,,,,,	Unlikely	no		no			yes	Scour in flow path							Pipe	RCP	N/A		18				
HRT-OF-360	HRT-OF-360	2016-06-24	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			yes	Pipe caved in and bank erosion							Pipe	CMP	N/A		18				
HRT-OF-361	HRT-OF-361	2016-06-24	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CMP	N/A		12				
HRT-OF-362	HRT-OF-362	2016-06-21	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CMP	N/A		15				
HRT-OF-363	HRT-CB-144	2016-06-21	Kateri Bisceglio	Poison ivy around OF.	no								no		no	,,,,,	Unlikely	no		no			no																OF covered in poison ivy.
HRT-OF-363	HRT-OF-363	2016-06-21	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CMP	N/A		18				Area around pipe is covered in poison ivy. Cb is dry. Area below pipe is dry.
HRT-OF-364	HRT-OF-364	2016-06-21	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			yes	Bottom of pipe rusted out and disconnected from larger piece of pipe							Pipe	CMP	N/A		15				
HRT-OF-365	HRT-OF-365	2016-06-21	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CMP	N/A		12				
HRT-OF-366	HRT-OF-366	2016-06-21	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CMP	N/A		15				
HRT-OF-367	HRT-CB-147	2016-06-24	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			yes	CB cover not on and covered in sediment															
HRT-OF-367	HRT-OF-367	2016-06-24	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			yes	Full of sediment							Pipe	RCP	N/A		15				
HRT-OF-368	HRT-CB-161	2016-06-24	Kateri Bisceglio	Could not locate OF on bank. Covered in poison ivy. CB dry.	no								no		no	,,,,,	Unlikely	no		no			no																

Outfall ID	Infrastructure ID	Date	Investigator	Notes	Flow?	Flow Description	Flow Location	Flow (CFS)	Temp. (C)	ph	Conductivity (us/cm)	Ammonia (mg/L)	Canine Investigation?	Physical Indicators?	Non Flow Related Indicators?	Non-Flow Related Indicators	Overall Characteriztion	Sample for Lab?	Sample Source	Optical Brightner Pad Set?	OB Set Date	OB Removal Date	Maintenance Needed?	Maintenance Notes?	Lab Analysis Date	Parameters Tested	Chlorine (mg/L)	Detergents (ppm)	Optical Brightner Present?	Lab Notes	Drainage Structure	Pipe Material	Pipe Submerged?	Submersion Amount	Pipe Diameter (inches)	Depth	Top Width	Bottom Width	Infrastructure Notes
HRT-OF-389	HRT-CB-143	2016-06-24	Kateri Bisceglio	Could not locate HRT-OF-389 on bank.	no								no		no	,,,,,	Unlikely	no		no			yes	Looking through CB cover, pipe looks completely filled with leaf litter.															
HRT-OF-390	HRT-OF-390	2016-06-24	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			yes	Pipe partially filled with sediment							Pipe	CMP	N/A		18				
HRT-OF-393	HRT-OF-393	2016-06-24	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	RCP	N/A		18				
HRT-OF-427	HRT-OF-427	2016-07-20	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CPP	Water	Partially	18				
HRT-OF-428	HRT-OF-428	2016-07-20	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CPP	N/A		12				
HRT-OF-429	HRT-OF-429	2016-07-20	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CPP	N/A		15				
HRT-OF-443	HRT-OF-443	2016-07-01	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	PVC	N/A		23				
HRT-OF-445	HRT-OF-445	2016-06-27	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	PVC	N/A		12				
HRT-OF-446	HRT-OF-446	2016-07-20	Kateri Bisceglio		yes	Trickle	Closed Pipe	0.035	20	7.27	734	3.48	no	no	yes	Poor pool quality,Pipe benthic growth,Suds,Oil Sheen,,Brown,,Benthic growth on top of sediment in bottom of OF	Possible (2 or more indicators present)	yes	Flow	no			no		2016-07-20	Chlorine,Detergents (MBAS)	0	0		Trace detergents and Cl	Pipe	CMP	N/A		42				
HRT-OF-446	HRT-CLVO-933	2016-08-03	Kateri Bisceglio	Could not measure flow	yes	Trickle	Closed Pipe		22.2	7.21	784	3.6	no	no	yes	Poor pool quality,Excessive Algae,Oil Sheen,Colors,,,,	Possible (2 or more indicators present)	yes	Flow	no			yes	Pipe cracked	2016-08-03	Chlorine,Detergents (MBAS)	0	0		Trace MBAS	Pipe	CPP	Water	Partially	15				
HRT-OF-446	HRT-OF-446	2016-08-03	Molly Bruno		yes	Trickle	Closed Pipe		21.2	7.87	743	2.71	no	no	yes	Poor pool quality,Suds,Colors,,,,	Possible (2 or more indicators present)	yes	Flow	no			no		2016-08-03	Chlorine,Detergents (MBAS)	0.5	0.25			Pipe	CMP	N/A		42				
HRT-OF-446	HRT-CLVI-991	2016-08-23	Molly Bruno	Seems like tree nursery has underdrains that lead to culvert inlet. Top of found flow.	yes	Trickle	Open Drainage (ditch)		21.7	7.12	800	5.2	no	Odor	yes	Deposits/Stains,Poor pool quality,Oil Sheen,,,,	Possible (2 or more indicators present)	yes	Flow	no			no		2016-08-23	Detergents (MBAS)		0											
HRT-OF-446	HRT-SMH-340	2016-08-23	Molly Bruno	Underdrain pvc pipe	yes	Trickle	Closed Pipe		21.2	7.56	712	0.23	no	no	no	,,,,,	Possible (2 or more indicators present)	yes	Flow	no			no		2016-08-23	Chlorine,Detergents (MBAS)	0	0		Trace detergents									
HRT-OF-446	HRT-SMH-340	2016-08-23	Molly Bruno	Culvert	yes	Trickle	Closed Pipe		19.7	7.49	764	3.6	no	no	no	,,,,,	Possible (2 or more indicators present)	yes	Flow	no			no		2016-08-23	Chlorine,Detergents (MBAS)	0	0		Trace detergents									
HRT-OF-447	HRT-OF-447	2016-07-20	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CPP	N/A		15				
HRT-OF-448	HRT-OF-448	2016-06-28	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			yes	Partially filled with sediment							Pipe	CMP	N/A		12				
HRT-OF-449	HRT-OF-449	2016-06-24	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	PVC	N/A		12				
HRT-OF-450	HRT-OF-450	2016-06-24	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			yes	A little crushed							Pipe	CPP	N/A		15				
HRT-OF-451	HRT-OF-451	2016-06-24	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			yes	Excess Sediment build up and sediment flow path							Pipe	CPP	N/A		15				
HRT-OF-452	HRT-OF-452	2016-06-24	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			yes	Bank above OF falling over pipe and scour in flow path.							Pipe	RCP	N/A		18				
HRT-OF-453	HRT-OF-453	2016-06-27	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	RCP	N/A		24				
HRT-OF-454	HRT-OF-454	2016-06-27	Kateri Bisceglio		yes	Moderate	Closed Pipe	0.072	17	7.75	313	0.34	no	no	no	,,,,,	Unlikely	yes	Flow	no			no		2016-06-27	Detergents (MBAS),Chlorine	0	0			Pipe	RCP	N/A		70				
HRT-OF-455	HRT-OF-455	2016-06-27	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	RCP	N/A		15				
HRT-OF-456	HRT-CB-2179	2016-06-27	Kateri Bisceglio	Could not visually inspect CB. Did not hear flowing water.	no								no		no	,,,,,	Unlikely	no		no			yes	Could not locate OF on bank. Suspect that it is buried. Garbage and excess brush piled on hillside. CB located underneath a parked trailer.															
HRT-OF-457	HRT-CB-2157	2016-06-28	Kerrie Garvey		yes	Trickle	Closed Pipe		20.6	7.74	238	0.13	no	no		,,,,,	Unlikely	no		no			no								Pipe	CMP	N/A		15				Outfall was dangerous to access, so CB was sampled. Unable to measure flow. Pipe diameter is an estimate.
HRT-OF-458	HRT-CB-409	2016-07-01	Dana Allen		no								no		no	,,,,,	Unlikely	no		no			no																
HRT-OF-459	HRT-OF-459	2016-06-28	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CPP	N/A		18				
HRT-OF-460	HRT-OF-460	2016-06-24	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			yes	Slight sediment build up							Pipe	CMP	N/A		18				
HRT-OF-461	HRT-OF-461	2016-07-06	Dana Allen	Could not find outfall.									no			,,,,,	Unlikely																						Could not find outfall.
HRT-OF-462	HRT-OF-462	2016-07-06	Dana Allen	Could not gain access to outfall.									no			,,,,,	Unlikely																						Could not gain access to outfall. May need to return via river in fall.
HRT-OF-464	HRT-OF-464	2016-07-20	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			yes	Pipe disconnected above outfall							Pipe	CPP	N/A		24				
HRT-OF-465	HRT-OF-465	2016-07-20	Kateri Bisceglio		yes	Trickle	Closed Pipe	0	19.2	7.71	375	0.59	no	no	no	,,,,,	Possible (2 or more indicators present)	yes	Flow	no			yes	Bank eroding out from underneath pipe and pipe rusting through	2016-07-20	Chlorine,Detergents (MBAS)	0	0.5		Cl trace	Pipe	CMP	N/A		18				
HRT-OF-465	HRT-CB-2196	2016-08-03	Molly Bruno	Wet in sump, not flowing	no								no		no	,,,,,	Unlikely	no		no			no																
HRT-OF-465	HRT-OF-465	2016-08-03	Kateri Bisceglio	MBAS sample green in comparator	yes	Trickle	Closed Pipe		22.7	8.12	330	0.16	no	no	no	,,,,,	Possible (2 or more indicators present)	yes	Flow	no			yes	Bottom of pipe rusting out and bank erosion around OF	2016-08-03	Chlorine,Detergents (MBAS)	0	0.75		Trace Cl; MBAS sample green in comparator	Pipe	CMP	N/A		18				
HRT-OF-465	HRT-CB-2216	2016-08-03	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			no																
HRT-OF-465	HRT-CB-2196	2016-08-09	Molly Bruno		no								no		no	,,,,,	Unlikely	no		yes	2016-08-09	2016-08-12	no		2016-08-16	Optical Brightener			no	Fell to bottom of CB sump.									
HRT-OF-465	HRT-OF-465	2016-08-09	Kateri Bisceglio		yes	Trickle	Closed Pipe						no	no	no	,,,,,	Unlikely	no		yes	2016-08-09	2016-08-12	yes	Bottom of pipe rusting out and bank erosion around OF	2016-08-16	Optical Brightener			no		Pipe	CMP	N/A		18				
HRT-OF-466	HRT-OF-466	2016-06-21	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			yes	Lots of scour and erosion							Pipe	CMP	N/A		15				
HRT-OF-467	HRT-OF-467	2016-06-21	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			yes	Clean out sediment							Pipe	CPP	N/A		18				
HRT-OF-468	HRT-OF-468	2016-06-15	Kateri Bisceglio		yes	Trickle	Closed Pipe	0.012	14.1	8.2	580	0	no	no	no	,,,,,	Unlikely	no		no			no								Pipe	CMP	N/A		36				
HRT-OF-469	HRT-OF-469	2016-06-16	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CPP	N/A		18				
HRT-OF-470	HRT-OF-470	2016-06-16	Kateri Bisceglio	Pipe next to outfall has strange iron buildup.	no								no		yes	Poor pool quality,Excessive Algae,,,,	Unlikely	no		no			yes	No maintenance needed, pipe next to pitfall had strange iron deposited, not flowing on visit							Pipe	CMP	N/A		15				
HRT-OF-470	HRT-CB-2214	2016-08-03	Molly Bruno	Cannot tell if flowing. Used for HRT-OF-471, 470 leads to 471 through open ditch.	yes	Trickle	Catchbasin Sump		19.3	7.68	9.33	2.95	no	no	yes	Poor pool quality,Colors,,,,Orange	Possible (2 or more indicators present)	yes	Sump				no		2016-08-03	Chlorine,Detergents (MBAS)	0	0		Trace MBAS									
HRT-OF-471	HRT-OF-471	2016-06-16	Kateri Bisceglio		yes	Trickle	Closed Pipe	0.001	17.4	7.16	1156	1.63	no	no	yes	Poor pool quality,Pipe benthic growth,Excessive Algae,Colors,Oil Sheen,,Orange,,	Possible (2 or more indicators present)	yes	Flow	no			no		2016-06-16	Chlorine,Detergents (MBAS)	0	0.25		0	Pipe	CPP	N/A		15				
HRT-OF-471	HRT-CLVI-981	2016-08-03	Molly Bruno	Cannot tell if flowing	yes	Trickle	Open Drainage (ditch)		21.5	7.69	763	0.38	no		yes	Poor pool quality,Colors,,,,Orange growth	Possible (2 or more indicators present)	yes	Pool	no			no		2016-08-03	Chlorine,Detergents (MBAS)	0	0.25		Cl trace									

