UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 1
Laboratory Services and Applied Science Division
11 Technology Drive
North Chelmsford, Massachusetts 01863-2431

Drafted Date: August 17, 2021
Finalized Date: September 14, 2021

Subject: Sampling Inspection Report
Clean Water Act – National Pollutant Discharge Elimination System (NPDES)
Town of Narragansett, Rhode Island, and the Rhode Island Department of Transportation (RIDOT)

From: Michelle Coombs, Inspector \MRC\
Field Services Branch (FSB)
Laboratory Services and Applied Science Division (LSASD)

Reviewed By: Jerome Keefe, Investigations Team Leader, LSASD-FSB \JCK\

To: Denny Dart, Water Compliance Section Chief,
Enforcement and Compliance Assurance Division (ECAD-EWC)

CC: David Turin, Inspector, ECAD-EWC

I. Facility Information

A. Facility Name: Town of Narragansett, RI
B. Facility Location: 260 Westmoreland Street, Narragansett, RI 02882
C. Facility Contact: Michael DiCicco, Director of Public Works,
Phone: 401-782-0687 Email: mdicicco@narragansettri.gov
D. NPDES Permit ID: RIR040026 (MS4)

E. Facility Name: RIDOT
F. Facility Location: 360 Lincoln Ave, Warwick, RI, 02888
G. Facility Contact: Allison Hamel, Supervisory Environmental Scientist, Office of Stormwater Management, RIDOT, Phone: 401-479-1202. Email: allison.hamel@dot.ri.gov
H. NPDES Permit ID: RIR040036 (MS4)

II. Background Information

A. Date/Start time of sampling inspection: 07/20/2021 @ 0830 HRS
B. Weather conditions: Overcast, hazy, ~70°F
C. USEPA Representatives: David Turin, Michelle Coombs, and Shannon Brunelle (FSB)
D. State/Local Representatives: Mark Nimiroski (RIDOT) and Ian Kirby (RIDOT)

E. Federally Enforceable Requirements Investigated:
Stormwater discharges and certain non-stormwater discharges from the Town of Narragansett (the Town) and RIDOT Municipal Separate Storm Sewer System (MS4) are authorized by the NPDES General Permit for the Discharge of Stormwater from Small MS4 (hereinafter, the Permit), issued by the Environmental Protection Agency (EPA) Region 1. The Town and RIDOT obtained coverage under the Permit with NPDES Permit IDs RIR040026 and RIR040036, respectively.

F. Pollutants Sampled: Pharmaceuticals and Personal Care Products (PPCPs), E. coli/Enterococcus, Ammonia (nitrogen), Total Chlorine, and Surfactants

III. Disclaimer:

Unless otherwise noted, this report describes conditions at the facility/property as observed by EPA inspector(s), and/or through records provided to and/or information reported to EPA inspector(s) by facility representatives and as understood by the inspector(s). This report may not capture all operations or activities ongoing at the time of the inspection. This report does not make final determinations on potential areas of concern. Nothing in this report affects EPA's authorities under federal statutes and regulations to pursue further investigation or action.

IV. Type and Purpose of Inspection(s)

The purpose of the compliance sampling inspection was to identify potential illicit connections or illegal discharges within the Town of Narragansett and RIDOT MS4 confines that may adversely impact the water quality in the Atlantic Ocean. Samples were collected from ten (10) locations in accordance with the FSB Investigations Team Stormwater Program Plan.

V. Permittee Details

The Town of Narragansett occupies approximately 38 square miles in Washington County, Rhode Island, and is approximately 30 miles south of Providence, RI. The Town shares borders with the Rhode Island municipalities of South Kingstown, North Kingstown, and Jamestown. According to the 2020 U.S. Census, the population of Narragansett was 14,532.

VI. 07/20/2021 Sampling Inspection Summary

On July 20, 2021, EPA inspectors David Turin, Michelle Coombs, and Shannon Brunelle conducted a compliance sampling inspection of the Scarborough Beach area at the locations described in Section VII. EPA inspectors were accompanied by RIDOT representatives Mark Nimiroski and Ian Kirby for the duration of the inspection. The inspection started at the southern end of Scarborough Beach at approximately 0830 HRS. At the time of the inspection, the weather was humid and hazy with overcast skies, with an ambient temperature of about 70°F.

According to National Weather Service for the Kingston, RI area, the last precipitation event prior to the inspection occurred on July 19, 2021, with 0.10 inches recorded. According to the National Weather Service, in the month (to July 19) of July, the area observed 4.71 inches of rain, compared to the 30-year normal value of 2.02 inches. According to the US Drought Monitor, as of July 27,

2021, Washington County is experiencing no drought conditions. Based on the National Oceanic and Atmospheric Administration tide predictions, low tide on July 19, 2021 was recorded at 1024 HRS at Station 8454658 (Narragansett Pier, RI.)

The sampling locations described in Section VII were field screened using test kits for ammonia (nitrogen), surfactants, and total chlorine, where applicable. In-situ measurements for specific conductivity, salinity, and temperature were also measured using a YSI water quality meter and recorded. Field data was recorded on field data sheets. All locations (unless otherwise noted) were sampled for fecal coliform, enterococcus, and PPCPs. Fecal coliform and enterococcus analysis were conducted at BAL Laboratory in Cranston, RI. The PPCPs analysis was conducted at the USEPA New England Regional Laboratory in North Chelmsford, MA. Table 1 below summarizes the sampling and analytical data.

VII. Description of Sampling Locations

Photographs depicting each sample location are included in Appendix A of this report, unless otherwise noted.

- **SB02**: A pair of reinforced concrete circular outfalls approximately 36" in diameter located at the end of Scarborough Beach. Discharge flow was approximately 15 gallons per minute (gpm) into the Atlantic Ocean via the beach. Sample was collected from the mouth of the west outfall. A musty odor was detected. Green algae growth and white suds were observed in the pool.
- **SB03**: A pair of reinforced concrete circular outfalls approximately 36" in diameter located at the end of Scarborough Beach. Discharge flow was approximately 10 gallons per minute (gpm) into the Atlantic Ocean via the beach. Sample was collected from the mouth of the east outfall. White suds were observed in the pool.
- **MH-4564950**: RIDOT access manhole located in front of the wastewater treatment plant on Ocean Road. Pipe flowing into manhole was approximately 24" in diameter with a discharge flow of approximately 5-7 gpm.
- **SB09-1**: A single reinforced concrete circular outfall approximately 36" in diameter located inside the stormwater vault on the beach at the intersection of Ocean Road and Burnside Avenue. Discharge flow was approximately 5-7 gpm into the channel ultimately discharging into the Atlantic Ocean via the beach. Sample was collected from the mouth of the south outfall.
- **SB06**: A single reinforced concrete circular outfall approximately 24" in diameter located on the beach across the street from Walcott Avenue. Discharge flow was approximately less than 1 gpm into the Atlantic Ocean via the beach. Some suds were observed on the ledge and the color of the discharge was slightly brown. Sample was collected at the mouth of the outfall.
- **SB07:** A pair of concrete circular outfalls approximately 40" in diameter located at the northern end of the beach near the ruins. Discharge flow was approximately 20 gpm into the Atlantic Ocean via the beach. The discharge was slightly brown in color, some suds were observed downstream, and green algae growth was observed on the pipe. Sample was collected at the mouth of the west outfall.
- **SB08:** A pair of concrete circular outfalls approximately 40" in diameter located at the northern end of the beach near the ruins. Discharge flow was approximately 25 gpm into the Atlantic Ocean via the beach. The discharge was slightly brown in color, some

