RHODE ISLAND
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER RESOURCES
235 Promenade Street, Providence, Rhode Island 02908

December 24, 2021

CERTIFIED MAIL

Craig DeMott
General Manager
Sakonnet Point Club, Inc.
PO BOX 299
Little Compton, RI 02837

RE: Final RIPDES Permit for Sakonnet Point Club, Inc.
RIPDES Permit No. RI0023558

Dear Mr. DeMott:

Enclosed is your final Rhode Island Pollutant Discharge Elimination System (RIPDES) Permit issued pursuant to the referenced application. State regulations, promulgated under Chapter 46-12 of the Rhode Island General Laws of 1956, as amended, require this permit to become effective on the date specified in the permit.

Enclosed is the response to public comments on the Draft RIPDES Permit. Also enclosed is information relative to hearing requests and stays of RIPDES Permits.

We appreciate your cooperation throughout the development of this permit. Should you have any questions concerning this permit, feel free to contact Max Maher of the State Permits Staff at (401) 222-4700, extension 2777201.

Sincerely,

Joseph B. Haberek, P.E.
Acting Administrator of Surface Water Protection

Enclosures

cc: Robert Ferrari, NWSI
John D. Karlsson
Max Maher, DEM
Crystal Charbonneau, DEM
Mary W. Karlsson
Mel DeCarvalho, NWSI
Kyla Bennett, PEER

Response to Public Comments
Sakonnet Point Club, Inc.
RIPDES Permit No. RI0023558

The Rhode Island Department of Environmental Management (DEM) solicited public comments on the draft Rhode Island Pollutant Discharge Elimination System (RIPDES) permit for the Sakonnet Point Club from October 22, 2021 to December 3, 2021.

The following is a synopsis of all significant comments received and the DEM's responses to those comments.

The following responses address comments that were made by Public Employees for Environmental Responsibility (PEER) on December 3, 2021.

Comment 1: PEER objected to the Draft Permit on the basis that it does not require monitoring for pollutants associated with domestic wastewater. PEER contended that the source water wells for the drinking water desalination system are contaminated with pollutants from domestic wastewater, and therefore are present in the Reverse Osmosis (RO) concentrate discharge that is authorized to discharge to the Sakonnet Harbor by this permit. PEER claims that, in addition to nitrates, pollutants from anthropogenic sources, such as steroidal hormones, pharmaceuticals, detergents, and other organic wastewater compounds, could be present in the discharge.

PEER claimed that the *Crepidula fornicata* mollusk and *Lyngbya* cyanobacteria have been growing in abundance since 2017, correlating the growth of these species to the relocation of the RO outfall from the Sakonnet River to the Sakonnet Harbor in 2013. PEER claimed that it is clear that the growth of these species was caused by high levels of nitrates entering the harbor.

PEER cited elevated Enterococci levels in the western portion of the harbor, suggesting that this may be caused by the RO concentrate discharge. PEER claimed that the nitrate in the source water wells documented in the draft permit is caused by contamination with domestic wastewater and claimed that the "12-year average of nitrates in the draft permit conceals the possibility of increasing levels of nitrate in the source water." PEER claimed that the Final Permit should contain an effluent limit for Nitrate.

Response 1: The Draft and Final Permit requires monitoring for Flow, Total Suspended Solids (TSS), Total Dissolved Solids (TDS), Total Cadmium, Hexavalent Chromium, Total Lead, Total Zinc, Total Nickel, and Total Aluminum. The Permit also establishes a water quality-based effluent limitation (WQBEL) for pH and Total Copper.

The NPDES Permit Writer's Manual (EPA, September 2010) notes that, when developing and assessing the need for WQBELs, the permit writer should first

characterize the effluent and the receiving water by identifying pollutants of concern in the effluent. These pollutants of concern can be divided into five categories:

1. Pollutants with applicable Technology-Based Effluent Limitations (TBELs): The Sakonnet Point Club discharge does not have an applicable effluent limitation guideline (ELG) under 40 C.F.R. Chapter I, Subchapter N. Therefore, no pollutants of concern fall under this category.

2. Pollutants with a Wasteload Allocation from a Total Maximum Daily Load (TMDL): The Sakonnet Harbor (Waterbody ID: RI0010031E-01D), which receives the Sakonnet Point Club discharge, is not listed on the State of Rhode Island 2018-2020 Impaired Water Report as being impaired, and therefore has no TMDL. Accordingly, no pollutants of concern fall under this category.

3. Pollutants Identified as Needing WQBELs in the Previous Permit: The only pollutants with WQBELs from the previous permit (pH and Total Copper) have also been assigned WQBELs in this Permit.

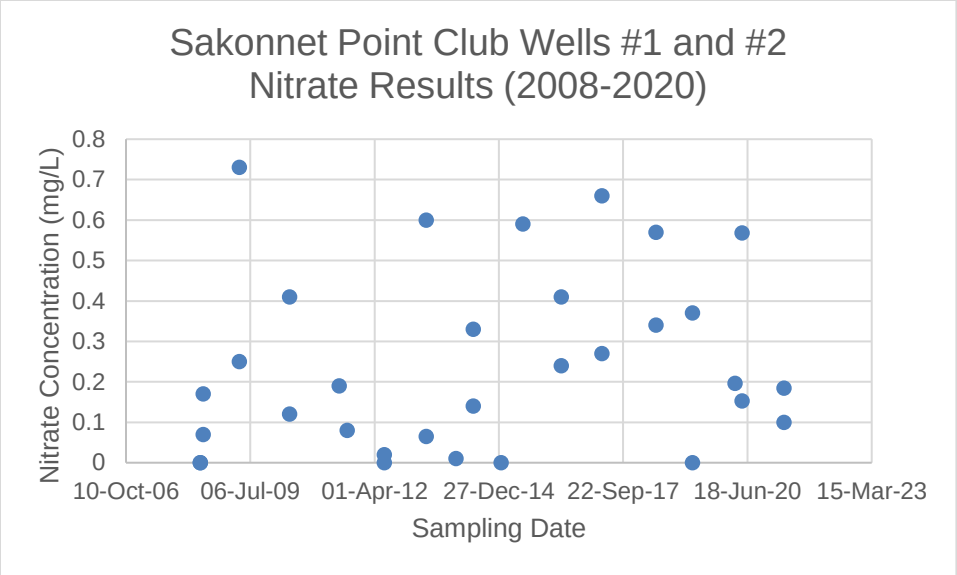
4. Pollutants Identified as Present in the Effluent through Monitoring: All pollutants previously monitored by the Sakonnet Point Club (TSS and TDS) are required to be monitored per the Final Permit.

5. Pollutants Otherwise Expected to be Present in the Discharge: According to the Permit Writer's Manual, for a given discharge, "There might be pollutants for which neither the discharger nor the permitting authority have monitoring data but, because of the raw materials stored or used, products or by-products of the facility operation, or available data and information on similar facilities, the permit writer has a strong basis for expecting that the pollutant could be present in the discharge."

Based on the above category (Pollutants Otherwise Expected to be Present in the Discharge), DEM included monitoring for Total Cadmium, Hexavalent Chromium, Total Lead, Total Zinc, Total Nickel, and Total Aluminum. As explained in the Draft Permit Statement of Basis, "metals can be present in drinking water wells and brackish water. Certain metals, identified in the Rhode Island Water Quality Regulations at 250-RICR-150-05-1.26(J)(1), have water quality standards for their acute and chronic toxic effects. The reverse osmosis water treatment system can increase metals concentrations in the surface water discharge to an extent that may violate water quality standards." Based on the data that was available for metals in the source wells for the site, there was no "reasonable potential" for these metals to cause a water quality exceedance. However, in order to ensure that these metals continue to not have "reasonable potential", DEM included monitoring for these parameters.

As an additional measure of assessing if the discharge has a reasonable potential to cause or contribute to an excursion above a State water quality standard for any pollutants in the receiving water, as explained in the Statement of Basis, DEM evaluated analytical data from the two wells which supply the Sakonnet Point Club. Using data collected from 2008-2020, DEM estimated potential pollutant concentrations using the recovery ratio of the reverse osmosis system, assuming that the pollutant is entirely removed from the permeate. The reverse osmosis system for the Club is designed to produce 5.2 gallons per minute of drinking water permeate. This results in 3.5 gallons per minute of reject water discharged to the harbor for every 8.7 gallons per minute of feedwater treated, as shown in the piping and instrumentation diagram in Attachment B of the Permit Statement of Basis. The reject recovery ratio is calculated then, as 3.5/8.7 = 0.4022, indicating that the reject water would conservatively be 1/0.4022 = 2.49 times more concentrated than the feedwater for the detected and measured pollutants. Note: This is a conservative assumption because it assumes that all of the pollutant is contained in the reject water discharged to the harbor, resulting in the highest potential concentration of pollutants in the permitted discharge.

For each pollutant sampled in the wells from 2008-2020, the result was multiplied by the reject recovery ratio of 2.49 and compared to the applicable water quality-based permit limit. For pollutants with multiple sample results, the highest concentration was selected and multiplied by 2.49 for the purposes of this analysis. Therefore, PEER's position that the nitrate results represent a "12-year average" which may be increasing over time is not accurate. Instead, the nitrate, nitrite, and nitrate-nitrite concentrations used to evaluate the need for permit limits represent the *highest* concentration of these parameters found through the drinking water well monitoring multiplied by the reject ratio of 2.49. Using the detectable well water analytical results found in Attachment F, the highest detectable well concentration of nitrate was 0.73 mg/L. This sample was recorded on April 9, 2009. Using this concentration times the reject ratio, the maximum discharge concentration of nitrate would be 1.81 mg/l: (0.73 mg/L)(2.49) = 1.81 mg/L. Attachment D has been changed to represent the highest concentration of nitrate detected multiplied by the theoretical reject ratio of the RO system (1.81 mg/L). The results of this analysis have also been moved to the "Max" column of Attachment D for clarity. As shown in the chart below, there is no correlation between nitrate concentrations with respect to time.



The EPA notes that "while nitrate does occur naturally in groundwater, concentrations greater than 3 mg/L generally indicate contamination (Madison and Brunett, 1985), and a more recent nationwide study found that concentrations over 1 mg/L nitrate indicate human activity (Dubrovsky *et al*. 2010)."[1] Both the average and maximum concentrations of nitrate in the Sakonnet Point Club source wells (0.23 mg/L and 0.73 mg/L, respectively) are below the threshold that indicates human activity, 1 mg/L, and well below the National Drinking Water Maximum Contaminant Level (MCL) of 10 mg/L. USGS studies of 30 public supply wells within the New England Coastal Basins reported a median concentration of 0.7 mg/L nitrate.[2] This shows that the source wells do not exhibit any evidence of being contaminated with domestic wastewater.

Moreover, when assessing if domestic wastewater parameters could be pollutants of concern in the RO concentrate discharge, DEM observes that "nitrite can be elevated when water samples are taken near sources of organic wastes or sewage, where ammonium is being converted first to nitrite and then to nitrate."[1] However, of the 14 nitrite samples taken from the Club's source wells from 2008-2020, only 3 of the samples showed concentrations above the method detection limit of 0.01 mg/L. The 3 samples with detectable concentrations were just above the detection limit at 0.026, 0.024, and 0.020 mg/L. Elevated levels of nitrite associated with the nitrification of ammonia present in raw domestic wastewater have not been observed. Therefore, based on the concentrations of nitrate and nitrite in the well water, there is no evidence of domestic wastewater contamination.

[1] https://www.epa.gov/nutrient-policy-data/estimated-nitrate-concentrations-groundwater-used-drinking
[2] *Water quality in the New England Coastal Basins, Maine, New Hampshire, Massachusetts, and Rhode Island, 1999-2001,* United State Geological Survey, January 2004.

As allowed by regulation, DEM also considers the dilution of the effluent in the receiving water when determining if the discharge has a reasonable potential to cause or contribute to an excursion above a State water quality standard. Rhode Island Water Quality Regulations at 250-RICR-150-05-1.10(E)(1) state that nutrients shall not be present "in such concentration that would impair any usages specifically assigned to said Class, or cause undesirable or nuisance aquatic species associated with cultural eutrophication." As discussed in the permit statement of basis and explained further in the Outfall Relocation Analysis (Attachment E), the dilution factor at the edge of the chronic mixing zone (radius of 25 meters) is 243. A "worst-case scenario" effluent loading scenario of 1.81 mg/L at a dilution factor of 243 (assuming zero for a background concentration of nitrate in the receiving water) would generate an in-stream nitrate concentration within the regulatory mixing zone of 7.44 µg/L, less than five times the analytical detection limit for nitrate per USGS sampling conducted in the Sakonnet River in 2018-2019[3]. One study of the marine cyanobacteria *Lyngbya* cultures under different nitrate concentrations (0 g/L, 0.75 g/L, 1.5 g/L, 2.25 g/L, and 3.0 g/L) in growth media showed that an abundant rise in chlorophyll-a and carotenes was observed after 15 days of incubation for the 1N and 2N (1.5 g/L and 3.0 g/L, respectively) samples, while glucose content for the 0.5N (0.75 g/L) samples only sharply increased after 20 days.[4] Given the much higher concentrations of nitrate, with 0.75 g/L being 100 times greater than the calculated "worst-case scenario" in-stream concentration of 7.44 µg/L, the discharge of nitrate from the Club's source wells would not be causing or contributing to cultural eutrophication in the harbor.

As discussed above, when conducting a reasonable potential analysis DEM is charged with considering existing controls on point and non-point sources of pollution, the variability of the pollutant or pollutant parameters in the effluent, and where appropriate, the dilution of the effluent in the receiving water. Given that the nitrate concentrations have not been shown to be above expected background levels in the source wells and that the modeled discharge of nitrates at critical conditions would result in an in-stream concentration well below the levels that cause cultural eutrophication in the receiving water, DEM finds that the Sakonnet Point Club discharge does not have reasonable potential to cause or contribute to an excursion above the State water quality criteria for nutrients.

DEM will continue to monitor pollutant levels in the Sakonnet Point Club source wells to determine if additional WQBELs are required for the discharge. For the above reasons, no changes have been made to the Final Permit monitoring requirements.

---

[3] https://www.usgs.gov/centers/new-england-water-science-center/science/characterization-water-quality-sakonnet-river

[4] "Growth Performance and Biochemical Analysis of Lyngbya Sp. BDU 90901 Under Different Nitrate Concentrations", January 2016, *Acta Horti Botanici Bucurestiensis* 43.

Comment 2: PEER claimed that the Draft Permit does not comply with the antidegradation provisions of the Rhode Island Water Quality Regulations and does not protect the designated uses.

Response 2: The rules for implementing the Antidegradation Provisions of the Rhode Island Water Quality Regulations are outlined at 250-RICR-150-05-1.27. According to these procedures, antidegradation applies to any "new, reissued, or modified RIPDES permits." The Regulations at §1.27(C)(1) state that DEM must determine whether the proposed activity can be considered a new or increased activity. §1.27(C)(1)(b)(2) states that for discharges covered by existing RIPDES permits "an evaluation of an increased loading shall constitute a comparison of the present permit limit with the newly calculated permit limit. If the new permit limit is less than or equal to the old limit, it would not be considered an increased activity." Since all permit limits in the Draft and Final Permit are as stringent as those contained in the previous Final Permit, there is no increased activity. The Water Quality Regulations at §1.27(C)(2) state that if the "evaluations result in a determination that the proposed activity is not a new or increased activity, then there would be no further review of the proposed activity under the Antidegradation Implementation Policy." Therefore, the Permit is consistent with the State's Antidegradation Policy and no changes to the permit are necessary.

The Sakonnet Harbor has a Waterbody ID of RI0010031E-01D and is a Class SA{b} water according to the Rhode Island Water Quality Regulations. The {b} partial use designation is due to the concentration of vessels in the harbor and results in the harbor being subject to seasonal shellfishing closures as determined by RIDEM pursuant to R.I. Gen. Laws Chapter 20-8.1. Although the harbor has a {b} partial use designation, all Class SA criteria must be attained. RIPDES Regulations at 250-RICR-150-10-1.16(A)(5)(h)(1) note that when developing water quality-based effluent limits the permitting authority shall ensure that "the level of water quality to be achieved by limits on point sources established under this paragraph is derived from and complies with all applicable water quality standards." Because the effluent limitations are derived from the applicable water quality criteria set out in the Rhode Island Water Quality Regulations, which support the designated uses for Class SA waters, DEM finds that the limitations set out in the Final Permit are protective of all designated uses and no changes to the permit are necessary.

HEARING REQUESTS

If you wish to contest any of the provisions of this permit, you must request a formal hearing within thirty (30) days of receipt of this letter. The request should be submitted to the Administrative Adjudication Division at the following address:

Mary Dalton, Clerk
Department of Environmental Management
Office of Administrative Adjudication
235 Promenade Street
3rd Floor, Rm 350
Providence, RI 02908

Any request for a formal hearing must conform to the requirements of §1.50 of the Regulations for the Rhode Island Pollutant Discharge Elimination System (RI Code of Regulations; 250-RICR-150-10-1.50).

STAYS OF RIPDES PERMITS

Should the Department receive and grant a request for a formal hearing, the contested conditions of the permit will not automatically be stayed. However, the permittee, in accordance with §1.51 of the Regulations for the Rhode Island Pollutant Discharge Elimination System (RI Code of Regulations; 250-RICR-150-10-1.51), may request a temporary stay for the duration of adjudicatory hearing proceedings. Requests for stays of permit conditions should be submitted to the Office of Water Resources at the following address:

Joseph B. Haberek, P.E.
Acting Administrator of Surface Water Protection
Office of Water Resources
235 Promenade Street
Providence, Rhode Island 02908

All uncontested conditions of the permit will be effective and enforceable in accordance with the provisions of §1.50 of the Regulations for the Rhode Island Pollutant Discharge Elimination System (RI Code of Regulations; 250-RICR-150-10-1.50).

AUTHORIZATION TO DISCHARGE UNDER THE
RHODE ISLAND POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of Chapter 46-12 of the Rhode Island General Laws, as amended,

Sakonnet Point Club, Incorporated
50 Sakonnet Point Road
Little Compton, Rhode Island 02837

is authorized to discharge from a facility located at

11 Bluff Head Avenue
Little Compton, Rhode Island 02837

to receiving waters named

Sakonnet Harbor
(WBID: RI0010031E-01D)

in accordance with effluent limitations, monitoring requirements and other conditions set forth herein.

This permit shall become effective on April 1, 2022.

This permit and the authorization to discharge expire at midnight, five (5) years from the effective date.

This permit supersedes the permit issued on January 31, 2013.

This permit consists of eight (8) pages in Part I including effluent limitations, monitoring requirements, etc. and ten (10) pages in Part II including General Conditions.

Signed this 24th day of December 2021.

Joseph B. Haberek, P.E., Acting Administrator of Surface Water Protection
Office of Water Resources
Rhode Island Department of Environmental Management
Providence, Rhode Island

PART I

A. **EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS**

1. During the period beginning on the effective date and lasting through permit expiration, the permittee is authorized to discharge from outfall serial number(s) 001A.

   Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations					Monitoring Requirement	
	Quantity - lbs./day		Concentration - specify units				
	Average Monthly	Maximum Daily	Average Monthly *(Minimum)	Average Weekly *(Average)	Maximum Daily *(Maximum)	Measurement Frequency	Sample Type
Flow	--- GPD	5000 GPD				Continuous	Recorder
TSS			--- mg/l		--- mg/l	1/Month	24-Hr. Comp.
TDS			--- mg/l		--- mg/l	1/Month	24-Hr. Comp.
pH			(6.5 SU)		(8.5 SU)	1/Month	Grab
Copper, Total			133 ug/l		312 ug/l	1/Month	24-Hr. Comp.
Cadmium, Total			--- ug/l		--- ug/l	1/Quarter	24-Hr. Comp.
Chromium, Hexavalent			--- ug/l		--- ug/l	1/Quarter	24-Hr. Comp.
Lead, Total			--- ug/l		--- ug/l	1/Quarter	24-Hr. Comp.
Zinc, Total			--- ug/l		--- ug/l	1/Quarter	24-Hr. Comp.
Nickel, Total			--- ug/l		--- ug/l	1/Quarter	24-Hr. Comp.
Aluminum, Total			--- ug/l		--- ug/l	1/Quarter	24-Hr. Comp.

*Values in parentheses () are to be reported as Minimum/Maximum for the reporting period rather than Average Monthly/Maximum Daily.

--- Signifies a parameter which must be monitored and data must be reported; no limit has been established at this time.

Sampling for TSS, TDS, pH, and Total Copper shall be performed Monday – Friday.

Sampling for Flow shall be performed Sunday-Saturday.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location: Outfall 001A (Reverse Osmosis Concentrate Discharge).

2. a. The pH of the effluent shall not be less than 6.5 nor greater than 8.5 standard units at any time.

   b. The discharge shall not cause visible discoloration of the receiving waters.

   c. The effluent shall contain neither a visible oil sheen, foam, nor floating solids at any time.

3. All existing manufacturing, commercial, mining, and silvicultural dischargers must notify the Director as soon as they know or have reason to believe:

   a. That any activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following “notification levels”:

      (1) One hundred micrograms per liter (100 ug/l);

      (2) Two hundred micrograms per liter (200 ug/l) for acrolein and acrylonitrile; five hundred micrograms per liter (500 ug/l) for 2,4-dinitrophenol and for 2-methyl-4,6-dinitro-phenol; and one milligram per liter (1 mg/l) for antimony;

      (3) Five (5) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 C.F.R. §122.21(g)(7); or

      (4) Any other notification level established by the Director in accordance with 40 C.F.R. §122.44(f) and Rhode Island Regulations.

   b. That any activity has occurred or will occur which would result in the discharge, on a non-routine or infrequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following “notification levels”:

      (1) Five hundred micrograms per liter (500 ug/l);

      (2) One milligram per liter (1 mg/l) for antimony;

      (3) Ten (10) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 C.F.R. §122.21(g)(7); or

      (4) Any other notification level established by the Director in accordance with 40 C.F.R. §122.44(f) and Rhode Island Regulations.

   c. That they have begun or expect to begin to use or manufacture as an intermediate or final product or by-product any toxic pollutant which was not reported in the permit application.

4. This permit serves as the State's Water Quality Certificate for the discharges described herein.

5. The permittee is not authorized to discharge any chemicals, including any that may be associated with the cleaning and/or sanitizing of the water treatment system, pretreatment of the feed water, or coagulation treatment. All such chemicals must be disposed of off-site in accordance with applicable State, Local, and Federal regulations.

6. The permittee must conduct an annual video inspection of the internal side of the outfall pipeline to verify the physical integrity of the outfall. If the video inspection shows evidence of damage to the outfall pipeline, additional action, including measurement of the outfall position or underwater video inspection of the outfall pipeline and diffuser from the outside of the pipe may be required. The results of the outfall inspection must be submitted to the DEM by January 15th of the year following the inspection. The first report is due on January 15, 2023.

7. By January 15th of each year, the permittee must submit an Annual Cleaning Report summarizing the date of each cleaning and/or sanitizing event, the type and quantity of cleaning and/or sanitizing chemicals used, and the location of cleaning and/or sanitizing chemical disposal. The report must cover the previous calendar year. The first report is due January 15, 2023.

B. **DETECTION LIMITS**

The permittee shall assure that all wastewater testing required by this permit, is performed in conformance with the method detection limits listed below, and the following terms and conditions:

1. All analyses of parameters under this permit must comply with the *National Pollutant Discharge Elimination System (NPDES): Use of Sufficiently Sensitive Test Methods for Permit Applications and Reporting* rule. Only sufficiently sensitive test methods may be used for analyses of parameters under this permit. The permittee shall assure that all testing required by this permit is performed in accordance with 40 CFR Part 136, EPA approved analysis techniques, quality assurance procedures and quality control procedures shall be followed for all reports required to be submitted under the Rhode Island Pollutant Discharge Elimination System (RIPDES) program. These procedures are described in "Methods for the Determination of Metals in Environmental Samples" (EPA/600/4-91/010) and "Methods for Chemical Analysis of Water and Wastes" (EPA/600/4-79/020).

   If after conducting the complete Method of Standard Additions analysis, the laboratory is unable to determine a valid result, the laboratory shall report “could not be analyzed”. Documentation supporting this claim shall be maintained onsite. If valid analytical results are repeatedly unobtainable, DEM may require that the permittee determine a method detection limit (MDL) for their effluent or sludge as outlined in 40 CFR Part 136, Appendix B.

2. When calculating sample averages for reporting on discharge monitoring reports (DMRs):

   a. “could not be analyzed” data shall be excluded and shall not be considered as a failure to comply with the permit sampling requirements.

   b. Results reported as less than the MDL shall be reported as zeros in accordance with the DEM’s DMR Instructions.

   Therefore, all sample results shall be reported as: an actual value, “could not be analyzed”, or zero. The effluent or sludge specific MDL must be calculated using the methods outlined in 40 CFR Part 136, Appendix B. Samples which have been diluted to ensure that the sample concentration will be within the linear dynamic range shall not be diluted to the extent that the analyte is not detected. If this should occur the analysis shall be repeated using a lower degree of dilution.

LIST OF TOXIC POLLUTANTS

The following list of toxic pollutants has been designated pursuant to Section 307(a)(1) of the Clean Water Act. The Method Detection Limits (MDLs) represent the required Rhode Island MDLs.