Outfall ID	Infrastructure ID	Date	Investigator	Notes	Flow?	Flow Description	Flow Location	Flow (CFS)	Temp. (C)	ph	Conductivity (us/cm)	Ammonia (mg/L)	Canine Investigation?	Physical Indicators?	Non Flow Related Indicators?	Non-Flow Related Indicators	Overall Characterization	Sample for Lab?	Sample Source	Optical Brightner Full Set?	OB Set Date	OB Removal Date	Maintenance Needed?	Maintenance Notes?	Lab Analysis Date	Parameters Tested	Chlorine (mg/L)	Detergents (ppm)	Optical Brightner Present?	Lab Notes	Drainage Structure	Pipe Material	Pipe Submerged?	Submersion Amount	Pipe Diameter (inches)	Depth	Top Width	Bottom Width	Infrastructure Notes
HRT-OF-471	HRT-OF-471	2016-08-03	Kateri Bisceglio		yes	Trickle	Closed Pipe		22	7.87	842	0.14	no	no	yes	Deposits/Stains,Poor pool quality,Suds,Oil Sheen,,,,	Possible (2 or more indicators present)	yes	Flow				no		2016-08-03	Detergents (MBAS),Chlorine	0	0		Trace Cl and MBAS	Pipe	CPP	N/A		15				
HRT-OF-472	HRT-OF-472	2016-07-20	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CPP	N/A		12				
HRT-OF-473	HRT-OF-473	2016-07-20	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CPP	N/A		12				
HRT-OF-474	HRT-OF-474	2016-07-20	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			yes	Eroding out of bank							Pipe	CMP	N/A		12				
HRT-OF-475	HRT-OF-475	2016-06-21	Kerrie Garvey		no								no			,,,,,	Unlikely	no		no			yes	Fully plugged with sediment							Pipe	RCP	N/A		12				
HRT-OF-476	HRT-OF-476	2016-06-21	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	PVC	N/A		8				
HRT-OF-477	HRT-OF-477	2016-06-21	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CPP	N/A		18				
HRT-OF-478	HRT-OF-478	2016-06-15	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			yes	Pipe almost completely submerged in sediment							Pipe	RCP	Sediment	Partially	12				
HRT-OF-479	HRT-CB-2131	2016-07-01	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			no																Unable to locate OF-479
HRT-OF-479	HRT-CB-2133	2016-07-01	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			no								Pipe								Couldn't locate outfall 479
HRT-OF-483	HRT-OF-483	2016-06-16	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CMP	N/A		15				
HRT-OF-484	HRT-OF-484	2016-06-17	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CPP	N/A		15				
HRT-OF-485	HRT-OF-485	2016-06-15	Kateri Bisceglio	Homeowner denied access. Couldn't see CB. Culvert coming from across street was dry at OF.	no								no		no	,,,,,	Unlikely	no		no			no																
HRT-OF-486	HRT-OF-486	2016-06-16	Kateri Bisceglio		yes	Trickle	Closed Pipe	0.003	12.8	8.12	4.36	0	no	no	no	,,,,,	Unlikely	no		no			no								Pipe	CMP	N/A		30				
HRT-OF-487	HRT-OF-487	2016-06-15	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			yes	Pipe partially submerged in sediment.							Pipe	RCP	Sediment	Partially	15				
HRT-OF-488	HRT-OF-488	2016-06-15	Dana Allen	Pipe fully buried under Cinder blocks. Appears dry. CB upstream dry.	no								no		no	,,,,,	Unlikely	no		no			no								Pipe		Sediment	Fully					
HRT-OF-489	HRT-CB-153	2016-06-15	Dana Allen	Water pooled in CB sump but not flowing to pipe. Could hear water flowing into pipe down from CB. Will sample at downstream CB.	no								no		no	,,,,,	Unlikely	no		no			no																
HRT-OF-489	HRT-CB-489	2016-06-15	Kateri Bisceglio		yes	Trickle	Catchbasin Sump		19.7	3.14	877	0.09	no	no	no	,,,,,	Possible (2 or more indicators present)	yes	Sump	no			no		2016-06-16	Detergents (MBAS),Chlorine	0	0		Trace Cl and detergents.									
HRT-OF-489	HRT-OF-489	2016-06-15	Kateri Bisceglio	Residual water in sump, minimal flow. Checked HRT-CB-489	yes	Trickle	Closed Pipe						no	no	no	,,,,,	Unlikely	no		no			no								Pipe	RCP	N/A		24				
HRT-OF-489	HRT-OF-489	2016-08-23	Molly Bruno	No flow, sample from pool	yes				19.6	7.72	963	0	no	no	no	,,,,,	Possible (2 or more indicators present)	yes	Pool	no			no		2016-08-23	Detergents (MBAS)		0.25		Detergents sample green	Pipe	RCP	N/A		24				
HRT-OF-490	HRT-OF-490	2016-06-15	Dana Allen		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	RCP	N/A		18				
HRT-OF-491	HRT-OF-491	2016-06-17	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CPP	N/A		6				
HRT-OF-492	HRT-OF-492	2016-06-16	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			yes	Pipe fully submerged in water.							Pipe	CMP	Water	Fully	20				
HRT-OF-494	HRT-OF-494	2016-06-22	Kateri Bisceglio		no								no			,,,,,	Unlikely	no		no			yes	Pipe broken.							Pipe	RCP	N/A		24				Water in sump. Also inspected CB.
HRT-OF-494	HRT-CB-150	2016-06-22	Dana Allen	Water pooled in sump - no flow.	no								no		no	,,,,,	Unlikely	no		no			no																
HRT-OF-495	HRT-OF-495	2016-06-22	Kateri Bisceglio		yes	Trickle	Closed Pipe	0	14	7.6	1350	0.07	no	no	no	,,,,,	Unlikely	no		no			yes	Trash around OF							Pipe	RCP	N/A		18				
HRT-OF-496	HRT-OF-496	2016-06-22	Kateri Bisceglio		yes	Trickle	Closed Pipe	0	14.4	7.3	1180	0.05	no	no	yes	Pipe benthic growth,,,Brown,,	Unlikely	no		no			no								Pipe	RCP	N/A		18				
HRT-OF-499	HRT-OF-499	2016-06-22	Dana Allen	Remove rock and unclog pipe.	no								no		no	,,,,,	Unlikely	no		no			no								Pipe	RCP	N/A		24				Pipe clogged and has rock at outlet - should be removed.
HRT-OF-502	HRT-OF-502	2016-06-22	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			yes	Pipe almost submerged in sediment.							Pipe	RCP	N/A		24				
HRT-OF-503	HRT-OF-503	2016-06-22	Dana Allen		no								no		no	,,,,,	Unlikely	no		no			yes	Cut vegetation away from outlet for easier future maintenance.							Pipe	RCP	N/A		24				
HRT-OF-504	HRT-OF-504	2016-06-22	Dana Allen		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CPP	N/A		24				
HRT-OF-505	HRT-OF-505	2016-06-22	Kateri Bisceglio		yes	Trickle	Closed Pipe	0.008	12.8	7.95	280	0.07	no	no	no	,,,,,	Unlikely	no		no			no								Pipe	RCP	N/A		24				
HRT-OF-506	HRT-OF-506	2016-06-22	Kateri Bisceglio		yes	Trickle	Closed Pipe	0.012	12.5	7.7	585	0.06	no	no	no	,,,,,	Unlikely	no		no			no								Pipe	CMP	N/A		24				
HRT-OF-507	HRT-OF-507	2016-06-21	Kateri Bisceglio		yes	Trickle	Closed Pipe	0	15.2	7.91	411	0.11	no	no	no	,,,,,	Unlikely	no		no			no								Pipe	CMP	N/A		18				
HRT-OF-508	HRT-OF-508	2016-06-21	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			yes	Pipe rusted through on bottom							Pipe	CMP	N/A		18				
HRT-OF-509	HRT-OF-509	2016-06-21	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CMP	N/A		15				
HRT-OF-510	HRT-OF-510	2016-06-21	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	RCP	N/A		15				
HRT-OF-511	HRT-OF-511	2016-06-21	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			yes	Mostly filled with sediment							Pipe	CMP	Sediment	Partially	18				
HRT-OF-512	HRT-OF-512	2016-06-21	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			yes	Partially filled with sediment							Pipe	RCP	Sediment	Partially	18				
HRT-OF-513	HRT-OF-513	2016-06-21	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			yes	Partially filled with sediment							Pipe	RCP	N/A		18				
HRT-OF-514	HRT-OF-514	2016-06-15	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CPP	N/A		12				
HRT-OF-515	HRT-OF-515	2016-06-21	Kateri Bisceglio		yes	Trickle	Closed Pipe	0.003	13.3	7.96	418	0.03	no	no	no	,,,,,	Unlikely	no		no			no								Pipe	CMP	N/A		18				
HRT-OF-516	HRT-OF-516	2016-06-17	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			yes	Size of pipe assumed. Almost completely buried in sediment.							Pipe	CMP	N/A		12				
HRT-OF-517	HRT-OF-517	2016-06-17	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			yes	Sediment needs to be removed							Pipe	CMP	N/A		15				
HRT-OF-518	HRT-OF-518	2016-06-16	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	RCP	N/A		24				
HRT-OF-519	HRT-OF-519	2016-06-16	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CPP	N/A		18				
HRT-OF-520	HRT-OF-520	2016-06-16	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CPP	N/A		15				
HRT-OF-521	HRT-OF-521	2016-06-16	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CPP	N/A		15				
HRT-OF-522	HRT-CB-2253	2016-06-16	Molly Bruno	Unable to locate OF-522 on eroding bank	no								no		no	,,,,,	Unlikely	no		no			yes	Erosion into CB														
HRT-OF-522	HRT-OF-522	2016-06-16	Kateri Bisceglio	Could not locate OF on bank. See HRT-CB-2253.	no								no		no	,,,,,	Unlikely	no		no			yes	Bank buried in leaves and other debris. Bank erosion.														
HRT-OF-523	HRT-OF-523	2016-06-16	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CPP	N/A		22				
HRT-OF-524	HRT-OF-524	2016-06-17	Kateri Bisceglio		yes	Moderate	Closed Pipe	0.021	17.3	7.97	464	0.01	no	no	no	,,,,,	Unlikely	no		no			no								Pipe	CMP	N/A		30				
HRT-OF-525	HRT-OF-525	2016-06-17	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CPP	N/A		12				
HRT-OF-526	HRT-OF-526	2016-06-17	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			yes	Bottom of pipe rusted out							Pipe	CMP	N/A		18				
HRT-OF-527	HRT-CB-468	2016-06-22	Dana Allen	Surface clogged.	no								no		no	,,,,,	Unlikely	no		no			yes	Inlet grate completely clogged.														
HRT-OF-527	HRT-OF-527	2016-06-22	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	RCP	N/A		18				
HRT-OF-528	HRT-OF-528	2016-06-17	Kateri Bisceglio		yes	Trickle	Closed Pipe	0	19.1	7.91	326	0.1	no	no	no	,,,,,	Unlikely	no		no			no								Pipe	CPP	N/A		4				
HRT-OF-529	HRT-OF-529	2016-06-17	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CPP	N/A		6				
HRT-OF-530	HRT-OF-530	2016-06-17	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			yes	Sediment							Pipe	CMP	N/A		8				
HRT-OF-531	HRT-OF-531	2016-07-20	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	PVC	N/A		6				
HRT-OF-532	HRT-OF-532	2016-06-21	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CMP	N/A		15				
HRT-OF-533	HRT-OF-533	2016-07-06	Dana Allen		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	Clay	N/A		6				2 pipes - same type.
HRT-OF-534	HRT-OF-534	2016-06-16	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			yes	Erosion							Pipe	RCP	Sediment	Partially	14				
HRT-OF-535	HRT-OF-535	2016-06-16	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			yes	Pipe almost completely filled with sediment.							Pipe	CPP	Sediment	Partially	22				
HRT-OF-536	HRT-OF-536	2016-06-16	Kateri Bisceglio		yes	Trickle	Closed Pipe	0	13.5	8.01	210	0.08	no	no	no	,,,,,	Unlikely	no		no			yes	Bottom of pipe rusted out							Pipe	CMP	N/A		24				
HRT-OF-537	HRT-OF-537	2016-06-16	Molly Bruno		yes	Trickle	Closed Pipe	0	13.8	7.92	165	0.09	no	no	no	,,,,,	Unlikely	no		no			no								Pipe	RCP	N/A		24				
HRT-OF-538	HRT-OF-538	2016-06-16	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	RCP	N/A		18				
HRT-OF-539	HRT-OF-539	2016-06-16	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	RCP	N/A		15				
HRT-OF-540	HRT-OF-540	2016-06-17	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			yes	Sediment should be cleaned out							Pipe	CMP	Sediment	Partially	15				
HRT-OF-541	HRT-OF-541	2016-06-16	Molly Bruno		yes	Trickle	Closed Pipe	0.002	13.1	7.91	326	0	no	no	no	,,,,,	Unlikely	no		no			no								Pipe	CMP	N/A		15				
HRT-OF-542	HRT-OF-542	2016-06-16	Molly Bruno		yes	Trickle	Closed Pipe	0.035	12.7	7.92	231	0.15	no	no	no	,,,,,	Unlikely	no		no			yes	Rusted out pipe							Pipe	CMP	N/A		18				
HRT-OF-543	HRT-CB-155	2016-06-16	Molly Bruno	Unable to locate OF-543 on eroded bank	no								no		no	,,,,,	Unlikely	no		no			no																
HRT-OF-543	HRT-OF-543	2016-06-16	Molly Bruno	Unable to locate outfall see CB-155												,,,,,	Unlikely																					
HRT-OF-544	HRT-OF-544	2016-06-16	Molly Bruno		yes	Moderate	Closed Pipe	0.003	14	7.96	390	0.13	no	no	no	,,,,,	Unlikely	no		no			no								Pipe	CPP	N/A		28				
HRT-OF-545	HRT-OF-545	2016-06-16	Molly Bruno		yes	Trickle	Closed Pipe	0.001	13.3	7.83	434	0.06	no	no	no	,,,,,	Unlikely	no		no			yes	Broken outfall structure							Pipe	CMP	N/A		22				
HRT-OF-546	HRT-OF-546	2016-06-16	Molly Bruno		yes	Trickle	Closed Pipe	0	13.1	7.83	226	0.07	no	no	no	,,,,,	Unlikely	no		no			no								Pipe	CMP	N/A		15				
HRT-OF-547	HRT-OF-547	2016-06-16	Molly Bruno		yes	Trickle	Closed Pipe	0.003	13.5	7.69	270	0	no	no	yes	Pipe benthic growth,,,Brown,,,	Unlikely	no		no			no								Pipe	PVC	N/A		22				
HRT-OF-548	HRT-OF-548	2016-06-16	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			yes	Crushed flat							Pipe	CMP	N/A		15				
HRT-OF-549	HRT-OF-549	2016-07-06	Dana Allen	Could not reach outfall sure to erosion but no flow observed.	no								no		no	,,,,,	Unlikely	no		no			yes	Erosion below outfall. Severe.							Pipe	RCP	N/A		12				Severely eroded below outlet.
HRT-OF-550	HRT-OF-550	2016-06-15	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	RCP	N/A		18				
HRT-OF-551	HRT-OF-551	2016-07-20	Molly Bruno		yes	Trickle	Closed Pipe	0.009	17.5	7.65	125	0	no	no	yes	Pipe benthic growth,,,Brown,,,	Unlikely	no		no			no								Pipe	CMP	N/A		18				
HRT-OF-552	HRT-OF-552	2016-07-01	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			yes	Partially filly with sediment							Pipe	CMP	N/A		18				
HRT-OF-901	HRT-OF-901	2016-07-06	Dana Allen	Looks like an underdrain pipe outlet.	no								no		no	,,,,,	Unlikely	no		no			no								Pipe	PVC	N/A		4				
HRT-OF-902	HRT-OF-902	2016-07-06	Dana Allen	Very close to two sanitary sewer manholes.	no								no		yes	,,,,,Smelled vaguely of sewage - possibly linked to sanitary manholes? Not on infrastructure map.	Possible (2 or more indicators present)	no		no			no								Pipe	Steel	N/A		18				Listed as possible due to proximity of sanitary infrastructure and smell of sewage from pipe.
HRT-OF-902	HRT-OF-902	2016-08-04	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	Steel	N/A		18				Listed as possible due to proximity of sanitary infrastructure and smell of sewage from pipe.
HRT-OF-902	HRT-OF-902	2016-08-09	Molly Bruno	No flow and no smell when OB pad was placed on 8-9-16. Human feces and toilet paper in pipe and caught on pad on 8-12-16 when visited to collect pad.	no								no		no	,,,,,	Obvious	no		yes	2016-08-09	2016-08-12	no		2016-08-17	Optical Brightener			yes	Flecks of Optical Brightener throughout the pad.	Pipe	Steel	N/A		18				Listed as possible due to proximity of sanitary infrastructure and smell of sewage from pipe.
HRT-OF-902	HRT-OF-902	2016-08-12	Molly Bruno	Smells	no								no		yes	,,,,,	Suspect (one or more indicators with severity of 3)	no		no			no								Pipe	Steel	N/A		18				Listed as possible due to proximity of sanitary infrastructure and smell of sewage from pipe.
HRT-OF-NEW-11	HRT-OF-NEW-10	2016-06-17	Kateri Bisceglio	Looks newly installed	no								no			,,,,,	Unlikely	no		no			no								Pipe	CPP	N/A		15				
HRT-OF-NEW-2	HRT-OF-NEW-1	2018-07-19	Kerrie Garvey		no										no	,,,,,	Unlikely	no		no			no								Pipe	CMP	N/A		50				
																																							55