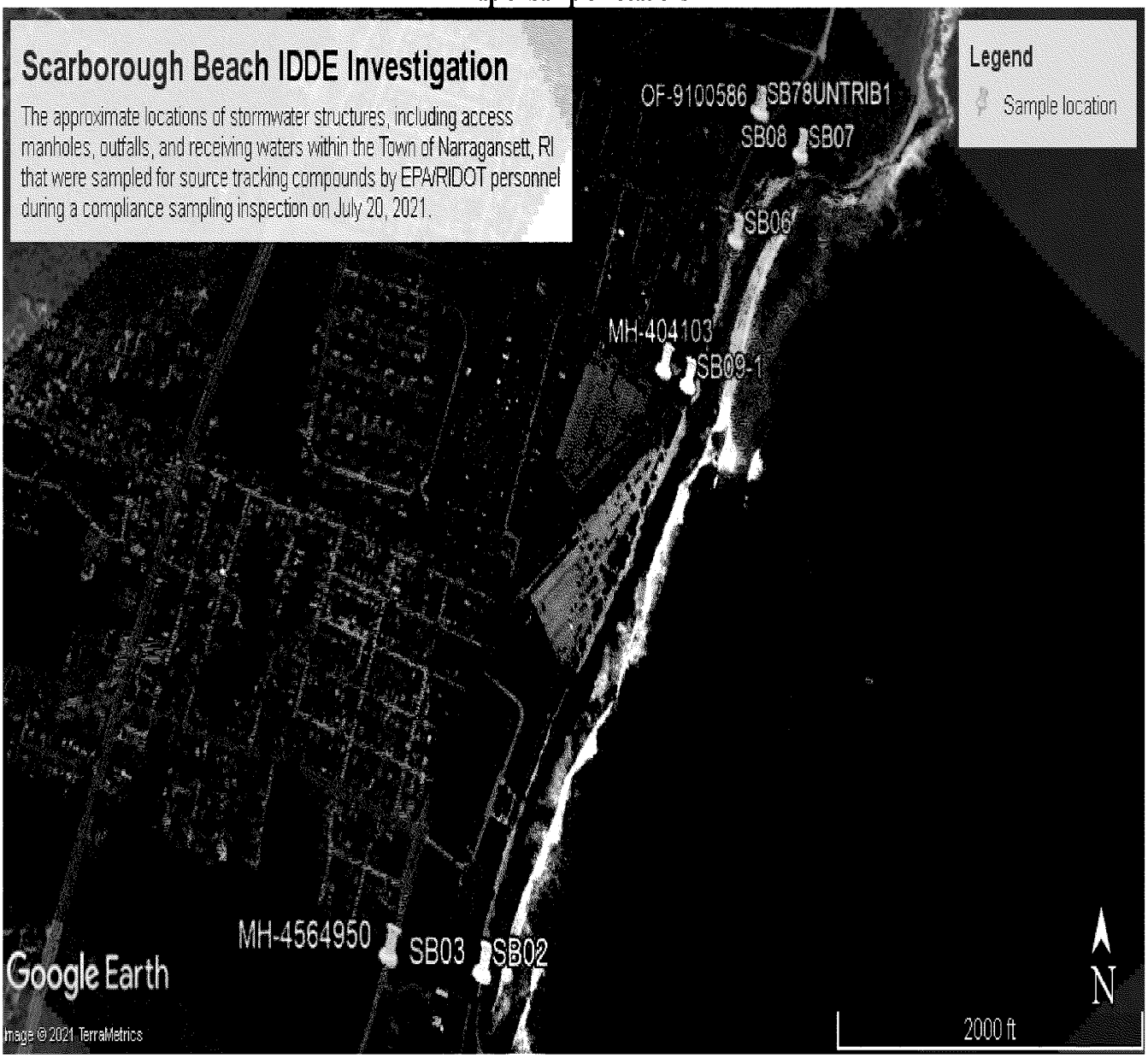
suds were observed downstream, and green algae growth was observed on the pipe. Sample was collected at the mouth of the east outfall.

- **OF-9100586**: A single steel outfall approximately 30" in diameter located upstream of the SB07 and SB08 outfalls, adjacent to the residences on Bellevue Ct. Discharge flow was approximately 10-12 gpm into the unnamed tributary that discharges into SB07/08. The discharge was slightly brown in color and dark algae growth was observed on the pipe. The bottom of the steel cone attached to the outfall was rusted away. Sample was collected at the mouth of the outfall.
- **SB78-UNTRIB1:** An in-stream sample of the unnamed tributary, collected approximately 30 feet upstream of the road culvert and OF-9100586. Oxidizing iron was observed along the banks and the color of the sample was slightly brown. No photograph was taken at this location.
- **MH-404103**: RIDOT access manhole located in the grassy area approximately 10 feet northwest of the small building at 835 Ocean Road. The pipe that was sampled inside the manhole was approximately 18" in diameter with a discharge flow of approximately 5-7 gpm. A significant buildup of what appeared to be oxidizing iron precipitate was observed in the flow path. Sample was collected at the mouth of the outfall upstream of the confluence with the other pipe.

Locations that were visited that did not have flow at the time of the inspection and were not sampled:

- **SB09-2:** The north outfall inside the stormwater vault on the beach at the intersection of Ocean Road and Burnside Avenue.
- **SB05:** A single reinforced concrete circular outfall approximately 24" in diameter located on the beach across the street from 811 Ocean Road.

Map of Sample Locations



Note: the locations on the map were estimated using Google Earth and are used for display purposes only.