Volatiles - EPA Method 624		MDL ug/l (ppb)
1V	acrolein	10.0
2V	acrylonitrile	5.0
3V	benzene	1.0
5V	bromoform	1.0
6V	carbon tetrachloride	1.0
7V	chlorobenzene	1.0
8V	chlorodibromomethane	1.0
9V	chloroethane	1.0
10V	2-chloroethylvinyl ether	5.0
11V	chloroform	1.0
12V	dichlorobromomethane	1.0
14V	1,1-dichloroethane	1.0
15V	1,2-dichloroethane	1.0
16V	1,1-dichloroethylene	1.0
17V	1,2-dichloropropane	1.0
18V	1,3-dichloropropylene	1.0
19V	ethylbenzene	1.0
20V	methyl bromide	1.0
21V	methyl chloride	1.0
22V	methylene chloride	1.0
23V	1,1,2,2-tetrachloroethane	1.0
24V	tetrachloroethylene	1.0
25V	toluene	1.0
26V	1,2-trans-dichloroethylene	1.0
27V	1,1,1-trichloroethane	1.0
28V	1,1,2-trichloroethane	1.0
29V	trichloroethylene	1.0
31V	vinyl chloride	1.0

Acid Compounds - EPA Method 625		MDL ug/l (ppb)
1A	2-chlorophenol	1.0
2A	2,4-dichlorophenol	1.0
3A	2,4-dimethylphenol	1.0
4A	4,6-dinitro-o-cresol	1.0
5A	2,4-dinitrophenol	2.0
6A	2-nitrophenol	1.0
7A	4-nitrophenol	1.0
8A	p-chloro-m-cresol	2.0
9A	pentachlorophenol	1.0
10A	phenol	1.0
11A	2,4,6-trichlorophenol	1.0

Pesticides - EPA Method 608		MDL ug/l (ppb)
1P	aldrin	0.059
2P	alpha-BHC	0.058
3P	beta-BHC	0.043
4P	gamma-BHC	0.048
5P	delta-BHC	0.034
6P	chlordane	0.211
7P	4,4'-DDT	0.251
8P	4,4'-DDE	0.049
9P	4,4'-DDD	0.139
10P	dieldrin	0.082
11P	alpha-endosulfan	0.031
12P	beta-endosulfan	0.036
13P	endosulfan sulfate	0.109
14P	endrin	0.050
15P	endrin aldehyde	0.062
16P	heptachlor	0.029
17P	heptachlor epoxide	0.040

Pesticides - EPA Method 608		MDL ug/l (ppb)
18P	PCB-1242	0.289
19P	PCB-1254	0.298
20P	PCB-1221	0.723
21P	PCB-1232	0.387
22P	PCB-1248	0.283
23P	PCB-1260	0.222
24P	PCB-1016	0.494
25P	toxaphene	1.670

Base/Neutral - EPA Method 625		MDL ug/l (ppb)
1B	acenaphthene *	1.0
2B	acenaphthylene *	1.0
3B	anthracene *	1.0
4B	benzidine	4.0
5B	benzo(a)anthracene *	2.0
6B	benzo(a)pyrene *	2.0
7B	3,4-benzofluoranthene *	1.0
8B	benzo(ghi)perylene *	2.0
9B	benzo(k)fluoranthene *	2.0
10B	bis(2-chloroethoxy)methane	2.0
11B	bis(2-chloroethyl)ether	1.0
12B	bis(2-chloroisopropyl)ether	1.0
13B	bis(2-ethylhexyl)phthalate	1.0
14B	4-bromophenyl phenyl ether	1.0
15B	butylbenzyl phthalate	1.0
16B	2-chloronaphthalene	1.0
17B	4-chlorophenyl phenyl ether	1.0
18B	chrysene *	1.0
19B	dibenzo (a,h)anthracene *	2.0
20B	1,2-dichlorobenzene	1.0
21B	1,3-dichlorobenzene	1.0
22B	1,4-dichlorobenzene	1.0
23B	3,3'-dichlorobenzidine	2.0
24B	diethyl phthalate	1.0
25B	dimethyl phthalate	1.0
26B	di-n-butyl phthalate	1.0
27B	2,4-dinitrotoluene	2.0
28B	2,6-dinitrotoluene	2.0
29B	di-n-octyl phthalate	1.0
30B	1,2-diphenylhydrazine (as azobenzene)	1.0
31B	fluoranthene *	1.0
32B	fluorene *	1.0
33B	hexachlorobenzene	1.0
34B	hexachlorobutadiene	1.0
35B	hexachlorocyclopentadiene	2.0
36B	hexachloroethane	1.0
37B	indeno(1,2,3-cd)pyrene *	2.0
38B	isophorone	1.0
39B	naphthalene *	1.0
40B	nitrobenzene	1.0
41B	N-nitrosodimethylamine	1.0
42B	N-nitrosodi-n-propylamine	1.0
43B	N-nitrosodiphenylamine	1.0
44B	phenanthrene *	1.0
45B	pyrene *	1.0
46B	1,2,4-trichlorobenzene	1.0

OTHER TOXIC POLLUTANTS

	MDL ug/l (ppb)
Antimony, Total	5.0
Arsenic, Total	5.0
Beryllium, Total	0.2
Cadmium, Total	1.0
Chromium, Total	5.0
Chromium, Hexavalent	20.0
Copper, Total	20.0
Lead, Total	3.0
Mercury, Total	0.5
Nickel, Total	10.0
Selenium, Total	5.0
Silver, Total	1.0
Thallium, Total	5.0
Zinc, Total	20.0
Asbestos	**
Cyanide, Total	10.0
Phenols, Total	50.0
TCDD	**
MTBE (Methyl Tert Butyl Ether)	1.0

* Polynuclear Aromatic Hydrocarbons
** No Rhode Island Department of Environmental Management (RIDEM) MDL

NOTE:

The MDL for a given analyte may vary with the type of sample. MDLs which are determined in reagent water may be lower than those determined in wastewater due to fewer matrix interferences. Wastewater is variable in composition and may therefore contain substances (interferents) that could affect MDLs for some analytes of interest. Variability in instrument performance can also lead to inconsistencies in determinations of MDLs.

To help verify the absence of matrix or chemical interference the analyst is required to complete specific quality control procedures. For the metals analyses listed above the analyst must withdraw from the sample two equal aliquots; to one aliquot add a known amount of analyte, and then dilute both to the same volume and analyze. The unspiked aliquot multiplied by the dilution factor should be compared to the original. Agreement of the results within 10% indicates the absence of interference. Comparison of the actual signal from the spiked aliquot to the expected response from the analyte in an aqueous standard should help confirm the finding from the dilution analysis. (Methods for Chemical Analysis of Water and Wastes EPA-600/4-79/020).

For Methods 624 and 625 the laboratory must on an ongoing basis, spike at least 5% of the samples from each sample site being monitored. For laboratories analyzing 1 to 20 samples per month, at least one spiked sample per month is required. The spike should be at the discharge permit limit or 1 to 5 times higher than the background concentration determined in Section 8.3.2, whichever concentration would be larger. (40 CFR Part 136 Appendix B Method 624 and 625 subparts 8.3.1 and 8.3.11).

C. **MONITORING AND REPORTING**

1. Monitoring

All monitoring required by this permit shall be done in accordance with sampling and analytical testing procedures specified in Federal Regulations (40 CFR Part 136).

2. Submittal of DMRs Using NetDMR

a. The permittee shall continue to submit its monthly monitoring data in discharge monitoring reports (DMRs) to DEM electronically using NetDMR per the following schedule:

Quarter Testing to be Performed	Report Due No Later Than	Results Submitted on DMR for
January 1 - March 31	April 15	January 1 - March 31
April 1 - June 30	July 15	April 1 - June 30
July 1 - September 30	October 15	July 1 - September 30
October 1 - December 31	January 15	October 1- December 31

When the permittee submits DMRs using NetDMR, it is not required to submit hard copies of DMRs to DEM.

b. Submittal of Reports as NetDMR Attachments

Unless otherwise specified in this permit, the permittee must submit electronic copies of documents in NetDMR that are directly related to the DMR. These include the following:

- DMR Cover Letters
- Below Detection Limit summary tables
- Monthly Operating Reports

c. Submittal of Reports in Hard Copy Form

The following notifications and reports shall be submitted as hard copy with a cover letter describing the submission. These reports shall be signed and dated originals submitted to DEM.

- Written notifications required under Part II
- Notice of unauthorized discharges
- Diffuser Inspection Video and Report
- Annual Cleaning Report

This information shall be submitted to DEM at the following address:

Rhodes Island Department of Environmental Management
RIPDES Program
235 Promenade Street
Providence, Rhode Island 02908

d. Verbal Reports and Verbal Notifications

Any verbal reports or verbal notifications, if required in Parts I and/or II of this permit, shall be made to the DEM. This includes verbal reports and notifications which require reporting within 24 hours. (See Part II(l)(5) General Requirements for 24-hour reporting) verbal reports and verbal notifications shall be made to DEM at (401) 222-4700 or (401) 222-3070 at night.

PART II
TABLE OF CONTENTS

GENERAL REQUIREMENTS

(a) Duty to Comply

The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of Chapter 46-12 of the Rhode Island General Laws and the Clean Water Act (CWA) and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application.

(1) The permittee shall comply with effluent standards or prohibitions established under Section 307(a) of the CWA for toxic pollutants within the time provided in the regulations that establish these standards or prohibitions, even if the permit has not yet been modified to incorporate the requirement.

(2) The CWA provides that any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the CWA is subject to a civil penalty not to exceed $10,000 per day of such violation. Any person who willfully or negligently violates permit conditions implementing Sections 301, 302, 306, 307 or 308 of the Act is subject to a fine of not less than $2,500 nor more than $25,000 per day of violation, or by imprisonment of not more than 1 year, or both.

(3) Chapter 46-12 of the Rhode Island General Laws provides that any person who violates a permit condition is subject to a civil penalty of not more than $5,000 per day of such violation. Any person who willfully or negligently violates a permit condition is subject to a criminal penalty of not more than $10,000 per day of such violation and imprisonment for not more than 30 days, or both. Any person who knowingly makes any false statement in connection with the permit is subject to a criminal penalty of not more than $5,000 for each instance of violation or by imprisonment for not more than 30 days, or both.

(b) Duty to Reapply

If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit. The permittee shall submit a new application at least 180 days before the expiration date of the existing permit, unless permission for a later date has been granted by the Director. (The Director shall not grant permission for applications to be submitted later than the expiration date of the existing permit.)

(c) Need to Halt or Reduce Not a Defense

It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

(d) Duty to Mitigate

The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

(e) Proper Operation and Maintenance

The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures, and, where applicable, compliance with DEM "Rules and Regulations Pertaining to the Operation and Maintenance of Wastewater Treatment Facilities" and "Rules and Regulations Pertaining to the Disposal and Utilization of Wastewater Treatment Facility Sludge." This provision requires the operation of back-up or auxiliary facilities or similar systems only when the operation is necessary to achieve compliance with the conditions of the permit.

(f) Permit Actions

This permit may be modified, revoked and reissued, or terminated for cause, including but not limited to: (1) Violation of any terms or conditions of this permit; (2) Obtaining this permit by misrepresentation or failure to disclose all relevant facts; or (3) A change in any conditions that requires either a temporary or permanent reduction or elimination of the authorized discharge. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.

(g) Property Rights

This permit does not convey any property rights of any sort, or any exclusive privilege.

(h) Duty to Provide Information

The permittee shall furnish to the Director, within a reasonable time, any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the Director, upon request, copies of records required to be kept by this permit.

(i) Inspection and Entry

The permittee shall allow the Director, or an authorized representative, upon the presentation of credentials and other documents as may be required by law, to:

(1) Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;

(2) Have access to and copy, at reasonable times any records that must be kept under the conditions of this permit;

(3) Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices or operations regulated or required under this permit; and

(4) Sample or monitor any substances or parameters at any location, at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the CWA or Rhode Island law.

(j) Monitoring and Records

(1) Samples and measurements taken for the purpose of monitoring shall be representative of the volume and nature of the discharge over the sampling and reporting period.

(2) The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings from continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 5 years from the date of the sample, measurement, report or application. This period may be extended by request of the Director at any time.

(3) Records of monitoring information shall include:

(i) The date, exact place, and time of sampling or measurements;

(ii) The individual(s) who performed the sampling or measurements;

(iii) The date(s) analyses were performed;

(iv) The individual(s) who performed the analyses;

(v) The analytical techniques or methods used; and

(vi) The results of such analyses.

(4) Monitoring must be conducted according to test procedures approved under 40 CFR Part 136 and applicable Rhode Island regulations, unless other test procedures have been specified in this permit.

(5) The CWA provides that any person who falsifies, tampers with, or knowingly renders inaccurate, any monitoring device or method required to be maintained under this permit shall upon conviction, be punished by a fine of not more than $10,000 per violation or by imprisonment for not more than 6 months per violation or by both. Chapter 46-12 of the Rhode Island General Laws also provides that such acts are subject to a fine of not more than $5,000 per violation, or by imprisonment for not more than 30 days per violation, or by both.

(6) Monitoring results must be reported on a Discharge Monitoring Report (DMR).

(7) If the permittee monitors any pollutant more frequently than required by the permit, using test procedures approved under 40 CFR Part 136, applicable State regulations, or as specified in the permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR.

(k) Signatory Requirement

All applications, reports, or information submitted to the Director shall be signed and certified in accordance with 250-RICR-150-10-1.12 of the Rhode Island Pollutant Discharge Elimination System (RIPDES) Regulations. Rhode Island General Laws, Chapter 46-12 provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance shall, upon conviction, be punished by a fine of not more than $5,000 per violation, or by imprisonment for not more than 30 days per violation, or by both.

(l) Reporting Requirements

(1) Planned changes. The permittee shall give notice to the Director as soon as possible of any planned physical alterations or additions to the permitted facility.

(2) Anticipated noncompliance. The permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity which may result in noncompliance with the permit requirements.

(3) Transfers. This permit is not transferable to any person except after written notice to the Director. The Director may require modification or revocation and reissuance of the permit to change the name of the permittee and incorporate such other requirements as may be necessary under State and Federal law.

(4) Monitoring reports. Monitoring results shall be reported at the intervals specified elsewhere in this permit.

(5) Twenty-four hour reporting. The permittee shall immediately report any noncompliance which may endanger health or the environment by calling DEM at (401) 222-4700 or (401) 222-3070 at night.

A written submission shall also be provided within five (5) days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

The following information must be reported immediately:

(i) Any unanticipated bypass which causes a violation of any effluent limitation in the permit; or

(ii) Any upset which causes a violation of any effluent limitation in the permit; or

(iii) Any violation of a maximum daily discharge limitation for any of the pollutants specifically listed by the Director in the permit.

The Director may waive the written report on a case-by-case basis if the oral report has been received within 24 hours.

(6) Other noncompliance. The permittee shall report all instances of noncompliance not reported under paragraphs (1), (2), and (5), of this section, at the time monitoring reports are submitted. The reports shall contain the information required in paragraph (l)(5) of the section.

(7) Other information. Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Director, they shall promptly submit such facts or information.

(m) Bypass

"Bypass" means the intentional diversion of waste streams from any portion of a treatment facility.

(1) Bypass not exceeding limitations. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of paragraphs (2) and (3) of this section.

(2) Notice.

(i) Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least ten (10) days before the date of the bypass.

(ii) Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required in 250-RICR-150-10-1.14(R) of the RIPDES Regulations.

(3) Prohibition of bypass.

(i) Bypass is prohibited, and the Director may take enforcement action against a permittee for bypass, unless:

(A) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage, where "severe property damage" means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production;

(B) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate backup equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and

(C) The permittee submitted notices as required under paragraph (2) of this section.

(ii) The Director may approve an anticipated bypass, after considering its adverse effects, if the Director determines that it will meet the three conditions listed above in paragraph (3)(i) of this section.

(n) Upset

"Upset" means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

(1) Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology-based permit effluent limitations if the requirements of paragraph (2) of this section are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

(2) Conditions necessary for a demonstration of upset. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:

(a) An upset occurred and that the permittee can identify the cause(s) of the upset;

(b) The permitted facility was at the time being properly operated;

(c) The permittee submitted notice of the upset as required in 250-RICR-150-10-1.14(R) of the RIPDES Regulations; and

(d) The permittee complied with any remedial measures required under 250-RICR-150-10-1.14(E) of the RIPDES Regulations.

(3) Burden of proof. In any enforcement proceeding the permittee seeking to establish the occurrence of an upset has the burden of proof.

(o) Change in Discharge

All discharges authorized herein shall be consistent with the terms and conditions of this permit. Discharges which cause a violation of water quality standards are prohibited. The discharge of any pollutant identified in this permit more frequently than or at a level in excess of that authorized shall constitute a violation of the permit. Any anticipated facility expansions, production increases, or process modifications which will result in new, different or increased discharges of pollutants must be reported by submission of a new NPDES application at least 180 days prior to commencement of such discharges, or if such changes will not violate the effluent limitations specified in this permit, by notice, in writing, to the Director of such changes. Following such notice, the permit may be modified to specify and limit any pollutants not previously limited.

Until such modification is effective, any new or increased discharge in excess of permit limits or not specifically authorized by the permit constitutes a violation.

(p) Removed Substances

Solids, sludges, filter backwash, or other pollutants removed in the course of treatment or control of wastewaters shall be disposed of in a manner consistent with applicable Federal and State laws and regulations including, but not limited to the CWA and the Federal Resource Conservation and Recovery Act, 42 U.S.C. §§6901 et seq., Rhode Island General Laws, Chapters 46-12, 23-19.1 and regulations promulgated thereunder.

(q) Power Failures

In order to maintain compliance with the effluent limitation and prohibitions of this permit, the permittee shall either:

> In accordance with the Schedule of Compliance contained in Part I, provide an alternative power source sufficient to operate the wastewater control facilities;

or if such alternative power source is not in existence, and no date for its implementation appears in Part I,

> Halt reduce or otherwise control production and/or all discharges upon the reduction, loss, or failure of the primary source of power to the wastewater control facilities.

(r) Availability of Reports

Except for data determined to be confidential under paragraph (w) below, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the DEM, 235 Promenade Street, Providence, Rhode Island 02908. As required by the CWA, effluent data shall not be considered confidential. Knowingly making any false statement on any such report may result in the imposition of criminal penalties as provided for in Section 309 of the CWA and under Section 46-12-14 of the Rhode Island General Laws.

(s) State Laws

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable State law.

(t) Other Laws

The issuance of a permit does not authorize any injury to persons or property or invasion of other private rights, nor does it relieve the permittee of its obligation to comply with any other applicable Federal, State, and local laws and regulations.

(u) Severability

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

(v) Reopener Clause

The Director reserves the right to make appropriate revisions to this permit in order to incorporate any appropriate effluent limitations, schedules of compliance, or other provisions which may be authorized under the CWA or State law. In accordance with 250-RICR-150-10-1.16 and 250-RICR-150-10-1.24 of the RIPDES Regulations, if any effluent standard or prohibition, or water quality standard is promulgated under the CWA or under State law which is more stringent than any limitation on the pollutant in the permit, or controls a pollutant not limited in the permit, then the Director may promptly reopen the permit and modify or revoke and reissue the permit to conform to the applicable standard.

(w) Confidentiality of Information

(1) Any information submitted to DEM pursuant to these regulations may be claimed as confidential by the submitter. Any such claim must be asserted at the time of submission in the manner prescribed on the application form or instructions or, in the case of other submissions, by stamping the words "confidential business information" on each page containing such information. If no claim is made at the time of submission, DEM may make the information available to the pubic without further notice.

(2) Claims of confidentiality for the following information will be denied:

(i) The name and address of any permit applicant or permittee;

(ii) Permit applications, permits and any attachments thereto; and

(iii) NPDES effluent data.

(x) Best Management Practices

The permittee shall adopt Best Management Practices (BMP) to control or abate the discharge of toxic pollutants and hazardous substances associated with or ancillary to the industrial manufacturing or treatment process and the Director may request the submission of a BMP plan where the Director determines that a permittee's practices may contribute significant amounts of such pollutants to waters of the State.

(y) Right of Appeal

Within thirty (30) days of receipt of notice of a final permit decision, the permittee or any interested person may submit a request to the Director for an adjudicatory hearing to reconsider or contest that decision. The request for a hearing must conform to the requirements of 250-RICR-150-10-1.50 of the RIPDES Regulations.

DEFINITIONS

1. For purposes of this permit, those definitions contained in the RIPDES Regulations and the Rhode Island Pretreatment Regulations shall apply.

2. The following abbreviations, when used, are defined below.

cu. M/day or M^3/day	cubic meters per day
mg/l	milligrams per liter
ug/l	micrograms per liter
lbs/day	pounds per day
kg/day	kilograms per day
Temp. ^oC	temperature in degrees Centigrade
Temp. ^oF	temperature in degrees Fahrenheit
Turb.	turbidity measured by the Nephelometric Method (NTU)
TNFR or TSS	total nonfilterable residue or total suspended solids
DO	dissolved oxygen
BOD	five-day biochemical oxygen demand unless otherwise specified
TKN	total Kjeldahl nitrogen as nitrogen
Total N	total nitrogen
NH_3-N	ammonia nitrogen as nitrogen
Total P	total phosphorus
COD	chemical oxygen demand
TOC	total organic carbon
Surfactant	surface-active agent
pH	a measure of the hydrogen ion concentration
PCB	polychlorinated biphenyl
CFS	cubic feet per second
MGD	million gallons per day
Oil & Grease	Freon extractable material
Total Coliform	total coliform bacteria
Fecal Coliform	total fecal coliform bacteria
ml/l	milliliter(s) per liter
NO_3-N	nitrate nitrogen as nitrogen
NO_2-N	nitrite nitrogen as nitrogen
NO_3-NO_2	combined nitrate and nitrite nitrogen as nitrogen
$C1_2$	total residual chlorine

RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER RESOURCES
235 PROMENADE STREET
PROVIDENCE, RHODE ISLAND 02908

STATEMENT OF BASIS

RHODE ISLAND POLLUTANT DISCHARGE ELIMINATION SYSTEM (RIPDES) PERMIT TO DISCHARGE TO WATERS OF THE STATE

RIPDES PERMIT NO. **RI0023558**

NAME AND ADDRESS OF APPLICANT:

Sakonnet Point Club, Incorporated
50 Sakonnet Point Road
Little Compton, Rhode Island 02837

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

Sakonnet Point Club, Incorporated
11 Bluff Head Avenue
Little Compton, Rhode Island 02837

RECEIVING WATER: **Sakonnet Harbor**
(WBID: RI0010031E-01D)

CLASSIFICATION: **SA{b}**

Statement of Basis Table of Contents

I. Proposed Action, Type of Facility, and Discharge Location

The Sakonnet Point Club, Inc. in Little Compton, Rhode Island has applied to the Rhode Island Department of Environmental Management for renewal of its RIPDES Permit to discharge into the Sakonnet Harbor. The discharge consists of brackish effluent from a Reverse Osmosis system that is used as a public drinking water supply for the Sakonnet Point Club. Site layout and process flow diagrams for the drinking water treatment system are shown in Attachment B.

II. Description of Discharge

A quantitative description of the discharge in terms of significant effluent parameters based on DMR data from June 2013 to March 2021 is shown on Attachment A.

III. Permit Limitations and Conditions

The effluent limitations of the permit and the monitoring requirements may be found in the draft permit.

IV. Permit Basis and Explanation of Effluent Limitation Derivation

Variances, Alternatives, and Justifications for Waivers of Application Requirements

No variances or alternatives to required standards were requested or granted.

No waivers were requested or granted for any application requirements per 40 CFR §122.21(j) or (q).

Facility Description

The Sakonnet Point Club owns the desalination water treatment facility to supply drinking water for the yacht club and associated facilities on Bluff Head Avenue in Little Compton, Rhode Island. The discharge to the Sakonnet Harbor, a SA{b] waterbody according to the Rhode Island Water Quality Regulations, consists of brackish effluent from the reverse osmosis desalination system.

Water for the club is supplied from two vertical groundwater wells. The brackish well water is first pumped through the primary filtration system, which consists of bag and cartridge filters, before being collected in a raw water storage tank. The raw water is then filtered through cartridge filters before being distributed to the water treatment system. The raw water enters the package RO system, which consists of a micron filter and a three-stage reverse osmosis units. The concentrate from the RO system is discharged through the outfall, and is the discharge authorized by this permit. A piping and instrumentation diagram for the water supply and treatment system is attached as Attachment B.

The Sakonnet Point Club's most recent RIPDES permit, authorizing discharges from the above-mentioned facility, was issued on January 21, 2013. This permit became effective on March 1, 2013 and expired on March 1, 2018. The facility submitted an application for permit reissuance to the DEM on September 28, 2017. On October 18, 2017, the DEM issued an application complete letter to the facility. In accordance with 250-RICR-150-10-1 §13 of the Regulations for the Rhode Island Pollutant Discharge Elimination System, the facility's March 1, 2013 permit remains in effect since the DEM has determined that a timely and complete permit application was submitted. Once this permit is reissued, it will supersede the March 1, 2013 permit. The Sakonnet Point Club does not have an industrial pretreatment program.

Receiving Water Description

The water body segment for the Sakonnet Harbor is RI0010031E-01D and is located in Little Compton, Rhode Island. This segment is delineated by the line from the light at the end of the Sakonnet breakwater to the point of land at the end of Goodrich Lane, Little Compton, on the eastern shore of the harbor. This segment is not identified on DEM's 2018-2020 303(d) impaired waters list as being impaired.

The Sakonnet Harbor has a Waterbody Classification of SA{b}; SA waters are designated for shellfish harvesting for direct human consumption, primary and secondary contact recreational activities, and fish and wildlife habitat. They shall be suitable for aquacultural uses, navigation and industrial cooling. The waters shall have good aesthetic value. As noted in the Rhode Island Water Quality Regulations at 250-RICR-150-05-1.9(D), the "{b}" indicates a partial use designation for concentration of vessels; Waters in the vicinity of marinas and/or mooring fields are subject to seasonal shellfishing closures as determined by RIDEM pursuant to R.I. Gen. Laws Chapter 20-8.1; however, all Class SA criteria must be attained.

Permit Limit Development

The requirements set forth in this permit are from the State's Water Quality Regulations and the State's Regulations for the Rhode Island Pollutant Discharge Elimination System, both filed pursuant to RIGL Chapter 46-12, as amended. RIDEM's primary authority over the permit comes from EPA's delegation of the program in September 1984 under the Federal Clean Water Act (CWA).

Development of RIPDES permit limitations is a multi-step process consisting of: determining if Federal effluent guidelines apply; calculation of allowable water quality-based discharge levels based on background data and available dilution; assigning appropriate Best Professional Judgement (BPJ) based limits; comparing existing and proposed limits; comparing discharge data to proposed limits; performing an antidegradation/antibacksliding analysis to determine the final permit limits; and developing interim limits as appropriate.