Table 7. Town of Pittsfield Summary

Outfall ID	Infrastructure ID	Date	Investigator	Notes	Flow?	Flow Description	Flow Location	Flow (CFS)	Temp. (C)	pH	Conductivity (us/cm)	Ammonia (mg/L)	Canine Investigation?	Physical Indicators	Non-Flow Related Indicators?	Non-Flow Related Indicators	Overall Characterization	Sample for Lab?	Sample Source	Optical Brightner Pad Set?	OB Set Date	OB Removed Date	Maintenance Needed?	Maintenance Notes	Lab Analysis Date	Parameters Tested	Chlorine (mg/L)	Detergents (ppm)	Optical Brightner Present?	Lab Notes	Drainage Structure	Pipe Material	Pipe Submerged ?	Submersion Amount	Pipe Diameter (inches)
PTS-OF-1	PTS-OF-1	2016-04-25	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			yes	Sediment and trash, breaking pipe							Pipe	CMP	Sediment	Partially	22
PTS-OF-10	PTS-OF-10	2016-04-25	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CMP	N/A		22
PTS-OF-11	PTS-CB-14	2016-04-25	Molly Bruno	Could not locate PTS OF 11 on bank across road	no								no		no	,,,,,	Unlikely	no		no			yes	Lost of sediment, clogging CB											
PTS-OF-12	PTS-OF-12	2016-04-25	Molly Bruno	Ammonia -0.07	yes	Moderate	Closed Pipe	1.73	7.5	7.14	131	0	no	no	no	,,,,,	Unlikely	no		no			yes	Some trash							Pipe	CMP	Sediment	Partially	24
PTS-OF-13	PTS-OF-13	2016-04-25	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			yes	Broken pipe, partially filled with leaf litter and sediment							Pipe	CMP	N/A		18
PTS-OF-14	PTS-OF-14	2016-04-25	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			no								Pipe		Sediment	Partially	12
PTS-OF-15	PTS-OF-15	2016-04-25	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CPP	N/A		18
PTS-OF-2	PTS-OF-2	2016-04-25	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			yes	Partially crushed and rusting.							Pipe	CMP	Water	Partially	18
PTS-OF-3	PTS-OF-3	2016-04-25	Molly Bruno		yes	Trickle	Closed Pipe	0.002	10.1	7.59	22	0	no	no	no	,,,,,	Unlikely	no		no			yes	Broken and rusting pipe.							Pipe	CMP	N/A		18
PTS-OF-4	PTS-OF-4	2016-04-25	Molly Bruno		yes	Trickle	Closed Pipe	0.003	11.3	7.61	55	0	no	no	no	,,,,,	Unlikely	no		no			yes	Pipe rusting							Pipe	CMP	N/A		24
PTS-OF-4	PTS-OF-4	2018-05-17		Stream Walk - Water draining from adjacent hillside ditch	yes	Trickle	Closed Pipe		15.5	7.93	112	0			yes	,,,,,Trickle - broken pipe	Unlikely	no													Pipe	CMP	N/A		24
PTS-OF-5	PTS-OF-5	2016-04-25	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CMP	N/A		18
PTS-OF-6	PTS-OF-6	2016-04-25	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			yes	Almost fully submerged with sediment							Pipe	CMP	Sediment	Fully	18
PTS-OF-7	PTS-OF-7	2016-04-25	Molly Bruno	Ammonia -0.10	yes	Trickle	Closed Pipe	6	6.6	7.69	250	0	no	no	no	,,,,,	Unlikely	no		no			yes	Sediment fills almost half of pipe							Pipe	CMP	Sediment	Partially	18
PTS-OF-9	PTS-OF-9	2016-04-25	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			no								Pipe	CMP	N/A		28