Table 1: Summary of Sampling and Analytical Data

Location	Site ID	SB02	SB03	MH456950	SB09-1	SB06
	Sample Date	07/20/21	07/20/21	07/20/21	07/20/21	07/20/21
	Sample Time	09:23	09:28	10:00	10:43	11:19
Coordinates[1] (decimal degrees)	North	41.384470	41.384483	41.384660	41.391654	41.393761
	West	-71.476133	-71.476123	-71.478400	-71.470783	-71.469293
YSI Meter	Salinity, ppt.	0.3	0.4	0.1	0.4	0.2
	Temperature, °C	18.7	18.8	14.9	20.0	23.3
	Conductivity, µS/cm	677	768	226.3	879	483
Field Test Kits (mg/L)	Ammonia	0.25	0.00	0.25	0.25	0.25
	Total Chlorine	0.14	0.12	0.02	0.07	0.13
	Surfactants	0.25	0.25	0.25	0.25	0.75
Bacteria (MPN/100mL)	Fecal Coliform	2,420	115	4.1	210	141
	Enterococcus	72	38	9	27	58
PPCPs (ng/L)	Cotinine	11	5.7	ND	1.6	3
	Acetaminophen	45	ND	ND	ND	ND
	Paraxanthine	33	ND	ND	ND	ND
	Atenolol	2.5	8.6	ND	ND	ND
	Caffeine	35	ND	ND	5.4	6.5
	Metoprolol	3.8	2.6	ND	ND	ND
	Diphenhydramine	1.4	ND	ND	ND	ND
	Carbamazepine	2.4	1.6	ND	ND	ND

Abbreviations and Notes:

1. The coordinates listed in Table 1 were derived from the map created in Google Earth, therefore the coordinates are estimates of the actual locations.

NA: Not Analyzed

ND: Not Detected above Reporting Limit

Fecal Coliform: Red ≥ 10,000 col/100ml, Orange ≥ 1,260 col/100ml, Yellow ≥ 235 col/100ml, Black < 235 col/100ml

Entero: Red ≥ 1,000 col/100ml, Orange ≥ 350 Yellow ≥ 61 col/100ml, Black < 61 col/100ml

NH_3: Red ≥ 6 mg/L, Orange ≥ 0.5 mg/L, Yellow ≥ 0.25 mg/L, Black < 0.25 mg/L

Cl_2: Red ≥ 1.0 mg/L, Orange ≥ 0.3 mg/L, Yellow ≥ 0.02 mg/L, Black < 0.02 mg/L

Surfactants: Red ≥ 1.0 mg/L, Orange ≥ 0.5 mg/L, Yellow ≥ 0.25 mg/L, Black < 0.25 mg/L (may give false positive at salinity greater than 1 ppt)

PPCPs: Dark Pink ≥ 100x the RL; Pink ≥ 10x the RL; Light Pink ≥ 3x the RL; No Pink < 3x the RL*

*See Reporting Limit (RL) values for each compound in attached Laboratory Report for Source Tracking

EPA notes while there are currently no numerical standards to compare pharmaceutical results against, it is EPA's experience that acetaminophen is the single best bacterial source tracking compound of those listed above, and any detection of this compound may indicate a source of sanitary sewage. With respect to all of the above compounds, when a sanitary sewage source is present, depending on the type of source, distance from the sample location, and the strength of the source, concentrations of these compounds may range from the low ng/l range up to thousands of ng/L.

Table 1: Summary of Sampling and Analytical Data, cont.

	Site ID	SB07	SB08	OF9100586	SB78UNTRIB1	MH404103
Location	Sample Date	07/20/21	07/20/21	07/20/21	07/20/21	07/20/21
	Sample Time	11:54	12:00	12:35	12:44	13:15
Coordinates[1] (decimal degrees)	North	41.395085	41.395089	41.395755	41.395784	41.391872
	West	-71.467298	-71.467275	-71.468382	-71.468457°	-71.471438
YSI Meter	Salinity, ppt.	0.2	0.2	0.3	NA	0.2
	Temperature, °C	20.0	19.7	20.3	NA	23.2
	Conductivity, µS/cm	361	396	624	NA	345
Field Test Kits (mg/L)	Ammonia	0.00	0.25	0.00	0.00	0.75
	Total Chlorine	0.00	0.13	0.02	0.15	0.08
	Surfactants	0.50	0.35	0.35	0.50	0.25
Bacteria (MPN/100mL)	Fecal Coliform	687	613	88.2	921	8.5
	Enterococcus	110	130	43	220	190
PPCPs (ng/L)	Cotinine	1	0.86	ND	1.1	1.5
	Acetaminophen	ND	ND	ND	ND	ND
	Paraxanthine	10	8.4	ND	8.9	6.2
	Atenolol	4.3	3.7	ND	5.8	ND
	Caffeine	8.3	7.2	7.7	8.8	6
	Metoprolol	4.9	4.1	ND	5.9	ND
	Diphenhydramine	ND	ND	ND	ND	ND
	Carbamazepine	ND	ND	0.49	ND	ND

Abbreviations and Notes:

1. The coordinates listed in Table 1 were derived from the map created in Google Earth, therefore the coordinates are estimates of the actual locations.

NA: Not Analyzed

ND: Not Detected above Reporting Limit

Fecal Coliform: Red ≥ 10,000 col/100ml, Orange ≥ 1260 col/100ml, Yellow ≥ 235 col/100ml, Black < 235 col/100ml

Entero: Red ≥ 1,000 col/100ml, Orange ≥ 350 Yellow ≥ 61 col/100ml, Black < 61 col/100ml

NH_3: Red ≥ 6 mg/L, Orange ≥ 0.5 mg/L, Yellow ≥ 0.25 mg/L, Black < 0.25 mg/L

Cl_2: Red ≥ 1.0 mg/L, Orange ≥ 0.3 mg/L, Yellow ≥ 0.02 mg/L, Black < 0.02 mg/L

Surfactants: Red ≥ 1.0 mg/L, Orange ≥ 0.5 mg/L, Yellow ≥ 0.25 mg/L, Black < 0.25 mg/L (may give false positive at salinity greater than 1 ppt)

PPCPs: Dark Pink ≥ 100x the RL; Pink ≥ 10x the RL; Light Pink ≥ 3x the RL; No Pink < 3x the RL

*See Reporting Limit (RL) values for each compound in attached Laboratory Report for Source Tracking

EPA notes while there are currently no numerical standards to compare pharmaceutical results against, it is EPA's experience that acetaminophen is the single best bacterial source tracking compound of those listed above, and any detection of this compound may indicate a source of sanitary sewage. With respect to all of the above compounds, when a sanitary sewage source is present, depending on the type of source, distance from the sample location, and the strength of the source, concentrations of these compounds may range from the low ng/l range up to thousands of ng/L.

