STANDARD OPERATING PROCEDURES
for the
TRWA/ VWNA
VOLUNTEER MONITORING PROGRAM

Funded and staffed by:

Taunton River Watershed Alliance (TRWA)
Veolia Water North America (VWNA)

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1. PROJECT DESCRIPTION

A. The TRWA/Veolia Water North America (VWNA) Water Quality Monitoring Project

The Taunton River Watershed Alliance is a non-profit alliance of concerned individuals, businesses, and organizations who are dedicated to protecting and restoring the Taunton River watershed – its tributaries, wetlands, floodplains, river corridors and wildlife. The Watershed Alliance conducts water quality monitoring at sites along the Taunton River and its tributaries. Volunteers play a critical role in water quality sampling. The TRWA's network of volunteers gives concerned residents an effective vehicle for "doing something real" to protect our rivers. VWNA provides contract operation and privatization of water and wastewater treatment facilities and related systems. In 1998, VWNA entered into a twenty-year contract with the City of Taunton to operate and maintain their wastewater treatment plant and manage and administer a pollution prevention program including collaborating with the TRWA on a watershed monitoring project.

B. Scope of this Document

This SOP describes procedures employed by the TRWA/ VWNA volunteer monitoring program. The background information, general safety, and water sampling information are described. Supplementary information is provided in the appendices. The laboratory SOP is located on site at the Taunton Wastewater Treatment Plant and is available upon request.

C. Purpose for Sampling

The Taunton River Watershed Basin is in the heart of the fastest growing area of Massachusetts. It has the largest remaining wetland in the state (Hockomock Swamp) and is home to many species of plants and animals. This sampling program monitors the water quality of a portion of the Taunton River to assess the impact of residential, agricultural, and industrial sprawl on water quality which affects the species indigenous to this basin.

D. Intended Use of Data

The monitoring data is forwarded monthly from VWNA to the TRWA. The TRWA uses the scientific data gathered to establish a baseline of knowledge from which changes to the watershed can be measured. Monitoring data is also forwarded to the City of Taunton Department of Public Works and has been critical in pinpointing areas where sewage outbreaks had occurred. Also areas of high nutrient readings are available to local communities to help determine the cause and help determine what remedial actions are possible.

2. TECHNICAL DESIGN

A. Sampling Strategy

Sampling is performed monthly, on the second Tuesday, between the hours of 5:30 a.m. and 8:00 a.m. Samples must be dropped off to the Taunton wastewater treatment plant laboratory by 08:30 a.m. Monthly sampling was picked because it is frequent enough to include wet-weather events, dry spells, and temperature variations. The second Tuesday of the month was chosen because there are few

national holidays celebrated on this day. The samples are collected in the morning because during photosynthesis, which occurs in the daytime, plants release more oxygen than is used by respiration and decomposition, raising oxygen levels. However, at night, with no photosynthesis oxygen levels are depleted. By sampling in the early morning, water quality can be assessed during a time when the river would be under the greatest oxygen stress. Early sampling also provides time for drop off and pick up of contract analysis samples and for the Taunton WWTP lab to perform those analysis performed in house.

B. Sampling Locations

A total of nineteen sites and a duplicate are sampled at this time. Samples are taken close/from bridges, normally at public access, due to safety considerations and accessibility for parking. These sites were chosen to cover a representative area of the City's waterways as well as significant tributaries up and downstream which affect the health of the Taunton River watershed. The Taunton River is tidal up to Route 24 – aquatic life including fish and wildlife migrate up and downstream. The better the water quality throughout the watershed the greater the aquatic life diversity which = greater ecological, recreational and economic value of the Taunton River watershed and estuary.