Table 8. Town of Randolph Summary

Outfall ID	Infrastructure ID	Date	Investigator	Notes	Flow?	Flow Description	Flow Location	Flow (CFS)	Temp. (C)	pH	Conductivity (us/cm)	Ammonia (mg/L)	Canine Investigation?	Physical Indicators	Non-Flow Related Indicators?	Non-Flow Related Indicators	Overall Characterization	Sample for Lab?	Sample Source	Optical Brightner Pad Set?	OB Removed Date	OB Removed Date	Maintenance Needed?	Maintenance Notes	Lab Analysis Date	Parameters Tested	Chlorine (mg/L)	Detergents (ppm)	Optical Brightner Present?	Lab Notes	Inspection Notes	Drainage Structure	Pipe Material	Pipe Submerged?	Submersion Amount	Pipe Diameter (inches)
RND-New-001		2018-07-19		Looks abandoned. No flow.	no											,,,,,	Unlikely														Likely abandoned	Pipe	Clay	Sediment	Partially	12
RND-New-002		2018-07-19	Katey Beaton		no								no		no	,,,,,	Unlikely	no		no			no									Pipe	Clay	N/A		4
RND-New-003		2018-07-19	Katey Beaton		no								no		no	,,,,,	Unlikely	no		no			no									Pipe	Steel	N/A		8
RND-NEW-004		2018-07-19	Katey Beaton		no								no		no	,,,,,	Unlikely	no		no			no									Pipe	Steel	N/A		6
RND-OF-1	RND-OF-1	2016-06-01	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			no									Pipe	PVC	N/A		18
RND-OF-10	RND-OF-10	2016-06-02	Dana Allen		no								no		no	,,,,,	Unlikely	no		no			no									Pipe	CPP	N/A		18
RND-OF-100	RND-OF-100	2016-05-27	Kerrie Garvey		no								no			,,,,,	Unlikely	no		no			no									Pipe	CMP	N/A		18
RND-OF-101	RND-OF-101	2016-05-27	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			yes	Pipe damaged								Pipe	CMP	N/A		12
RND-OF-102	RND-OF-102	2016-05-27	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			yes	Pipe damaged, sediment built up								Pipe	CMP	Sediment	Partially	12
RND-OF-103	RND-OF-103	2016-05-27	Kerrie Garvey		no								no			,,,,,	Unlikely	no		no			yes	Pipe bent								Pipe	CMP	N/A		12
RND-OF-104	RND-OF-104	2016-05-27	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			yes	Filled with leaves								Pipe	PVC	N/A		18
RND-OF-105	RND-OF-105	2016-05-27	Kerrie Garvey		no								no			,,,,,	Unlikely	no		no			yes	Rusted, some sediment								Pipe	CMP	N/A		12
RND-OF-106	RND-CLVO-117	2017-08-02	Dana Allen		yes	Trickle	Closed Pipe	0.005	18	7.55	535	0.09		no	no	,,,,,	Unlikely	no		no			no													
RND-OF-106	RND-CB-769	2017-08-02	Dana Allen		yes	Moderate	Catchbasin Sump		18.4	7.84	578			no	no	,,,,,	Unlikely						no													
RND-OF-107	RND-CB-767	2016-05-27	Kerrie Garvey												no	,,,,,	Unlikely	no		no			yes	CB needs vactoring												
RND-OF-107	RND-OF-107	2016-05-27	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			yes	Swale filled with sediment							Could not locate pipe - buried by fill in swale					
RND-OF-108	RND-CB-766	2016-05-27	Kerrie Garvey		no								no			,,,,,	Unlikely	no		no			yes	Needs vactoring												
RND-OF-109	RND-OF-109	2016-05-27	Kerrie Garvey		no								no			,,,,,	Unlikely	no		no			yes	Sediment accumulated								Pipe	CMP	N/A		24
RND-OF-11	RND-OF-11	2016-06-02	Dana Allen	Likely a footing drain. Values low.	yes	Trickle	Closed Pipe		26.8	8.53	420	0.21	no	no	no	,,,,,	Possible (2 or more indicators present)	yes	Flow	no			no									Pipe	PVC	N/A		4
RND-OF-11	RND-OF-11	2016-08-04	Molly Bruno	Believed to be a footing drain. Unable to locate any catch basins in this area.	yes	Trickle	Closed Pipe		26.5	8	416	0.15	no	no	no	,,,,,	Unlikely	yes	Flow	no			no		2016-08-04	Chlorine,Detergents (MBAS)	0	0				Pipe	PVC	N/A		4
RND-OF-11	RND-OF-11	2017-08-02	Dana Allen		yes	Moderate	Closed Pipe		20.6	7.98	1380	0		no	yes	Pipe benthic growth,Poor pool quality,,,Colors,Excessive Algae,,	Unlikely	yes	Flow	no			no									Pipe	PVC	N/A		4
RND-OF-110	RND-OF-110	2016-05-27	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			no									Pipe	PVC	Sediment	Partially	15
RND-OF-112	RND-OF-112	2016-05-27	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			no									Pipe	CMP	N/A		18
RND-OF-116	RND-OF-116	2016-05-27	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			no									Pipe	PVC	N/A		18
RND-OF-117	RND-OF-117	2016-05-27	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			no									Pipe	PVC	N/A		36
RND-OF-118	RND-OF-118	2016-06-01	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			no									Pipe	CMP	N/A		18
RND-OF-138	RND-CB-324	2016-06-01	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			yes	Vactor CB								Pipe	HDPE	N/A		4
RND-OF-139	RND-OF-139	2016-06-01	Kerrie Garvey	Outfall is mapped slightly off	no								no		no	,,,,,	Unlikely	no		no			yes	Scoured, trash								Pipe	Cement	N/A		8
RND-OF-14	RND-OF-14	2016-07-20	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			no									Pipe	CPP	N/A		12
RND-OF-15	RND-OF-15	2016-07-20	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			no									Pipe	CPP	N/A		12
RND-OF-16	RND-OF-16	2016-06-02	Dana Allen		no								no		no	,,,,,	Unlikely	no		no			no									Pipe	HDPE	N/A		12
RND-OF-17	RND-OF-17	2016-06-02	Kateri Bisceglio		yes	Moderate	Closed Pipe	4	11.5	7.88	772	0.01	no	no	yes	Pipe benthic growth,,,,Brown and green,	Unlikely	no		no			yes	Grate at end of pipe partially blocked by trash and leaf litter.								Pipe	PVC	N/A		40
RND-OF-18	RND-OF-18	2016-06-02	Dana Allen		yes	Trickle	Closed Pipe		15.8	8.04	170	0.17	no	no	no	,,,,,	Possible (2 or more indicators present)	yes	Flow	no			yes	Deep head cut.								Pipe	CPP	N/A		24
RND-OF-18	RND-CB-270	2016-08-04	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			no													
RND-OF-18	RND-OF-18	2016-08-04	Molly Bruno		yes	Trickle	Closed Pipe		21.4	8.09	1108	0.15	no	no	yes	Deposits/Stains,,,,,	Possible (2 or more indicators present)	yes	Flow	no			yes	Heavy erosion	2016-08-04	Chlorine,Detergents (MBAS)	1.6	0.25				Pipe	CPP	N/A		24
RND-OF-19	RND-OF-19	2016-05-27	Kerrie Garvey		no										no	,,,,,	Unlikely	no		no			yes	Trash								Pipe	PVC	N/A		18
RND-OF-2	RND-OF-2	2016-06-02	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			no									Pipe	CPP	N/A		24
RND-OF-20	RND-OF-20	2016-06-01	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			no									Pipe	HDPE	N/A		15
RND-OF-21	RND-OF-21	2016-05-27	Kerrie Garvey		no								no			,,,,,	Unlikely	no		no			yes	Pipe mostly filled with sediment								Pipe	PVC	Sediment	Fully	15
RND-OF-22	RND-OF-22	2016-05-27	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			no									Pipe	PVC	N/A		15
RND-OF-23	RND-OF-23	2016-05-27	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			no									Pipe	PVC	N/A		12
RND-OF-24	RND-OF-24	2016-06-02	Dana Allen		no								no		no	,,,,,	Unlikely	no		no			yes	Neighbor says pipe clogs frequently in spring. Partially clogged now. Recommend upsizing pipe.								Pipe	CMP	N/A		12
RND-OF-25	RND-OF-25	2016-06-02	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			yes	Sediment								Pipe	RCP	Sediment	Partially	18
RND-OF-26	RND-OF-26	2016-06-01	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			yes	Mostly filled with sediment								Pipe	Concrete	Sediment	Partially	15
RND-OF-27	RND-CB-384	2016-06-01	Kerrie Garvey		no										no	,,,,,	Unlikely	no		no			no									Pipe	CMP	N/A		
RND-OF-28	RND-OF-28	2016-06-01	Kerrie Garvey	Tubing in pipe	yes	Moderate	Closed Pipe	0.016	17.8	7.45	722	0	no	no	no	,,,,,	Unlikely	no		no			no									Pipe	HDPE	N/A		15
RND-OF-29	RND-OF-29	2016-06-02	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			no									Pipe	RCP	N/A		15
RND-OF-3	RND-OF-3	2016-06-02	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			no									Pipe	CPP	N/A		24
RND-OF-30	RND-OF-30	2016-06-02	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			no									Pipe	CMP	N/A		18
RND-OF-31	RND-OF-31	2016-06-02	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			yes	Blocked with sediment								Pipe	CMP	Sediment	Fully	15
RND-OF-32	RND-OF-32	2016-06-01	Kateri Bisceglio		yes	Moderate	Closed Pipe	0.01	14.3	7.84	155	0.06	no	no	no	,,,,,	Unlikely	no		no			no									Pipe	CMP	N/A		24
RND-OF-33	RND-OF-33	2016-06-01	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			yes	Bottom of pipe rusting. Looks like water may also be flowing from under pipe due to scouring.								Pipe	CMP	N/A		24
RND-OF-34	RND-OF-34	2016-06-01	Kerrie Garvey		yes	Moderate	Closed Pipe	0.019	10.1	7.4	377	0.16	no	no	no	,,,,,	Unlikely	no		no			no									Pipe	CMP	N/A		24
RND-OF-35	RND-CB-410	2016-06-01	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			no								Couldn't locate outfall, no flow in CB	Pipe	CMP	N/A		
RND-OF-36	RND-OF-36	2016-06-01	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			no									Pipe	PVC	N/A		24
RND-OF-37	RND-OF-37	2016-06-02	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			yes	Vegetation could block flow and filled with debris.								Pipe	PVC	N/A		12
RND-OF-38	RND-CB-485	2016-07-20	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			no								Unable to locate outfall 38. Disturbed soil and standing water in outfall location. Closest CB found up line of outfall.					
RND-OF-38	RND-OF-38	2016-07-20	Kateri Bisceglio	Standing water and disturbed soil in OF location.	no								no		no	,,,,,	Unlikely	no		no			no								Could not locate OF. Checked HRT-CB-485. CB dry.					
RND-OF-39	RND-OF-39	2016-06-02	Dana Allen		no								no		no	,,,,,	Unlikely	no		no			no									Pipe	RCP	N/A		24
RND-OF-4	RND-OF-4	2016-06-02	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			no									Pipe	CPP	N/A		18
RND-OF-40	RND-CB-29	2016-06-02	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			no								Unable to locate outfall					
RND-OF-40	RND-CB-30	2016-06-02	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			no													
RND-OF-40	RND-OF-40	2016-06-02	Molly Bruno													,,,,,	Unlikely														In very eroded valley, banks too steep and unusable to climb down. See above infrastructure. Man said that they are repaving area soon and possibly changing storm lines.					
RND-OF-41	RND-OF-41	2016-06-02	Dana Allen		no								no		no	,,,,,	Unlikely	no		no			yes	Pipe buried, W								Pipe	CMP	N/A		18
RND-OF-42	RND-CB-491	2016-06-02	Dana Allen		no								no		no	,,,,,	Unlikely	no		no			yes	Fully plugged CB inlet.							CB completely plugged.					
RND-OF-43	RND-CB-606	2016-06-02	Dana Allen		no								no		no	,,,,,	Unlikely	no		no			no													
RND-OF-44	RND-CB-487	2016-07-20	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			no								Not flowing in CB, but moderate flow at outfall					
RND-OF-44	RND-OF-44	2016-07-20	Kateri Bisceglio		yes	Moderate	Closed Pipe	0.5	18.6	6.45	1348	1.34	no	Color,Odor,Turbidym manure, faint odor, cloudy	yes	Poor pool quality,Pipe benthic growth,,,Odors,Suds,Excessive Algae,Colors,Floatables,Tan,	Possible (2 or more indicators present)	yes	Flow	no			yes	Cows allowed around OF and in OF flow path.	2016-07-20	Chlorine,Detergents (MBAS)	0.4	0.5		Detergent test approximated as sample was to viscous for comparator.		Pipe	PVC	N/A		8
RND-OF-45	RND-OF-45	2016-05-27	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			yes	Pipe crushed, trash								Pipe	CMP	N/A		24
RND-OF-46	RND-OF-46	2016-05-27	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			yes	Concrete broken, trash								Pipe	PVC	N/A		18
RND-OF-47	RND-OF-47	2016-06-01	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			no									Pipe	PVC	N/A		12
RND-OF-49	RND-OF-49	2016-06-02	Dana Allen		no								no		no	,,,,,	Unlikely	no		no			no								Single CB outfall.	Pipe	CMP	N/A		12
RND-OF-5	RND-OF-5	2016-06-02	Dana Allen		no								no		no	,,,,,	Unlikely	no		no			no									Pipe	CPP	N/A		24
RND-OF-50	RND-OF-50	2016-06-02	Dana Allen		no								no		no	,,,,,	Unlikely	no		no			no									Pipe	CMP	N/A		12
RND-OF-53	RND-OF-53	2016-06-02	Dana Allen		no								no		no	,,,,,	Unlikely	no		no			no									Pipe	RCP	N/A	Partially	18
RND-OF-53	RND-OF-53	2016-06-02	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			yes	Wood broken, partially filled with leaves and sediment								Pipe	RCP	N/A	Partially	18
RND-OF-54	RND-OF-54	2016-06-02	Dana Allen		no								no		no	,,,,,	Unlikely	no		no			yes	Pipe crushed at end - partial.								Pipe	CMP	N/A		18
RND-OF-55	RND-OF-55	2016-06-02	Dana Allen		no								no		no	,,,,,	Unlikely	no		no			yes	Grate and pipe outlet mostly plugged.								Pipe	HDPE	N/A		8
RND-OF-56	RND-CB-530	2016-08-04	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			no													
RND-OF-56	RND-OF-56	2016-08-04	Molly Bruno		yes	Trickle								no	yes	Pipe benthic growth,,,,,	Unlikely	yes	Flow	no			no								6-2-16: placed OB pad. Not enough flow to sample and test.	Pipe	Steel	N/A		18
RND-OF-56	RND-OF-56	2017-08-02	Dana Allen	Third visit. No flow in any upstream infrastructure. No concern here.	no										no	,,,,,	Unlikely	no		no			no								6-2-16: placed OB pad. Not enough flow to sample and test.	Pipe	Steel	N/A		18
RND-OF-56	RND-OF-56			Trickle flow only. Placed OB pad. Could not obtain enough sample for evaluation.	yes	Trickle	Closed Pipe						no		yes	Pipe benthic growth,,,,,	Possible (2 or more indicators present)	yes	Flow	yes	2016-06-02	2016-06-03	no		2016-07-05	Optical Brightener			no	Negative	6-2-16: placed OB pad. Not enough flow to sample and test.	Pipe	Steel	N/A		18