VIII. Appendix

Appendix A: Photograph Log

IX. Attachments

Attachment A: Laboratory Report for PPCPs (Source Tracking) Analysis
Attachment B: Laboratory Report for Fecal Coliform/Enterococcus Analysis

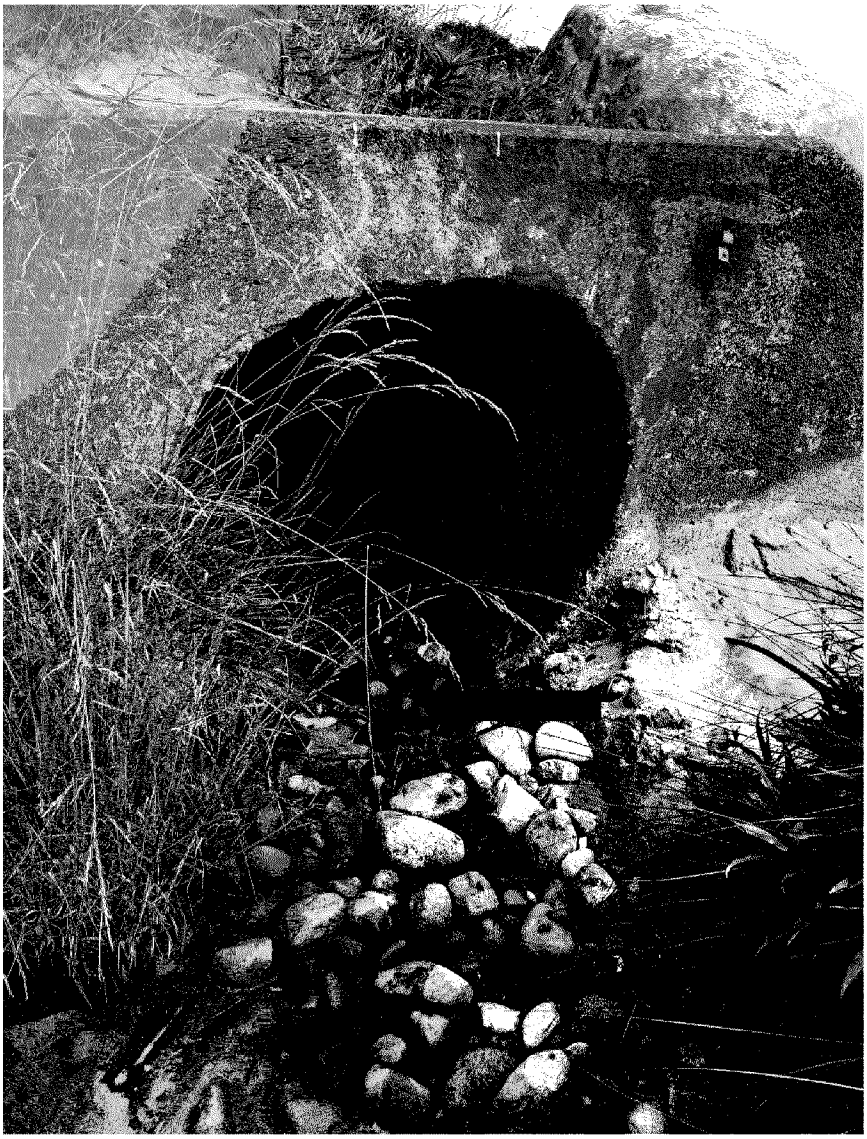
End of Report

Appendix A
Photograph Log

Photo Name	Date Taken	Time Taken
SB02 & SB03	07/20/2021	0936
SB02	07/20/2021	0927
SB03	07/20/2021	0934
MH-4564950	07/20/2021	1018
SB09-1	07/20/2021	1044
SB06	07/20/2021	1119
SB06 (2)	07/20/2021	1119
SB07 & SB08	07/20/2021	1206
OF-9100586	07/20/2021	1242
MH404103	07/20/2021	1311

SB02 (left) & SB03 (right): Pair of reinforced concrete outfalls located at the southern end of Scarborough State Beach.

SB02: Close-up of SB02. Note the green algae growth and orange suds in the pool downstream of the pipe. Sample collection point indicated by a red arrow.



SB03: Close-up of SB03. Note the orange suds downstream of the rocks (bottom left). Sample collection point indicated by a red arrow.

MH-4564950: RIDOT access manhole near the wastewater treatment plant on Ocean Road. Sample collection point indicated by a red arrow.

SB09-1: South outfall located inside the stormwater vault on the beach near the intersection of Ocean Road and Burnside Avenue. Sample collection point indicated by a red arrow.

SB06: Reinforced concrete outfall located on Scarborough Beach across the street from Walcott Ave.

SB06 (2): Close up of SB-06. Sample collection point indicated by a red arrow.

SB07 (left) & SB08 (right): Pair of concrete outfalls at the northern end of Scarborough Beach near the ruins. Sample collection points indicated by red arrows.

OF-9100586: Steel outfall located upstream of the SB07/08 outfalls. Stream culvert for the unnamed tributary is visible at the right side of the photograph. Note the rusted and degraded steel cone attached to the outfall. Sample collection point indicated by a red arrow.

MH404103: Photograph of the location of where RIDOT access manhole is located. No photograph was collected of the manhole interior.

Attachment A
Laboratory Report for
Source Tracking Analysis

Author: LSASD Laboratory Services Branch
Pages: 17

Region 1, New England

United States Environmental Protection Agency
Laboratory Services and Applied Science Division
11 Technology Drive
North Chelmsford, MA 01863-2431

Laboratory Report

July 29, 2021

Michelle Coombs - LFSB
US EPA New England R1

Project Number: 21070019
Project: Scarboroug Beach MS4 - Narragansett, RI
Analysis: HPLC/MS/MS Source Tracking Analysis
EPA Chemist: Peter Philbrook

Date Samples Received by the Laboratory: 07/21/2021

Analytical Procedure:

All samples were received and logged in by the laboratory according to the USEPA New England Laboratory SOP for Sample Log-in.

Sample preparation and analysis was done following the EPA Region I SOP, LSBSOP-LCMS_STA3.

The SOP is based on an EPA Regional Analytical Method developed at the EPA New England Laboratory.

Data were reviewed in accordance with the internal verification procedures described in the EPA New England Quality Manual for NERL.

Results relate only to the items tested or to the samples as received by the Laboratory. This analytical report shall not be reproduced except in full, without written approval of the laboratory.

If you have any questions please call me at 617-918-8340 .