STREET/BRIDGE LOCATION	RIVER	GPS Location	ID
CENTER ST., BERKLEY BRIDGE	TAUNTON RIVER	N41°50' 6.1/W71°06' 28.7	TNT 01
PLAIN ST., TAUNTON	TAUNTON RIVER	N41°53' 9.7/W71°05' 20.5	TNT 02
BEDFORD ST., RT. 18, BRIDGEWATER	TAUNTON RIVER	N41°56' 12/W70°57' 56	BED 01 (TNT 03)
CHERRY ST., BRIDGEWATER	TAUNTON RIVER	N41°58' 42.3/W70°54' 44	CHE 01 (TNT 04)
ROUTE 79, ASSONET R., BRIDGE	ASSONET RIVER	N41°47' 37.9/W71°04' 3.6	ASO 01
SEGREGANSETT RIVER BRIDGE, BROOK ST., DIGHTON	SEGREGANSETT RIVER	N41°49' 32/W71°07' 37	SEG
CHICKAMUCKETSETT BROOK BRIDGE, BERKLEY ST., BERKLEY	CHICKAMUCK-SETT BROOK	N41°49' 58.3/W71°06' 25	BER 01
SOMERSET AVE., ROUTE 138 TAUNTON	THREE MILE	N41°51' 19.9/W71°06' 56	TMR 01
COHANNET ST., ROUTE 44 TAUNTON	THREE MILE	N41°53' 11.4/W71°08'	TMR 02
CRANE ST., NORTON	THREE MILE	N41°56' 48.3/W71°09' 38	TMR 03
INGELL ST., TAUNTON	MILL RIVER	N41°58' 46/W71°04' 55.6	MIL 01
WASHINGTON ST., TAUNTON	MILL RIVER	N41°54' 11.7/W71°05' 51	MIL02
WHITTENDON ST., TAUNTON	MILL RIVER	N41°55' 24/W71°06' 21.5	MIL03
ROUTE 44, RAYNHAM	FORGE RIVER	N41°54' 18.3/W71°03' 35	FORGE
MIDDLEBOROUGH AVE., TAUNTON	COTLEY RIVER	N41°53'/W71°01' 28.4	COTLEY
RIVER ST., E. TAUNTON	FURNACE BROOK	N41°53' 35/W71°00' 04.7	FBR 01
HIGHSTONE ST., E. TAUNTON	THOMPSON BROOK	N41°51' 46/W70°58' 40.6	TBR 01
HAYWARD ST., BRIDGEWATER	TOWN RIVER	N41°59' 51/W70°57' 13.2	TWH 01
HIGH ST., BRIDGEWATER	MATFIELD RIVER	N41°59' 58.1/W70°56' 16	MAT 01

C. Sampling Design

Volunteers make careful visual observations about the basic conditions of the river (i.e. color, odor, etc.). Volunteers take in situ measurements for temperature, pH, and salinity (at select locations). Volunteers collect and store for transportation (place in an insulated cooler with a cold pack) samples for fecal coliform, nitrate-nitrogen, total phosphorus, dissolved oxygen, and total suspended solids.

Samples and field data sheets are delivered by volunteers to the Taunton Wastewater Treatment Plant laboratory. At the drop off site, chain-of-custody forms are completed and custody of the samples is transferred to the laboratory technician. **ALL CHAIN OF CUSTODY FORMS AND LABELS MUST BE COMPLETED AND SIGNED BY THE VOLUNTEER SAMPLE COLLECTOR**.

D. Monitoring Parameters

The TRWA/ VWNA monitoring program testing focuses on physical, biological, and chemical water quality indicators. The nine parameters are as follows:

Temperature – It determines how much oxygen the water can hold and the rate at which many biochemical reactions can occur. Warmer water can hold less oxygen. Aquatic organisms are dependent on certain temperature ranges for their optimal health. The temperature for a cold water Class B stream should be <20 degrees Celsius. (68 Fahrenheit)

DO (Dissolved Oxygen) – The river system both produces and consumes oxygen. It gains oxygen from the atmosphere and from plants as a result of photosynthesis. Oxygen is consumed during respiration by aquatic animals, decomposition of organic matter, and various chemical reactions. Oxygen is measured in its dissolved form as dissolved oxygen. If more DO is consumed than is produced, dissolved oxygen levels decline. The DO of a Class B river should be greater than 6.0 mg/l in cold water fisheries and greater than 5.0 mg/l in warm water fisheries to support life.

pH – The pH measures the acidity or alkalinity of water on a scale of 1.0 – 14.0 with 7 being neutral. 1.0 would be the most acidic and 14 would be the most basic or alkaline. The acidity affects the rate of biochemical reactions in the water. The pH of a Class B stream should be 6.5 – 8.3. A pH outside of this range reduces diversity in the river because it stresses the physiological systems of most organisms and can reduce reproduction. Low pH may also allow toxic elements to precipitate out of solution and become available for uptake by aquatic plants and animals.