Outfall ID	Infrastructure ID	Date	Investigator	Notes	Flow?	Flow Description	Flow Location	Flow (CFS)	Temp. (C)	pH	Conductivity (us/cm)	Ammonia (mg/L)	Canine Investigation?	Physical Indicators	Non-Flow Related Indicators?	Non-Flow Related Indicators	Overall Characterization	Sample for Lab?	Sample Source	Optical Brightner Pad Set?	OB Set Date	OB Removed Date	Maintenance Needed?	Maintenance Notes	Lab Analysis Date	Parameters Tested	Chlorine (mg/L)	Detergents (ppm)	Optical Brightner Present?	Lab Notes	Inspection Notes	Drainage Structure	Pipe Material	Pipe Submerged?	Submersion Amount	Pipe Diameter (inches)
RND-OF-57	RND-OF-57	2016-06-01	Kerrie Garvey	Not flowing but looks suspicious.	yes	Trickle	Closed Pipe		18.1	7.51	435	0.12	no	no	yes	Pipe benthic growth,,,,,	Possible (2 or more indicators present)	yes	Pool	no			no									Pipe	CMP	Water	Partially	24
RND-OF-57	RND-OF-57	2016-08-04	Molly Bruno	Not flowing sample of pool	yes	Moderate	Closed Pipe		24	8.35	313	0.3	no	no	no	,,,,,	Possible (2 or more indicators present)	yes	Pool	no			yes	Trash	2016-08-04	Chlorine,Detergents (MBAS)	0	0.5		Trace chlorine		Pipe	CMP	Water	Partially	24
RND-OF-58	RND-OF-58	2016-06-01	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			no									Pipe	CMP	N/A		12
RND-OF-58	RND-OF-58	2018-07-19			yes	Trickle	Closed Pipe		21.4	8.51	439	0				,,,,,	Unlikely															Pipe	CMP	N/A		12
RND-OF-59	RND-OF-59	2016-06-02	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			no									Pipe	CMP	N/A		15
RND-OF-6	RND-OF-6	2016-05-27	Kateri Bisceglio	Dripping. Flow insignificant and not enough to provide flow measurement.	no								no		no	,,,,,	Unlikely	no		no			no									Pipe	CPP	N/A		18
RND-OF-60	RND-OF-60	2016-06-01	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			no									Pipe	CPP	N/A		24
RND-OF-61	RND-OF-61	2016-06-01	Kateri Bisceglio	Some sediment in bottom of pipe	no								no		no	,,,,,	Unlikely	no		no			no									Pipe	CPP	N/A		18
RND-OF-62	RND-OF-62	2016-07-20	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			yes	Pipe almost fully submerged in sediment								Pipe	CMP	Sediment	Fully	12
RND-OF-63	RND-OF-63	2016-06-02	Dana Allen		no								no		no	,,,,,	Unlikely	no		no			no									Pipe	HDPE	N/A		18
RND-OF-64	RND-OF-64	2016-06-02	Dana Allen		no								no		no	,,,,,	Unlikely	no		no			yes	Outfall badly eroded below pipe.								Pipe	HDPE	N/A		12
RND-OF-65	RND-OF-65	2016-06-02	Dana Allen		no								no		no	,,,,,	Unlikely	no		no			no									Pipe	HDPE	N/A		6
RND-OF-66	RND-OF-66	2016-06-02	Dana Allen		no								no		no	,,,,,	Unlikely	no		no			no									Pipe	HDPE	N/A		12
RND-OF-67	RND-OF-67	2016-06-02	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			yes	Trash and erosion								Pipe	RCP	Sediment	Partially	15
RND-OF-68	RND-OF-68	2016-06-02	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			yes	Sediment								Pipe	CPP	Sediment	Partially	8
RND-OF-69	RND-OF-69	2016-06-02	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			yes	Filled in with grass								Pipe	CPP	Sediment	Partially	12
RND-OF-7	RND-OF-7	2016-05-27	Kerrie Garvey		no								no			,,,,,	Unlikely	no		no			no									Pipe	HDPE	N/A		4
RND-OF-70	RND-OF-70	2016-06-02	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			yes	Sediment								Pipe	RCP	Sediment	Partially	15
RND-OF-71	RND-OF-71	2016-06-02	Dana Allen		no								no		no	,,,,,	Unlikely	no		no			no									Pipe	CPP	N/A		18
RND-OF-72	RND-OF-72	2016-06-02	Dana Allen		no								no		no	,,,,,	Unlikely	no		no			no									Pipe	CPP	N/A		18
RND-OF-73	RND-OF-73	2016-06-02	Dana Allen		no								no		no	,,,,,	Unlikely	no		no			yes	Pipe outlet partially crushed.								Pipe	CPP	N/A		24
RND-OF-74	RND-OF-74	2016-06-02	Dana Allen		no								no		no	,,,,,	Unlikely	no		no			no									Pipe	CPP	N/A		18
RND-OF-75	RND-OF-75	2016-06-02	Dana Allen		no								no		no	,,,,,	Unlikely	no		no			no									Pipe	CPP	N/A		24
RND-OF-76	RND-OF-76	2016-06-02	Dana Allen		no								no		no	,,,,,	Unlikely	no		no			no									Pipe	CMP	N/A		18
RND-OF-77	RND-OF-77	2016-05-27	Kateri Bisceglio		yes	Trickle	Closed Pipe	3.5	12.2	8.27	1072	0	no	no	yes	Pipe benthic growth,Poor pool quality,,,Excessive Algae,Suds,Brown and green,	Possible (2 or more indicators present)	yes	Flow	no			no		2016-05-27	Chlorine,Detergents (MBAS)	0	0				Pipe	CPP	N/A		18
RND-OF-78	RND-OF-78	2016-05-27	Kateri Bisceglio		no								no		no	,,,,,Algae in pond	Unlikely	no		no			no									Pipe	PVC	Water	Partially	18
RND-OF-79	RND-OF-79	2016-05-27	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			no									Pipe	CPP	Water	Partially	12
RND-OF-8	RND-OF-8	2016-05-27	Kerrie Garvey		no								no			,,,,,	Unlikely	no		no			no									Pipe	PVC	N/A		15
RND-OF-80	RND-OF-80	2016-05-27	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			no									Pipe	PVC	Water	Partially	18
RND-OF-81	RND-OF-81	2016-05-27	Kerrie Garvey	Flow too shallow to measure time of travel	yes	Trickle	Closed Pipe	0.002	15	8.14	1440	0.04	no		yes	Pipe benthic growth,,,,,In swale below pipe too	Unlikely	no		no			no									Pipe	PVC	N/A		18
RND-OF-82	RND-OF-82	2016-05-27	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			yes	Sediment partially blocking pipe								Pipe	PVC	Sediment	Partially	18
RND-OF-83	RND-OF-83	2016-05-27	Kerrie Garvey		no								no			,,,,,	Unlikely	no		no			yes	Trash								Pipe	PVC	N/A		15
RND-OF-84	RND-CB-689	2016-05-27	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			no								Couldn't locate outfall, CB not flowing					
RND-OF-86	RND-CB-702	2016-05-27	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			no													
RND-OF-86	RND-OF-86	2016-05-27	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			yes	Half filled with sediment								Pipe	PVC	Sediment	Partially	18
RND-OF-87	RND-OF-87	2016-06-01	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			no									Pipe	PVC	N/A		24
RND-OF-88	RND-OF-88	2016-06-01	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			no									Pipe	HDPE	N/A		8
RND-OF-89	RND-OF-89	2016-06-01	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			yes	Mostly buried							Unable to measure pipe size	Pipe	CMP	Sediment	Partially	15
RND-OF-9	RND-OF-9	2016-05-27	Kerrie Garvey		no								no			,,,,,	Unlikely	no		no			no									Pipe	HDPE	N/A		8
RND-OF-90	RND-CB-708	2016-06-01	Kerrie Garvey		no								no			,,,,,	Unlikely	no		no			yes	Vactor CB								Pipe	HDPE	N/A		8
RND-OF-90	RND-OF-90	2016-06-01	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			yes	Pipe buried							Pipe buried.					
RND-OF-91	RND-OF-91	2016-06-01	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			no									Pipe	HDPE	N/A		6
RND-OF-92	RND-OF-92	2016-06-01	Kateri Bisceglio	Pipe completely disconnected	no								no		no	,,,,,	Unlikely	no		no			yes	Pipe broken off, mass failure, other pieces of clay pipes								Pipe	HDPE	N/A		18
RND-OF-92	RND-OF-92	2018-07-19		Pipe up stream of old pipe. Flowing. Definitely needs stableization. Attribute slightly elevated ammonia to swale network and underdraina	yes	Moderate	Closed Pipe		15.5	8.43	1300	0.26	no			,,,,,	Unlikely						yes	Bank stabilization needed								Pipe	HDPE	N/A		18
RND-OF-93	RND-OF-93	2016-06-01	Kerrie Garvey		yes	Moderate	Closed Pipe	0.007	14.6	7.62	516	0.02	no	no	yes	Pipe benthic growth,,,,,Minor	Unlikely	no		no			no									Pipe	PVC	N/A		30
RND-OF-94	RND-OF-94	2016-06-01	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			no									Pipe	PVC	N/A		18
RND-OF-95	RND-OF-95	2016-06-02	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			yes	Pipe breaking and erosion								Pipe	Clay	N/A		8
RND-OF-96	RND-CB-723	2016-06-01	Kerrie Garvey		no								no			,,,,,	Unlikely	no		no			yes	Vactor CB								Pipe	PVC	N/A		18
RND-OF-97	RND-OF-97	2016-06-01	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			yes	Pipe partially crushed, almost entirely buried in sediment								Pipe	CMP	Sediment	Partially	18
RND-OF-98	RND-OF-98	2016-06-02	Molly Bruno	Dripping	yes	Trickle	Closed Pipe		18.3	7.85	694	0.93	no	Smell, but likely decaying leaf litter	yes	Deposits/Stains,Poor pool quality,,,Suds,,	Possible (2 or more indicators present)	yes	Flow	no			yes	Outfall grate filled with debris											
RND-OF-98	RND-CB-319	2016-08-04	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			no													
RND-OF-98	RND-OF-98	2016-08-04	Molly Bruno	Dripping	yes	Trickle			20	8.22	656	0.92	no	no	yes	Deposits/Stains,,,,,	Possible (2 or more indicators present)	yes	Flow	no			yes	Clean out trash and leaves	2016-08-04	Detergents (MBAS),Chlorine	0.2	0.5								
RND-OF-98	RND-CB-319	2017-08-02	Dana Allen		no										no	,,,,,	Unlikely	no		no			no													
RND-OF-99	RND-OF-99	2016-06-01	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			yes	Some erosion, sediment deposits								Pipe	Concrete	N/A		12
RND-OF-NEW-1		2016-05-27	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			no									Pipe	CMP	N/A		12