Sincerely,

21070019$STA

Qualifiers:

RL = Reporting limit
ND = Not Detected above Reporting limit
NA = Not Applicable due to high sample dilutions or sample interferences
NC = Not calculated since analyte concentration is ND.
J = Estimated value
J1 = Estimated value due to MS recovery outside accceptance criteria
J2 = Estimated value due to LFB result outside acceptance criteria
J3 = Estimated value due to RPD result outside acceptance criteria
J4 = Estimated value due to LCS result outside acceptance criteria
E = Estimated value exceeds the calibration range
L = Estimated value is below the calibration range
B = Analyte is associated with the lab blank or trip blank contamination. Values are qualified when the observed concentration of the contamination in the sample extract is less than 10 times the concentration in the blank.
R = No recovery was calculated since the analyte concentration is greater than four times the spike level.
P = The confirmation value exceeded 35% difference and is less than 100%. The lower value is reported.
C = The identification has been confirmed by GC/MS.
A = Suspected Aldol condensation product.
N = Tentatively identified compound.

Scarboroug Beach MS4 - Narragansett, RI

HPLC/MS/MS Source Tracking Analysis

Client Sample ID:	SB02	Lab Sample ID:	AB92969
Date of Collection:	7/20/2021	Matrix:	Stormwater
Date of Preparation:	7/21/2021	Amount Prepared:	500 mL
Date of Analysis:	7/27/2021	Percent Solids:	N/A
Dry Weight Prepared:	N/A	Extract Dilution:	1
Wet Weight Prepared:	N/A	pH:	N/A

CAS Number	Compound	Concentration ng/L	Dilution	RL ng/L	Qualifier
486-56-6	Cotinine	**11**	1	0.40	
103-90-2	Acetaminophen	**45**	1	2.0	
611-59-6	Paraxanthine	**33**	1	2.0	
29122-68-7	Atenolol	**2.5**	1	2.0	
58-08-2	Caffeine	**35**	1	4.0	
56392-17-7	Metoprolol	**3.8**	1	2.0	
58-73-1	Diphenhydramine	**1.4**	1	0.40	
298-46-4	Carbamazepine	**2.4**	1	0.40	

Surrogate Compounds	Recoveries (%)	QC Ranges
Phentermine-D5	82	59 - 137
Diphenhydramine-D3	63	19 - 135

Comments:

Scarboroug Beach MS4 - Narragansett, RI

HPLC/MS/MS Source Tracking Analysis

Client Sample ID:	SB03	Lab Sample ID:	AB92970
Date of Collection:	7/20/2021	Matrix:	Stormwater
Date of Preparation:	7/21/2021	Amount Prepared:	500 mL
Date of Analysis:	7/27/2021	Percent Solids:	N/A
Dry Weight Prepared:	N/A	Extract Dilution:	1
Wet Weight Prepared:	N/A	pH:	N/A

CAS Number	Compound	Concentration ng/L	Dilution	RL ng/L	Qualifier
486-56-6	Cotinine	**5.7**	1	0.40	
103-90-2	Acetaminophen	ND	1	2.0	
611-59-6	Paraxanthine	ND	1	2.0	
29122-68-7	Atenolol	**8.6**	1	2.0	
58-08-2	Caffeine	ND	1	4.0	
56392-17-7	Metoprolol	**2.6**	1	2.0	
58-73-1	Diphenhydramine	ND	1	0.40	
298-46-4	Carbamazepine	**1.6**	1	0.40	

Surrogate Compounds	Recoveries (%)	QC Ranges
Phentermine-D5	75	59 - 137
Diphenhydramine-D3	60	19 - 135

Comments:

Scarboroug Beach MS4 - Narragansett, RI

HPLC/MS/MS Source Tracking Analysis

Client Sample ID:	MH-4564950	Lab Sample ID:	AB92971
Date of Collection:	7/20/2021	Matrix:	Stormwater
Date of Preparation:	7/21/2021	Amount Prepared:	500 mL
Date of Analysis:	7/27/2021	Percent Solids:	N/A
Dry Weight Prepared:	N/A	Extract Dilution:	1
Wet Weight Prepared:	N/A	pH:	N/A

CAS Number	Compound	Concentration ng/L	Dilution	RL ng/L	Qualifier
486-56-6	Cotinine	ND	1	0.40	
103-90-2	Acetaminophen	ND	1	2.0	
611-59-6	Paraxanthine	ND	1	2.0	
29122-68-7	Atenolol	ND	1	2.0	
58-08-2	Caffeine	ND	1	4.0	
56392-17-7	Metoprolol	ND	1	2.0	
58-73-1	Diphenhydramine	ND	1	0.40	
298-46-4	Carbamazepine	ND	1	0.40	

Surrogate Compounds	Recoveries (%)	QC Ranges
Phentermine-D5	82	59 - 137
Diphenhydramine-D3	64	19 - 135

Comments:

Scarboroug Beach MS4 - Narragansett, RI

HPLC/MS/MS Source Tracking Analysis

Client Sample ID:	SB09-1	Lab Sample ID:	AB92972
Date of Collection:	7/20/2021	Matrix:	Stormwater
Date of Preparation:	7/21/2021	Amount Prepared:	500 mL
Date of Analysis:	7/27/2021	Percent Solids:	N/A
Dry Weight Prepared:	N/A	Extract Dilution:	1
Wet Weight Prepared:	N/A	pH:	N/A

CAS Number	Compound	Concentration ng/L	Dilution	RL ng/L	Qualifier
486-56-6	Cotinine	**1.6**	1	0.40	
103-90-2	Acetaminophen	ND	1	2.0	
611-59-6	Paraxanthine	ND	1	2.0	
29122-68-7	Atenolol	ND	1	2.0	
58-08-2	Caffeine	**5.4**	1	4.0	
56392-17-7	Metoprolol	ND	1	2.0	
58-73-1	Diphenhydramine	ND	1	0.40	
298-46-4	Carbamazepine	ND	1	0.40	

Surrogate Compounds	Recoveries (%)	QC Ranges
Phentermine-D5	74	59 - 137
Diphenhydramine-D3	62	19 - 135

Comments:

Scarboroug Beach MS4 - Narragansett, RI

HPLC/MS/MS Source Tracking Analysis

Client Sample ID:	SB06	Lab Sample ID:	AB92973
Date of Collection:	7/20/2021	Matrix:	Stormwater
Date of Preparation:	7/21/2021	Amount Prepared:	500 mL
Date of Analysis:	7/27/2021	Percent Solids:	N/A
Dry Weight Prepared:	N/A	Extract Dilution:	1
Wet Weight Prepared:	N/A	pH:	N/A