Total phosphorus (Total P) – Phosphorus occurs in water in several forms called phosphates. The total phosphorus test measures all of the forms of phosphates. Phosphates are necessary for biological growth, yet it is the nutrient that is in the shortest supply in most fresh waters. For this reason it is referred to as a "limiting" nutrient (meaning it limits the amount of biological growth). A small increase in the level of phosphorus may result in an undesirable chain of events including excessive growth of aquatic plants, low dissolved oxygen and death of certain aquatic animals. Phosphates enter the water both naturally and from humans. It naturally occurs in soil and rocks. It may be introduced from human activities such as runoff from fertilized lawns and crop land, failing septic systems outbreaks, wastewater treatment plants, stormwater runoff (automobile fluid leaks and exhaust deposition wash off), road salt (which incorporates phosphorus compounds as anti-caking agents), and commercial cleaning operations.

Nitrate Nitrogen (**NO3-N)** – Nitrogen is normally found in water or soil as organic nitrogen, ammonia (NH3), nitrite (NO2) and nitrate (NO3). Like phosphorus, nitrogen is also a necessary part of the life cycle. Most plants, animals, and microorganisms require some amount of nitrogen for growth and reproduction. Like phosphorus, nitrogen is a limiting nutrient particularly in estuaries where freshwaters and salt waters mix (Taunton River below route 24 and Mount Hope Bay). Excess nitrates will result in excessive growth of algae and aquatic plants. The decomposition of these aquatic plants depletes oxygen from the water (the process of decomposition requires oxygen). This may result in "choking" the river due to low DO levels. Excessive amounts of nitrates can come from sewage, animal manure, run off from fertilized lawns, agricultural farming, and industrial discharges than contain corrosion inhibitors. Nitrates from land sources end up in rivers more quickly than nutrients like phosphorus. This is because they dissolve in water more readily than phosphorus, which has an attraction for soil particles. Nitrates because they dissolve in water flow with groundwater to rivers and streams when applied as fertilizers at rates higher than lawns and crops require for growth. Nitrates serve as a better indicator of sewage pollution during dry weather.

Fecal Coliform Bacteria (Fecals) – Fecal coliform bacteria are indicators of the presence of human sewage or animal manure. Although they are not harmful themselves, they indicate the possible presence of disease-causing bacteria and viruses. Their presence in streams suggests that disease causing microorganisms might be present and that swimming and eating shellfish might be a health risk. Reported as number of colonies/100 milliliters of sample. The former standard for a Class B water was <10% of the samples >400 colonies/100 ml.

Total Suspended Solids (TSS) – Total suspended solids is an indicator of water clarity. TSS measures the level of sediment contained in the water column. Suspended solids include silt and clay particles, plankton, algae, fine organic debris and other particulate matter. A high TSS (>25 mg/l) might interfere with sunlight penetrating through the water to the bottom. This may slow photosynthesis by aquatic plants. Sources of solids are industrial discharges, sewage, fertilizers, road runoff, and soil erosion.

Salinity – This is measured to establish a baseline for tidal influence at select locations.

E. Quality Control

For quality control purposes, field duplicates are taken at a frequency of one site each month.

In the laboratory, a duplicate is analyzed at a minimum frequency of 1 per sample batch of 20 or less. One blank is analyzed per batch of twenty samples or less. For accuracy a standard of known concentration is analyzed at 1 per sample batch of 20 or less.

Following the sampling event and analytical analysis, the data sheet is reviewed and validated by the laboratory quality control officer. The laboratory quality control officer then enters the data into an Excel database and forwards it to the TRWA.

3. PROJECT ORGANIZATION AND RESPONSIBILITY

Quality Assurance Officer:

Jonathan Mongie, Project Manager
Veolia Water
825 West Water Street
Taunton, MA 02780
508-823-3582, FAX 508-880-7566
Jonathan.mongie@veolia.com

TRWA Sampling Program Coordinator:

Steve Silva
124 Titicut Rd
Raynham, MA 02676
508-824-7345; Cell: 508-280-3991
steve124@gmail.com

Back-up TRWA Sampling Program Coordinator:

Alex Houtzager
175 Bayview Avenue
Berkley, MA 02779
508-822-4142; Cell: 508-813-3458
houtz33@verizon.net

The field sampling program coordinators check each sample site directly for safety and accessibility and assist with training sessions for community volunteer samplers.

The laboratory performing the analyses is as follows:

Veolia Water North America
Taunton Wastewater Treatment Facility
825 West Water St.
Taunton, MA 02780
Lab Manager Rick McCormack
508- 823-3582

4. FIELD SAMPLING TABLE

Sample Matrix: River water for all samples.