Water quality criteria are comprised of numeric and narrative criteria. Numeric criteria are scientifically derived ambient concentrations developed by EPA or the State for various pollutants of concern to protect human health and aquatic life. Narrative criteria are statements that describe the desired water quality goal. A technology-based limit is a numeric limit, which is determined by examining the capability of a treatment process to reduce or eliminate pollutants.

Conventional Pollutant Permit Limitations

Flow Limits

The basis for the facility's maximum daily flow limit of 5000 gallons per day is the designed flow rate for the package RO system.

TSS, TDS, and pH

Monitoring and reporting for TSS and TDS has been established for water treatment system process control and to monitor pollutant loading to the receiving water. The minimum and maximum pH limitations are based on the water quality criteria for saltwaters from the Rhode Island Water Quality Regulations at 250-RICR-150-05-1.10(E)(1).

WWTF Toxic Pollutant Limits

Water Quality-Based Limit (WQBEL) Calculations

The allowable effluent limitations were established on the basis of acute and chronic aquatic life criteria and human health criteria using the following: available instream dilution; an allocation factor; and background concentrations when available and/or appropriate. The aquatic life and human health criteria are specified in the Rhode Island Water Quality Regulations (250-RICR-150-05-1). Aquatic life criteria have been established to ensure the protection and propagation of aquatic life while human health criteria represent the pollutant levels that would not result in a significant risk to public health from ingestion of aquatic organisms. The more stringent of the two criteria was then used in establishing allowable effluent limitations. Details concerning the calculation of potential permit limitations, selection of factors, which influence their calculation, and the selection of final permit limitations are included below or in the attached documents. The Sakonnet Point Club 2013 permit also contained WQBELs. The facility's first permit to contain WQBELs was issued in 2002.

Acute Mixing Zone

The size of the acute mixing zone was determined using the EPA's recommended criteria from the *Technical Support Document for Water Quality-Based Toxics Control* (the "TSD") which indicates that the most stringent of the following criteria should be used:

a) The CMC must be met within a distance of fifty times (50x) the discharge length scale in any spatial direction. The discharge length scale equals the square root of the cross-sectional area of the discharge outlet. For an outfall pipe with seven 0.0381m openings:

$$Radius = 50 * \sqrt{7 * (\tfrac{\pi}{4})(0.0381m)^2} = 4.46m$$

This criterion gives an acute mixing zone radius of 4.46 meters.

b) The CMC must be met within a distance of five times (5x) the local water depth in any horizontal direction. Using a local water depth of 2.28 meters:

Radius = 5 * 2.28m = 11.4 m

The most stringent of the above criteria would be condition a, an acute mixing zone radius of 4.46 meters. Therefore, an acute mixing zone radius of 4.46 meters has been established.

CORMIX is a plume model that solves a set of analytical equations to estimate the steady state shape, extent and dilution of an effluent plume from a constant discharge. In order to understand the potential radius required to achieve the dilution necessary to meet water quality standards, multiple CORMIX runs were simulated covering a range of possible conditions. The CORMIX model runs were set up to reflect a conservative estimate of both the effluent discharge and ambient conditions. Specifically the scenarios included: a) the maximum discharge rate (based on maximum pump rate); b) a conservative estimate of density differential between the discharge and the receiving water (3 kg/m^3); c) the diffuser configuration (a single pipe with seven 1.5 inch diameter vertical, upwards facing ports located 0.5m above the bottom in 2.3m waters relative to mean lower water (MLW); d) a range of ambient current conditions (0.02 through 0.5 m/s).

Based upon the CORMIX modeling results contained in the *June 22, 2012 Sakonnet Point Club Discharge Outfall Relocation Analysis* report, the lowest dilution factor at the acute mixing zone of 4.46 meters is 73.7, which occurs at an ambient velocity of 0.075 m/s. This dilution factor was then used to determine applicable water quality based daily maximum permit limitations. The mixing zone and dilution factor results from this analysis can be found in Attachment E.

Chronic Mixing Zone

With tidal currents, there are distinct patterns of current regimes (mean flood, mean ebb, mean slack) for which the CORMIX analysis was run. However, in the Sakonnet Harbor there is far less regularity of circulation patterns. The currents and circulation in the Sakonnet River are primarily tidally driven whereas circulation in the harbor is primarily wind driven. For this reason, a time varying 3D hydrodynamic and mass transport model application was also developed using Applied Science Associates's WQMAP modeling system to determine the potential for far field buildup.

Mass transport model runs were conducted to determine the distance required to achieve the necessary dilution to satisfy the previously identified antidegradation criteria. A mixing zone radius of 25 meters established using WQMAP had a corresponding dilution factor of 243. This dilution factor was then used to determine applicable water quality based monthly average permit limitations that will satisfy the antidegradation criteria. Attachment C contains a summary of the calculations completed to determine the applicable water quality-based permit limitations based on the acute and chronic dilution factors and applicable water quality criteria.

Although a mixing zone radius of 25 meters was necessary to meet the antidegradation criteria, the model showed that excess water column concentrations above the derived limits were mainly confined to the source location within a 16 m^2 (essentially 2m radius) area. However, there were intermittent periods where the area extended to approximately 32m^2 at a 6m radius. These distances are comparable to the steady state near field CORMIX modeling results. The model predicted that discharged concentrations were confined to the bottom of the water column based on the modeling assumption of neutral buoyancy, however in reality the

effluent will rise to the surface due to the density differential between the discharge and the receiving water body. The predicted dilution factors therefore are conservative as there would actually be higher dilution through vertical mixing within the water column. The mixing zone and dilution factor results from this analysis can be found in Attachment E.

Mixing Zones and Dilution Factors

Using the above dilution factors, the allowable discharge limits were calculated as follows:

Background concentration unknown or available data is impacted by sources that have not yet achieved water quality-based limits.

$$Limit = (DF) * (Criteria) * (80\%)$$

Where: DF = acute or chronic dilution factor, as appropriate

Background data was available for the Sakonnet Harbor for the following pollutants: Cadmium, Hexavalent Chromium, Copper, Lead, Nickel, and Silver. Therefore, for these pollutants, a 90% allocation was used to calculated water quality-based effluent limitations using the equation below:

$$Limit = (DF) * (Criteria) * (90\%) - (X_i) * (DF - 1)$$

Where: X_i = the background concentration of the pollutant in the receiving water.

An 80% allocation was used to calculate the remaining toxic pollutant limitations.

Reference Attachment C for calculations of allowable limits based on Aquatic Life and Human Health Criteria.

The formulas and data noted above were applied with the following exceptions:

I. Pollutants that, based on the acute and chronic dilution factors, have a higher allowable chronic limit than allowable acute limit. For this situation, both the "Monthly Average" and "Daily Maximum" limits were set at the allowable acute limit.

II. Total residual chlorine. The limits for total residual chlorine (TRC) were established in accordance with the RIDEM Effluent Disinfection Policy. The "Monthly Average" and "Daily Maximum" were based on a 100% allocation, a zero-background concentration, and the appropriate dilution factor(s). The 100% allocation factor for TRC was used due to the non-conservative nature of chlorine and the improbability of the receiving water having a detectable background TRC concentration.

III. Pollutants with water quality based monthly average limits in the previous RIPDES permit. The relaxation of monthly average limits from the previous permit was restricted in accordance with the antibacksliding provisions of the Clean Water Act and the Policy on the Implementation of the Antidegradation Provisions of the Rhode Island Water Quality Regulations.

Wasteload Allocation

Based on the above dilution factors and the freshwater aquatic life and non-Class AA human health criteria, from the Rhode Island Water Quality Regulations, allowable discharge concentrations for the above referenced metals were established using a 90% allocation and an 80% allocation for the remaining pollutants.

In accordance with 40 CFR Part 122.4(d)(1)(iii), it is only necessary to establish limitations for those pollutants in the discharge which have the reasonable potential to cause or contribute to the exceedance of the in-stream criteria. In order to evaluate the need for permit limitations, the allowable discharge levels (permit limits) were compared to Discharge Monitoring Report (DMR) data, Priority Pollutant Scan data, and data provided in the permit application. An assessment was made to determine if limits were necessary, using the data collected during the previous five (5) years. Based on these comparisons, water quality limitations have been deemed

necessary for copper.

As an additional measure of assessing if the discharge has a reasonable potential to cause or contribute to an excursion above a State water quality standard in the receiving water, DEM evaluated analytical data from the two wells which supply the Sakonnet Point Club. As a transient non-community water system, the Sakonnet Point Club is required to routinely sample for volatile organic compounds (VOCs), sodium, sulfate, fecal coliform, nitrate, and nitrite per Rhode Island Drinking Water Regulations at 216-RICR-50-05-1. Using data collected from 2008-2020, DEM estimated potential pollutant concentrations using the recovery ratio of the reverse osmosis system, assuming that the pollutant is entirely removed from the permeate. The reverse osmosis system is designed to produce 5.2 gallons per minute of product water (3.5 gallons per minute of reject water) for every 8.7 gallons per minute of feedwater treated, as shown in the piping and instrumentation diagram in Attachment B. The reject recovery ratio is calculated then, as 3.5/8.7 = 0.4022, indicating that the reject water should be 1/0.4022 = 2.49 times more concentrated than the feedwater for the detected and measured pollutants. DEM determined that this is a conservative estimate of pollutant concentrations in the reverse osmosis reject water and appropriate for the reasonable potential analysis. For each pollutant sampled in the wells from 2008-2020, the result was multiplied by the reject recovery ratio of 2.49 and compared to the applicable water quality-based permit limit. For pollutants with multiple sample results, the highest concentration was selected and multiplied by 2.49 for the purposes of this analysis. Based on this analysis, no additional pollutants had reasonable potential to cause or contribute to an excursion above a State water quality-based standard. The data from this analysis is shown in Attachment D “Comparison of Allowable Limits with Discharge Monitoring Report and Application Data.” The well water sample results with analytical detections from 2008-2020 are shown in Attachment F.

Metals can be present in drinking water wells and brackish water. Certain metals, identified in the Rhode Island Water Quality Regulations at 250-RICR-150-05-1.26(J)(1), have water quality standards for their acute and chronic toxic effects. The reverse osmosis water treatment system can increase metals concentrations in the surface water discharge to an extent that may violate water quality standards. As mentioned above, the Sakonnet Point Club is a transient non-community water system according to the Rhode Island Drinking Water Regulations at 216-RICR-50-05-1 and are not required to routinely sample for metals in the drinking water wells. Available data from the Rhode Island Department of Health shows that metals sampling was conducted in 2008 and 2013. In order to address the paucity of data and characterize the Sakonnet Point Club effluent for metals, quarterly monitoring for Cadmium, Hexavalent Chromium, Lead, Zinc, Nickel, and Aluminum have been established in the permit.

WET Testing

The biomonitoring requirements are set forth in 40 CFR 131.11 and in the State’s Water Quality Regulations, containing narrative conditions at 250-RICR-150-05-1.10(B) that state, at a minimum, all waters shall be free of pollutants in concentrations or combinations or from anthropogenic activities subject to these regulations that: adversely affect the composition of fish and wildlife; adversely affect the physical, chemical, or biological integrity of the habitat; interfere with the propagation of fish and wildlife; adversely alter the life cycle functions, uses, processes, and activities of fish and wildlife; or adversely affect human health. DEM has determined that limits to ensure that the above water quality criteria are met are appropriately captured in the water quality-based effluent limitation on copper. Therefore, Whole Effluent Toxicity (WET) limits were not established in the permit.

Cleaning Chemicals

This permit does not authorize the discharge of cleaning chemicals. All cleaning chemicals must be disposed of off-site in accordance with applicable State, Local, and Federal regulations.

To ensure that all cleaning chemicals are disposed of appropriately, the permit requires that an annual report be submitted to the DEM. This report is due January 15th for the previous calendar year and must identify when each cleaning cycle was conducted and where the cleaning waste was disposed.

Diffuser Integrity

The permit requires the permittee to conduct a video inspection of the diffuser line for damage or leaks at a minimum frequency of once every year. The results of an annual diffuser line inspection must be submitted to the DEM by January 15th of the year following the biennial video inspection.

Antibacksliding

Provided below is a brief introduction to Antibacksliding and Antidegradation; as well as a discussion on how the two policies were used to calculate water quality-based limits.

Antibacksliding restricts the level of relaxation of water quality-based limits from the previous permit. Section 303(d)(4) of the Clean Water Act addresses antibacksliding as the following:

Section 303(d)(4)

Standards not attained – For receiving waters that have not attained the applicable water quality standards, limits based on a TMDL or WLA can only be revised if the water quality standards will be met. This may be done by (i) determining that the cumulative effect of all such revised limits would assure the attainment of such water quality standards; or (ii) removing the designated use which is not being attained in accordance with regulations under Section 303.

Standards attained – For receiving waters achieving or exceeding applicable water quality standards, limits can be relaxed if the revision is consistent with the State's Antidegradation Policy.

Therefore, in order to determine whether backsliding is permissible, the first question that must be asked is whether or not the receiving water is attaining the water quality standard. The Office has determined the most appropriate evaluation of existing water quality is by calculating pollutant levels, which would result after the consideration of all currently valid RIPDES permit limits or historic discharge data (whichever is greater), background data (when available), and any new information (i.e., dilution factors).

Antidegradation

The DEM's "Policy on the Implementation of the Antidegradation Provisions of the Rhode Island Water Quality Regulations July 2006" (the Policy) established four tiers of water quality protection:

> Tier 1. In all surface waters, existing uses and the level of water quality necessary to protect the existing uses shall be maintained and protected.
>
> Tier 2. In waters where the existing water quality criteria exceeds the levels necessary to support the propagation of fish and wildlife and recreation in and on the water, that quality shall be maintained and protected except for insignificant changes in water quality as determined by the Director and in accordance with the Antidegradation Implementation Policy, as amended. In addition, the Director may allow significant degradation, which is determined to be necessary to achieve important economic or social benefits to the State in accordance with the Antidegradation Policy.
>
> Tier 2½. Where high quality waters constitute Special Resource Protection Waters SRPWs , there shall be no measurable degradation of the existing water quality necessary to protect the characteristics which cause the waterbody to be designated a SRPW. Notwithstanding that all public drinking water supplies are SRPWs, public drinking water suppliers may undertake temporary and short-term activities within the boundary perimeter of a public drinking water supply impoundment for essential maintenance or to address emergency conditions in order to prevent adverse effect on public health or safety. These activities must comply with the requirements set forth in Tier 1 and Tier 2.
>
> Tier 3. Where high quality waters constitute an Outstanding Natural Resource ONRWs , that water quality shall be maintained and protected. The State may allow some limited activities that result in temporary or short-term changes in the water quality of an ONRW. Such activities must not permanently degrade water quality or result in water quality lower than necessary to protect

the existing uses in the ONRW.

The formulas previously presented ensure that permit limitations are based upon water quality criteria and methodologies established to ensure that all designated uses will be met.

In terms of the applicability of Tier 2 of the Policy, a water body is assessed as being high quality on a parameter-by-parameter basis. In accordance with Part II of the Policy, "Antidegradation applies to all new or increased projects or activities which may lower water quality or affect existing water uses, including but not limited to all 401 Water Quality Certification reviews and any new, reissued, or modified RIPDES permits." Part VI.A of the Policy indicates that it is not applicable to activities which result in insignificant (i.e., short-term minor) changes in water quality and that significant changes in water quality will only be allowed if it is necessary to accommodate important economic and social development in the area in which the receiving waters are located (important benefits demonstration). Part VI.B.4 of the Policy states that: "Theoretically, any new or increased discharge or activity could lower existing water quality and thus require the important benefits demonstration. However, DEM will: 1) evaluate applications on a case-by-case basis, using BPJ and all pertinent and available facts, including scientific and technical data and calculations as provided by the applicant; and 2) determine whether the incremental loss is significant enough to require the important benefits demonstration described below. [If not then as a general rule DEM will allocate no more than 20%.] Some of the considerations which will be made to determine if an impact is significant in each site specific decision are: 1) percent change in water quality parameter value and their temporal distribution; 2) quality and value of the resource; 3) cumulative impact of discharges and activities on water quality to date; 4) measurability of the change; 5) visibility of the change; 6) impact on fish and wildlife habitat; and 7) impact on potential and existing uses. As a general guide, any discharge or activity which consumes greater than 20% of the remaining assimilative capacity may be deemed significant and invoke full requirements to demonstrate important economic or social benefits."

In terms of a RIPDES permit, an increased discharge is defined as an increase in any limitation, which would result in an increased mass loading to a receiving water. The baseline for this comparison would be the monthly average mass loading established in the previous permit. It would be inappropriate to use the daily maximum mass loading since the Policy is not applicable to short-term changes in water quality.

For the purposes of ensuring that the revised limit is consistent with the requirements of antidegradation, existing water quality must be defined. As explained earlier, DEM evaluates existing water quality by determining the pollutant levels which would result under the design conditions appropriate for the particular criteria (i.e., background water quality, when available and/or appropriate, non-point source inputs; and existing RIPDES permit limitations or recent historical discharge data, whichever is higher). In general, available data would be used to make this determination.

Use the above-mentioned criteria, the present instream water quality Cp is defined as:

$$C_p = \frac{(DF - 1) \cdot C_B + (1 \cdot C_d)}{DF}$$

where: C_b = background concentration
C_d = discharge data
DF = dilution factor

In this permit, all monthly average limitations are either the same as or more stringent than the limits in the 2013 permit. Therefore, the limits contained in this permit are consistent with the Department's anti-degradation policy.

The remaining general and specific conditions of the permit are based on the RIPDES regulations as well as 40 CFR Parts 122 through 125 and consist primarily of management requirements common to all permits.

V. Comment Period, Hearing Requests, and Procedures for Final Decisions

All persons, including applicants, who believe any condition of the draft permit is inappropriate must raise all issues and submit all available arguments and all supporting material for their arguments in full by the close of the public comment period, to the Rhode Island Department of Environmental Management, Office of Water Resources, 235 Promenade Street, Providence, Rhode Island, 02908-5767. Any person, prior to such date, may submit a request in writing for a public hearing to consider the draft permit to the Rhode Island Department of Environmental Management. Such requests shall state the nature of the issues proposed to be raised in the hearing. A public hearing may be held after at least thirty (30) days public notice whenever the Director finds that response to this notice indicates significant public interest. In reaching a final decision on the draft permit the Director will respond to all significant comments and make these responses available to the public at DEM's Providence Office.

Following the close of the comment period, and after a public hearing, if such hearing is held, the Director will issue a final permit decision and forward a copy of the final decision to the applicant and each person who has submitted written comments or requested notice. Within thirty (30) days following the notice of the final permit decision any interested person may submit a request for a formal hearing to reconsider or contest the final decision. Requests for formal hearings must satisfy the requirements of §1.50 of the Regulations for the Rhode Island Pollutant Discharge Elimination System.

VI. DEM Contact

Additional information concerning the permit may be obtained between the hours of 8:30 a.m. and 4:00 p.m., Monday through Friday, excluding holidays, from:

Max Maher, Environmental Engineer I
RIPDES Program - Office of Water Resources
Department of Environmental Management
235 Promenade Street
Providence, Rhode Island 02908
Telephone: (401) 222-4700, ext. 2777201
Email: maximilian.maher@dem.ri.gov

12/24/2021
Date

Joseph Haberek, P.E.
Acting Administrator of Surface Water Protection
RIPDES Permitting Section
Office of Water Resources
Department of Environmental Management

ATTACHMENTS

ATTACHMENT A
Average Effluent Characteristics 2013-2021

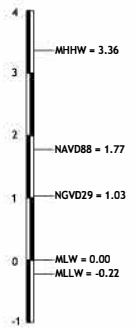
DESCRIPTION OF DISCHARGE: Brackish Reverse Osmosis Concentrate
DISCHARGE: Outfall 001A – Drinking Water Treatment System Effluent

AVERAGE EFFLUENT CHARACTERISTICS AT POINT OF DISCHARGE:

PARAMETER	**AVERAGE[1]**	**MAXIMUM[2]**
FLOW	1273 gpd	3397 gpd
Copper	25.72 µg/L	33.15 µg/L
pH	7.52 (minimum)[3]	7.75 (maximum)[4]
TDS	27254 mg/L	29883 mg/L
TSS	28 mg/L	70 mg/L

[1]Data represents the mean of the monthly average data from June 2013 – March 2021.
[2]Data represents the mean of the daily maximum data from June 2013 – March 2021.
[3]Values represent the average minimum value for outfall 001A
[4]Values represent the average maximum value for outfall 001A

ATTACHMENT B
SITE LOCATION AND PROCESS FLOW DIAGRAM



VERTICAL DATUM CONVERSION DIAGRAM

REFERENCES

1. THE ELEVATION DATA ABOVE WAS COMPUTED FROM THE U.S. DEPARTMENT OF COMMERCE, NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION, NATIONAL OCEAN SERVICE, FROM:
   STATION ID: 8450768
   NAME: TIDAL 1 BENCHMARK LW0620
   LOCATION: Little Compton, Rhode Island
2. ALL ELEVATIONS SHOWN ON THESE PLANS ARE RELATIVE TO LOCAL MLW DATUM AS ESTABLISHED BY RT GROUP, INC. IN APRIL 2008.
3. FEMA FLOOD ELEVATION INFORMATION SHOWN ON THIS PLAN WAS TAKEN FROM THE FLOOD INSURANCE RATE MAP (FIRM), NEWPORT COUNTY, RHODE ISLAND, PANEL 204 OF 226, FIRM MAP NUMBER 44005C0204H, EFFECTIVE DATE APRIL 5, 2010. ELEVATION SHOWN IN PARENTHESIS ARE RELATIVE TO NAVD 88.
4. THE ENTIRE PROJECT SITE IS WITHIN THE SPECIAL FLOOD HAZARD AREA SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD.
5. PROPERTY LINES AS SHOWN ON THESE PLANS WERE TAKEN FROM A PLAN ENTITLED: *PLAN OF BLUFF HEAD AVENUE AND POINT STREET IN AND FOR THE TOWN OF LITTLE COMPTON, RHODE ISLAND*, PREPARED BY: STANLEY ENGINEERING, INC., SCALE: 1"=20', DATED: JANUARY, 1997. PROPERTY LINES AS SHOWN ARE CONSIDERED APPROXIMATE.

VERTICAL CONTROL

PROJECT BENCHMARK:
GEODETIC DISK LW0620,
ELEVATION=5.99 FEET (NAVD88) 7.76 FEET (MLW)

HORIZONTAL CONTROL

HORIZONTAL DATUM BASIS IS RHODE STATE PLANE COORDINATE SYSTEM NORTH AMERICAN DATUM OF 1983 (NAD 83).