CAS Number	Compound	Concentration ng/L	Dilution	RL ng/L	Qualifier
486-56-6	Cotinine	**3.0**	1	0.40	
103-90-2	Acetaminophen	ND	1	2.0	
611-59-6	Paraxanthine	ND	1	2.0	
29122-68-7	Atenolol	ND	1	2.0	
58-08-2	Caffeine	**6.5**	1	4.0	
56392-17-7	Metoprolol	ND	1	2.0	
58-73-1	Diphenhydramine	ND	1	0.40	
298-46-4	Carbamazepine	ND	1	0.40	

Surrogate Compounds	Recoveries (%)	QC Ranges
Phentermine-D5	80	59 - 137
Diphenhydramine-D3	61	19 - 135

Comments:

Scarboroug Beach MS4 - Narragansett, RI

HPLC/MS/MS Source Tracking Analysis

Client Sample ID:	SB07	Lab Sample ID:	AB92974
Date of Collection:	7/20/2021	Matrix:	Stormwater
Date of Preparation:	7/21/2021	Amount Prepared:	500 mL
Date of Analysis:	7/27/2021	Percent Solids:	N/A
Dry Weight Prepared:	N/A	Extract Dilution:	1
Wet Weight Prepared:	N/A	pH:	N/A

CAS Number	Compound	Concentration ng/L	Dilution	RL ng/L	Qualifier
486-56-6	Cotinine	**1.0**	1	0.40	
103-90-2	Acetaminophen	ND	1	2.0	
611-59-6	Paraxanthine	**10**	1	2.0	
29122-68-7	Atenolol	**4.3**	1	2.0	
58-08-2	Caffeine	**8.3**	1	4.0	
56392-17-7	Metoprolol	**4.9**	1	2.0	
58-73-1	Diphenhydramine	ND	1	0.40	
298-46-4	Carbamazepine	ND	1	0.40	

Surrogate Compounds	Recoveries (%)	QC Ranges
Phentermine-D5	84	59 - 137
Diphenhydramine-D3	61	19 - 135

Comments:

Scarboroug Beach MS4 - Narragansett, RI

HPLC/MS/MS Source Tracking Analysis

Client Sample ID:	SB08	Lab Sample ID:	AB92975
Date of Collection:	7/20/2021	Matrix:	Stormwater
Date of Preparation:	7/21/2021	Amount Prepared:	500 mL
Date of Analysis:	7/27/2021	Percent Solids:	N/A
Dry Weight Prepared:	N/A	Extract Dilution:	1
Wet Weight Prepared:	N/A	pH:	N/A

CAS Number	Compound	Concentration ng/L	Dilution	RL ng/L	Qualifier
486-56-6	Cotinine	**0.86**	1	0.40	
103-90-2	Acetaminophen	ND	1	2.0	
611-59-6	Paraxanthine	**8.4**	1	2.0	
29122-68-7	Atenolol	**3.7**	1	2.0	
58-08-2	Caffeine	**7.2**	1	4.0	
56392-17-7	Metoprolol	**4.1**	1	2.0	
58-73-1	Diphenhydramine	ND	1	0.40	
298-46-4	Carbamazepine	ND	1	0.40	

Surrogate Compounds	Recoveries (%)	QC Ranges
Phentermine-D5	86	59 - 137
Diphenhydramine-D3	60	19 - 135

Comments:

Scarboroug Beach MS4 - Narragansett, RI

HPLC/MS/MS Source Tracking Analysis

Client Sample ID:	OF-9100586	Lab Sample ID:	AB92976
Date of Collection:	7/20/2021	Matrix:	Stormwater
Date of Preparation:	7/21/2021	Amount Prepared:	500 mL
Date of Analysis:	7/27/2021	Percent Solids:	N/A
Dry Weight Prepared:	N/A	Extract Dilution:	1
Wet Weight Prepared:	N/A	pH:	N/A

CAS Number	Compound	Concentration ng/L	Dilution	RL ng/L	Qualifier
486-56-6	Cotinine	ND	1	0.40	
103-90-2	Acetaminophen	ND	1	2.0	
611-59-6	Paraxanthine	ND	1	2.0	
29122-68-7	Atenolol	ND	1	2.0	
58-08-2	Caffeine	**7.7**	1	4.0	
56392-17-7	Metoprolol	ND	1	2.0	
58-73-1	Diphenhydramine	ND	1	0.40	
298-46-4	Carbamazepine	**0.49**	1	0.40	

Surrogate Compounds	Recoveries (%)	QC Ranges
Phentermine-D5	73	59 - 137
Diphenhydramine-D3	58	19 - 135

Comments:

Scarboroug Beach MS4 - Narragansett, RI

HPLC/MS/MS Source Tracking Analysis

Client Sample ID:	SB78-UNTRIB1	Lab Sample ID:	AB92977
Date of Collection:	7/20/2021	Matrix:	Stormwater
Date of Preparation:	7/21/2021	Amount Prepared:	500 mL
Date of Analysis:	7/27/2021	Percent Solids:	N/A
Dry Weight Prepared:	N/A	Extract Dilution:	1
Wet Weight Prepared:	N/A	pH:	N/A

CAS Number	Compound	Concentration ng/L	Dilution	RL ng/L	Qualifier
486-56-6	Cotinine	**1.1**	1	0.40	
103-90-2	Acetaminophen	ND	1	2.0	
611-59-6	Paraxanthine	**8.9**	1	2.0	
29122-68-7	Atenolol	**5.8**	1	2.0	
58-08-2	Caffeine	**8.8**	1	4.0	
56392-17-7	Metoprolol	**5.9**	1	2.0	
58-73-1	Diphenhydramine	ND	1	0.40	
298-46-4	Carbamazepine	ND	1	0.40	

Surrogate Compounds	Recoveries (%)	QC Ranges
Phentermine-D5	87	59 - 137
Diphenhydramine-D3	64	19 - 135

Comments:

Scarboroug Beach MS4 - Narragansett, RI

HPLC/MS/MS Source Tracking Analysis

Client Sample ID:	MH-404103	Lab Sample ID:	AB92978
Date of Collection:	7/20/2021	Matrix:	Stormwater
Date of Preparation:	7/21/2021	Amount Prepared:	500 mL
Date of Analysis:	7/27/2021	Percent Solids:	N/A
Dry Weight Prepared:	N/A	Extract Dilution:	1
Wet Weight Prepared:	N/A	pH:	N/A

CAS Number	Compound	Concentration ng/L	Dilution	RL ng/L	Qualifier
486-56-6	Cotinine	**1.5**	1	0.40	
103-90-2	Acetaminophen	ND	1	2.0	
611-59-6	Paraxanthine	**6.2**	1	2.0	
29122-68-7	Atenolol	ND	1	2.0	
58-08-2	Caffeine	**6.0**	1	4.0	
56392-17-7	Metoprolol	ND	1	2.0	
58-73-1	Diphenhydramine	ND	1	0.40	
298-46-4	Carbamazepine	ND	1	0.40	