Table 9. Town of Rochester Summary

Outfall ID	Infrastructure ID	Date	Investigator	Notes	Flow?	Flow Description	Flow Location	Flow (CFS)	Temp. (C)	pH	Conductivity (us/cm)	Ammonia (mg/L)	Canine Investigation?	Physical Indicators	Non-Flow Related Indicators?	Non-Flow Related Indicators	Overall Characterization	Sample for Lab?	Sample Source	Optical Brightner Pad Set?	OB Set Date	OB Removed Date	Maintenance Needed?	Maintenance Notes	Lab Analysis Date	Parameters Tested	Chlorine (mg/L)	Detergents (ppm)	Optical Brightner Present?	Lab Notes	Inspection Note	Pipe Material	Pipe Submerged?	Submersion Amount	Pipe Diameter (inches)
RCH-New-001		2018-05-17	Dana Allen	Drains swale on brooks ave	no										no	.....	Unlikely														Dry				
RCH-OF-1	RCH-OF-1	2016-04-18	Kerrie Garvey		yes	Trickle	Closed Pipe		15.4	8.16	30	0		no	no	.....	Unlikely	no		no			yes	Hole in bottom of pipe								CMP	N/A		10
RCH-OF-10	RCH-CB-6	2016-04-18	Kerrie Garvey		yes	Trickle	Closed Pipe		10	7.13	1848	0.21	no	no	no	.....	Possible (2 or more indicators present)	yes	Flow	no			no		2016-04-18	Detergents (MBAS)		0.25			Unable to locate RCH-OF-10. See on other side of road, line location unknown.				
RCH-OF-10	RCH-CB-6	2016-05-27	Molly Bruno		yes	Trickle	Closed Pipe		15.5	7.39	1981	0.35	no	no	no	.....	Possible (2 or more indicators present)	yes	Sump	no			no		2016-05-27	Chlorine,Detergents (MBAS)	0	0.25			Unable to locate RCH-OF-10. See on other side of road, line location unknown.				
RCH-OF-10	RCH-CB-32	2016-05-27	Molly Bruno		no								no		no	.....	Unlikely	no		no			yes	Collapsing CB							Dry				
RCH-OF-10	RCH-CB-76	2016-05-27	Molly Bruno		no								no		no	.....	Unlikely	no		no			no								Dry, top of line				
RCH-OF-10	RCH-OF-10	2018-05-17	Dana Allen	Possibly new since last inspection. Fulcrum map unable to load so not 100% will follow up back at the office. Pool formed at mouth of outfall. Rip rap reccomended	yes	Trickle		0.002	13.2	7.66	1720	-0.03				.....	Unlikely													Unable to locate outfall: see RCH-CB-6. Dean: select board member says outfall is under bridge covered in rubble, cleared out after Irene, however covered again.				
RCH-OF-11	RCH-OF-11	2016-04-18	Kerrie Garvey		no								no		no	.....	Unlikely	no		no			yes	Pipe crushed and rusty.								CMP	N/A		12
RCH-OF-12	RCH-OF-12	2016-04-18	Kerrie Garvey		no								no		no	.....	Unlikely	no		no			yes	Pipe broken and disconnected. Significant erosion where water bypasses pipe. Very rusty.								CMP	N/A		12
RCH-OF-13	RCH-OF-13	2016-04-18	Kerrie Garvey		no								no		no	.....	Unlikely	no		no			yes	Mostly filled with sediment. Upper section of pipe disconnected and above ground surface.								CMP	Sediment	Partially	12
RCH-OF-14	RCH-OF-14	2016-04-18	Kerrie Garvey		no								no		no	.....	Unlikely	no		no			no									CMP	N/A		24
RCH-OF-15	RCH-OF-15	2016-04-18	Kerrie Garvey		no								no		no	.....	Unlikely	no		no			no									PVC	N/A		10
RCH-OF-16	RCH-OF-16	2016-04-18	Kerrie Garvey		yes	Trickle	Closed Pipe	0.002	12.4	7.7	75	0.3	no	no	yes	Pipe benthic growth,,,,Little benthic growth below pipe	Possible (2 or more indicators present)	yes	Flow	no			no		2016-04-18	Detergents (MBAS)		0		Trace		PVC	N/A		15
RCH-OF-16	RCH-CB-34	2016-05-27	Dana Allen												no	.....	Unlikely																		
RCH-OF-16	RCH-OF-16	2016-05-27	Molly Bruno	CB above dry	no								no		no	.....	Unlikely	no		no			no									PVC	N/A		15
RCH-OF-17	RCH-OF-17	2016-04-18	Kerrie Garvey		no								no		no	.....	Unlikely	no		no			yes	Some trash and mostly filled with sediment.								CMP	Sediment	Partially	15
RCH-OF-18	RCH-OF-18	2016-04-18	Kerrie Garvey		no								no		no	.....	Unlikely	no		no			yes	Pipe partially crushed. Sediment and leaf litter present.								CMP	N/A		12
RCH-OF-19	RCH-OF-19	2016-05-27	Molly Bruno		no								no		no	.....	Unlikely	no		no			no									PVC	Sediment	Partially	8
RCH-OF-2	RCH-OF-2	2016-04-18	Kerrie Garvey		no								no		no	.....	Unlikely	no		no			no									CPP	N/A		20
RCH-OF-20	RCH-OF-20	2016-04-18	Kerrie Garvey		no								no		no	.....	Unlikely	no		no			yes	Halfway filled with sediment.								CMP	Sediment	Partially	18
RCH-OF-21	RCH-OF-21	2016-04-18	Molly Bruno		no								no		no	.....	Unlikely	no		no			no									CMP	N/A		18
RCH-OF-22	RCH-OF-22	2016-04-18	Molly Bruno		no								no		no	.....	Unlikely	no		no			no									CMP	N/A		20
RCH-OF-23	RCH-OF-23	2016-04-18	Molly Bruno		no								no		no	.....	Unlikely	no		no			yes	Some sediment								CPP	Sediment	Partially	18
RCH-OF-24	RCH-OF-24	2016-04-18			no								no		no	.....	Unlikely	no		no			yes	Some sediment and broken								CPP	Sediment	Partially	20
RCH-OF-25	RCH-OF-25	2016-04-18	Molly Bruno		no								no		no	.....	Unlikely	no		no			no									CMP	N/A		20
RCH-OF-26	RCH-OF-26	2016-04-18	Molly Bruno		no								no		no	.....	Unlikely	no		no			yes	Small amount of debris and sediment								CPP	Sediment	Partially	20
RCH-OF-27	RCH-OF-27	2016-04-18	Molly Bruno		no								no		no	.....	Unlikely	no		no			no									CPP	N/A		20
RCH-OF-28	RCH-CB-60	2016-04-18	Kerrie Garvey		no								no		no	.....	Unlikely	no		no			yes	Needs to be cleaned out.							Unable to locate RCH-OF-28				
RCH-OF-29	RCH-OF-29	2016-04-18	Alex Arsenault		yes	Moderate	Closed Pipe	0.018	8.5	7.92	38	0.27		no	yes	Pipe benthic growth,,,,,	Possible (2 or more indicators present)	yes	Flow	no			no		2016-04-18	Detergents (MBAS)		0.25				CMP	N/A		18
RCH-OF-29	RCH-CB-20	2016-05-27	Molly Bruno	Stream running into catch basin	yes	Moderate	Stream						no	Growth at end of pipe	no	.....	Unlikely	no		no			no												
RCH-OF-29	RCH-OF-29	2016-05-29	Dana Allen	Stream flow	yes											.....	Unlikely															CMP	N/A		18
RCH-OF-3	RCH-OF-3	2016-04-18	Molly Bruno		no								no		no	.....	Unlikely	no		no			no									CPP	N/A		24
RCH-OF-30	RCH-OF-30	2016-04-18	Molly Bruno		no								no		no	.....	Unlikely	no		no			no									CPP	N/A		20
RCH-OF-4	RCH-OF-4	2016-04-18	Kerrie Garvey		no								no		no	.....	Unlikely	no		no			no									Steel	N/A		18
RCH-OF-5	RCH-OF-5	2016-04-18	Kerrie Garvey		no								no		no	.....	Unlikely	no		no			yes	Sediment entering River from bank.								CMP	N/A		24
RCH-OF-6	RCH-OF-6	2016-04-18	Kerrie Garvey		no								no		no	.....	Unlikely	no		no			no									CMP	Sediment	Partially	18
RCH-OF-7	RCH-OF-7	2016-04-18	Kerrie Garvey		no								no		no	.....	Unlikely	no		no			yes	Pipe partially crushed and filled with sediment.								CMP	Sediment	Partially	18
RCH-OF-8	RCH-OF-8	2016-04-18	Kerrie Garvey		no								no			.....	Unlikely	no		no			yes	Partially filled with sediment.								HDPE	Sediment	Partially	8
RCH-OF-9	RCH-OF-9	2016-04-18	Kerrie Garvey		no								no		no	.....	Unlikely	no		no			yes	Pipe crushed and rusted with holes								CMP	N/A		18