In Situ Measurement

Analyte/ Parameter	Sampling Method	Sample Container (P) Plastic or Glass (G)	Volume needed (ml)	Method of preservation	Maximum Hold Time
Temperature	170.1 (a) Field Thermometer	Measure from 500 ml. TSS sample bottle.	Approx. 500 mls.	None required	Analyze Immediately
pH	River Water pH strips	Measure from 500 ml. TSS sample bottle	Approx. 500 mls.	None required	Analyze within 10 minutes
Salinity	Hydrometer / Temperature	Measure from 500 ml. TSS sample bottle	Approx. 500 mls.	None required	Analyze within 10 minutes

Discrete Samples

Analyte/ Parameter	Sample Matrix	Sample Container (P) Plastic or Glass (G)	Total # of samples collected at each site	Volume needed (ml)	Method of preservation	Maximum Hold Time
Total phosphorus	River water	P	1	250	H2SO4 by lab	Analyze ASAP
Nitrate-Nitrogen	River water	P	1	250	Cool to 4ºC	48 hours
TSS	River water	P	1	1000	Cool to 4ºC	7 days
Dissolved Oxygen	River water	G (Wheaton BOD bottle)	1	300	Cool to 4ºC	Non Preserved 2 hours
Fecal Coliform	River water	P (100ml)	1	100 ml	Cool to 4ºC	6 hours

Quality Control/Quality Assurance Samples

Analyte/ Parameter	Sample Matrix	Sample Container (P) Plastic or Glass (G)	Total # of samples collected at each site	Volume needed (ml)	Method of preservation	Maximum Hold Time
Total phosphorus	River Water	P	1	250	H2SO4 by lab	ASAP
Nitrate-Nitrogen	River Water	P	1	250	Cool to 4ºC	48 hours
TSS	River Water	P	1	1000	Cool to 4ºC	7 days

As described in Section 2 (E), duplicate samples are collected by each sampling team on a rotating basis. If it is your turn to collect a duplicate sample, field duplicates are to be taken separately, but at

the same time, or as close to the same time as possible, as the original sample. A duplicate sample is collected for each parameter analyzed.

Sample bottles for Nitrate Nitrogen, Total Phosphorus and Fecal Coliform are provided by the Veolia contract laboratory, Microbac Laboratories Inc. of Dayville, CT. The labels on the bottles are to be filled out by the sample collectors as follows:

Client – Veolia Taunton
Date Collected
Time Collected
Sample ID
Analysis Required.

5. SAMPLE PROCEDURES AND CHAIN OF CUSTODY

A. Safety

There are many safety precautions that must be followed both in the field and in the lab. Potentially hazardous situations exist in any field sampling situation. Volunteer samplers are encouraged to always sample in pairs. Since most of the sampling locations are off bridges (plastic bucket tied to a rope) or near bridge embankments, and the sampling times are in the early morning hours, it is advisable to wear high-visibility clothing. Be aware that embankments may be slippery and/or icy. Proper footwear is recommended. Sampling is done in all weather conditions, but if there is lightning in the area, sampling must be avoided. Standard lab safety procedures are followed during all laboratory analyses.

In the event of a cancellation due to inclement weather or lab schedule issue, Steve or Alex will notify each volunteer. If you, the volunteer, are unable to collect your samples, for whatever reason, please notify Steve by phone/cell (508-280-3991) or e-mail (steve124@gmail.com) at least 2 hours prior to the sampling event. If you can't reach Steve call the wastewater treatment plant at 508-823-3582.

B. List of Sampling Equipment

<u>TRWA/Veolia Provided</u>
Sample grabber or Plastic Bucket with rope
Thermometer
Hydrometer
pH Strips
Gloves
Field paperwork (Field Sheet / Chain-of-Custody and Salinity Conversion Chart)
Clipboard
Pen or Marker
Cooler(s)
Cold pack(s)
One 1-liter plastic bottle for each sampling site
Two plastic bottles from Microbac for each sampling site for nitrate and total phosphorus samples
One plastic cylindrical screw top container from Microbac for each sampling site for fecal coliform

One Wheaton BOD bottle for each sample site for the dissolved oxygen sample
Assigned duplicate bottles and/or 2 L container of DI water for field blanks

Volunteer Provided
Flashlight
Emergency Telephone Numbers
First Aid Kit
Cell Phone

All sampling equipment is provided by VWNA at the Taunton Wastewater Treatment Plant and TRWA. Veolia will provide two sets of sample containers for each sample location. Each volunteer monitor will be given one set of sample containers for each sample location, a clipboard with pen, field data and chain of custody sheets, a thermometer, a hydrometer (if sampling lower river saline water sites), pH strips, a cooler with a blue ice pack, a sample grabber if needed, plastic bucket with a rope, and a pair of latex or nitrile gloves. Sample collectors are requested to provide their own flashlight, first aid kit and cell phone.