Surrogate Compounds	Recoveries (%)	QC Ranges
Phentermine-D5	70	59 - 137
Diphenhydramine-D3	59	19 - 135

Comments:

Scarboroug Beach MS4 - Narragansett, RI

Laboratory Blank

Client Sample ID:	N/A	Lab Sample ID:	N/A
Date of Collection:	N/A	Matrix:	Stormwater
Date of Preparation:	7/21/2021	Amount Prepared:	500 mL
Date of Analysis:	7/27/2021	Percent Solids:	N/A
Dry Weight Prepared:	N/A	Extract Dilution:	1
Wet Weight Prepared:	N/A	pH:	N/A

CAS Number	Compound	Concentration ng/L	Dilution	RL ng/L	Qualifier
486-56-6	Cotinine	ND	1	0.40	
103-90-2	Acetaminophen	ND	1	2.0	
611-59-6	Paraxanthine	ND	1	2.0	
29122-68-7	Atenolol	ND	1	2.0	
58-08-2	Caffeine	ND	1	4.0	
56392-17-7	Metoprolol	ND	1	2.0	
58-73-1	Diphenhydramine	ND	1	0.40	
298-46-4	Carbamazepine	ND	1	0.40	

Surrogate Compounds	Recoveries (%)	QC Ranges
Phentermine-D5	72	59 - 137
Diphenhydramine-D3	64	19 - 135

Comments:

Scarboroug Beach MS4 - Narragansett, RI

MATRIX SPIKE (MS) RECOVERY

Sample ID: AB92976

PARAMETER	SPIKE ADDED ng/L	SAMPLE CONCENTRATION ng/L	MS CONCENTRATION ng/L	MS % REC	QC LIMITS (% REC)
Acetaminophen	120	ND	89.5	75	61 - 100
Atenolol	120	ND	120	100	59 - 122
Caffeine	240	7.7	211	85	54 - 128
Carbamazepine	24.0	0.49	20.6	84	61 - 120
Cotinine	24.0	ND	20.1	84	48 - 124
Diphenhydramine	24.0	ND	18.1	75	30 - 130
Metoprolol	120	ND	105	88	59 - 128
Paraxanthine	120	ND	102	85	42 - 125

Scarboroug Beach MS4 - Narragansett, RI

Laboratory Duplicate Results

Sample ID: AB92977

PARAMETER	SAMPLE RESULT ng/L	SAMPLE DUPLICATE RESULT ng/L	PRECISION RPD %	QC LIMITS
Acetaminophen	ND	ND	NC	50
Atenolol	5.8	5.52	5.0	50
Caffeine	8.8	9.29	5.4	50
Carbamazepine	ND	ND	NC	50
Cotinine	1.1	1.08	1.8	50
Diphenhydramine	ND	ND	NC	50
Metoprolol	5.9	5.72	3.1	50
Paraxanthine	8.9	8.90	0.00	50

Scarboroug Beach MS4 - Narragansett, RI

Laboratory Fortified Blank (LFB) Results

PARAMETER	LFB AMOUNT SPIKED ng/L	LFB RESULT ng/L	LFB RECOVERY %	QC LIMITS %
Acetaminophen	120	88.0	73	53 - 105
Atenolol	120	100	83	62 - 117
Caffeine	240	208	87	50 - 127
Carbamazepine	24	21.6	90	28 - 126
Cotinine	24	20.7	86	52 - 134
Diphenhydramine	24	17.4	73	30 - 130
Metoprolol	120	105	88	33 - 139
Paraxanthine	120	102	85	61 - 113

Comments:

Samples in Batch: AB92969, AB92970, AB92971, AB92972, AB92973, AB92974, AB92975, AB92976, AB92977, AB92978

ENVIRONMENTAL PROTECTION AGENCY

REGION 1

CHAIN OF CUSTODY RECORD

PROJ. NO.	PROJECT NAME
21070019	Scarborough MS4 - Narragansett RI

SAMPLERS: (Signature) Michelle Coombs

STA. NO.	DATE 2021	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	#STA	REMARKS
	7/20	0923		X	SB02	1	✓	
		0928		X	SB03			
		1000		X	MH-456495B			
		1043		X	SB09-1			
		1119		X	SB06			
		1154		X	SB07			
		1200		X	SB08			
		1235		X	OF9100586			
		1244		X	SB78-UNTRIB1			
	↓	1315		X	MH-404103	↓	↓	

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
M. Coombs	7/20/21 1700	Rm 190A Fridge			
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks	
		ESAT	7-21-21 06:30		

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

20c

1- 20577

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ED_019088A_00020983-00037

Attachment B
Laboratory Report for
Fecal Coliform/Enterococcus Analysis

Author: BAL Laboratory
Pages: 5

Mark Nimiroski
Rhode Island Department of Transportation
2 Capital Hill
Providence. RI 02903

RE: Scarborough_EPA

Dear Mark Nimiroski:

We appreciate this opportunity to provide you with our analytical services. BAL Laboratory is committed to providing the highest quality service. Our dedication to each client includes responsiveness to emergencies, dependability, well-written reports and superior client services.

Enclosed is your data report for **Work Order Number D107307.** The invoice for this project is included with this report unless other arrangements have previously been made with the laboratory. Samples will be disposed of thirty days after the final report has been mailed. If you have any questions or concerns, please feel free to call our Customer Service Department. We value our continued relationship and look forward to hearing from you in the future.

Sincerely,

BAL Laboratory

Laurel Stoddard
Laboratory Director

RI Laboratory License Number: RI LAI00036
MA Laboratory License Number: M-RIM01

enclosure

CERTIFICATE OF ANALYSIS

Client: Rhode Island Department of Transportation
Client Project ID: Scarborough_EPA

Work Order Number: D107307
Date Received: 07/20/21 15:15

Microbiology

Client Sample ID: SB02
BAL Sample ID: D107307-01 **Matrix:** Surface Water **Sampled:** 07/20/21 09:23

Analyte	Result	Units	Analyzed	Analyst	Method
Enterococci	**72**	CFU/100mL	07/20/21 16:30	AJP	EPA M-1600
Fecal Coliform	**2420**	MPN/100mL	07/20/21 16:30	AJP	SM9223B

Client Sample ID: SB03
BAL Sample ID: D107307-02 **Matrix:** Surface Water **Sampled:** 07/20/21 09:28

Analyte	Result	Units	Analyzed	Analyst	Method
Enterococci	**38**	CFU/100mL	07/20/21 16:30	AJP	EPA M-1600
Fecal Coliform	**115**	MPN/100mL	07/20/21 16:30	AJP	SM9223B