PERMIT SUBMISSION
NOT FOR CONSTRUCTION
THIS DRAWING IS HALF SIZE

RT Group, Inc.
Engineered from the Ground Up
197 Taunton Avenue, Suite 202
East Providence, Rhode Island 02914
T 401 438 3100 F 401 438 5275
Geotechnical Waterfront Structural Civil Geo-

DSGN	SWO
DR	SWO
CHK	JBR
APVD	SWO

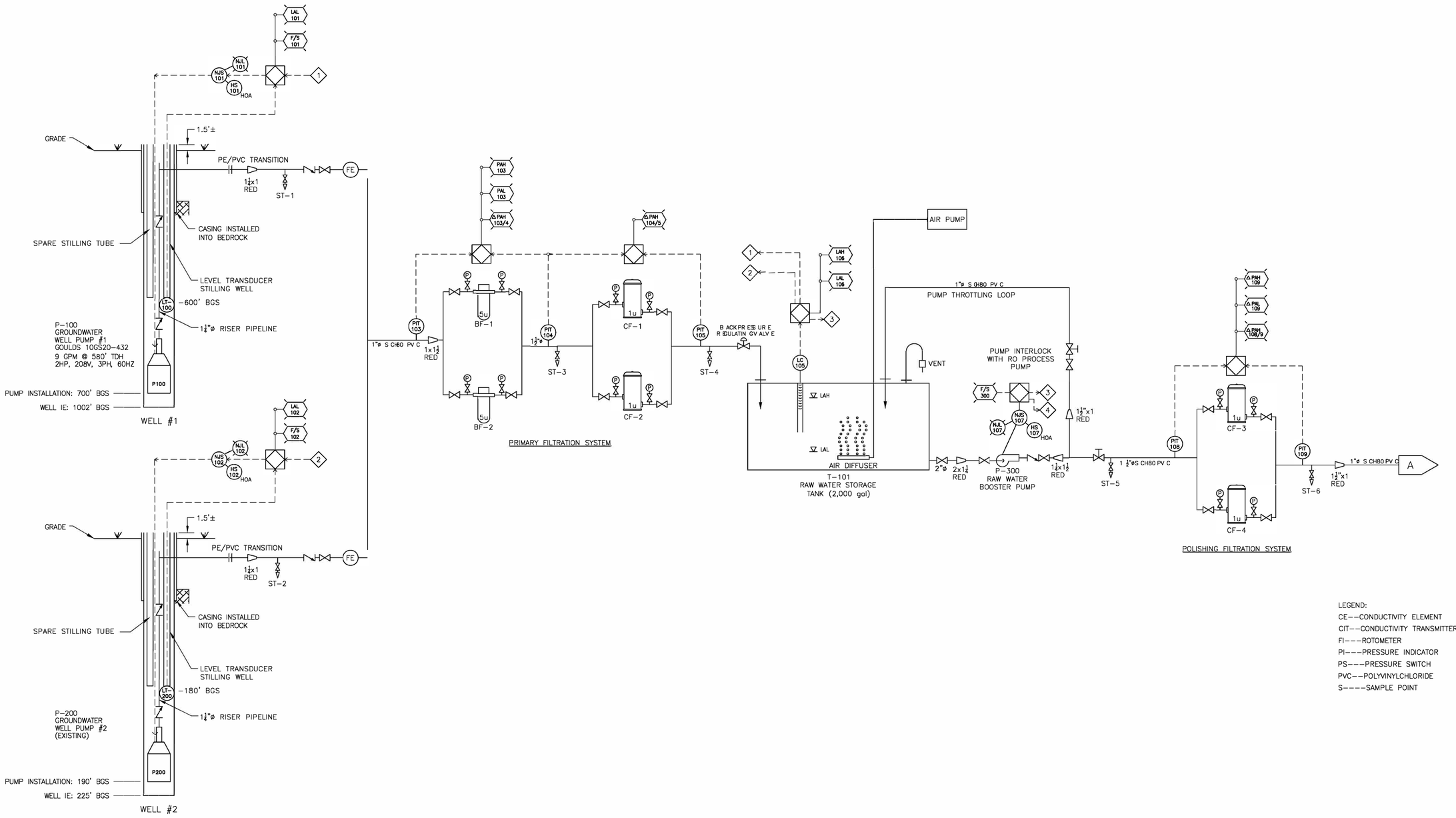
No.	DATE	REVISIONS	BY	APVD

BAR IS ONE INCH ON ORIGINAL DRAWING.
0 —— 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

REVERSE OSMOSIS EFFLUENT DISCHARGE PIPELINE
Sakonnet Point Club
11 Bluff Head Ave.
Little Compton, Rhode Island

OVERALL SITE PLAN

SHEET	3 OF 9
DWG No.	C-01
DATE	MAY 2012
PROJ.No.	11107.02



LEGEND:
CE--CONDUCTIVITY ELEMENT
CIT--CONDUCTIVITY TRANSMITTER
FI---ROTOMETER
PI---PRESSURE INDICATOR
PS---PRESSURE SWITCH
PVC--POLYVINYLCHLORIDE
S----SAMPLE POINT

CARTRIDGE FILTER
CF-1, CF-2, CF-3, CF-4
MFGR: CRITICAL PROCESS FILTRATION INC.
MODEL: 4FOS-2-1-1.5NPT
INLET/OUTLET: 1½"ø NPT
MAX PRESSURE: 150 PSIG
NO. OF CARTRIDGES: 4
MATERIAL: 304SS

BAG FILTER
BF-1, BF-2
MFGR: CRITICAL PROCESS FILTRATION INC.
MODEL: BFS-2C-1.5NPT
INLET/OUTLET: 1½ø NPT
MAX PRESSURE: 150 PSIG
MATERIAL: 304SS

RAW WATER STORAGE TANK
T-101
MFGR: NORWESCO CANADA, LTD
MODEL: LPHCO - 1706 HD
VOLUME: 2,049 GALLONS
MANWAY: 16"ø

RAW WATER BOOSTER PUMP
P-300
MFGR: GRUNDFOS
MODEL: CRN3-6
STAGES: 6
IMPELLER: 1.4401
SPEED: 3500RPM
MOTOR HP: 1.0
POWER: 208-230/460VAC, 3ø, 60Hz
CAPACITY: 16 GPM @ 134ft TDH
MATERIAL: 316SS
CONNECTIONS: 1¼"ø FLNG

ISSUE	DATE	REVISION	BY	CHK

NWSI NORTHEAST Water Solutions INC.
567 S OUTH COUNTY TRAIL • EXETER, RHODE ISLAND 02822 • (401) 667-7465 FAX (401) 667-7465

SAKONNET POINT CLUB

11 BLUFF HEAD AVENUE

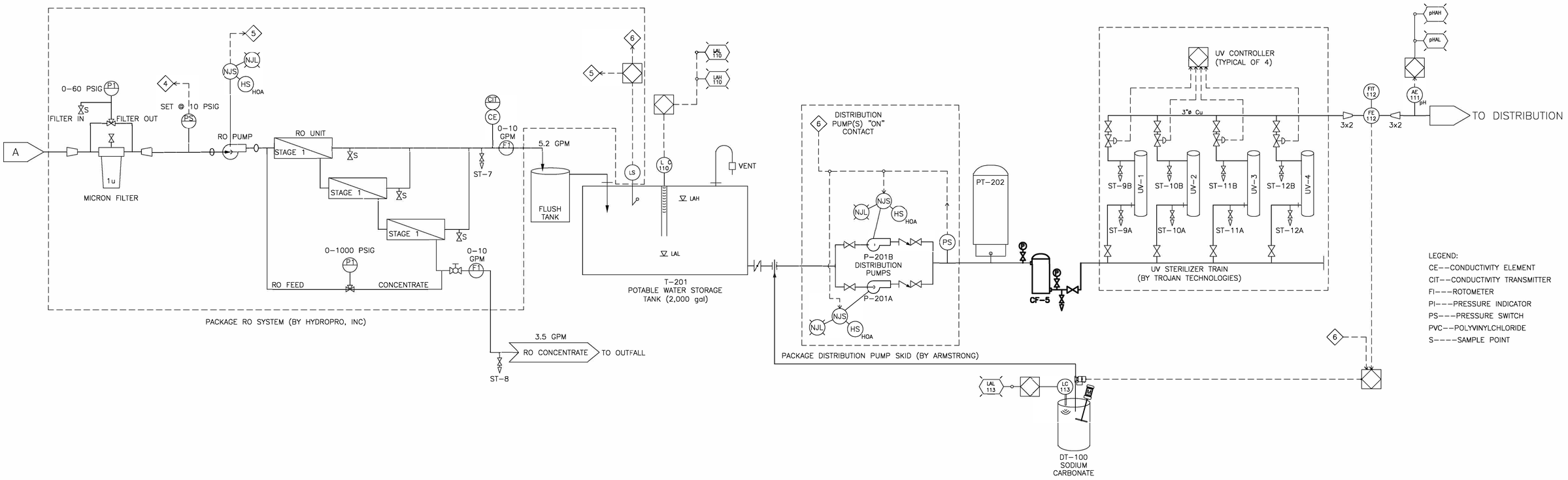
LITTLE COMPTON, RHODE ISLAND

WATER SUPPLY & TREATMENT SYSTEM

PROCESS & INSTRUMENTATION DIAGRAM

DRAWN BY	CDL
DESIGNED	RFF
CHECKED	RFF
APPROVED	RFF
SCALE	NONE
DRAWING NUMBER	P-1

FILE NUMBER	DATE	PROJECT NUMBER
182 P1-2	6-26-08	182.0



LEGEND:
CE--CONDUCTIVITY ELEMENT
CIT--CONDUCTIVITY TRANSMITTER
FI---ROTOMETER
PI---PRESSURE INDICATOR
PS---PRESSURE SWITCH
PVC--POLYVINYLCHLORIDE
S----SAMPLE POINT

REVERSE OSMOSIS SYSTEM
MFGR: HYDROPRO, INC.
MODEL NO: B2FSM–7.5
FLOWRATES:
FEEDWATER: 8.7GPM
PRODUCT: 5.2GPM
REJECT: 3.4GPM
PRODUCT RECOVERY: 59.79
FEEDWATER PRESSURE: 625PSIG
TRANSMEMBRANE PRESSURE: 489PSIG (1st YR)
FEEDWATER SDI: ≤3
PRODUCT WATER QUALITY: <135 PPM TDS
SOFT REJECTION: 98%

POTABLE WATER STORAGE TANK
T–201
MFGR: NORWESCO CANADA, LTD
MODEL: LPHCO – 1706 HD
VOLUME: 2,049 GALLONS
MANWAY: 16"ø

WATER DISTRIBUTION PUMPS
P–201A, P–201B)
MFGR: ARMSTRONG
CAPACITY: 50GPM @ 106ft TDH
MOTOR: 3 HP
POWER: 208VAC, 3ø, 60Hz

ULTRAVIOLET STERILIZERS
UV–1, UV–2, UV–3, UV–4
MFGR: TROJAN TECHNOLOGIES
MODEL: UV MAX PRO 30
CAPACITY: 30 GPM
INLET/OUTLET: 1"ø NPT
MAX PRESSURE: 100 PSIG

CARTRIDGE FILTER
CF–5
MFGR: HARMSCO
MODEL: HUR40HP
INLET/OUTLET: 2"
MAX PRESSURE: 150 PSIG
MATERIAL: 304SS
CARTRIDGE MODEL: HC40–5
CARTRIDGE RATING: 5 MICRON
NSF61 COMPLIANT: YES

ISSUE	DATE	REVISION	BY	CHK
A	6–23–14	ADDITION OF CARTRIDGE FILTER (CF–5).	SMB	MAD

NORTHEAST Water Solutions
567 S OTH COUN TYTRAIL • EXETER • RHODE IS LAN • 002822 • (401)667–7463 • FAX (401)667–7465

SAKONNET POINT CLUB
11 BLUFF HEAD AVENUE
LITTLE COMPTON, RHODE ISLAND
WATER SUPPLY & TREATMENT SYSTEM
PROCESS & INSTRUMENTATION DIAGRAM

DRAWN BY	DESIGNED	CHECKED	APPROVED	SCALE	DRAWING NUMBER
CDL	RFF	RFF	RFF	NONE	P-2

FILE NUMBER	DATE	PROJECT NUMBER
182 P1–2	6–26–08	182.0

ATTACHMENT C
SUMMARY OF APPLICABLE WATER QUALITY-BASED EFFLUENT LIMITS

CALCULATION OF WATER QUALITY BASED SALTWATER DISCHARGE LIMITS

FACILITY SPECIFIC DATA INPUT SHEET

NOTE: LIMITS BASED ON RI WATER QUALITY CRITERIA DATED JULY 2006

FACILITY NAME: **SPC 2012 SH**

RIPDES PERMIT #: **RI0023558**

	DISSOLVED BACKGROUND DATA (ug/L)	ACUTE METAL TRANSLATOR	CHRONIC METAL TRANSLATOR
ALUMINUM	NA	NA	NA
ARSENIC	NA	1	1
CADMIUM	0.0361	0.994	0.994
CHROMIUM III	NA	NA	NA
CHROMIUM VI	0.173	0.993	0.993
COPPER	0.818	0.83	0.83
LEAD	0.083	0.951	0.951
MERCURY	NA	0.85	NA
NICKEL	1.61	0.99	0.99
SELENIUM	NA	0.998	0.998
SILVER	0.007	0.85	0.85
ZINC	NA	0.946	0.946

USE NA WHEN NO DATA IS AVAILABLE

NOTE 1: BACKGROUND DATA BASED ON AVERAGE DATA SINBADD Cruises, Stations 18 and 19: 10/21-24/85, 11/18-21/85, 4/7-10/86, 5/19-20/86.

NOTE 2: METAL TRANSLATORS FROM RI WATER QUALITY REGS.

DILUTION FACTORS		
ACUTE =	73.7	x
CHRONIC =	243	x
HUMAN HEALTH =	243	x

NOTE: SPC'S DILUTION FACTORS OBTAINED FROM A CORMIX MODEL.

TOTAL AMMONIA CRITERIA (ug/L)		
WINTER ACUTE =		6000
CHRONIC =		900
SUMMER ACUTE =		4600
CHRONIC =		690

NOTE 1: LIMITS ARE FROM TABLE 3 IN THE RI WATER QUALITY REGS. USING:
SALINITY = 30 g/Kg
WINTER (NOV-APRIL) pH=8.4 s.u.;
SUMMER (MAY-OCT) pH=8.2 s.u.
WINTER (NOV-APRIL) TEMP=10.0 C;
SUMMER (MAY-OCT) TEMP=20.0 C.

CALCULATION OF WATER QUALITY BASED SALTWATER DISCHARGE LIMITS

FACILITY NAME: SPC 2012 SH RIPDES PERMIT #: RI0023558

NOTE: METALS CRITERIA ARE DISSOLVED, METALS LIMITS ARE TOTAL; AMMONIA CRITERIA AND LIMITS HAVE BEEN CONVERTED TO ug/l N.

CHEMICAL NAME	CAS #	BACKGROUND CONCENTRATION (ug/L)	SALTWATER CRITERIA ACUTE (ug/L)	DAILY MAX LIMIT (ug/L)	SALTWATER CRITERIA CHRONIC (ug/L)	HUMAN HEALTH NON-CLASS A CRITERIA (ug/L)	MONTHLY AVE LIMIT (ug/L)
PRIORITY POLLUTANTS:							
TOXIC METALS AND CYANIDE							
ANTIMONY	7440360			No Criteria		640	124416
ARSENIC (limits are total recoverable)	7440382	NA	69	4068.24	36	1.4	272.16
ASBESTOS	1332214			No Criteria			No Criteria
BERYLLIUM	7440417			No Criteria			No Criteria
CADMIUM (limits are total recoverable)	7440439	0.0361	40	2666.57498	8.8		1927.388129
CHROMIUM III (limits are total recoverable)	16065831	NA		No Criteria			No Criteria
CHROMIUM VI (limits are total recoverable)	18540299	0.173	1100	73464.67563	50		10969.92346
COPPER (limits are total recoverable)	7440508	0.818	4.8	311.9462651	1.27		133.3180723
CYANIDE	57125		1	58.96	1	140	194.4
LEAD (limits are total recoverable)	7439921	0.083	210	14640.65815	8.1		1841.623554
MERCURY (limits are total recoverable)	7439976	NA	1.8	124.8564706	0.94	0.15	29.16
NICKEL (limits are total recoverable)	7440020	1.61	74	4839.770707	2.93	4600	325.6262626
SELENIUM (limits are total recoverable)	7782492	NA	290	17132.66533	71	4200	13830.06012
SILVER (limits are total recoverable)	7440224	0.007	1.9	147.6683529			No Criteria
THALLIUM	7440280			No Criteria		0.47	91.368
ZINC (limits are total recoverable)	7440666	NA	90	5609.302326	81	26000	16645.24313
VOLATILE ORGANIC COMPOUNDS							
ACROLEIN	107028			No Criteria		290	56376
ACRYLONITRILE	107131			No Criteria		2.5	486
BENZENE	71432			No Criteria		510	99144
BROMOFORM	75252			No Criteria		1400	272160
CARBON TETRACHLORIDE	56235			No Criteria		16	3110.4
CHLOROBENZENE	108907			No Criteria		1600	311040
CHLORODIBROMOMETHANE	124481			No Criteria		130	25272
CHLOROFORM	67663			No Criteria		4700	913680
DICHLOROBROMOMETHANE	75274			No Criteria		170	33048
1,2DICHLOROETHANE	107062			No Criteria		370	71928
1,1DICHLOROETHYLENE	75354			No Criteria		7100	1380240
1,2DICHLOROPROPANE	78875			No Criteria		150	29160
1,3DICHLOROPROPYLENE	542756			No Criteria		21	4082.4
ETHYLBENZENE	100414			No Criteria		2100	408240
BROMOMETHANE (methyl bromide)	74839			No Criteria		1500	291600
CHLOROMETHANE (methyl chloride)	74873			No Criteria			No Criteria
METHYLENE CHLORIDE	75092			No Criteria		5900	1146960

CALCULATION OF WATER QUALITY BASED SALTWATER DISCHARGE LIMITS

FACILITY NAME: SPC 2012 SH RIPDES PERMIT #: RI0023558

NOTE: METALS CRITERIA ARE DISSOLVED, METALS LIMITS ARE TOTAL; AMMONIA CRITERIA AND LIMITS HAVE BEEN CONVERTED TO ug/l N.

CHEMICAL NAME	CAS #	BACKGROUND CONCENTRATION (ug/L)	SALTWATER CRITERIA ACUTE (ug/L)	DAILY MAX LIMIT (ug/L)	SALTWATER CRITERIA CHRONIC (ug/L)	HUMAN HEALTH NON-CLASS A CRITERIA (ug/L)	MONTHLY AVE LIMIT (ug/L)
1,1,2,2TETRACHLOROETHANE	79345			No Criteria		40	7776
TETRACHLOROETHYLENE	127184			No Criteria		33	6415.2
TOLUENE	108883			No Criteria		15000	2916000
1,2TRANSDICHLOROETHYLENE	156605			No Criteria		10000	1944000
1,1,1TRICHLOROETHANE	71556			No Criteria			No Criteria
1,1,2TRICHLOROETHANE	79005			No Criteria		160	31104
TRICHLOROETHYLENE	79016			No Criteria		300	58320
VINYL CHLORIDE	75014			No Criteria		2.4	466.56
ACID ORGANIC COMPOUNDS							
2CHLOROPHENOL	95578			No Criteria		150	29160
2,4DICHLOROPHENOL	120832			No Criteria		290	56376
2,4DIMETHYLPHENOL	105679			No Criteria		850	165240
4,6DINITRO2METHYL PHENOL	534521			No Criteria		280	54432
2,4DINITROPHENOL	51285			No Criteria		5300	1030320
4NITROPHENOL	88755			No Criteria			No Criteria
PENTACHLOROPHENOL	87865		13	766.48	7.9	30	1535.76
PHENOL	108952			No Criteria		1700000	330480000
2,4,6TRICHLOROPHENOL	88062			No Criteria		24	4665.6
BASE NEUTRAL COMPUNDS							
ACENAPHTHENE	83329			No Criteria		990	192456
ANTHRACENE	120127			No Criteria		40000	7776000
BENZIDINE	92875			No Criteria		0.002	0.3888
POLYCYCLIC AROMATIC HYDROCARBONS				No Criteria		0.18	34.992
BIS(2CHLOROETHYL)ETHER	111444			No Criteria		5.3	1030.32
BIS(2CHLOROISOPROPYL)ETHER	108601			No Criteria		65000	12636000
BIS(2ETHYLHEXYL)PHTHALATE	117817			No Criteria		22	4276.8
BUTYL BENZYL PHTHALATE	85687			No Criteria		1900	369360
2CHLORONAPHTHALENE	91587			No Criteria		1600	311040
1,2DICHLOROBENZENE	95501			No Criteria		1300	252720
1,3DICHLOROBENZENE	541731			No Criteria		960	186624
1,4DICHLOROBENZENE	106467			No Criteria		190	36936
3,3DICHLOROBENZIDENE	91941			No Criteria		0.28	54.432
DIETHYL PHTHALATE	84662			No Criteria		44000	8553600
DIMETHYL PHTHALATE	131113			No Criteria		1100000	213840000
DInBUTYL PHTHALATE	84742			No Criteria		4500	874800
2,4DINITROTOLUENE	121142			No Criteria		34	6609.6

CALCULATION OF WATER QUALITY BASED SALTWATER DISCHARGE LIMITS

FACILITY NAME: SPC 2012 SH RIPDES PERMIT #: RI0023558

NOTE: METALS CRITERIA ARE DISSOLVED, METALS LIMITS ARE TOTAL; AMMONIA CRITERIA AND LIMITS HAVE BEEN CONVERTED TO ug/l N.

CHEMICAL NAME	CAS #	BACKGROUND CONCENTRATION (ug/L)	SALTWATER CRITERIA ACUTE (ug/L)	DAILY MAX LIMIT (ug/L)	SALTWATER CRITERIA CHRONIC (ug/L)	HUMAN HEALTH NON-CLASS A CRITERIA (ug/L)	MONTHLY AVE LIMIT (ug/L)
1,2DIPHENYLHYDRAZINE	122667			No Criteria		2	388.8
FLUORANTHENE	206440			No Criteria		140	27216
FLUORENE	86737			No Criteria		5300	1030320
HEXACHLOROBENZENE	118741			No Criteria		0.0029	0.56376
HEXACHLOROBUTADIENE	87683			No Criteria		180	34992
HEXACHLOROCYCLOPENTADIENE	77474			No Criteria		1100	213840
HEXACHLOROETHANE	67721			No Criteria		33	6415.2
ISOPHORONE	78591			No Criteria		9600	1866240
NAPHTHALENE	91203			No Criteria			No Criteria
NITROBENZENE	98953			No Criteria		690	134136
NNITROSODIMETHYLAMINE	62759			No Criteria		30	5832
NNITROSODINPROPYLAMINE	621647			No Criteria		5.1	991.44
NNITROSODIPHENYLAMINE	86306			No Criteria		60	11664
PYRENE	129000			No Criteria		4000	777600
1,2,4trichlorobenzene	120821			No Criteria		70	13608
PESTICIDES/PCBs							
ALDRIN	309002		1.3	76.648		0.0005	0.0972
Alpha BHC	319846			No Criteria		0.049	9.5256
Beta BHC	319857			No Criteria		0.17	33.048
Gamma BHC (Lindane)	58899		0.16	9.4336		1.8	349.92
CHLORDANE	57749		0.09	5.3064	0.004	0.0081	0.7776
4,4DDT	50293		0.13	7.6648	0.001	0.0022	0.1944
4,4DDE	72559			No Criteria		0.0022	0.42768
4,4DDD	72548			No Criteria		0.0031	0.60264
DIELDRIN	60571		0.71	41.8616	0.0019	0.00054	0.104976
ENDOSULFAN (alpha)	959988		0.034	2.00464	0.0087	89	1.69128
ENDOSULFAN (beta)	33213659		0.034	2.00464	0.0087	89	1.69128
ENDOSULFAN (sulfate)	1031078			No Criteria		89	17301.6
ENDRIN	72208		0.037	2.18152	0.0023	0.06	0.44712
ENDRIN ALDEHYDE	7421934			No Criteria		0.3	58.32
HEPTACHLOR	76448		0.053	3.12488	0.0036	0.00079	0.153576
HEPTACHLOR EPOXIDE	1024573		0.053	3.12488	0.0036	0.00039	0.075816
POLYCHLORINATED BIPHENYLS3	1336363			No Criteria	0.03	0.00064	0.124416
2,3,7,8TCDD (Dioxin)	1746016			No Criteria		0.000000051	9.9144E-06
TOXAPHENE	8001352		0.21	12.3816	0.0002	0.0028	0.03888
TRIBUTYLTIN			0.42	24.7632	0.0074		1.43856

CALCULATION OF WATER QUALITY BASED SALTWATER DISCHARGE LIMITS

FACILITY NAME: SPC 2012 SH RIPDES PERMIT #: RI0023558

NOTE: METALS CRITERIA ARE DISSOLVED, METALS LIMITS ARE TOTAL; AMMONIA CRITERIA AND LIMITS HAVE BEEN CONVERTED TO ug/l N.

CHEMICAL NAME	CAS #	BACKGROUND CONCENTRATION (ug/L)	SALTWATER CRITERIA ACUTE (ug/L)	DAILY MAX LIMIT (ug/L)	SALTWATER CRITERIA CHRONIC (ug/L)	HUMAN HEALTH NON-CLASS A CRITERIA (ug/L)	MONTHLY AVE LIMIT (ug/L)
ALUMINUM (limits are total recoverable)	7429905	NA		No Criteria			No Criteria
AMMONIA as N (winter/summer)	7664417		4932 | 3781.2	290791 222940	739.8 | 567.2		143817 | 110260
4BROMOPHENYL PHENYL ETHER				No Criteria			No Criteria
CHLORIDE	16887006			No Criteria			No Criteria
CHLORINE	7782505		13	958.1	7.5		1822.5
4CHLORO2METHYLPHENOL				No Criteria			No Criteria
1CHLORONAPHTHALENE				No Criteria			No Criteria
4CHLOROPHENOL	106489			No Criteria			No Criteria
2,4DICHLORO6METHYLPHENOL				No Criteria			No Criteria
1,1DICHLOROPROPANE				No Criteria			No Criteria
1,3DICHLOROPROPANE	142289			No Criteria			No Criteria
2,3DINITROTOLUENE				No Criteria			No Criteria
2,4DINITRO6METHYL PHENOL				No Criteria			No Criteria
IRON	7439896			No Criteria			No Criteria
pentachlorobenzene	608935			No Criteria			No Criteria
PENTACHLOROETHANE				No Criteria			No Criteria
1,2,3,5tetrachlorobenzene				No Criteria			No Criteria
1,1,1,2TETRACHLOROETHANE	630206			No Criteria			No Criteria
2,3,4,6TETRACHLOROPHENOL	58902			No Criteria			No Criteria
2,3,5,6TETRACHLOROPHENOL				No Criteria			No Criteria
2,4,5TRICHLOROPHENOL	95954			No Criteria			No Criteria
2,4,6TRINITROPHENOL	88062			No Criteria			No Criteria
XYLENE	1330207			No Criteria			No Criteria