Monthly, when the samples are collected and delivered to the laboratory, the extra set of sample bottles will be given to the collector to replace the relinquished samples. Any paperwork is replenished by VWNA as needed.

After analyses are complete, all used sample bottles are cleaned in the laboratory dishwasher using Sparkleen Laboratory Detergent, a non-phosphate detergent manufactured to clean laboratory glassware.

Volunteers are requested to not use the buckets or coolers for any other purpose. Buckets should be rinsed with tap water only and air dried.

C. Sampling Preparation

Sampling preparation is the most important part of a successful sampling event. Careful attention must be given to both equipment and handling in order to collect a valid sample. Sampling site(s) and type(s) of samples will determine the equipment needed and the method of collection. A standard sampling checklist is specified above. Sampling preparation procedures are as follows:

1. Two days prior to the event contact your sampling partner to confirm the sample date and meeting time and place.

2. The night before the event, place the ice packs into the freezer.

3. Either the night before or the morning of the event notify someone other than your partner of your intended sampling locations and approximate departure and return time.

4. Go over the sample checklist and the field sheet to determine what will be used for each site.

5. The morning of the sampling event, place the ice packs into the cooler.

6. Check your vehicle to make sure it is properly stocked with all necessary equipment and

paperwork.

IMPORTANT: In the event that you are unable to collect a sample please notify Steve Silva at 508-280-3991 or the Wastewater Treatment Plant at 508-823-3582

D. Sample Collection

Each of the sample containers provided by the Quality Assurance Officer is labeled with an identification number. Each sampling location has been assigned a three letter - two number I.D. This I.D. correlates with the name of the river and sequential location from the mouth. All river samples are grab samples from running water.

1. Park your vehicle in a safe secure location. Prepare the equipment necessary for the site being sampled. Set aside the appropriately labeled sample containers. Have the thermometer, hydrometer, pH strips, the field sheet on the clipboard, and a pen on hand. Leave the cooler in your car. Set all test equipment in a bucket to carry to the sample site.

2. Assess your situation to ensure safety and ease of sample collection. You should have adequate space for yourself and all of the sampling equipment.

3. Observe the sample location for water uses (swimming, fishing, boating, etc.). Observe the color of the water and notice if any odors are present. Make note of any plant or algal growth. Log this information onto the field sheet.

4. Use the sample grabber or bucket to retrieve each of the following samples. Insert the container into the grabber and immerse in the river or more commonly use a rope and plastic bucket.

    a. Set the sample container into the grabber and immerse into the river or more commonly immerse the bucket into the river using a rope from a bridge to collect river water. Break the paper label seal on the top and fill the Microbac supplied small cylindrical clear plastic container with the screw on cover. These will be used for fecal coliform (FC) analysis.
    b. Fill the Microbac supplied plastic bottle, non-preserved the smaller of the two small rectangular bottles from: the sample bucket of water, the river directly, or pour from the larger bottle used to collect samples with the grabber. This sample will be used for nitrate-nitrogen (NO3) analysis.
    c. Fill the Microbac supplied plastic bottle, preserved with sulfuric acid the larger of the two small rectangular bottles from: the sample bucket of water, the river directly, or pour from the larger bottle used to collect samples with the grabber. This sample will be used for total phosphorus (TP) analysis.
    d. Set the one liter plastic bottle into the grabber for the TSS analysis or pour water from the bucket directly into the one liter plastic bottle. Fill to the shoulder of the bottle only.

5. Place the Wheaton glass BOD bottle into the sample grabber and gently immerse it into the river. Fill the bottle completely underwater carefully and do not entrain any air bubbles. Put the stopper into the bottle. Or more commonly immerse the bottle directly into the bucket filled with water not entraining any air bubbles. Set the bottle into the cooler.

** If you are collecting any duplicate samples please collect the duplicate when collecting the original sample.

6. Measure the water temperature from the large plastic bottle collected for TSS. Read the water temperature to the nearest 0.5 degree. Record this onto the field sheet along with the site # and time.

7. To determine salinity (at select tidal influenced sites) start by setting the hydrometer into the TSS bottle and record the reading onto the field sheet. Utilize the salinity conversion chart to determine salinity. Look at the chart. Where the hydrometer reading and temperature intersect is your salinity, record this on the field data sheet.