Table 10. Town of Royalton Summary

Outfall ID	Infrastructure ID	Date	Investigator	Notes	Flow?	Flow Description	Flow Location	Flow (CFS)	Temp. (C)	pH	Conductivity (us/cm)	Ammonia (mg/L)	Canine Investigation?	Physical Indicators	Non-Flow Related Indicators?	Non-Flow Related Indicators	Overall Characterization	Sample for Lab?	Sample Source	Optical Brightner Pad Set?	OB Set Date	OB Removed Date	Maintenance Needed?	Maintenance Notes	Lab Analysis Date	Parameters Tested	Chlorine (mg/L)	Detergents (ppm)	Optical Brightner Present?	Lab Notes	Inspection Notes	Pipe Material	Pipe Submerged?	Submersion Amount	Pipe Diameter (inches)
RYL-OF-1	RYL-OF-1	2016-05-13	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			yes	Sediment								CPP	Sediment	Partially	15
RYL-OF-10	RYL-CB-305	2016-05-13	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			no								No flow observed to OF-10				
RYL-OF-10	RYL-OF-10	2016-05-13	Kateri Bisceglio		yes	Moderate	Closed Pipe	0.004	11.2	7.85	770	0.37	no		yes	Pipe benthic growth,,,,,	Possible (2 or more indicators present)	yes	Flow	no			no		2016-05-13	Detergents (MBAS)		0		Trace of MBAS		Clay	N/A		18
RYL-OF-10	RYL-CB-373	2016-05-13	Kateri Bisceglio		yes	Trickle	Catchbasin Sump						no	no	no	,,,,,	Unlikely	no		no			no								Point of highest flow to OF-10				
RYL-OF-10	RYL-CB-305	2016-05-23	Molly Bruno		no								no			,,,,,	Unlikely														No flow observed to OF-10				
RYL-OF-10	RYL-OF-10	2016-05-23	Molly Bruno		yes	Trickle	Closed Pipe	0.004	15	8.33	710	0.28	no	no	yes	Pipe benthic growth,,,,,	Possible (2 or more indicators present)	yes	Flow	no			no		2016-05-23	Detergents (MBAS),Chlorine	0	0		Trace detergents		Clay	N/A		18
RYL-OF-10	RYL-CB-372	2016-05-23	Molly Bruno	Dry	no								no		no	,,,,,	Unlikely	no		no			no												
RYL-OF-10	RYL-CB-373	2016-05-23	Molly Bruno		yes	Trickle										,,,,,	Unlikely														Point of highest flow to OF-10				
RYL-OF-10	RYL-OF-10	2017-08-02	Dana Allen		no										no	,,,,,	Unlikely	no		yes	2017-08-02		no									Clay	N/A		18
RYL-OF-12	RYL-OF-12	2016-05-13	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			yes	Pipe partially submerged in sediment								PVC	Sediment	Partially	12
RYL-OF-13	RYL-OF-13	2016-05-13	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			no									PVC	N/A		8
RYL-OF-14	RYL-CB-296		Dana Allen		no								no		no	,,,,,	Unlikely	no		no			no								Unable to locate outfall RYL-OF-14				
RYL-OF-15	RYL-CB-414	2016-05-13	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			yes	CB clogged, standing water in basin, cannot see outfall pipe because submerged in water							Unable to locate outfall RYL-OF-15, lots of rubble and vegetation in outfall location				
RYL-OF-16	RYL-OF-16				no								no		no	,,,,,	Unlikely	no		no			no									CPP	Sediment	Partially	18
RYL-OF-17	RYL-OF-17	2016-05-13	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			yes	Broken pipe								CPP	N/A		16
RYL-OF-18	RYL-OF-18	2016-05-13	Molly Bruno		yes	Moderate	Closed Pipe	1.3	10.4	8.17	79	0	no	no	no	,,,,,	Unlikely	no		no			no									RCP	Sediment	Partially	24
RYL-OF-2	RYL-OF-2	2016-07-20	Molly Bruno		yes	Trickle	Closed Pipe	0	21.7	7.86	110	5.3	no	no	yes	Pipe benthic growth,Poor pool quality,,,Excessive Algae,,	Possible (2 or more indicators present)	yes	Flow	no			no		2016-07-20	Detergents (MBAS),Chlorine	0	0.5		Trace chlorine Detergents test was approximated because the sample was too viscous		CPP	N/A		18
RYL-OF-2	RYL-CB-290	2016-08-04	Molly Bruno		yes	Trickle	Catchbasin Sump		21.4	7.72	229	4.52	no	no	no	,,,,,	Possible (2 or more indicators present)	yes	Sump	no			no		2016-08-04	Detergents (MBAS),Chlorine	0	0.75		Trace chlorine					
RYL-OF-2	RYL-OF-2	2016-08-04	Molly Bruno		yes	Trickle	Closed Pipe		21.1	8.05	172	2.36	no	no	yes	Poor pool quality,Pipe benthic growth,,,Excessive Algae,Green/Brown	Possible (2 or more indicators present)	yes	Flow	no			no		2016-08-04	Detergents (MBAS),Chlorine	0	0.5				CPP	N/A		18
RYL-OF-25	RYL-OF-25	2016-05-13	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			yes	Pipe partially submerged in sediment. Minor outfall erosion.								RCP	Sediment	Partially	24
RYL-OF-26	RYL-OF-26	2016-05-13	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			yes	Pipe almost completely clogged with leaves and sediment. Upstream catchbasin totally clogged.								RCP	N/A		18
RYL-OF-27	RYL-OF-27	2016-05-13	Molly Bruno		yes	Trickle	Closed Pipe	0	11.8	8.35	2454	0	no	no	yes	Deposits/Stains,,,,,	Possible (2 or more indicators present)	yes	Flow	no			no		2016-05-13	Detergents (MBAS)		0.5				CMP	Sediment	Partially	30
RYL-OF-27	RYL-OF-27	2016-05-23	Molly Bruno		no								no		no	,,,,,	Unlikely	yes	Flow	yes	2016-05-23	2016-05-27	no		2016-07-05	Optical Brightener			no	Negative		CMP	Sediment	Partially	30
RYL-OF-27	RYL-OF-27	2016-05-27	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			no									CMP	Sediment	Partially	30
RYL-OF-28	RYL-OF-28	2016-05-13	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			no									CPP	N/A		18
RYL-OF-29	RYL-OF-29	2016-05-13	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			yes	Headwall starting to collapse.								CMP	N/A		18
RYL-OF-3	RYL-OF-3	2016-05-13	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			no									CMP	N/A		12
RYL-OF-4	RYL-OF-4	2016-05-13	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			no									CMP	N/A		12
RYL-OF-43	RYL-OF-43	2016-05-13	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			yes	Pipe clogged with sediment. Swale needs armoring.								CMP	N/A		24
RYL-OF-44	RYL-OF-44	2016-05-13	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			yes	Pipe partially full of sediment. Swale getting more full of sediment. Need some cleaning.											
RYL-OF-45	RYL-CB-397	2016-05-13	Kateri Bisceglio		yes	Trickle	Closed Pipe		13.1	7.45	258	0.13	no	no	no	,,,,,	Unlikely						no									PVC	N/A		4
RYL-OF-45	RYL-OF-45	2016-05-13	Kateri Bisceglio		yes	Trickle	Closed Pipe		11.9	7.59	2502	0.34	no		no	,,,,,	Possible (2 or more indicators present)	yes	Flow	no			no		2016-05-13	Detergents (MBAS)		0				PVC	N/A		4
RYL-OF-45	RYL-CB-396	2016-05-23	Molly Bruno		yes	Trickle										,,,,,	Unlikely																		
RYL-OF-45	RYL-OF-45	2016-05-23	Molly Bruno	Unable to measure flow, too shallow	yes	Trickle	Closed Pipe		15.4	7.35	224	0.38	no	no	yes	Pipe benthic growth,,,,,	Possible (2 or more indicators present)	yes	Flow	no			yes	Pipe broken at end	2016-05-23	Chlorine,Detergents (MBAS)	0	0				PVC	N/A		4
RYL-OF-46	RYL-OF-46	2016-05-13	Kateri Bisceglio		yes	Trickle	Closed Pipe	0.001	11.2	7.99	505	0.27	no	no		,,,,,	Unlikely	yes	Flow	no			no		2016-05-13	Detergents (MBAS)		0			Flow coming from upstream CB by gym building.				
RYL-OF-47	RYL-OF-47	2016-05-13	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			no									CMP	N/A		18
RYL-OF-48	RYL-OF-48	2016-05-13	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			yes	Slightly crushed and little rust								CMP	N/A		18
RYL-OF-49	RYL-OF-49	2016-05-13	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			yes	Pipe disconnected								RCP	N/A		18
RYL-OF-5	RYL-OF-5	2016-05-13	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			yes	Broken pipe, sediment filled								CPP	Sediment	Partially	14
RYL-OF-50	RYL-OF-50	2016-05-13	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			yes	Pipe partially clogged by sediment. Minor outfall scour.								CPP	N/A		18
RYL-OF-51	RYL-OF-51	2016-05-13	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			no									CPP	N/A		18
RYL-OF-52	RYL-OF-52	2016-05-13	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			no									CMP	N/A		18
RYL-OF-53	RYL-OF-53	2016-05-13	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			no									CPP	N/A		18
RYL-OF-54	RYL-OF-54	2016-05-13	Molly Bruno	Unable to preform flow measurement with bottle or ping pong ball because of wind	yes	Moderate	Closed Pipe		14.3	8.15	148	0	no	no	yes	Pipe benthic growth,,,,,Brown/green	Unlikely	no		no			yes	Pooling net pipe								CPP	Water	Partially	15
RYL-OF-55	RYL-OF-55	2016-05-13	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			no									CPP	N/A		15
RYL-OF-56	RYL-OF-56	2016-05-13	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			no									CPP	N/A		12
RYL-OF-57	RYL-OF-57	2016-05-13	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			yes	Sediment								RCP	Sediment	Partially	18
RYL-OF-58	RYL-OF-58	2016-05-13	Molly Bruno		yes	Trickle	Closed Pipe	0.001	13.3	7.93	285	0	no	no	no	,,,,,	Unlikely	no		no			yes	Pipe slightly crushed								RCP	N/A		12
RYL-OF-59	RYL-OF-59	2016-05-23	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			yes	Pipe partially filled with sediment								PVC	N/A		6
RYL-OF-6	RYL-OF-6	2016-05-23	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			yes	Clogged grate at end of pipe								PVC	N/A		4
RYL-OF-60	RYL-OF-60	2016-05-23	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			yes	Bottom of pipe rusted through								CMP	N/A		18
RYL-OF-61	RYL-OF-61	2016-05-23	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			no									RCP	N/A		18