CALCULATION OF WATER QUALITY BASED SALTWATER DISCHARGE LIMITS

FACILITY NAME: SPC 2012 SH RIPDES PERMIT #: RI0023558

CHEMICAL NAME	CAS#	DAILY MAX LIMIT (ug/L)	MONTHLY AVE LIMIT (ug/L)
PRIORITY POLLUTANTS:			
TOXIC METALS AND CYANIDE			
ANTIMONY	7440360	No Criteria	124416.00
ARSENIC, TOTAL	7440382	4068.24	272.16
ASBESTOS	1332214	No Criteria	No Criteria
BERYLLIUM	7440417	No Criteria	No Criteria
CADMIUM, TOTAL	7440439	2666.57	1927.39
CHROMIUM III, TOTAL	16065831	No Criteria	No Criteria
CHROMIUM VI, TOTAL	18540299	73464.68	10969.92
COPPER, TOTAL	7440508	311.95	133.32
CYANIDE	57125	58.96	58.96
LEAD, TOTAL	7439921	14640.66	1841.62
MERCURY, TOTAL	7439976	124.86	29.16
NICKEL, TOTAL	7440020	4839.77	325.63
SELENIUM, TOTAL	7782492	17132.67	13830.06
SILVER, TOTAL	7440224	147.67	No Criteria
THALLIUM	7440280	No Criteria	91.37
ZINC, TOTAL	7440666	5609.30	5609.30
VOLATILE ORGANIC COMPOUNDS			
ACROLEIN	107028	No Criteria	56376.00
ACRYLONITRILE	107131	No Criteria	486.00
BENZENE	71432	No Criteria	99144.00
BROMOFORM	75252	No Criteria	272160.00
CARBON TETRACHLORIDE	56235	No Criteria	3110.40
CHLOROBENZENE	108907	No Criteria	311040.00
CHLORODIBROMOMETHANE	124481	No Criteria	25272.00
CHLOROFORM	67663	No Criteria	913680.00
DICHLOROBROMOMETHANE	75274	No Criteria	33048.00
1,2DICHLOROETHANE	107062	No Criteria	71928.00
1,1DICHLOROETHYLENE	75354	No Criteria	1380240.00
1,2DICHLOROPROPANE	78875	No Criteria	29160.00
1,3DICHLOROPROPYLENE	542756	No Criteria	4082.40
ETHYLBENZENE	100414	No Criteria	408240.00
BROMOMETHANE (methyl bromide)	74839	No Criteria	291600.00
CHLOROMETHANE (methyl chloride)	74873	No Criteria	No Criteria
METHYLENE CHLORIDE	75092	No Criteria	1146960.00
1,1,2,2TETRACHLOROETHANE	79345	No Criteria	7776.00
TETRACHLOROETHYLENE	127184	No Criteria	6415.20
TOLUENE	108883	No Criteria	2916000.00
1,2TRANSDICHLOROETHYLENE	156605	No Criteria	1944000.00
1,1,1TRICHLOROETHANE	71556	No Criteria	No Criteria
1,1,2TRICHLOROETHANE	79005	No Criteria	31104.00
TRICHLOROETHYLENE	79016	No Criteria	58320.00
VINYL CHLORIDE	75014	No Criteria	466.56
ACID ORGANIC COMPOUNDS			
2CHLOROPHENOL	95578	No Criteria	29160.00
2,4DICHLOROPHENOL	120832	No Criteria	56376.00
2,4DIMETHYLPHENOL	105679	No Criteria	165240.00
4,6DINITRO2METHYL PHENOL	534521	No Criteria	54432.00
2,4DINITROPHENOL	51285	No Criteria	1030320.00
4NITROPHENOL	88755	No Criteria	No Criteria
PENTACHLOROPHENOL	87865	766.48	766.48
PHENOL	108952	No Criteria	330480000.00
2,4,6TRICHLOROPHENOL	88062	No Criteria	4665.60
BASE NEUTRAL COMPUNDS			
ACENAPHTHENE	83329	No Criteria	192456.00
ANTHRACENE	120127	No Criteria	7776000.00
BENZIDINE	92875	No Criteria	0.39
PAHs		No Criteria	34.99
BIS(2CHLOROETHYL)ETHER	111444	No Criteria	1030.32
BIS(2CHLOROISOPROPYL)ETHER	108601	No Criteria	12636000.00
BIS(2ETHYLHEXYL)PHTHALATE	117817	No Criteria	4276.80
BUTYL BENZYL PHTHALATE	85687	No Criteria	369360.00
2CHLORONAPHTHALENE	91587	No Criteria	311040.00
1,2DICHLOROBENZENE	95501	No Criteria	252720.00
1,3DICHLOROBENZENE	541731	No Criteria	186624.00
1,4DICHLOROBENZENE	106467	No Criteria	36936.00
3,3DICHLOROBENZIDENE	91941	No Criteria	54.43
DIETHYL PHTHALATE	84662	No Criteria	8553600.00
DIMETHYL PHTHALATE	131113	No Criteria	213840000.00
DI-n-BUTYL PHTHALATE	84742	No Criteria	874800.00
2,4DINITROTOLUENE	121142	No Criteria	6609.60
1,2DIPHENYLHYDRAZINE	122667	No Criteria	388.80
FLUORANTHENE	206440	No Criteria	27216.00

CALCULATION OF WATER QUALITY BASED SALTWATER DISCHARGE LIMITS

FACILITY NAME: SPC 2012 SH RIPDES PERMIT #: RI0023558

CHEMICAL NAME	CAS#	DAILY MAX LIMIT (ug/L)	MONTHLY AVE LIMIT (ug/L)
FLUORENE	86737	No Criteria	1030320.00
HEXACHLOROBENZENE	118741	No Criteria	0.56
HEXACHLOROBUTADIENE	87683	No Criteria	34992.00
HEXACHLOROCYCLOPENTADIENE	77474	No Criteria	213840.00
HEXACHLOROETHANE	67721	No Criteria	6415.20
ISOPHORONE	78591	No Criteria	1866240.00
NAPHTHALENE	91203	No Criteria	No Criteria
NITROBENZENE	98953	No Criteria	134136.00
N-NITROSODIMETHYLAMINE	62759	No Criteria	5832.00
N-NITROSODI-N-PROPYLAMINE	621647	No Criteria	991.44
N-NITROSODIPHENYLAMINE	86306	No Criteria	11664.00
PYRENE	129000	No Criteria	777600.00
1,2,4trichlorobenzene	120821	No Criteria	13608.00
PESTICIDES/PCBs			
ALDRIN	309002	76.65	0.10
Alpha BHC	319846	No Criteria	9.53
Beta BHC	319857	No Criteria	33.05
Gamma BHC (Lindane)	58899	9.43	9.43
CHLORDANE	57749	5.31	0.78
4,4DDT	50293	7.66	0.19
4,4DDE	72559	No Criteria	0.43
4,4DDD	72548	No Criteria	0.60
DIELDRIN	60571	41.86	0.10
ENDOSULFAN (alpha)	959988	2.00	1.69
ENDOSULFAN (beta)	33213659	2.00	1.69
ENDOSULFAN (sulfate)	1031078	No Criteria	17301.60
ENDRIN	72208	2.18	0.45
ENDRIN ALDEHYDE	7421934	No Criteria	58.32
HEPTACHLOR	76448	3.12	0.15
HEPTACHLOR EPOXIDE	1024573	3.12	0.08
POLYCHLORINATED BIPHENYLS3	1336363	No Criteria	0.12
2,3,7,8TCDD (Dioxin)	1746016	No Criteria	0.00
TOXAPHENE	8001352	12.38	0.04
TRIBUTYLTIN		24.76	1.44

CHEMICAL NAME	CAS#	DAILY MAX LIMIT (ug/L)	MONTHLY AVE LIMIT (ug/L)
NON PRIORITY POLLUTANTS:			
OTHER SUBSTANCES			
ALUMINUM, TOTAL	7429905	No Criteria	No Criteria
AMMONIA (as N), WINTER (NOV-APR	7664417	290790.72	143817.12
AMMONIA (as N), SUMMER (MAY-OC	7664417	222939.55	110259.79
4BROMOPHENYL PHENYL ETHER		No Criteria	No Criteria
CHLORIDE	16887006	No Criteria	No Criteria
CHLORINE	7782505	958.10	958.10
4CHLORO2METHYLPHENOL		No Criteria	No Criteria
1CHLORONAPHTHALENE		No Criteria	No Criteria
4CHLOROPHENOL	106489	No Criteria	No Criteria
2,4DICHLORO6METHYLPHENOL		No Criteria	No Criteria
1,1DICHLOROPROPANE		No Criteria	No Criteria
1,3DICHLOROPROPANE	142289	No Criteria	No Criteria
2,3DINITROTOLUENE		No Criteria	No Criteria
2,4DINITRO6METHYL PHENOL		No Criteria	No Criteria
IRON	7439896	No Criteria	No Criteria
pentachlorobenzene	608935	No Criteria	No Criteria
PENTACHLOROETHANE		No Criteria	No Criteria
1,2,3,5tetrachlorobenzene		No Criteria	No Criteria
1,1,1,2TETRACHLOROETHANE	630206	No Criteria	No Criteria
2,3,4,6TETRACHLOROPHENOL	58902	No Criteria	No Criteria
2,3,5,6TETRACHLOROPHENOL		No Criteria	No Criteria
2,4,5TRICHLOROPHENOL	95954	No Criteria	No Criteria
2,4,6TRINITROPHENOL	88062	No Criteria	No Criteria
XYLENE	1330207	No Criteria	No Criteria

ATTACHMENT D
COMPARISON OF ALLOWABLE LIMITS WITH DISCHARGE MONITORING REPORT AND APPLICATION DATA

Facility Name: ***Sakonnet Point Club***

RIPDES Permit #: ***RI0023558***

Outfall #: ***001A***

NOTE: METALS LIMITS ARE TOTAL METALS

Parameter	CAS #	Concentration Limits (ug/L) Based on WQ Criteria		Antideg. Limits (ug/L)	Well Water Data x Reject Ratio (ug/L) 2008-2020		Permit Application Data (ug/L) 3/13-5/21		Avg. DMR Data (ug/L) 3/13-5/21		Potential Permit Limits (ug/L)		Reasonable Potential (Yes/No)
		Daily Max	Monthly Ave	Monthly Ave	Max	Ave	Daily Max	Monthly Ave	Daily Max	Monthly Ave	Daily Max	Monthly Ave	
PRIORITY POLLUTANTS													
TOXIC METALS AND CYANIDE													
ANTIMONY	7440360	No Criteria	124416.00	---	1.74	---	---	---	---	---	---	124416	No
ARSENIC (limits are total recoverable)	7440382	4068.24	272.16	---	---	---	---	---	---	---	4068.24	272.16	No
ASBESTOS	1332214	No Criteria	No Criteria	---	---	---	---	---	---	---	---	---	No
BERYLLIUM	7440417	No Criteria	No Criteria	---	0	---	---	---	---	---	---	---	No
CADMIUM (limits are total recoverable)	7440439	2666.57	1927.39	---	0	---	---	---	---	---	2666.57498	1927.388129	No
CHROMIUM III (limits are total recoverable)	16065831	No Criteria	No Criteria	---	0	---	---	---	---	---	---	---	No
CHROMIUM VI (limits are total recoverable)	18540299	73464.68	10969.92	---	0	---	---	---	---	---	73464.67563	10969.92346	No
COPPER (limits are total recoverable)	7440508	311.95	133.32	---	---	---	---	51	33.15	25.72	311.9462651	133.3180723	YES
CYANIDE	57125	58.96	58.96	---	---	---	---	---	---	---	58.96	58.96	No
LEAD (limits are total recoverable)	7439921	14640.66	1841.62	---	---	---	---	---	---	---	14640.65815	1841.623554	No
MERCURY (limits are total recoverable)	7439976	124.86	29.16	---	0	---	---	---	---	---	124.8564706	29.16	No
NICKEL (limits are total recoverable)	7440020	4839.77	325.63	---	0	---	---	---	---	---	4839.770707	325.6262626	No
SELENIUM (limits are total recoverable)	7782492	17132.67	13830.06	---	0	---	---	---	---	---	17132.66533	13830.06012	No
SILVER (limits are total recoverable)	7440224	147.67	No Criteria	---	---	---	---	---	---	---	147.6683529	147.6683529	No
THALLIUM	7440280	No Criteria	91.37	---	1.245	---	---	---	---	---	---	91.368	No
ZINC (limits are total recoverable)	7440666	5609.30	5609.30	---	---	---	---	---	---	---	5609.302326	5609.302326	No
VOLATILE ORGANIC COMPOUNDS													
ACROLEIN	107028	No Criteria	56376.00	---	---	---	---	---	---	---	---	56376	No
ACRYLONITRILE	107131	No Criteria	486.00	---	---	---	---	---	---	---	---	486	No
BENZENE	71432	No Criteria	99144.00	---	0	---	---	---	---	---	---	99144	No
BROMOFORM	75252	No Criteria	272160.00	---	0	---	---	---	---	---	---	272160	No
CARBON TETRACHLORIDE	56235	No Criteria	3110.40	---	0	---	---	---	---	---	---	3110.4	No
CHLOROBENZENE	108907	No Criteria	311040.00	---	0	---	---	---	---	---	---	311040	No
CHLORODIBROMOMETHANE	124481	No Criteria	25272.00	---	---	---	---	---	---	---	---	25272	No
CHLOROFORM	67663	No Criteria	913680.00	---	0.8	---	---	---	---	---	---	913680	No
DICHLOROBROMOMETHANE	75274	No Criteria	33048.00	---	---	---	---	---	---	---	---	33048	No
1,2DICHLOROETHANE	107062	No Criteria	71928.00	---	---	---	---	---	---	---	---	71928	No
1,1DICHLOROETHYLENE	75354	No Criteria	1380240.00	---	0	---	---	---	---	---	---	1380240	No
1,2DICHLOROPROPANE	78875	No Criteria	29160.00	---	---	---	---	---	---	---	---	29160	No
1,3DICHLOROPROPYLENE	542756	No Criteria	4082.40	---	---	---	---	---	---	---	---	4082.4	No
ETHYLBENZENE	100414	No Criteria	408240.00	---	0	---	---	---	---	---	---	408240	No
BROMOMETHANE (methyl bromide)	74839	No Criteria	291600.00	---	0	---	---	---	---	---	---	291600	No
CHLOROMETHANE (methyl chloride)	74873	No Criteria	No Criteria	---	0	---	---	---	---	---	---	---	No
METHYLENE CHLORIDE	75092	No Criteria	1146960.00	---	---	---	---	---	---	---	---	1146960	No
1,1,2,2TETRACHLOROETHANE	79345	No Criteria	7776.00	---	0	---	---	---	---	---	---	7776	No
TETRACHLOROETHYLENE	127184	No Criteria	6415.20	---	0	---	---	---	---	---	---	6415.2	No
TOLUENE	108883	No Criteria	2916000.00	---	0.7	---	---	---	---	---	---	2916000	No
1,2TRANSDICHLOROETHYLENE	156605	No Criteria	1944000.00	---	0	---	---	---	---	---	---	1944000	No
1,1,1TRICHLOROETHANE	71556	No Criteria	No Criteria	---	0	---	---	---	---	---	---	---	No
1,1,2TRICHLOROETHANE	79005	No Criteria	31104.00	---	0	---	---	---	---	---	---	31104	No
TRICHLOROETHYLENE	79016	No Criteria	58320.00	---	0	---	---	---	---	---	---	58320	No
VINYL CHLORIDE	75014	No Criteria	466.56	---	0	---	---	---	---	---	---	466.56	No
ACID ORGANIC COMPOUNDS													
2CHLOROPHENOL	95578	No Criteria	29160.00	---	---	---	---	---	---	---	---	29160	No
2,4DICHLOROPHENOL	120832	No Criteria	56376.00	---	---	---	---	---	---	---	---	56376	No
2,4DIMETHYLPHENOL	105679	No Criteria	165240.00	---	---	---	---	---	---	---	---	165240	No

Facility Name: ***Sakonnet Point Club***
RIPDES Permit #: ***RI0023558***
Outfall #: ***001A***

NOTE: METALS LIMITS ARE TOTAL METALS

Parameter	CAS #	Concentration Limits (ug/L) Based on WQ Criteria		Antideg. Limits (ug/L)	Well Water Data x Reject Ratio (ug/L) 2008-2020		Permit Application Data (ug/L) 3/13-5/21		Avg. DMR Data (ug/L) 3/13-5/21		Potential Permit Limits (ug/L)		Reasonable Potential (Yes/No)
		Daily Max	Monthly Ave	Monthly Ave	Max	Ave	Daily Max	Monthly Ave	Daily Max	Monthly Ave	Daily Max	Monthly Ave	
4,6DINITRO2METHYL PHENOL	534521	No Criteria	54432.00	---	---	---	---	---	---	---	---	54432	No
2,4DINITROPHENOL	51285	No Criteria	1030320.00	---	---	---	---	---	---	---	---	1030320	No
4NITROPHENOL	88755	No Criteria	No Criteria	---	---	---	---	---	---	---	---	---	No
PENTACHLOROPHENOL	87865	766.48	766.48	---	0	---	---	---	---	---	766.48	766.48	No
PHENOL	108952	No Criteria	330480000.00	---	---	---	---	---	---	---	---	330480000	No
2,4,6TRICHLOROPHENOL	88062	No Criteria	4665.60	---	---	---	---	---	---	---	---	4665.6	No
BASE NEUTRAL COMPOUNDS													
ACENAPHTHENE	83329	No Criteria	192456.00	---	---	---	---	---	---	---	---	192456	No
ANTHRACENE	120127	No Criteria	7776000.00	---	---	---	---	---	---	---	---	7776000	No
BENZIDINE	92875	No Criteria	0.39	---	---	---	---	---	---	---	---	0.3888	No
POLYCYCLIC AROMATIC HYDROCARBONS		No Criteria	34.99	---	---	---	---	---	---	---	---	34.992	No
BIS(2CHLOROETHYL)ETHER	111444	No Criteria	1030.32	---	---	---	---	---	---	---	---	1030.32	No
BIS(2CHLOROISOPROPYL)ETHER	108601	No Criteria	12636000.00	---	---	---	---	---	---	---	---	12636000	No
BIS(2ETHYLHEXYL)PHTHALATE	117817	No Criteria	4276.80	---	0	---	---	---	---	---	---	4276.8	No
BUTYL BENZYL PHTHALATE	85687	No Criteria	369360.00	---	---	---	---	---	---	---	---	369360	No
2CHLORONAPHTHALENE	91587	No Criteria	311040.00	---	---	---	---	---	---	---	---	311040	No
1,2DICHLOROBENZENE	95501	No Criteria	252720.00	---	---	---	---	---	---	---	---	252720	No
1,3DICHLOROBENZENE	541731	No Criteria	186624.00	---	0	---	---	---	---	---	---	186624	No
1,4DICHLOROBENZENE	106467	No Criteria	36936.00	---	0	---	---	---	---	---	---	36936	No
3,3DICHLOROBENZIDENE	91941	No Criteria	54.43	---	---	---	---	---	---	---	---	54.432	No
DIETHYL PHTHALATE	84662	No Criteria	8553600.00	---	---	---	---	---	---	---	---	8553600	No
DIMETHYL PHTHALATE	131113	No Criteria	213840000.00	---	---	---	---	---	---	---	---	213840000	No
DInBUTYL PHTHALATE	84742	No Criteria	874800.00	---	---	---	---	---	---	---	---	874800	No
2,4DINITROTOLUENE	121142	No Criteria	6609.60	---	---	---	---	---	---	---	---	6609.6	No
1,2DIPHENYLHYDRAZINE	122667	No Criteria	388.80	---	---	---	---	---	---	---	---	388.8	No
FLUORANTHENE	206440	No Criteria	27216.00	---	---	---	---	---	---	---	---	27216	No
FLUORENE	86737	No Criteria	1030320.00	---	---	---	---	---	---	---	---	1030320	No
HEXACHLOROBENZENE	118741	No Criteria	0.56	---	0	---	---	---	---	---	---	0.56376	No
HEXACHLOROBUTADIENE	87683	No Criteria	34992.00	---	0	---	---	---	---	---	---	34992	No
HEXACHLOROCYCLOPENTADIENE	77474	No Criteria	213840.00	---	0	---	---	---	---	---	---	213840	No
HEXACHLOROETHANE	67721	No Criteria	6415.20	---	---	---	---	---	---	---	---	6415.2	No
ISOPHORONE	78591	No Criteria	1866240.00	---	---	---	---	---	---	---	---	1866240	No
NAPHTHALENE	91203	No Criteria	No Criteria	---	---	---	---	---	---	---	---	---	No
NITROBENZENE	98953	No Criteria	134136.00	---	---	---	---	---	---	---	---	134136	No
NNITROSODIMETHYLAMINE	62759	No Criteria	5832.00	---	---	---	---	---	---	---	---	5832	No
NNITROSODINPROPYLAMINE	621647	No Criteria	991.44	---	---	---	---	---	---	---	---	991.44	No
NNITROSODIPHENYLAMINE	86306	No Criteria	11664.00	---	---	---	---	---	---	---	---	11664	No
PYRENE	129000	No Criteria	777600.00	---	---	---	---	---	---	---	---	777600	No
1,2,4trichlorobenzene	120821	No Criteria	13608.00	---	---	---	---	---	---	---	---	13608	No
PESTICIDES/PCBs													
ALDRIN	309002	76.65	0.10	---	0	---	---	---	---	---	76.648	0.0972	No
Alpha BHC	319846	No Criteria	9.53	---	---	---	---	---	---	---	---	9.5256	No
Beta BHC	319857	No Criteria	33.05	---	---	---	---	---	---	---	---	33.048	No
Gamma BHC (Lindane)	58899	9.43	9.43	---	---	---	---	---	---	---	9.4336	9.4336	No
CHLORDANE	57749	5.31	0.78	---	---	---	---	---	---	---	5.3064	0.7776	No
4,4DDT	50293	7.66	0.19	---	---	---	---	---	---	---	7.6648	0.1944	No
4,4DDE	72559	No Criteria	0.43	---	---	---	---	---	---	---	---	0.42768	No
4,4DDD	72548	No Criteria	0.60	---	---	---	---	---	---	---	---	0.60264	No

Facility Name: ***Sakonnet Point Club***

RIPDES Permit #: ***RI0023558***

Outfall #: ***001A***

NOTE: METALS LIMITS ARE TOTAL METALS

Parameter	CAS #	Concentration Limits (ug/L) Based on WQ Criteria		Antideg. Limits (ug/L)	Well Water Data x Reject Ratio (ug/L) 2008-2020		Permit Application Data (ug/L) 3/13-5/21		Avg. DMR Data (ug/L) 3/13-5/21		Potential Permit Limits (ug/L)		Reasonable Potential (Yes/No)
		Daily Max	Monthly Ave	Monthly Ave	Max	Ave	Daily Max	Monthly Ave	Daily Max	Monthly Ave	Daily Max	Monthly Ave	
DIELDRIN	60571	41.86	0.10	---	0	---	---	---	---	---	41.8616	0.104976	No
ENDOSULFAN (alpha)	959988	2.00	1.69	---	0	---	---	---	---	---	2.00464	1.69128	No
ENDOSULFAN (beta)	33213659	2.00	1.69	---	---	---	---	---	---	---	2.00464	1.69128	No
ENDOSULFAN (sulfate)	1031078	No Criteria	17301.60	---	---	---	---	---	---	---	---	17301.6	No
ENDRIN	72208	2.18	0.45	---	---	---	---	---	---	---	2.18152	0.44712	No
ENDRIN ALDEHYDE	7421934	No Criteria	58.32	---	---	---	---	---	---	---	---	58.32	No
HEPTACHLOR	76448	3.12	0.15	---	0	---	---	---	---	---	3.12488	0.153576	No
HEPTACHLOR EPOXIDE	1024573	3.12	0.08	---	---	---	---	---	---	---	3.12488	0.075816	No
POLYCHLORINATED BIPHENYLS3	1336363	No Criteria	0.12	---	---	---	---	---	---	---	---	0.124416	No
2,3,7,8TCDD (Dioxin)	1746016	No Criteria	0.00	---	---	---	---	---	---	---	---	9.9144E-06	No
TOXAPHENE	8001352	12.38	0.04	---	---	---	---	---	---	---	12.3816	0.03888	No
TRIBUTYLTIN		24.76	1.44								24.7632	1.43856	No
ALUMINUM (limits are total recoverable)	7429905	No Criteria	No Criteria	---	---	---	---	---	---	---	---	---	No
AMMONIA (winter)	7664417	290790.72	143817.12	---	---	---	---	---	---	---	290790.72	143817.12	No
AMMONIA (summer)		222939.55	110259.79	---	---	---	---	---	---	---	222939.552	110259.792	No
4BROMOPHENYL PHENYL ETHER	16887006	No Criteria	No Criteria	---	---	---	---	---	---	---	---	---	No
CHLORIDE	7782505	No Criteria	No Criteria				---	---			---	---	No
CHLORINE		958.10	958.10	---	---	---	---	---	---	---	958.1	958.1	No
4CHLORO2METHYLPHENOL		No Criteria	No Criteria	---	---	---	---	---	---	---	---	---	No
1CHLORONAPHTHALENE	106489	No Criteria	No Criteria	---	---	---	---	---	---	---	---	---	No
4CHLOROPHENOL		No Criteria	No Criteria	---	---	---	---	---	---	---	---	---	No
2,4DICHLORO6METHYLPHENOL		No Criteria	No Criteria	---	---	---	---	---	---	---	---	---	No
1,1DICHLOROPROPANE	142289	No Criteria	No Criteria	---	---	---	---	---	---	---	---	---	No
1,3DICHLOROPROPANE		No Criteria	No Criteria	---	---	---	---	---	---	---	---	---	No
2,3DINITROTOLUENE		No Criteria	No Criteria	---	---	---	---	---	---	---	---	---	No
2,4DINITRO6METHYL PHENOL	7439896	No Criteria	No Criteria	---	---	---	---	---	---	---	---	---	No
IRON	608935	No Criteria	No Criteria								---	---	No
pentachlorobenzene		No Criteria	No Criteria	---	---	---	---	---	---	---	---	---	No
PENTACHLOROETHANE		No Criteria	No Criteria	---	---	---	---	---	---	---	---	---	No
1,2,3,5tetrachlorobenzene	630206	No Criteria	No Criteria	---	---	---	---	---	---	---	---	---	No
1,1,1,2TETRACHLOROETHANE	58902	No Criteria	No Criteria	---	---	---	---	---	---	---	---	---	No
2,3,4,6TETRACHLOROPHENOL		No Criteria	No Criteria	---	---	---	---	---	---	---	---	---	No
2,3,5,6TETRACHLOROPHENOL	95954	No Criteria	No Criteria	---	---	---	---	---	---	---	---	---	No
2,4,5TRICHLOROPHENOL	88062	No Criteria	No Criteria	---	---	---	---	---	---	---	---	---	No
2,4,6TRINITROPHENOL	1330207	No Criteria	No Criteria	---	---	---	---	---	---	---	---	---	No
XYLENE		No Criteria	No Criteria		0	---					---	---	No
BOD5	---	No Criteria	No Criteria	---	---	---	---	---	---	---	No Criteria	No Criteria	---
COD		No Criteria	No Criteria	---	---	---	---	---	---	---	No Criteria	No Criteria	---
TSS (mg/L)	---	No Criteria	No Criteria	---	---	---	---	---	70.60	28.18	No Criteria	No Criteria	---
pH (min, max)	---	No Criteria	No Criteria	---	---	---	7.21	8	7.6	8.07	No Criteria	No Criteria	---
Flow (gal/d)	---	No Criteria	No Criteria	---	---	---	2325	1164	3396.96	1272.69	No Criteria	No Criteria	---
Temperature (Winter) ^{o}C	---	No Criteria	No Criteria	---	---	---	25	16.6	---	---	No Criteria	No Criteria	---
Temperature (Summer) ^{o}C	---	No Criteria	No Criteria	---	---	---	21.6	18.1	---	---	No Criteria	No Criteria	---
Fecal Coliform (MPN/100ml)	---	No Criteria	No Criteria	---	1	---	---		---	---	No Criteria	No Criteria	---
Enterococci (CFU/100ml)	---	No Criteria	No Criteria	---	---	---	---	---	---	---	No Criteria	No Criteria	---