Client Sample ID: MH456950
BAL Sample ID: D107307-03 **Matrix:** Surface Water **Sampled:** 07/20/21 10:00

Analyte	Result	Units	Analyzed	Analyst	Method
Enterococci	**9**	CFU/100mL	07/20/21 16:30	AJP	EPA M-1600
Fecal Coliform	**4.1**	MPN/100mL	07/20/21 16:30	AJP	SM9223B

Client Sample ID: SB091
BAL Sample ID: D107307-04 **Matrix:** Surface Water **Sampled:** 07/20/21 10:43

Analyte	Result	Units	Analyzed	Analyst	Method
Enterococci	**27**	CFU/100mL	07/20/21 16:30	AJP	EPA M-1600
Fecal Coliform	**210**	MPN/100mL	07/20/21 16:30	AJP	SM9223B

Client Sample ID: SB06
BAL Sample ID: D107307-05 **Matrix:** Surface Water **Sampled:** 07/20/21 11:19

Analyte	Result	Units	Analyzed	Analyst	Method
Enterococci	**58**	CFU/100mL	07/20/21 16:30	AJP	EPA M-1600
Fecal Coliform	**141**	MPN/100mL	07/20/21 16:30	AJP	SM9223B

Client Sample ID: SB07
BAL Sample ID: D107307-06 **Matrix:** Surface Water **Sampled:** 07/20/21 11:54

Analyte	Result	Units	Analyzed	Analyst	Method
Enterococci	**110**	CFU/100mL	07/20/21 16:30	AJP	EPA M-1600
Fecal Coliform	**687**	MPN/100mL	07/20/21 16:30	AJP	SM9223B

CERTIFICATE OF ANALYSIS

Client: Rhode Island Department of Transportation
Client Project ID: Scarborough_EPA

Work Order Number: D107307
Date Received: 07/20/21 15:15

Microbiology

Client Sample ID: SB08
BAL Sample ID: D107307-07 **Matrix:** Surface Water **Sampled:** 07/20/21 12:00

Analyte	Result	Units	Analyzed	Analyst	Method
Enterococci	**130**	CFU/100mL	07/20/21 16:30	AJP	EPA M-1600
Fecal Coliform	**613**	MPN/100mL	07/20/21 16:30	AJP	SM9223B

Client Sample ID: OF9100586
BAL Sample ID: D107307-08 **Matrix:** Surface Water **Sampled:** 07/20/21 12:35

Analyte	Result	Units	Analyzed	Analyst	Method
Enterococci	**43**	CFU/100mL	07/20/21 16:30	AJP	EPA M-1600
Fecal Coliform	**88.2**	MPN/100mL	07/20/21 16:30	AJP	SM9223B

Client Sample ID: SB78TRIB
BAL Sample ID: D107307-09 **Matrix:** Surface Water **Sampled:** 07/20/21 12:44

Analyte	Result	Units	Analyzed	Analyst	Method
Enterococci	**220**	CFU/100mL	07/20/21 16:30	AJP	EPA M-1600
Fecal Coliform	**921**	MPN/100mL	07/20/21 16:30	AJP	SM9223B

Client Sample ID: MH404103
BAL Sample ID: D107307-10 **Matrix:** Surface Water **Sampled:** 07/20/21 13:15

Analyte	Result	Units	Analyzed	Analyst	Method
Enterococci	**190**	CFU/100mL	07/20/21 16:30	AJP	EPA M-1600
Fecal Coliform	**8.5**	MPN/100mL	07/20/21 16:30	AJP	SM9223B

CERTIFICATE OF ANALYSIS

Client: Rhode Island Department of Transportation
Client Project ID: Scarborough_EPA

Work Order Number: D107307
Date Received: 07/20/21 15:15

Notes and Definitions

MF	Membrane Filtration
MPN	Most Probable Number
TNTC	Too Numerous to Count
dry	Sample results reported on a dry weight basis
CFU	Colony Forming Units

BAL LABORATORY

Microbiology Division of Thielsch Engineering, Inc.

185 Frances Avenue, Cranston, RI 02910-2211
Tel. (401) 785-0241 Fax (401) 785-2374
www.ballaboratory.com

CHAIN OF CUSTODY

BAL Lab # D107307

Turn Time _____Standard Other_____

Regulatory State: MA RI Other_____

Payment: Amount:$_____
Check#_____ V MC D AmEx

Specifications / Reporting Limits

State Forms Required Yes No

Company RIDOT	Project #		
Contact Mark Nimiroski	Address Lincoln Ave.		
City Warwick	State RI	Zip 02888	PO #
Tel. 401	Fax.	email:	
Cell	Persons Authorized To Receive Results		

BAL Lab ID	Date	Collection Time	Grab -G Composite-C	Matrix	Sample ID	Pres. Code	# of Containers	Type of Container	Vol of Container	Analysis: Enterococcus	Analysis: Fecal Coliform
	7/20	0923	G	Storm	SB02		1	Poly	500ml	X	X
		0928			~~SB~~ SB03					X	X
		1000			MH456950					X	X
		1043			SB091					X	X
		1119			SB06					X	X
		1154			SB07					X	X
		1200			SB08					X	X
		1235			OF9100586					X	X
		1244			SB78 TRIB					X	X
		1315			MH 404103					X	X

Container Type: P-Poly G-Glass AG-Amber Glass S-Sterile V-VOA FP-Finished Product

Matrix: S-Soil SD-Solid D-Sludge WW-Wastewater GW-Groundwater SW-Surface Water DW-Drinking Water O-Oil W-Wipes F-Filter R- Rinse SW-Swab FP-Finished Product IP-In Process RM-Raw Material

Cooler Present X Yes ___No

Seals Intact ___ Yes ___No NA: ✓

Cooler Temperature: 0.2

Internal Use Only

[ ] Pickup

[ ] Technician____

Preservation Code: 1-NP, 2-HCl, 3-H2SO4, 4-HNO3, 5-NaOH, 6-MeOH, 7-Asorbic Acid, 8-ZnAct, 9-Sodium Thiosulfate

Sampled by : Print Signature

Comments: Add Info. JAG 07/26/21

Relinquished by: (Signature, Date & Time)	Received by: (Signature, Date & Time)	Relinquished by: (Signature, Date & Time)	Received by: (Signature, Date & Time)
Mark Nimiroski 7/20 1518	[signature] 7/20/21 1515		
Relinquished by: (Signature, Date & Time)	Received by: (Signature, Date & Time)	Relinquished by: (Signature, Date & Time)	Received by: (Signature, Date & Time)

Please fax to the laboratory all changes to Chain of Custody

1 (White) Lab Copy
2 (Yellow) Client Receipt