8. Immerse a pH strip into the TSS sample bottle and record pH on the field data sheet. Record pH to the nearest tenth decimal place.

9. Place these sample bottles into the bucket to carry to the cooler with the ice packs.

10. Be sure to complete the field data sheet and chain of custody form for that sample site.

11. Continue on to your next sample site, repeating Steps 1 – 10 at each sample location.

E. Documentation

Documentation is an integral part of any sampling program. The validity of samples collected and data obtained both in the field and the laboratory is ensured through documentation and record keeping. All information must be complete and accurate. Documentation includes the field sheet and the chain-of-custody record. The overall success of a monitoring program depends on its capability to produce valid data through the use of accepted sampling procedures and protocol, and its ability to substantiate such data through documentation. This begins with properly trained personnel and continues with sampling preparation, the sampling event, transfer of sample custody, laboratory analyses, equipment cleaning and data management.

1) WATER QUALITY MONITORING FIELD TEST SHEET

The Field Sheet is a permanent record of the information gathered during the sampling round. It is also the Chain of Custody. A blank field sheet is included in Appendix A. The chain of custody (COC) must always be completed. The COC is the legal document that follows the sample from collection through to final analysis. The data on the field sheet includes:

- Unique site identification number
- Name of Sampling Personnel
- Date and Time of Sample Collection
- Water Temperature
- Hydrometer Reading (if measured)
- Salinity (if measured)
- pH reading
- Water Clarity

- Requested Analysis
- Comments or any observations, such as weather, water odor, water color, or observed uses. Unusually large groups of wildlife.
- Relinquished by: Name of person who relinquishes sample to laboratory personnel
- Date/Time: Date and Time that lab person receives the sample
- Received by: Lab person receiving sample accepts transfer by signing.

F. Sample Transport

Every sample collected, regardless of type, should be handled in the same manner. Once the sample is collected, place it upright into the cooler. When all samples are collected at the site carry the bucket to your vehicle and place it securely in the cooler. Once all of your sample sites are collected, drive directly to the laboratory conducting the tests and deliver the samples to the laboratory manager or technician.

G. Transfer of Custody

All of the samples that are collected are analyzed by the laboratory specified in this document. When delivering the samples to the laboratory, place the cooler on the lab counter and unload the sample containers. Group the sample bottles by site and line up the bottles so that the ID is visible. The chain-of-custody form and sample label should be checked for completion and accuracy. The laboratory technician signs off on the chain of custody and receives all samples. The lab technician will prepare the chain of custody for the samples which are forwarded to Veolia's contract lab (Microbac) for analysis. These samples are the nitrate-nitrogen, total phosphorus, and fecal coliform samples. All samples are placed into the laboratory refrigerator until analysis or pick up by Microbac.

FOR SAFETY AND HEALTH REASONS, NO CHILDREN UNDER THE AGE OF 14 ARE ALLOWED IN THE WASTEWATER TREATMENT PLANT LABORATORY.

6. ANALYTICAL PROCEDURES

This monitoring program uses the procedures specified below:

Analyte/parameter	Analytical Method
pH	pH strips
Temperature	Field Thermometer
Total Suspended Solids (TSS)	SM 2540 D
Salinity	Hydrometer / Field Thermometer
Fecal Coliform Bacteria	SM9222D. Membrane filtration method, Standard Methods, by Microbac Laboratories, Inc.
Nitrate-Nitrogen	SM4500NO3-F. Analysis conducted by contract laboratory, Microbac Laboratories, Inc.
Total Phosphorus	365.1. Analysis conducted by contract laboratory, Microbac Laboratories, Inc.
Dissolved Oxygen	Winkler or iodometric method, Standard Methods 4500-0 C.

7. Collection of Supplies

Collect necessary sampling supplies for the following month at the sample drop-off, at the Taunton Wastewater Treatment Plant

8. Sample Analysis

Samples are analyzed for nitrate, total phosphorus and total coliform by Microbac, Dayville, CT a MassDEP certified laboratory.
https://www.microbac.com/testing-services/accreditations-certifications/

Analysis for dissolved oxygen, total suspended solids, and pH is performed by Veolia at the Taunton Wastewater Treatment Plant laboratory an NPDES permit regulated facility.

TRWA sampling volunteers measure temperature, salinity (in salt or brackish water locations), and pH with test strips in the field at the time of sample collection.