Facility Name: ***Sakonnet Point Club***

RIPDES Permit #: ***RI0023558***

Outfall #: ***001A***

NOTE: METALS LIMITS ARE TOTAL METALS

Parameter	CAS #	Concentration Limits (ug/L) Based on WQ Criteria		Antideg. Limits (ug/L)	Well Water Data x Reject Ratio (ug/L) 2008-2020		Permit Application Data (ug/L) 3/13-5/21		Avg. DMR Data (ug/L) 3/13-5/21		Potential Permit Limits (ug/L)		Reasonable Potential (Yes/No)
		Daily Max	Monthly Ave	Monthly Ave	Max	Ave	Daily Max	Monthly Ave	Daily Max	Monthly Ave	Daily Max	Monthly Ave	
TKN	---	No Criteria	No Criteria	---	---	---	---	---	---	---	No Criteria	No Criteria	---
Nitrate + Nitrite (mg/L)	---	No Criteria	No Criteria	---	1.474	---	---	1.1	---	---	No Criteria	No Criteria	---
Nitrogen, Nitrate (mg/L)	---	No Criteria	No Criteria	---	1.81	---	---	---	---	---	No Criteria	No Criteria	---
Nitrogen, Nitrite (mg/L)	---	No Criteria	No Criteria	---	0.6474	---	---	---	---	---	No Criteria	No Criteria	---
Nitrogen, Total	---	No Criteria	No Criteria	---	---	---	---	---	---	---	No Criteria	No Criteria	---
Phosphorus, Total	---	No Criteria	No Criteria	---	---	---	---	---	---	---	No Criteria	No Criteria	---
Phosphorous, Orthophosphate	---	No Criteria	No Criteria	---	---	---	---	---	---	---	No Criteria	No Criteria	---
Hardness (as CaCO3)	---	No Criteria	No Criteria	---	---	---	---	---	---	---	No Criteria	No Criteria	---
Oil and Grease, SGT	---	No Criteria	No Criteria	---	---	---	---	---	---	---	No Criteria	No Criteria	---
α-terpineol	---	No Criteria	No Criteria	---	---	---	---	---	---	---	No Criteria	No Criteria	---
Benzoic Acid	---	No Criteria	No Criteria	---	---	---	---	---	---	---	No Criteria	No Criteria	---
Barium	---	No Criteria	No Criteria	---	89.64	---	---	---	---	---	No Criteria	No Criteria	---
Calcium	---	No Criteria	No Criteria	---	---	---	---	---	---	---	No Criteria	No Criteria	---
Cobalt	---	No Criteria	No Criteria	---	---	---	---	---	---	---	No Criteria	No Criteria	---
Magnesium (mg/L)	---	No Criteria	No Criteria	---	---	---	---	1300	---	---	No Criteria	No Criteria	---
Vanadium	---	No Criteria	No Criteria	---	---	---	---	---	---	---	No Criteria	No Criteria	---
Tin	---	No Criteria	No Criteria	---	---	---	---	---	---	---	No Criteria	No Criteria	---
Methyl tert-butyl ether	---	No Criteria	No Criteria	---	2.988	---	---	---	---	---	No Criteria	No Criteria	---
Sulfides	---	No Criteria	No Criteria	---	---	---	---	---	---	---	No Criteria	No Criteria	---
Delta BHC	---	No Criteria	No Criteria	---	---	---	---	---	---	---	No Criteria	No Criteria	---
Chloroethane	---	No Criteria	No Criteria	---	0	---	---	---	---	---	No Criteria	No Criteria	---
2-Chloro-ethylvinyl ether	---	No Criteria	No Criteria	---	---	---	---	---	---	---	No Criteria	No Criteria	---
1,1-Dichloroethane	---	No Criteria	No Criteria	---	0	---	---	---	---	---	No Criteria	No Criteria	---
p-chloro-m-cresol	---	No Criteria	No Criteria	---	---	---	---	---	---	---	No Criteria	No Criteria	---
4,6-Dinitro-o-cresol	---	No Criteria	No Criteria	---	---	---	---	---	---	---	No Criteria	No Criteria	---
2-Nitrophenol	---	No Criteria	No Criteria	---	---	---	---	---	---	---	No Criteria	No Criteria	---
Acenaphthylene	---	No Criteria	No Criteria	---	---	---	---	---	---	---	No Criteria	No Criteria	---
Benzo(a)anthracene	---	No Criteria	No Criteria	---	---	---	---	---	---	---	No Criteria	No Criteria	---
Benzo(a)pyrene	---	No Criteria	No Criteria	---	0	---	---	---	---	---	No Criteria	No Criteria	---
3,4 Benzo-Fluoranthene	---	No Criteria	No Criteria	---	---	---	---	---	---	---	No Criteria	No Criteria	---
Benzo(ghi)Perylene	---	No Criteria	No Criteria	---	---	---	---	---	---	---	No Criteria	No Criteria	---
Benzo(k)Fluoranthene	---	No Criteria	No Criteria	---	---	---	---	---	---	---	No Criteria	No Criteria	---
Bis (2-Chloroethoxy) Methane	---	No Criteria	No Criteria	---	---	---	---	---	---	---	No Criteria	No Criteria	---
4-Chlorophenyl Phenyl Ether	---	No Criteria	No Criteria	---	---	---	---	---	---	---	No Criteria	No Criteria	---
Chrysene	---	No Criteria	No Criteria	---	---	---	---	---	---	---	No Criteria	No Criteria	---
Di-n-Octyl Phthalate	---	No Criteria	No Criteria	---	---	---	---	---	---	---	No Criteria	No Criteria	---
Dibenzo(a,h)anthracene	---	No Criteria	No Criteria	---	---	---	---	---	---	---	No Criteria	No Criteria	---
2,6-Dinitrotoluene	---	No Criteria	No Criteria	---	---	---	---	---	---	---	No Criteria	No Criteria	---
Total Phenolic Compounds	---	No Criteria	No Criteria	---	---	---	---	---	---	---	No Criteria	No Criteria	---
Indeno(1,2,3-cd) pyrene	---	No Criteria	No Criteria	---	---	---	---	---	---	---	No Criteria	No Criteria	---
Phenanthrene	---	No Criteria	No Criteria	---	---	---	---	---	---	---	No Criteria	No Criteria	---

ATTACHMENT E
CORMIX/WQMAP MODELING RESULTS

3. Outfall Relocation Analysis

The present analysis evaluated the SPC discharge at the proposed new location within Sakonnet harbor utilizing the present diffuser design. There were two different analysis procedures, CORMIX modeling for characterizing the steady state near field plume dilution characteristics and a WQMAP modeling simulation to determine the transient long term far field impacts of the discharge.

3.1. CORMIX

CORMIX is a plume model that solves a set of analytical equations to estimate the steady state shape, extent and dilution of an effluent plume from a constant discharge. In order to understand the potential radius required to achieve the dilution necessary to meet water quality standards, multiple CORMIX runs were simulated covering a range of possible conditions. CORMIX contains a set of algorithms, and chooses the appropriate solution based on the set of input parameters and furthermore may invoke multiple solution algorithms to estimate the plume extent. Experience with CORMIX has shown that when evaluating the output from a simulation, the results are sometimes discontinuous between the CORMIX near field and CORMIX far field solution; assessment of these results has shown that the CORMIX far field solution is not typically suitable for non-uniform environments (variable flow, variable bathymetry) and therefore results that were determined by the far field algorithm were disregarded.

CORMIX provides predictions of discharge plume location and size along with the plume dilution factor at each location. CORMIX model runs were set up to reflect a conservative estimate of both the effluent discharge and ambient conditions. Specifically the scenarios included:

- the maximum discharge rate (based on maximum pump rate)
- a conservative estimate of density differential between the discharge and the receiving water (3 kg/m^3)
- the diffuser configuration (a 3 m block with seven 1 ½ inch diameter vertical, upwards facing ports located 0.5 m above the bottom in 2.3 m waters relative to mean lower water [MLW])
- a range of ambient current conditions (0.02 through 0.5 m/s).

The density differential of 3 kg/m^3 was chosen based on RIDEMs comments as it represents a conservative value. The density differential was observed to reach up to 25 kg/m^3, and the differential of 3 kg/m^3 represents the 2^{nd} percentile value, meaning it is exceeded 98% of the time. The smaller the density difference, the less the mixing and dilution is expected for the effluent plume, making this a conservative value. It should be noted that the proposed diffuser has a “duck bill” nozzle, such that when the RO plant is not discharging, the rubberized nozzle closes in around the ports to prevent the influx of seawater and entrained marine debris. This feature does not affect any of the assumptions or results of the CORMIX analysis.

RIDEM also requested an evaluation of the SPC discharge with respect to the EPAs recommended criteria based on the Technical Support Document for Water Quality Based Toxics Control. This

document suggest two different formulations for determining the mixing zone radius, illustrated in Equations 1 and 2 below, where the more stringent of the two is to be used. RIDEM stated that the acute limit would be adjusted based on the dilution factor at the smallest mixing zone radius from these equations. Based on the diameter of the discharge ports and the water column depth, Equation 1 yields a radius of 4.46 m and Equation 2 yields a radius of 11.43 m and as such the acute mixing zone radius is 4.46 m.

Equation 1: $$Radius = 50 * \sqrt{7 * \frac{\pi}{4} D^2}, where\ D\ is\ 0.0381m = 4.46\ m$$

Equation 2: $$Radius = 5 * H, where\ H\ is\ 2.28 = 11.43\ m$$

A set of CORMIX runs of the proposed diffuser for various ambient currents at the density differential of 3 kg/m^3 were run and the dilution factors predicted, at the acute mixing zone radius, are summarized in Table 1. The dilution factor at a distance of 4.46 m from the discharge is very high (108.6) at very low velocities (0.02 m/s) after which point it decreases with increasing velocity down to 73.7 at an ambient current of 0.075 m/s, and then increases with increasing velocity to 123.6 at 0.50 m/s. The original RIDEM inquiry requested the final report focus on the CORMIX results from environmental conditions at 0.5 m/s, however the final model runs reflecting the final diffuser configuration showed that simulations at lower speeds were more conservative resulting in less dilution as a function of distance and therefore a range of ambient current speeds are presented here with the assumption that the most conservative case in terms of dilution factor will be used to determine permit limits. The trend of the dilution factor mirrors the trend in the difference between plume centerline velocity and the ambient velocity. Larger differences between the plume centerline and the ambient velocity result in a larger potential for entrainment and associated dilution. The lowest dilution factor at the acute mixing zone of 4.46 m is 73.7, which occurs at an ambient velocity of 0.075 m/s.

Table 1 Summary of CORMIX Runs.

Ambient Current	Description	Overall Flow Rate	Port Diameter	Density Difference	Dilution Factor at 4.46 m	Difference in Plume Centerline Velocity from Ambient
(m/s)		gpm	m	kg/m3		m/s
0.020	(7) port diffuser	6.5	0.0381	3	108.6	0.006
0.050	(7) port diffuser	6.5	0.0381	3	78.2	0.001
0.075	(7) port diffuser	6.5	0.0381	3	73.7	0.000
0.100	(7) port diffuser	6.5	0.0381	3	80.1	-0.001
0.200	(7) port diffuser	6.5	0.0381	3	94.9	-0.003
0.500	(7) port diffuser	6.5	0.0381	3	123.6	-0.006

The acute permit limit is to be set based on the lowest dilution factor at the acute mixing zone radius and the water quality standard, taking into account the background concentrations. The background concentrations within the harbor area were assumed to be 1.0 ug/L based on values documented for the Sakonnet River in the Town of Portsmouth, RI Wastewater Facilities Plan (Woodard and Curran 2009). The acute and chronic water quality criteria are summarized in Table 2, along with the background concentration and calculated allowable plume excess concentration (over background). Using the dilution factor of 73.7 at the mixing zone radius, it is assumed that the present permit will be limited to an acute discharge limit of 4.8 ug/L * 73.7 = 353 ug/L.

Table 2 Summary of Acute and Chronic Water Quality Criteria.

Condition	WQ Standard	Ambient Conc.	Allowable Plume Excess Concentration over Ambient
	ug/L	ug/L	ug/L
Chronic	3.7	1	2.7
Acute	5.8	1	4.8

Assuming no change to the chronic permit limit concentration of 218 ug/L, the dilution factor required to achieve both the permit limit and the max observed chronic concentrations are summarized in Table 3. The CORMIX runs were evaluated to determine the distance required to achieve the necessary dilution to satisfy the water quality criteria for both permit and maximum observed chronic discharge. These are summarized for a range of ambient currents in Table 4, as can be seen from this table the largest extent of concentrations above the chronic water quality criteria based on chronic permit and maximum observed concentrations are 5.12 m and 2.12 m respectively.

Table 3 Summary of necessary chronic dilution factor required to meet chronic water quality criteria for permit and observed conditions.

Condition	Case	Effluent Total Copper Conc.	WQ Standard	Ambient Conc.	Allowable Plume Excess Concentration over Ambient	Dilution Factor Required
		ug/L	ug/L	ug/L	ug/L	-
Chronic	2009 Permit Limit	218	3.7	1	2.7	81
Chronic	Max Observed	131	3.7	1	2.7	50

Table 4 Summary of CORMIX predictions of distance to achieve various dilution factors with respect to chronic criteria.

Ambient Current	Description	Overall Flow Rate	Pipe/Port Diameter	Density Difference	Distance to Achieve 81:1	Distance to Achieve 50:1
(m/s)		gpm	m	kg/m3	m	m
0.020	(7) port diffuser	6.5	0.0381	3	2.98	1.51
0.050	(7) port diffuser	6.5	0.0381	3	4.67	2.42
0.075	(7) port diffuser	6.5	0.0381	3	5.12	2.51
0.100	(7) port diffuser	6.5	0.0381	3	4.53	2.22
0.200	(7) port diffuser	6.5	0.0381	3	3.46	1.6
0.500	(7) port diffuser	6.5	0.0381	3	0.95	2.21

3.2. WQMAP

As previously stated CORMIX is a tool suitable for evaluating a steady state discharge under steady state environmental conditions. The major difference between the previous discharge permit and the current application is that the proposed location of the discharge pipe is within the harbor as opposed to the previous location outside the harbor in the Sakonnet River. The discharge location change results in differences in water depth at the discharge location and differences in the ambient currents at the discharge. The currents in the river are primarily tidally driven whereas circulation in the harbor is primarily wind driven. With tidal currents, there are distinct patterns of current regimes (mean flood, mean ebb, mean slack) for which the CORMIX analysis was run, however in the harbor there is far less regularity of circulation patterns.

In order to assess the dynamic system, a 3D hydrodynamic and mass (pollutant) transport model application of the study site was developed using ASAs WQMAP modeling system. This model was used to simulate the current and circulation in the harbor and their influence on the discharge transport and dilution. The benefit of the WQMAP model is that it can simulate time varying conditions which can capture changing environmental conditions. The 3D application was set up and run assuming uniform density and temperature within the water column, as well as the effluent. This assumption is conservative as it assumes that the discharge initial mixing is not enhanced by the density differential between the effluent and receiving waters. The result is that the model predicts worst case conditions without the enhanced vertical mixing, and actual concentrations are expected to be lower since the effluent would be mixed with the entire water column.

The WQMAP simulations were used as a second evaluation point of the near field, for instance to capture times when the winds and currents shift direction and transport the plume first away but then back towards the discharge, and also were used to evaluate the potential for any buildup of pollutant and elevated concentrations as a result of constant discharge. The latter was evaluated with respect to the Antidegradation water quality criteria which is an evaluation of the discharge with respect to the assimilative capacity of the receiving water, i.e. the ability to accommodate the discharge while not significantly changing the ambient conditions of the receiving water.

The WQMAP modeling system contains a hydrodynamic model (BFHYDRO) and a mass transport model (BFMASS) in a map based graphical user interface. The hydrodynamic model application was forced with environmental conditions to generate time varying currents within the model gridded domain. Subsequently the currents were used as input to the mass transport model to simulate the transport of the discharge. Mass transport simulations were run simulating typical loading patterns based on operational procedures of the plant. A unit load was modeled, which was scaled in the model domain to reflect either acute or chronic permit or observed loads. These results were then evaluated against the appropriate criteria.

3.2.1. Hydrodynamic Model Application

While CORMIX is well suited for receiving waters with consistent conditions, the shallow Sakonnet Harbor has primarily wind driven currents which are less consistent and prone to periods that are less

dynamic during periods of low winds. In order to better understand the fate of the pollutants subsequent to initial dilution, a dynamic, time-dependent model application was developed for a typical summer period to simulate such conditions. A typical summer month was chosen for this study since the summer season is characterized by weaker winds which results in weaker wind driven currents. The model was applied and qualitatively verified based on previous studies in the area.

Previous Hydrodynamic Studies

The Army Core of Engineers (ACOE) had previously evaluated the area to determine the impacts of a breakwater outside the harbor entrance. The ACOE study included a field program as well as a model application of the study area.

The field program gathered current measurements at three different locations within the harbor over a 27 day period in February 1979; one close to the club facility and two near the harbor entrance. At the location near the club the mean currents ranged from 0.01 to 0.08 knots (0.5 -4.1 cm/s) and near the harbor entrance they ranged from 0.03 - 0.15 knots (1.5 – 7.7 cm/s). There was a note however that nearly 80% of the time the currents were below the instrumentation threshold 0.06 knots (3.1 cm/s). Figure 6 illustrates the time series of observed currents at Sakonnet Harbor Mooring 1, located near the facility as shown in Figure 5. From this figure it can be seen that at this location the currents range from 0.0 – 0.25 knots (0 -12.6 cm/s). Note that the decrease in observed current speeds beginning on February 17th was due to ice cover in the harbor which continued through the remainder of the field program.

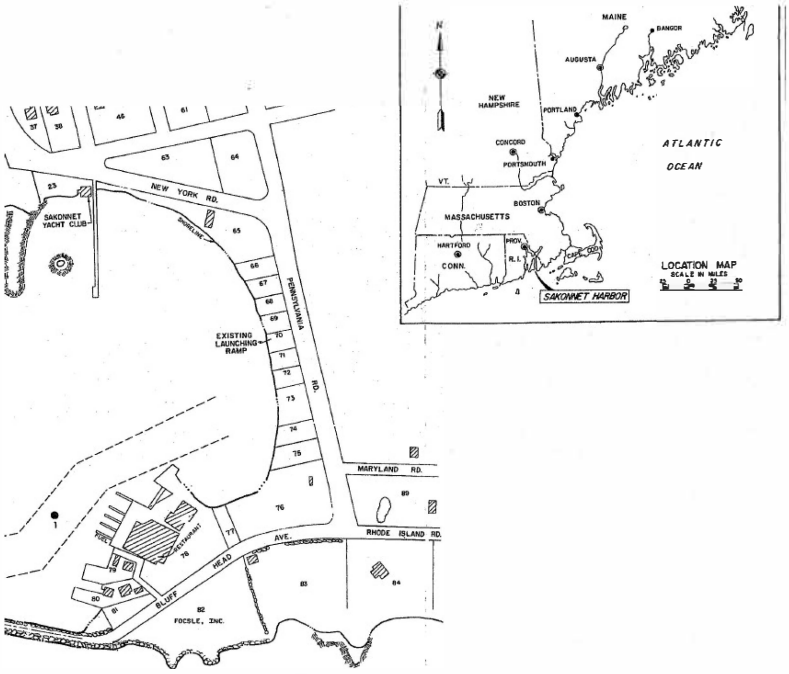


Figure 5 Illustration of ACOE Mooring 1

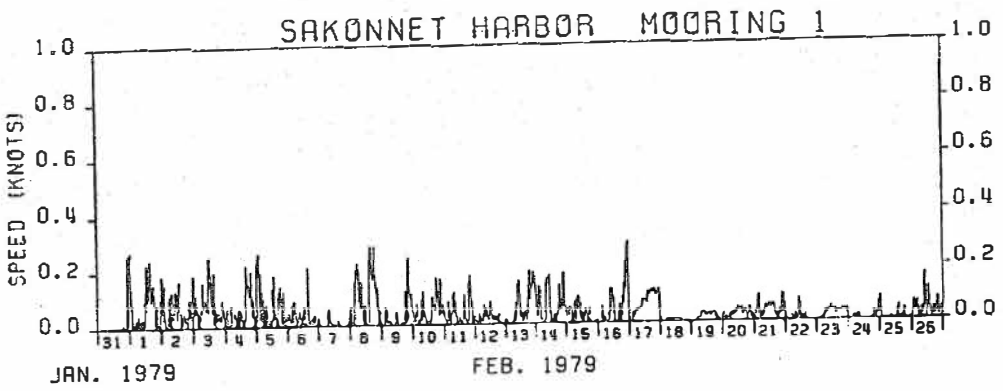


Figure 6 Time series of observed currents from ACOE study at ACOE Mooring 1

The ACOE study found that the currents within the harbor were very low and they were highly dependent on the wind, as such the currents observed in this timeframe are representative of winter currents but the currents in the summer when the winds are weaker are expected to be lower. The study estimated that the existing harbor would flush within a day (based on the wind driven currents).

WQMAP BFHYDRO Model Application

The BFHYDRO model grid had an approximate 12 ft (4m) resolution in the lateral and had 11 layers in the vertical. Harbor depths were obtained from NOAA Navigation charts, where most of the harbor is defined as a dredged area of 6.5 ft (1.9 m) depth relative to Mean Lower Low Water. Supplemental sounding data was also provided by the client, which agreed well with the NOAA chart depths. Figure 7 shows the model grid and bathymetry. The model boundary conditions included tides and winds. The primary tidal range within the harbor had previously been observed to be approximately 1 m from both the ACOE report, and was further verified through review of a temporary tide station in place by NOAA, and as such an M2 tide with an amplitude of 0.5 m was assigned to the open boundary at the harbor entrance (also illustrated in Figure 7). The wind forcing was applied to all surface cells based on wind observations from late July –August 2007 at NOAA Newport Station 8452660; this timeframe was used since July and August are characterized by weak winds. Figure 8 illustrates a stick plot of the winds during a portion of the simulation time frame, in this figure the length of the arrow represents the wind speed and the orientation represents the direction. There is a clear period of very weak winds on July 29th, as depicted by the smaller arrows. This timeframe also captures a period where the winds change direction, which is a conservative case with respect to mass transport as the plume is not transported constantly away from the release site, but rather will be transported away then back to the area of release; it is during these periods where a greater extent of elevated water column concentrations close to the site could be expected.

The model was able to successfully recreate the wind driven response of circulation with a weak tidal component. The results queried at the approximate location of the ACOE Mooring 1 are shown in Figure 9. In this figure it can be seen that the currents range from less than 2.5 cm/s up to peaks of approximately 7.5 cm/s. This range is similar but smaller than those observed in February 1979, however likely due to weaker winds.

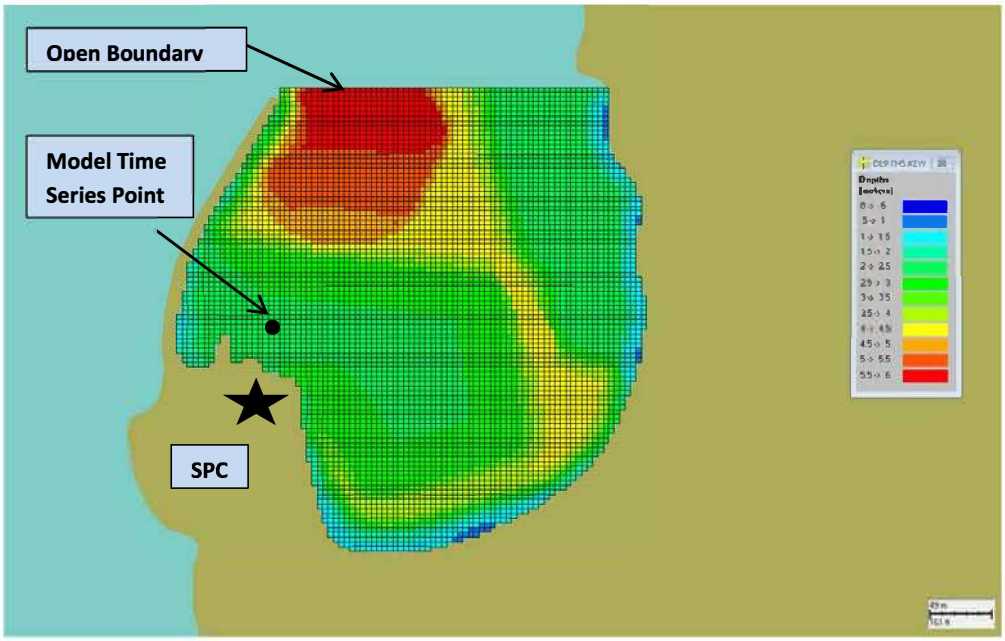


Figure 7 Model grid and bathymetry

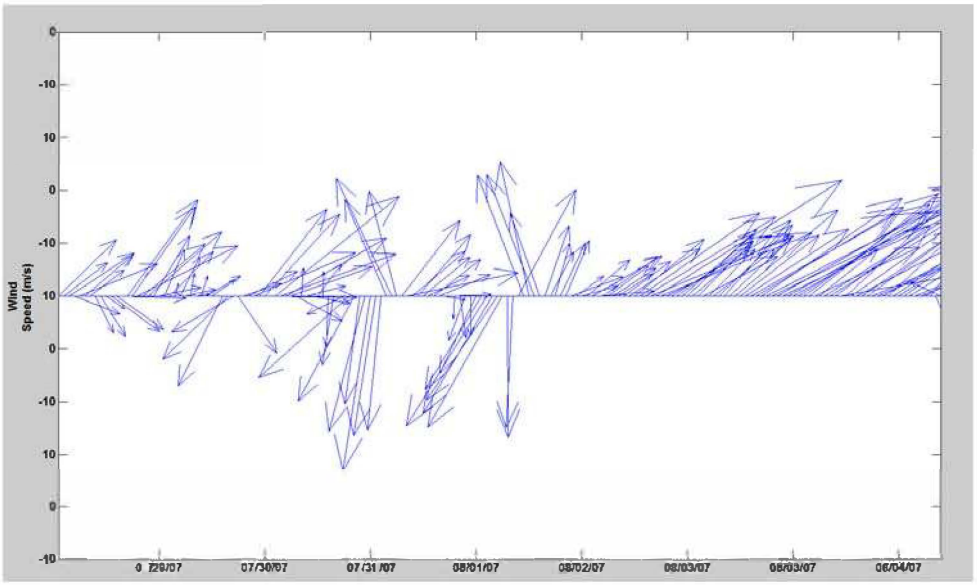


Figure 8 Stick plot of winds during portion of simulation period

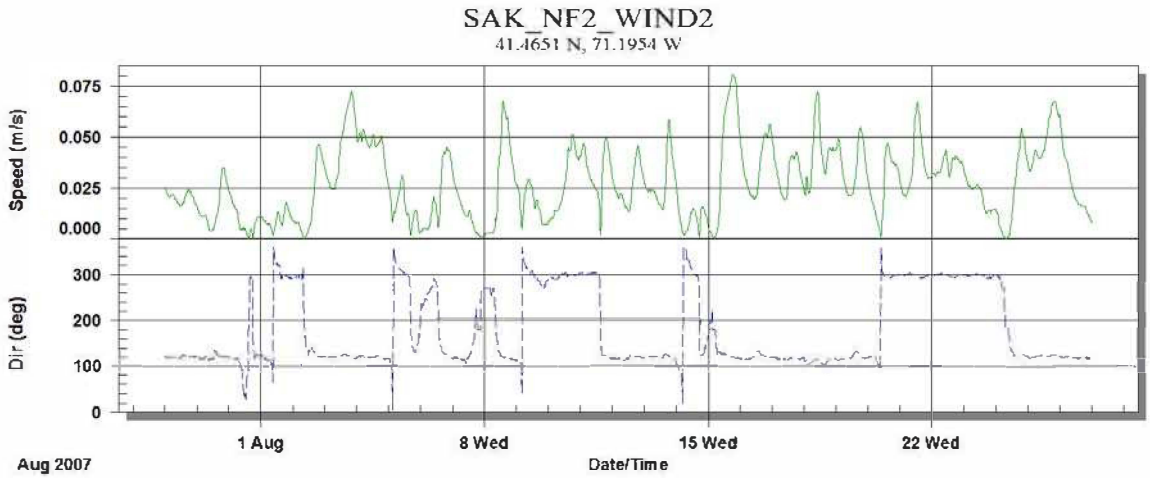


Figure 9 Model predicted current speed and direction at Model Time Series Point (similar to ACOE Mooring 1)

3.2.2. Mass Transport Model Application

The mass transport model was run simulating typical loading patterns based on operational procedures of the plant. A unit load was modeled, which was scaled in the model domain to reflect either acute or chronic, permit or observed loads. These results were then evaluated against the appropriate criteria. The model was used to predict excess concentrations, (or concentration rise above background). The model was run for two different configurations:

1. 2009 permit monthly average maximum (comparable to chronic water quality criteria)
2. maximum observed monthly (comparable to chronic water quality criteria)

Furthermore the permit and observed monthly conditions were also evaluated with respect to the Antidegradation criteria.