Outfall ID	Infrastructure ID	Date	Investigator	Notes	Flow?	Flow Description	Flow Location	Flow (CFS)	Temp. (C)	pH	Conductivity (us/cm)	Ammonia (mg/L)	Canine Investigation?	Physical Indicators	Non-Flow Related Indicators?	Non-Flow Related Indicators	Overall Characterization	Sample for Lab?	Sample Source	Optical Brightner Pad Set?	OB Set Date	OB Removed Date	Maintenance Needed?	Maintenance Notes	Lab Analysis Date	Parameters Tested	Chlorine (mg/L)	Detergents (ppm)	Optical Brightner Present?	Lab Notes	Inspection Notes	Pipe Material	Pipe Submerged?	Submersion Amount	Pipe Diameter (inches)
RYL-OF-62	RYL-OF-62	2016-05-23	Kateri Bisceglio	Could not measure flow.	yes	Trickle	Closed Pipe		11.6	7.98	462	0.3	no	Floatables - Not Trash, oil sheen	yes	Poor pool quality,,,Oil Sheen,Excessive Algae,Colors,,Abundance of orange algae and some oil sheen	Suspect (one or more indicators with severity of 3)	yes	Flow	no			yes	Pipe half submerged in sediment	2016-05-23	Chlorine,Detergents (MBAS)	0.2	0.25				CMP	Sediment	Partially	15
RYL-OF-62	RYL-CB-429	2016-06-02	Molly Bruno	Flowing											yes	Poor pool quality,,,Excessive Algae,,Iron deposits seen in catch basin	Unlikely	no		no			no												
RYL-OF-62	RYL-OF-62	2016-06-02	Molly Bruno		yes	Trickle			11.9	7.72	486	0.21	no	no	yes	Poor pool quality,,,Excessive Algae,,Iron bacteria	Unlikely	yes	Pool	no					2016-06-03	Chlorine,Detergents (MBAS)	0	0				CMP	Sediment	Partially	15
RYL-OF-63	RYL-OF-63	2016-05-23	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			yes	Erosion at end of pipe								CMP	N/A		18
RYL-OF-64	RYL-OF-64	2016-05-23	Kateri Bisceglio		yes	Moderate	Closed Pipe	0.01	11.8	7.84	170	0.28	no	no	yes	Poor pool quality,Abnormal Vegetation,,,Excessive Algae,,	Possible (2 or more indicators present)	yes	Flow	no					2016-05-23	Chlorine,Detergents (MBAS)	0	0		Trace detergents		CMP	N/A		30
RYL-OF-65	RYL-OF-65	2016-05-23	Molly Bruno		yes	Trickle	Closed Pipe	6.1	13.2	7.81	104	0.36	no	no	yes	Pipe benthic growth,Poor pool quality,,,Suds,,	Possible (2 or more indicators present)	yes	Flow	no			no		2016-05-23	Chlorine,Detergents (MBAS)	0	0				CPP	N/A		15
RYL-OF-65	RYL-OF-65	2016-06-02	Molly Bruno		yes	Trickle	Closed Pipe		18.6	8	146	0.06	no	no	no	,,,,,	Unlikely	yes	Flow	no			no		2016-06-03	Chlorine,Detergents (MBAS)	0	0				CPP	N/A		15
RYL-OF-66	RYL-OF-66	2016-05-13	Molly Bruno		yes	Trickle	Closed Pipe	1	11.4	8.35	1044	0	no	no	yes	Pipe benthic growth,,,,,	Unlikely	no		no			yes	Pipe rusting								CMP	Water	Partially	24
RYL-OF-7	RYL-OF-7	2016-05-23	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			no									PVC	N/A		4
RYL-OF-9	RYL-CB-320	2016-05-13	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			no								No flow to OF-9				

Table 11. Town of Sharon Summary

Outfall ID	Infrastructure ID	Date	Investigator	Notes	Flow?	Flow Description	Flow Location	Flow (CFS)	Temp. (C)	pH	Conductivity (us/cm)	Ammonia (mg/L)	Canine Investigation?	Physical Indicators	Non-Flow Related Indicators?	Non-Flow Related Indicators	Overall Characterization	Sample for Lab?	Sample Source	Optical Brightner Pad Set?	OB Set Date	OB Removed Date	Maintenance Needed?	Maintenance Notes	Lab Analysis Date	Parameters Tested	Chlorine (mg/L)	Detergents (ppm)	Optical Brightner Present?	Lab Notes	Inspection Notes	Pipe Material	Pipe Submerged?	Submersion Amount	Pipe Diameter (inches)
SHR-OF-3	SHR-OF-3	2016-05-12	Kerrie Garvey	Outfall likely covered by brush or buried	no								no		no	,,,,,	Unlikely	no		no											Unable to locate outfall. See: SHR-CB-312				
SHR-OF-3	SHR-CB-312	2016-05-12	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			no								Unable to locate SHR-OF-3				
SHR-OF-31	SHR-OF-31	2016-05-12	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			yes	Erosion and trash								CMP	N/A		18
SHR-OF-32	SHR-OF-32	2016-05-12	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			yes	Erosion at pipe outlet								CPP	N/A		12
SHR-OF-33	SHR-OF-33	2016-05-12	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			yes	Pipe rusting and lots of erosion at outfall								CMP	N/A		12
SHR-OF-34	SHR-OF-34	2016-05-12	Molly Bruno		no								no		no	,,,,,	Unlikely						yes	Erosion								CMP	N/A		12
SHR-OF-35	SHR-OF-35	2016-05-12	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			yes	Scour below outfall								Concrete	N/A		24
SHR-OF-36	SHR-OF-36	2016-05-12	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			yes	Pipe damaged, sediment buildup								PVC	N/A		18
SHR-OF-37	SHR-OF-37	2016-05-12	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			yes	Pipe partially filled with sediment								CMP	N/A		18
SHR-OF-38	SHR-OF-38	2016-05-12	Kerrie Garvey		no								no			,,,,,	Unlikely	no		no			no									PVC	N/A		15
SHR-OF-4	SHR-OF-4	2016-05-12	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			no									PVC	N/A		12
SHR-OF-40	SHR-OF-40	2016-05-12	Kerrie Garvey		no								no		no	,,,,,	Unlikely	no		no			yes	Significant erosion along pipe								CMP	N/A		12
SHR-OF-5	SHR-OF-5	2016-05-12	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			yes	Erosion								CMP	N/A		22

Table 12. Town of Tunbridge

Outfall ID	Infrastructure ID	Date	Investigator	Notes	Flow?	Flow Description	Flow Location	Flow (CFS)	Temp. (C)	pH	Conductivity (us/cm)	Ammonia (mg/L)	Canine Investigation?	Physical Indicators	Non-Flow Related Indicators?	Non-Flow Related Indicators	Overall Characterization	Sample for Lab?	Sample Source	Optical Brightner Pad Set?	OB Set Date	OB Removed Date	Maintenance Needed?	Maintenance Notes	Lab Analysis Date	Parameters Tested	Chlorine (mg/L)	Detergents (ppm)	Optical Brightner Present?	Lab Notes	Inspection Notes	Pipe Material	Pipe Submerged?	Submersion Amount	Pipe Diameter (inches)
TNB_New_001		2018-05-31	Dana Allen													,,,,,	Unlikely														Small plastic pipe running down hill up to stream. Potentially just garbage can't track source				
TNB-new-002		2018-05-31		Coming from field, no animals or egg agriculture. Likely in under drain	yes	Moderate		0.002	17.6	7.88	480	0.01	no			,,,,,	Unlikely																		
TNB-NEW-003		2018-05-31		Outlet coming from white building	no								no		no	,,,,,	Unlikely	no		no			no												
TNB-NEW-004		2018-05-31			no								no		no	,,,,,	Unlikely	no		no			no								Water regulator pipe with latch coming from field next to white house				
TNB-OF-1	TNB-OF-1	2016-05-10	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			no									CMP	N/A		15
TNB-OF-10	TNB-CB-35	2016-05-10	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			no								Could not locate outfall				
TNB-OF-2	TNB-OF-2	2016-05-10	Kateri Bisceglio		yes	Trickle	Closed Pipe	1.6	7.9	7.87	284	0.05	no	no	no	,,,,,	Unlikely	no		no			no									CMP	N/A		24
TNB-OF-3	TNB-OF-3	2016-05-10	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			yes	Broken and buried								CMP	N/A		18
TNB-OF-4	TNB-OF-4	2016-05-10	Kateri Bisceglio		no								no		no	,,,,,	Unlikely	no		no			yes	Pipe crushed								CMP	N/A		18
TNB-OF-5	TNB-OF-5	2016-05-10	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			yes	Clean out sediment								Clay	Sediment	Partially	12
TNB-OF-6	TNB-OF-6	2016-05-10	Molly Bruno		yes	Trickle	Closed Pipe	0.001	11	8.38	306	0.08	no	no	no	,,,,,	Unlikely	no		no			no									CMP	N/A		32
TNB-OF-7	TNB-OF-7	2016-05-10	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			no									CPP	N/A		12
TNB-OF-8	TNB-OF-8	2016-05-10	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			yes	Clay pipe broken								Clay	N/A		12
TNB-OF-9	TNB-CLVI-13	2016-05-10	Molly Bruno		no								no		no	,,,,,	Unlikely	no		no			yes	Pipe broken and submerged							Could not find outfall, Colbert from CB to stream	CMP	Sediment	Partially	14