WQMAP BFMASS Model Application

A mass (pollutant) transport model application was set up using the BFMASS model within WQMAP. The model was applied on the same grid as the hydrodynamic model and used the simulated currents described above. The model forcing included effluent loads reflective of the different conditions with a loading pattern reflective of plant operations which at maximum operation include four separate cycles lasting 3 ¼ hours at a pump speed of 6.5 gpm with constant total copper concentration depending on the scenario as shown in Figure 11. The loads were applied at the location depicted in Figure 10 which is representative of a spot near the club under the docks; the load was applied only within one vertical layer of the cell representing the height above the diffuser assumed to be 0.5 m (1.6 ft.) above the bottom. The effluent was assumed to be neutrally buoyant in the model application, meaning that it is at the same density and temperature of the receiving water. The simulations were run for a twenty eight day period which encompassed weak winds which changed direction and magnitude.

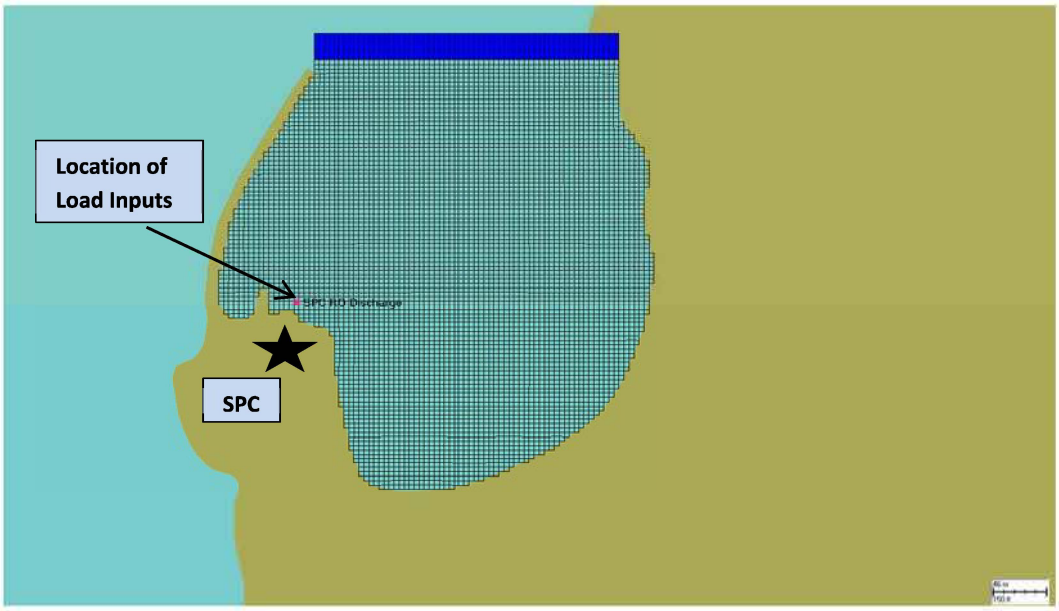


Figure 10 Illustration of location of load modeled

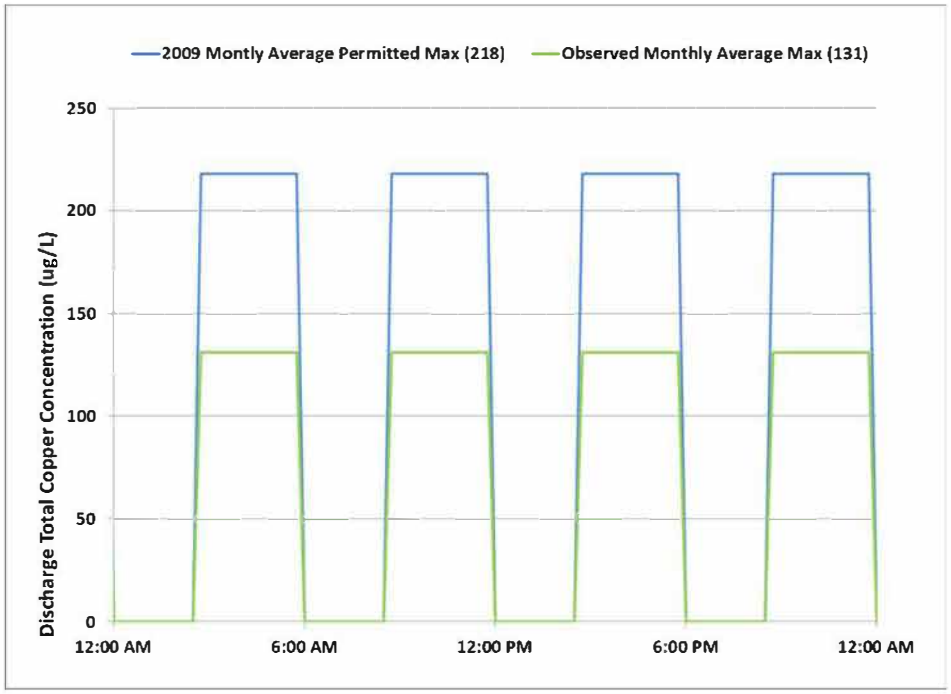


Figure 11 Loading profile

Mass Transport Model Results

The two scenarios were modeled and the results were evaluated against RIDEM chronic water quality criteria and with respect to Antidegradation criteria. In each case the results were queried to determine the extent and frequency of predicted water column concentrations over the threshold of interest.

As mentioned previously, the derived water quality limit relating to chronic criteria of total copper is 3.7 ug/L respectively. Based on the assumed 1.0 ug/L background concentration of total copper the allowable excess chronic concentration is 2.7 ug/L.

The threshold of interest for evaluation of antidegradation is calculated based on background conditions and water quality criteria. Sakonnet Harbor is designated as Class SA{b} water, indicating that it is a High Water Quality body and therefore subject to Antidegradation provisions. The guidance states that activities that consume greater than 20% of the assimilative capacity will be considered significant and will require a demonstration for approval. The assimilative capacity is described as the difference between the maximum allowable level of a pollutant and the actual maximum level of a water body. The maximum allowable chronic level of total copper is 3.7 ug/L and the assumed background levels is 1 ug/L, resulting in an assimilative capacity of 2.7 ug/L . The excess concentration that would result in 20% of the assimilative capacity therefore is 0.54 ug/L.

Figure 12 and Figure 13 illustrate the maximum extent of excess copper concentrations above the allowable limit based on chronic criteria from the 2009 permit allowable maximum monthly average loading and observed SPC discharge maximum average monthly loading, respectively. The extent of excess concentrations above the allowable based on 2009 permit allowable maximum monthly average loading is often less than the initial dilution area of 16 m^2, reflecting the load input location. The impacted area based on loads derived from the maximum observed monthly concentrations is often smaller and exceeds the threshold less frequently than the permit loads. In all cases the impacted area is confined close to the discharge location. While discharged concentrations are predicted to remain close to the bottom for this application, in reality they will rise to the surface due to the positively buoyant, density differential. The predicted concentrations therefore are conservative as they would dilute through vertical mixing within the water column. Therefore, in reality the excess concentrations would also be anticipated to be distributed throughout the water column, however at a lesser degree.

Figure 14 illustrates the maximum extent of excess copper concentrations above the derived antidegradation threshold of interest (0.54 ug/L) based on 2009 permit chronic copper concentration limit (218 ug/L). The dilution factor to meet the 20% criteria based on permit limits is 218 / 0.54 = 402. Depending on the currents, the extent is often confined to the grid cell area associated with the load source however can extend up to approximately 35 m from the source, occupying the approximate shape of a quarter circle. The shape and extent varies with the currents and is often zero reflecting those times when the plant is cycled off. Figure 15 illustrates the maximum extent of excess copper concentrations above the derived antidegradation threshold of interest based on the maximum monthly average observed concentrations (131 ug/L). The dilution factor to meet the 20% criteria based on the observed maximum is 131/0.54 = 243. The maximum extent of concentrations over the threshold

extends approximately 25 m from the source. The surface area and volume of Sakonnet Harbor is approximately 101,730 m^2 320,400 m^3 respectively. The maximum volume of water anticipated to consume 20% of the assimilative capacity is less than 2500 m^3, which is less than 1% of the harbor volume.

It should be noted that this maximum extent does not occur continuously during the day, but rather is periodic, based on cyclical loading reflecting plant operations and a daily volume flow at the maximum allowable permitted condition. Furthermore to put the discharge in perspective, the tide range is approximately 1 m, and the associated tidal prism approximately 101,730 m^3, the tidal prism refers to the amount of water exchanged during a tidal cycle based on the rise and fall of the tides. The permitted daily maximum volume of discharge is 5,000 gallons (19 m^3) which is 0.01% of the tidal prism; since the basin is not constantly uniformly mixed the exchange of water does not always dilute and transport the discharge immediately however the large potential for dilution and transport is evident.

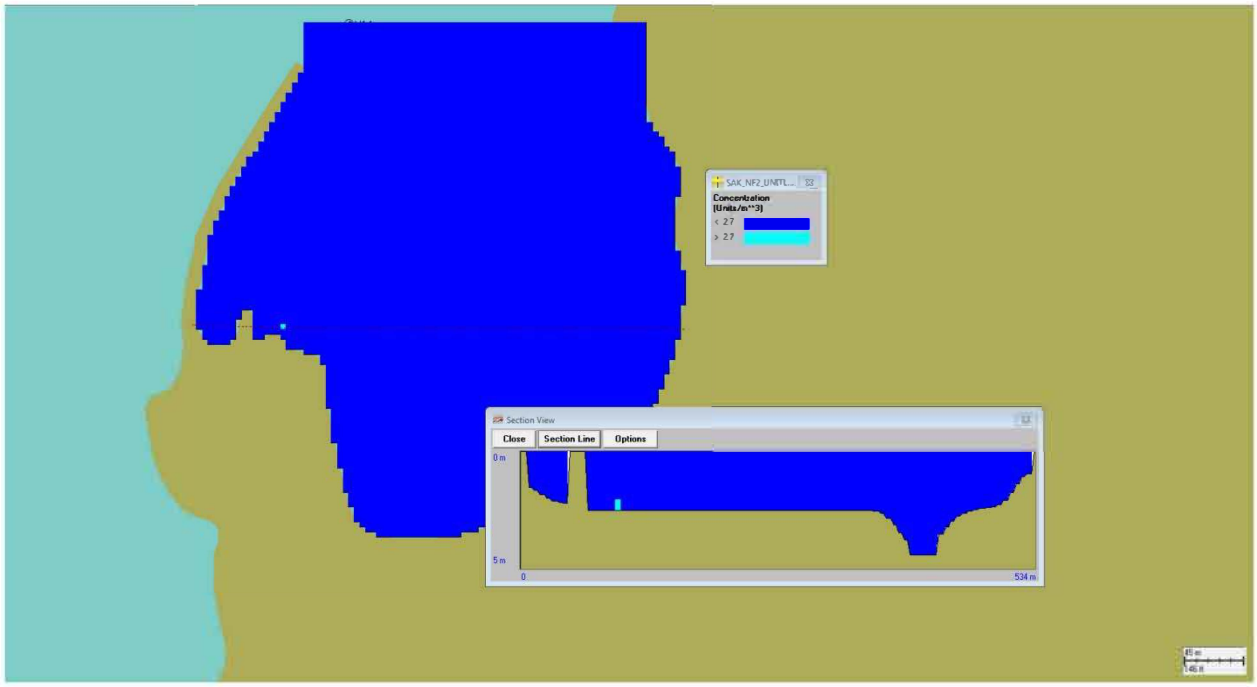


Figure 12 Illustration of maximum extent of excess concentration associated with loads based on 2009 permit maximum monthly averaged concentrations and shown with respect to chronic water quality allowable excess concentration

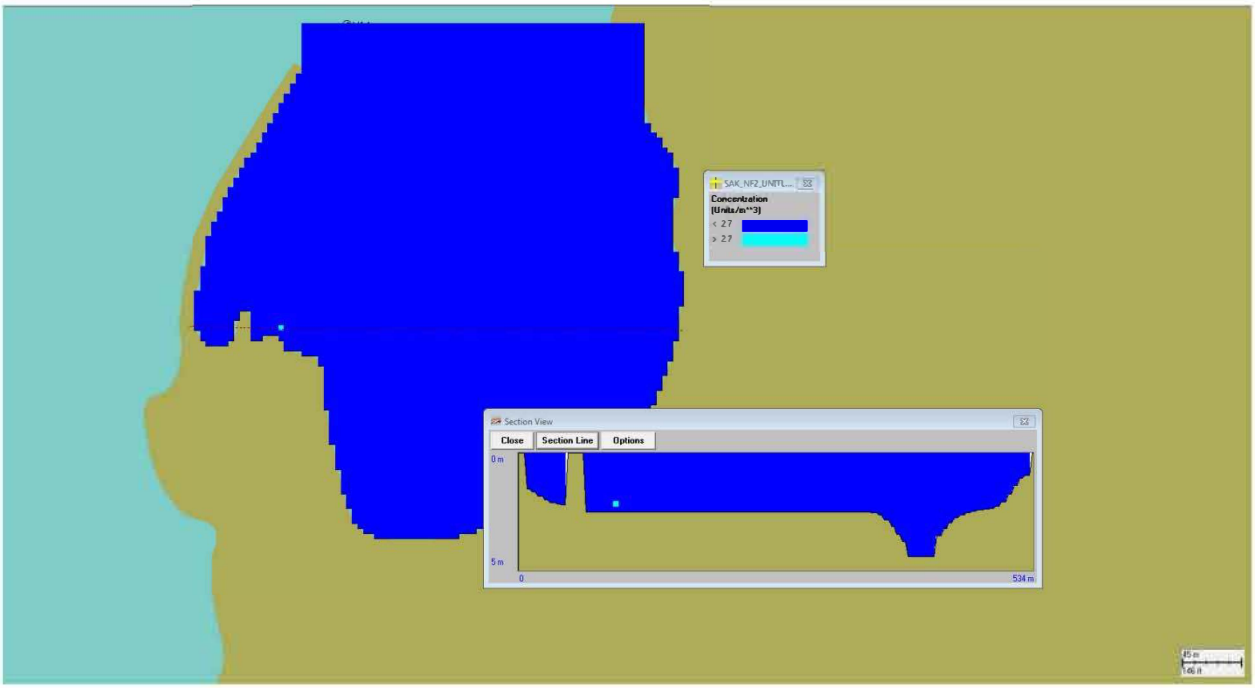


Figure 13 Illustration of maximum extent of excess concentration associated with loads based on observed maximum monthly averaged concentrations and shown with respect to chronic water quality allowable excess concentration

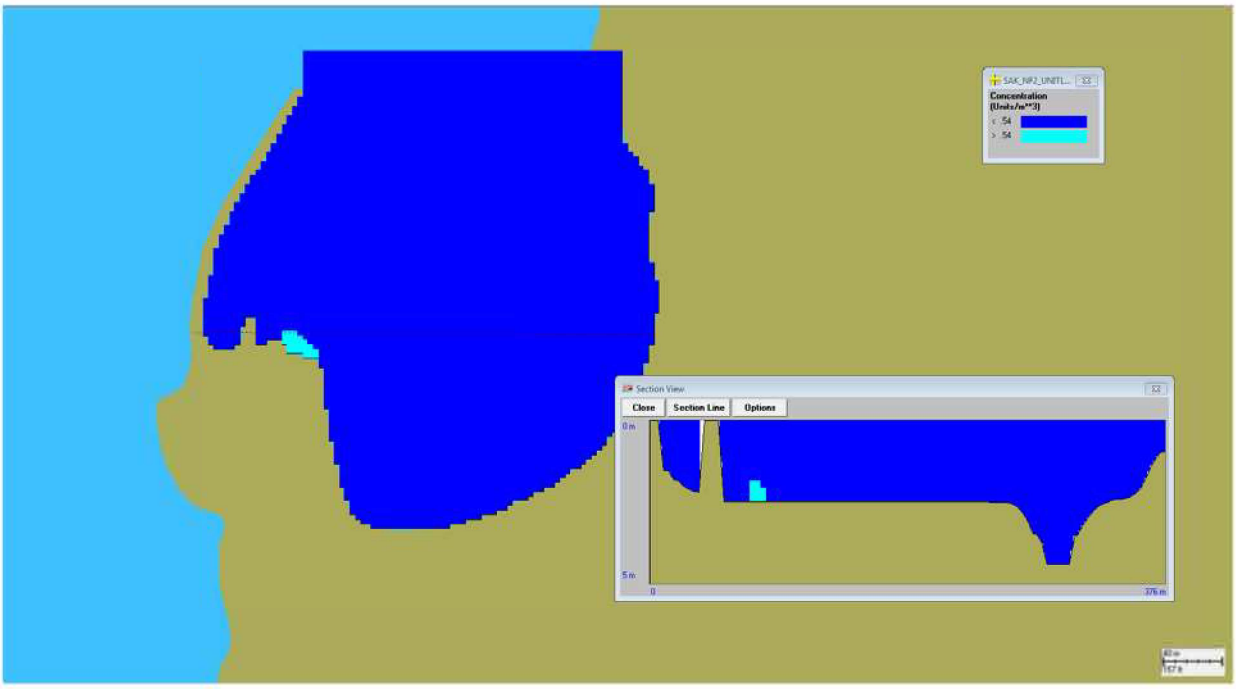


Figure 14 Illustration of maximum extent of excess concentration associated with loads based on permit maximum monthly averaged concentrations and shown with respect to antidegradation threshold of interest (20% assimilative capacity).

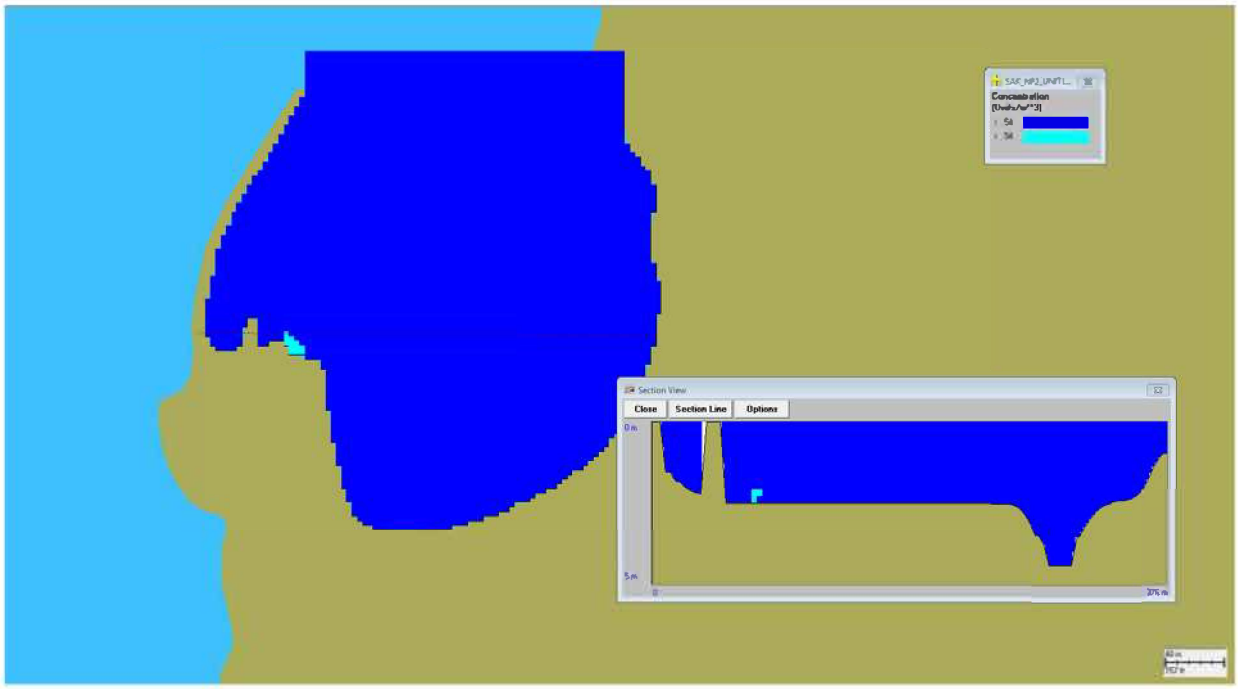


Figure 15 Illustration of maximum extent of excess concentration associated with loads based on observed maximum monthly averaged concentrations and shown with respect to antidegradation threshold of interest (20% assimilative capacity).

ATTACHMENT F
WELL WATER ANALYTICAL RESULTS 2008-2020

PWS #	PWS NAME	DESCRIPTION_TEXT	DATE	SAMPLE #	NAME	CODE	LESS_THAN_IND	DETECTN_LIMIT_NUM	DETECTN_LIM_UOM_CD	CONCENTRATION_MSR	UOM_CODE	COLLECTION_ADDRESS	COMMENT_TEXT
RI2980397	SAKONNET POINT CLUB		14-Aug-08	0808-14525-001_SOC	1,2-DIBROMO-3-CHLOROPROPANE	2931	N	0.02	UG/L	0.02	UG/L		WELL 1 (EDB & DBCP analyzed by RIAL, entered results w/ those from subcontractor MWH lab)
RI2980397	SAKONNET POINT CLUB	DRILLED WELL # 2A	22-Oct-13	L1321419_IOC	ANTIMONY, TOTAL	1074	N	0.0001	MG/L	0.0007	MG/L	WELL 2A	Anaylzed by Alpha Analytical RI lab cert. LAO00299 (Used method 6020A for Antimony, Thallium, Beryllium and method 1632A for Arsenic for same reason)
RI2980397	SAKONNET POINT CLUB		23-Jun-08	320204_IOC	BARIUM	1010	N	0.03	MG/L	0			WELL 1 (ANTIMONY REPORTED AS <0.02 MG/L NOT ACCEPTABLE RESULT DUE TO INTERFERENCE W/SODIUM) (THALLIUM REPORTED AS <0.01 MG/L NOT ACCEPTABLE RESULT DUE TO INTERFERENCE W/SODIUM).RESAMPLE USING METHOD 200.9
RI2980397	SAKONNET POINT CLUB		23-Jun-08	320205_IOC	BARIUM	1010	N	0.005	MG/L	0.036	MG/L		WELL 2 (ANTIMONY REPORTED AS <0.02 MG/L NOT ACCEPTABLE RESULT DUE TO INTERFERENCE W/SODIUM) (THALLIUM REPORTED AS <0.01 MG/L NOT ACCEPTABLE RESULT DUE TO INTERFERENCE W/SODIUM).RESAMPLE USING METHOD 200.9
RI2980397	SAKONNET POINT CLUB		23-Jun-08	320201_TO12	CHLOROFORM	2941	N	0.5	UG/L	0.8	UG/L		WELL 2
RI2980397	SAKONNET POINT CLUB	DRILLED WELL # 2A	20-Sep-13	1310-21955-001_WL21	FLUORIDE	1025	N	0.06		5	MG/L	DRILLED WELL # 2A	(WELL NOT ON LINE-SPECIAL NOT FOR COMPLIANCE)
RI2980397	SAKONNET POINT CLUB	DRILLED WELL # 2A	22-Oct-13	1303916-01_WL21	FLUORIDE	1025	N	0		0.24	MG/L		WELL 2A
RI2980397	SAKONNET POINT CLUB		23-Jun-08	320201_TO12	METHYL TERT-BUTYL ETHER	2251	N	0.5	UG/L	0.6	UG/L		WELL 2
RI2980397	SAKONNET POINT CLUB		14-Aug-08	320554_TO12	METHYL TERT-BUTYL ETHER	2251	N	0.5	UG/L	1.2	UG/L		WELL 2
RI2980397	SAKONNET POINT CLUB		28-Jan-09	321524_TO12	METHYL TERT-BUTYL ETHER	2251	N	0.5	UG/L	0.66	UG/L		WELL 2
RI2980397	SAKONNET POINT CLUB		23-Jun-08	320200_TO12	NAPHTHALENE	2248	N	0.5	UG/L	5.6	UG/L		WELL 1
RI2980397	SAKONNET POINT CLUB		14-Aug-08	320555_TO12	NAPHTHALENE	2248	N	0.5	UG/L	9.7	UG/L		WELL 1
RI2980397	SAKONNET POINT CLUB		06-Nov-08	321058_TO12	NAPHTHALENE	2248	N	0.5	UG/L	3.3	UG/L		
RI2980397	SAKONNET POINT CLUB		28-Jan-09	321523_TO12	NAPHTHALENE	2248	N	0.5	UG/L	7.8	UG/L		WELL 1
RI2980397	SAKONNET POINT CLUB		09-Apr-09	E904615-1_TO12	NAPHTHALENE	2248	N	0.5	UG/L	7.3	UG/L		WELL 1
RI2980397	SAKONNET POINT CLUB		16-Jul-09	E907A73-5_TO12	NAPHTHALENE	2248	N	0.5	UG/L	8.1	UG/L		WELL 1
RI2980397	SAKONNET POINT CLUB		14-Aug-08	320553_WL16_WL71	NITRATE	1040	N	0.01	MG/L	0.07	MG/L		FOOD PREP SINK ENTRY POINT
RI2980397	SAKONNET POINT CLUB		06-Nov-08	321056_WL16WL71WL29	NITRATE	1040	N	0.01	MG/L	0.09	MG/L		FOOD PREP SINK
RI2980397	SAKONNET POINT CLUB		28-Jan-09	321522_WL16_WL71	NITRATE	1040	N	0.1	MG/L	0.11	MG/L		FOOD PREP SINK

RI2980397	SAKONNET POINT CLUB		23-Dec-10	1012-25228-001_WL16	NITRATE	1040	N	0.01	MG/L	0.02	MG/L		DISTRIBUTION: FOOD PREP SINK
RI2980397	SAKONNET POINT CLUB		31-Mar-11	1103-05878-001_WL16	NITRATE	1040	N	0.01	MG/L	0.02	MG/L		DISTRIBUTION: FOOD PREP SINK
RI2980397	SAKONNET POINT CLUB		08-Jun-11	1106-10820-001_WL16	NITRATE	1040	N	0.01	MG/L	0.06	MG/L		FOOD PREP SINK (WATER REPRESENTATIVE OF BULK WATER DELIVERY)
RI2980397	SAKONNET POINT CLUB		13-Oct-11	1110-20034-001_WL16	NITRATE	1040	N	0.01	MG/L	0.02	MG/L		FOOD PREP SINK
RI2980397	SAKONNET POINT CLUB		23-Jan-12	1201-01446-001_WL16	NITRATE	1040	N	0.01	MG/L	0.06	MG/L		FOOD PREP SINK
RI2980397	SAKONNET POINT CLUB		17-May-12	1205-09981-001_WL16	NITRATE	1040	N	0.01	MG/L	0.01	MG/L	FOOD PREP SINK	
RI2980397	SAKONNET POINT CLUB		24-Jul-12	1207-15144-001_WL16	NITRATE	1040	N	0.01	MG/L	0.01	MG/L	FOOD PREP SINK	
RI2980397	SAKONNET POINT CLUB		05-Oct-12	1210-20921-001_WL16	NITRATE	1040	N	0.01	MG/L	0.02	MG/L	FOOD PREP SINK	
RI2980397	SAKONNET POINT CLUB		07-Feb-13	1302-02769-001_WL16	NITRATE	1040	N	0.01	MG/L	0.12	MG/L	FOOD PREP SINK	
RI2980397	SAKONNET POINT CLUB		18-Apr-13	1304-08120-002_WL16	NITRATE	1040	N	0.01	MG/L	0.18	MG/L	FOOD PREP SINK	
RI2980397	SAKONNET POINT CLUB		16-Aug-13	1308-17595-002_WL16	NITRATE	1040	N	0.05	MG/L	0.08	MG/L	FOOD PREP SINK	
RI2980397	SAKONNET POINT CLUB		05-May-14	1405-09886-004_WL16	NITRATE	1040	N	0.05	MG/L	0.07	MG/L	FOOD PREP SINK	
RI2980397	SAKONNET POINT CLUB		06-Oct-16	C1006-19B_WL16_WL71	NITRATE	1040	N	0.03	MG/L	0.66	MG/L	TREATMENT PLANT	Treatment Plant.
RI2980397	SAKONNET POINT CLUB		03-Feb-17	D0203-32D_WL16	NITRATE	1040	N	0.03	MG/L	0.05	MG/L	DISTRIBUTION FOOD PREP	
RI2980397	SAKONNET POINT CLUB		23-Jun-08	320204_IOC	NITRATE	1040	N	0.01	MG/L	0.07	MG/L		WELL 1 (ANTIMONY REPORTED AS <0.02 MG/L NOT ACCEPTABLE RESULT DUE TO INTERFERENCE W/SODIUM) (THALLIUM REPORTED AS <0.01 MG/L NOT ACCEPTABLE RESULT DUE TO INTERFERENCE W/SODIUM).RESAMPLE USING METHOD 200.9
RI2980397	SAKONNET POINT CLUB		09-Apr-09	E904615-1_WL16_WL71	NITRATE	1040	N	0.1	MG/L	0.25	MG/L		WELL 1
RI2980397	SAKONNET POINT CLUB		19-May-10	E005C67-1_WL16	NITRATE	1040	N	0.017	MG/L	0.12	MG/L		WELL 1
RI2980397	SAKONNET POINT CLUB		25-Aug-11	1108-16571-001_WL16	NITRATE	1040	N	0.01	MG/L	0.08	MG/L		WELL 1
RI2980397	SAKONNET POINT CLUB		18-Jun-12	1206-12272-001_WL16	NITRATE	1040	N	0.01	MG/L	0.02	MG/L	DRILLED WELL # 1	
RI2980397	SAKONNET POINT CLUB		22-May-13	E305L26-1_WL16_WL71	NITRATE	1040	N	0.017		0.065	MG/L	DRILLED WELL # 1	
RI2980397	SAKONNET POINT CLUB		05-Jun-14	1406-12146-003_WL16	NITRATE	1040	N	0.05	MG/L	0.14	MG/L	WELL 1	
RI2980397	SAKONNET POINT CLUB		09-Jul-15	1507-14356-002_WL16_	NITRATE	1040	N	0.05	MG/L	0.59	MG/L	DRILLED WELL 1	
RI2980397	SAKONNET POINT CLUB		23-Jun-08	320205_IOC	NITRATE	1040	N	0.01	MG/L	0.17	MG/L		WELL 2 (ANTIMONY REPORTED AS <0.02 MG/L NOT ACCEPTABLE RESULT DUE TO INTERFERENCE W/SODIUM) (THALLIUM REPORTED AS <0.01 MG/L NOT ACCEPTABLE RESULT DUE TO INTERFERENCE W/SODIUM).RESAMPLE USING METHOD 200.9
RI2980397	SAKONNET POINT CLUB		09-Apr-09	E904615-2_WL16_WL71	NITRATE	1040	N	0.1	MG/L	0.73	MG/L		WELL 2

RI2980397	SAKONNET POINT CLUB		19-May-10	E005C67-2_WL16	NITRATE	1040	N	0.017	MG/L	0.41	MG/L		WELL 2
RI2980397	SAKONNET POINT CLUB		22-Jun-11	1106-11913-001_WL16	NITRATE	1040	N	0.01	MG/L	0.19	MG/L		WELL #2
RI2980397	SAKONNET POINT CLUB		22-May-13	E305L26-2_WL16_WL71	NITRATE	1040	N	0.017	MG/L	0.6	MG/L	DRILLED WELL # 2	
RI2980397	SAKONNET POINT CLUB	DRILLED WELL # 2A	17-Jan-14	1401-01175-001_WL16	NITRATE	1040	N	0.01	MG/L	0.01	MG/L	WELL 2A MAKE-UP FOR MISSED 2013 RESTART OF MODIFIED SOURCE	
RI2980397	SAKONNET POINT CLUB	DRILLED WELL # 2A	05-Jun-14	1406-12146-002_WL16	NITRATE	1040	N	0.05	MG/L	0.33	MG/L	WELL 2A	
RI2980397	SAKONNET POINT CLUB	DRILLED WELL # 2A	17-Jan-14	1401-01175-001_WL16	NITRITE	1041	N	0.01	MG/L	0.02	MG/L	WELL 2A MAKE-UP FOR MISSED 2013 RESTART OF MODIFIED SOURCE	
RI2980397	SAKONNET POINT CLUB		23-Jun-08	320208_WL71	SODIUM	1052	N	3	MG/L	95.5	MG/L		FOOD PREP SINK
RI2980397	SAKONNET POINT CLUB		14-Aug-08	320553_WL16_WL71	SODIUM	1052	N	3	MG/L	110	MG/L		FOOD PREP SINK ENTRY POINT
RI2980397	SAKONNET POINT CLUB		06-Nov-08	321056_WL16WL71WL29	SODIUM	1052	N	3	MG/L	95.3	MG/L		FOOD PREP SINK
RI2980397	SAKONNET POINT CLUB		28-Jan-09	321522_WL16_WL71	SODIUM	1052	N	0.051	MG/L	92	MG/L		FOOD PREP SINK
RI2980397	SAKONNET POINT CLUB		09-Apr-09	E904615-3_WL16_WL71	SODIUM	1052	N	0.051	MG/L	99	MG/L		DISTRIBUTION FOOD PREP SINK
RI2980397	SAKONNET POINT CLUB		16-Jul-09	E907A73-2_WL16_71_29	SODIUM	1052	N	0.051	MG/L	95	MG/L		FOOD PREP SINK AFTER RO EFFLUENT & UV
RI2980397	SAKONNET POINT CLUB		09-Oct-09	E910647-2_WL16_WL71	SODIUM	1052	N	0.051	MG/L	88	MG/L		FOOD PREP SINK AFTER RO EFFLUENT & UV
RI2980397	SAKONNET POINT CLUB		11-Feb-10	E002753-1_WL16_71_29	SODIUM	1052	N	0.051	MG/L	100	MG/L		DISTRIBUTION: FOOD PREP SINK
RI2980397	SAKONNET POINT CLUB		19-May-10	E005C67-3_WL16	SODIUM	1052	N	0.051	MG/L	58	MG/L		DISTRIBUTION: FOOD PREP SINK
RI2980397	SAKONNET POINT CLUB		11-Aug-10	E008703-1_WL16	SODIUM	1052	N	0.051	MG/L	98	MG/L		DISTRIBUTION: FOOD PREP SINK
RI2980397	SAKONNET POINT CLUB		23-Dec-10	1012-25228-001_WL16	SODIUM	1052	N	3	MG/L	60	MG/L		DISTRIBUTION: FOOD PREP SINK
RI2980397	SAKONNET POINT CLUB		31-Mar-11	1103-05878-001_WL16	SODIUM	1052	N	3	MG/L	60	MG/L		DISTRIBUTION: FOOD PREP SINK
RI2980397	SAKONNET POINT CLUB		08-Jun-11	1106-10820-001_WL16	SODIUM	1052	N	3	MG/L	65	MG/L		FOOD PREP SINK (WATER REPRESENTATIVE OF BULK WATER DELIVERY)
RI2980397	SAKONNET POINT CLUB		15-Sep-11	1109-17904-002_WL16	SODIUM	1052	N	3	MG/L	65	MG/L		FOOD PREP SINK
RI2980397	SAKONNET POINT CLUB		13-Oct-11	1110-20034-001_WL16	SODIUM	1052	N	3	MG/L	72	MG/L		FOOD PREP SINK
RI2980397	SAKONNET POINT CLUB		23-Jan-12	1201-01446-001_WL16	SODIUM	1052	N	3		53	MG/L		FOOD PREP SINK
RI2980397	SAKONNET POINT CLUB		17-May-12	1205-09981-001_WL16	SODIUM	1052	N	3		57	MG/L	FOOD PREP SINK	
RI2980397	SAKONNET POINT CLUB		24-Jul-12	1207-15144-001_WL16	SODIUM	1052	N	3	MG/L	61	MG/L	FOOD PREP SINK	
RI2980397	SAKONNET POINT CLUB		05-Oct-12	1210-20921-001_WL16	SODIUM	1052	N	3	MG/L	60	MG/L	FOOD PREP SINK	
RI2980397	SAKONNET POINT CLUB		07-Feb-13	1302-02769-001_WL71	SODIUM	1052	N	3		59	MG/L	FOOD PREP SINK	
RI2980397	SAKONNET POINT CLUB		18-Apr-13	1304-08120-002_WL16	SODIUM	1052	N	3	MG/L	69	MG/L	FOOD PREP SINK	
RI2980397	SAKONNET POINT CLUB		16-Aug-13	1308-17595-002_WL16	SODIUM	1052	N	3	MG/L	64	MG/L	FOOD PREP SINK	
RI2980397	SAKONNET POINT CLUB		22-Oct-13	1310-22769-001_IOC	SODIUM	1052	N	3	MG/L	66	MG/L	REVERSE OSMOSIS SYSTEM PRODUCT WATER	
RI2980397	SAKONNET POINT CLUB		19-Dec-13	1312-27107-001_WL16	SODIUM	1052	N	3	MG/L	45	MG/L	FOOD PREP SINK	
RI2980397	SAKONNET POINT CLUB		20-Mar-14	1403-05823-001_WL16	SODIUM	1052	N	3	MG/L	45	MG/L	FOOD PREP SINK	
RI2980397	SAKONNET POINT CLUB		05-May-14	1405-09886-004_WL16	SODIUM	1052	N	3	MG/L	57	MG/L	FOOD PREP SINK	
RI2980397	SAKONNET POINT CLUB		16-Jul-14	1407-15611-004_WL16	SODIUM	1052	N	3	MG/L	52	MG/L	TREATMENT PLANT	
RI2980397	SAKONNET POINT CLUB		09-Jul-15	1507-14356-003_WL16	SODIUM	1052	N	3	MG/L	84	MG/L	TREATMENT PLANT	
RI2980397	SAKONNET POINT CLUB		06-Oct-16	C1006-19B_WL16_WL71	SODIUM	1052	N	0.5	MG/L	59.8	MG/L	TREATMENT PLANT	Treatment Plant.
RI2980397	SAKONNET POINT CLUB		03-Feb-17	D0203-32D_WL16	SODIUM	1052	N	0.5	MG/L	36.7	MG/L	DISTRIBUTION FOOD PREP	

RI2980397	SAKONNET POINT CLUB		23-Jun-08	320204_IOC	SODIUM	1052	N	300	MG/L	5620	MG/L		WELL 1 (ANTIMONY REPORTED AS <0.02 MG/L NOT ACCEPTABLE RESULT DUE TO INTERFERENCE W/SODIUM) (THALLIUM REPORTED AS <0.01 MG/L NOT ACCEPTABLE RESULT DUE TO INTERFERENCE W/SODIUM).RESAMPLE USING METHOD 200.9
RI2980397	SAKONNET POINT CLUB		09-Apr-09	E904615-1_WL16_WL71	SODIUM	1052	N	0.51	MG/L	4600	MG/L		WELL 1
RI2980397	SAKONNET POINT CLUB		19-May-10	E005C67-1_WL16	SODIUM	1052	N	0.51	MG/L	4200	MG/L		WELL 1
RI2980397	SAKONNET POINT CLUB		25-Aug-11	1108-16571-001_WL16	SODIUM	1052	N	300	MG/L	6970	MG/L		WELL 1
RI2980397	SAKONNET POINT CLUB		18-Jun-12	1206-12272-001_WL16	SODIUM	1052	N	300	MG/L	6300	MG/L	DRILLED WELL # 1	
RI2980397	SAKONNET POINT CLUB		22-May-13	E305L26-1_WL16_WL71	SODIUM	1052	N	100	MG/L	7800	MG/L	DRILLED WELL # 1	
RI2980397	SAKONNET POINT CLUB		08-May-14	1405-09886-003_WL71	SODIUM	1052	N	300		7730	MG/L	WELL 1	
RI2980397	SAKONNET POINT CLUB		09-Jul-15	1507-14356-002_WL16_	SODIUM	1052	N	300	MG/L	7740	MG/L	DRILLED WELL 1	
RI2980397	SAKONNET POINT CLUB		23-Jun-08	320205_IOC	SODIUM	1052	N	300	MG/L	4730	MG/L		WELL 2 (ANTIMONY REPORTED AS <0.02 MG/L NOT ACCEPTABLE RESULT DUE TO INTERFERENCE W/SODIUM) (THALLIUM REPORTED AS <0.01 MG/L NOT ACCEPTABLE RESULT DUE TO INTERFERENCE W/SODIUM).RESAMPLE USING METHOD 200.9
RI2980397	SAKONNET POINT CLUB		09-Apr-09	E904615-2_WL16_WL71	SODIUM	1052	N	0.51	MG/L	3600	MG/L		WELL 2
RI2980397	SAKONNET POINT CLUB		19-May-10	E005C67-2_WL16	SODIUM	1052	N	0.51	MG/L	3500	MG/L		WELL 2
RI2980397	SAKONNET POINT CLUB		22-Jun-11	1106-11913-001_WL16	SODIUM	1052	N	300	MG/L	5780	MG/L		WELL #2
RI2980397	SAKONNET POINT CLUB		18-Jun-12	1206-12272-002_WL16	SODIUM	1052	N	300	MG/L	4820	MG/L	DRILLED WELL # 2	
RI2980397	SAKONNET POINT CLUB		22-May-13	E305L26-2_WL16_WL71	SODIUM	1052	N	100	MG/L	5600	MG/L	DRILLED WELL # 2	
RI2980397	SAKONNET POINT CLUB	DRILLED WELL # 2A	08-May-14	1405-09886-002_WL71	SODIUM	1052	N	300		5900	MG/L	WELL 2A	
RI2980397	SAKONNET POINT CLUB		09-Apr-09	E904615-1_TO12	STYRENE	2996	N	0.5	UG/L	0.65	UG/L		WELL 1
RI2980397	SAKONNET POINT CLUB		11-Feb-10	E002753-1_WL16_71_29	SULFATE	1055	N	5	MG/L	16	MG/L		DISTRIBUTION: FOOD PREP SINK
RI2980397	SAKONNET POINT CLUB		08-Jun-11	1106-10820-001_WL16	SULFATE	1055	N	5	MG/L	12	MG/L		FOOD PREP SINK (WATER REPRESENTATIVE OF BULK WATER DELIVERY)
RI2980397	SAKONNET POINT CLUB		23-Jan-12	1201-01446-001_WL16	SULFATE	1055	N	5	MG/L	10	MG/L		FOOD PREP SINK
RI2980397	SAKONNET POINT CLUB		17-May-12	1205-09981-001_WL16	SULFATE	1055	N	5	MG/L	9.4	MG/L	FOOD PREP SINK	
RI2980397	SAKONNET POINT CLUB		24-Jul-12	1207-15144-001_WL16	SULFATE	1055	N	5	MG/L	9.2	MG/L	FOOD PREP SINK	
RI2980397	SAKONNET POINT CLUB		05-Oct-12	1210-20921-001_WL16	SULFATE	1055	N	5	MG/L	7.7	MG/L	FOOD PREP SINK	
RI2980397	SAKONNET POINT CLUB		07-Feb-13	1302-02769-001_WL71	SULFATE	1055	N	5	MG/L	9.1	MG/L	FOOD PREP SINK	
RI2980397	SAKONNET POINT CLUB		18-Apr-13	1304-08120-002_WL16	SULFATE	1055	N	5	MG/L	11	MG/L	FOOD PREP SINK	
RI2980397	SAKONNET POINT CLUB		09-Jul-15	1507-14356-003_WL16	SULFATE	1055	N	2.5	MG/L	2.6	MG/L	TREATMENT PLANT	

RI2980397	SAKONNET POINT CLUB		06-Oct-16	C1006-19B_WL16_WL71	SULFATE	1055	N	2	MG/L	3	MG/L	TREATMENT PLANT	Treatment Plant.
RI2980397	SAKONNET POINT CLUB		03-Feb-17	D0203-32D_WL16	SULFATE	1055	N	2	MG/L	2	MG/L	DISTRIBUTION FOOD PREP	
RI2980397	SAKONNET POINT CLUB		05-Feb-20	20B0134-01_WL29	SULFATE	1055	N	1		10.2	MG/L	TREATMENT PLANT	
RI2980397	SAKONNET POINT CLUB		23-Jun-08	320204_IOC	SULFATE	1055	N	5	MG/L	1800	MG/L		WELL 1 (ANTIMONY REPORTED AS <0.02 MG/L NOT ACCEPTABLE RESULT DUE TO INTERFERENCE W/SODIUM) (THALLIUM REPORTED AS <0.01 MG/L NOT ACCEPTABLE RESULT DUE TO INTERFERENCE W/SODIUM).RESAMPLE USING METHOD 200.9
RI2980397	SAKONNET POINT CLUB		09-Apr-09	E904615-1_WL16_WL71	SULFATE	1055	N	250	MG/L	1900	MG/L		WELL 1
RI2980397	SAKONNET POINT CLUB		19-May-10	E005C67-1_WL16	SULFATE	1055	N	250	MG/L	1900	MG/L		WELL 1
RI2980397	SAKONNET POINT CLUB		25-Aug-11	1108-16571-001_WL16	SULFATE	1055	N	5	MG/L	2400	MG/L		WELL 1
RI2980397	SAKONNET POINT CLUB		18-Jun-12	1206-12272-001_WL16	SULFATE	1055	N	5	MG/L	2300	MG/L	DRILLED WELL # 1	
RI2980397	SAKONNET POINT CLUB		22-May-13	E305L26-1_WL16_WL71	SULFATE	1055	N	250	MG/L	2000	MG/L	DRILLED WELL # 1	
RI2980397	SAKONNET POINT CLUB		08-May-14	1405-09886-003_WL71	SULFATE	1055	N	1250		2100	MG/L	WELL 1	
RI2980397	SAKONNET POINT CLUB		09-Jul-15	1507-14356-002_WL16_	SULFATE	1055	N	125	MG/L	1900	MG/L	DRILLED WELL 1	
RI2980397	SAKONNET POINT CLUB		23-Jun-08	320205_IOC	SULFATE	1055	N	5	MG/L	1400	MG/L		WELL 2 (ANTIMONY REPORTED AS <0.02 MG/L NOT ACCEPTABLE RESULT DUE TO INTERFERENCE W/SODIUM) (THALLIUM REPORTED AS <0.01 MG/L NOT ACCEPTABLE RESULT DUE TO INTERFERENCE W/SODIUM).RESAMPLE USING METHOD 200.9
RI2980397	SAKONNET POINT CLUB		09-Apr-09	E904615-2_WL16_WL71	SULFATE	1055	N	250	MG/L	1200	MG/L		WELL 2
RI2980397	SAKONNET POINT CLUB		19-May-10	E005C67-2_WL16	SULFATE	1055	N	250	MG/L	1400	MG/L		WELL 2
RI2980397	SAKONNET POINT CLUB		22-Jun-11	1106-11913-001_WL16	SULFATE	1055	N	5	MG/L	2400	MG/L		WELL #2
RI2980397	SAKONNET POINT CLUB		18-Jun-12	1206-12272-002_WL16	SULFATE	1055	N	5	MG/L	1700	MG/L	DRILLED WELL # 2	
RI2980397	SAKONNET POINT CLUB		22-May-13	E305L26-2_WL16_WL71	SULFATE	1055	N	250	MG/L	1500	MG/L	DRILLED WELL # 2	
RI2980397	SAKONNET POINT CLUB	DRILLED WELL # 2A	08-May-14	1405-09886-002_WL71	SULFATE	1055	N	1250	MG/L	1600	MG/L	WELL 2A	
RI2980397	SAKONNET POINT CLUB	DRILLED WELL # 2A	22-Oct-13	L1321419_IOC	THALLIUM, TOTAL	1085	N	0.0003	MG/L	0.0005	MG/L	WELL 2A	Anaylzed by Alpha Analytical RI lab cert. LAO00299 (Used method 6020A for Antimony, Thallium, Beryllium and method 1632A for Arsenic for same reason)
RI2980397	SAKONNET POINT CLUB		23-Jun-08	320200_TO12	TOLUENE	2991	N	0.5	UG/L	0.7	UG/L		WELL 1
RI2980397	SAKONNET POINT CLUB		25-Aug-11	1108-16571-001_TO12	TOLUENE	2991	N	0.5	UG/L	1.6	UG/L		WELL 1 MAKE-UP FOR MISSED 2ND QTR.

RI2980397	SAKONNET POINT CLUB	DRILLED WELL # 2A	20-Sep-13	1309-20348-001_TO12	TOLUENE	2991	N	0.5	UG/L	1.7	UG/L	DRILLED WELL # 2A	(WELL NOT ON LINE - SPECIAL NOT FOR COMPLIANCE)
RI2980397	SAKONNET POINT CLUB	DRILLED WELL # 2A	19-Dec-13	1312-27107-002_TO12	TOLUENE	2991	N	0.5	UG/L	5.5	UG/L	DRILLED WELL # 2A	
RI2980397	SAKONNET POINT CLUB	DRILLED WELL # 2A	20-Mar-14	1403-05823-002_TO12	TOLUENE	2991	N	0.5	UG/L	5.5	UG/L	WELL 2A	
RI2980397	SAKONNET POINT CLUB	DRILLED WELL # 2A	08-May-14	1405-09886-002_TO12	TOLUENE	2991	N	0.5	UG/L	0.5	UG/L	WELL 2A	